

Fitting time series data to pool models

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Dataset Bracho2016SBB

Variable control_7.5_15_mean;

Field control, midDepth of 7.5, incubation temperature of 15 Celsius

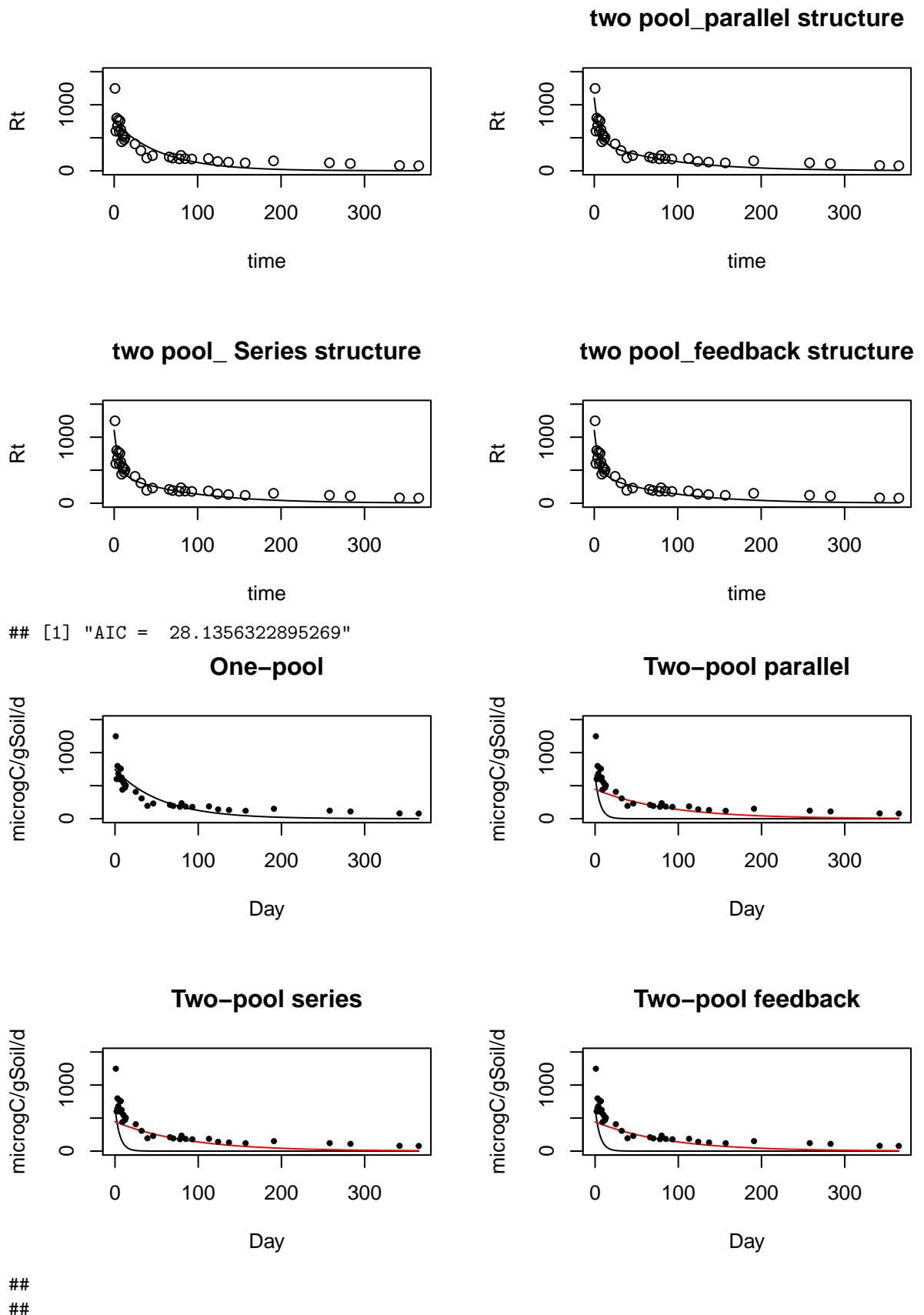
```
Bracho_V2=modelFitTS_Markdown(db = db[[4]], ts.col = 2, ic.col = 1, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))

## [1] "Bracho2016SBB; variable: control_7.5_15_mean"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0178355900699554"

## [1] "AIC = 21.4095319954639"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.172345029665615"
## [2] "k2= 0.0117543861088043"
## [3] "proportion of C0 in pool 1= 0.091275262183296"

## [1] "AIC = 24.1356322856545"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.17235227425884"
## [2] "k2= 0.0117545749594015"
## [3] "a21= 3.25526348277094e-06"
## [4] "Proportion of C0 in pool 1= 0.0912715809051408"

## [1] "AIC = 26.1356322827205"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.172355581357532"
## [2] "k2= 0.011754919969861"
## [3] "a21= 0.108995640191576"
## [4] "a12= 0.000201170018896024"
## [5] "Proportion of C0 in pool 1= 0.103369468293029"
```



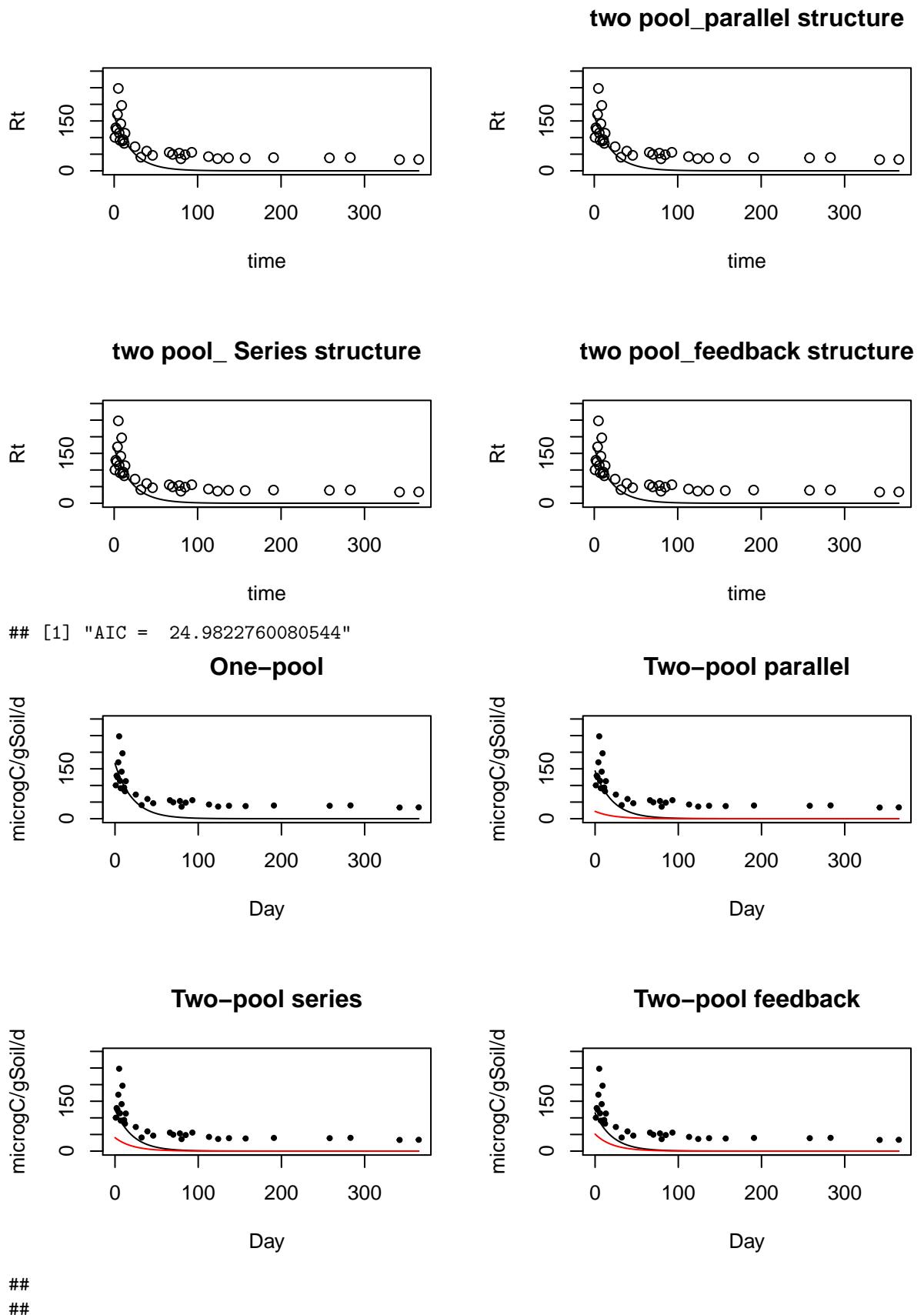
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0178					524658	16396
## Two-pool parallel	0.1723	0.0118	0.0913			277493	8672
## Two-pool series	0.1724	0.0118	0.0913	0.000		277493	8672
## Two-pool feedback	0.1724	0.0118	0.1034	0.109	0.0913	277493	8672
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	21.41	22.88	312.6	21.54	0.8156	41800.000	
## Two-pool parallel	24.14	28.53	296.2	24.99	0.1453	37.861	8.630
## Two-pool series	26.14	32.00	298.2	27.62	0.0391	5.802	4.022
## Two-pool feedback	28.14	35.46	300.2	30.44	0.0095	15.075	4.751

Variable control_20_15_mean;

Field control, midDepth of 20, incubation temperature of 15 Celsius

```
Bracho_V4=modelFitTS_Markdown(db = db[[4]], ts.col = 4, ic.col = 2, unitConverter = 100,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))
```

```
## [1] "Bracho2016SBB; variable: control_20_15_mean"
## [1] "One pool model"
## [1] "Best fit parameter: -0.0476775666473532"
## [1] "AIC = 16.9822760093142"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0476765169432423"
## [2] "k2= 0.0476826863179865"
## [3] "proportion of CO in pool 1= 0.866355751509897"
## [1] "AIC = 20.9822760098609"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0476803500966002"
## [2] "k2= 0.0476883871373185"
## [3] "a21= 0.000106959848000576"
## [4] "Proportion of CO in pool 1= 0.756025522376041"
## [1] "AIC = 22.9822760093226"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0476845552942854"
## [2] "k2= 0.0476995239280224"
## [3] "a21= 0.000241922706708309"
## [4] "a12= 0.000232555975450799"
## [5] "Proportion of CO in pool 1= 0.691775525814984"
```



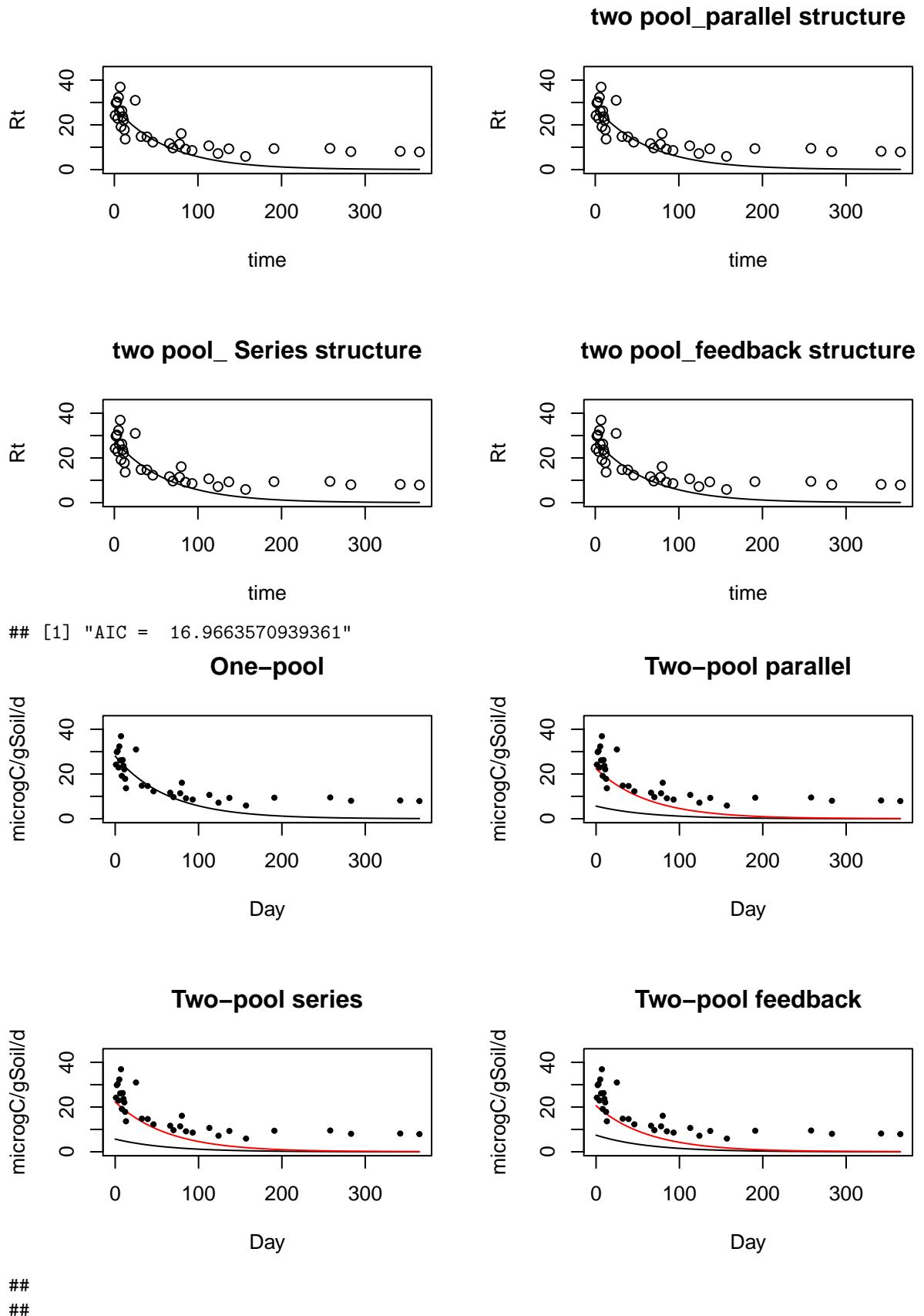
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0477					57347	1792
## Two-pool parallel	0.0477	0.0477	0.8664			57347	1792
## Two-pool series	0.0477	0.0477	0.7560	1e-04		57347	1792
## Two-pool feedback	0.0477	0.0477	0.6918	2e-04	0.756	57347	1792
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	16.98	18.45	241.7	17.12	0.8932	3483.00	
## Two-pool parallel	20.98	25.38	245.7	21.84	0.0842	20.97	14.54
## Two-pool series	22.98	28.85	247.7	24.46	0.0227	20.98	14.54
## Two-pool feedback	24.98	32.31	249.7	27.29	0.0055	20.98	14.54

Variable control_50_15_mean;

Field control, midDepth of 50, incubation temperature of 15 Celsius

```
Bracho_V6=modelFitTS_Markdown(db = db[[4]], ts.col = 6, ic.col = 3, unitConverter = 100,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))
```

```
## [1] "Bracho2016SBB; variable: control_50_15_mean"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0158148433969103"
## [1] "AIC = 8.96635709630517"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0158160070222554"
## [2] "k2= 0.0158146224733395"
## [3] "proportion of CO in pool 1= 0.201871066597856"
## [1] "AIC = 12.9663570965531"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0158188189949418"
## [2] "k2= 0.0158152083264824"
## [3] "a21= 0.000313998737998589"
## [4] "Proportion of CO in pool 1= 0.20266933664414"
## [1] "AIC = 14.9663570965121"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0158251726647072"
## [2] "k2= 0.0158185263955308"
## [3] "a21= 0.000296634374838955"
## [4] "a12= 0.000362149507121046"
## [5] "Proportion of CO in pool 1= 0.265369961052504"
```



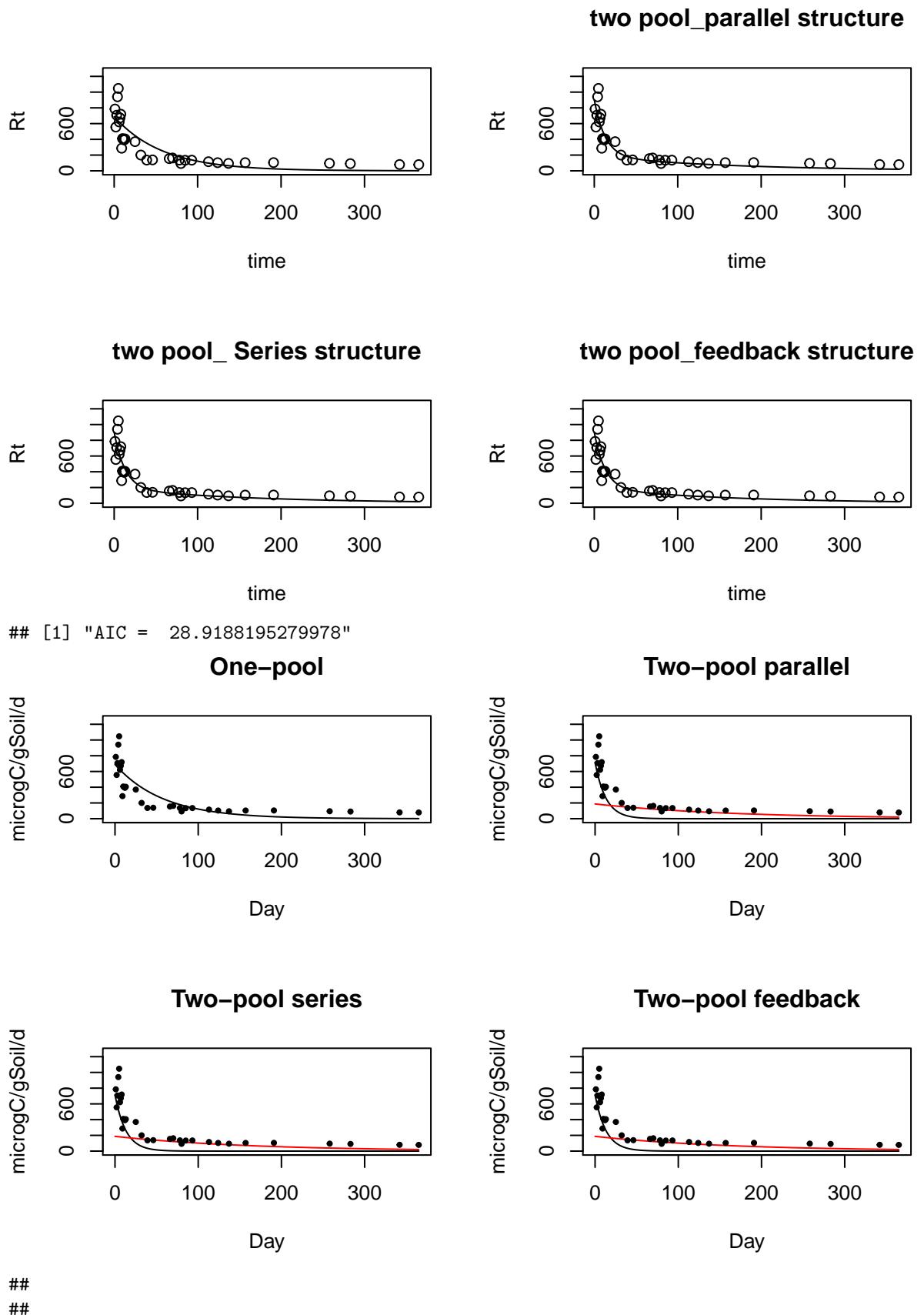
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0158					1042	32.56
## Two-pool parallel	0.0158	0.0158	0.2019			1042	32.56
## Two-pool series	0.0158	0.0158	0.2027	3e-04		1042	32.56
## Two-pool feedback	0.0158	0.0158	0.2654	3e-04	0.2027	1042	32.56
##							
##							
## Model	AIC	BIC	AICn	AICC	wi	MeanTrT	q05
## One-pool	8.966	10.43	113.5	9.10	0.8932	1770.00	
## Two-pool parallel	12.966	17.36	117.5	13.82	0.0842	63.23	43.83
## Two-pool series	14.966	20.83	119.5	16.45	0.0227	63.24	43.83
## Two-pool feedback	16.966	24.30	121.5	19.27	0.0055	63.21	43.81

Variable warming_7.5_15_mean;

Field warming, midDepth of 7.5, incubation temperature of 15 Celsius

```
Bracho_V8=modelFitTS_Markdown(db = db[[4]], ts.col = 8, ic.col = 4, unitConverter = 1000,
                                inipars=list(oneP=0.5,
                                            parallel=c(0.01, 0.001, 0.1),
                                            series=c(0.01, 0.001, 0.01, 0.1),
                                            feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))
```

```
## [1] "Bracho2016SBB; variable: warming_7.5_15_mean"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0172885108797871"
## [1] "AIC = 21.9215326913061"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0771223270422912"
## [2] "k2= 0.00612954671655782"
## [3] "proportion of CO in pool 1= 0.232987120928352"
## [1] "AIC = 24.9188195289635"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0771157154650838"
## [2] "k2= 0.00612891565323363"
## [3] "a21= 7.46442471695197e-05"
## [4] "Proportion of CO in pool 1= 0.233029596296617"
## [1] "AIC = 26.9188195301903"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0771185954070789"
## [2] "k2= 0.00612918862391289"
## [3] "a21= 2.78536178620059e-05"
## [4] "a12= 0.000425549663942149"
## [5] "Proportion of CO in pool 1= 0.233034830037517"
```



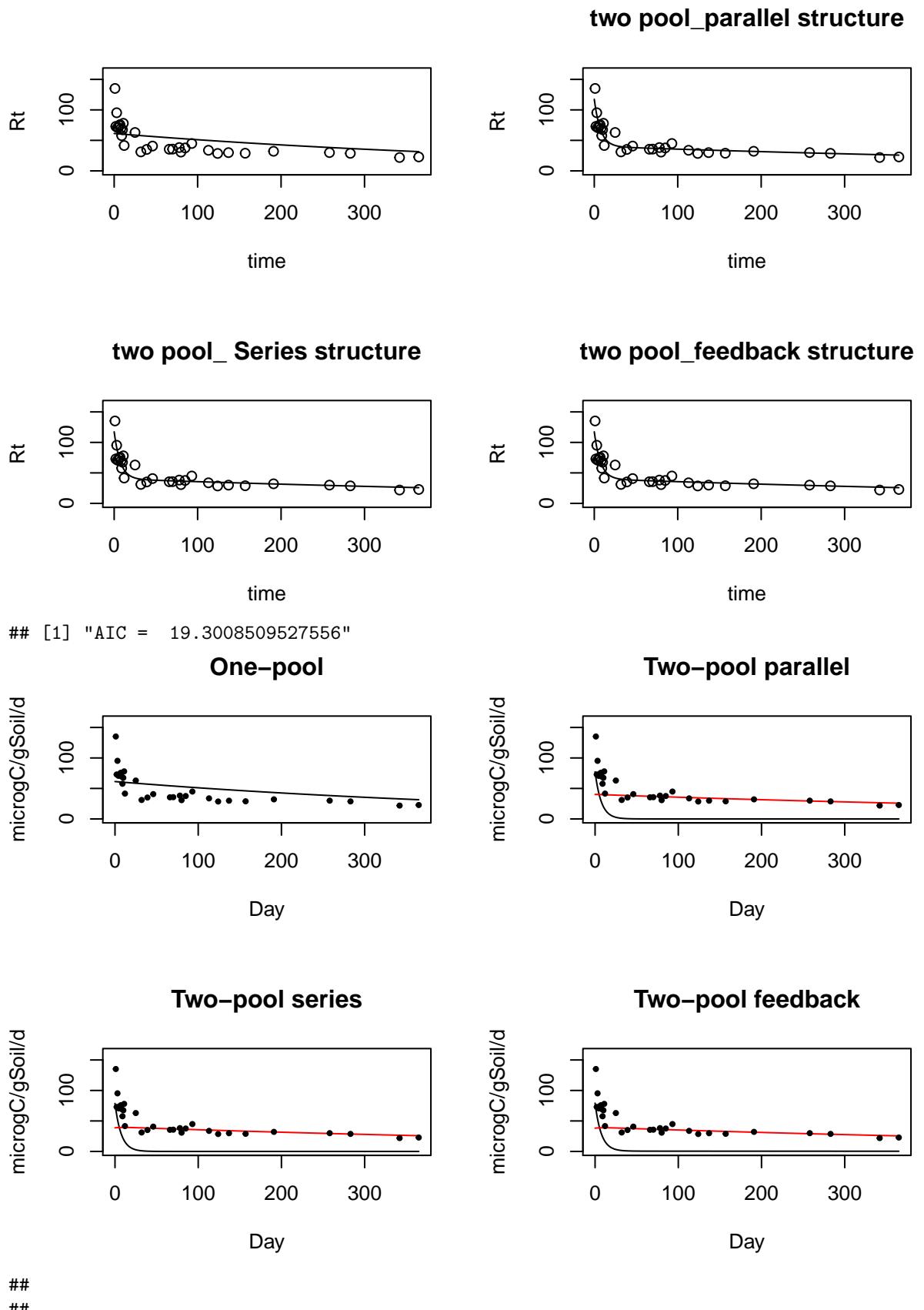
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## -----	-----	-----	-----	-----	-----	-----	-----
## One-pool	0.0173					677729	21179
## Two-pool parallel	0.0771	0.0061	0.233			410506	12828
## Two-pool series	0.0771	0.0061	0.233	1e-04		410506	12828
## Two-pool feedback	0.0771	0.0061	0.233	0e+00	0.233	410506	12828
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## -----	-----	-----	-----	-----	-----	-----	-----
## One-pool	21.92	23.39	320.7	22.05	0.8351	39880.00	
## Two-pool parallel	24.92	29.32	308.7	25.78	0.1299	44.11	12.271
## Two-pool series	26.92	32.78	310.7	28.40	0.0350	12.98	8.989
## Two-pool feedback	28.92	36.25	312.7	31.23	0.0085	12.97	8.988

Variable warming_20_15_mean;

Field warming, midDepth of 20, incubation temperature of 15 Celsius

```
Bracho_V10=modelFitTS_Markdown(db = db[[4]], ts.col = 10, ic.col = 5, unitConverter = 1000,
                                 inipars=list(oneP=0.5,
                                              parallel=c(0.01, 0.001, 0.1),
                                              series=c(0.01, 0.001, 0.01, 0.1),
                                              feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))

## [1] "Bracho2016SBB; variable: warming_20_15_mean"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00181991401633397"
## [1] "AIC = 14.0921934224956"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.134317450407222"
## [2] "k2= 0.00121509208166692"
## [3] "proportion of CO in pool 1= 0.0170623446023135"
## [1] "AIC = 15.30085095027"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.134322433632662"
## [2] "k2= 0.00121509912305678"
## [3] "a21= 0.678766915154136"
## [4] "Proportion of CO in pool 1= 0.0541591579073797"
## [1] "AIC = 17.300850948304"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.134285435889407"
## [2] "k2= 0.00124782492610622"
## [3] "a21= 0.689452805099384"
## [4] "a12= 0.0377059489171391"
## [5] "Proportion of CO in pool 1= 0.0564269276027045"
```



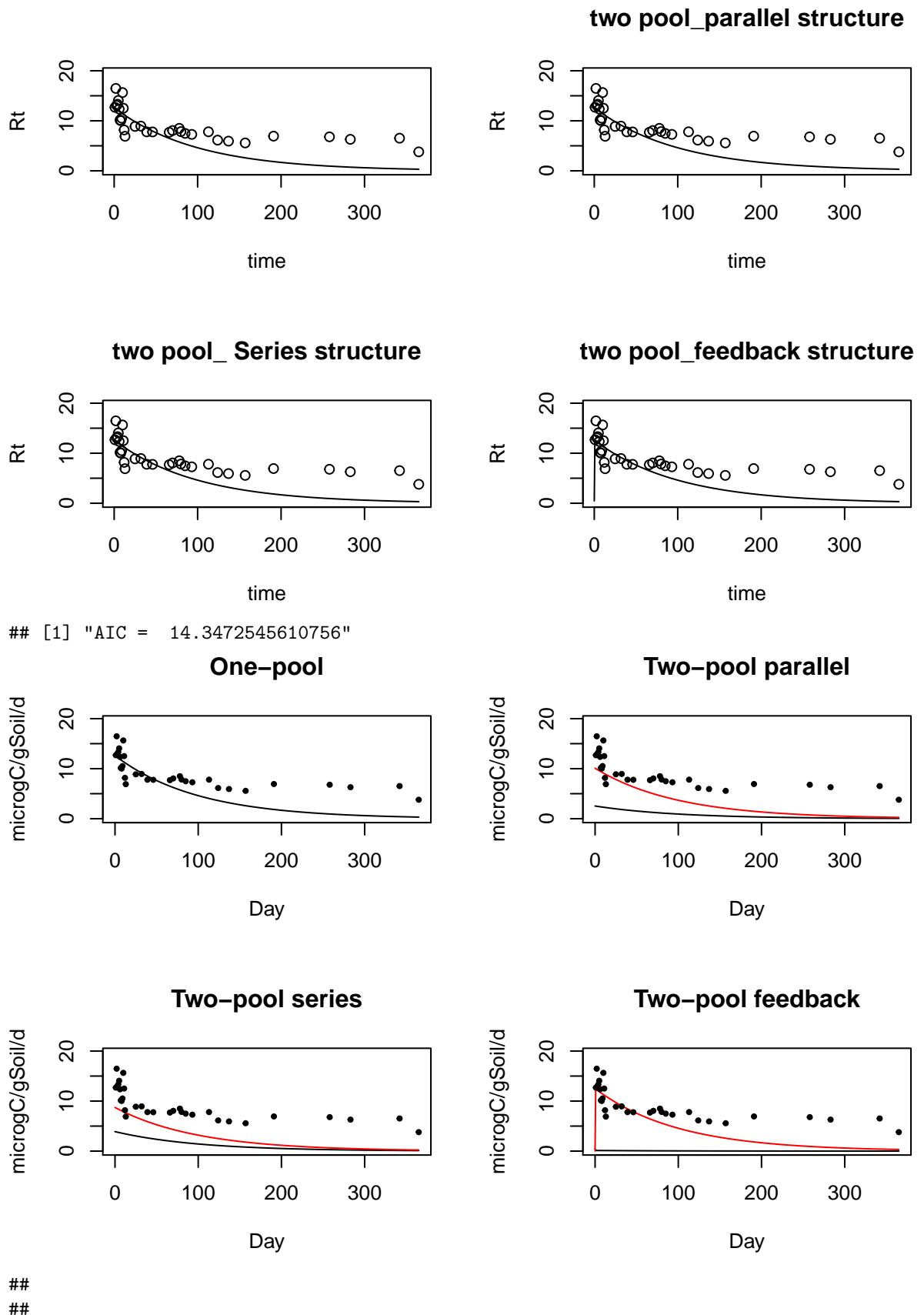
## Model	k1	k2	C0Inp1	a21	a12	SSR	MSR
## One-pool	-0.0018					13096	422.5
## Two-pool parallel	0.1343	0.0012	0.0171			3244	104.6
## Two-pool series	0.1343	0.0012	0.0542	0.6788		3244	104.6
## Two-pool feedback	0.1343	0.0012	0.0564	0.6895	0.0542	3244	104.6
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	14.09	15.56	195.5	14.23	0.6743	33670.0	
## Two-pool parallel	15.30	19.70	154.8	16.16	0.2566	286.9	10.44
## Two-pool series	17.30	23.16	156.8	18.78	0.0691	566.1	259.04
## Two-pool feedback	19.30	26.63	158.8	21.61	0.0168	574.9	271.99

Variable warming_50_15_mean;

Field warming, midDepth of 50, incubation temperature of 15 Celsius

```
Bracho_V12=modelFitTS_Markdown(db = db[[4]], ts.col = 12, ic.col = 6, unitConverter = 100,
  inipars=list(oneP=0.5,
    parallel=c(0.01, 0.001, 0.1),
    series=c(0.01, 0.001, 0.01, 0.1),
    feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))
```

```
## [1] "Bracho2016SBB; variable: warming_50_15_mean"
## [1] "One pool model"
## [1] "Best fit parameter: -0.0100717340761154"
## [1] "AIC = 6.34731439087186"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0100717578017237"
## [2] "k2= 0.0100718026476942"
## [3] "proportion of C0 in pool 1= 0.200846686272399"
## [1] "AIC = 10.3473143912333"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0100724103649657"
## [2] "k2= 0.0100721300304381"
## [3] "a21= 0.000133262746708718"
## [4] "Proportion of C0 in pool 1= 0.308655479162702"
## [1] "AIC = 12.3473143906689"
## [1] "Two pool model-feedback structure"
## [1] "k1= 267.894136665368"
## [2] "k2= 96.8567292318489"
## [3] "a21= 0.999998648506405"
## [4] "a12= 0.999859779231427"
## [5] "Proportion of C0 in pool 1= 0.998621777143609"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0101					281.3	8.79
## Two-pool parallel	0.0101	0.0101	0.2008			281.3	8.79
## Two-pool series	0.0101	0.0101	0.3087	1e-04		281.3	8.79
## Two-pool feedback	267.8941	96.8567	0.9986	1e+00	0.3087	281.3	8.79
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	6.347	7.813	71.56	6.481	0.8932	1253.00	
## Two-pool parallel	10.347	14.745	75.56	11.204	0.0842	99.29	68.82
## Two-pool series	12.347	18.210	77.56	13.829	0.0227	99.29	68.83
## Two-pool feedback	14.347	21.676	79.56	16.655	0.0055	99.29	68.83

Dataset Crow2019a

Variable Site01;

CO2 production rate

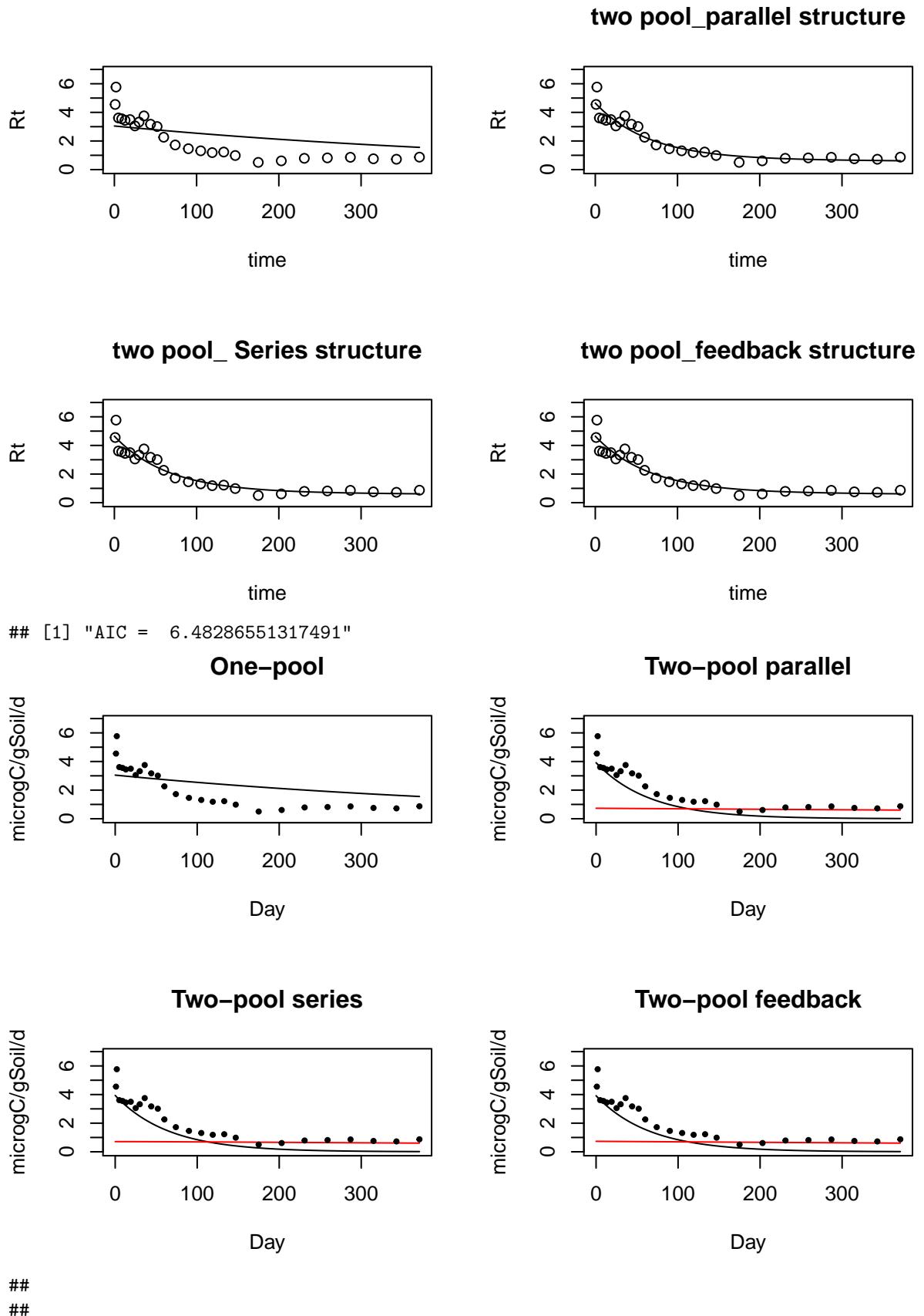
```
Crow_V2=modelFitTS_Markdown(db = db[[9]], ts.col = 2, ic.col = 1, unitConverter = 1e3)

## [1] "Crow2019a; variable: Site01"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00181433474857151"

## [1] "AIC = 2.39913582290172"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0153724331697695"
## [2] "k2= 0.000513742669664509"
## [3] "proportion of CO in pool 1= 0.151653220803611"

## [1] "AIC = 2.48286551282388"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0153722554556742"
## [2] "k2= 0.000513735267482581"
## [3] "a21= 0.133722411861794"
## [4] "Proportion of CO in pool 1= 0.176003693910743"

## [1] "AIC = 4.48286551530233"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0153725507779158"
## [2] "k2= 0.000513747632367684"
## [3] "a21= 0.0066279675011085"
## [4] "a12= 1.13904553483146e-05"
## [5] "Proportion of CO in pool 1= 0.152698721039364"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0018					31.74	1.2209
## Two-pool parallel	0.0154	5e-04	0.1517			4.48	0.1723
## Two-pool series	0.0154	5e-04	0.1760	0.1337		4.48	0.1723
## Two-pool feedback	0.0154	5e-04	0.1527	0.0066	0.176	4.48	0.1723
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	2.399	6.315	76.04	2.410	0.4407	1680.00	
## Two-pool parallel	2.483	14.232	-646.43	2.548	0.4113	361.39	57.69
## Two-pool series	4.483	20.148	-644.43	4.592	0.1480	325.35	55.78
## Two-pool feedback	6.483	26.064	-642.43	6.647	0.0530	77.95	45.52

Variable Site02;

CO2 production rate

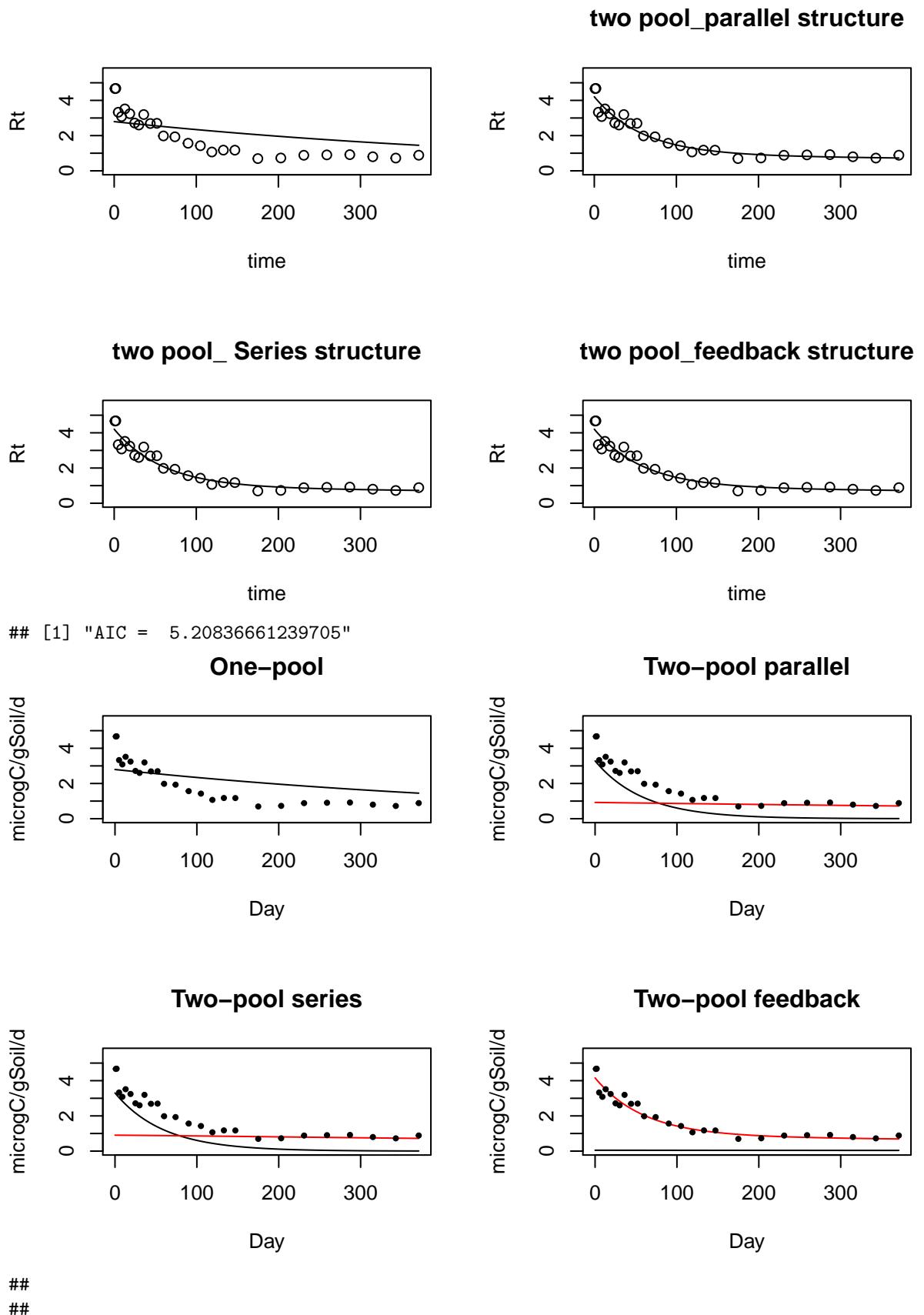
```
Crow_V3=modelFitTS_Markdown(db = db[[9]], ts.col = 3, ic.col = 2, unitConverter = 1e3) #,
```

```
## [1] "Crow2019a; variable: Site02"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00176870119973138"

## [1] "AIC = 1.62130147908555"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0169171918810776"
## [2] "k2= 0.00066697101943013"
## [3] "proportion of CO in pool 1= 0.122832597845683"

## [1] "AIC = 1.20836660832542"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0169173002590872"
## [2] "k2= 0.000666974698459602"
## [3] "a21= 0.127568299309428"
## [4] "Proportion of CO in pool 1= 0.141641779969732"

## [1] "AIC = 3.20836660954217"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.000666991331254473"
## [2] "k2= 0.0169177283174458"
## [3] "a21= 0.945057887008565"
## [4] "a12= 2.17089008835991e-06"
## [5] "Proportion of CO in pool 1= 0.844417153965827"
```



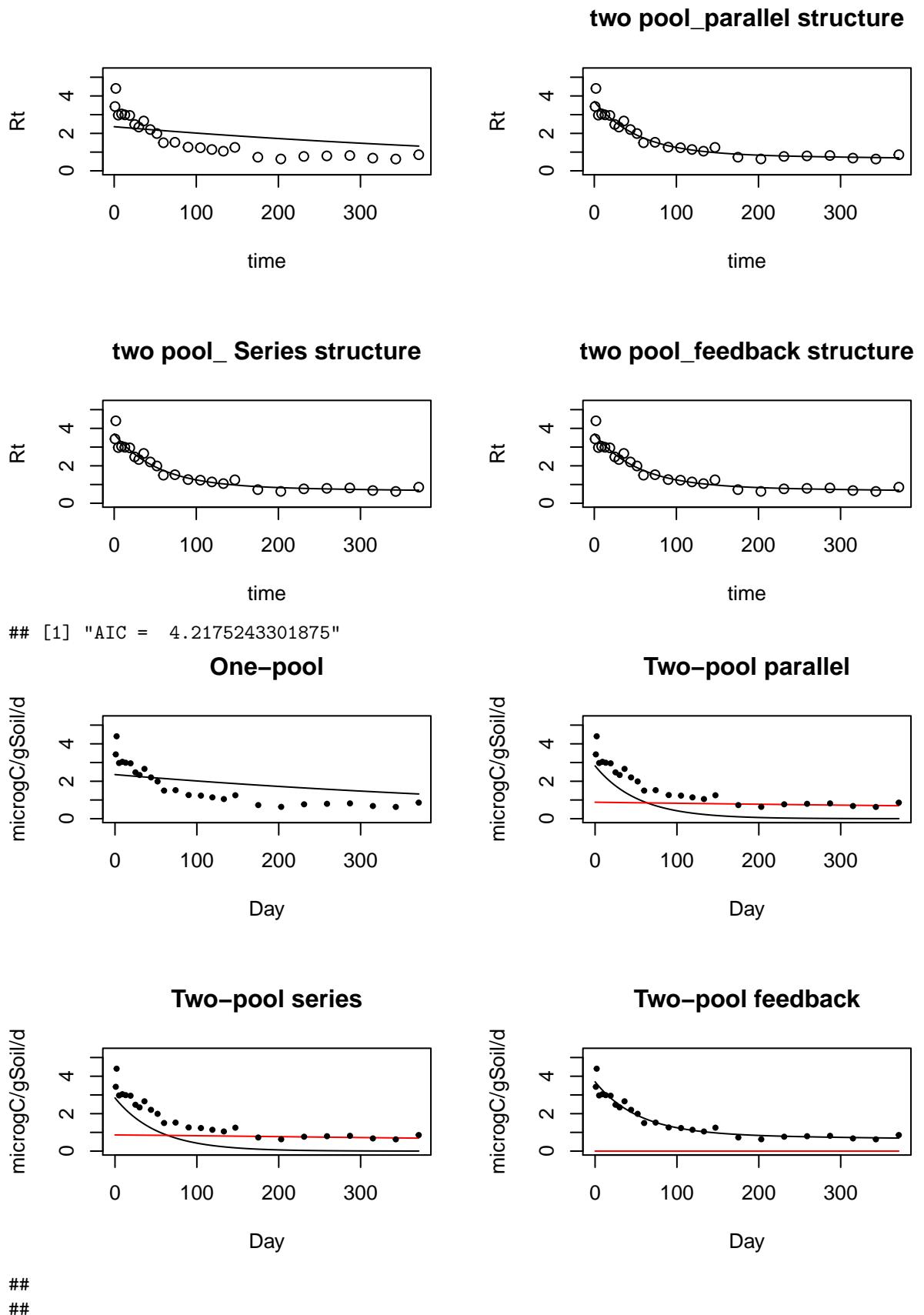
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0018					21.515	0.8275
## Two-pool parallel	0.0169	0.0007	0.1228			2.369	0.0911
## Two-pool series	0.0169	0.0007	0.1416	0.1276		2.369	0.0911
## Two-pool feedback	0.0007	0.0169	0.8444	0.9451	0.1416	2.369	0.0911
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	1.621	5.537	-68.25	1.632	0.3807	1580.0	
## Two-pool parallel	1.208	12.957	-882.85	1.274	0.4554	375.5	58.76
## Two-pool series	3.208	18.873	-880.85	3.318	0.1639	250.4	50.10
## Two-pool feedback	5.208	24.789	-878.85	5.373	0.0587	1555.1	1096.27

Variable Site03;

CO2 production rate

```
Crow_V4=modelFitTS_Markdown(db = db[[9]], ts.col = 4, ic.col = 3, unitConverter = 1e3,
                             inipars=list(oneP=0.5,
                                         parallel=c(0.01, 0.001, 0.1),
                                         series=c(0.05, 0.0001, 0.01, 0.1),
                                         feedback=c(0.05, 0.0001, 0.1, 0.01, 0.1)))
```

```
## [1] "Crow2019a; variable: Site03"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00156088504933827"
## [1] "AIC = 1.12306420773767"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0189674273339294"
## [2] "k2= 0.000646330109031004"
## [3] "proportion of CO in pool 1= 0.0985918120889208"
## [1] "AIC = 0.217524329907982"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0189674273983276"
## [2] "k2= 0.000646330110742148"
## [3] "a21= 0.151401290512062"
## [4] "Proportion of CO in pool 1= 0.116917688224088"
## [1] "AIC = 2.21752432995185"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0188464140531664"
## [2] "k2= 0.000767345762822293"
## [3] "a21= 0.15229974276901"
## [4] "a12= 0.999998173761209"
## [5] "Proportion of CO in pool 1= 0.153518957752388"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0016					16.771	0.6450
## Two-pool parallel	0.0190	6e-04	0.0986			1.443	0.0555
## Two-pool series	0.0190	6e-04	0.1169	0.1514		1.443	0.0555
## Two-pool feedback	0.0188	8e-04	0.1535	0.1523	0.1169	1.443	0.0555
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	1.1231	5.039	-160.7	1.1339	0.3246	1510.0	
## Two-pool parallel	0.2175	11.966	-1066.6	0.2829	0.4967	407.7	54.60
## Two-pool series	2.2175	17.882	-1064.6	2.3268	0.1788	287.0	46.68
## Two-pool feedback	4.2175	23.799	-1062.6	4.3819	0.0640	296.7	47.23

Variable Site04;

CO2 production rate

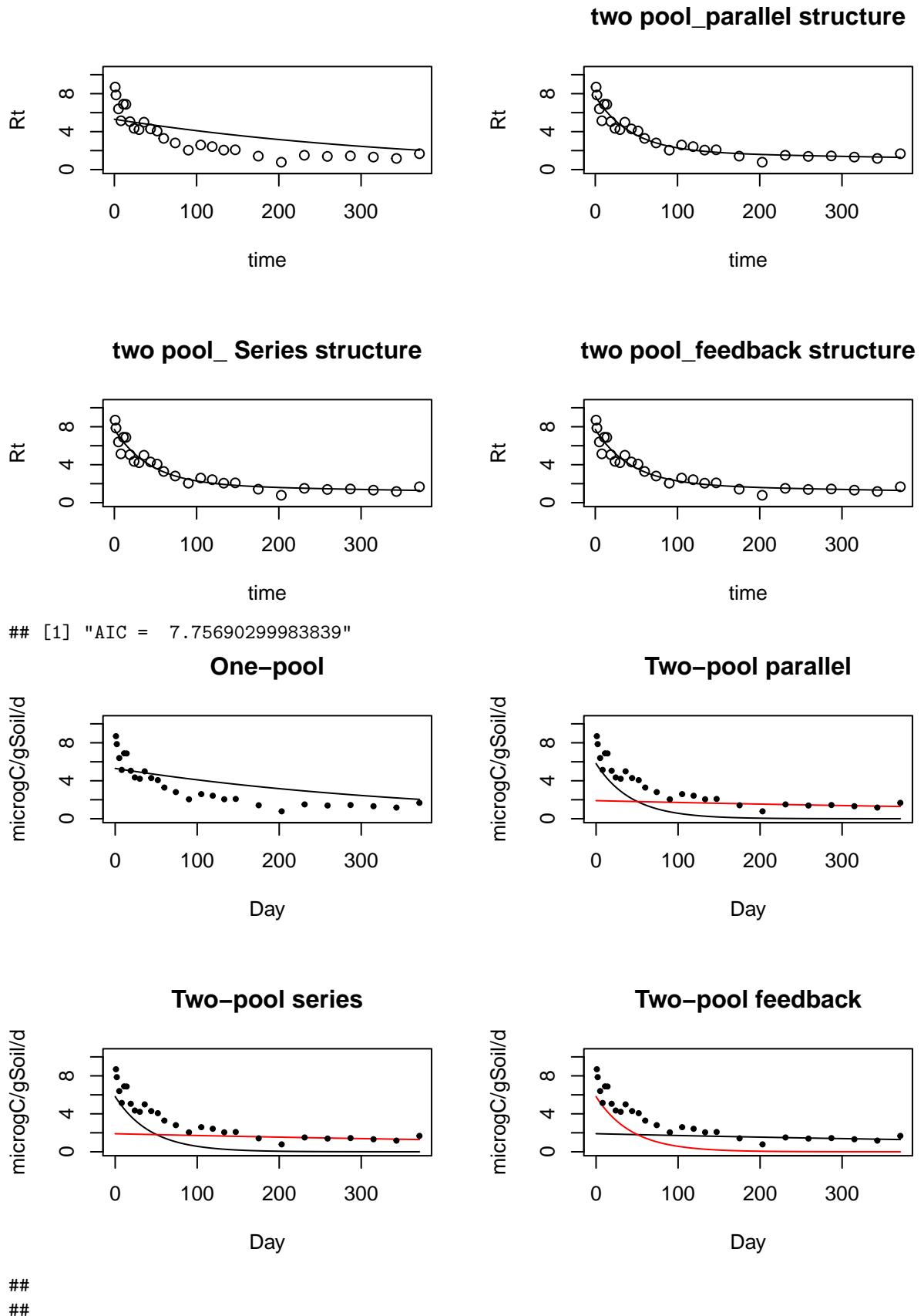
```
Crow_V5=modelFitTS_Markdown(db = db[[9]], ts.col = 5, ic.col = 4, unitConverter = 1e3)
```

```
## [1] "Crow2019a; variable: Site04"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00257483626298871"

## [1] "AIC = 3.67023000932624"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.023143224446111"
## [2] "k2= 0.00105365102574314"
## [3] "proportion of CO in pool 1= 0.121912511957848"

## [1] "AIC = 3.75690300082543"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0231427266861298"
## [2] "k2= 0.00105363466227209"
## [3] "a21= 0.0160560770188149"
## [4] "Proportion of CO in pool 1= 0.124001224646758"

## [1] "AIC = 5.75690300200839"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00105365859570677"
## [2] "k2= 0.0231431910253195"
## [3] "a21= 0.000589516094946674"
## [4] "a12= 2.51407658174996e-06"
## [5] "Proportion of CO in pool 1= 0.878062828203264"
```



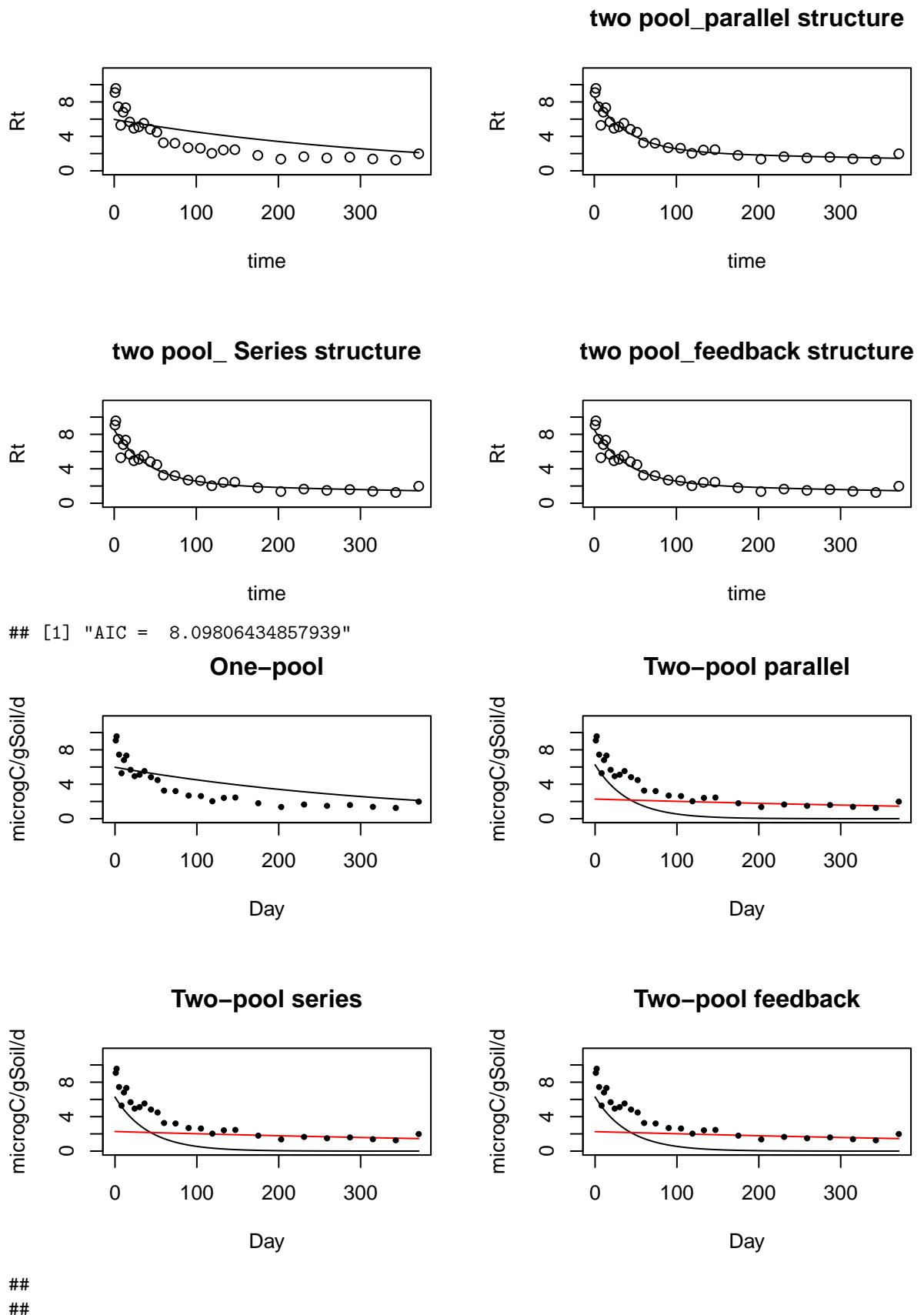
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0026					62.237	2.3051
## Two-pool parallel	0.0231	0.0011	0.1219			8.796	0.3258
## Two-pool series	0.0231	0.0011	0.1240	0.0161		8.796	0.3258
## Two-pool feedback	0.0011	0.0231	0.8781	0.0006	0.124	8.796	0.3258
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.670	7.586	311.8	3.681	0.4411	2060.00	
## Two-pool parallel	3.757	15.505	-410.1	3.822	0.4110	266.91	45.20
## Two-pool series	5.757	21.422	-408.1	5.866	0.1479	58.45	30.65
## Two-pool feedback	7.757	27.338	-406.1	7.921	0.0529	949.10	657.87

Variable Site05;

CO2 production rate

```
Crow_V6=modelFitTS_Markdown(db = db[[9]], ts.col = 6, ic.col = 5, unitConverter = 1e3,
                             inipars=list(oneP=0.5,
                                         parallel=c(0.01, 0.001, 0.1),
                                         series=c(0.05, 0.0001, 0.01, 0.1),
                                         feedback=c(0.05, 0.0001, 0.1, 0.01, 0.1)))
```

```
## [1] "Crow2019a; variable: Site05"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00280246427369057"
## [1] "AIC = 3.87275102990533"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0244428611526866"
## [2] "k2= 0.00121489364506501"
## [3] "proportion of CO in pool 1= 0.120285843516455"
## [1] "AIC = 4.09806434912774"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0244416970602002"
## [2] "k2= 0.00121485631271023"
## [3] "a21= 0.0161954157507398"
## [4] "Proportion of CO in pool 1= 0.122377784391282"
## [1] "AIC = 6.09806434510847"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0244409707678101"
## [2] "k2= 0.00121482231775397"
## [3] "a21= 0.058684656180491"
## [4] "a12= 4.652485112e-06"
## [5] "Proportion of CO in pool 1= 0.128214846190897"
```



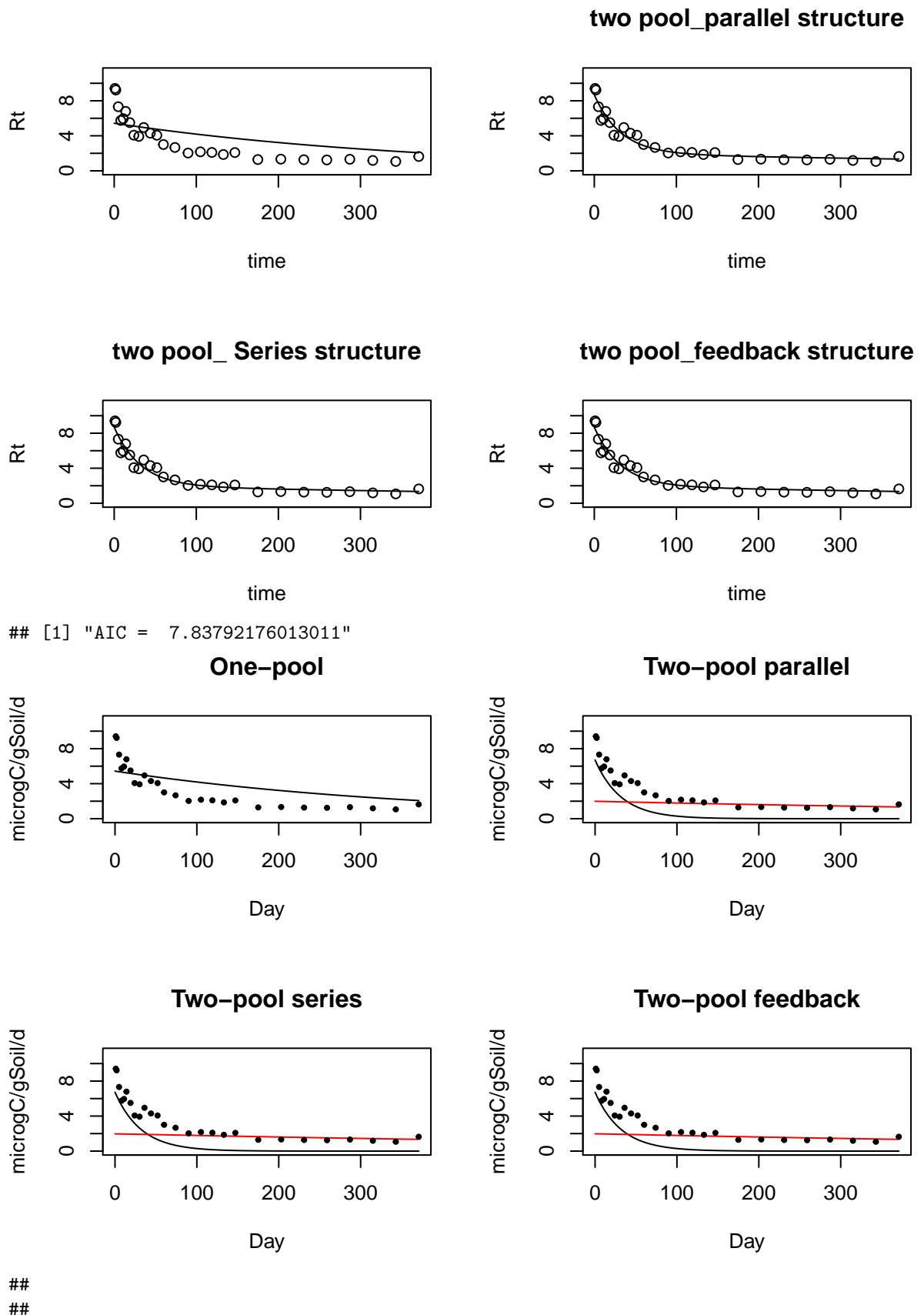
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0028					68.87	2.5507
## Two-pool parallel	0.0244	0.0012	0.1203			10.43	0.3864
## Two-pool series	0.0244	0.0012	0.1224	0.0162		10.43	0.3864
## Two-pool feedback	0.0244	0.0012	0.1282	0.0587	0.1224	10.43	0.3864
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.873	7.789	349.4	3.884	0.4582	2130.00	
## Two-pool parallel	4.098	15.847	-346.8	4.163	0.3984	249.45	44.46
## Two-pool series	6.098	21.763	-344.8	6.207	0.1434	54.24	29.02
## Two-pool feedback	8.098	27.679	-342.8	8.262	0.0513	89.22	30.93

Variable Site06;

CO2 production rate

```
Crow_V7=modelFitTS_Markdown(db = db[[9]], ts.col = 7, ic.col = 6, unitConverter = 1e3,
                             inipars=list(oneP=0.5,
                                         parallel=c(0.01, 0.001, 0.1),
                                         series=c(0.05, 0.0001, 0.01, 0.1),
                                         feedback=c(0.05, 0.0001, 0.1, 0.01, 0.1)))
```

```
## [1] "Crow2019a; variable: Site06"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00260157343011613"
## [1] "AIC = 4.26498544605259"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0313679619214142"
## [2] "k2= 0.0010599188697537"
## [3] "proportion of CO in pool 1= 0.10228031610273"
## [1] "AIC = 3.83792175982291"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0313675873274746"
## [2] "k2= 0.00105991130899477"
## [3] "a21= 0.086985246206364"
## [4] "Proportion of CO in pool 1= 0.112400548677191"
## [1] "AIC = 5.83792175955546"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0313678861628721"
## [2] "k2= 0.00105991699918593"
## [3] "a21= 0.0577924237722272"
## [4] "a12= 7.6481913716675e-06"
## [5] "Proportion of CO in pool 1= 0.108787615089775"
```



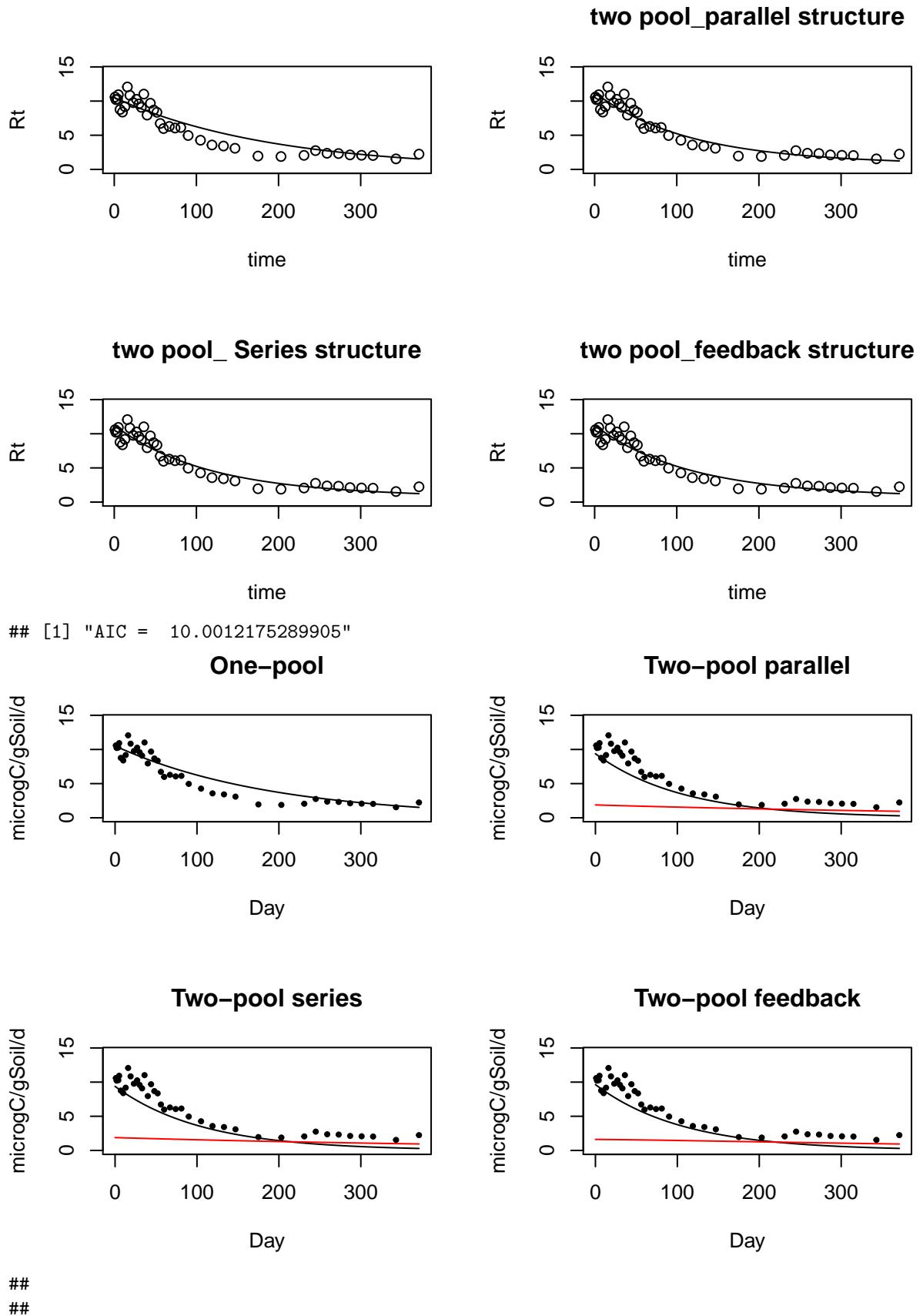
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0026					83.79	3.1034
## Two-pool parallel	0.0314	0.0011	0.1023			9.16	0.3392
## Two-pool series	0.0314	0.0011	0.1124	0.0870		9.16	0.3392
## Two-pool feedback	0.0314	0.0011	0.1088	0.0578	0.1124	9.16	0.3392
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	4.265	8.181	422.2	4.276	0.3790	2090.00	
## Two-pool parallel	3.838	15.586	-395.1	3.903	0.4566	240.39	32.42
## Two-pool series	5.838	21.503	-393.1	5.947	0.1643	113.95	25.23
## Two-pool feedback	7.838	27.419	-391.1	8.002	0.0588	86.41	24.08

Variable Site07;

CO2 production rate

```
Crow_V8=modelFitTS_Markdown(db = db[[9]], ts.col = 8, ic.col = 7, unitConverter = 1e3,
                             inipars=list(oneP=0.5,
                                         parallel=c(0.01, 0.001, 0.1),
                                         series=c(0.01, 0.0001, 0.01, 0.1),
                                         feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)))
```

```
## [1] "Crow2019a; variable: Site07"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0052072532116334"
## [1] "AIC = 2.76047974153698"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00937419330520892"
## [2] "k2= 0.00184307058201746"
## [3] "proportion of CO in pool 1= 0.495136376501103"
## [1] "AIC = 6.00121752917688"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00937464494042726"
## [2] "k2= 0.00184329446951804"
## [3] "a21= 0.000122001442330544"
## [4] "Proportion of CO in pool 1= 0.495169005834716"
## [1] "AIC = 8.00121752420468"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00937544557223806"
## [2] "k2= 0.00184366004811991"
## [3] "a21= 0.101437797366004"
## [4] "a12= 2.49929872309096e-06"
## [5] "Proportion of CO in pool 1= 0.566559504002903"
```



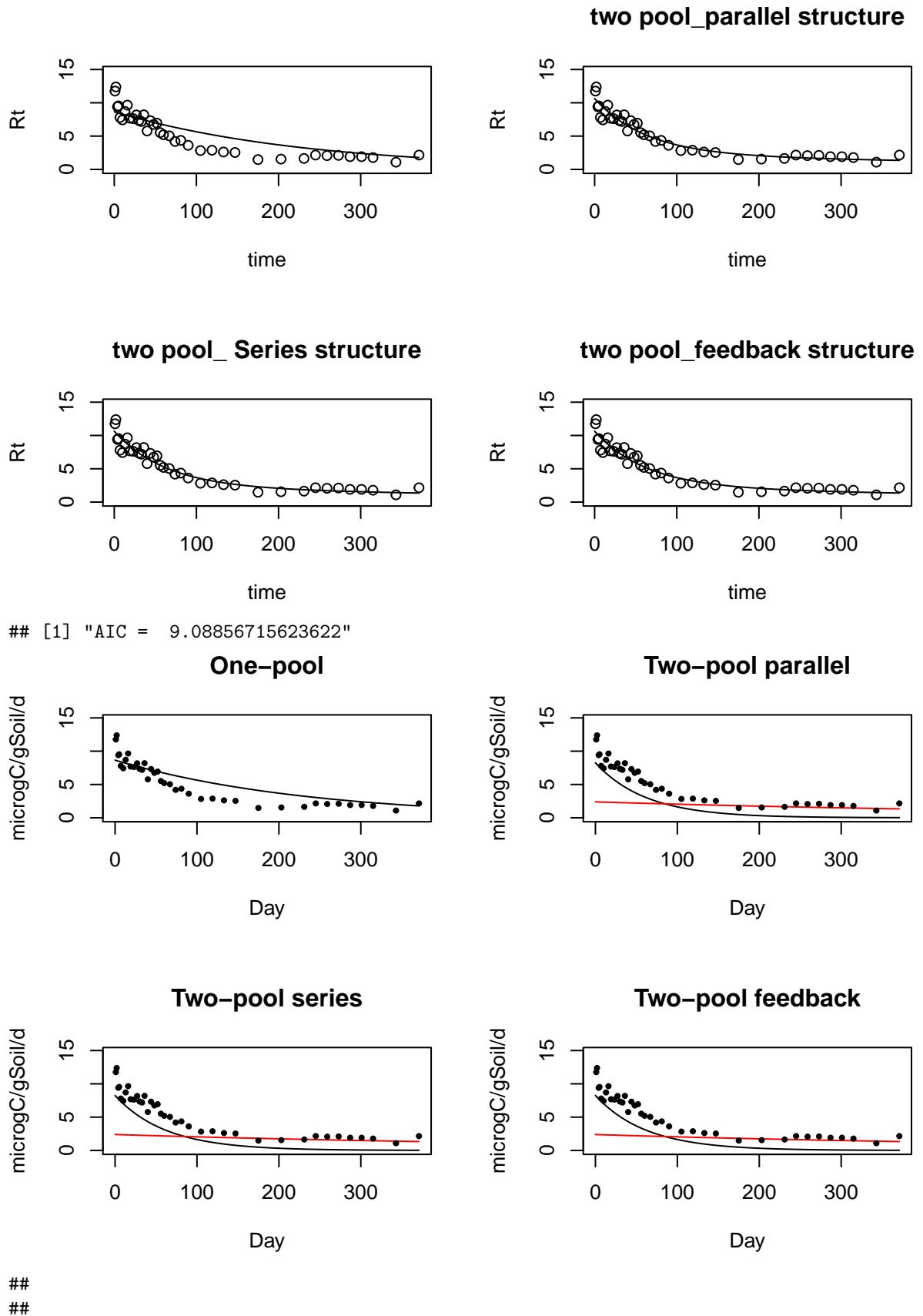
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0052					57.04	1.463
## Two-pool parallel	0.0094	0.0018	0.4951			39.02	1.001
## Two-pool series	0.0094	0.0018	0.4952	0.0001		39.02	1.001
## Two-pool feedback	0.0094	0.0018	0.5666	0.1014	0.4952	39.02	1.001
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	2.760	6.677	143.069	2.771	0.7925	2020.0	
## Two-pool parallel	6.001	17.750	6.226	6.067	0.1526	179.5	89.94
## Two-pool series	8.001	23.666	8.226	8.111	0.0549	106.7	73.95
## Two-pool feedback	10.001	29.582	10.226	10.166	0.0197	161.7	85.45

Variable Site08;

CO2 production rate

```
Crow_V9=modelFitTS_Markdown(db = db[[9]], ts.col = 9, ic.col = 8, unitConverter = 1e3,
                             inipars=list(oneP=0.5,
                                         parallel=c(0.01, 0.001, 0.1),
                                         series=c(0.01, 0.0001, 0.01, 0.1),
                                         feedback=c(0.05, 0.0001, 0.1, 0.01, 0.01)))
```

```
## [1] "Crow2019a; variable: Site08"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0042624975999388"
## [1] "AIC = 3.72545596885523"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0161673896121356"
## [2] "k2= 0.0015725476692938"
## [3] "proportion of CO in pool 1= 0.251338476074876"
## [1] "AIC = 5.08856715635619"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0161674486730964"
## [2] "k2= 0.00157255455054574"
## [3] "a21= 0.000339612778835596"
## [4] "Proportion of CO in pool 1= 0.251431743231871"
## [1] "AIC = 7.08856715624658"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0161674715887246"
## [2] "k2= 0.00157255776146037"
## [3] "a21= 0.00688698908360191"
## [4] "a12= 4.2302885643497e-05"
## [5] "Proportion of CO in pool 1= 0.253272193822175"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0043					92.42	2.370
## Two-pool parallel	0.0162	0.0016	0.2513			24.73	0.634
## Two-pool series	0.0162	0.0016	0.2514	0.0003		24.73	0.634
## Two-pool feedback	0.0162	0.0016	0.2533	0.0069	0.2514	24.73	0.634
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.725	7.642	322.1	3.736	0.5990	2030.00	
## Two-pool parallel	5.089	16.837	-163.1	5.154	0.2949	190.81	59.67
## Two-pool series	7.089	22.753	-161.1	7.198	0.1061	62.07	42.89
## Two-pool feedback	9.089	28.670	-159.1	9.253	0.0380	66.23	43.29

Variable Site09;

CO2 production rate

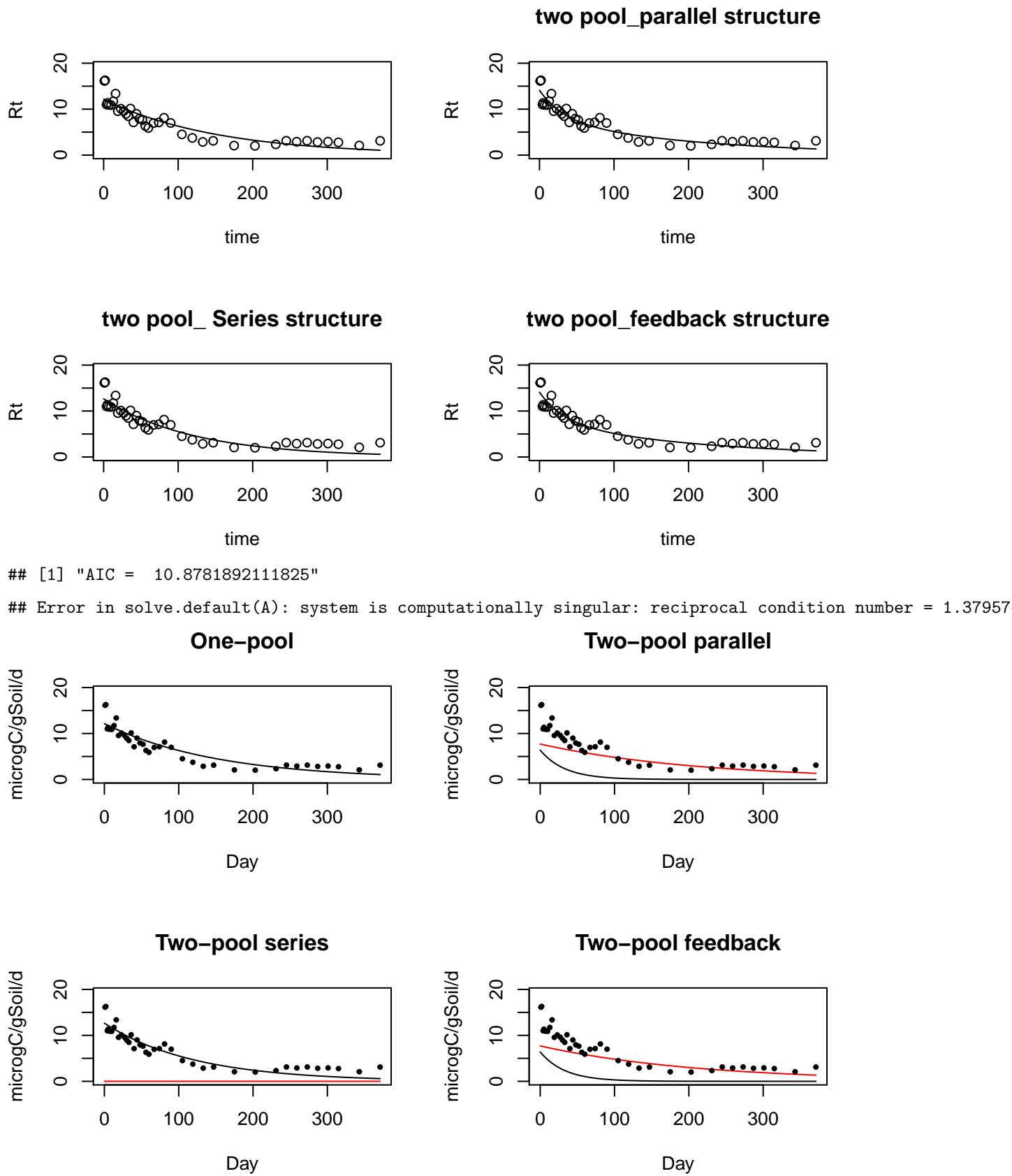
```
Crow_V10=modelFitTS_Markdown(db = db[[9]], ts.col = 10, ic.col = 9, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.1, 0.01, 0.01)))

## [1] "Crow2019a; variable: Site09"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00656624119461036"

## [1] "AIC = 3.77435771552583"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0302963385075891"
## [2] "k2= 0.00470156150003336"
## [3] "proportion of CO in pool 1= 0.113990406551844"

## [1] "AIC = 6.87818921701486"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00827491389380052"
## [2] "k2= 1.14180244392803e-19"
## [3] "a21= 0.000195479938784937"
## [4] "Proportion of CO in pool 1= 0.826402769308212"

## [1] "AIC = 9.5814738614555"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0303120090134481"
## [2] "k2= 0.00470231638385086"
## [3] "a21= 0.00281921916754413"
## [4] "a12= 0.000307555541876114"
## [5] "Proportion of CO in pool 1= 0.114333078694072"
```



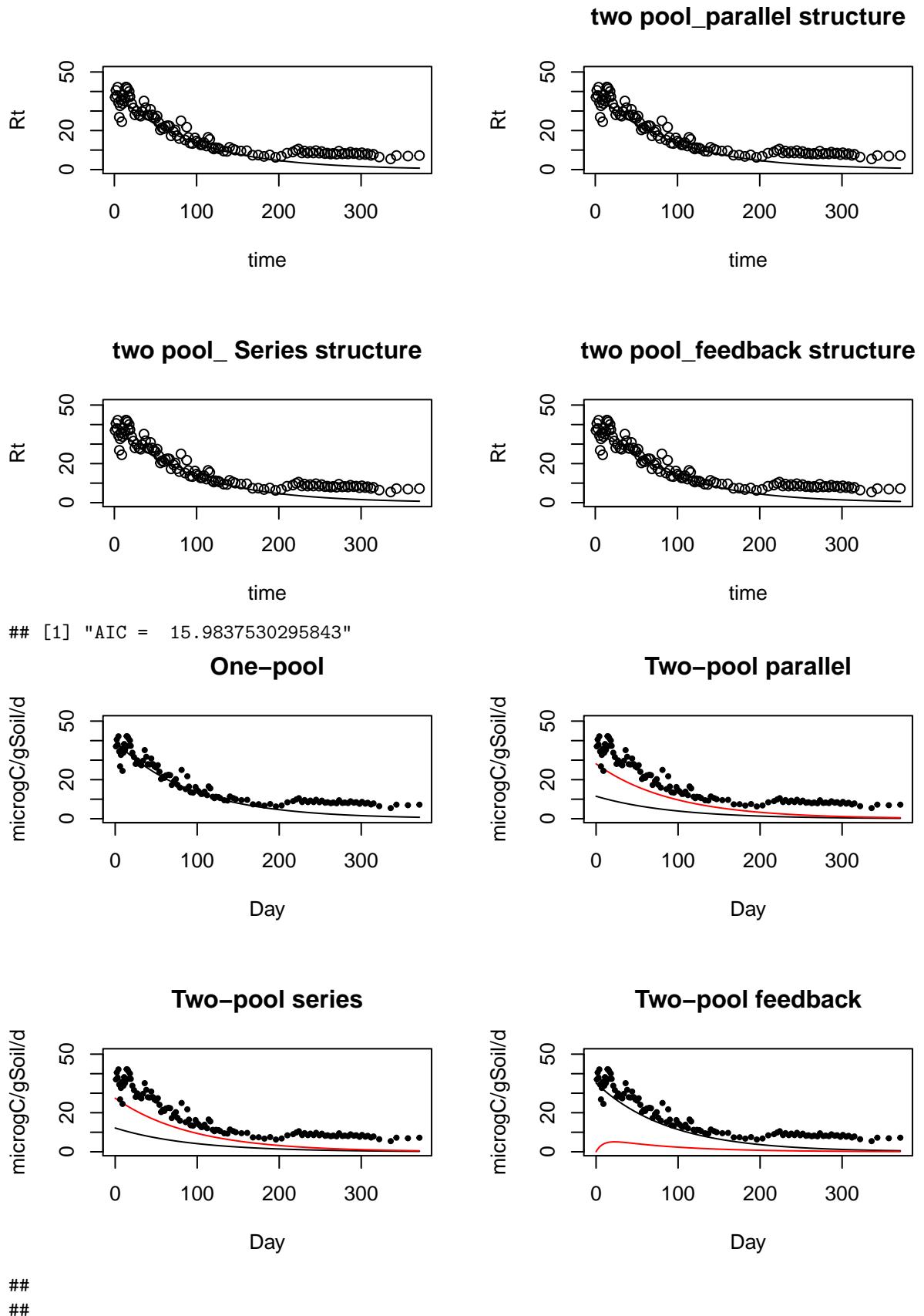
Variable Site10;

CO2 production rate

```
# The models get fitted but the following error prevents the data to be saved
# Error in solve.default(A) :
#   system is computationally singular: reciprocal condition number = 1.37957e-17

Crow_V11=modelFitTS_Markdown(db = db[[9]], ts.col = 11, ic.col = 10, unitConverter = 1e3,
                               inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.05, 0.0001, 0.1, 0.01, 0.01)))

## [1] "Crow2019a; variable: Site10"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0107157549868226"
## [1] "AIC = 8.04509719561267"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0107157557606457"
## [2] "k2= 0.0107157647669732"
## [3] "proportion of CO in pool 1= 0.290668545620501"
## [1] "AIC = 12.045097195638"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0107182542608361"
## [2] "k2= 0.0107167280269373"
## [3] "a21= 0.000451098357366841"
## [4] "Proportion of CO in pool 1= 0.307371381926603"
## [1] "AIC = 14.0450971862893"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0112880146205454"
## [2] "k2= 0.112902504154333"
## [3] "a21= 0.157107463423432"
## [4] "a12= 2.22446644593255e-06"
## [5] "Proportion of CO in pool 1= 0.999902011441339"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0107					2363	20.54
## Two-pool parallel	0.0107	0.0107	0.2907			2363	20.54
## Two-pool series	0.0107	0.0107	0.3074	0.0005		2363	20.54
## Two-pool feedback	0.0113	0.1129	0.9999	0.1571	0.3074	2291	19.92
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	8.045	11.96	1123	8.056	0.8481	3700.00	
## Two-pool parallel	12.045	23.79	1127	12.111	0.1117	93.32	64.68
## Two-pool series	14.045	29.71	1129	14.154	0.0402	93.34	64.70
## Two-pool feedback	15.984	35.56	1120	16.148	0.0148	89.98	62.94

Variable Site11;

CO2 production rate

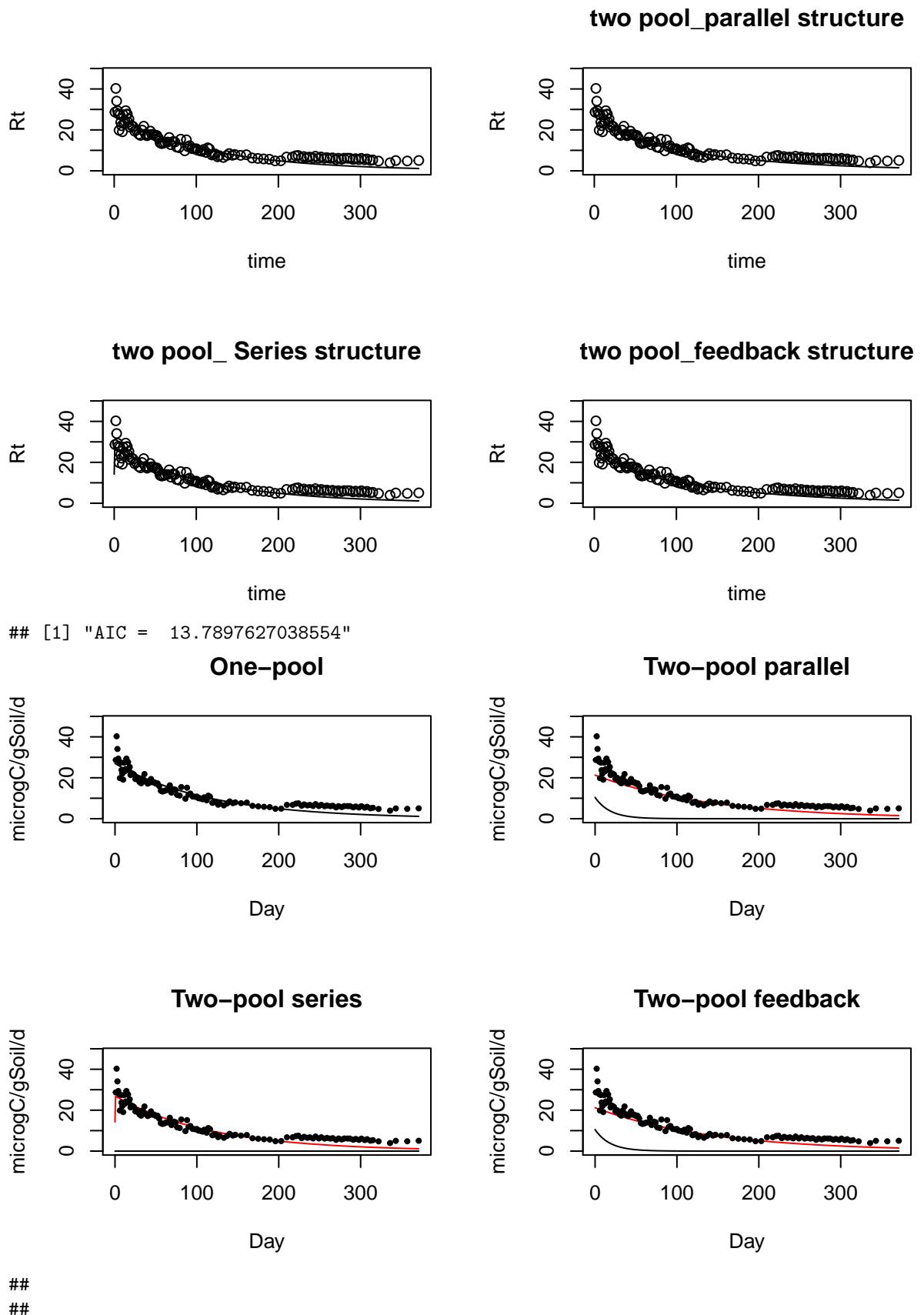
```
Crow_V12=modelFitTS_Markdown(db = db[[9]], ts.col = 12, ic.col = 11, unitConverter = 1e3)
```

```
## [1] "Crow2019a; variable: Site11"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00854289070173486"

## [1] "AIC = 6.25273616977495"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0548884151748828"
## [2] "k2= 0.00717249409839575"
## [3] "proportion of CO in pool 1= 0.0599831504614473"

## [1] "AIC = 9.78976271286518"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00853816841412715"
## [2] "k2= 7.79097213826444"
## [3] "a21= 0.999999388486949"
## [4] "Proportion of CO in pool 1= 0.999422867333266"

## [1] "AIC = 12.2522513145884"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0549116375624049"
## [2] "k2= 0.00717281256692238"
## [3] "a21= 0.0662002086303181"
## [4] "a12= 4.54486004108912e-06"
## [5] "Proportion of CO in pool 1= 0.064897897969479"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0085					964.2	8.384
## Two-pool parallel	0.0549	0.0072	0.0600			765.0	6.652
## Two-pool series	0.0085	7.7910	0.9994	1.0000		964.0	8.382
## Two-pool feedback	0.0549	0.0072	0.0649	0.0662	0.9994	765.0	6.652
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	6.253	10.17	790.9	6.264	0.8241	3160.00	
## Two-pool parallel	9.790	21.54	709.0	9.855	0.1368	99.65	47.94
## Two-pool series	12.252	27.92	796.8	12.361	0.0391	117.25	81.31
## Two-pool feedback	13.790	33.37	713.0	13.954	0.0176	27.44	13.88

Variable Site12;

CO2 production rate

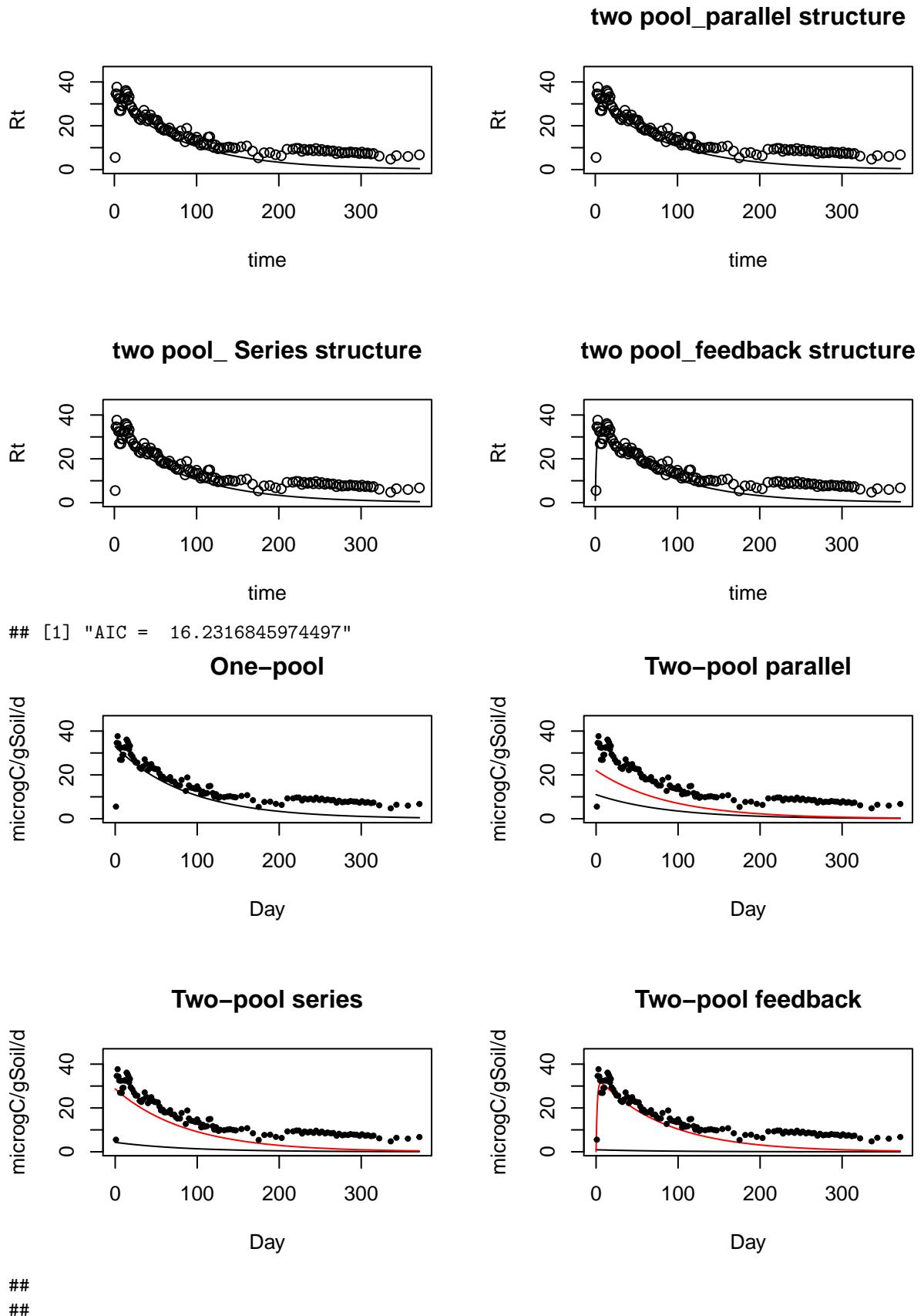
```
Crow_V13=modelFitTS_Markdown(db = db[[9]], ts.col = 13, ic.col = 12, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0005, 0.01, 0.1),
                                             feedback=c(0.05, 0.0001, 0.1, 0.01, 0.01)) )

## [1] "Crow2019a; variable: Site12"
## [1] "One pool model"
## [1] "Best fit parameter: 0.011416882826639"

## [1] "AIC = 8.65344910472484"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0114168639651415"
## [2] "k2= 0.0114168470289279"
## [3] "proportion of CO in pool 1= 0.333358757221232"

## [1] "AIC = 12.6534491046856"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0114187649572254"
## [2] "k2= 0.0114173530174847"
## [3] "a21= 0.000460180917528252"
## [4] "Proportion of CO in pool 1= 0.130654531109314"

## [1] "AIC = 14.6534491002426"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.012007480123861"
## [2] "k2= 0.686734222262463"
## [3] "a21= 0.973486741177099"
## [4] "a12= 1.0032913940472e-05"
## [5] "Proportion of CO in pool 1= 0.999940520341775"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0114					3202	27.85
## Two-pool parallel	0.0114	0.0114	0.3334			3202	27.85
## Two-pool series	0.0114	0.0114	0.1307	0.0005		3202	27.85
## Two-pool feedback	0.0120	0.6867	0.9999	0.9735	0.1307	2594	22.55
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	8.653	12.57	1236	8.664	0.8481	2890.00	
## Two-pool parallel	12.653	24.40	1240	12.719	0.1117	87.59	60.71
## Two-pool series	14.653	30.32	1242	14.763	0.0402	87.62	60.73
## Two-pool feedback	16.232	35.81	1166	16.396	0.0178	84.70	59.16

Variable Site13;

CO2 production rate

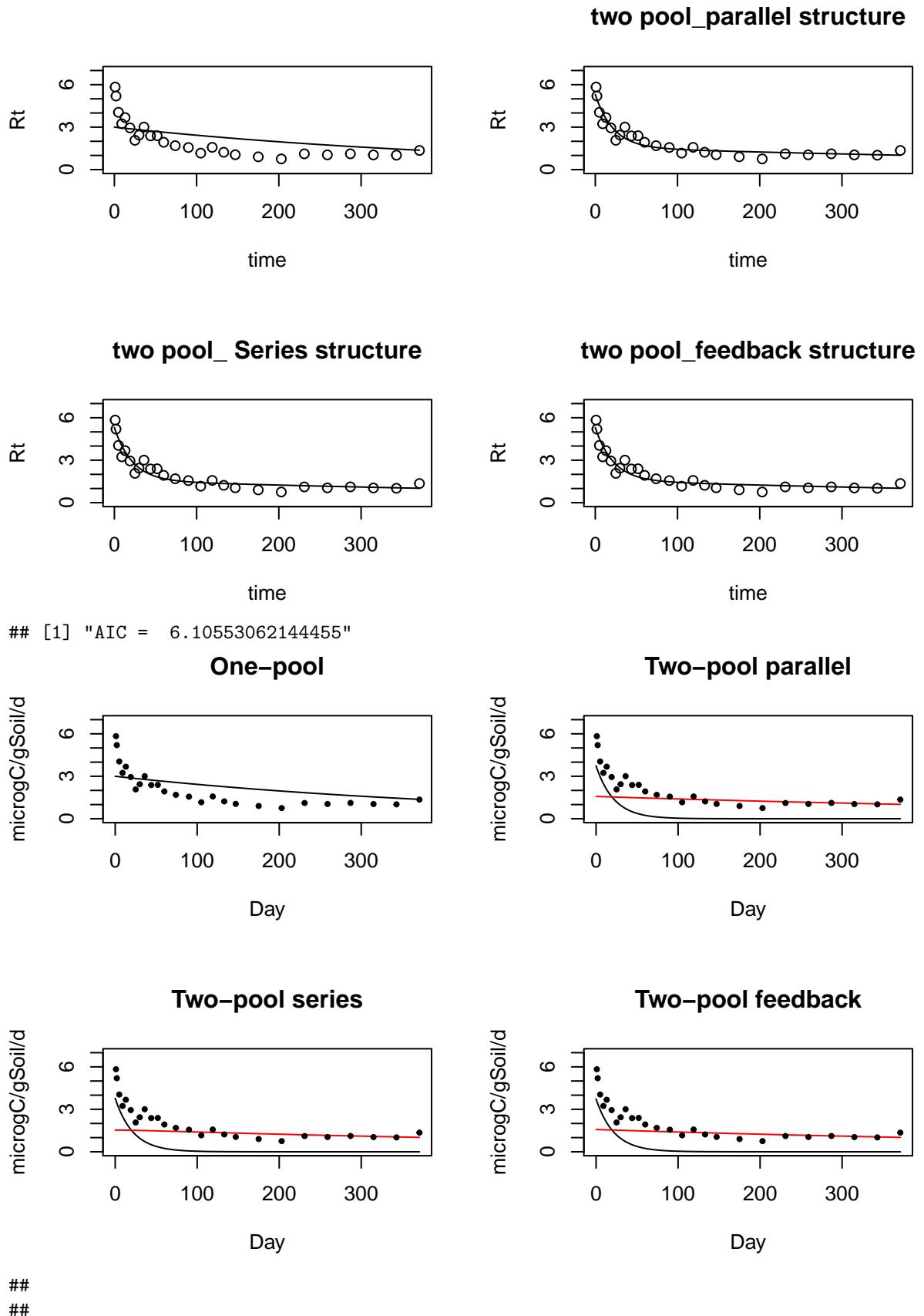
```
Crow_V14=modelFitTS_Markdown(db = db[[9]], ts.col = 14, ic.col = 13, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site13"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00211168123926875"

## [1] "AIC = 2.0719575565404"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0458504197803192"
## [2] "k2= 0.00117419498674367"
## [3] "proportion of CO in pool 1= 0.0573371414882743"

## [1] "AIC = 2.10553062251289"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0458494955211818"
## [2] "k2= 0.00117418601014614"
## [3] "a21= 0.289470622668628"
## [4] "Proportion of CO in pool 1= 0.0815704804917208"

## [1] "AIC = 4.10553063794084"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0458529914979764"
## [2] "k2= 0.00117421365897312"
## [3] "a21= 0.00062007263506153"
## [4] "a12= 1.04304697162716e-06"
## [5] "Proportion of CO in pool 1= 0.0573708594484849"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0021					26.953	1.0366
## Two-pool parallel	0.0459	0.0012	0.0573			3.709	0.1427
## Two-pool series	0.0458	0.0012	0.0816	0.2895		3.709	0.1427
## Two-pool feedback	0.0459	0.0012	0.0574	0.0006	0.0816	3.709	0.1427
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	2.072	5.988	15.35	2.083	0.4345	1420.00	
## Two-pool parallel	2.106	13.854	-716.42	2.171	0.4158	267.68	26.10
## Two-pool series	4.106	19.770	-714.42	4.215	0.1496	268.34	26.15
## Two-pool feedback	6.106	25.686	-712.42	6.270	0.0536	22.34	15.13

Variable Site14;

CO2 production rate

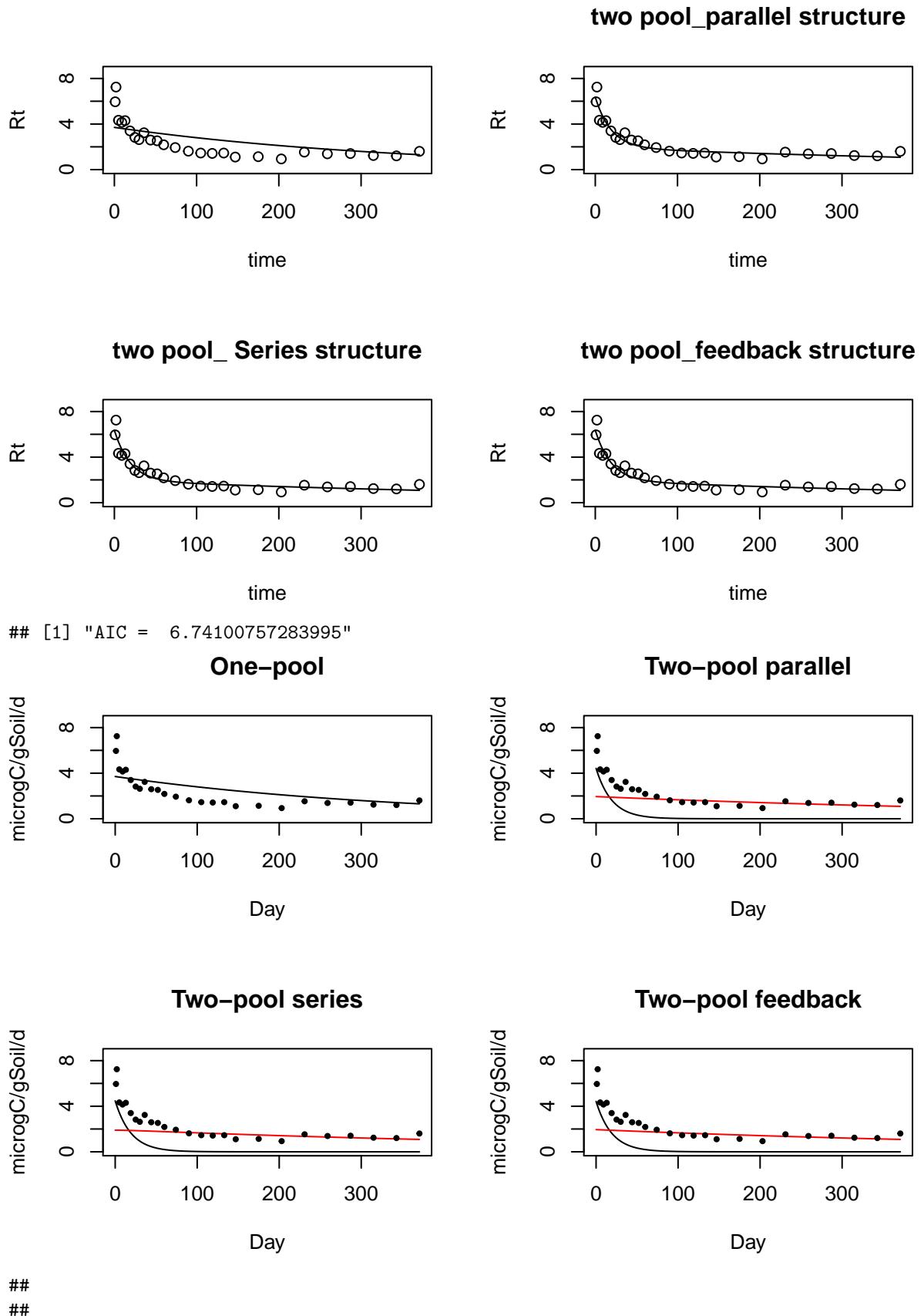
```
Crow_V15=modelFitTS_Markdown(db = db[[9]], ts.col = 15, ic.col = 14, unitConverter = 1e3 )
```

```
## [1] "Crow2019a; variable: Site14"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00280881229577545"

## [1] "AIC = 2.5441921230558"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0520663154566501"
## [2] "k2= 0.00157524568786505"
## [3] "proportion of CO in pool 1= 0.0643540554870202"

## [1] "AIC = 2.74100757450186"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.052068201566388"
## [2] "k2= 0.00157526264422755"
## [3] "a21= 0.249788674142591"
## [4] "Proportion of CO in pool 1= 0.0866783237157396"

## [1] "AIC = 4.74100756736138"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0520709850558828"
## [2] "k2= 0.00157529051463499"
## [3] "a21= 0.00176820734877364"
## [4] "a12= 1.16313178682992e-06"
## [5] "Proportion of CO in pool 1= 0.0644661741346905"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0028					34.130	1.313
## Two-pool parallel	0.0521	0.0016	0.0644			5.097	0.196
## Two-pool series	0.0521	0.0016	0.0867	0.2498		5.097	0.196
## Two-pool feedback	0.0521	0.0016	0.0645	0.0018	0.0867	5.097	0.196
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	2.544	6.46	102.9	2.555	0.4547	1320.00	
## Two-pool parallel	2.741	14.49	-598.5	2.806	0.4010	207.27	23.38
## Two-pool series	4.741	20.41	-596.5	4.850	0.1443	177.78	20.85
## Two-pool feedback	6.741	26.32	-594.5	6.905	0.0516	20.33	13.35

Variable Site15;

CO2 production rate

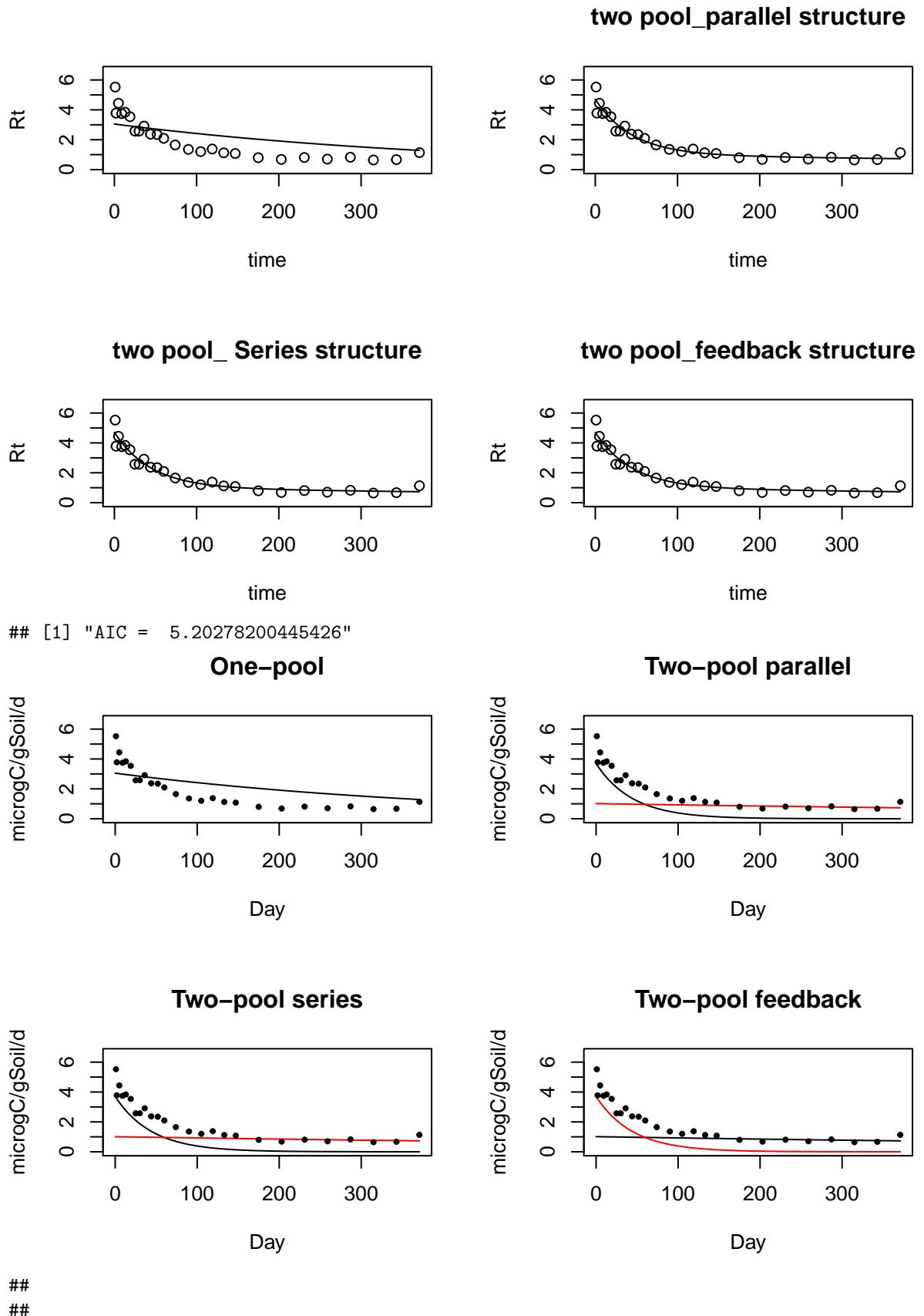
```
Crow_V16=modelFitTS_Markdown(db = db[[9]], ts.col = 16, ic.col = 15, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site15"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00232857492559013"

## [1] "AIC = 1.89521977508919"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0225675563191509"
## [2] "k2= 0.000884811692029611"
## [3] "proportion of CO in pool 1= 0.124994126072246"

## [1] "AIC = 1.20278200592872"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0225682649030453"
## [2] "k2= 0.000884838647933699"
## [3] "a21= 0.0422347318204941"
## [4] "Proportion of CO in pool 1= 0.130736091639678"

## [1] "AIC = 3.20278200774187"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00088482793717792"
## [2] "k2= 0.0225678775961678"
## [3] "a21= 0.000904180049180581"
## [4] "a12= 2.39344682789744e-06"
## [5] "Proportion of CO in pool 1= 0.874975393455531"
```



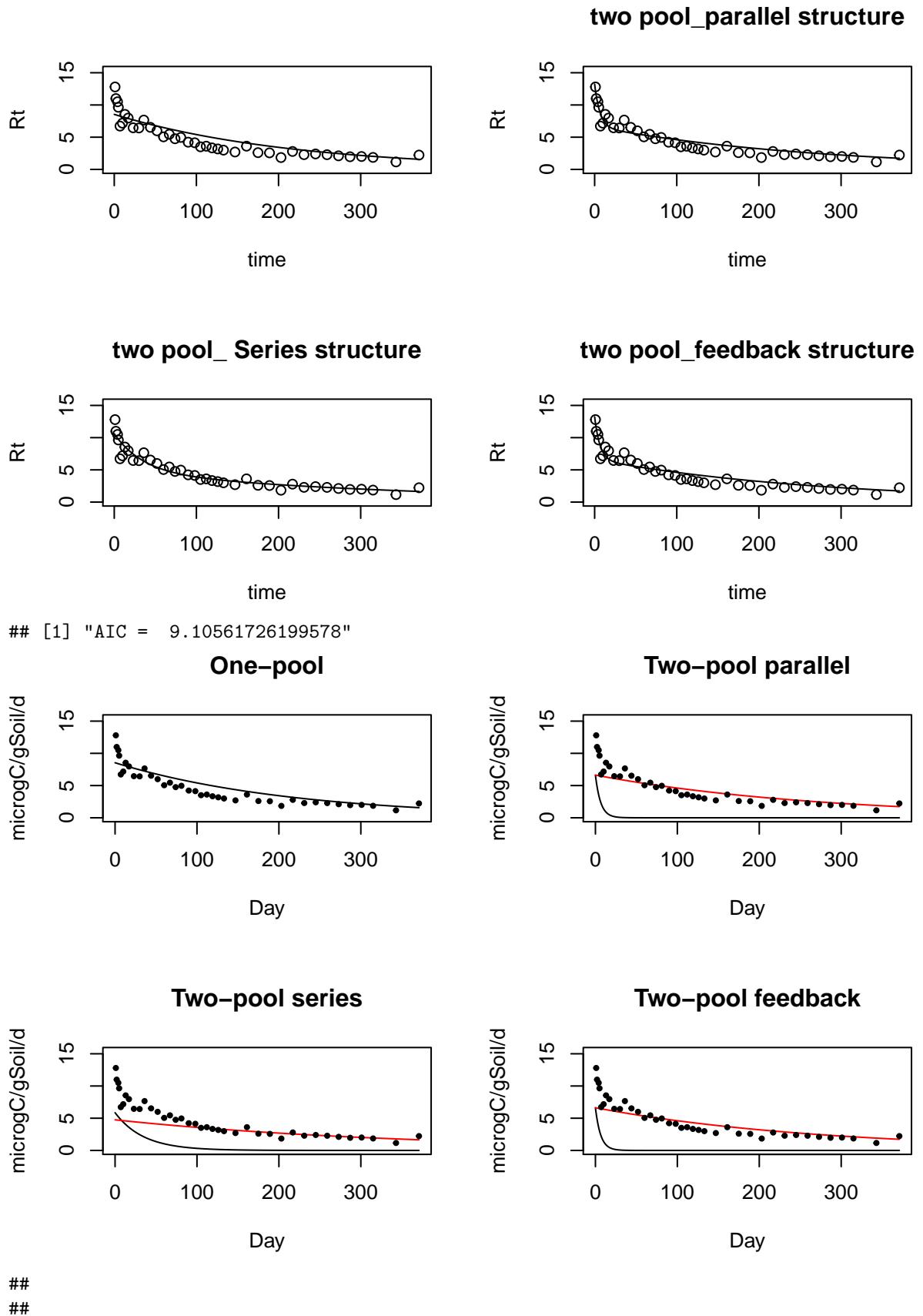
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0023					24.673	0.9490
## Two-pool parallel	0.0226	0.0009	0.1250			2.362	0.0908
## Two-pool series	0.0226	0.0009	0.1307	0.0422		2.362	0.0908
## Two-pool feedback	0.0009	0.0226	0.8750	0.0009	0.1307	2.362	0.0908
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	1.895	5.811	-17.44	1.906	0.3483	1310.00	
## Two-pool parallel	1.203	12.951	-883.88	1.268	0.4792	278.16	43.68
## Two-pool series	3.203	18.868	-881.88	3.312	0.1725	92.04	32.68
## Two-pool feedback	5.203	24.784	-879.88	5.367	0.0617	1130.20	783.41

Variable Site16;

CO2 production rate

```
Crow_V17=modelFitTS_Markdown(db = db[[9]], ts.col = 17, ic.col = 16, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.05, 0.1),
                                             feedback=c(0.05, 0.0005, 0.1, 0.01, 0.01)))

## [1] "Crow2019a; variable: Site16"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00456710932619764"
## [1] "AIC = 3.19397117542569"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.156480139724336"
## [2] "k2= 0.00362582899822005"
## [3] "proportion of CO in pool 1= 0.0225938577569471"
## [1] "AIC = 5.10561725112356"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0290211865158371"
## [2] "k2= 0.00285112221664917"
## [3] "a21= 0.010185892618897"
## [4] "Proportion of CO in pool 1= 0.109135060857401"
## [1] "AIC = 7.0742623425539"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.156481007082816"
## [2] "k2= 0.00362583188827106"
## [3] "a21= 0.0211377138077176"
## [4] "a12= 1.35368292774052e-05"
## [5] "Proportion of CO in pool 1= 0.0230928634926796"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0046					70.85	1.8166
## Two-pool parallel	0.1565	0.0036	0.0226			24.94	0.6394
## Two-pool series	0.0290	0.0029	0.1091	0.0102		24.55	0.6295
## Two-pool feedback	0.1565	0.0036	0.0231	0.0211	0.1091	24.94	0.6394
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.194	7.11	223.5	3.205	0.6618	1870.00	
## Two-pool parallel	5.106	16.85	-159.9	5.171	0.2476	141.25	17.819
## Two-pool series	7.074	22.74	-163.7	7.184	0.0905	38.03	24.227
## Two-pool feedback	9.106	28.69	-155.9	9.270	0.0319	12.22	4.568

Variable Site17;

CO2 production rate

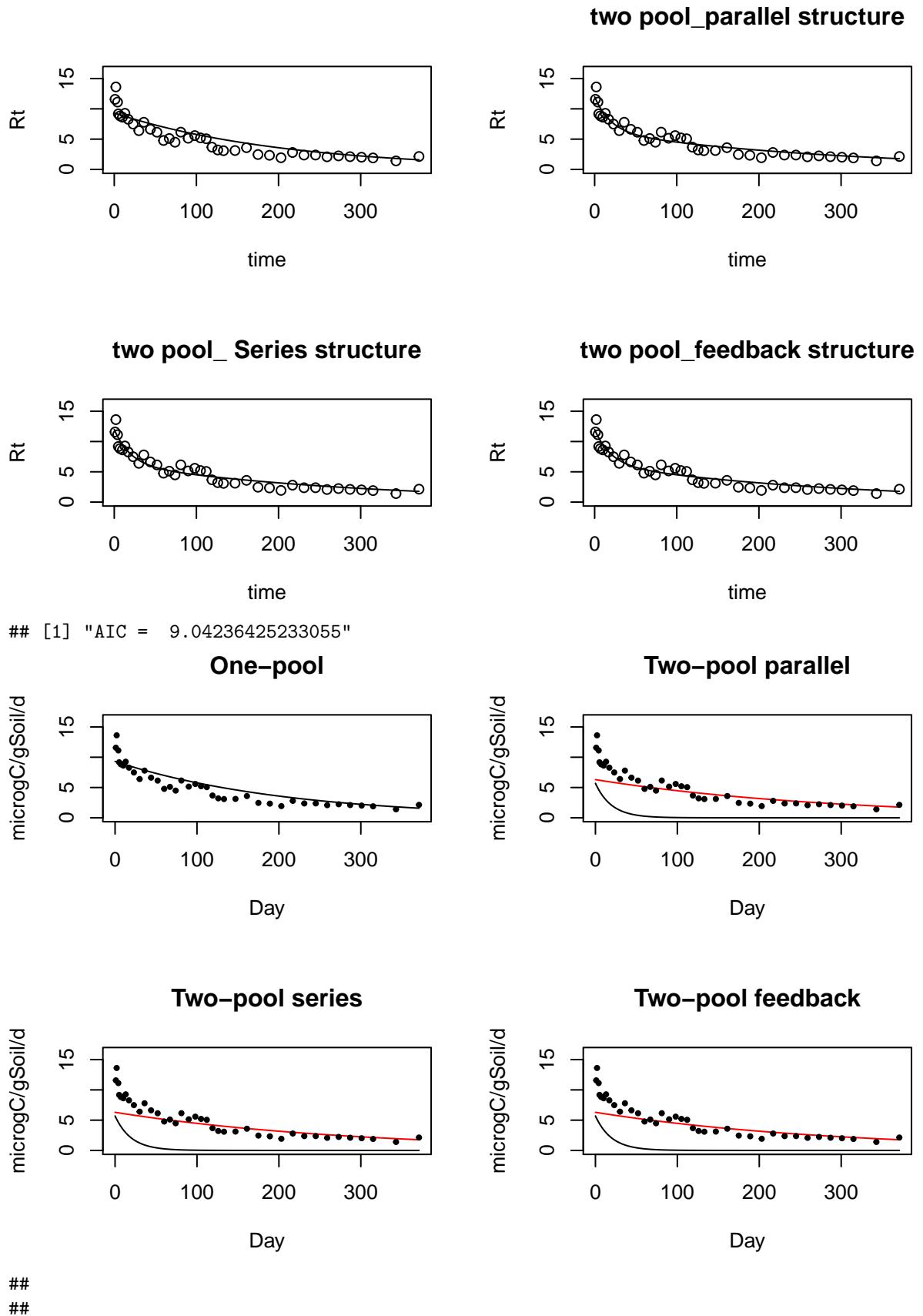
```
Crow_V18=modelFitTS_Markdown(db = db[[9]], ts.col = 18, ic.col = 17, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site17"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00477595365029515"

## [1] "AIC = 3.15379815773936"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0511439690100633"
## [2] "k2= 0.00342582065958342"
## [3] "proportion of CO in pool 1= 0.0570774686265928"

## [1] "AIC = 5.04236425683937"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0511486406886805"
## [2] "k2= 0.00342586961142708"
## [3] "a21= 0.00159047993891459"
## [4] "Proportion of CO in pool 1= 0.0571686015561863"

## [1] "AIC = 7.04236424877227"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0511787319323724"
## [2] "k2= 0.00342616283333933"
## [3] "a21= 0.00839712236046891"
## [4] "a12= 1.32398428498437e-06"
## [5] "Proportion of CO in pool 1= 0.057555179359695"
```



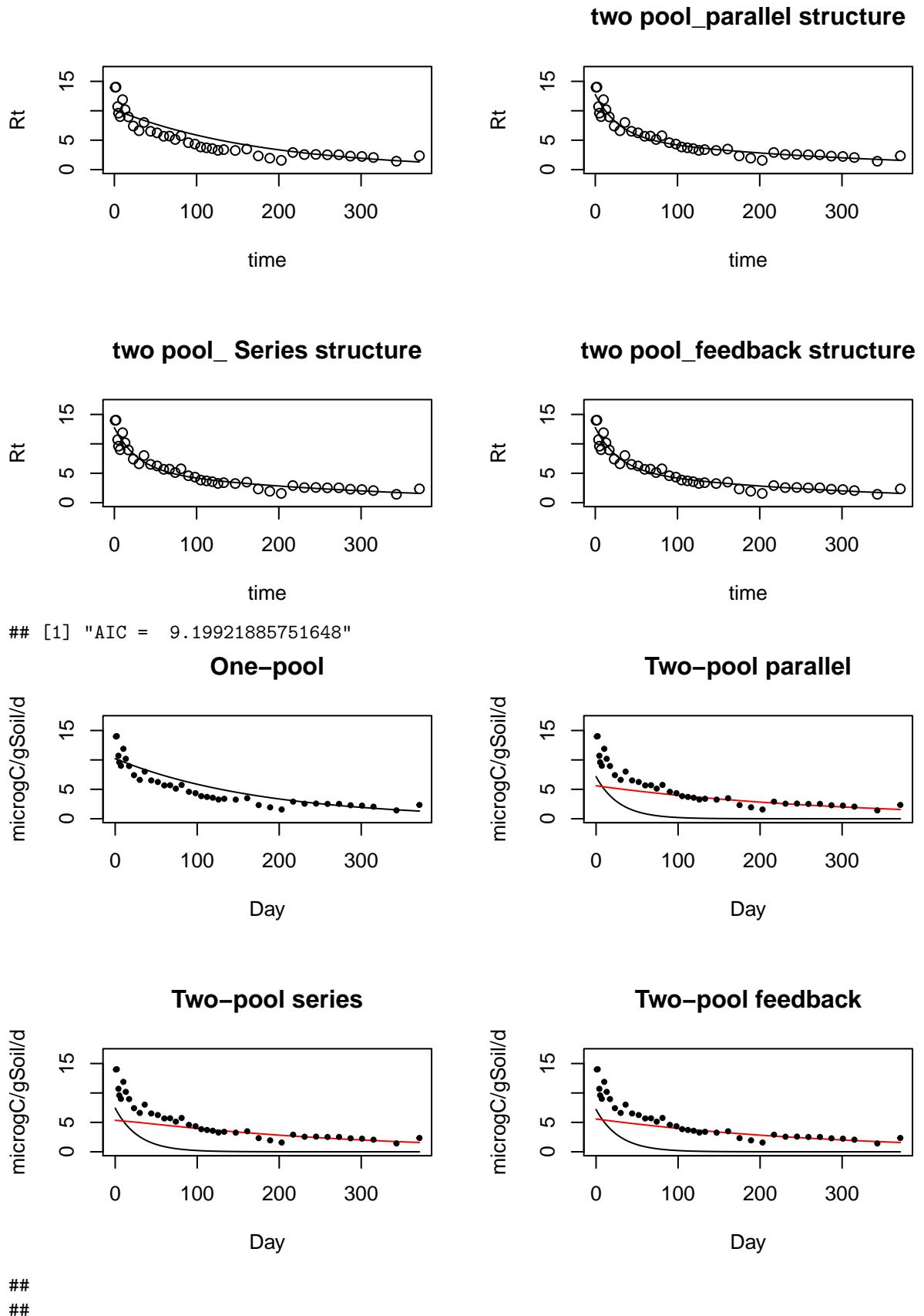
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0048					69.44	1.7805
## Two-pool parallel	0.0511	0.0034	0.0571			24.16	0.6195
## Two-pool series	0.0511	0.0034	0.0572	0.0016		24.16	0.6195
## Two-pool feedback	0.0512	0.0034	0.0576	0.0084	0.0572	24.16	0.6195
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.154	7.07	216.0	3.165	0.6602	1950.00	
## Two-pool parallel	5.042	16.79	-171.6	5.108	0.2499	162.62	44.44
## Two-pool series	7.042	22.71	-169.6	7.152	0.0899	20.02	13.58
## Two-pool feedback	9.042	28.62	-167.6	9.207	0.0322	21.99	13.71

Variable Site18;

CO2 production rate

```
Crow_V19=modelFitTS_Markdown(db = db[[9]], ts.col = 19, ic.col = 18, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.05, 0.1),
                                             feedback=c(0.05, 0.0001, 0.1, 0.01, 0.1)))
```

```
## [1] "Crow2019a; variable: Site18"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00555111338472969"
## [1] "AIC = 3.61917743488867"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0355157990408913"
## [2] "k2= 0.00341848970856351"
## [3] "proportion of CO in pool 1= 0.109461586210882"
## [1] "AIC = 5.19921885428916"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0355167362625162"
## [2] "k2= 0.00341851313319829"
## [3] "a21= 0.249473315615727"
## [4] "Proportion of CO in pool 1= 0.151194218830348"
## [1] "AIC = 7.19921885328219"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0355212948071661"
## [2] "k2= 0.00341863756789335"
## [3] "a21= 0.0393034380830021"
## [4] "a12= 2.8819932916313e-05"
## [5] "Proportion of CO in pool 1= 0.114421130714161"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0056					87.63	2.2470
## Two-pool parallel	0.0355	0.0034	0.1095			26.13	0.6701
## Two-pool series	0.0355	0.0034	0.1512	0.2495		26.13	0.6701
## Two-pool feedback	0.0355	0.0034	0.1144	0.0393	0.1512	26.13	0.6701
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.619	7.535	302.4	3.630	0.6248	1840.00	
## Two-pool parallel	5.199	16.948	-142.5	5.265	0.2759	144.26	43.16
## Two-pool series	7.199	22.864	-140.5	7.309	0.0993	101.13	29.85
## Two-pool feedback	9.199	28.780	-138.5	9.364	0.0355	39.65	20.64

Variable Site19;

CO2 production rate

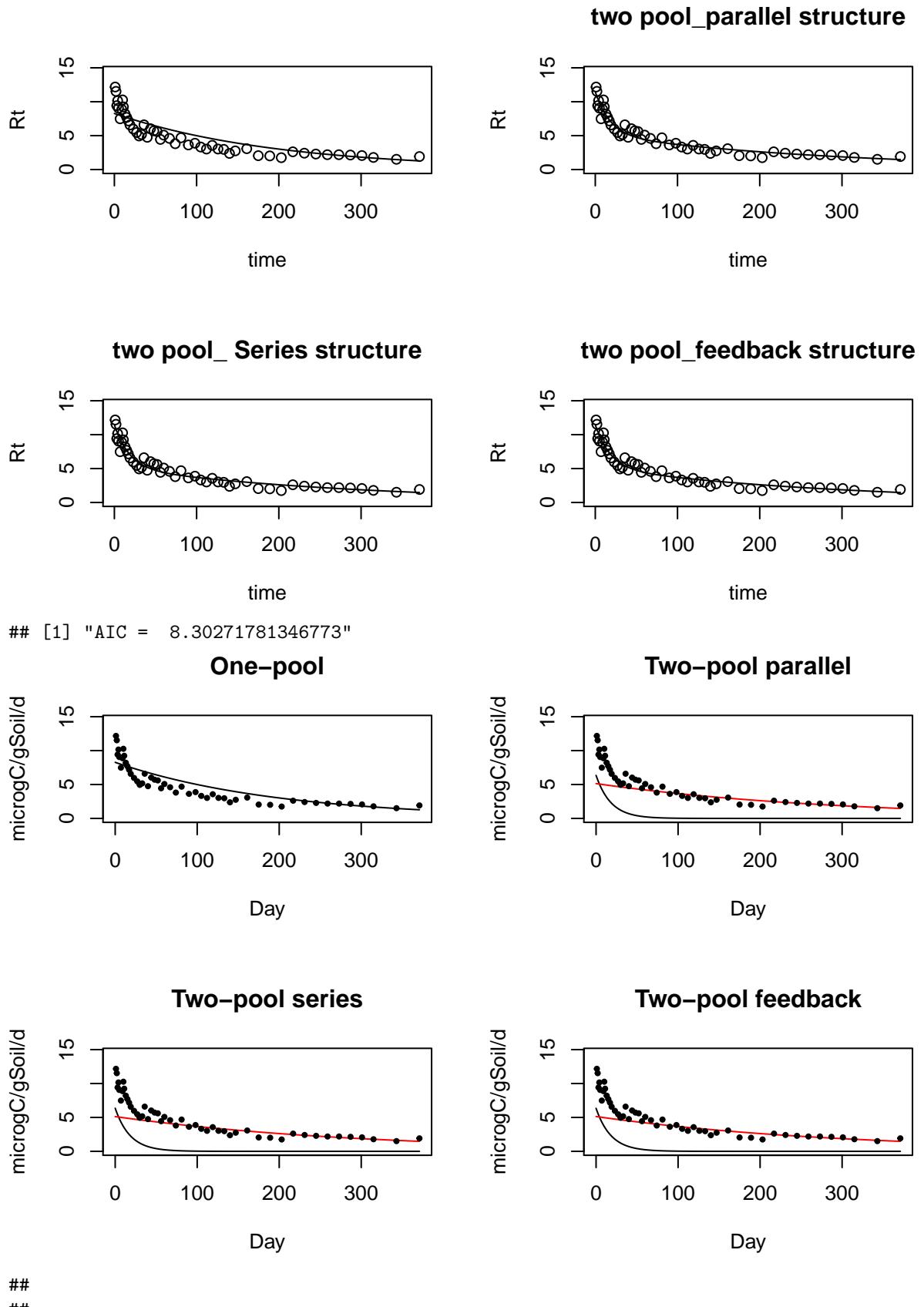
```
Crow_V20=modelFitTS_Markdown(db = db[[9]], ts.col = 20, ic.col = 19, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site19"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00504176902718534"

## [1] "AIC = 3.31335388305591"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0551649922085945"
## [2] "k2= 0.00336756722826823"
## [3] "proportion of CO in pool 1= 0.0701504376843637"

## [1] "AIC = 4.30271781500133"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0551643509604241"
## [2] "k2= 0.00336755760657498"
## [3] "a21= 0.0353317399879906"
## [4] "Proportion of CO in pool 1= 0.0728921767024192"

## [1] "AIC = 6.30271783069185"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0551695151306521"
## [2] "k2= 0.00336763354531901"
## [3] "a21= 0.003401346205058"
## [4] "a12= 2.88909699613926e-06"
## [5] "Proportion of CO in pool 1= 0.0703996804712523"
```



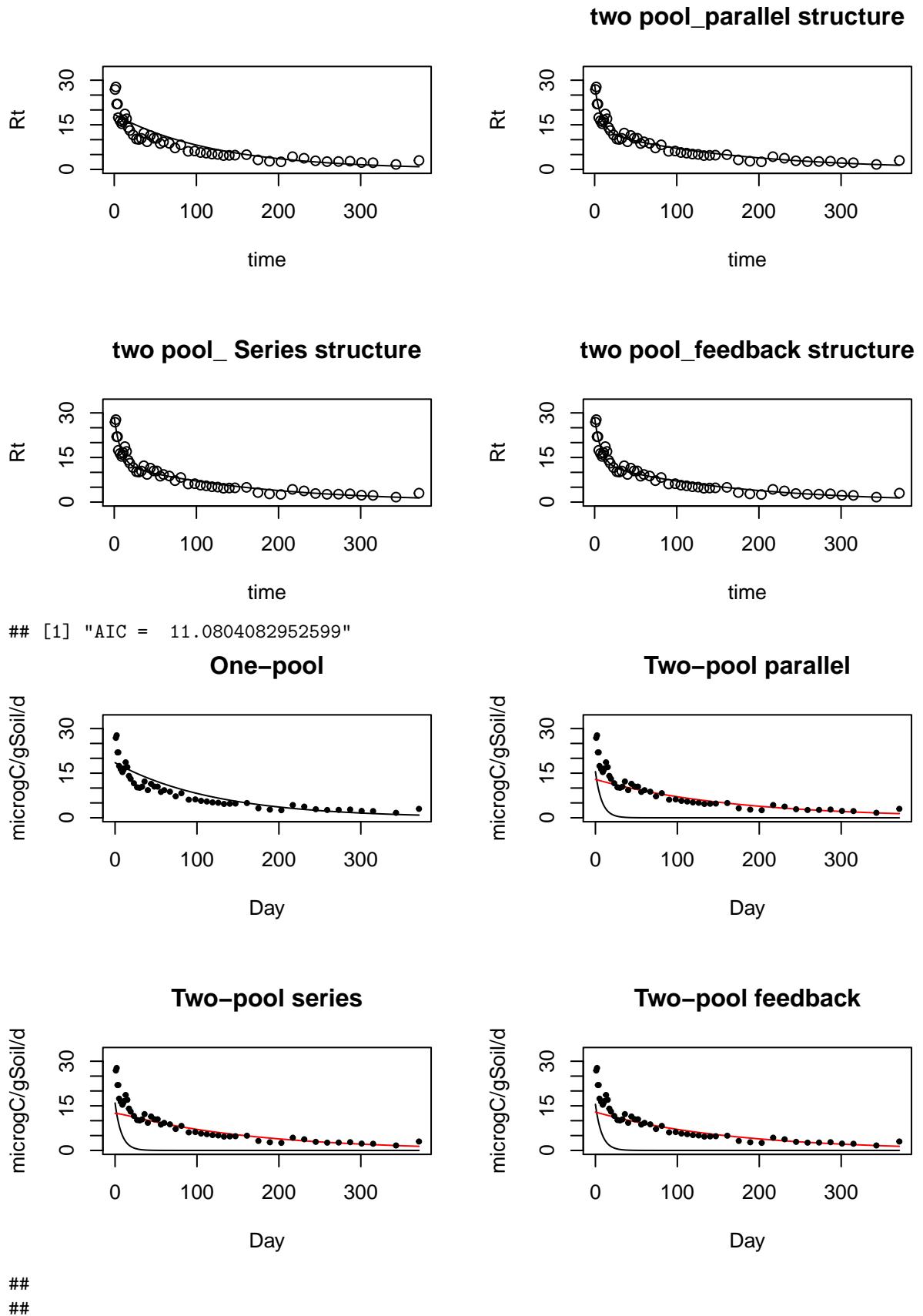
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0050					96.42	1.928
## Two-pool parallel	0.0552	0.0034	0.0702			21.40	0.428
## Two-pool series	0.0552	0.0034	0.0729	0.0353		21.40	0.428
## Two-pool feedback	0.0552	0.0034	0.0704	0.0034	0.0729	21.40	0.428
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.313	7.23	245.6	3.324	0.5534	1640.00	
## Two-pool parallel	4.303	16.05	-308.8	4.368	0.3284	142.83	31.42
## Two-pool series	6.303	21.97	-306.8	6.412	0.1182	28.62	13.22
## Two-pool feedback	8.303	27.88	-304.8	8.467	0.0423	19.14	12.62

Variable Site20;

CO2 production rate

```
Crow_V21=modelFitTS_Markdown(db = db[[9]], ts.col = 21, ic.col = 20, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.1, 0.01, 0.01)) )

## [1] "Crow2019a; variable: Site20"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00816246504779272"
## [1] "AIC = 6.09197786371572"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.128779054827537"
## [2] "k2= 0.00600516191813811"
## [3] "proportion of CO in pool 1= 0.0530827559538779"
## [1] "AIC = 7.08040829532846"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.128778183867773"
## [2] "k2= 0.00600515447515844"
## [3] "a21= 0.360809167447383"
## [4] "Proportion of CO in pool 1= 0.085404216021529"
## [1] "AIC = 9.08040830030457"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.128780557867527"
## [2] "k2= 0.00600517495981819"
## [3] "a21= 0.000909507704375923"
## [4] "a12= 3.23701648765606e-05"
## [5] "Proportion of CO in pool 1= 0.0531340211359463"
```



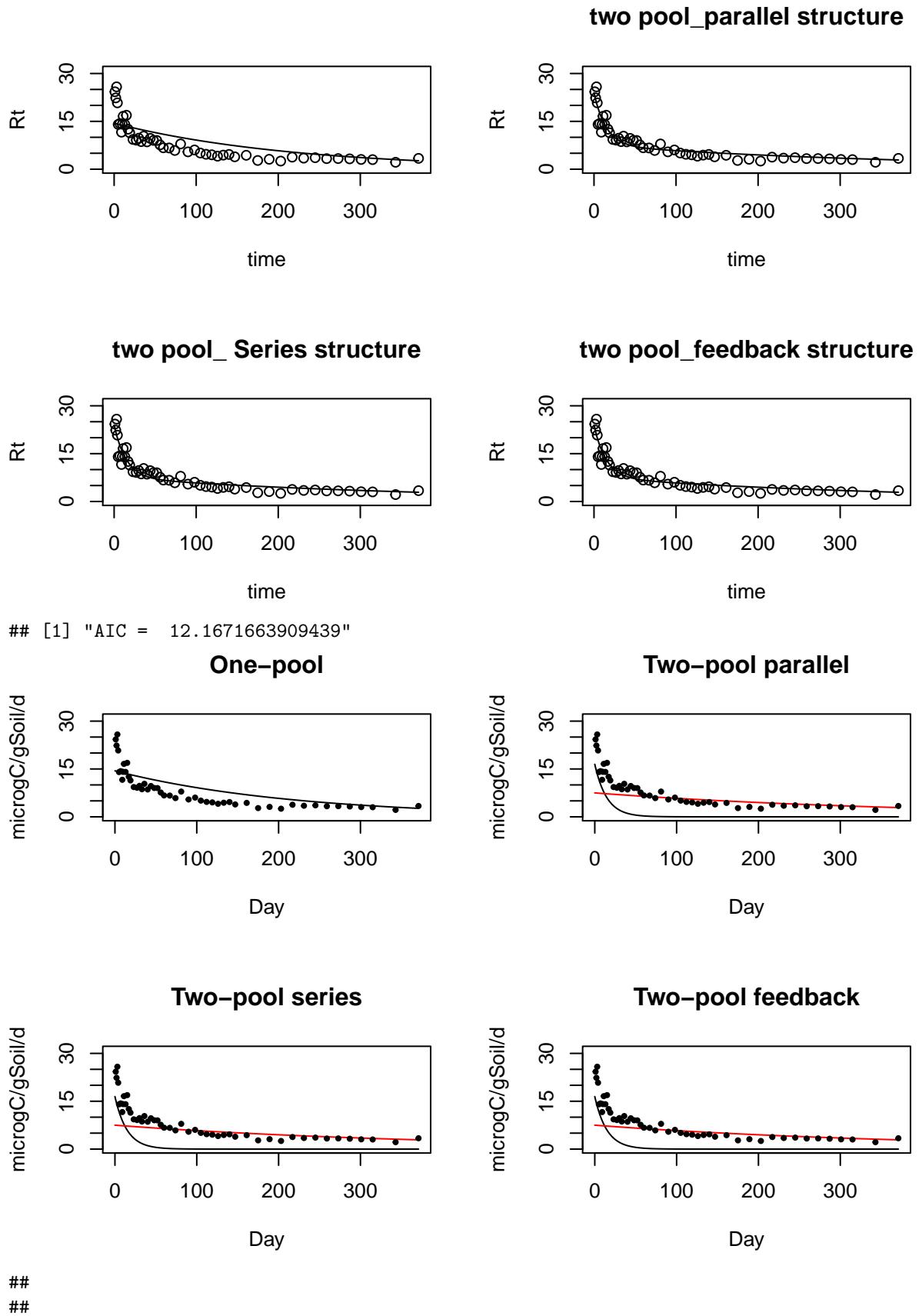
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0082					386.84	7.737
## Two-pool parallel	0.1288	0.006	0.0531			85.82	1.716
## Two-pool series	0.1288	0.006	0.0854	0.3608		85.82	1.716
## Two-pool feedback	0.1288	0.006	0.0531	0.0009	0.0854	85.82	1.716
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	6.092	10.01	761.1	6.103	0.5533	2270.000	
## Two-pool parallel	7.080	18.83	206.4	7.146	0.3285	79.857	14.545
## Two-pool series	9.080	24.75	208.4	9.190	0.1182	67.849	11.236
## Two-pool feedback	11.080	30.66	210.4	11.245	0.0423	7.917	5.389

Variable Site21;

CO2 production rate

```
Crow_V22=modelFitTS_Markdown(db = db[[9]], ts.col = 22, ic.col = 11, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.1, 0.01, 0.01)) )
```

```
## [1] "Crow2019a; variable: Site21"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00456229262842101"
## [1] "AIC = 7.26119137150638"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.068149069177916"
## [2] "k2= 0.00256769767185383"
## [3] "proportion of CO in pool 1= 0.0764535062508055"
## [1] "AIC = 8.16716639313313"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0681385788238766"
## [2] "k2= 0.00256756625855304"
## [3] "a21= 0.000227985084033266"
## [4] "Proportion of CO in pool 1= 0.0764819836308582"
## [1] "AIC = 10.1671663925402"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0681397338707614"
## [2] "k2= 0.00256758081632058"
## [3] "a21= 0.000565979508753922"
## [4] "a12= 4.11549625450869e-06"
## [5] "Proportion of CO in pool 1= 0.0765079301773642"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0046					694.1	13.882
## Two-pool parallel	0.0681	0.0026	0.0765			147.8	2.955
## Two-pool series	0.0681	0.0026	0.0765	2e-04		147.8	2.955
## Two-pool feedback	0.0681	0.0026	0.0765	6e-04	0.0765	147.8	2.955
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	7.261	11.18	978	7.272	0.5431	3160.00	
## Two-pool parallel	8.167	19.92	408	8.233	0.3360	131.90	18.01
## Two-pool series	10.167	25.83	410	10.277	0.1209	14.76	10.18
## Two-pool feedback	12.167	31.75	412	12.332	0.0433	14.90	10.18

Variable Site22;

CO2 production rate

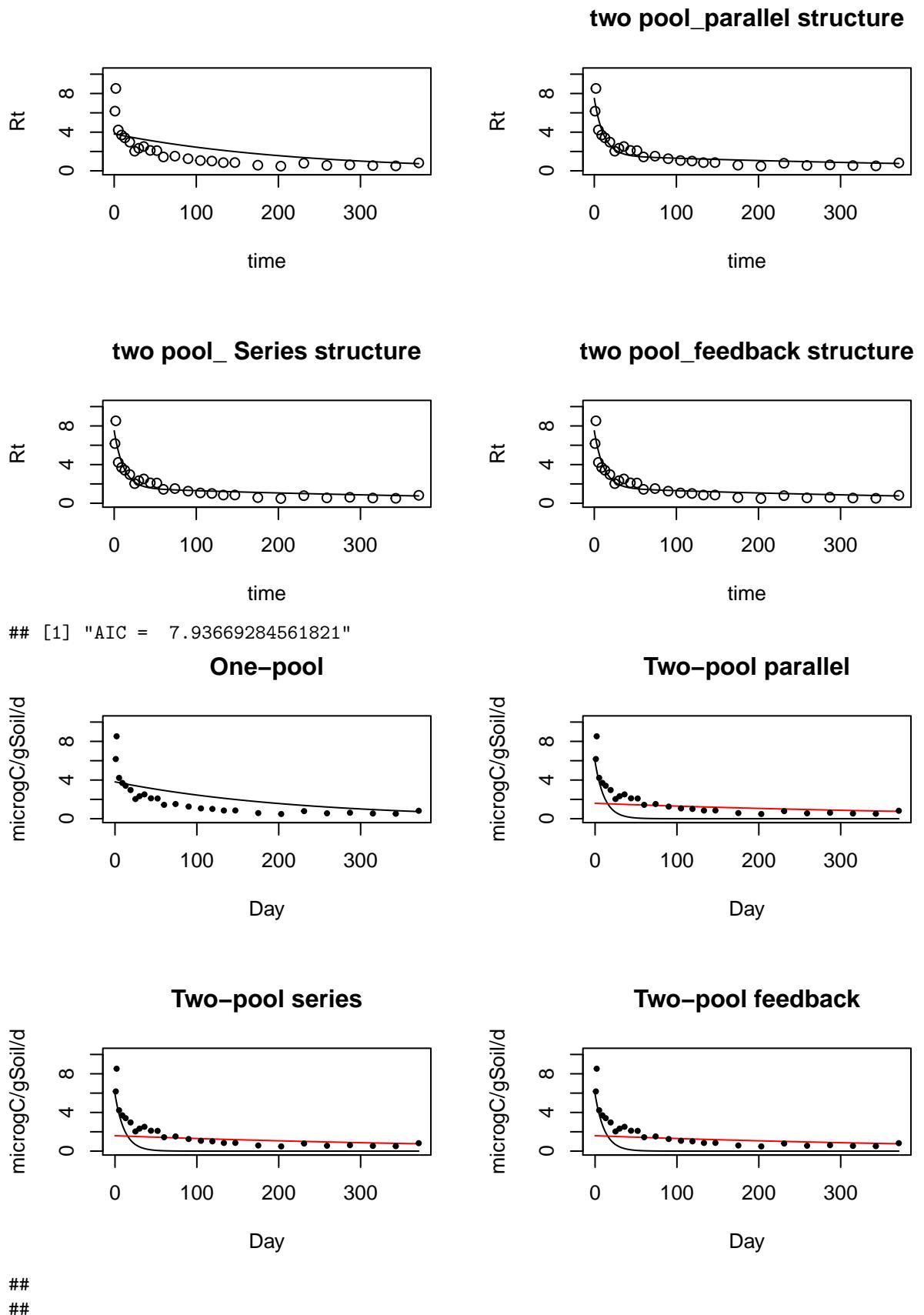
```
Crow_V23=modelFitTS_Markdown(db = db[[9]], ts.col = 23, ic.col = 22, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site22"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00443129338802173"

## [1] "AIC = 3.29006194578875"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0867645078259964"
## [2] "k2= 0.00200875743671488"
## [3] "proportion of CO in pool 1= 0.079119117396054"

## [1] "AIC = 3.93669284258133"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0867500175623432"
## [2] "k2= 0.00200860315723003"
## [3] "a21= 7.46653905354111e-05"
## [4] "Proportion of CO in pool 1= 0.0791364551848839"

## [1] "AIC = 5.93669283872693"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0867608361290447"
## [2] "k2= 0.0020087180161932"
## [3] "a21= 0.00396993775846138"
## [4] "a12= 1.24503664872266e-06"
## [5] "Proportion of CO in pool 1= 0.0794432389549916"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0044					49.557	1.9060
## Two-pool parallel	0.0868	0.002	0.0791			9.267	0.3564
## Two-pool series	0.0868	0.002	0.0791	1e-04		9.267	0.3564
## Two-pool feedback	0.0868	0.002	0.0794	4e-03	0.0791	9.267	0.3564
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.290	7.206	241.3	3.301	0.5108	860.00	
## Two-pool parallel	3.937	15.685	-376.7	4.002	0.3597	114.75	11.416
## Two-pool series	5.937	21.602	-374.7	6.046	0.1295	11.56	7.991
## Two-pool feedback	7.937	27.518	-372.7	8.101	0.0463	13.50	8.035

Variable Site23;

CO2 production rate

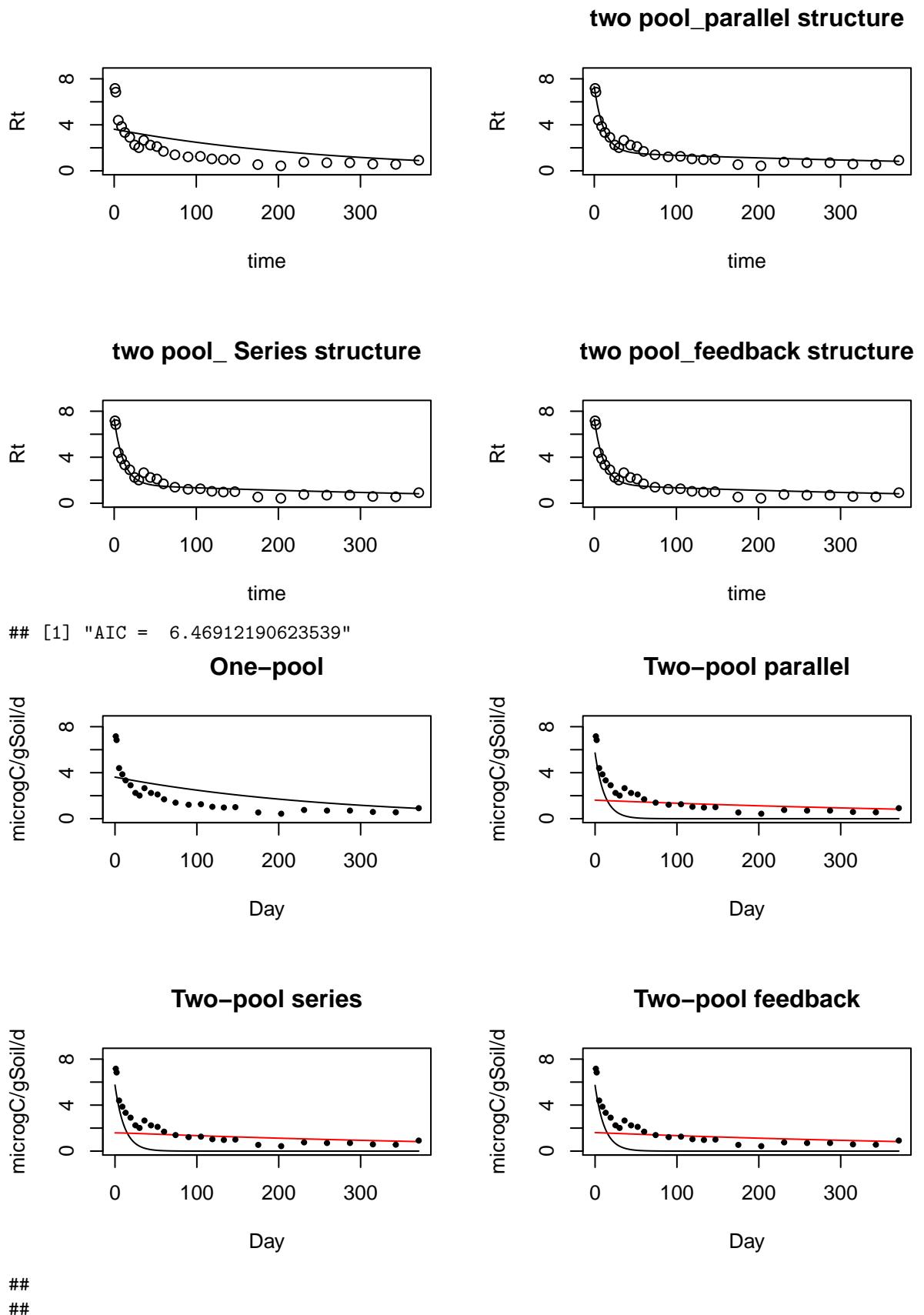
```
Crow_V24=modelFitTS_Markdown(db = db[[9]], ts.col = 24, ic.col = 23, unitConverter = 1e3 )
```

```
## [1] "Crow2019a; variable: Site23"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00376783066147901"

## [1] "AIC = 3.07093521220887"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.086688735268614"
## [2] "k2= 0.00180284323917104"
## [3] "proportion of CO in pool 1= 0.068686958479798"

## [1] "AIC = 2.46912191729624"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0866734009988844"
## [2] "k2= 0.00180271444890217"
## [3] "a21= 0.17319115247672"
## [4] "Proportion of CO in pool 1= 0.0834582426828976"

## [1] "AIC = 4.4691219046712"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0866838365818844"
## [2] "k2= 0.00180280207509933"
## [3] "a21= 0.00113890725928956"
## [4] "a12= 5.23320354661738e-07"
## [5] "Proportion of CO in pool 1= 0.0687703018355946"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0038					44.414	1.7082
## Two-pool parallel	0.0867	0.0018	0.0687			4.449	0.1711
## Two-pool series	0.0867	0.0018	0.0835	0.1732		4.449	0.1711
## Two-pool feedback	0.0867	0.0018	0.0688	0.0011	0.0835	4.449	0.1711
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.071	6.987	200.7	3.082	0.3587	960.00	
## Two-pool parallel	2.469	14.218	-649.0	2.534	0.4716	131.00	11.631
## Two-pool series	4.469	20.134	-647.0	4.578	0.1697	107.61	10.669
## Two-pool feedback	6.469	26.050	-645.0	6.633	0.0607	12.17	8.009

Variable Site24;

CO2 production rate

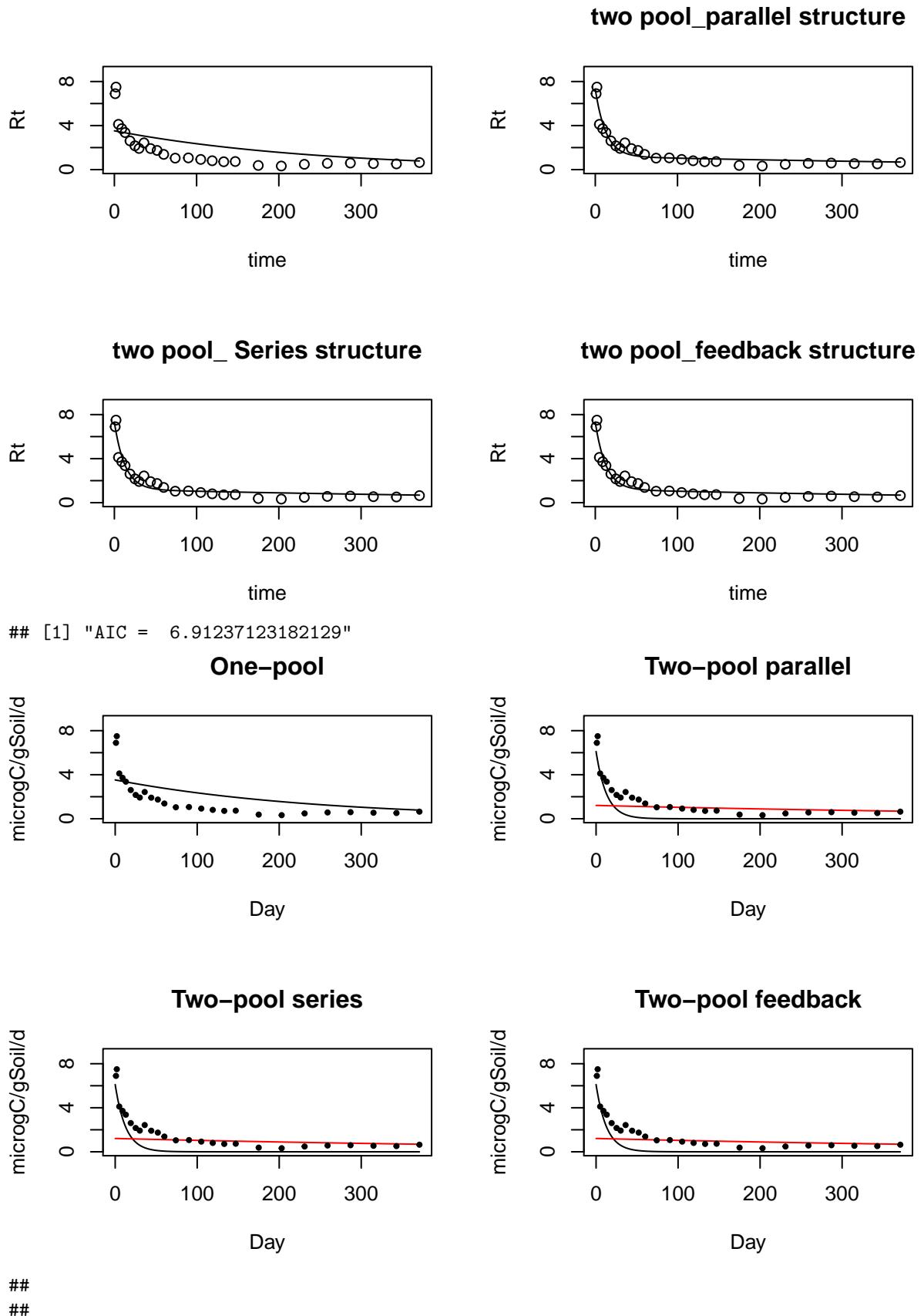
```
Crow_V25=modelFitTS_Markdown(db = db[[9]], ts.col = 25, ic.col = 24, unitConverter = 1e3 )
```

```
## [1] "Crow2019a; variable: Site24"
## [1] "One pool model"
## [1] "Best fit parameter: -0.0040527688137999"

## [1] "AIC = 3.39278873564719"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0779926331238771"
## [2] "k2= 0.00152820370014227"
## [3] "proportion of CO in pool 1= 0.0899637679322258"

## [1] "AIC = 2.91237123000156"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0779782457048384"
## [2] "k2= 0.00152803927723981"
## [3] "a21= 1.65916600575744e-05"
## [4] "Proportion of CO in pool 1= 0.0899794234767097"

## [1] "AIC = 4.91237123530977"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0779888752944091"
## [2] "k2= 0.0015281607294328"
## [3] "a21= 0.00366290917712631"
## [4] "a12= 4.95666578231857e-06"
## [5] "Proportion of CO in pool 1= 0.0903034034107997"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0041					52.169	2.0065
## Two-pool parallel	0.0780	0.0015	0.0900			5.553	0.2136
## Two-pool series	0.0780	0.0015	0.0900	0.0000		5.553	0.2136
## Two-pool feedback	0.0780	0.0015	0.0903	0.0037	0.09	5.553	0.2136
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.393	7.309	260.4	3.404	0.3728	870.00	
## Two-pool parallel	2.912	14.661	-566.8	2.978	0.4612	118.95	11.609
## Two-pool series	4.912	20.577	-564.8	5.022	0.1660	12.83	8.889
## Two-pool feedback	6.912	26.493	-562.8	7.077	0.0594	15.22	8.935

Variable Site25;

CO2 production rate

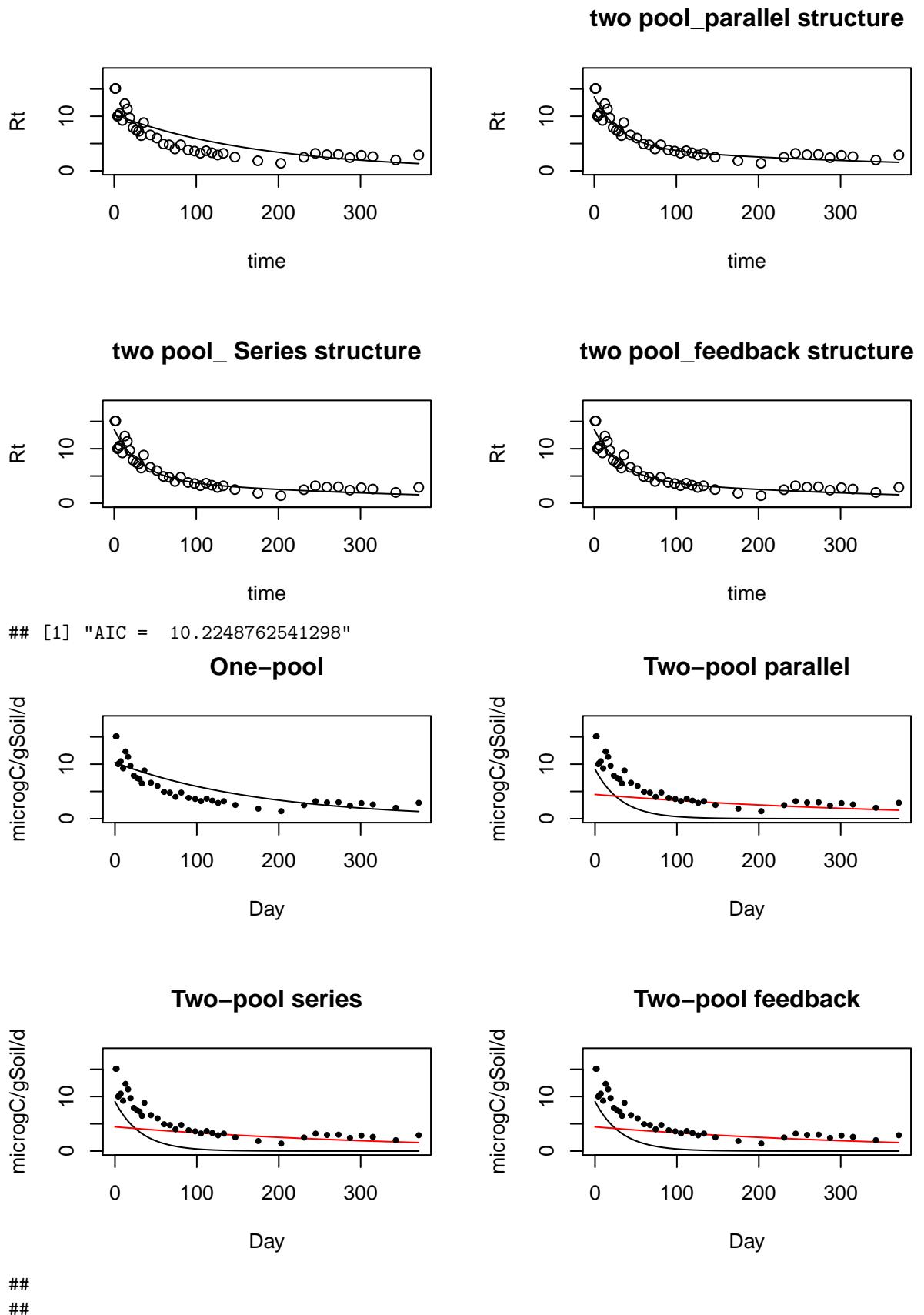
```
Crow_V26=modelFitTS_Markdown(db = db[[9]], ts.col = 26, ic.col = 25, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site25"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00554365730321749"

## [1] "AIC = 4.68435005903809"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0316277190514386"
## [2] "k2= 0.00282714794498828"
## [3] "proportion of CO in pool 1= 0.154630255981283"

## [1] "AIC = 6.22487625404265"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0316272651907586"
## [2] "k2= 0.00282712066665093"
## [3] "a21= 9.34913615480149e-06"
## [4] "Proportion of CO in pool 1= 0.15463475264992"

## [1] "AIC = 8.22487625482566"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0316283469199871"
## [2] "k2= 0.00282719082401011"
## [3] "a21= 0.0068456257503331"
## [4] "a12= 3.86165723209597e-06"
## [5] "Proportion of CO in pool 1= 0.155797777695413"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0055					149.27	3.827
## Two-pool parallel	0.0316	0.0028	0.1546			43.64	1.119
## Two-pool series	0.0316	0.0028	0.1546	0.0000		43.64	1.119
## Two-pool feedback	0.0316	0.0028	0.1558	0.0068	0.1546	43.64	1.119
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	4.684	8.601	499.95	4.695	0.6201	1860.00	
## Two-pool parallel	6.225	17.974	47.71	6.290	0.2793	137.35	37.56
## Two-pool series	8.225	23.890	49.71	8.334	0.1005	31.62	21.92
## Two-pool feedback	10.225	29.806	51.71	10.389	0.0360	34.04	22.13

Variable Site26;

CO2 production rate

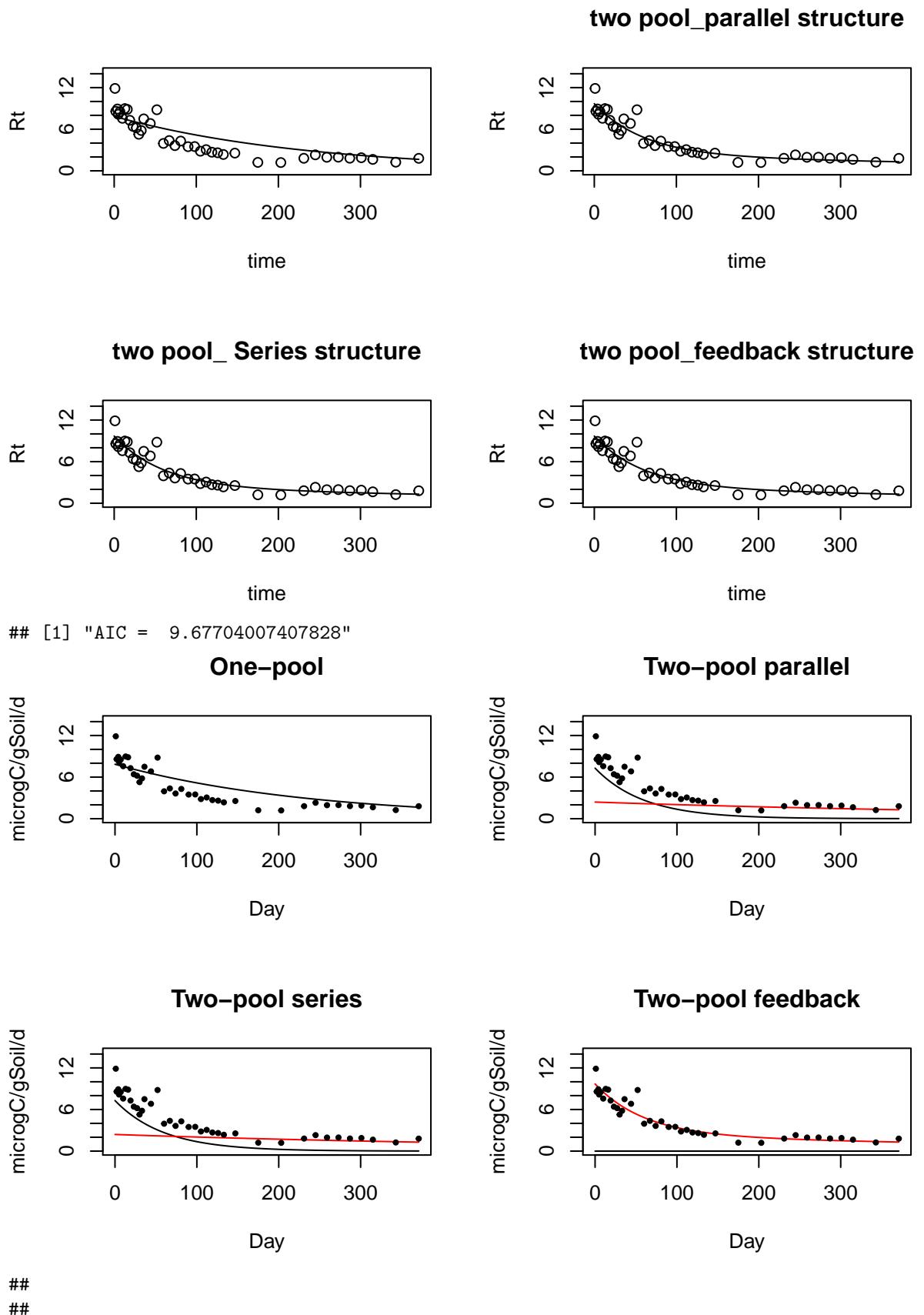
```
Crow_V27=modelFitTS_Markdown(db = db[[9]], ts.col = 27, ic.col = 26, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site26"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00420023991592622"

## [1] "AIC = 3.77213274500204"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0167731865649481"
## [2] "k2= 0.00167105096776249"
## [3] "proportion of CO in pool 1= 0.23240387734973"

## [1] "AIC = 5.67704007418397"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0167731133048804"
## [2] "k2= 0.00167104372073031"
## [3] "a21= 0.000108626601143857"
## [4] "Proportion of CO in pool 1= 0.232431846349491"

## [1] "AIC = 7.67704007517416"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00167107134366585"
## [2] "k2= 0.0167733796919686"
## [3] "a21= 0.999893473399878"
## [4] "a12= 5.66535479640251e-07"
## [5] "Proportion of CO in pool 1= 0.691133702525874"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0042					94.60	2.4256
## Two-pool parallel	0.0168	0.0017	0.2324			33.18	0.8509
## Two-pool series	0.0168	0.0017	0.2324	0.0001		33.18	0.8509
## Two-pool feedback	0.0017	0.0168	0.6911	0.9999	0.2324	33.18	0.8509
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.772	7.688	330.73	3.783	0.6620	1870.00	
## Two-pool parallel	5.677	17.426	-53.91	5.742	0.2485	193.02	59.80
## Two-pool series	7.677	23.342	-51.91	7.786	0.0894	59.68	41.33
## Two-pool feedback	9.677	29.258	-49.91	9.841	0.0320	658.03	477.54

Variable Site27;

CO2 production rate

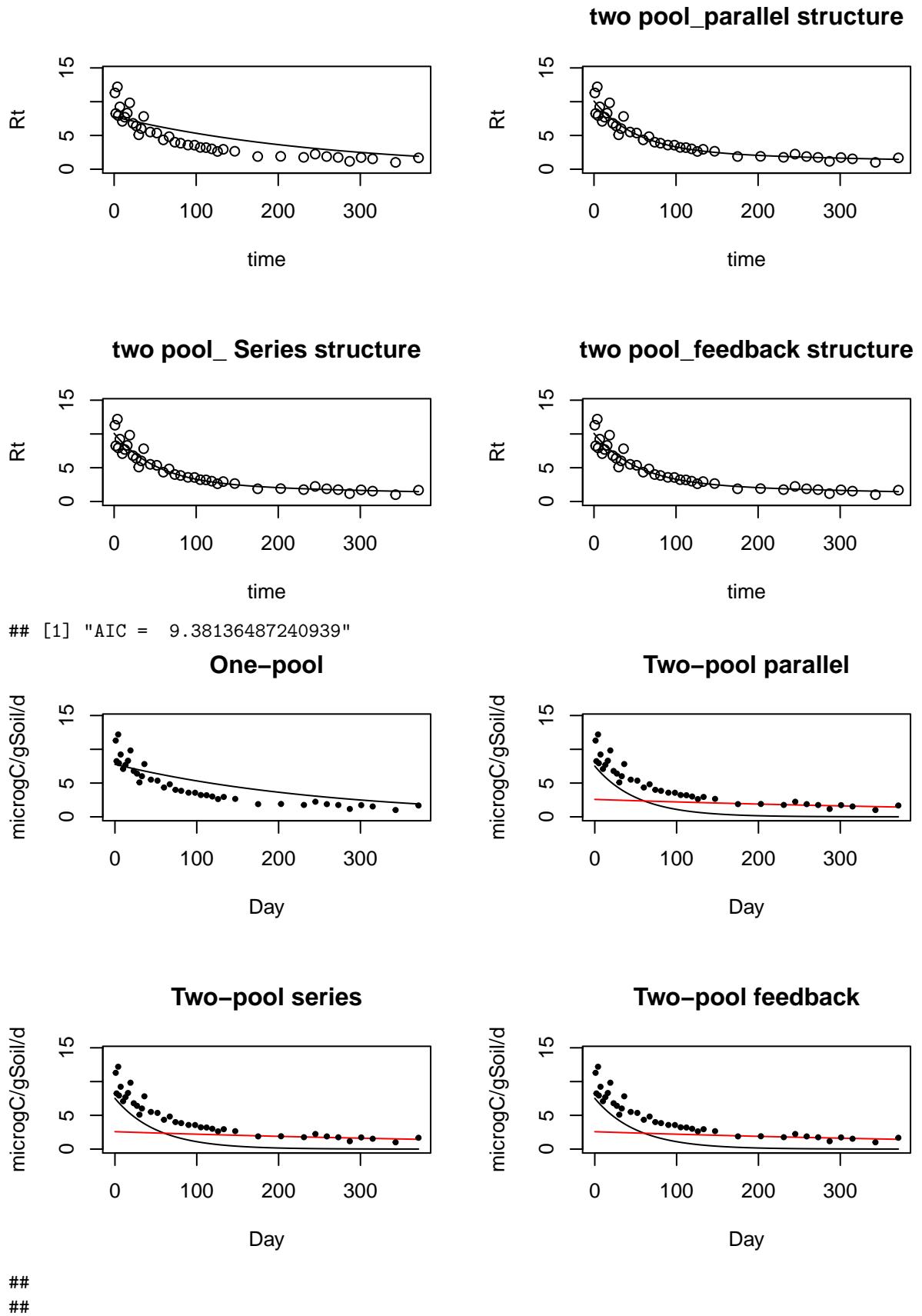
```
Crow_V28=modelFitTS_Markdown(db = db[[9]], ts.col = 28, ic.col = 27, unitConverter = 1e3 )
```

```
## [1] "Crow2019a; variable: Site27"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00379254008286622"

## [1] "AIC = 4.08277074209629"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.019248573767885"
## [2] "k2= 0.0015533824074903"
## [3] "proportion of CO in pool 1= 0.190392011102497"

## [1] "AIC = 5.38136487236722"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0192491406658688"
## [2] "k2= 0.00155341990441607"
## [3] "a21= 0.00109915764239304"
## [4] "Proportion of CO in pool 1= 0.190611964786688"

## [1] "AIC = 7.38136487511014"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0192485750522382"
## [2] "k2= 0.00155338277782593"
## [3] "a21= 0.00695439498679895"
## [4] "a12= 2.22434919615044e-05"
## [5] "Proportion of CO in pool 1= 0.191844614473325"
```



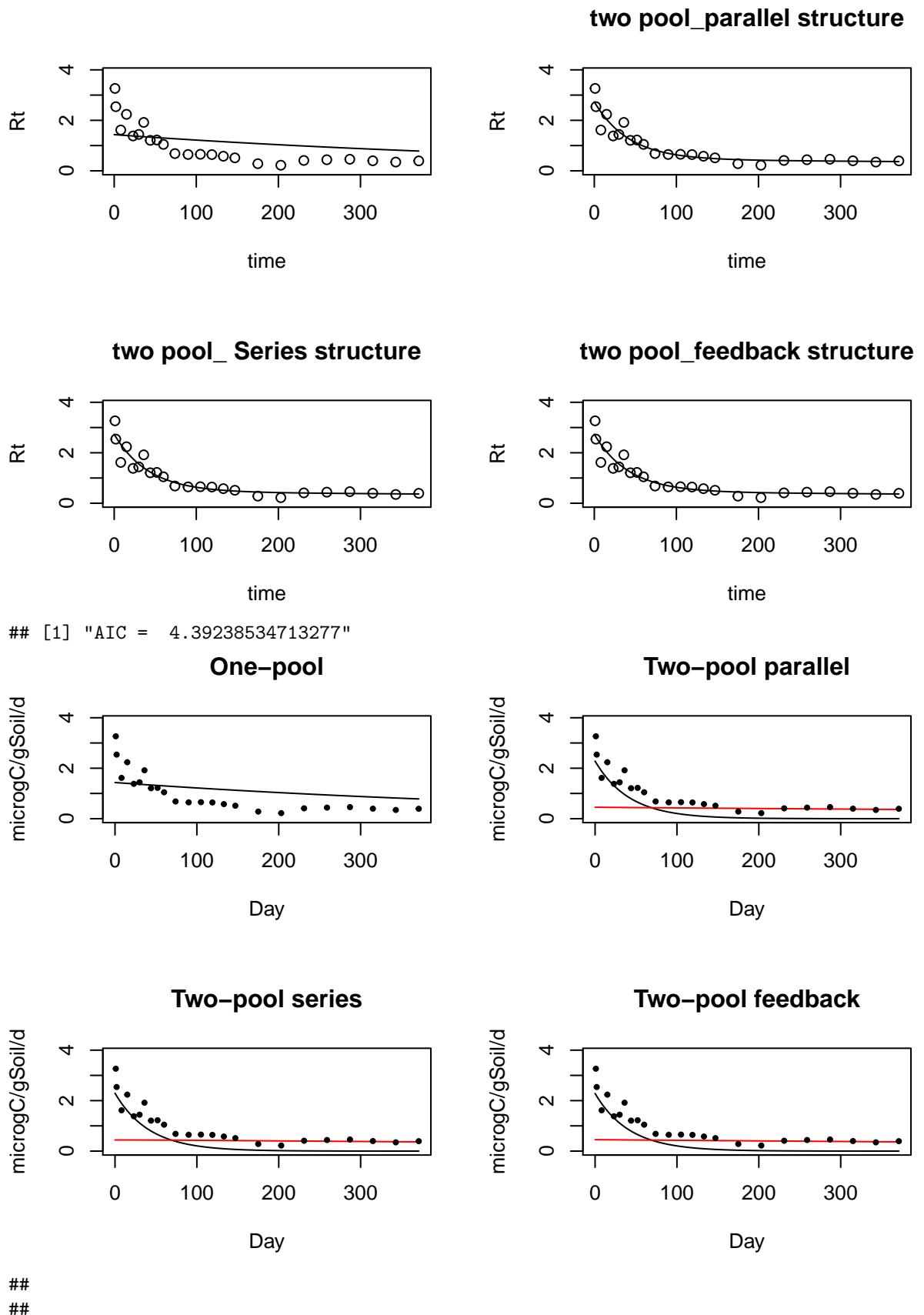
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0038					110.49	2.8331
## Two-pool parallel	0.0192	0.0016	0.1904			28.62	0.7339
## Two-pool series	0.0192	0.0016	0.1906	0.0011		28.62	0.7339
## Two-pool feedback	0.0192	0.0016	0.1918	0.0070	0.1906	28.62	0.7339
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	4.083	7.999	388.4	4.094	0.5913	2050.00	
## Two-pool parallel	5.381	17.130	-108.8	5.447	0.3006	203.15	53.68
## Two-pool series	7.381	23.046	-106.8	7.491	0.1082	52.66	36.06
## Two-pool feedback	9.381	28.962	-104.8	9.546	0.0387	56.43	36.36

Variable Site28;

CO2 production rate

```
Crow_V29=modelFitTS_Markdown(db = db[[9]], ts.col = 29, ic.col = 28, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)) )

## [1] "Crow2019a; variable: Site28"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00162860669881582"
## [1] "AIC = 0.329402860778075"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0240706386027816"
## [2] "k2= 0.000577526445097158"
## [3] "proportion of CO in pool 1= 0.107769990440503"
## [1] "AIC = 0.39238534706246"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0240706110759427"
## [2] "k2= 0.000577532717226547"
## [3] "a21= 0.178472133046223"
## [4] "Proportion of CO in pool 1= 0.131885854390179"
## [1] "AIC = 2.39238535351847"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0240706225833688"
## [2] "k2= 0.000577531323594551"
## [3] "a21= 0.0208525514898324"
## [4] "a12= 7.04180203020544e-06"
## [5] "Proportion of CO in pool 1= 0.110122446892387"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0016					10.410	0.4337
## Two-pool parallel	0.0241	6e-04	0.1078			1.454	0.0606
## Two-pool series	0.0241	6e-04	0.1319	0.1785		1.454	0.0606
## Two-pool feedback	0.0241	6e-04	0.1101	0.0209	0.1319	1.454	0.0606
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	0.3294	4.246	-307.9	0.3402	0.4382	880.00	
## Two-pool parallel	0.3924	12.141	-1034.2	0.4578	0.4132	321.61	37.56
## Two-pool series	2.3924	18.057	-1032.2	2.5017	0.1487	350.57	38.79
## Two-pool feedback	4.3924	23.973	-1030.2	4.5568	0.0532	77.65	29.68

Variable Site29;

CO2 production rate

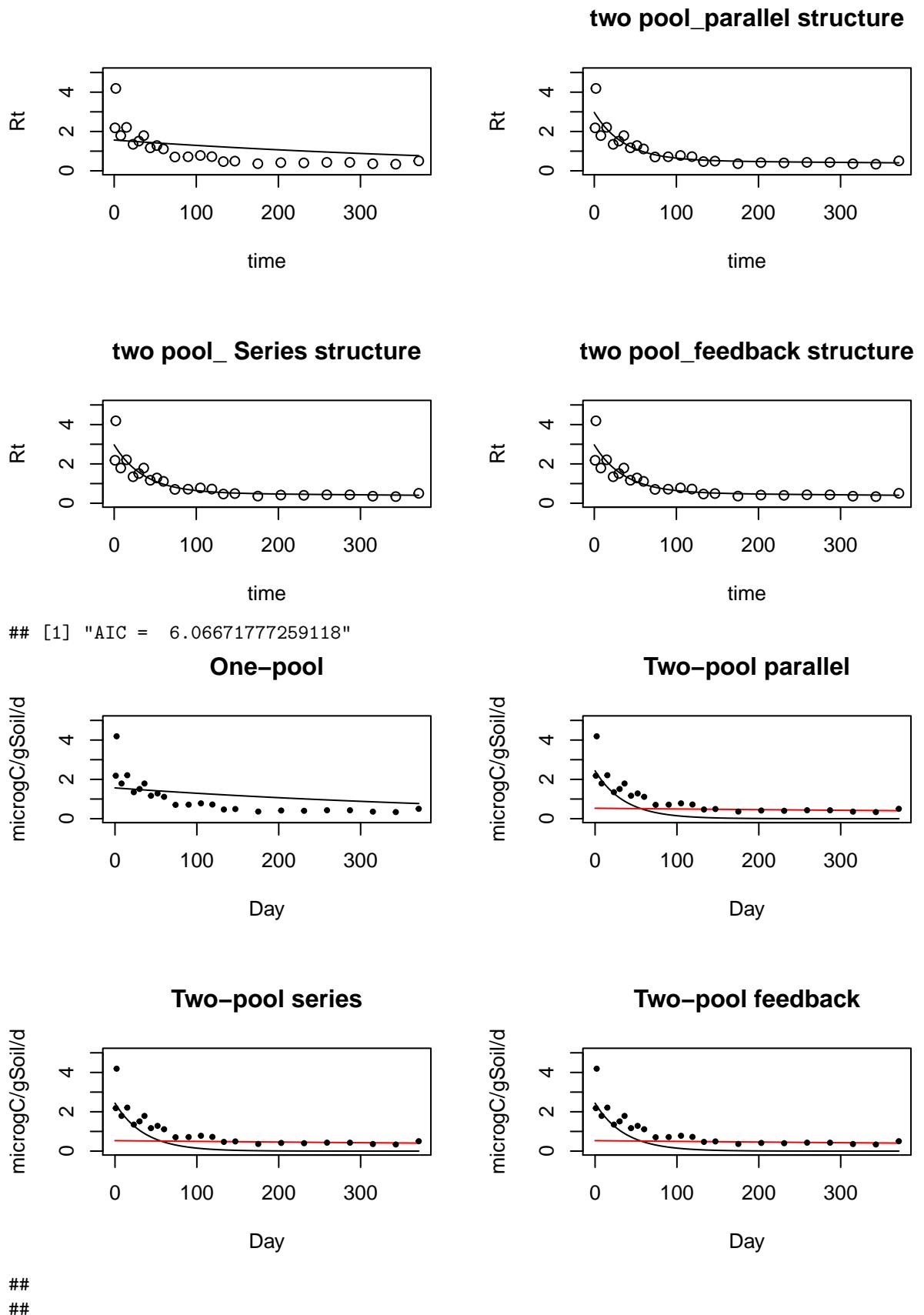
```
Crow_V30=modelFitTS_Markdown(db = db[[9]], ts.col = 30, ic.col = 29, unitConverter = 1e3 )
```

```
## [1] "Crow2019a; variable: Site29"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00190901595808413"

## [1] "AIC = 0.761602784650345"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0278369976567548"
## [2] "k2= 0.000726535086098548"
## [3] "proportion of CO in pool 1= 0.10679271336649"

## [1] "AIC = 2.06671777283616"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0278382662950202"
## [2] "k2= 0.000726548469680782"
## [3] "a21= 0.0202927884033987"
## [4] "Proportion of CO in pool 1= 0.109061037685363"

## [1] "AIC = 4.06671777589053"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.027836891457419"
## [2] "k2= 0.000726532311524579"
## [3] "a21= 0.0170139145689257"
## [4] "a12= 2.8527195455319e-06"
## [5] "Proportion of CO in pool 1= 0.108691794642482"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0019					12.921	0.5384
## Two-pool parallel	0.0278	7e-04	0.1068			3.358	0.1399
## Two-pool series	0.0278	7e-04	0.1091	0.0203		3.358	0.1399
## Two-pool feedback	0.0278	7e-04	0.1087	0.0170	0.1091	3.358	0.1399
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	0.7616	4.678	-227.7	0.7724	0.5920	820.00	
## Two-pool parallel	2.0667	13.815	-723.6	2.1321	0.3000	276.11	33.27
## Two-pool series	4.0667	19.732	-721.6	4.1760	0.1080	63.85	25.64
## Two-pool feedback	6.0667	25.648	-719.6	6.2311	0.0386	59.34	25.52

Variable Site30;

CO2 production rate

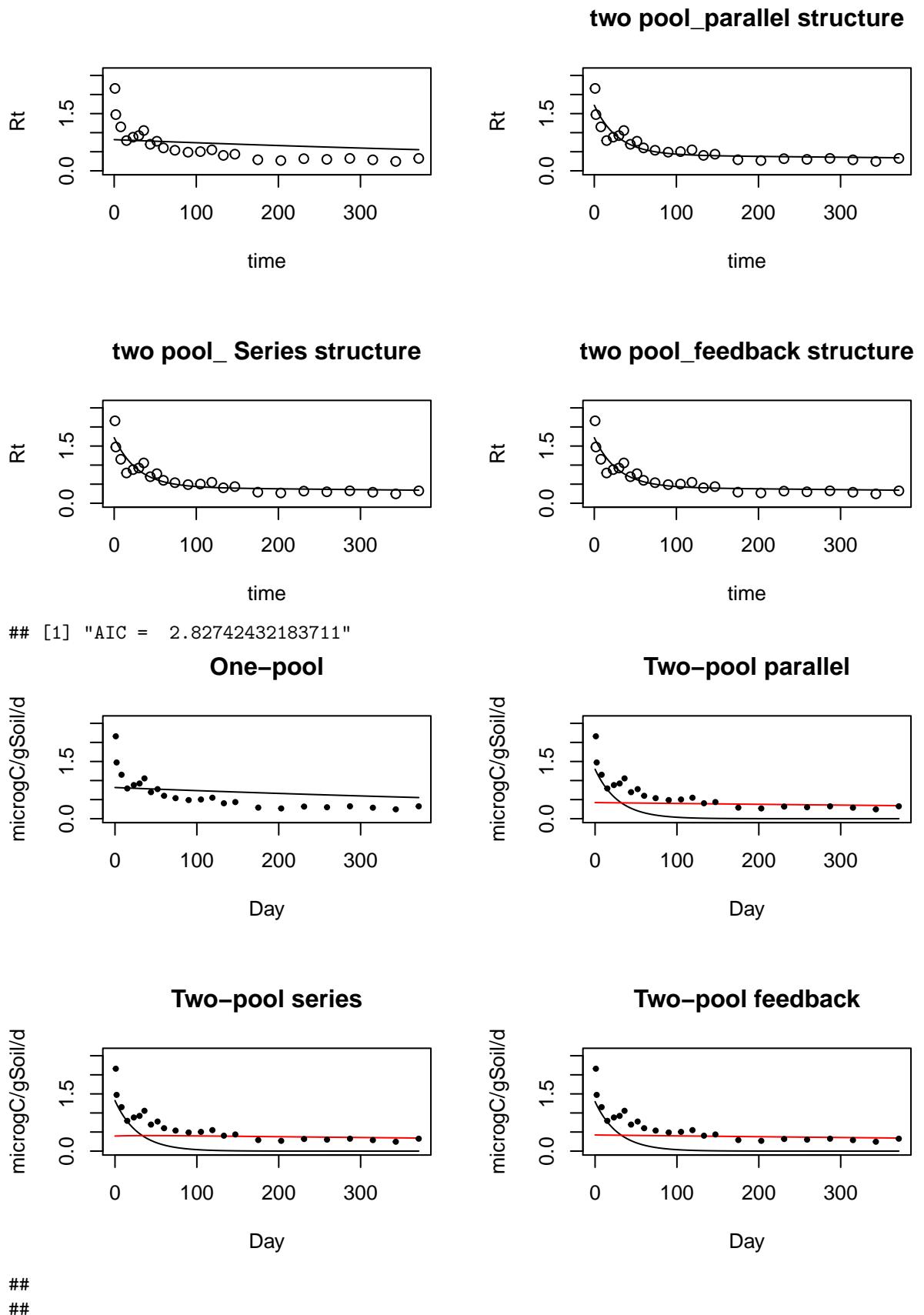
```
Crow_V31=modelFitTS_Markdown(db = db[[9]], ts.col = 31, ic.col = 30, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site30"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0010478735401005"

## [1] "AIC = -1.74597254619101"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0354187761969758"
## [2] "k2= 0.000568675455971866"
## [3] "proportion of CO in pool 1= 0.0469431945384809"

## [1] "AIC = -1.17257567496562"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0354166714898071"
## [2] "k2= 0.000568662359458117"
## [3] "a21= 0.565437084720865"
## [4] "Proportion of CO in pool 1= 0.110373329581005"

## [1] "AIC = 0.827424338230797"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0354172847815863"
## [2] "k2= 0.000568666247885957"
## [3] "a21= 0.0116340978904637"
## [4] "a12= 1.97249316874482e-06"
## [5] "Proportion of CO in pool 1= 0.047506440162275"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0010					3.6879	0.1537
## Two-pool parallel	0.0354	6e-04	0.0469			0.6648	0.0277
## Two-pool series	0.0354	6e-04	0.1104	0.5654		0.6648	0.0277
## Two-pool feedback	0.0354	6e-04	0.0475	0.0116	0.1104	0.6648	0.0277
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	-1.7460	2.17	-692.9	-1.7351	0.5016	780.00	
## Two-pool parallel	-1.1726	10.58	-1324.5	-1.1072	0.3665	453.59	30.25
## Two-pool series	0.8274	16.49	-1322.5	0.9367	0.1319	1022.56	245.00
## Two-pool feedback	2.8274	22.41	-1320.5	2.9918	0.0472	48.69	19.90

Variable Site31;

CO2 production rate

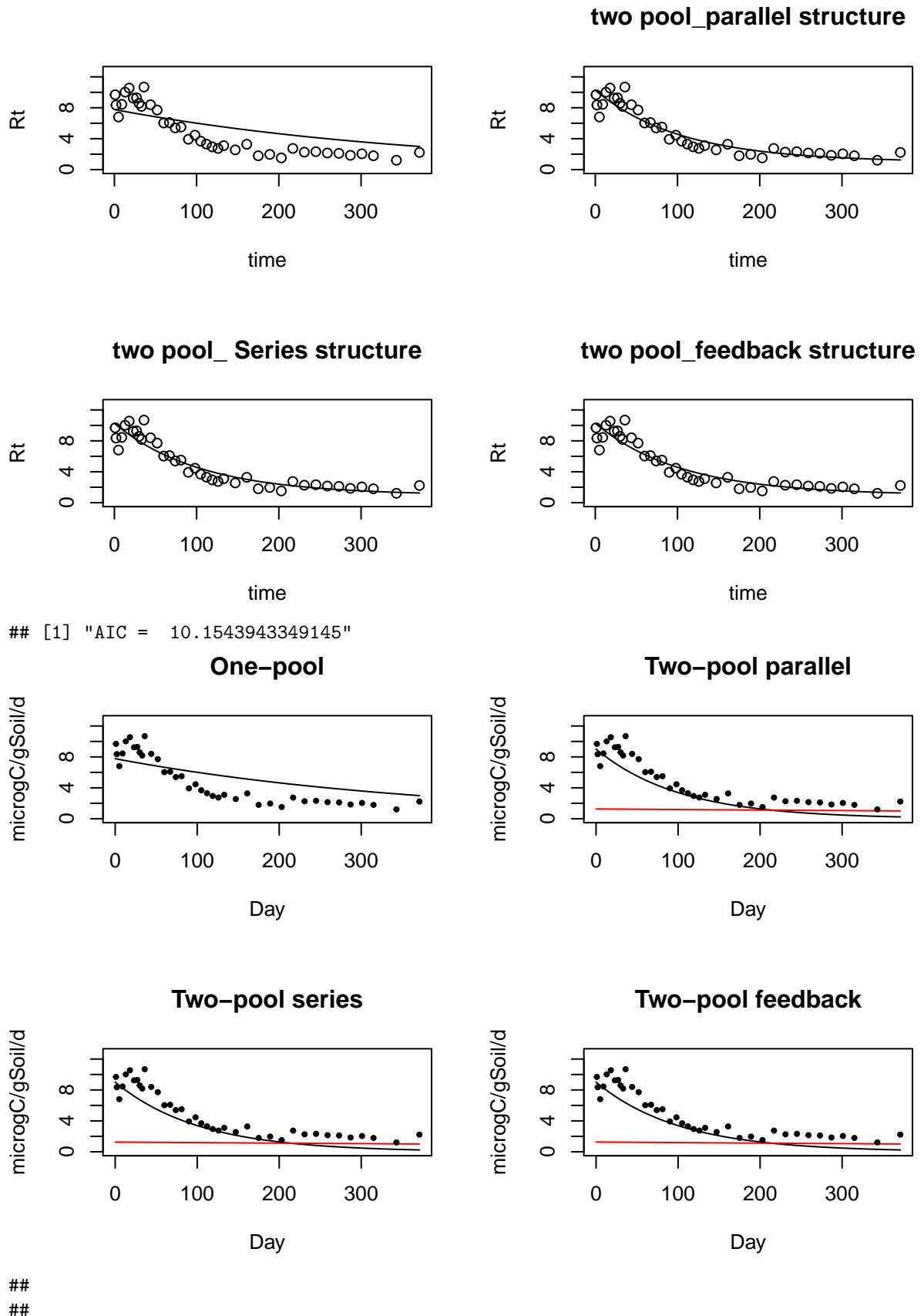
```
Crow_V32=modelFitTS_Markdown(db = db[[9]], ts.col = 32, ic.col = 31, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site31"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00257331949078576"

## [1] "AIC = 4.82450937542965"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00978630986238602"
## [2] "k2= 0.000601724893898424"
## [3] "proportion of CO in pool 1= 0.304932374699162"

## [1] "AIC = 6.15439433493837"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00978571710291936"
## [2] "k2= 0.00060163659450374"
## [3] "a21= 0.0174267526137949"
## [4] "Proportion of CO in pool 1= 0.310725412642139"

## [1] "AIC = 8.15439433236098"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00978550978311692"
## [2] "k2= 0.000601605803681048"
## [3] "a21= 0.00233299013566085"
## [4] "a12= 6.47632189282321e-06"
## [5] "Proportion of CO in pool 1= 0.305723173174051"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0026					160.10	4.105
## Two-pool parallel	0.0098	6e-04	0.3049			42.13	1.080
## Two-pool series	0.0098	6e-04	0.3107	0.0174		42.13	1.080
## Two-pool feedback	0.0098	6e-04	0.3057	0.0023	0.3107	42.13	1.080
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	4.824	8.741	525.95	4.835	0.5950	3020.0	
## Two-pool parallel	6.154	17.903	34.64	6.220	0.2978	293.9	84.62
## Two-pool series	8.154	23.819	36.64	8.264	0.1072	131.2	72.62
## Two-pool feedback	10.154	29.735	38.64	10.319	0.0384	106.1	71.07

Variable Site32;

CO2 production rate

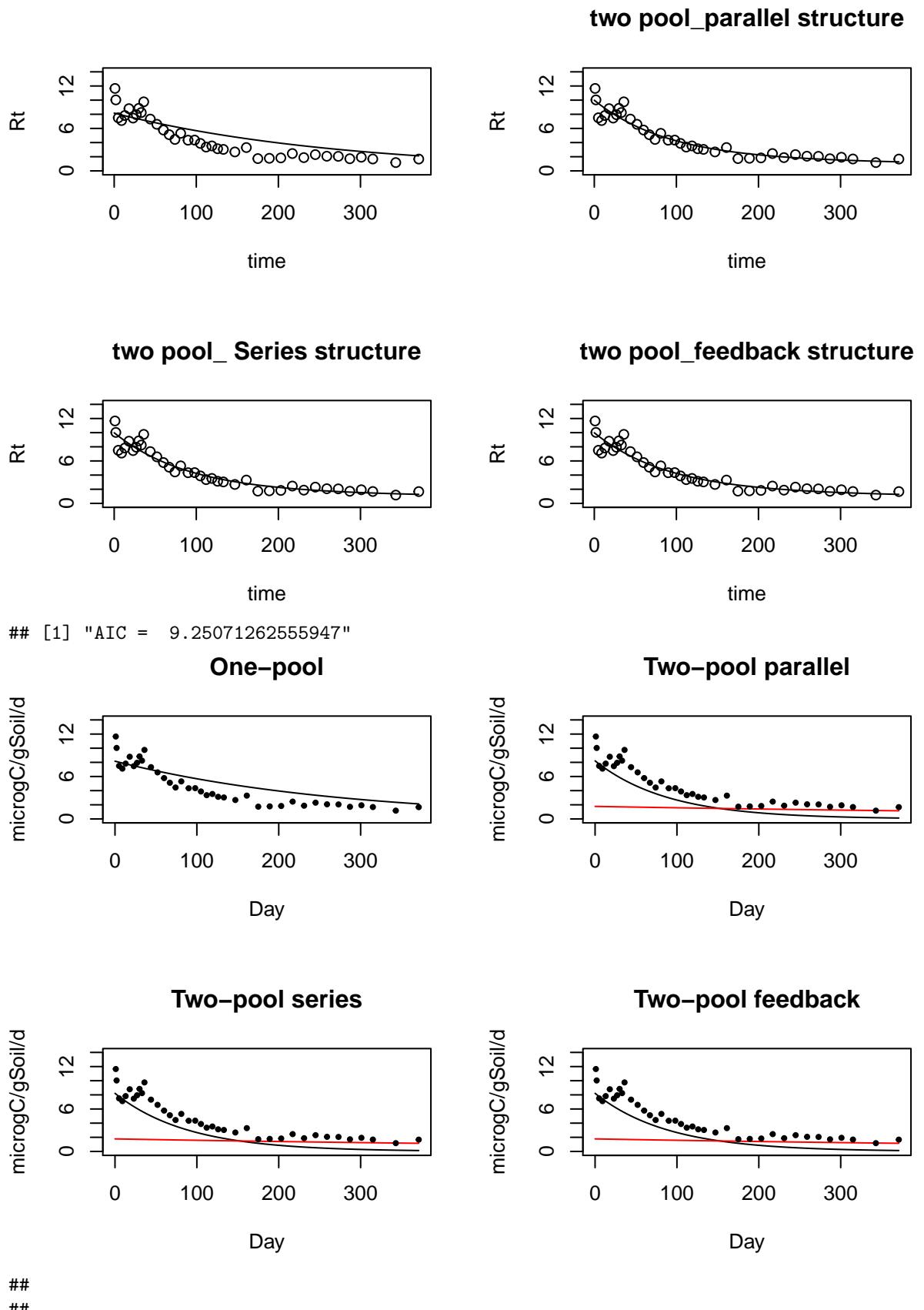
```
Crow_V33=modelFitTS_Markdown(db = db[[9]], ts.col = 33, ic.col = 32, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site32"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00362900645769137"

## [1] "AIC = 3.72621560886364"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0112428471407725"
## [2] "k2= 0.00116682522649421"
## [3] "proportion of CO in pool 1= 0.324757409967034"

## [1] "AIC = 5.25071262237635"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0112430390463932"
## [2] "k2= 0.00116685735875824"
## [3] "a21= 0.000418551196956662"
## [4] "Proportion of CO in pool 1= 0.32490145432171"

## [1] "AIC = 7.2507126223836"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0112427270165045"
## [2] "k2= 0.00116680526333688"
## [3] "a21= 0.00080228485351852"
## [4] "a12= 1.47397420274809e-06"
## [5] "Proportion of CO in pool 1= 0.3250503895316"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## -----	-----	-----	-----	-----	-----	-----	-----
## One-pool	-0.0036					92.45	2.3705
## Two-pool parallel	0.0112	0.0012	0.3248			26.81	0.6875
## Two-pool series	0.0112	0.0012	0.3249	4e-04		26.81	0.6875
## Two-pool feedback	0.0112	0.0012	0.3251	8e-04	0.3249	26.81	0.6875
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## -----	-----	-----	-----	-----	-----	-----	-----
## One-pool	3.726	7.642	322.2	3.737	0.6182	2250.00	
## Two-pool parallel	5.251	16.999	-133.0	5.316	0.2807	225.27	79.06
## Two-pool series	7.251	22.916	-131.0	7.360	0.1010	89.30	61.69
## Two-pool feedback	9.251	28.832	-129.0	9.415	0.0362	89.63	61.72

Variable Site33;

CO2 production rate

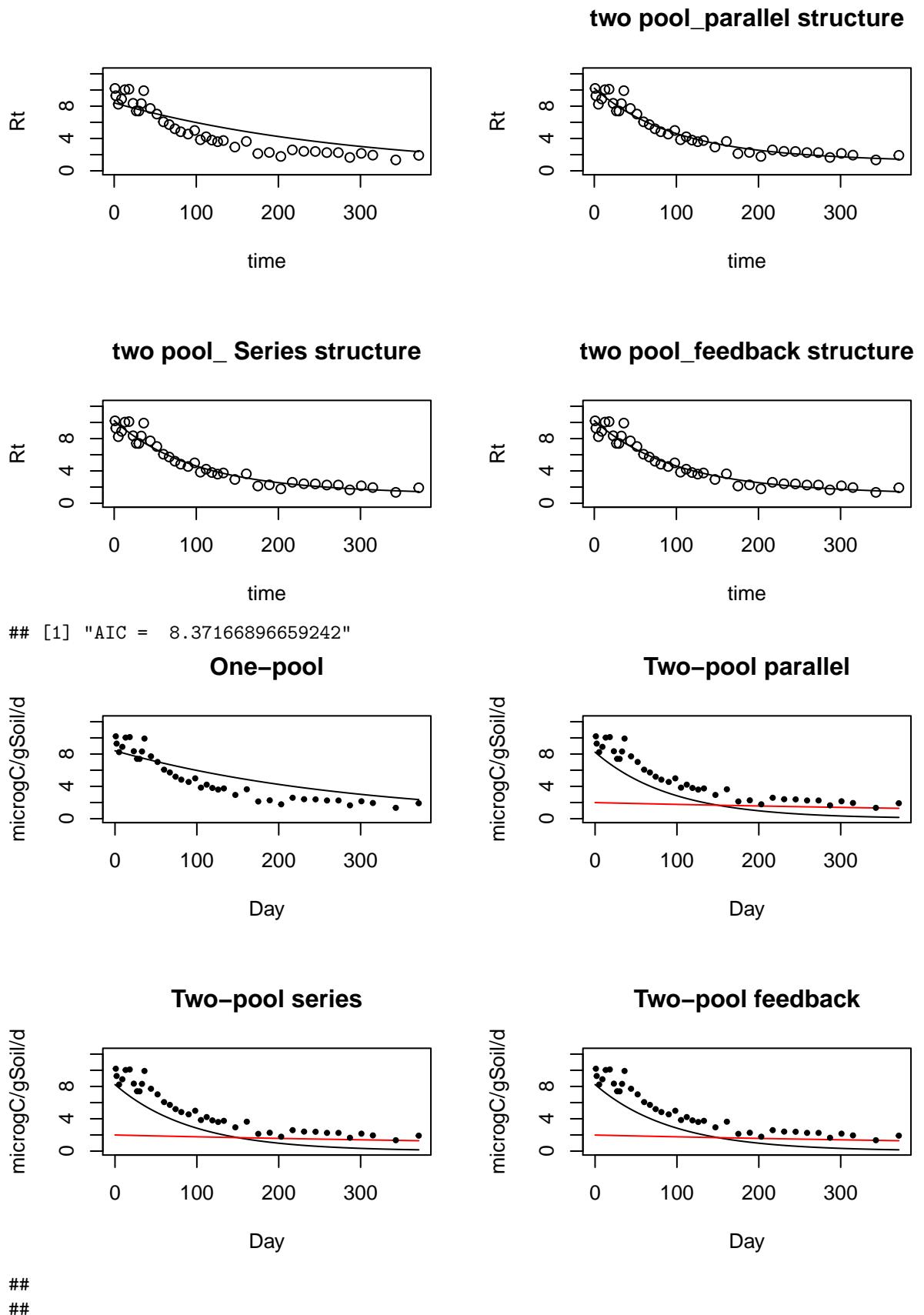
```
Crow_V34=modelFitTS_Markdown(db = db[[9]], ts.col = 34, ic.col = 33, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site33"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00341699376035542"

## [1] "AIC = 3.4994066868254"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0106551553660563"
## [2] "k2= 0.00118053956318237"
## [3] "proportion of CO in pool 1= 0.314067184783034"

## [1] "AIC = 4.37166896503547"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.010655250182711"
## [2] "k2= 0.00118055518672884"
## [3] "a21= 9.36155375663716e-06"
## [4] "Proportion of CO in pool 1= 0.314066533984723"

## [1] "AIC = 6.37166896485545"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0106551006653995"
## [2] "k2= 0.00118053065601323"
## [3] "a21= 0.0059148090570299"
## [4] "a12= 1.21991822927825e-05"
## [5] "Proportion of CO in pool 1= 0.316172074229321"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0034					82.54	2.116
## Two-pool parallel	0.0107	0.0012	0.3141			17.28	0.443
## Two-pool series	0.0107	0.0012	0.3141	0.0000		17.28	0.443
## Two-pool feedback	0.0107	0.0012	0.3162	0.0059	0.3141	17.28	0.443
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	3.499	7.416	280.1	3.510	0.5389	2460.00	
## Two-pool parallel	4.372	16.120	-296.1	4.437	0.3391	240.60	85.47
## Two-pool series	6.372	22.037	-294.1	6.481	0.1220	93.86	65.05
## Two-pool feedback	8.372	27.953	-292.1	8.536	0.0437	98.86	65.59

Variable Site34;

CO2 production rate

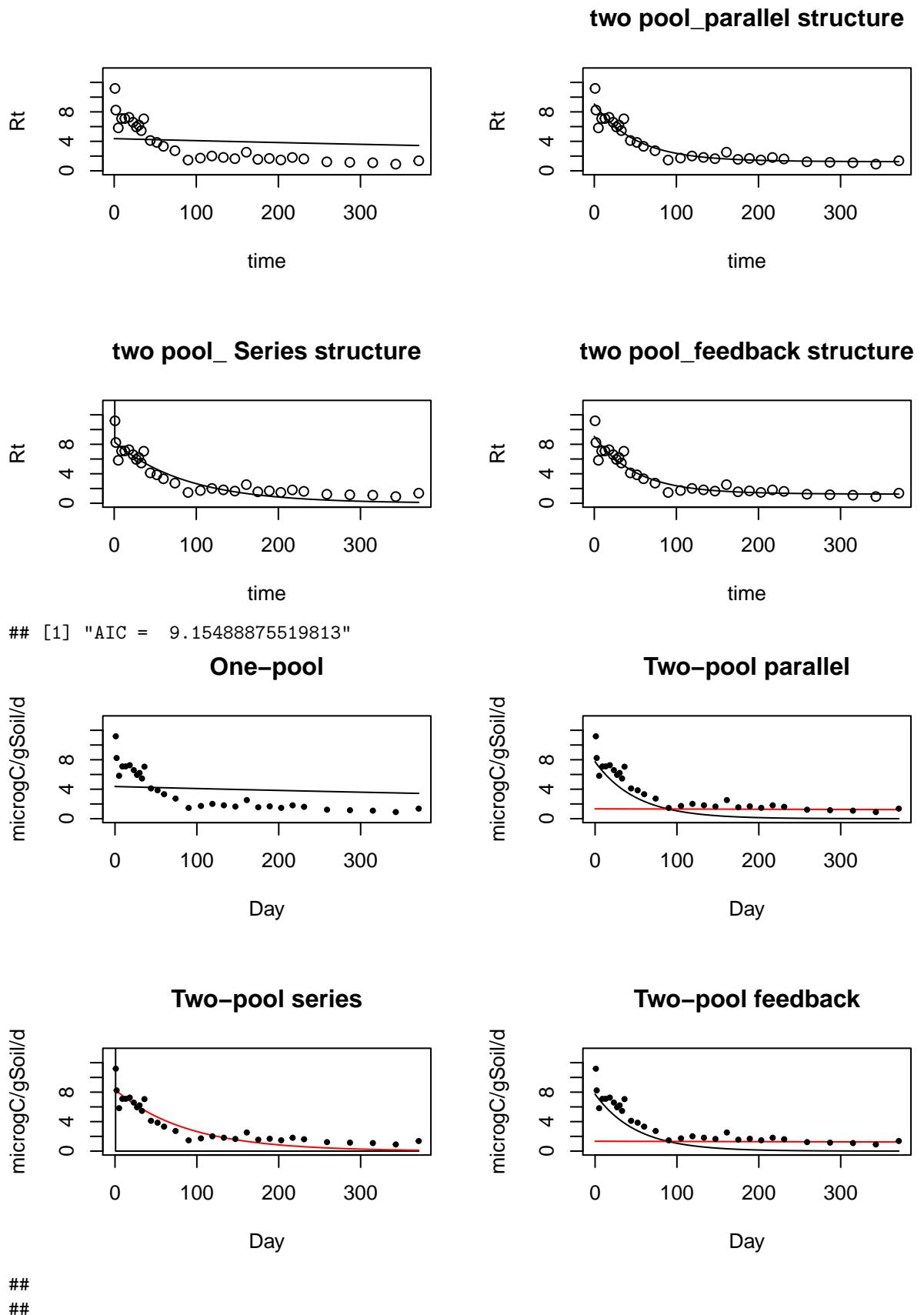
```
Crow_V35=modelFitTS_Markdown(db = db[[9]], ts.col = 35, ic.col = 34, unitConverter = 1e3 )
```

```
## [1] "Crow2019a; variable: Site34"
## [1] "One pool model"
## [1] "Best fit parameter: 0.000646921358903541"

## [1] "AIC = 5.66905473274459"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0198422405239192"
## [2] "k2= 0.000210194298677612"
## [3] "proportion of CO in pool 1= 0.0577246926824738"

## [1] "AIC = 5.15488875518837"
## [1] "Two pool model-Series structure"
## [1] "k1= 92.1571128089596"
## [2] "k2= 0.0114560695062352"
## [3] "a21= 5.60765459844959e-07"
## [4] "Proportion of CO in pool 1= 0.891929050777254"

## [1] "AIC = 7.98077990148148"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0198422435154704"
## [2] "k2= 0.000210194378476307"
## [3] "a21= 0.0137934804269001"
## [4] "a12= 1.69453790155871e-05"
## [5] "Proportion of CO in pool 1= 0.0585409527890533"
```



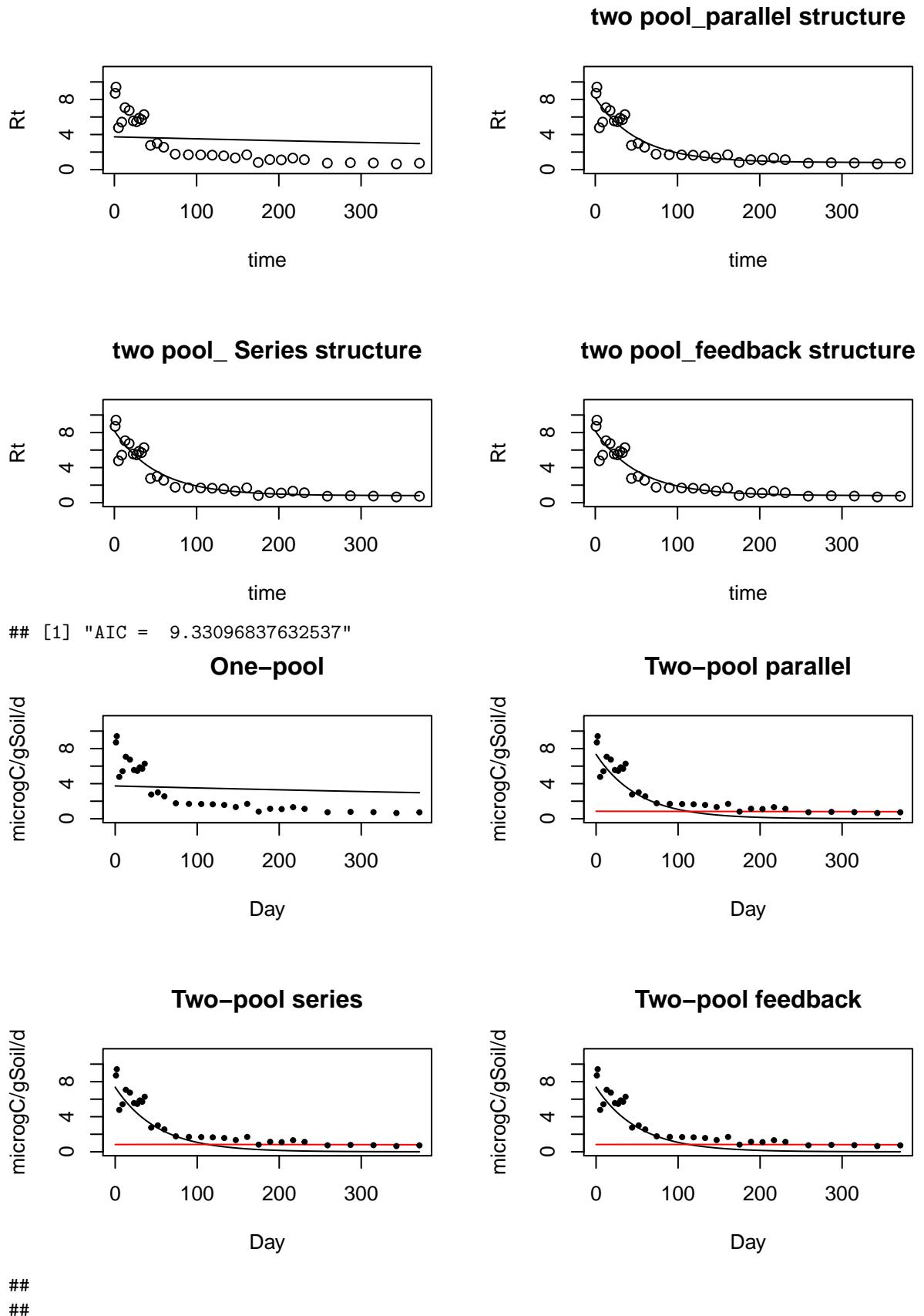
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0006					194.13	6.2622
## Two-pool parallel	0.0198	0.0002	0.0577			20.32	0.6554
## Two-pool series	92.1571	0.0115	0.8919	0.0000		30.70	0.9904
## Two-pool feedback	0.0198	0.0002	0.0585	0.0138	0.8919	20.32	0.6554
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	5.669	9.585	682.610	5.680	0.3909	6750.0000	
## Two-pool parallel	5.155	16.904	-150.768	5.220	0.4919	744.3533	44.3062
## Two-pool series	7.981	23.646	4.435	8.090	0.1171	0.0109	0.0075
## Two-pool feedback	9.155	28.736	-146.768	9.319	0.0634	116.0201	35.6397

Variable Site35;

CO2 production rate

```
Crow_V36=modelFitTS_Markdown(db = db[[9]], ts.col = 36, ic.col = 35, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)))
```

```
## [1] "Crow2019a; variable: Site35"
## [1] "One pool model"
## [1] "Best fit parameter: 0.000619787840317798"
## [1] "AIC = 5.54214469458533"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0192837447338591"
## [2] "k2= 0.000150686289817516"
## [3] "proportion of CO in pool 1= 0.0631804453638553"
## [1] "AIC = 5.33096837608006"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.01928372147141"
## [2] "k2= 0.000150686043860211"
## [3] "a21= 0.296826660443886"
## [4] "Proportion of CO in pool 1= 0.0901501899806175"
## [1] "AIC = 7.33096837610443"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0192837340146538"
## [2] "k2= 0.000150688511570306"
## [3] "a21= 0.280752267389513"
## [4] "a12= 5.44382819196443e-05"
## [5] "Proportion of CO in pool 1= 0.0881134705009501"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0006					182.19	5.8772
## Two-pool parallel	0.0193	2e-04	0.0632			22.19	0.7157
## Two-pool series	0.0193	2e-04	0.0902	0.2968		22.19	0.7157
## Two-pool feedback	0.0193	2e-04	0.0881	0.2808	0.0902	22.19	0.7157
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	5.542	9.458	659.1	5.553	0.4047	6030.0	
## Two-pool parallel	5.331	17.080	-118.1	5.396	0.4377	735.6	42.24
## Two-pool series	7.331	22.996	-116.1	7.440	0.1575	2021.7	64.07
## Two-pool feedback	9.331	28.912	-114.1	9.495	0.0564	1915.0	61.35

Variable Site36;

CO2 production rate

```

## 
Crow_V37=modelFitTS_Markdown(db = db[[9]], ts.col = 37, ic.col = 36, unitConverter = 1e3,
    inipars=list(oneP=0.5,
                 parallel=c(0.01, 0.001, 0.1),
                 series=c(0.05, 0.0001, 0.01, 0.1),
                 feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)) )

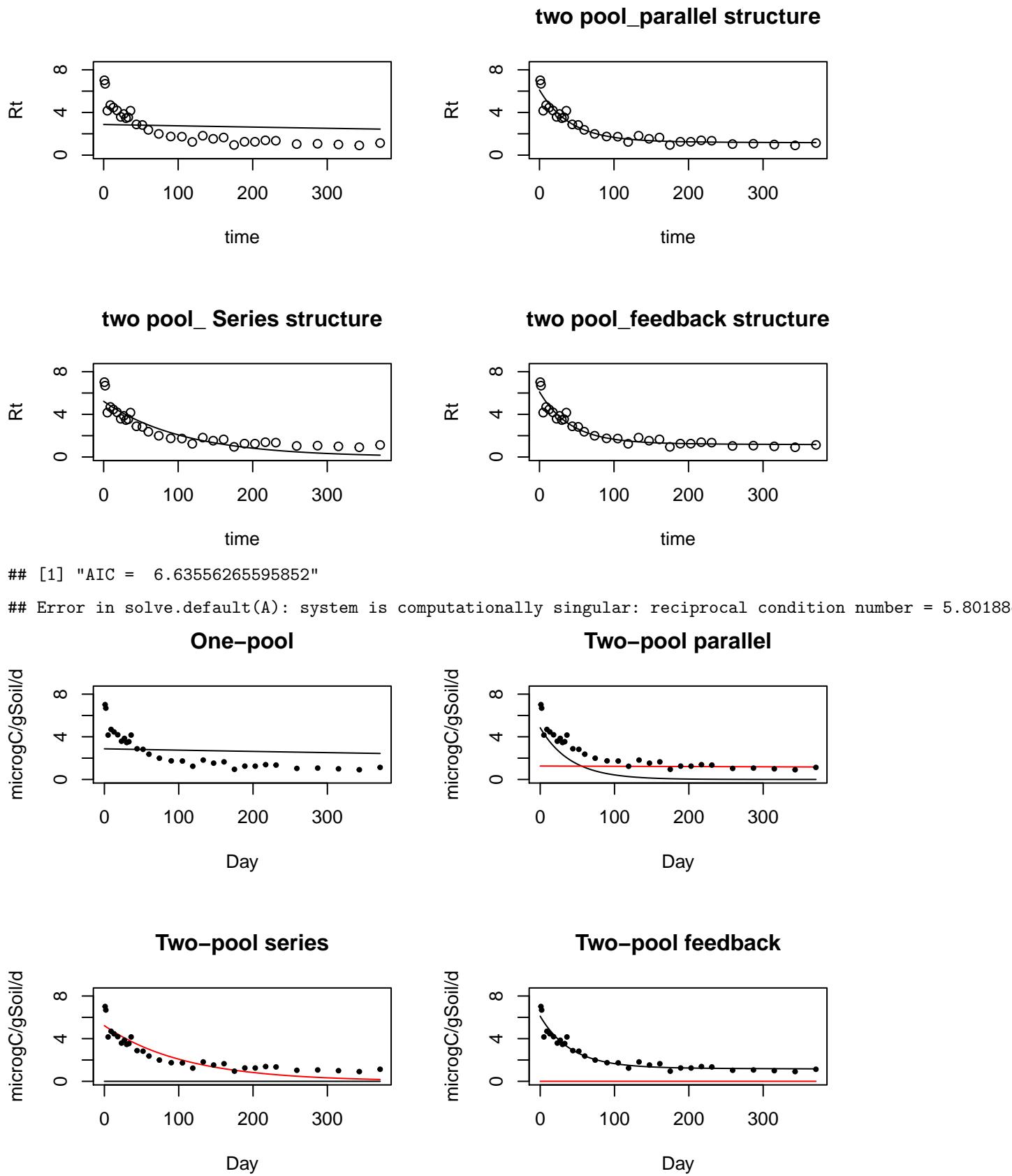
## [1] "Crow2019a; variable: Site36"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0004418644629407"

## [1] "AIC = 3.74882742158281"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0243028031270947"
## [2] "k2= 0.000199981544317473"
## [3] "proportion of CO in pool 1= 0.0306869164699602"

## [1] "AIC = 2.63556394882525"
## [1] "Two pool model-Series structure"
## [1] "k1= 5.34638362493219e-286"
## [2] "k2= 0.00921491056546782"
## [3] "a21= 0.999999537544831"
## [4] "Proportion of CO in pool 1= 0.912845745646155"

## [1] "AIC = 6.39227698069503"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0240772806414971"
## [2] "k2= 0.000422430252034709"
## [3] "a21= 0.522363607357951"
## [4] "a12= 0.999785081775439"
## [5] "Proportion of CO in pool 1= 0.0816960832461098"

```



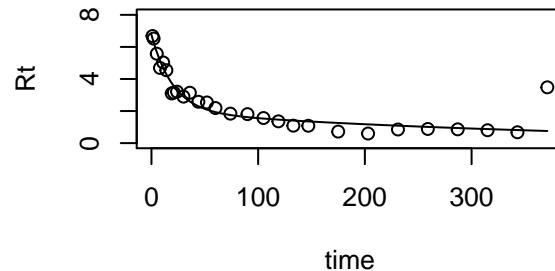
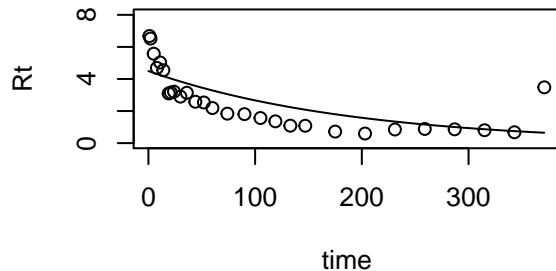
Variable Site37;

CO2 production rate

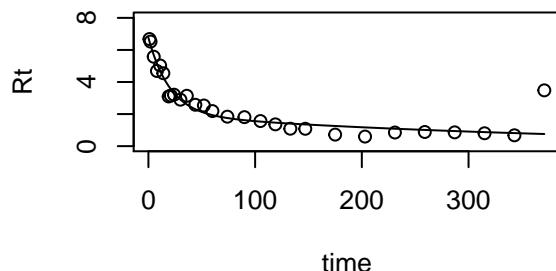
```
Crow_V38=modelFitTS_Markdown(db = db[[9]], ts.col = 38, ic.col = 37, unitConverter = 1e3 )

## [1] "Crow2019a; variable: Site37"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00522739068221512"
## [1] "AIC = 2.47222734926867"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0497127051283284"
## [2] "k2= 0.00258724700780508"
## [3] "proportion of CO in pool 1= 0.11195212976005"
## [1] "AIC = 3.95359417760061"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0497165639726841"
## [2] "k2= 0.00258733451801405"
## [3] "a21= 0.000147369199155756"
## [4] "Proportion of CO in pool 1= 0.111959257083919"
## [1] "AIC = 5.95359418267302"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0150561258979131"
## [2] "k2= 4.150871193116e-15"
## [3] "a21= 0.562429938860131"
## [4] "a12= 0.999999483856156"
## [5] "Proportion of CO in pool 1= 0.99548501074292"
```

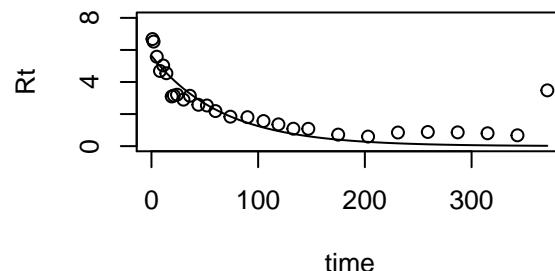
two pool_parallel structure



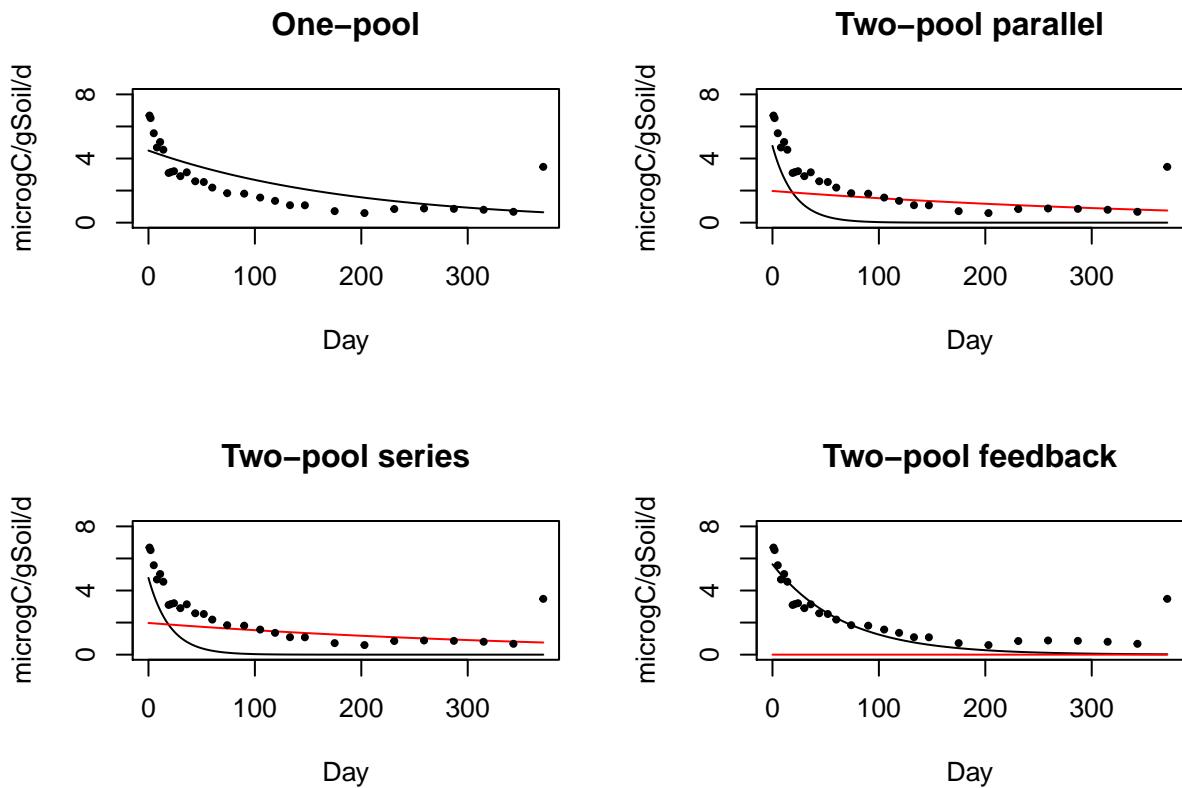
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 9.47990418720999"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0052
## Two-pool parallel 0.0497  0.0026  0.1120
## Two-pool series  0.0497  0.0026  0.1120  0.0001
## Two-pool feedback 0.0151  0.0000  0.9955  0.5624  0.112   21.59  0.7710
##
##
## Model           AIC      BIC    AICn     AICc     wi    MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        2.472   6.388   89.60   2.483   0.6131  8.600e+02
## Two-pool parallel 3.954  15.702 -373.61  4.019   0.2845  1.272e+02  2.308e+01
## Two-pool series  5.954  21.618 -371.61  6.063   0.1024  2.017e+01  1.394e+01
## Two-pool feedback 9.480  29.061 -86.48  9.644   0.0171  3.097e+14  6.479e+13
```

Variable Site38;

CO₂ production rate

```
Crow_V39=modelFitTS_Markdown(db = db[[9]], ts.col = 39, ic.col = 38, unitConverter = 1e3 )
```

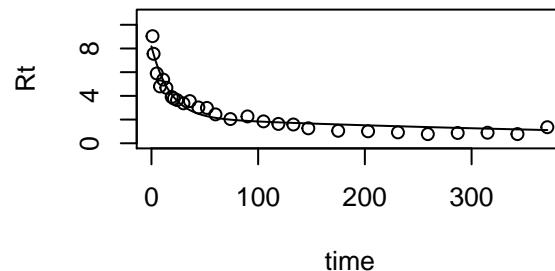
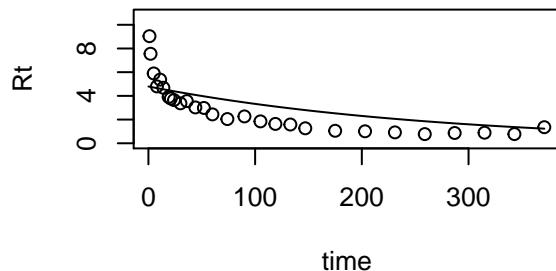
```
## [1] "Crow2019a; variable: Site38"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00365836256182028"
## [1] "AIC = 3.3394163709452"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0576632774421042"
```

```

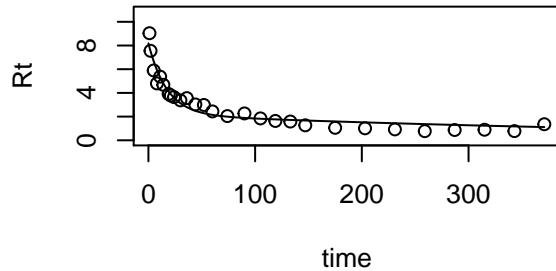
## [2] "k2= 0.00180926231381553"
## [3] "proportion of C0 in pool 1= 0.079433407596456"
## [1] "AIC = 3.20072075754985"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.057657120463871"
## [2] "k2= 0.0018091719735807"
## [3] "a21= 0.000183461631863613"
## [4] "Proportion of C0 in pool 1= 0.0794555535932017"
## [1] "AIC = 5.20072076037344"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0576606513456775"
## [2] "k2= 0.00180922381318167"
## [3] "a21= 0.0058380846556822"
## [4] "a12= 1.34386596567504e-06"
## [5] "Proportion of C0 in pool 1= 0.0799185236097249"

```

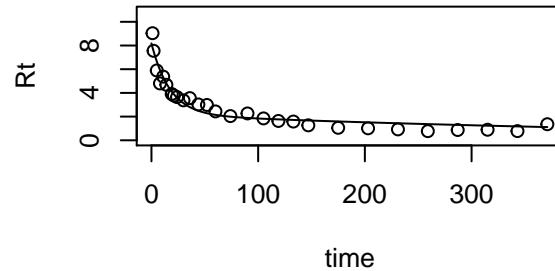
two pool_parallel structure



two pool_Series structure



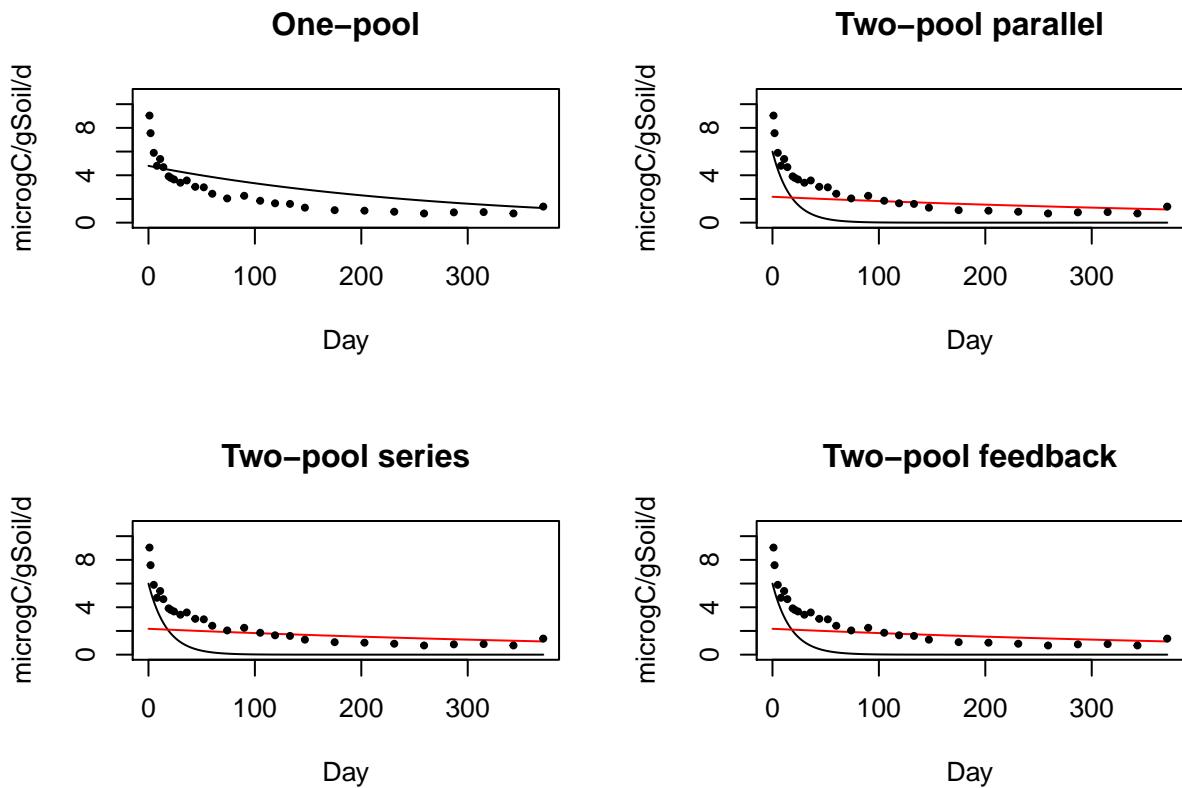
two pool_feedback structure



```

## [1] "AIC = 7.2007207529952"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----   ----  -----  -----  -----  -----  -----
## One-pool        -0.0037
## Two-pool parallel 0.0577  0.0018  0.0794
## Two-pool series  0.0577  0.0018  0.0795  0.0002
## Two-pool feedback 0.0577  0.0018  0.0799  0.0058  0.0795  6.907  0.2467
##
##
## Model           AIC     BIC    AICn    AICc     wi    MeanTrT   q05
## -----          ----  ----  -----  -----  -----  -----  -----
## One-pool        3.339   7.256  250.5   3.350  0.4135  1310.00
## Two-pool parallel 3.201  14.949 -513.3   3.266  0.4313  160.10   19.20
## Two-pool series  5.201  20.866 -511.3   5.310  0.1552  17.45   12.03
## Two-pool feedback 7.201  26.782 -509.3   7.365  0.0555  20.57   12.12
```

Variable Site39;

CO₂ production rate

```
Crow_V40=modelFitTS_Markdown(db = db[[9]], ts.col = 40, ic.col = 39, unitConverter = 1e3 )
```

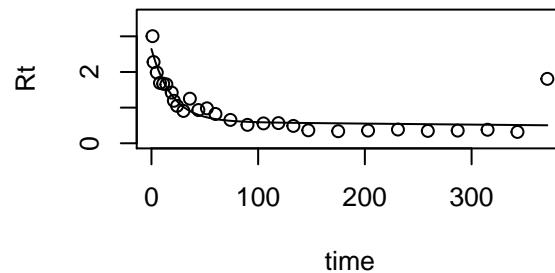
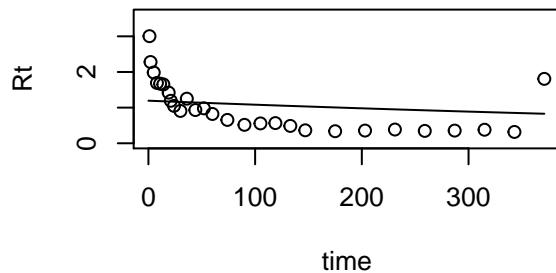
```
## [1] "Crow2019a; variable: Site39"
## [1] "One pool model"
## [1] "Best fit parameter: -0.000987129792992647"
## [1] "AIC = 0.170979045430834"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0527513748170046"
```

```

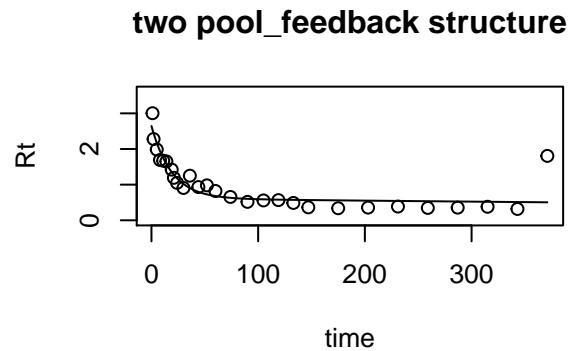
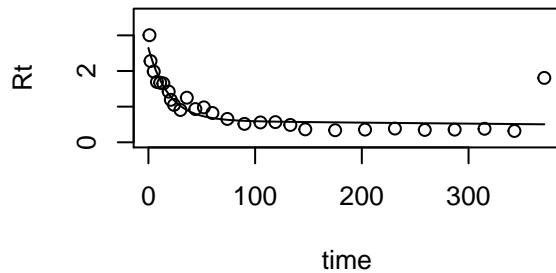
## [2] "k2= 0.000522945878140466"
## [3] "proportion of C0 in pool 1= 0.0318547950120958"
## [1] "AIC = 1.24797072061764"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0527532186774386"
## [2] "k2= 0.000522952928851675"
## [3] "a21= 0.337508866550882"
## [4] "Proportion of C0 in pool 1= 0.0483283296725641"
## [1] "AIC = 3.24797072695022"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0527545356965893"
## [2] "k2= 0.000522957795434166"
## [3] "a21= 0.0150803633103221"
## [4] "a12= 3.4924770908662e-05"
## [5] "Proportion of C0 in pool 1= 0.0323461737050124"

```

two pool_parallel structure



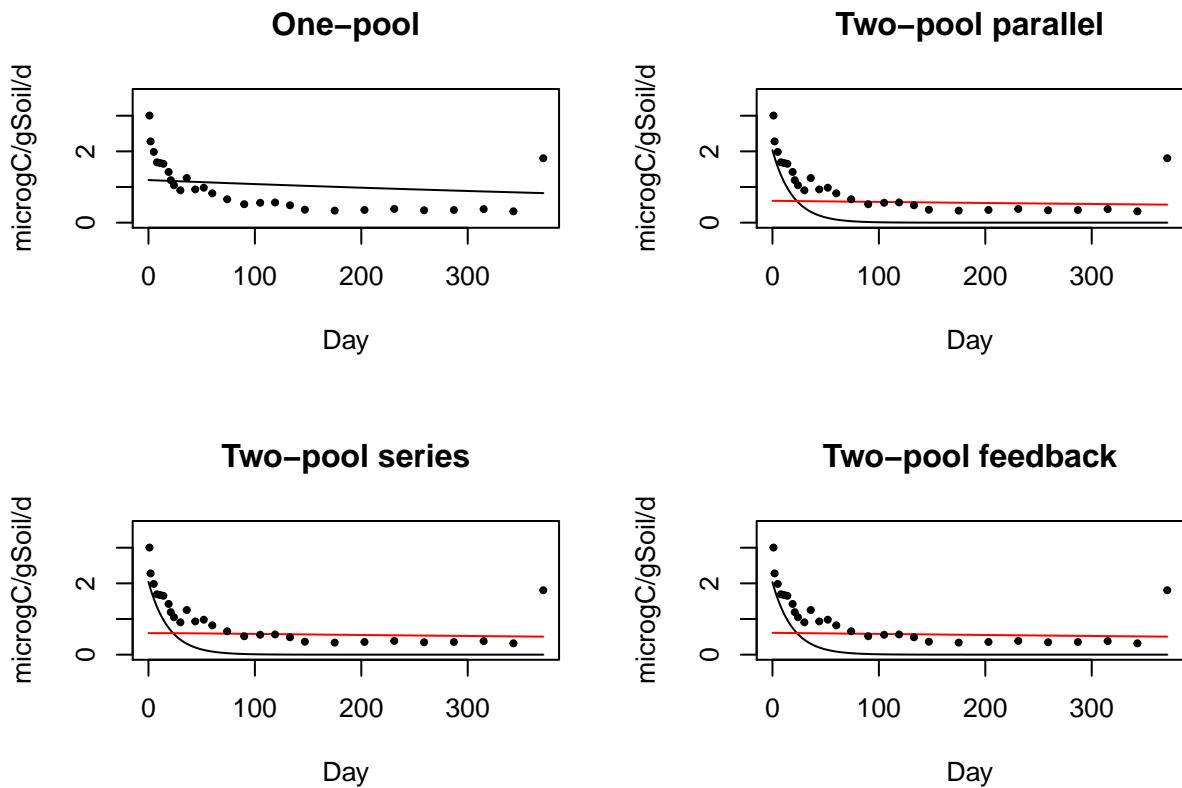
two pool_Series structure



```

## [1] "AIC = 5.24797072044588"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----
## One-pool        -0.0010
## Two-pool parallel 0.0528  5e-04  0.0319
## Two-pool series  0.0528  5e-04  0.0483  0.3375
## Two-pool feedback 0.0528  5e-04  0.0323  0.0151  0.0483  2.602  0.0929
##
##
## Model           AIC     BIC    AICn    AICc     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        0.171   4.087  -337.3  0.1818  0.5642  1210.00
## Two-pool parallel 1.248  12.997  -875.5  1.3134  0.3204  457.32   19.77
## Two-pool series  3.248  18.913  -873.5  3.3573  0.1153  664.35   26.39
## Two-pool feedback 5.248  24.829  -871.5  5.4124  0.0413  47.79   13.43
```

Variable Site40;

CO₂ production rate

```
Crow_V41=modelFitTS_Markdown(db = db[[9]], ts.col = 41, ic.col = 40, unitConverter = 1e3 )
```

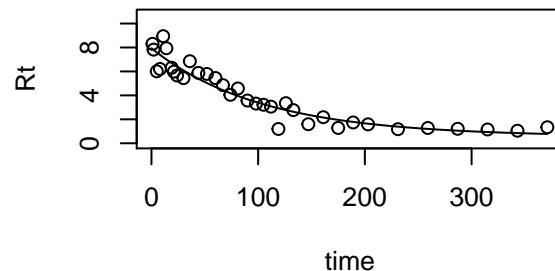
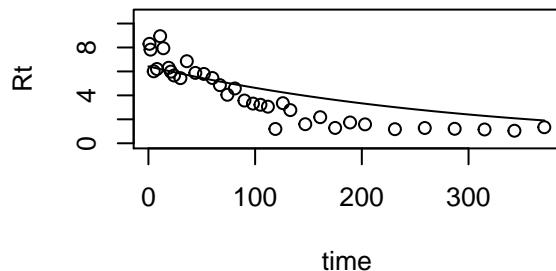
```
## [1] "Crow2019a; variable: Site40"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00327728510520764"
## [1] "AIC = 3.35547107743355"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0098201610092445"
```

```

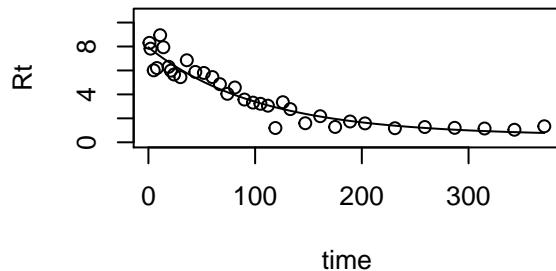
## [2] "k2= 0.000601782954089287"
## [3] "proportion of C0 in pool 1= 0.373737903628587"
## [1] "AIC = 4.61988489075764"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00981984799850031"
## [2] "k2= 0.000601711428431565"
## [3] "a21= 0.00108855438000777"
## [4] "Proportion of C0 in pool 1= 0.374186661669766"
## [1] "AIC = 6.61988489033869"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00981998003102495"
## [2] "k2= 0.00060174158444491"
## [3] "a21= 0.00652329924639516"
## [4] "a12= 9.51060681464444e-06"
## [5] "Proportion of C0 in pool 1= 0.376362932686411"

```

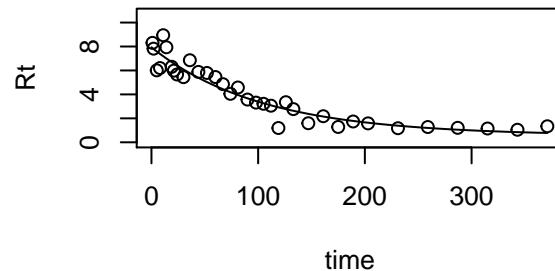
two pool_parallel structure



two pool_Series structure



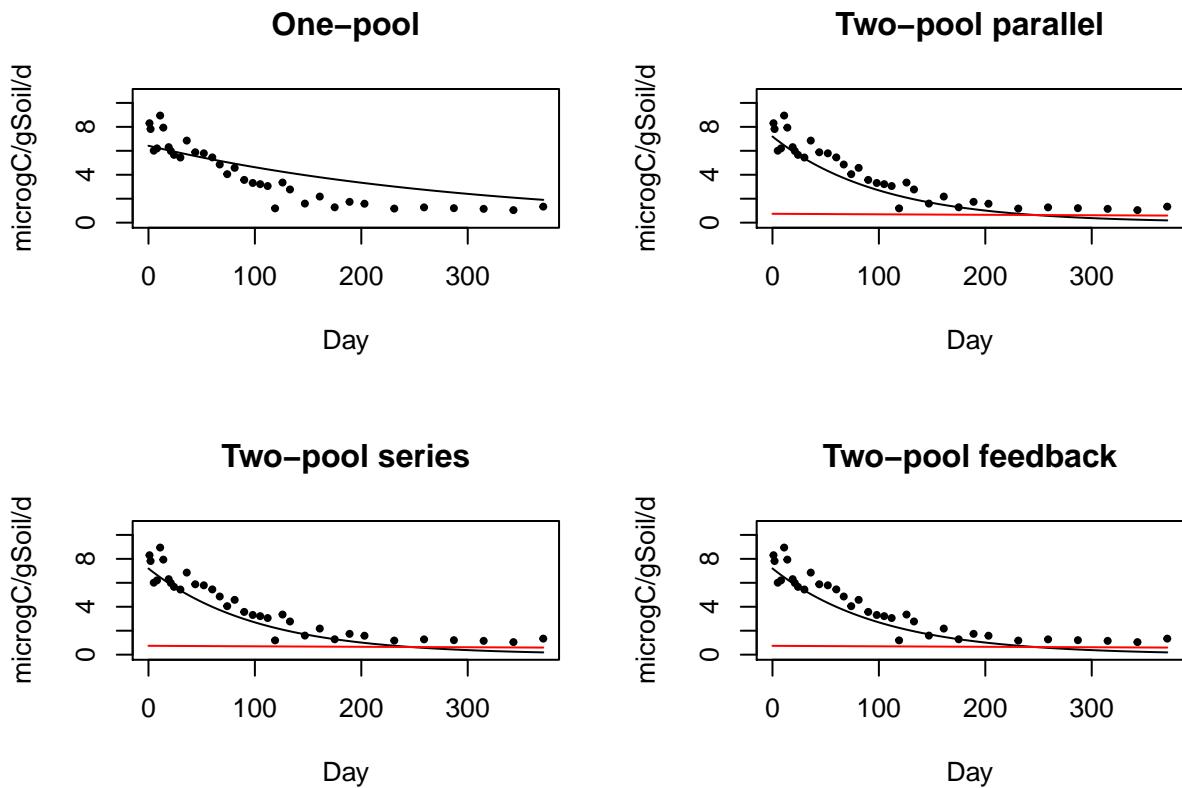
two pool_feedback structure



```

## [1] "AIC = 8.61988488969835"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----   -----  -----  -----  -----  -----
## One-pool        -0.0033
## Two-pool parallel 0.0098  6e-04  0.3737
## Two-pool series  0.0098  6e-04  0.3742  0.0011
## Two-pool feedback 0.0098  6e-04  0.3764  0.0065  0.3742  17.55  0.5015
##
##
## Model           AIC      BIC     AICn     AICc      wi  MeanTrT   q05
## -----          ----   -----  -----  -----  -----  -----
## One-pool        3.356   7.272   253.4   3.366   0.5871  1960.0
## Two-pool parallel 4.620  16.369  -250.0   4.685   0.3036  247.1   80.52
## Two-pool series  6.620  22.285  -248.0   6.729   0.1093  103.6   70.69
## Two-pool feedback 8.620  28.201  -246.0   8.784   0.0391  112.7   71.24
```

Variable Site41;

CO₂ production rate

```
Crow_V42=modelFitTS_Markdown(db = db[[9]], ts.col = 42, ic.col = 41, unitConverter = 1e3 )
```

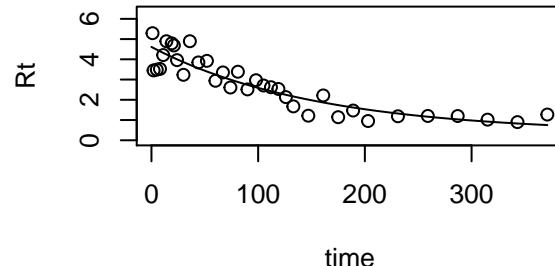
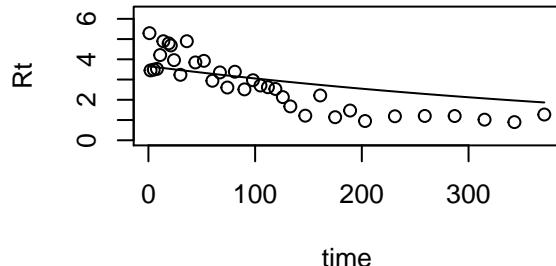
```
## [1] "Crow2019a; variable: Site41"
## [1] "One pool model"
## [1] "Best fit parameter: -0.0018120236035486"
## [1] "AIC = 1.64440677812137"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00654173221062781"
```

```

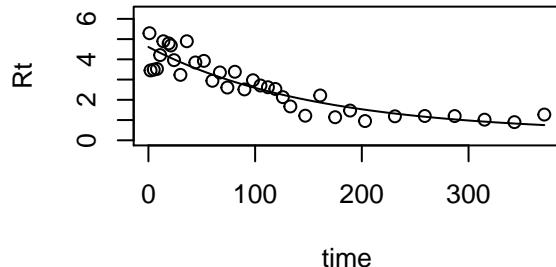
## [2] "k2= 0.000310475344094715"
## [3] "proportion of C0 in pool 1= 0.316517536558733"
## [1] "AIC = 3.43331179142959"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00654219463155194"
## [2] "k2= 0.000310573940235897"
## [3] "a21= 0.0930776019782992"
## [4] "Proportion of C0 in pool 1= 0.350755546170661"
## [1] "AIC = 5.43331180091594"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00654156912497382"
## [2] "k2= 0.000310441017340594"
## [3] "a21= 0.010216591604741"
## [4] "a12= 2.24233435998644e-05"
## [5] "Proportion of C0 in pool 1= 0.319959440692948"

```

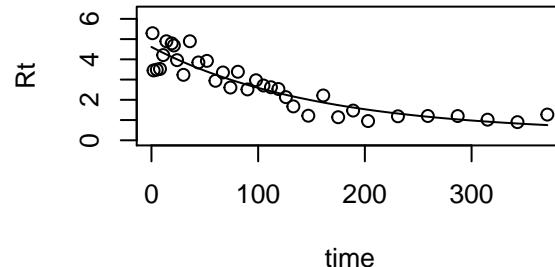
two pool_parallel structure



two pool_Series structure



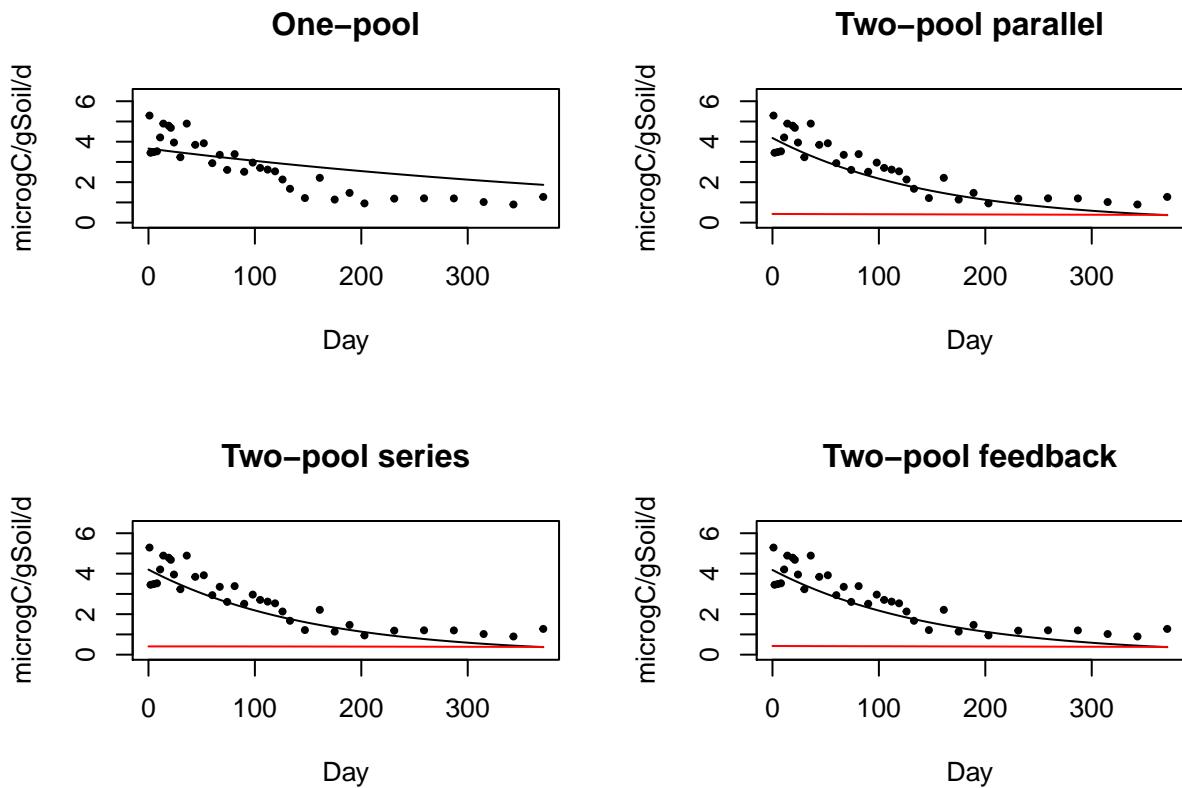
two pool_feedback structure



```

## [1] "AIC = 7.43331179449859"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0018
## Two-pool parallel 0.0065  3e-04  0.3165
## Two-pool series  0.0065  3e-04  0.3508  0.0931
## Two-pool feedback 0.0065  3e-04  0.3200  0.0102  0.3508  9.699  0.2771
##
##
## Model          AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----
## One-pool        1.644   5.561   -63.96   1.655   0.6489  2020.0
## Two-pool parallel 3.433  15.182  -470.12  3.499   0.2582  438.1   121.2
## Two-pool series  5.433  21.098  -468.12  5.543   0.0929  452.5   122.1
## Two-pool feedback 7.433  27.014  -466.12  7.598   0.0333  185.8   107.5
```

Variable Site42;

CO2 production rate

```
Crow_V43=modelFitTS_Markdown(db = db[[9]], ts.col = 43, ic.col = 42, unitConverter = 1e3 )
```

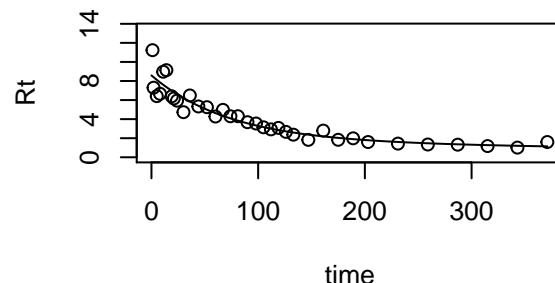
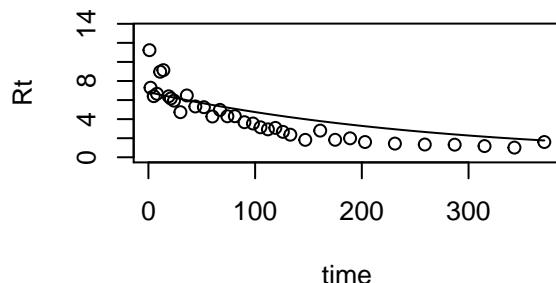
```
## [1] "Crow2019a; variable: Site42"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00365397593668071"
## [1] "AIC = 3.52350252638119"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0137429687405774"
```

```

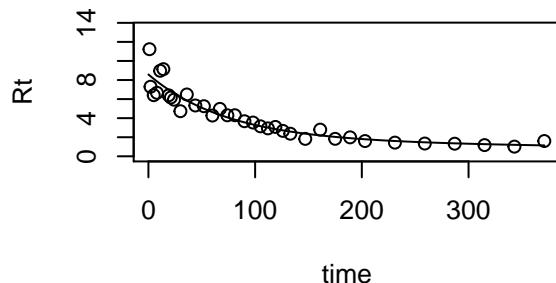
## [2] "k2= 0.00129533330427992"
## [3] "proportion of C0 in pool 1= 0.264853277318832"
## [1] "AIC = 5.25101640445197"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0137433700614413"
## [2] "k2= 0.00129538096379141"
## [3] "a21= 0.000556439129961561"
## [4] "Proportion of C0 in pool 1= 0.265005191827463"
## [1] "AIC = 7.25101640575872"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0137429050671559"
## [2] "k2= 0.00129532606320551"
## [3] "a21= 0.0224082965509067"
## [4] "a12= 5.64692827387248e-06"
## [5] "Proportion of C0 in pool 1= 0.271573838976547"

```

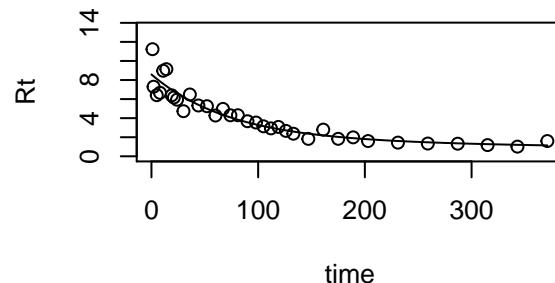
two pool_parallel structure



two pool_Series structure



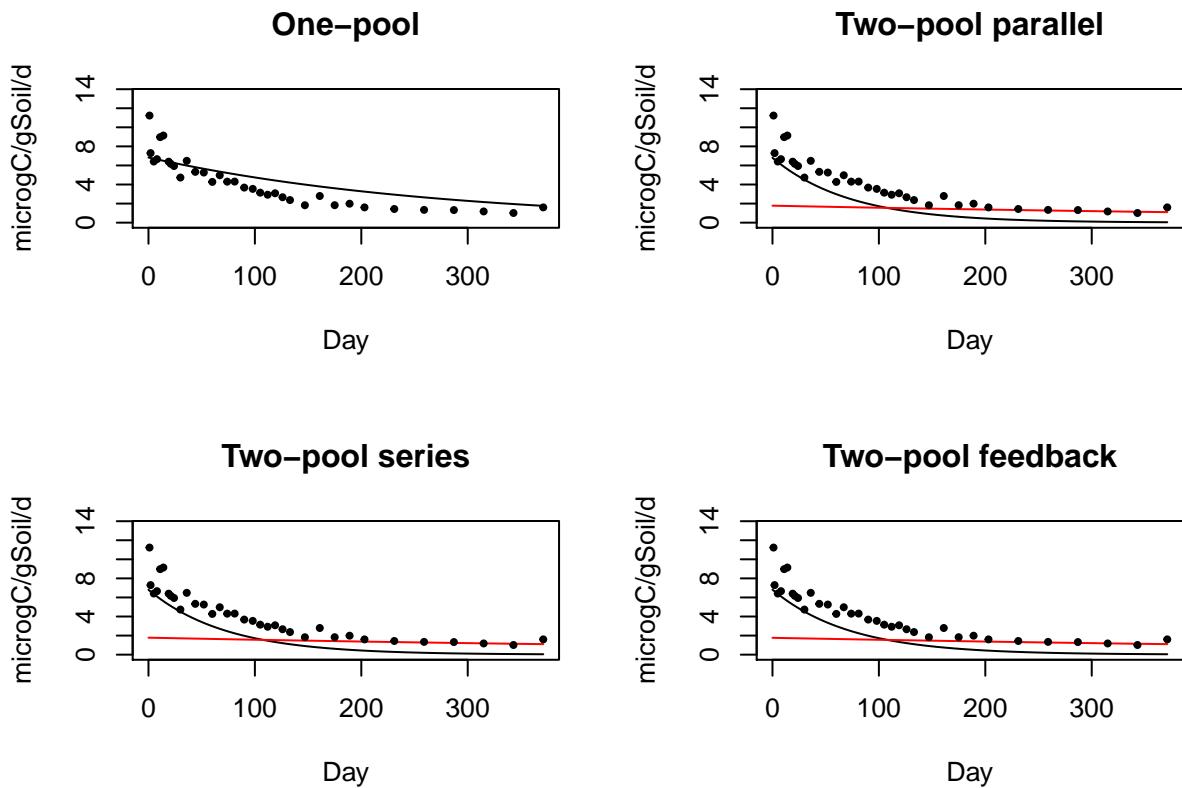
two pool_feedback structure



```

## [1] "AIC = 9.25101640445023"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0037
## Two-pool parallel 0.0137  0.0013  0.2649
## Two-pool series   0.0137  0.0013  0.2650  0.0006
## Two-pool feedback 0.0137  0.0013  0.2716  0.0224  0.265  24.07  0.6876
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----
## One-pool        3.523    7.44    284.6   3.534    0.6419  1870.00
## Two-pool parallel 5.251   17.00   -132.9   5.316    0.2633  217.76   68.27
## Two-pool series   7.251   22.92   -130.9   7.360    0.0948  73.19    50.47
## Two-pool feedback 9.251   28.83   -128.9   9.415    0.0339  90.06    52.06
```

Variable Site43;

CO₂ production rate

```
Crow_V44=modelFitTS_Markdown(db = db[[9]], ts.col = 44, ic.col = 43, unitConverter = 1e3 )
```

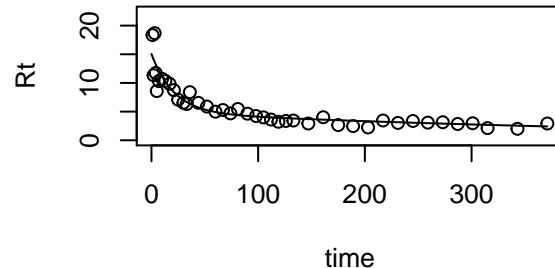
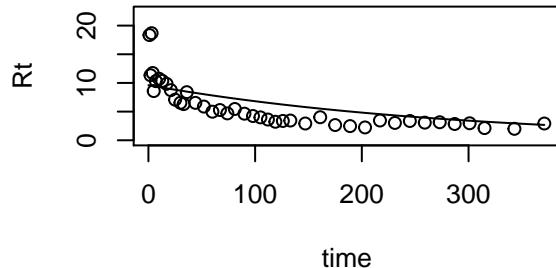
```
## [1] "Crow2019a; variable: Site43"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00344366794009154"
## [1] "AIC = 6.00504901846402"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0477387280692213"
```

```

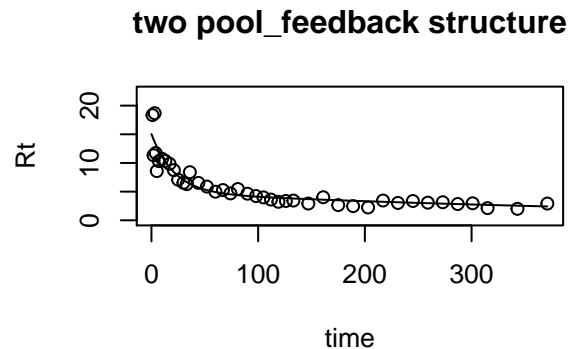
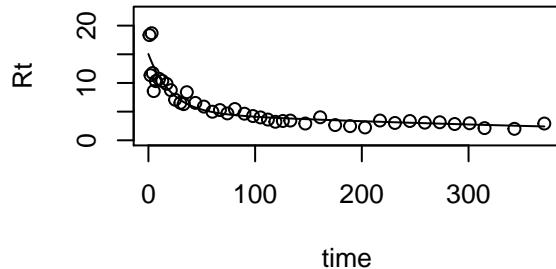
## [2] "k2= 0.0018869248980969"
## [3] "proportion of C0 in pool 1= 0.0764698976654727"
## [1] "AIC = 7.39686050065059"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0477348797858957"
## [2] "k2= 0.00188687970328482"
## [3] "a21= 0.152318946604913"
## [4] "Proportion of C0 in pool 1= 0.0908888532855347"
## [1] "AIC = 9.3968605004217"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00188688947892572"
## [2] "k2= 0.0477355630383085"
## [3] "a21= 0.999061107719894"
## [4] "a12= 9.34040410738302e-07"
## [5] "Proportion of C0 in pool 1= 0.8870529691711"

```

two pool_parallel structure



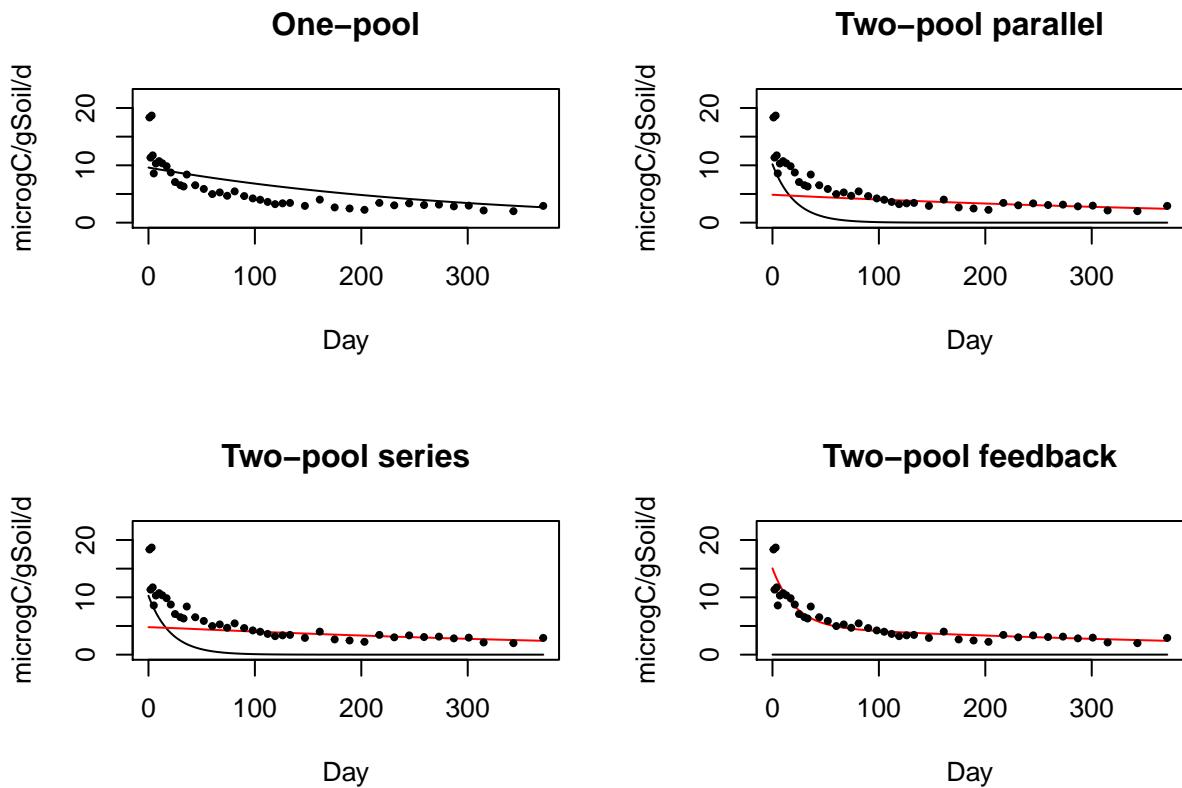
two pool_Series structure



```

## [1] "AIC = 11.3968609887936"

```



```

## 
## 
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        ----  -----  -----  -----  -----  -----  -----
## One-pool       0.0034
## Two-pool parallel  0.0477  0.0019  0.0765
## Two-pool series   0.0477  0.0019  0.0909  0.1523
## Two-pool feedback  0.0019  0.0477  0.8871  0.9991  0.0909  84.44  2.011
## 
## 
## Model          AIC      BIC    AICn     AICc      wi  MeanTrT    q05
## -----        ----  -----  -----  -----  -----  -----  -----
## One-pool       6.005   9.921  744.9   6.016   0.6025  2790.0
## Two-pool parallel  7.397  19.145  265.1   7.462   0.2923  185.4   26.33
## Two-pool series   9.397  25.062  267.1   9.506   0.1052  101.7   18.56
## Two-pool feedback 11.397 30.978  269.1  11.561   0.0377  550.9  388.70

```

Variable Site44;

CO₂ production rate

```
Crow_V45=modelFitTS_Markdown(db = db[[9]], ts.col = 45, ic.col = 44, unitConverter = 1e3 )
```

```

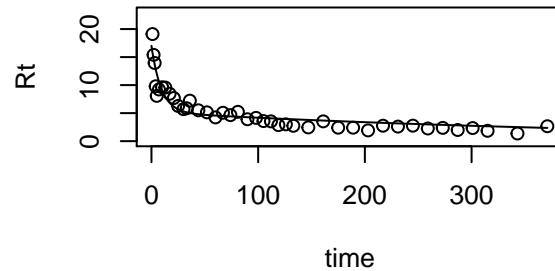
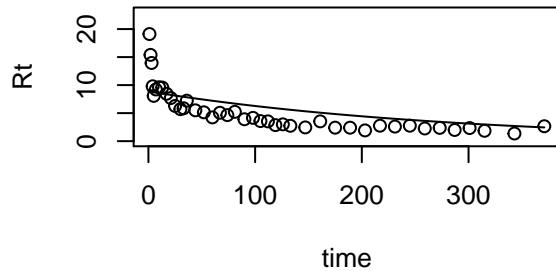
## [1] "Crow2019a; variable: Site44"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00346551228747494"
## [1] "AIC = 6.01409379513177"
## [1] "Two pool model-parallel structure"
## Warning in nls.lm(par = Pars, fn = Fun, control = Contr, ...): lmdif: info = -1. Number of iterations
```

```

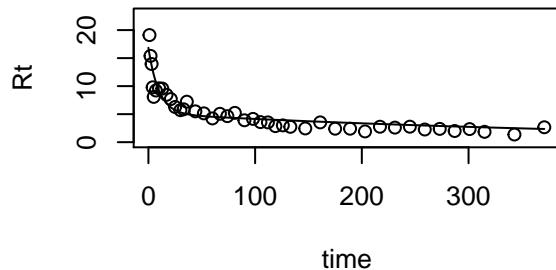
## [1] "k1= 0.107975682417379"
## [2] "k2= 0.00210469106724599"
## [3] "proportion of C0 in pool 1= 0.0428637358100487"
## [1] "AIC = 6.99280990523983"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.103660381199892"
## [2] "k2= 0.00208820017316022"
## [3] "a21= 0.21748392438107"
## [4] "Proportion of C0 in pool 1= 0.0568519619991053"
## [1] "AIC = 8.99267526957245"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.103900202684665"
## [2] "k2= 0.00208914251107324"
## [3] "a21= 0.00843323002199481"
## [4] "a12= 2.24689790523369e-06"
## [5] "Proportion of C0 in pool 1= 0.0445378351419887"

```

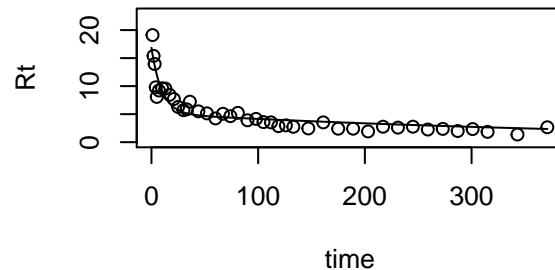
two pool_parallel structure



two pool_Series structure



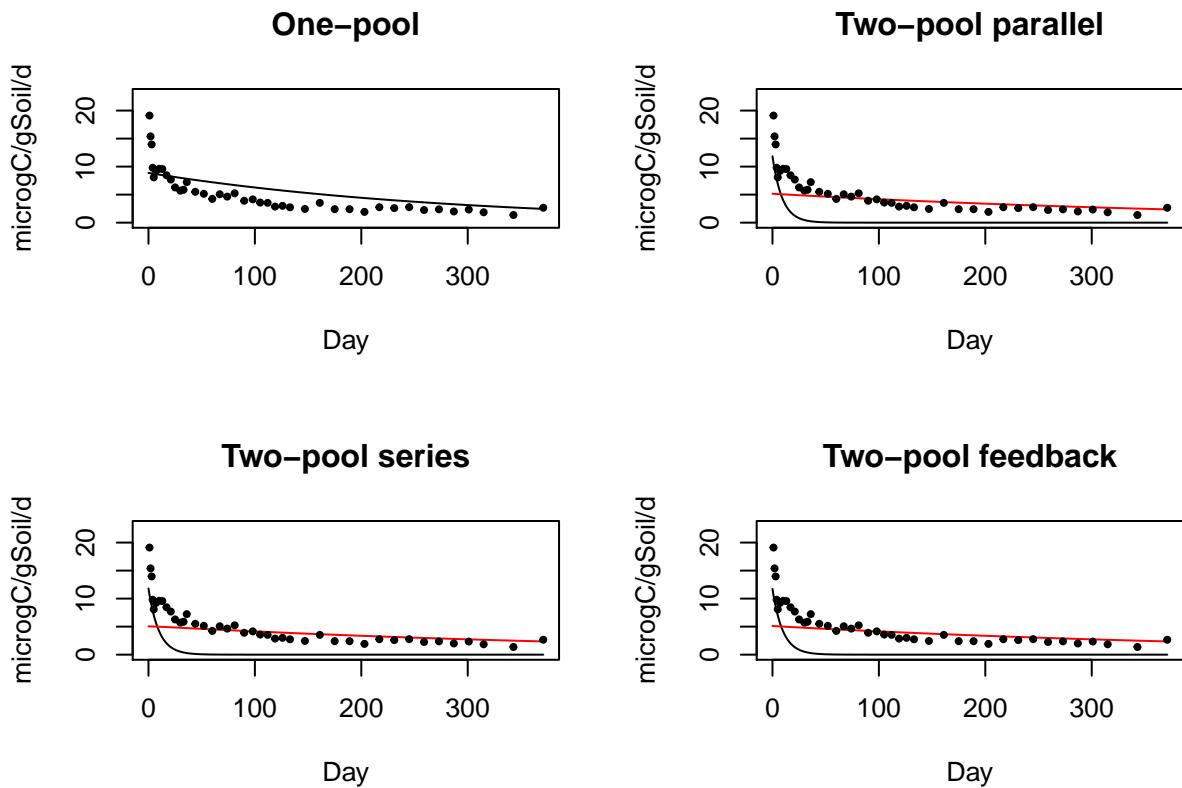
two pool_feedback structure



```

## [1] "AIC = 10.992675288478"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        -----  -----  -----  -----  -----  -----  -----
## One-pool       0.0035
## Two-pool parallel 0.1080  0.0021  0.0429
## Two-pool series   0.1037  0.0021  0.0569  0.2175
## Two-pool feedback  0.1039  0.0021  0.0445  0.0084  0.0569  68.99  1.643
##
##
## Model          AIC     BIC    AICn     AICc     wi    MeanTrT   q05
## -----        -----  -----  -----  -----  -----  -----  -----
## One-pool       6.014   9.93   746.6   6.025   0.5521  2560.00
## Two-pool parallel 6.993  18.74  190.2   7.058   0.3293  150.54  11.379
## Two-pool series   8.993  24.66  192.1   9.102   0.1185  113.80  9.772
## Two-pool feedback 10.993 30.57  194.1  11.157   0.0424  13.66  6.753
```

Variable Site45;

CO₂ production rate

```
Crow_V46=modelFitTS_Markdown(db = db[[9]], ts.col = 46, ic.col = 45, unitConverter = 1e3 )
```

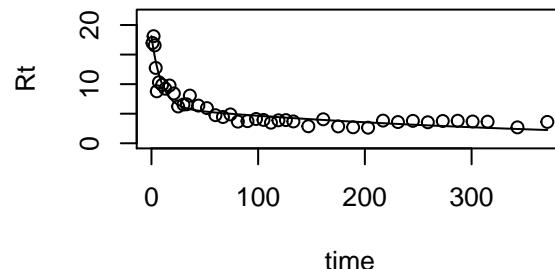
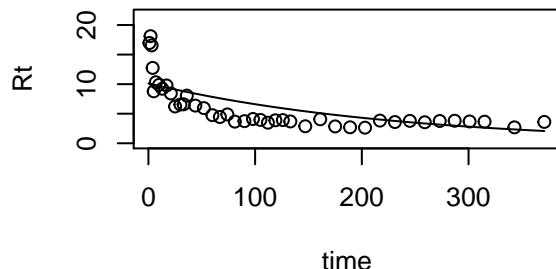
```
## [1] "Crow2019a; variable: Site45"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00427333887508219"
## [1] "AIC = 5.91839414284505"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.107572178538879"
```

```

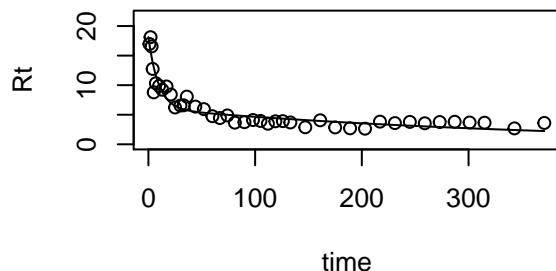
## [2] "k2= 0.00269536443743524"
## [3] "proportion of C0 in pool 1= 0.0472134153231689"
## [1] "AIC = 6.70537844842895"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.107579563092178"
## [2] "k2= 0.00269539669616898"
## [3] "a21= 0.000554805693131322"
## [3] "a21= 0.000554805693131322"
## [4] "Proportion of C0 in pool 1= 0.0472375454691351"
## [1] "AIC = 8.70537843883639"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00269537002737719"
## [2] "k2= 0.107572903232955"
## [3] "a21= 0.98617234443448"
## [4] "a12= 9.31673141135736e-07"
## [5] "Proportion of C0 in pool 1= 0.929235098217804"

```

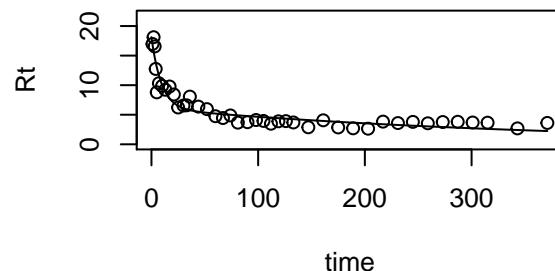
two pool_parallel structure



two pool_Series structure



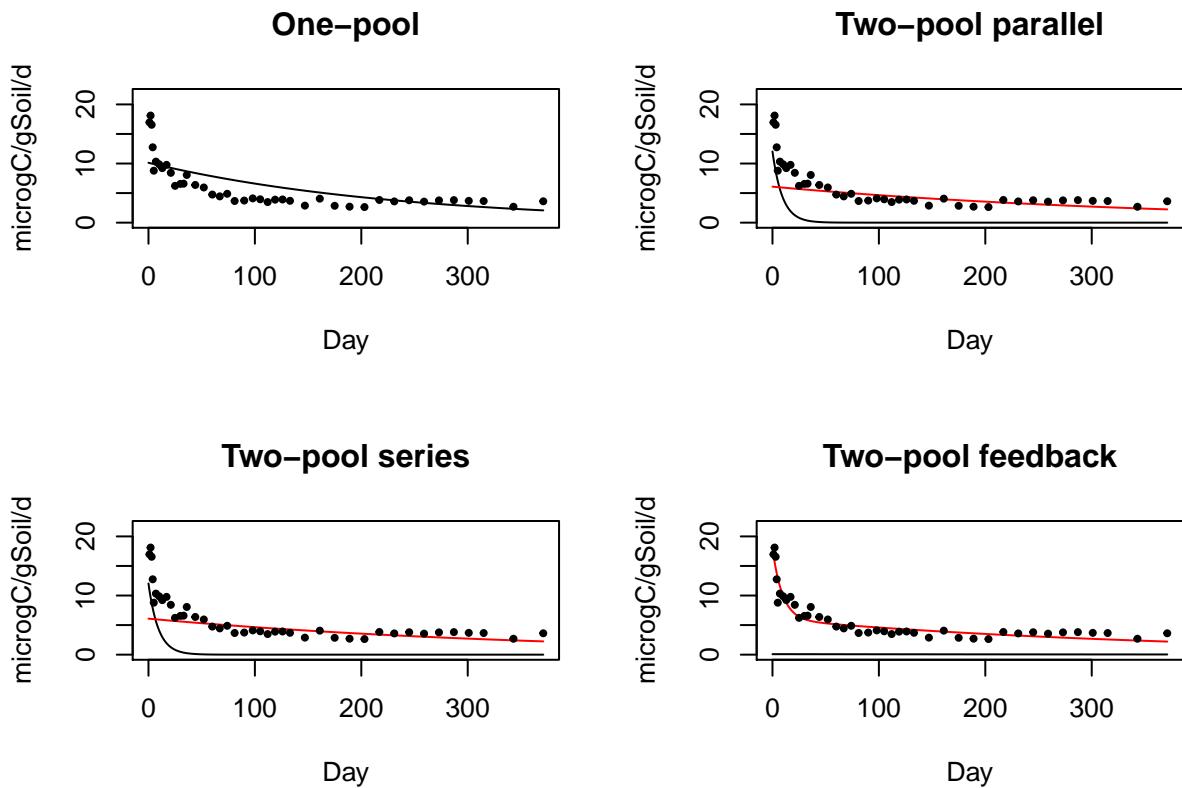
two pool_feedback structure



```

## [1] "AIC = 10.7053786374203"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----
## One-pool        0.0043
## Two-pool parallel 0.1076  0.0027  0.0472
## Two-pool series   0.1076  0.0027  0.0472  0.0006
## Two-pool feedback 0.0027  0.1076  0.9292  0.9862  0.0472  59.76  1.423
##
##
## Model           AIC      BIC    AICn    AICc      wi    MeanTrT    q05
## -----          ----  -----  -----  -----  -----
## One-pool        5.918   9.835  728.9   5.929  0.5283  2370.000
## Two-pool parallel 6.705  18.454 136.8   6.771  0.3469  130.771  12.388
## Two-pool series   8.705  24.370 138.8   8.815  0.1248   9.501  6.448
## Two-pool feedback 10.705 30.286 140.8  10.870  0.0447  380.174 266.448
```

Variable Site46;

CO₂ production rate

```
Crow_V47=modelFitTS_Markdown(db = db[[9]], ts.col = 47, ic.col = 46, unitConverter = 1e3 )
```

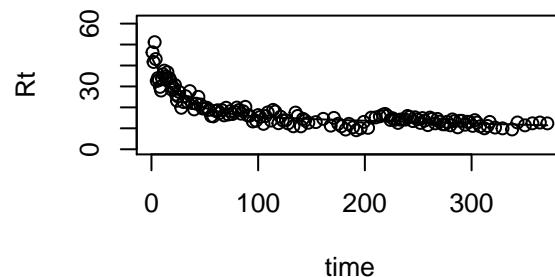
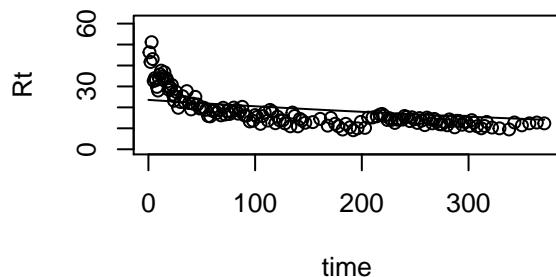
```
## [1] "Crow2019a; variable: Site46"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00138269794661738"
## [1] "AIC = 9.43138369345513"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0390678211215938"
```

```

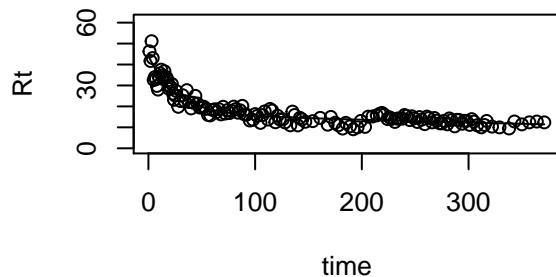
## [2] "k2= 0.00102340613799625"
## [3] "proportion of C0 in pool 1= 0.0412388098511655"
## [1] "AIC = 9.6369741750552"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0390677876936174"
## [2] "k2= 0.00102340601885451"
## [3] "a21= 0.688883771588014"
## [4] "Proportion of C0 in pool 1= 0.140947194349037"
## [1] "AIC = 11.6369741754979"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0390677944726871"
## [2] "k2= 0.00102340676092684"
## [3] "a21= 0.0106707911256298"
## [4] "a12= 5.17771065050021e-05"
## [5] "Proportion of C0 in pool 1= 0.0416970491271371"

```

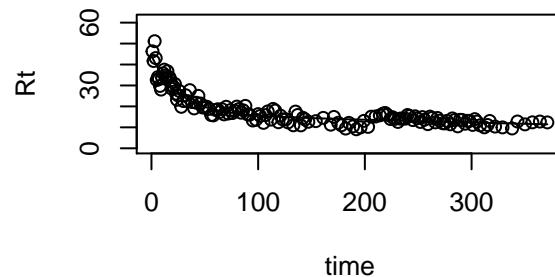
two pool_parallel structure



two pool_Series structure



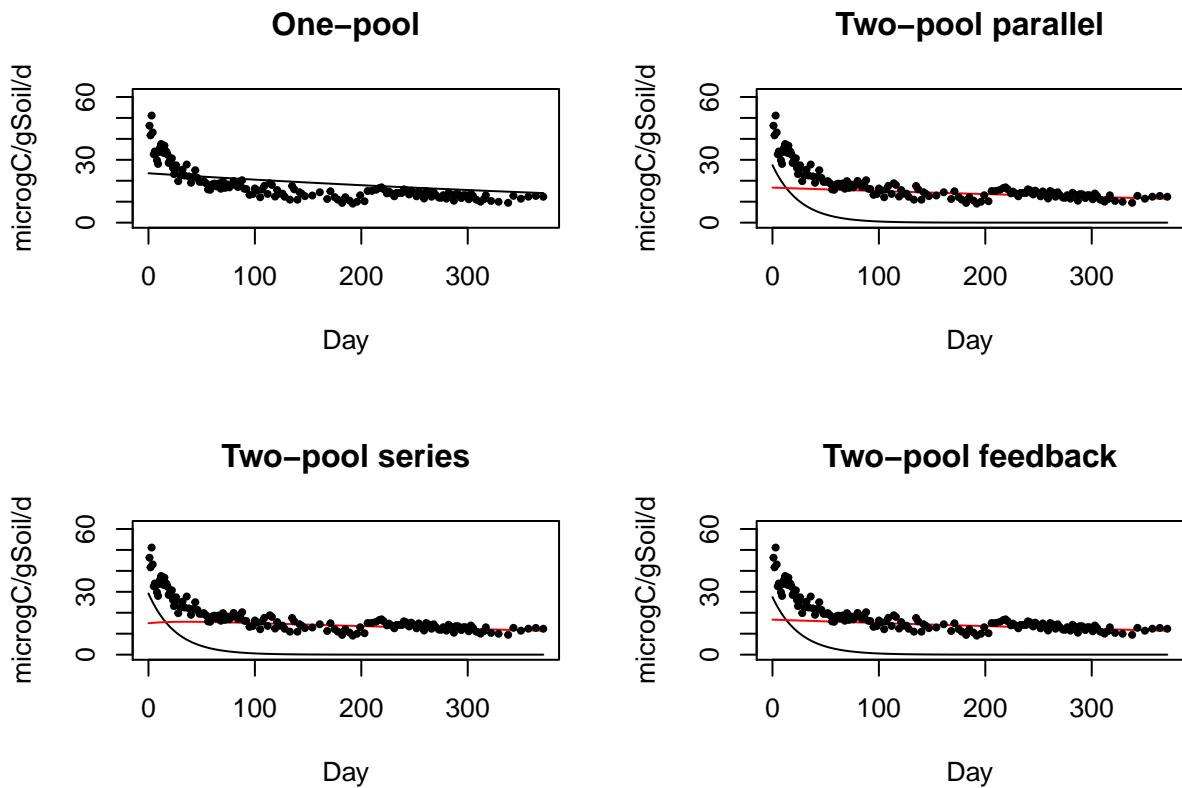
two pool_feedback structure



```

## [1] "AIC = 13.6369741750545"

```



```

## 
## 
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----  -----
## One-pool        -0.0014
## Two-pool parallel 0.0391  0.001   0.0412
## Two-pool series  0.0391  0.001   0.1409  0.6889
## Two-pool feedback 0.0391  0.001   0.0417  0.0107  0.1409  912.1  6.162
## 
## 
## Model           AIC     BIC    AICn    AICc     wi    MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----  -----
## One-pool        9.431   13.35  1380.5  9.442   0.4558  17050.00
## Two-pool parallel 9.637   21.39  680.7   9.702   0.4002   385.76  38.85
## Two-pool series  11.637  27.30  682.7   11.746  0.1440   698.73  339.07
## Two-pool feedback 13.637  33.22  684.7   13.801  0.0515   36.02   18.02

```

Variable Site47;

CO₂ production rate

```
Crow_V48=modelFitTS_Markdown(db = db[[9]], ts.col = 48, ic.col = 47, unitConverter = 1e3 )
```

```

## [1] "Crow2019a; variable: Site47"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00168952064241878"
## [1] "AIC = 9.7925443439438"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0284237936692063"

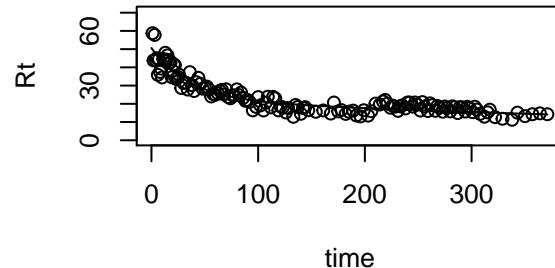
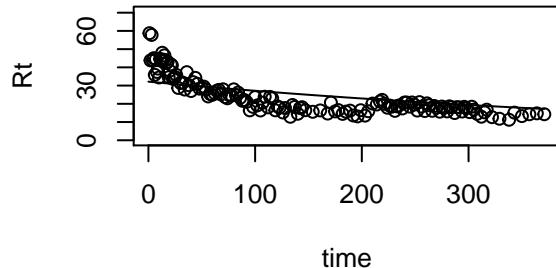
```

```

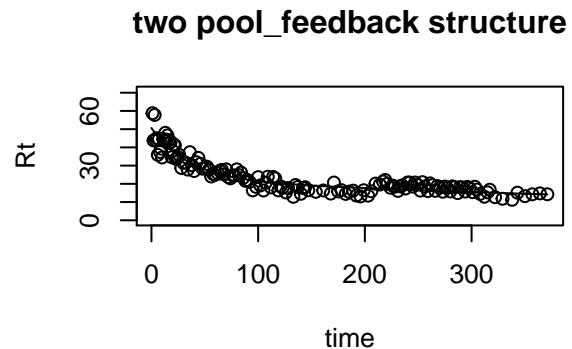
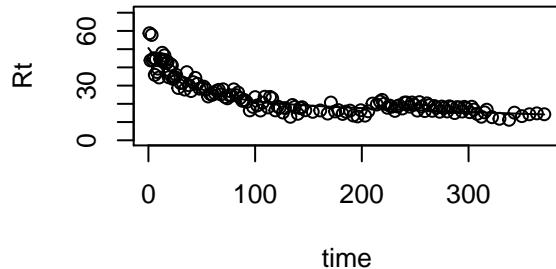
## [2] "k2= 0.00124951870061338"
## [3] "proportion of C0 in pool 1= 0.0519239145099826"
## [1] "AIC = 10.7030232572581"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0284241485370315"
## [2] "k2= 0.00124952054450917"
## [3] "a21= 0.424837968699965"
## [4] "Proportion of C0 in pool 1= 0.093450026461511"
## [1] "AIC = 12.7030232571439"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0284241876313594"
## [2] "k2= 0.00124952135894652"
## [3] "a21= 0.00316853794015715"
## [4] "a12= 8.12790081433645e-06"
## [5] "Proportion of C0 in pool 1= 0.0520964246209251"

```

two pool_parallel structure



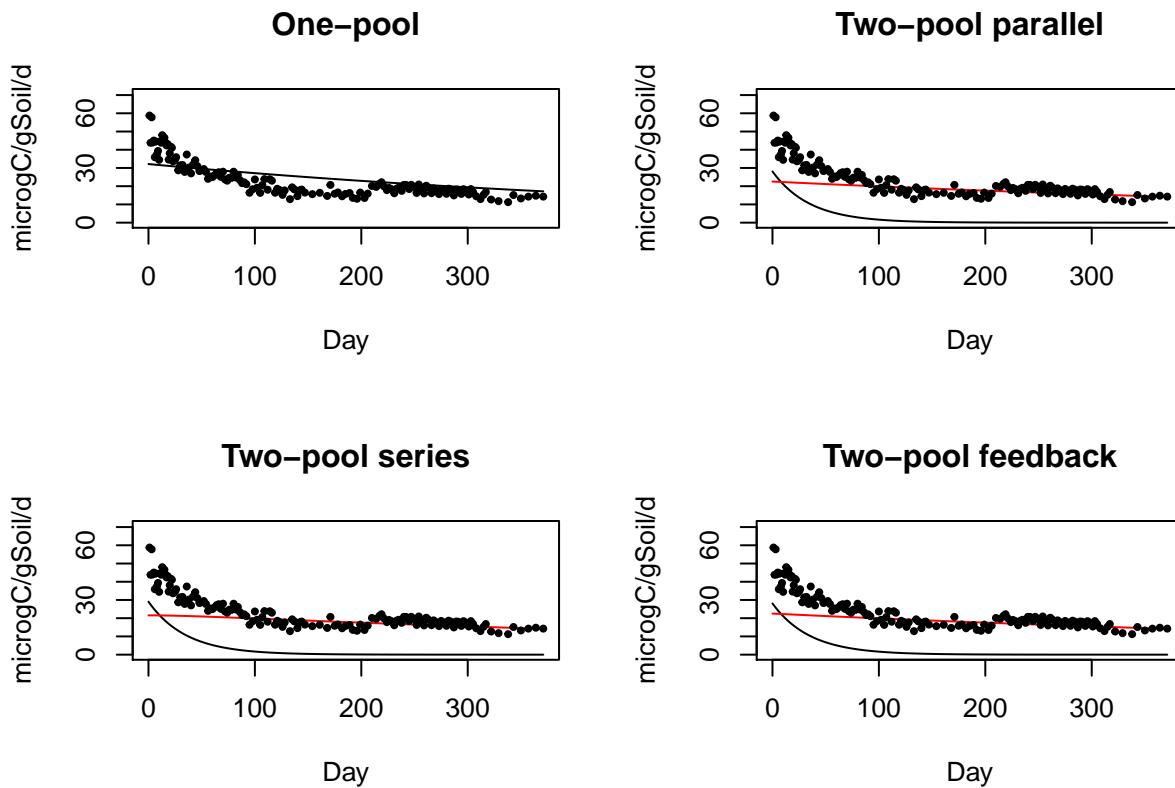
two pool_Series structure



```

## [1] "AIC = 14.7030232569446"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0017
## Two-pool parallel 0.0284  0.0012  0.0519
## Two-pool series  0.0284  0.0012  0.0935  0.4248
## Two-pool feedback 0.0284  0.0012  0.0521  0.0032  0.0935  1554   10.50
##
##
## Model           AIC      BIC     AICn     AICC      wi    MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        9.793   13.71  1447.5   9.803  0.5437  19030.00
## Two-pool parallel 10.703  22.45  878.4   10.768  0.3356  375.87  64.33
## Two-pool series  12.703  28.37  880.4   12.812  0.1208  375.18  64.11
## Two-pool feedback 14.703  34.28  882.4   14.867  0.0432  37.72   24.50
```

Variable Site48;

CO₂ production rate

```
Crow_V49=modelFitTS_Markdown(db = db[[9]], ts.col = 49, ic.col = 48, unitConverter = 1e3 )
```

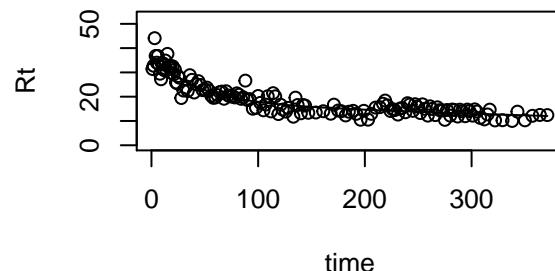
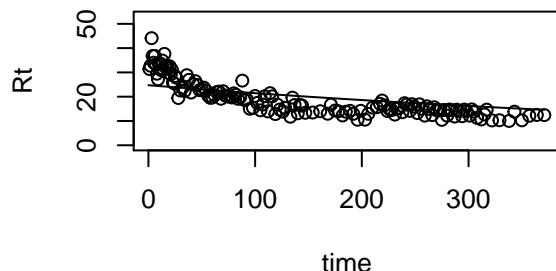
```
## [1] "Crow2019a; variable: Site48"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00141885895869187"
## [1] "AIC = 8.50168829299918"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0241145759424994"
```

```

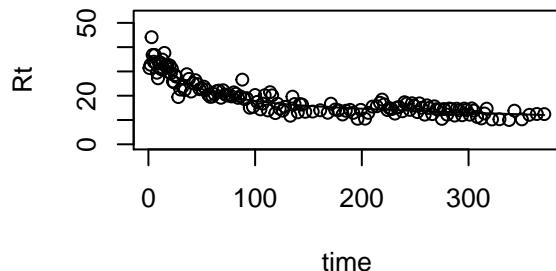
## [2] "k2= 0.00108189276069781"
## [3] "proportion of C0 in pool 1= 0.0454224148539825"
## [1] "AIC = 9.57290359537004"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0241144318540014"
## [2] "k2= 0.00108189110445175"
## [3] "a21= 0.205219312520308"
## [4] "Proportion of C0 in pool 1= 0.0578527355277146"
## [1] "AIC = 11.5729035953233"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0241144171445886"
## [2] "k2= 0.00108189103083525"
## [3] "a21= 0.0148621910170638"
## [4] "a12= 2.03077027943754e-06"
## [5] "Proportion of C0 in pool 1= 0.0461408239171716"

```

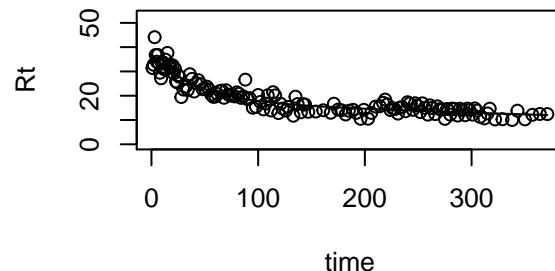
two pool_parallel structure



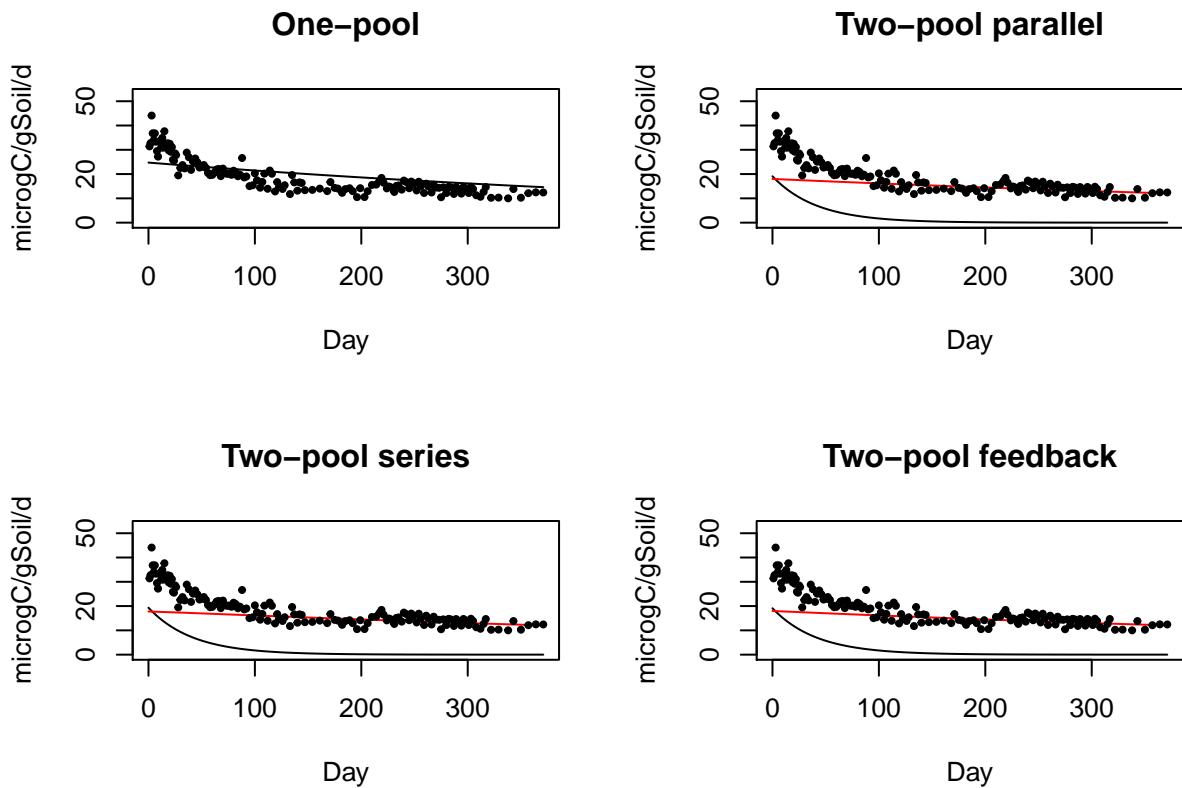
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 13.5729035952411"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----   ----  -----  -----  -----  -----  -----
## One-pool        -0.0014
## Two-pool parallel 0.0241  0.0011  0.0454
## Two-pool series  0.0241  0.0011  0.0579  0.2052
## Two-pool feedback 0.0241  0.0011  0.0461  0.0149  0.0579  883.3  5.968
##
##
## Model           AIC     BIC    AICn    AICC     wi    MeanTrT   q05
## -----          ----  ----  -----  -----  -----  -----  -----
## One-pool        8.502   12.42  1208.1  8.512   0.5635  17430.00
## Two-pool parallel 9.573   21.32  668.8   9.638   0.3210  469.90   89.48
## Two-pool series  11.573  27.24  670.8   11.682   0.1155  231.15   40.68
## Two-pool feedback 13.573  33.15  672.8   13.737   0.0413  55.21   29.36
```

Variable Site49;

CO2 production rate

```
Crow_V50=modelFitTS_Markdown(db = db[[9]], ts.col = 50, ic.col = 49, unitConverter = 1e3 )
```

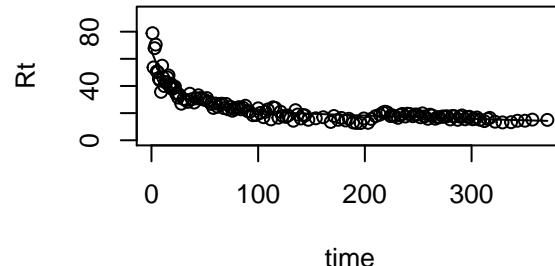
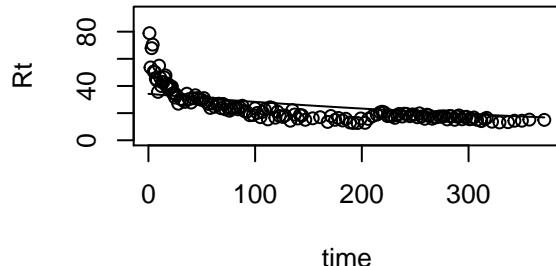
```
## [1] "Crow2019a; variable: Site49"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00190915217627996"
## [1] "AIC = 10.677931123038"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.051432575399109"
```

```

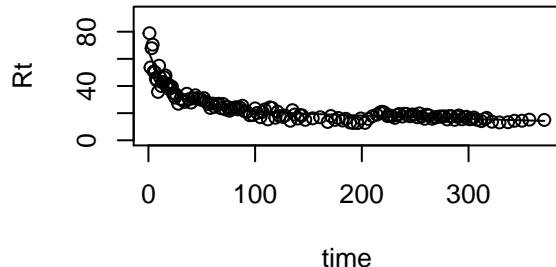
## [2] "k2= 0.00141057990900574"
## [3] "proportion of C0 in pool 1= 0.0453162467664809"
## [1] "AIC = 11.1072550068447"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0514338690709657"
## [2] "k2= 0.00141058466994198"
## [3] "a21= 0.692364198826727"
## [4] "Proportion of C0 in pool 1= 0.15728447625295"
## [1] "AIC = 13.107255006537"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0514321981017084"
## [2] "k2= 0.00141225942943647"
## [3] "a21= 0.00115375631891101"
## [4] "a12= 0.999998026382363"
## [5] "Proportion of C0 in pool 1= 0.0715828051983818"

```

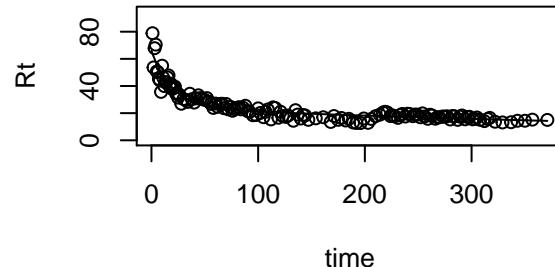
two pool_parallel structure



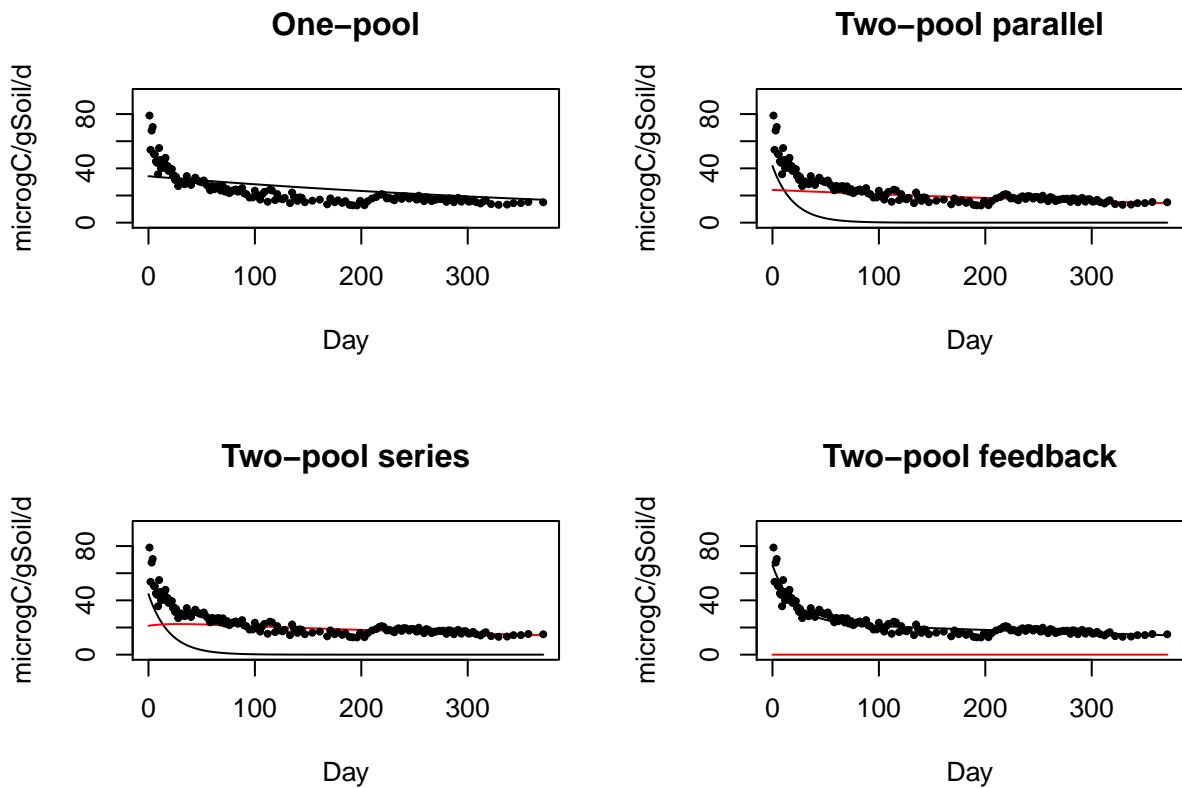
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 15.1072542355906"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0019
## Two-pool parallel 0.0514  0.0014  0.0453
## Two-pool series  0.0514  0.0014  0.1573  0.6924
## Two-pool feedback 0.0514  0.0014  0.0716  0.0012  0.1573  1889  12.85
##
##
## Model          AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----
## One-pool        10.68   14.59  1611.8   10.69  0.4836  17920.00
## Two-pool parallel 11.11   22.86  953.4    11.17  0.3797  271.93   28.27
## Two-pool series  13.11   28.77  955.4    13.22  0.1367  510.28   250.47
## Two-pool feedback 15.11   34.69  957.4    15.27  0.0489  20.28   13.50
```

Variable Site50;

CO₂ production rate

```
Crow_V51=modelFitTS_Markdown(db = db[[9]], ts.col = 51, ic.col = 50, unitConverter = 1e3 )
```

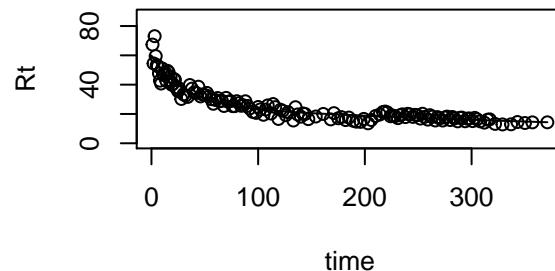
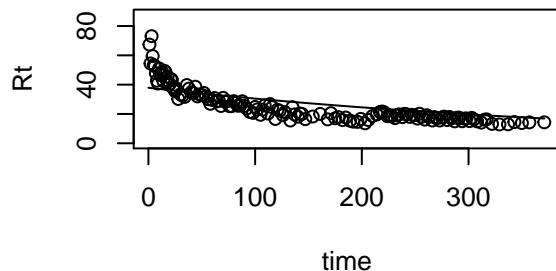
```
## [1] "Crow2019a; variable: Site50"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00217840867031249"
## [1] "AIC = 10.1566744593949"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0328650693343986"
```

```

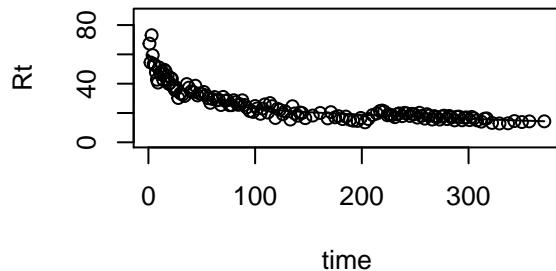
## [2] "k2= 0.00157172016680901"
## [3] "proportion of C0 in pool 1= 0.0597527534929103"
## [1] "AIC = 10.5775467996488"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0328643423571711"
## [2] "k2= 0.0015717147717547"
## [3] "a21= 0.441610927596047"
## [4] "Proportion of C0 in pool 1= 0.11143757571902"
## [1] "AIC = 12.5775467989795"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0328643651552964"
## [2] "k2= 0.00157171486395899"
## [3] "a21= 0.00252696672744118"
## [4] "a12= 4.99144354404457e-07"
## [5] "Proportion of C0 in pool 1= 0.0599128316597828"

```

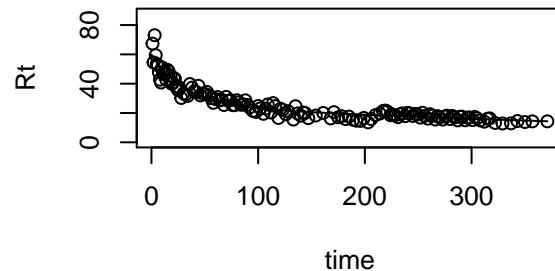
two pool_parallel structure



two pool_Series structure



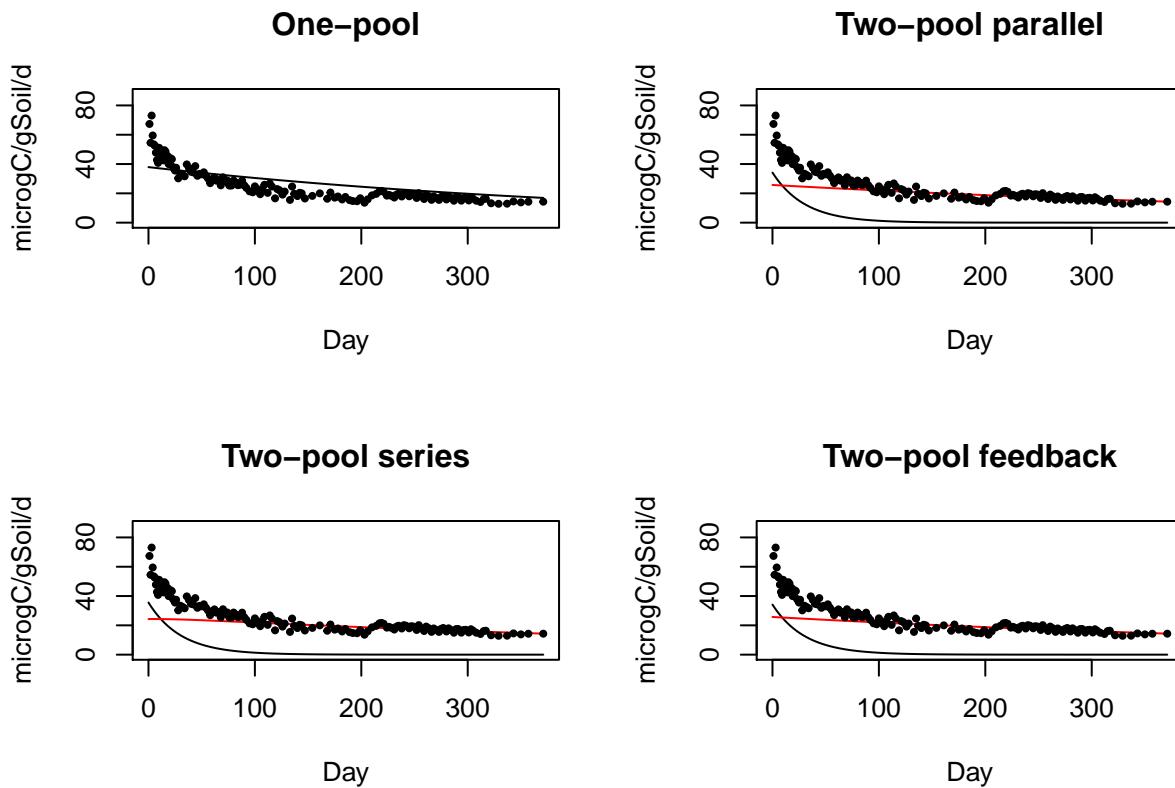
two pool_feedback structure



```

## [1] "AIC = 14.5775467988271"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0022 & 8680 59.047  
## Two-pool parallel 0.0329 0.0016 0.0598 & 1450 9.863  
## Two-pool series 0.0329 0.0016 0.1114 0.4416 & 1450 9.863  
## Two-pool feedback 0.0329 0.0016 0.0599 0.0025 0.1114 & 1450 9.863  
##  
##  
## Model AIC BIC AICn AICc wi MeanTrT q05  
## -----  
## One-pool 10.16 14.07 1515.1 10.17 0.4826 17400.00  
## Two-pool parallel 10.58 22.33 855.1 10.64 0.3805 290.56 51.75  
## Two-pool series 12.58 28.24 857.1 12.69 0.1369 311.40 58.95  
## Two-pool feedback 14.58 34.16 859.1 14.74 0.0490 32.04 21.17
```

Variable Site51;

CO2 production rate

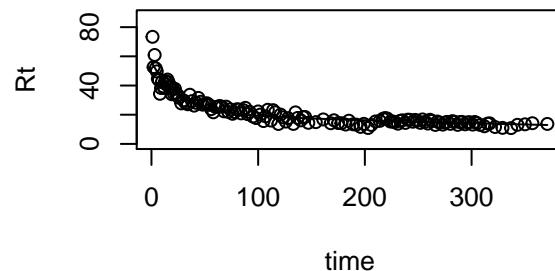
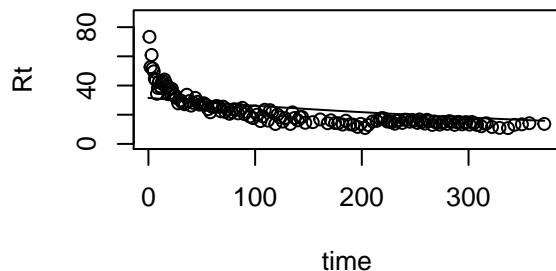
```
Crow_V52=modelFitTS_Markdown(db = db[[9]], ts.col = 52, ic.col = 51, unitConverter = 1e3,  
    inipars=list(oneP=0.5,  
                parallel=c(0.01, 0.001, 0.1),  
                series=c(0.01, 0.0001, 0.01, 0.1),  
                feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))  
  
## [1] "Crow2019a; variable: Site51"  
## [1] "One pool model"  
## [1] "Best fit parameter: -0.00185455457697969"
```

```

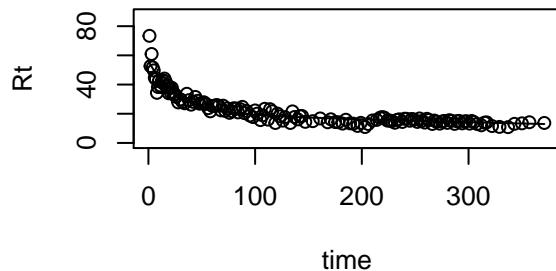
## [1] "AIC = 10.2608657486606"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0376996419302183"
## [2] "k2= 0.00131266542627514"
## [3] "proportion of C0 in pool 1= 0.0546867897843724"
## [1] "AIC = 10.4376051895905"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0376999971923741"
## [2] "k2= 0.00131266708006467"
## [3] "a21= 1.38467497621808e-05"
## [4] "Proportion of C0 in pool 1= 0.0546870537042795"
## [1] "AIC = 12.4376051891226"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0376785748501735"
## [2] "k2= 0.00133541626168218"
## [3] "a21= 0.0164753886638787"
## [4] "a12= 0.997601284363483"
## [5] "Proportion of C0 in pool 1= 0.0890411164407184"

```

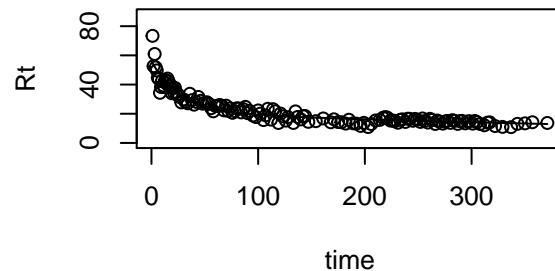
two pool_parallel structure



two pool_Series structure



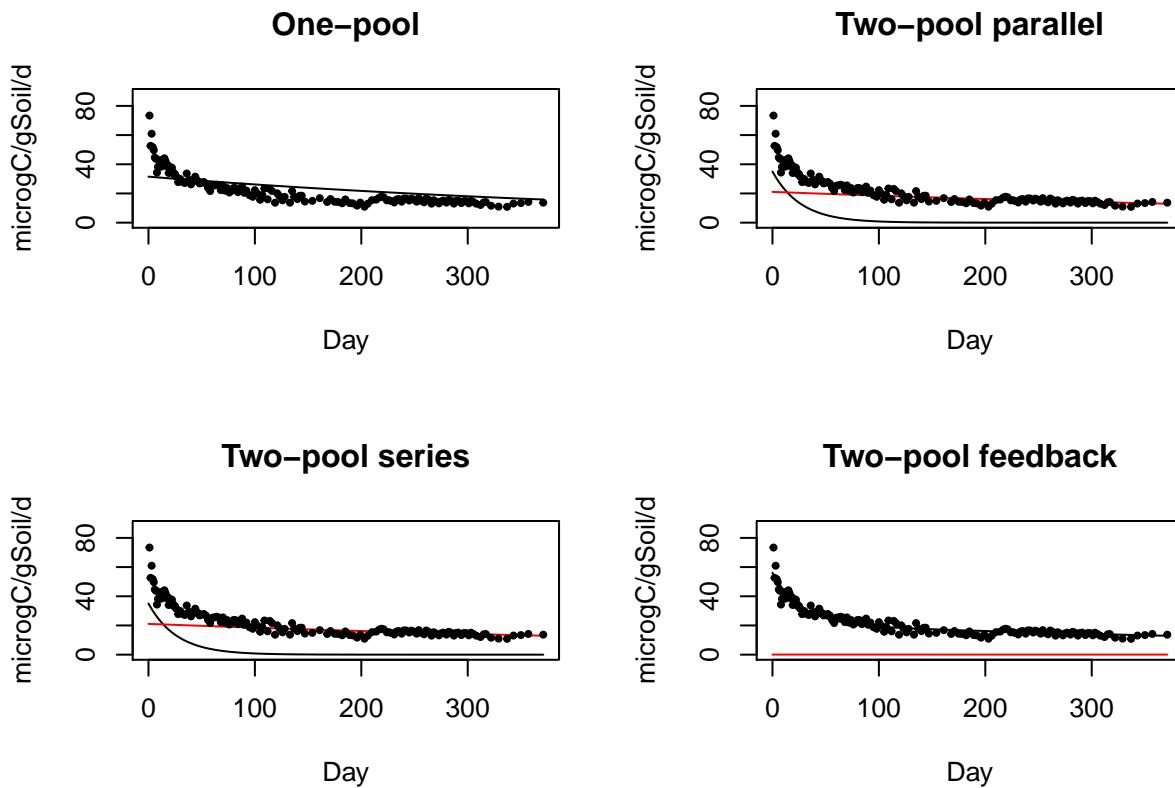
two pool_feedback structure



```

## [1] "AIC = 14.4376048307375"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----  -----
## One-pool        -0.0019
## Two-pool parallel 0.0377  0.0013  0.0547
## Two-pool series  0.0377  0.0013  0.0547  0.0000
## Two-pool feedback 0.0377  0.0013  0.0890  0.0165  0.0547  1352  9.196
##
##
## Model           AIC     BIC    AICn    AICc     wi    MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----  -----
## One-pool        10.26  14.18  1534.4  10.27  0.4522  16990.00
## Two-pool parallel 10.44  22.19  829.2   10.50  0.4028   302.80  39.08
## Two-pool series  12.44  28.10  831.2   12.55  0.1450   26.54  18.39
## Two-pool feedback 14.44  34.02  833.2   14.60  0.0519   39.53  18.84
```

Variable Site52;

CO₂ production rate

```
Crow_V53=modelFitTS_Markdown(db = db[[9]], ts.col = 53, ic.col = 52, unitConverter = 1e3 ,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))

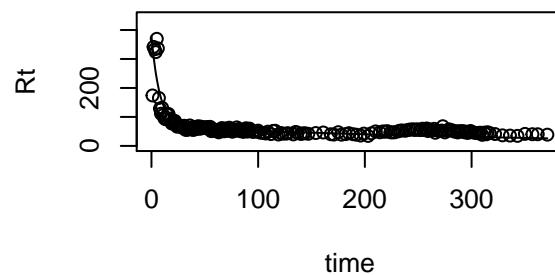
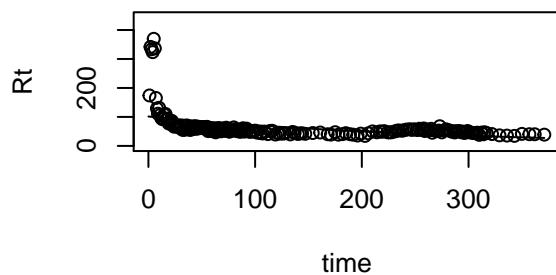
## [1] "Crow2019a; variable: Site52"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00351927139801944"
```

```

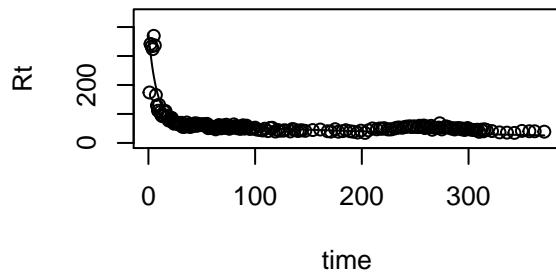
## [1] "AIC = 17.1284698217194"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.127670293343143"
## [2] "k2= 0.00253008350204208"
## [3] "proportion of C0 in pool 1= 0.0848030107993669"
## [1] "AIC = 18.57841989458"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.1276780867775"
## [2] "k2= 0.00253012573920565"
## [3] "a21= 0.000374070259693826"
## [4] "Proportion of C0 in pool 1= 0.0848312440670238"
## [1] "AIC = 20.5784198963463"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.127675235701133"
## [2] "k2= 0.00253053492986649"
## [3] "a21= 0.243476817033883"
## [4] "a12= 0.000675628812025597"
## [5] "Proportion of C0 in pool 1= 0.112839477284501"

```

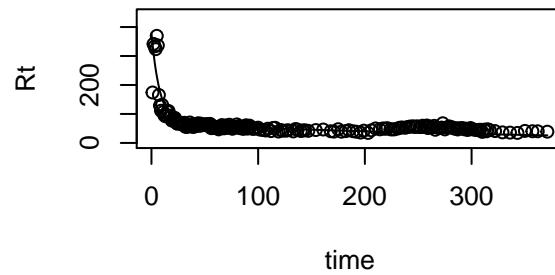
two pool_parallel structure



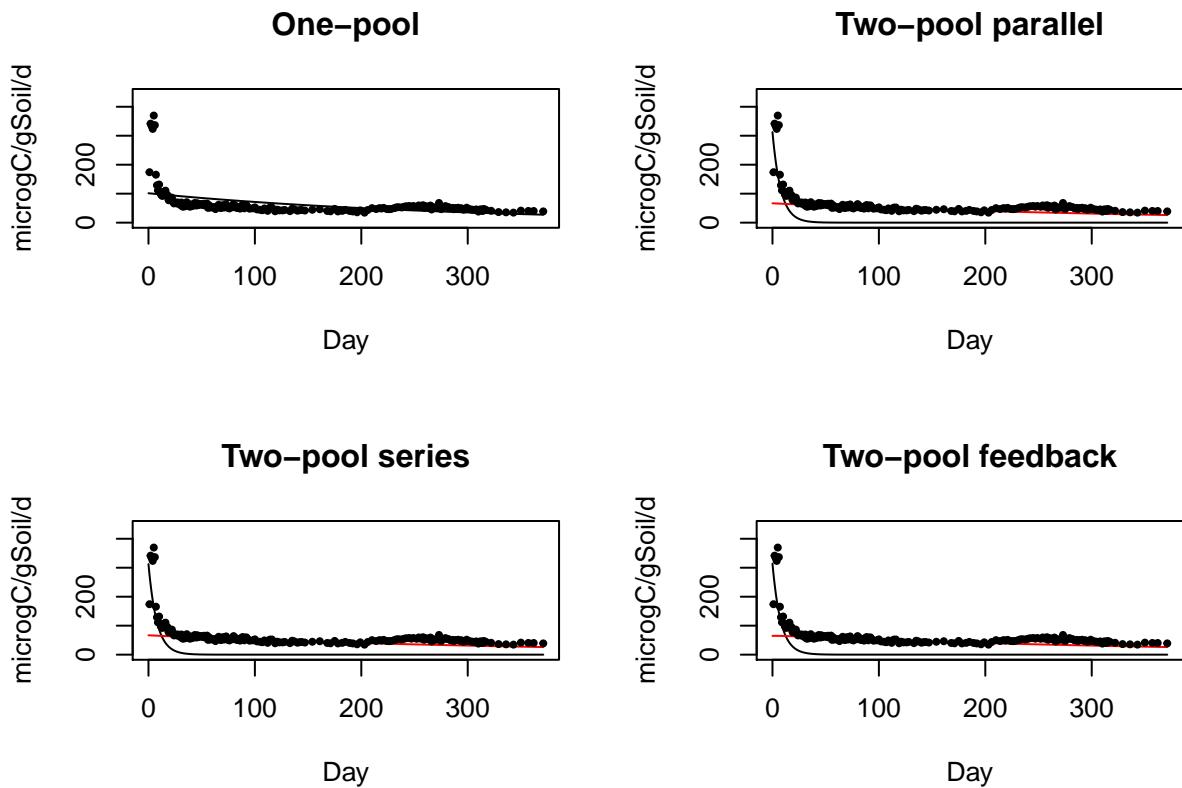
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 22.5784198934571"
```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        -----  -----  -----  -----  -----
## One-pool       0.0035
## Two-pool parallel  0.1277  0.0025  0.0848
## Two-pool series   0.1277  0.0025  0.0848  0.0004
## Two-pool feedback  0.1277  0.0025  0.1128  0.2435  0.0848  103436  538.7
##
##
## Model          AIC     BIC    AICn    AICc      wi    MeanTrT    q05
## -----        -----  -----  -----  -----  -----
## One-pool       17.13   21.04  2808   17.14  0.6094  28840.00
## Two-pool parallel  18.58   30.33  2339   18.64  0.2872   76.09   7.237
## Two-pool series   20.58   36.24  2341   20.69  0.1034    7.98   5.432
## Two-pool feedback  22.58   42.16  2343   22.74  0.0370   104.06  8.410
```

Variable Site53;

CO₂ production rate

```
Crow_V54=modelFitTS_Markdown(db = db[[9]], ts.col = 54, ic.col = 53, unitConverter = 1e3 )
```

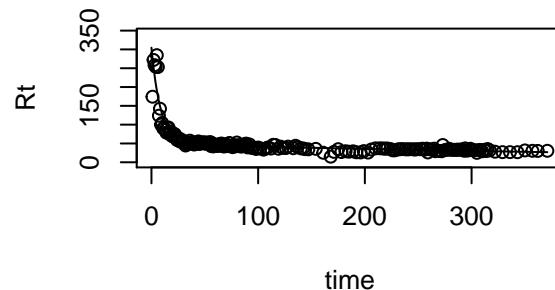
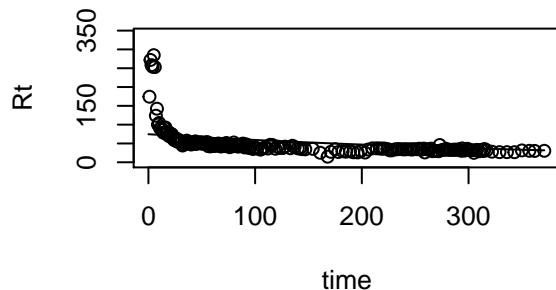
```
## [1] "Crow2019a; variable: Site53"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00230293642583668"
## [1] "AIC = 16.2707270848224"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.116099561140531"
```

```

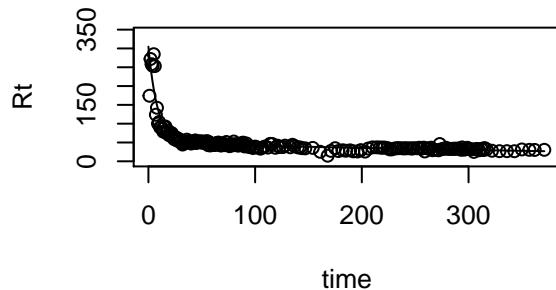
## [2] "k2= 0.00163161396717155"
## [3] "proportion of C0 in pool 1= 0.0679636335417936"
## [1] "AIC = 16.5543476446733"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.116099898110064"
## [2] "k2= 0.00163161509579557"
## [3] "a21= 0.0361903924204933"
## [4] "Proportion of C0 in pool 1= 0.0705531687932045"
## [1] "AIC = 18.5543476446615"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.116100202195536"
## [2] "k2= 0.00163161611017919"
## [3] "a21= 0.00259342439619314"
## [4] "a12= 9.50707479629997e-07"
## [5] "Proportion of C0 in pool 1= 0.0681426602975256"

```

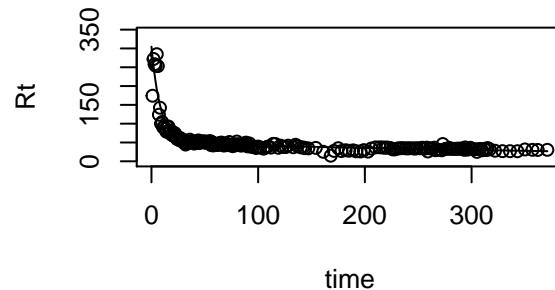
two pool_parallel structure



two pool_Series structure



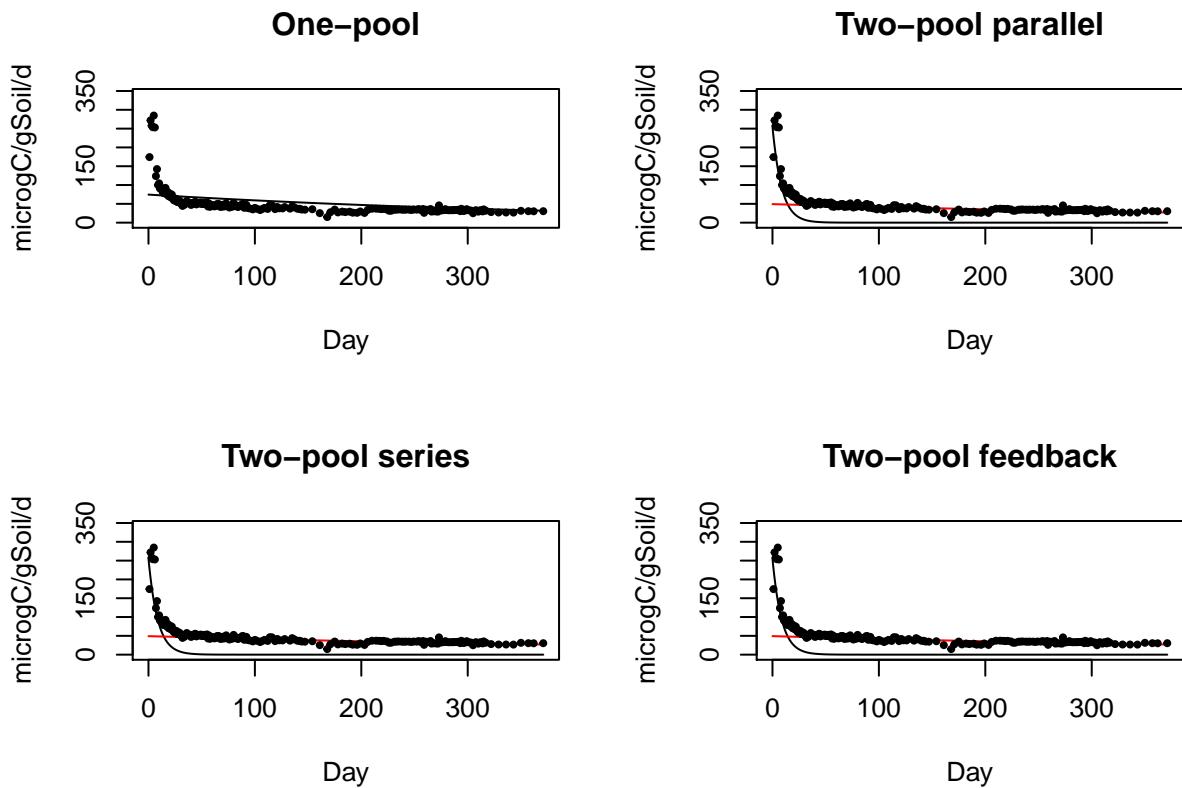
two pool_feedback structure



```

## [1] "AIC = 20.5543476445776"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0023
## Two-pool parallel 0.1161  0.0016  0.0680
## Two-pool series   0.1161  0.0016  0.0706  0.0362
## Two-pool feedback 0.1161  0.0016  0.0681  0.0026  0.0706  37597  195.8
##
##
## Model          AIC      BIC    AICn     AICc      wi    MeanTrT    q05
## -----
## One-pool        16.27   20.19  2649    16.28  0.4655  32380.00
## Two-pool parallel 16.55   28.30  1964    16.62  0.3931  106.26   7.763
## Two-pool series   18.55   34.22  1966    18.66  0.1415   30.79   6.298
## Two-pool feedback 20.55   40.14  1968    20.72  0.0506   10.20   5.993
```

Variable Site54;

CO₂ production rate

```
Crow_V55=modelFitTS_Markdown(db = db[[9]], ts.col = 55, ic.col = 54, unitConverter = 1e3 )
```

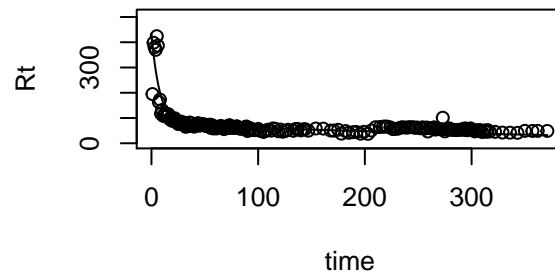
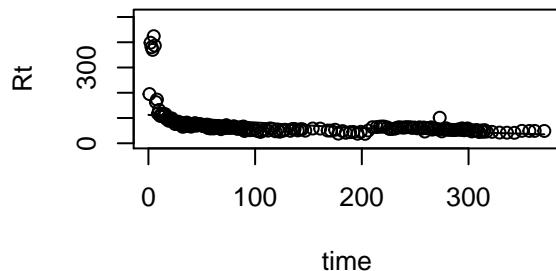
```
## [1] "Crow2019a; variable: Site54"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00311107759924667"
## [1] "AIC = 17.6845783732787"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.129435914087525"
```

```

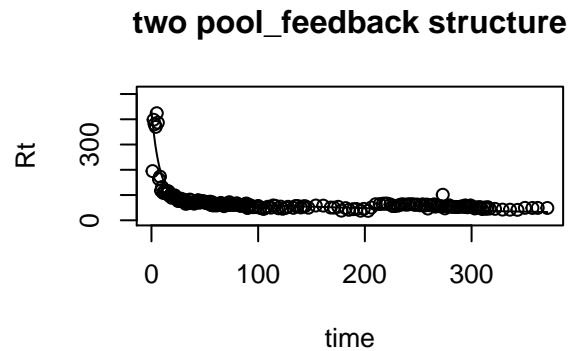
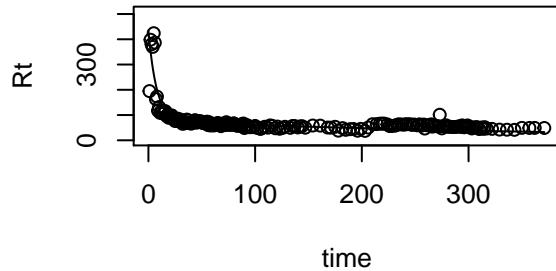
## [2] "k2= 0.00226697862456489"
## [3] "proportion of C0 in pool 1= 0.0766411858931706"
## [1] "AIC = 19.1359905086792"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.129436618107711"
## [2] "k2= 0.00226698163953391"
## [3] "a21= 0.000175364707250325"
## [4] "Proportion of C0 in pool 1= 0.0766544014170797"
## [1] "AIC = 21.1359905093189"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.129430921713268"
## [2] "k2= 0.00226695730746494"
## [3] "a21= 0.00680785642863807"
## [4] "a12= 9.50100969687728e-06"
## [5] "Proportion of C0 in pool 1= 0.0771776614032146"

```

two pool_parallel structure



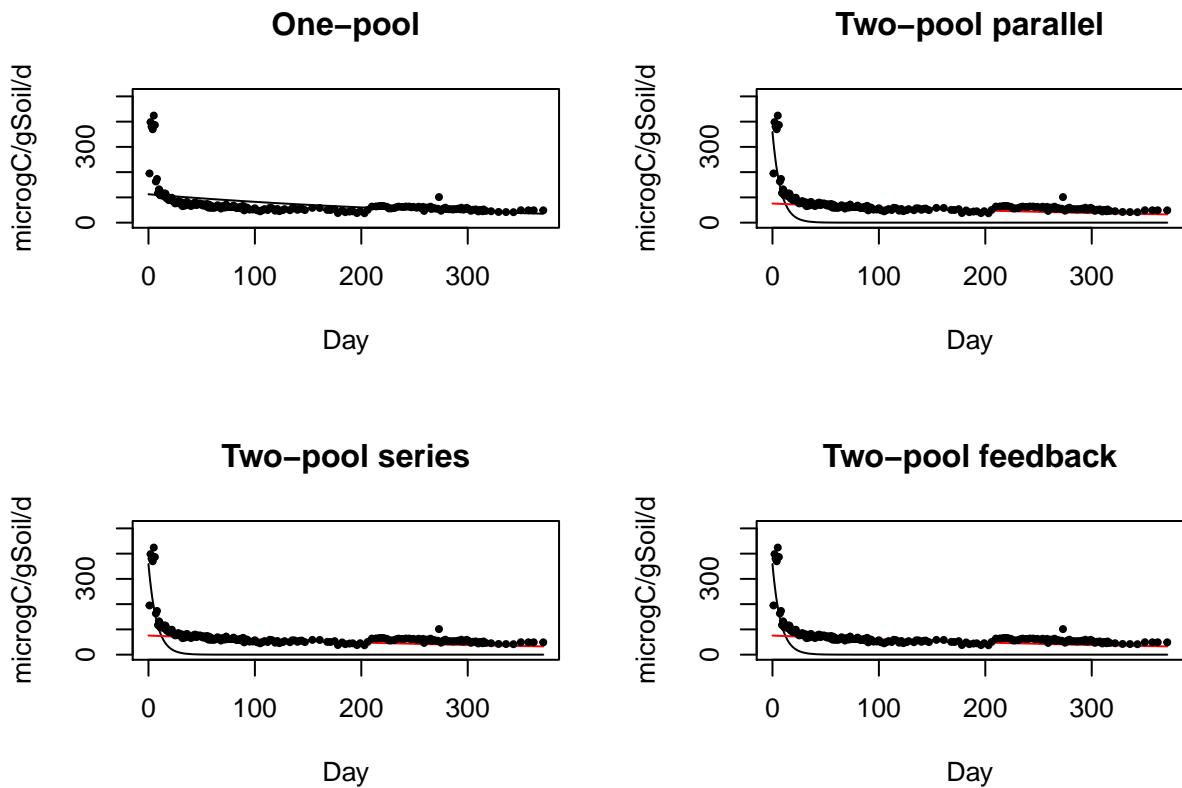
two pool_Series structure



```

## [1] "AIC = 23.1359905087859"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0031
## Two-pool parallel 0.1294  0.0023  0.0766
## Two-pool series   0.1294  0.0023  0.0767  0.0002
## Two-pool feedback 0.1294  0.0023  0.0772  0.0068  0.0767  136693  711.9
##
##
## Model          AIC     BIC    AICn    AICc      wi    MeanTrT   q05
## -----
## One-pool        17.68  21.60  2911   17.70  0.6096  36140.000
## Two-pool parallel 19.14  30.88  2443   19.20  0.2871  83.241   7.120
## Two-pool series   21.14  36.80  2445   21.25  0.1033  7.803   5.356
## Two-pool feedback 23.14  42.72  2447   23.30  0.0370  10.729  5.408
```

Variable Site55;

CO₂ production rate

```
Crow_V56=modelFitTS_Markdown(db = db[[9]], ts.col = 56, ic.col = 55, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))
```

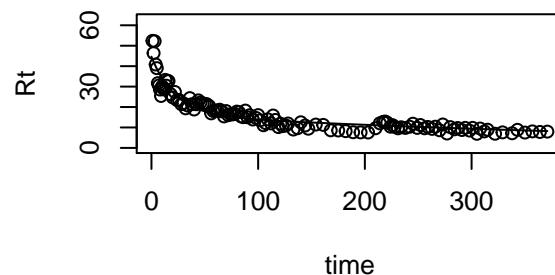
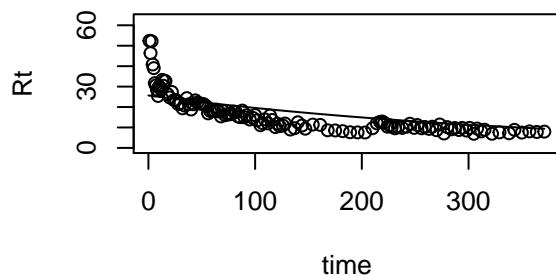
```
## [1] "Crow2019a; variable: Site55"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00271534584059907"
```

```

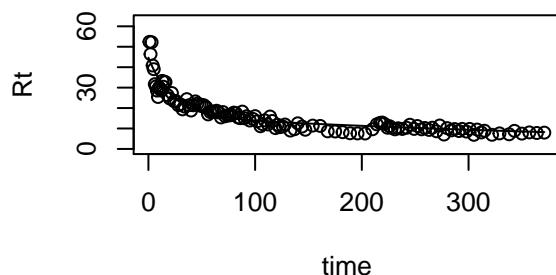
## [1] "AIC = 9.277577526569"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.04529160175102"
## [2] "k2= 0.00185663371023784"
## [3] "proportion of C0 in pool 1= 0.0660573352309849"
## [1] "AIC = 10.0209507470427"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0452804739687953"
## [2] "k2= 0.0018565432461793"
## [3] "a21= 0.000213660522893788"
## [4] "Proportion of C0 in pool 1= 0.066083761790132"
## [1] "AIC = 12.0209507555382"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0452874898598864"
## [2] "k2= 0.00185660191606629"
## [3] "a21= 0.0133271742301493"
## [4] "a12= 1.75641291348394e-05"
## [5] "Proportion of C0 in pool 1= 0.0669937580078694"

```

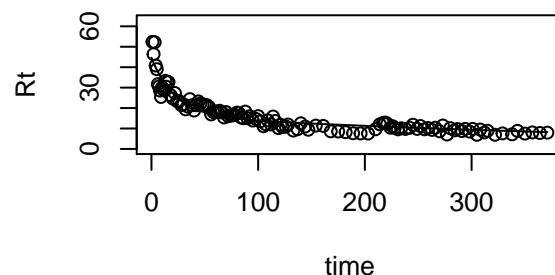
two pool_parallel structure



two pool_Series structure



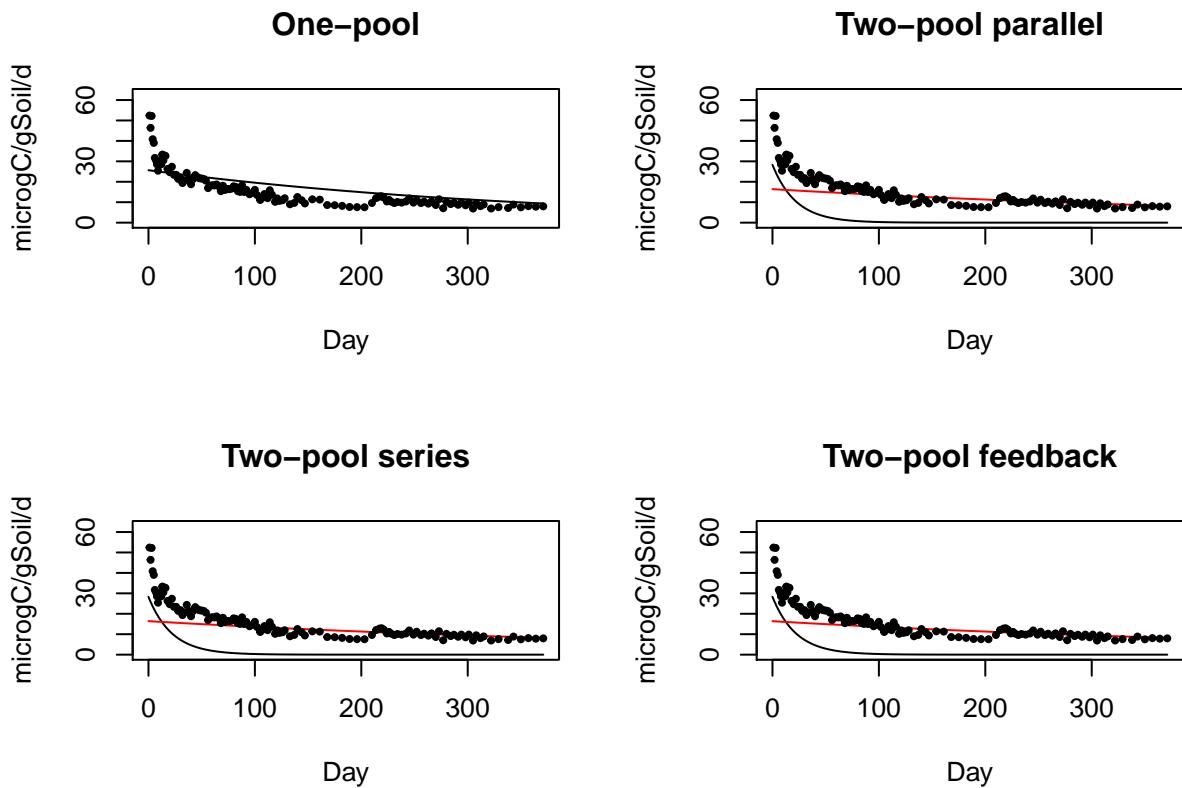
two pool_feedback structure



```

## [1] "AIC = 14.0209507392401"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----   ----  -----  -----  -----  -----  -----
## One-pool        -0.0027
## Two-pool parallel 0.0453  0.0019  0.0661
## Two-pool series 0.0453  0.0019  0.0661  0.0002
## Two-pool feedback 0.0453  0.0019  0.0670  0.0133  0.0661  918.4  7.467
##
##
## Model           AIC     BIC    AICn    AICC     wi    MeanTrT   q05
## -----          ----  ----  -----  -----  -----  -----  -----
## One-pool        9.278  13.19  1352.0  9.288  0.5229  9450.00
## Two-pool parallel 10.021 21.77  751.9  10.086  0.3509  211.60  31.25
## Two-pool series 12.021 27.69  753.9  12.130  0.1263  22.20  15.31
## Two-pool feedback 14.021 33.60  755.9  14.185  0.0452  29.26  15.60
```

Variable Site56;

CO₂ production rate

```
Crow_V57=modelFitTS_Markdown(db = db[[9]], ts.col = 57, ic.col = 56, unitConverter = 1e3 )
```

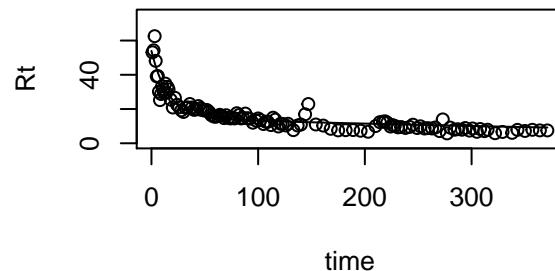
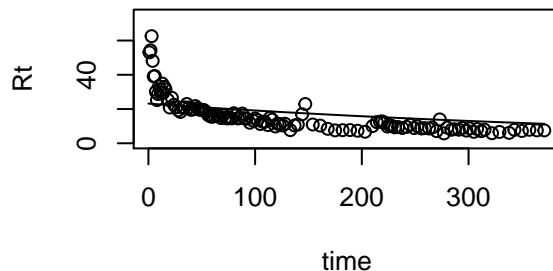
```
## [1] "Crow2019a; variable: Site56"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00191867669009937"
## [1] "AIC = 10.4103336777478"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0643188153277254"
```

```

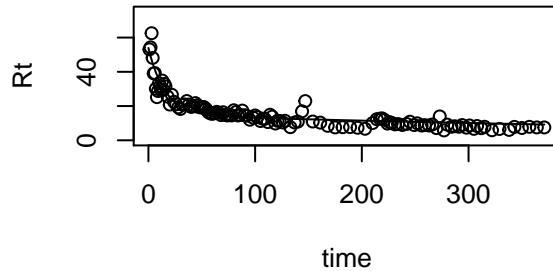
## [2] "k2= 0.00129788010388902"
## [3] "proportion of C0 in pool 1= 0.0502600872844731"
## [1] "AIC = 10.9172209055979"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0643075012180765"
## [2] "k2= 0.00129783751526693"
## [3] "a21= 0.0350370048012089"
## [4] "Proportion of C0 in pool 1= 0.0521301877921773"
## [1] "AIC = 12.9172209004945"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0643158541582544"
## [2] "k2= 0.0012978694178962"
## [3] "a21= 0.00889187669171732"
## [4] "a12= 3.91331409659856e-05"
## [5] "Proportion of C0 in pool 1= 0.0507220511160756"

```

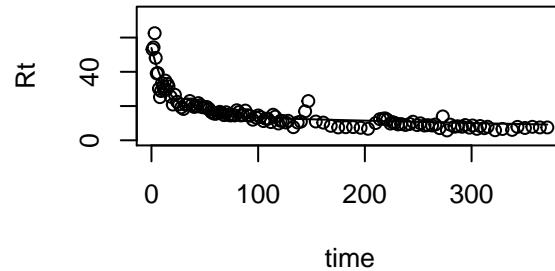
two pool_parallel structure



two pool_Series structure



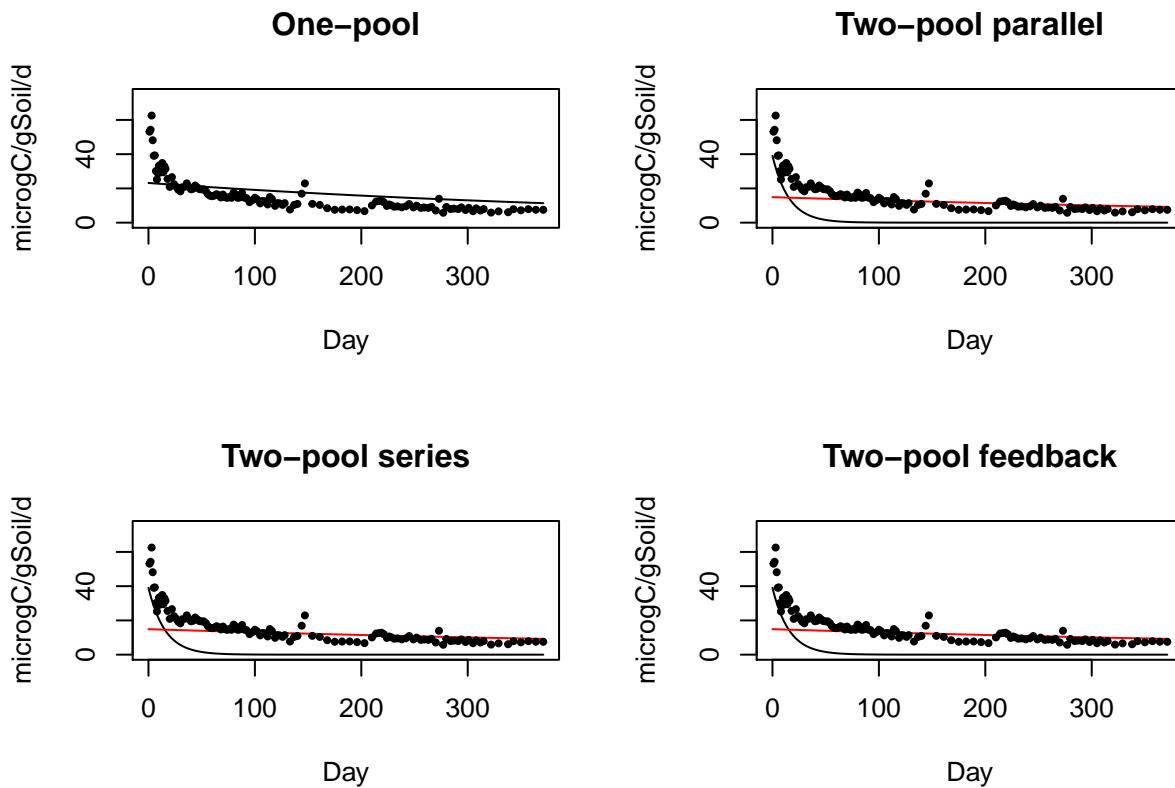
two pool_feedback structure



```

## [1] "AIC = 14.9172209019514"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        -----  -----  -----  -----  -----  -----  -----
## One-pool       -0.0019
## Two-pool parallel  0.0643  0.0013  0.0503
## Two-pool series   0.0643  0.0013  0.0521  0.0350
## Two-pool feedback  0.0643  0.0013  0.0507  0.0089  0.0521  1438  11.69
##
##
## Model          AIC     BIC    AICn    AICc      wi    MeanTrT    q05
## -----        -----  -----  -----  -----  -----  -----  -----
## One-pool        10.41  14.33  1562.1  10.42  0.4933  12080.00
## Two-pool parallel 10.92  22.67  918.1   10.98  0.3726  223.95  17.81
## Two-pool series  12.92  28.58  920.1   13.03  0.1341  42.55  11.35
## Two-pool feedback 14.92  34.50  922.1   15.08  0.0480  22.40  10.92
```

Variable Site57;

CO₂ production rate

```
Crow_V58=modelFitTS_Markdown(db = db[[9]], ts.col = 58, ic.col = 57, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))
```

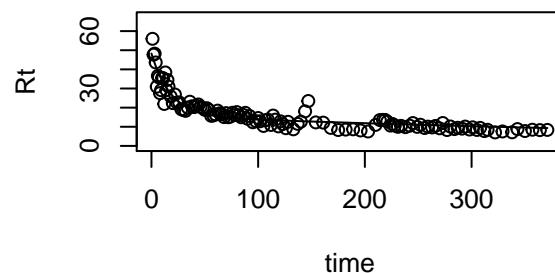
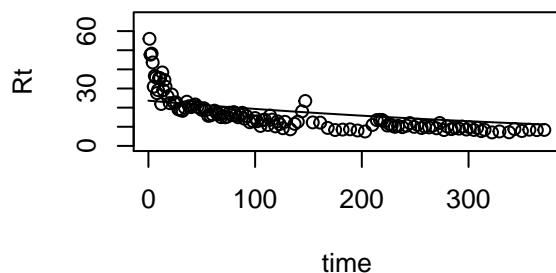
```
## [1] "Crow2019a; variable: Site57"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00201299637023844"
```

```

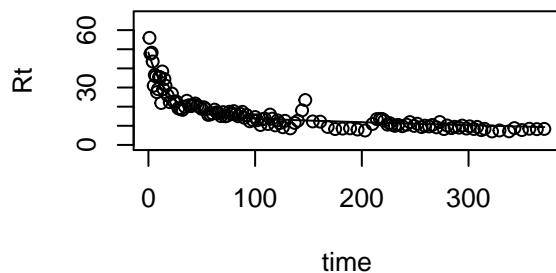
## [1] "AIC = 9.83945484788868"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0552435073611665"
## [2] "k2= 0.00141146680283245"
## [3] "proportion of C0 in pool 1= 0.0501996787533646"
## [1] "AIC = 10.3985243859849"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0552380936171791"
## [2] "k2= 0.00141144279328994"
## [3] "a21= 0.441618557779926"
## [4] "Proportion of C0 in pool 1= 0.0918118955385107"
## [1] "AIC = 12.3985243814112"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0552381881986219"
## [2] "k2= 0.00141195522050974"
## [3] "a21= 0.368631056550951"
## [4] "a12= 0.000954403657262237"
## [5] "Proportion of C0 in pool 1= 0.080774383709016"

```

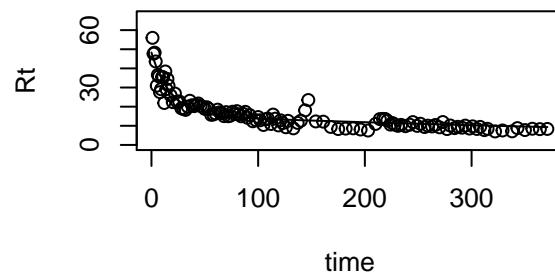
two pool_parallel structure



two pool_Series structure



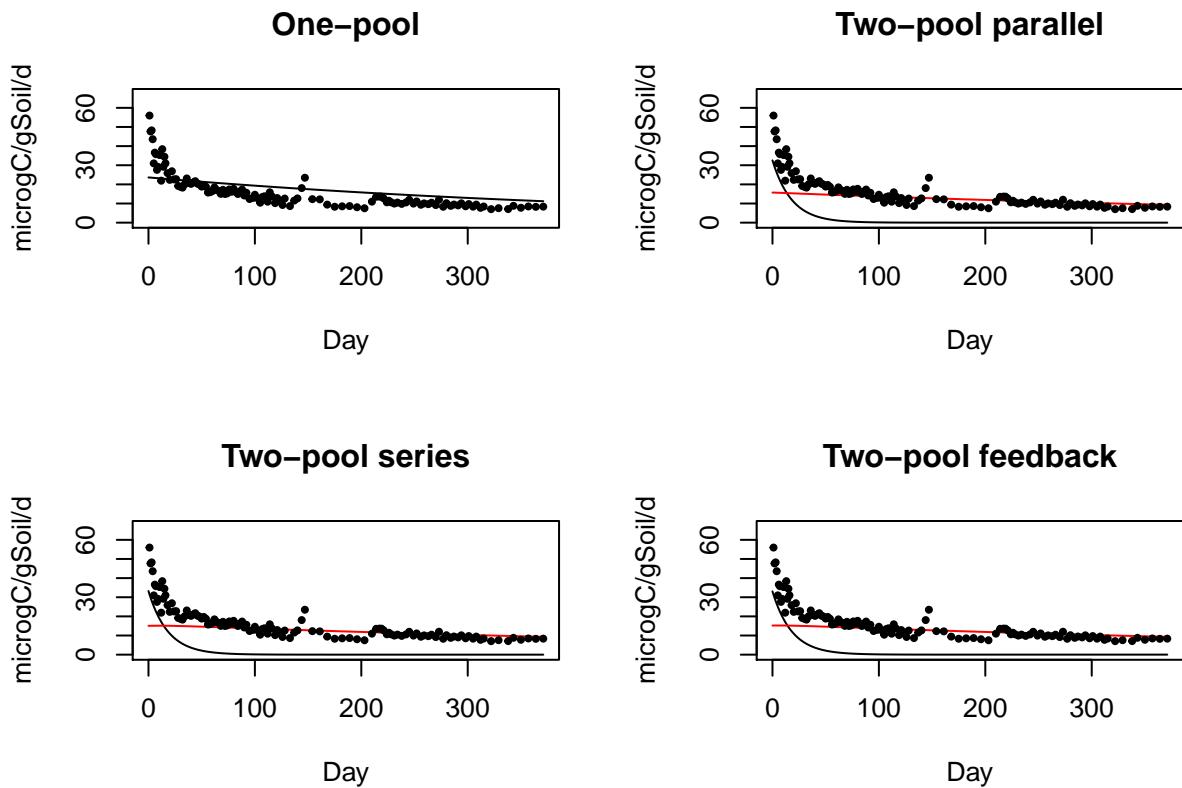
two pool_feedback structure



```

## [1] "AIC = 14.3985243801691"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0020
## Two-pool parallel 0.0552  0.0014  0.0502
## Two-pool series  0.0552  0.0014  0.0918  0.4416
## Two-pool feedback 0.0552  0.0014  0.0808  0.3686  0.0918  1109   9.018
##
##
## Model          AIC      BIC     AICn     AICc      wi    MeanTrT    q05
## -----
## One-pool        9.839   13.76   1456.2   9.85  0.4999  11740.0
## Two-pool parallel 10.399  22.15   821.9   10.46  0.3678  243.1   23.43
## Two-pool series  12.399  28.06   823.9   12.51  0.1324  331.0   37.22
## Two-pool feedback 14.399  33.98   825.9   14.56  0.0474  279.3   27.50
```

Variable Site58;

CO₂ production rate

```
Crow_V59=modelFitTS_Markdown(db = db[[9]], ts.col = 59, ic.col = 58, unitConverter = 1e3 )
```

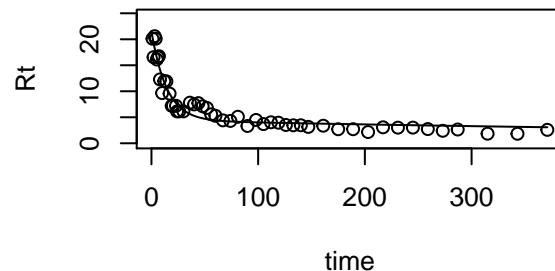
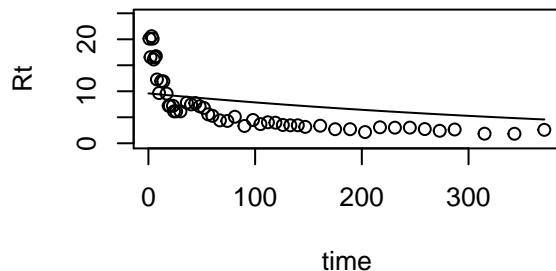
```
## [1] "Crow2019a; variable: Site58"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00199433701395257"
## [1] "AIC = 7.89051699584913"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0699287535618657"
```

```

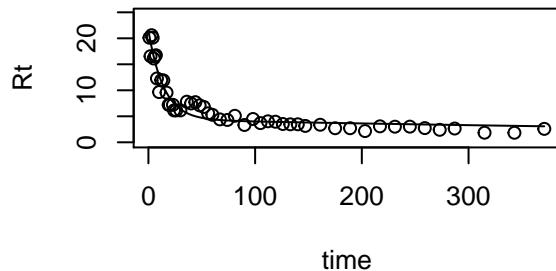
## [2] "k2= 0.000963652151119603"
## [3] "proportion of C0 in pool 1= 0.0509484797655088"
## [1] "AIC = 7.18436364899851"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0699295814741649"
## [2] "k2= 0.00096365681684581"
## [3] "a21= 0.383136047993755"
## [4] "Proportion of C0 in pool 1= 0.0833149020606254"
## [1] "AIC = 9.18436364894026"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0699308770941428"
## [2] "k2= 0.000963664128037063"
## [3] "a21= 0.00353866017010507"
## [4] "a12= 4.57276241078164e-06"
## [5] "Proportion of C0 in pool 1= 0.0511307392278319"

```

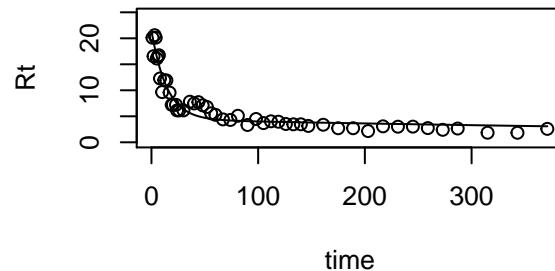
two pool_parallel structure



two pool_Series structure



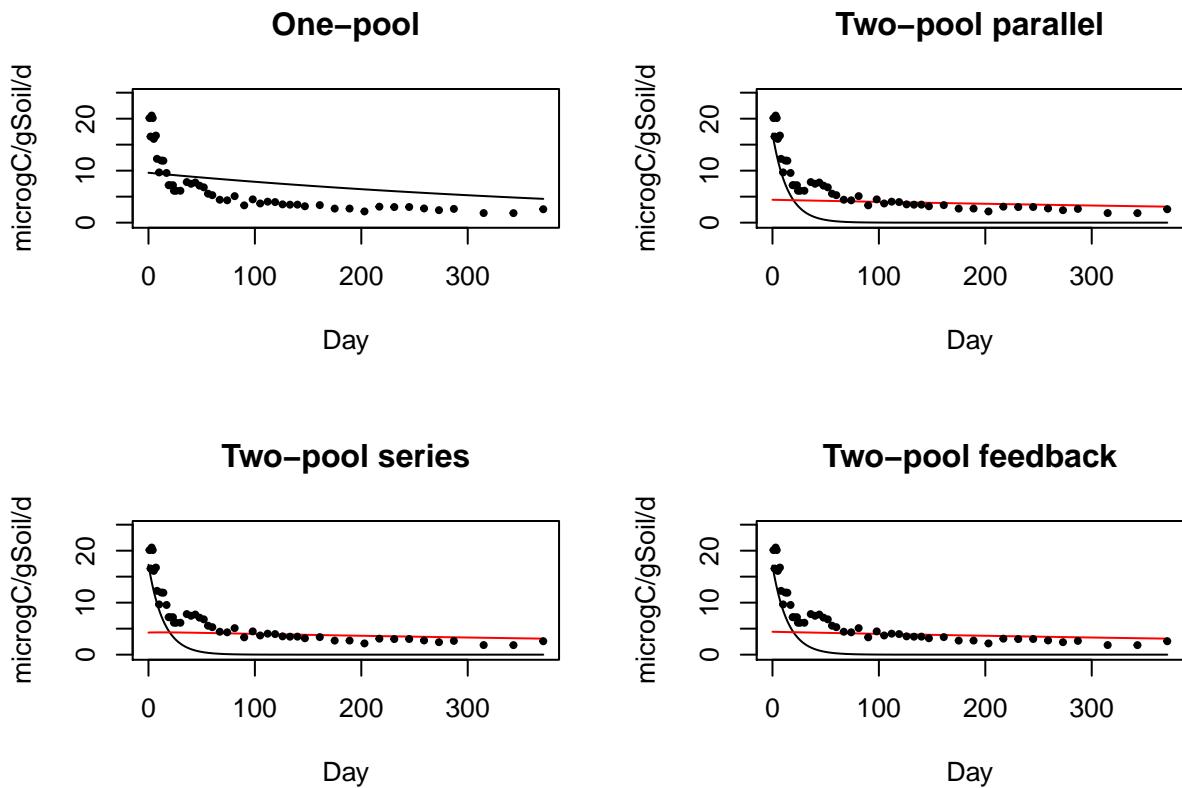
two pool_feedback structure



```

## [1] "AIC = 11.1843636470853"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       -0.0020
## Two-pool parallel  0.0699  0.001   0.0509
## Two-pool series   0.0699  0.001   0.0833  0.3831
## Two-pool feedback  0.0699  0.001   0.0511  0.0035  0.0833  90.4   1.808
##
##
## Model           AIC      BIC    AICn     AICc     wi  MeanTrT   q05
## -----
## One-pool        7.891   11.81  1094.7   7.901  0.3468  4810.00
## Two-pool parallel 7.184   18.93  225.7    7.250  0.4803  223.35  14.023
## Two-pool series  9.184   24.85  227.7    9.294  0.1729  411.89  23.272
## Two-pool feedback 11.184  30.77  229.7   11.349  0.0619  17.97  9.963
```

Variable Site59;

CO₂ production rate

```
Crow_V60=modelFitTS_Markdown(db = db[[9]], ts.col = 60, ic.col = 59, unitConverter = 1e3 )
```

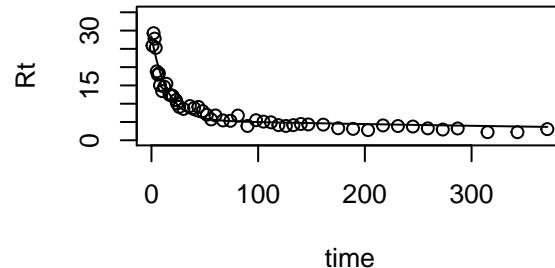
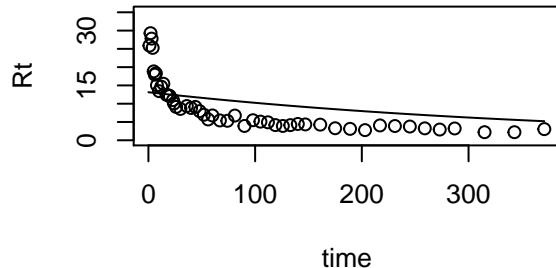
```
## [1] "Crow2019a; variable: Site59"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00249392637564227"
## [1] "AIC = 8.90650463929914"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0684229522969089"
```

```

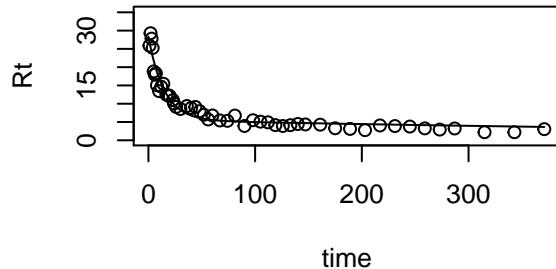
## [2] "k2= 0.00112332444261784"
## [3] "proportion of C0 in pool 1= 0.0632869597139549"
## [1] "AIC = 7.85029719481497"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0684201272748422"
## [2] "k2= 0.00112330359094412"
## [3] "a21= 0.251055716255316"
## [4] "Proportion of C0 in pool 1= 0.0849791225280396"
## [1] "AIC = 9.85029719701341"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0684220572485554"
## [2] "k2= 0.00112331787462471"
## [3] "a21= 0.0120180208569901"
## [4] "a12= 2.16433495880963e-06"
## [5] "Proportion of C0 in pool 1= 0.0640703370723594"

```

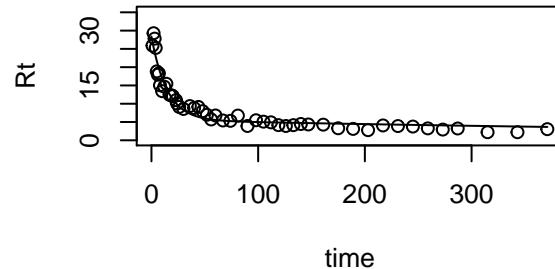
two pool_parallel structure



two pool_Series structure



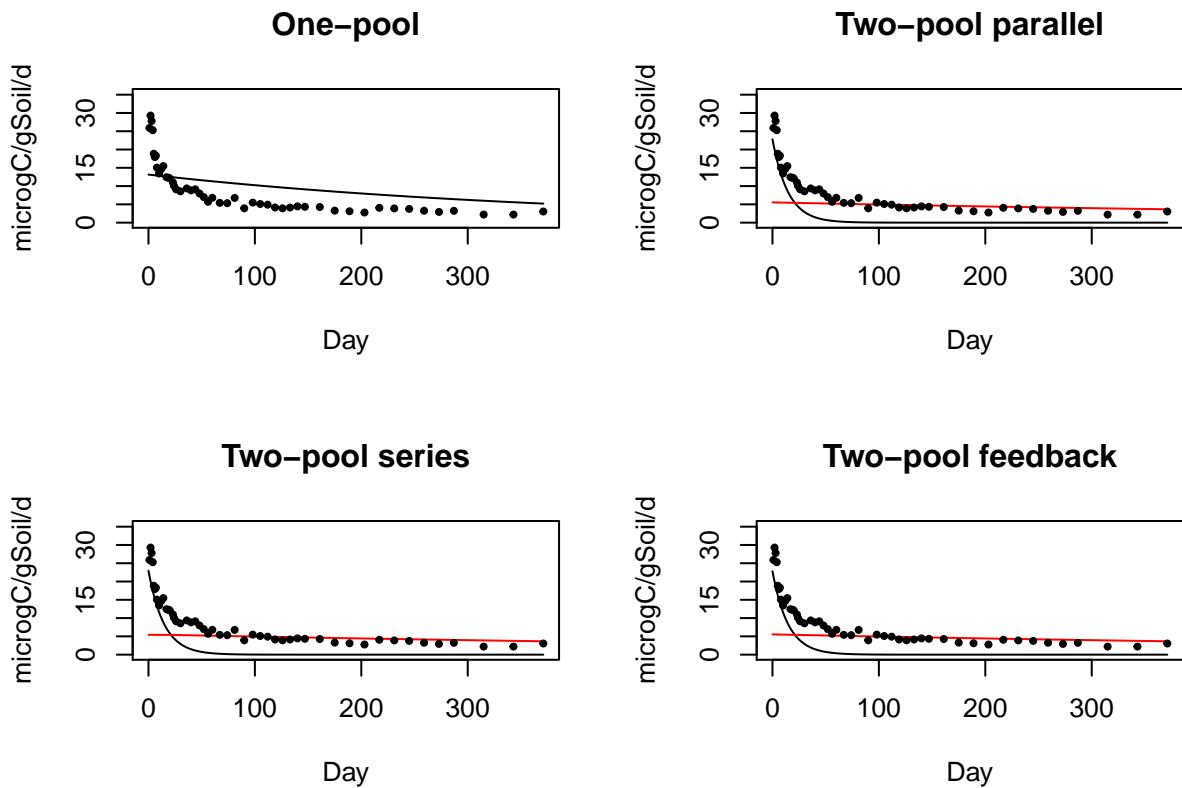
two pool_feedback structure



```

## [1] "AIC = 11.8502971939823"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0025
## Two-pool parallel 0.0684  0.0011  0.0633
## Two-pool series  0.0684  0.0011  0.0850  0.2511
## Two-pool feedback 0.0684  0.0011  0.0641  0.0120  0.085  126.1  2.522
##
##
## Model          AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----
## One-pool        8.906   12.82   1283.2   8.917   0.3083  5270.00
## Two-pool parallel 7.850   19.60   349.2    7.916   0.5087  185.79  14.05
## Two-pool series  9.850   25.52   351.2    9.960   0.1831  238.11  16.00
## Two-pool feedback 11.850  31.43   353.2   12.015   0.0655  25.31  10.31
```

Variable Site60;

CO₂ production rate

```
Crow_V61=modelFitTS_Markdown(db = db[[9]], ts.col = 61, ic.col = 59, unitConverter = 1e3 )
```

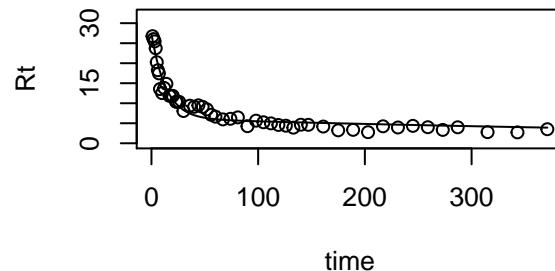
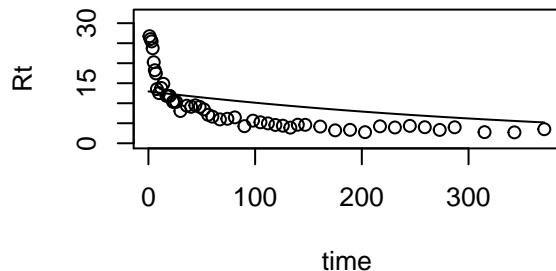
```
## [1] "Crow2019a; variable: Site60"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00245824063991051"
## [1] "AIC = 8.54348433093213"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.073415882254979"
```

```

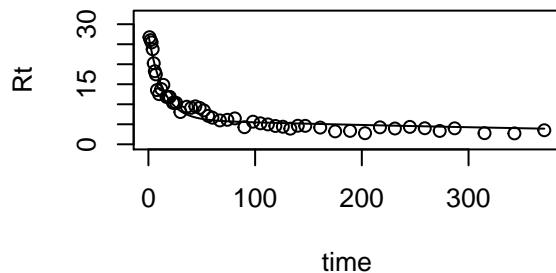
## [2] "k2= 0.00124407952531646"
## [3] "proportion of C0 in pool 1= 0.0547500617726134"
## [1] "AIC = 7.53138111670455"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0734057512799262"
## [2] "k2= 0.00124401707637982"
## [3] "a21= 0.253077705472829"
## [4] "Proportion of C0 in pool 1= 0.0737391832837054"
## [1] "AIC = 9.53138113214863"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0734157870827799"
## [2] "k2= 0.00124408004252377"
## [3] "a21= 0.001856821905244"
## [4] "a12= 0.000446138790394179"
## [5] "Proportion of C0 in pool 1= 0.0548609620244102"

```

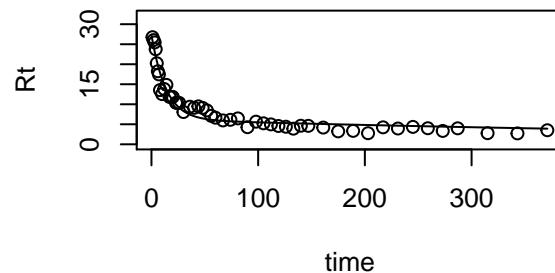
two pool_parallel structure



two pool_Series structure



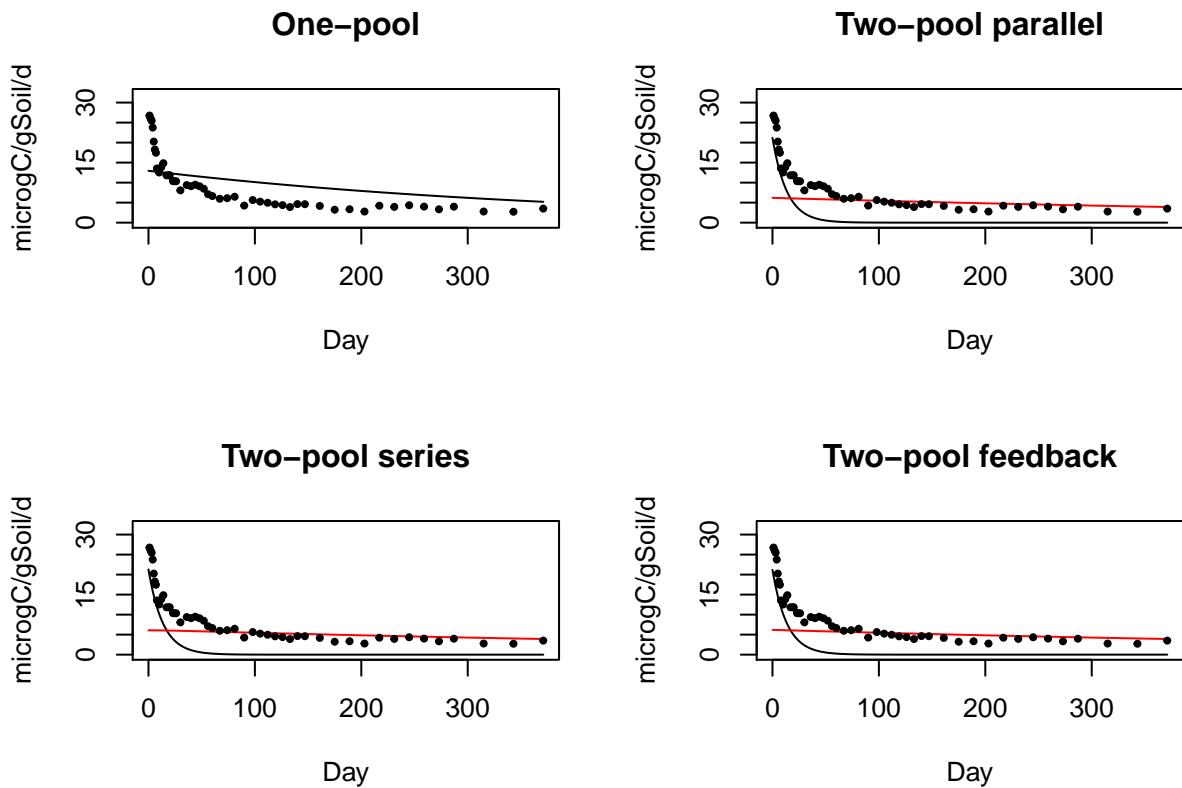
two pool_feedback structure



```

## [1] "AIC = 11.5313811166394"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0025
## Two-pool parallel  0.0734  0.0012  0.0548
## Two-pool series   0.0734  0.0012  0.0737  0.2531
## Two-pool feedback  0.0734  0.0012  0.0549  0.0019  0.0737  107.5  2.151
##
##
## Model           AIC      BIC    AICn     AICC      wi  MeanTrT   q05
## -----
## One-pool         8.543   12.46  1215.8   8.554  0.3130  5270.00
## Two-pool parallel 7.531   19.28  290.1    7.597  0.5052  192.47  13.963
## Two-pool series   9.531   25.20  292.1    9.641  0.1818  217.06  14.978
## Two-pool feedback 11.531  31.11  294.1   11.696  0.0651  15.11   9.467
```

Variable Site61;

CO₂ production rate

```
Crow_V62=modelFitTS_Markdown(db = db[[9]], ts.col = 62, ic.col = 61, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))
```

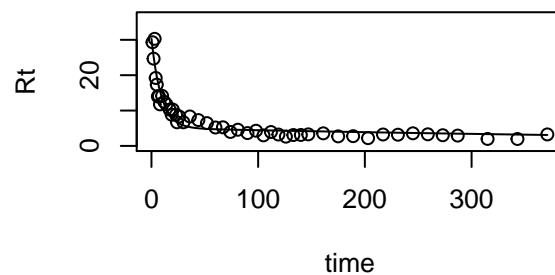
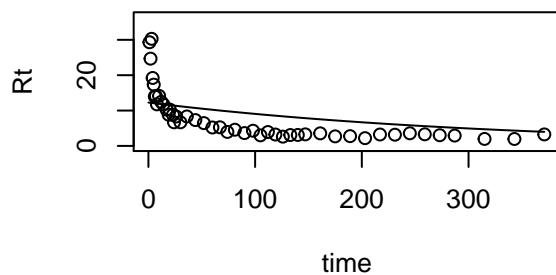
```
## [1] "Crow2019a; variable: Site61"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00303522627672059"
```

```

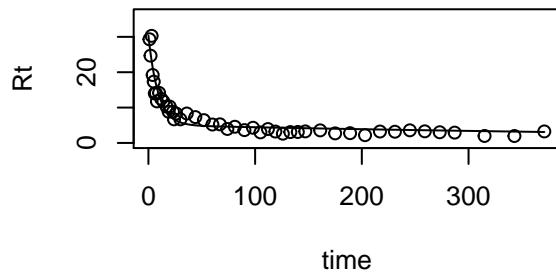
## [1] "AIC = 8.86207534271281"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.109983026864474"
## [2] "k2= 0.0013309281485722"
## [3] "proportion of C0 in pool 1= 0.0569184514055152"
## [1] "AIC = 8.45610835008897"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.109972837700327"
## [2] "k2= 0.00133087119838325"
## [3] "a21= 0.238598445293567"
## [4] "Proportion of C0 in pool 1= 0.0750469468648818"
## [1] "AIC = 10.4561083594994"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.109973459322008"
## [2] "k2= 0.0013308949101484"
## [3] "a21= 0.459094639768407"
## [4] "a12= 3.25094590887809e-05"
## [5] "Proportion of C0 in pool 1= 0.106339809971918"

```

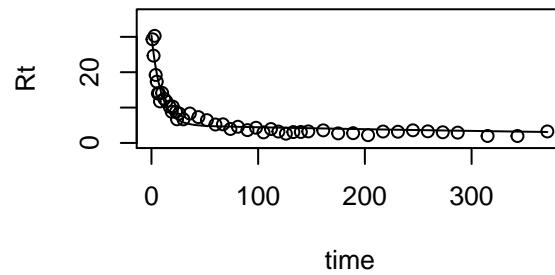
two pool_parallel structure



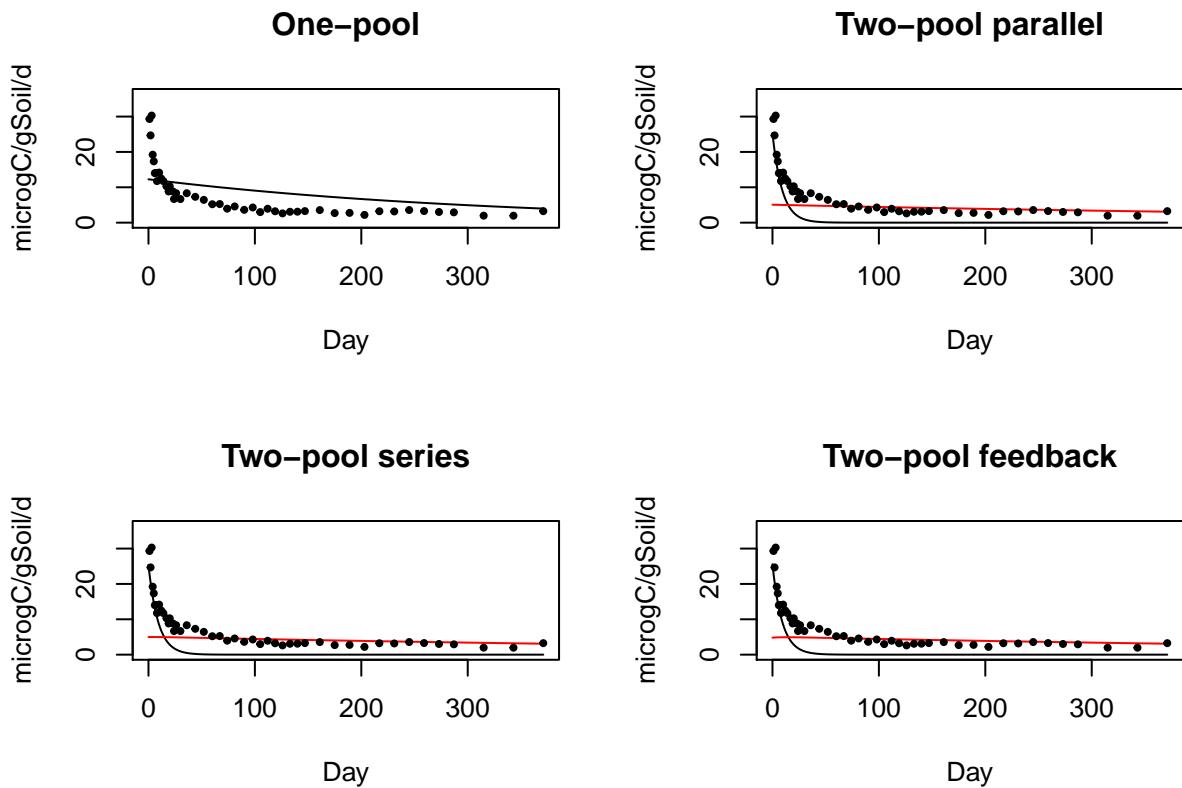
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 12.4561083581368"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.003
## Two-pool parallel  0.110  0.0013  0.0569
## Two-pool series   0.110  0.0013  0.0750  0.2386
## Two-pool feedback  0.110  0.0013  0.1063  0.4591  0.075  160.5  3.415
##
##
## Model           AIC     BIC    AICn    AICc     wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        8.862  12.78  1274.9  8.873  0.3815  4040.0
## Two-pool parallel 8.456  20.20  461.6   8.521  0.4548  133.1   8.287
## Two-pool series  10.456 26.12  463.6  10.565  0.1637  188.4   9.681
## Two-pool feedback 12.456 32.04  465.6  12.620  0.0586  354.1  21.819
```

Variable Site62;

CO₂ production rate

```
Crow_V63=modelFitTS_Markdown(db = db[[9]], ts.col = 63, ic.col = 62, unitConverter = 1e3 )
```

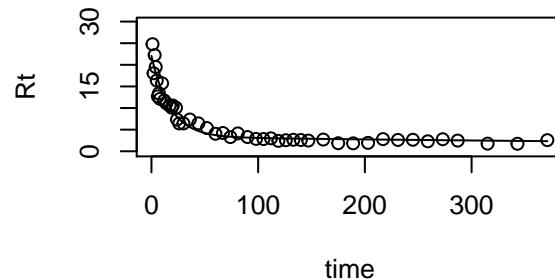
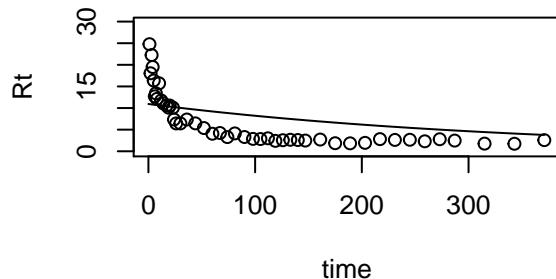
```
## [1] "Crow2019a; variable: Site62"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00286247690399044"
## [1] "AIC = 8.22843332674539"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0573002712968653"
```

```

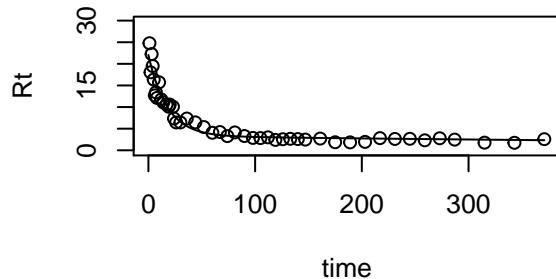
## [2] "k2= 0.000951404946242432"
## [3] "proportion of C0 in pool 1= 0.085546405670939"
## [1] "AIC = 7.2167963730873"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0572987980104351"
## [2] "k2= 0.000951390259205753"
## [3] "a21= 0.00615427165148646"
## [4] "Proportion of C0 in pool 1= 0.0860868289827377"
## [1] "AIC = 9.21679637265521"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0572998395652249"
## [2] "k2= 0.000951400610439141"
## [3] "a21= 0.00375062559282341"
## [4] "a12= 1.09450188834348e-06"
## [5] "Proportion of C0 in pool 1= 0.085874041733251"

```

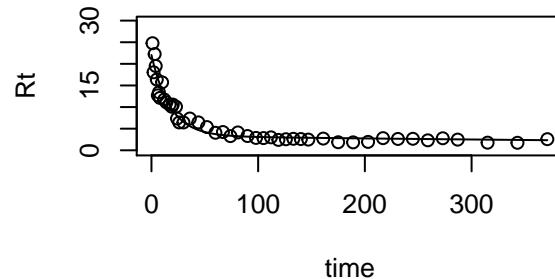
two pool_parallel structure



two pool_Series structure



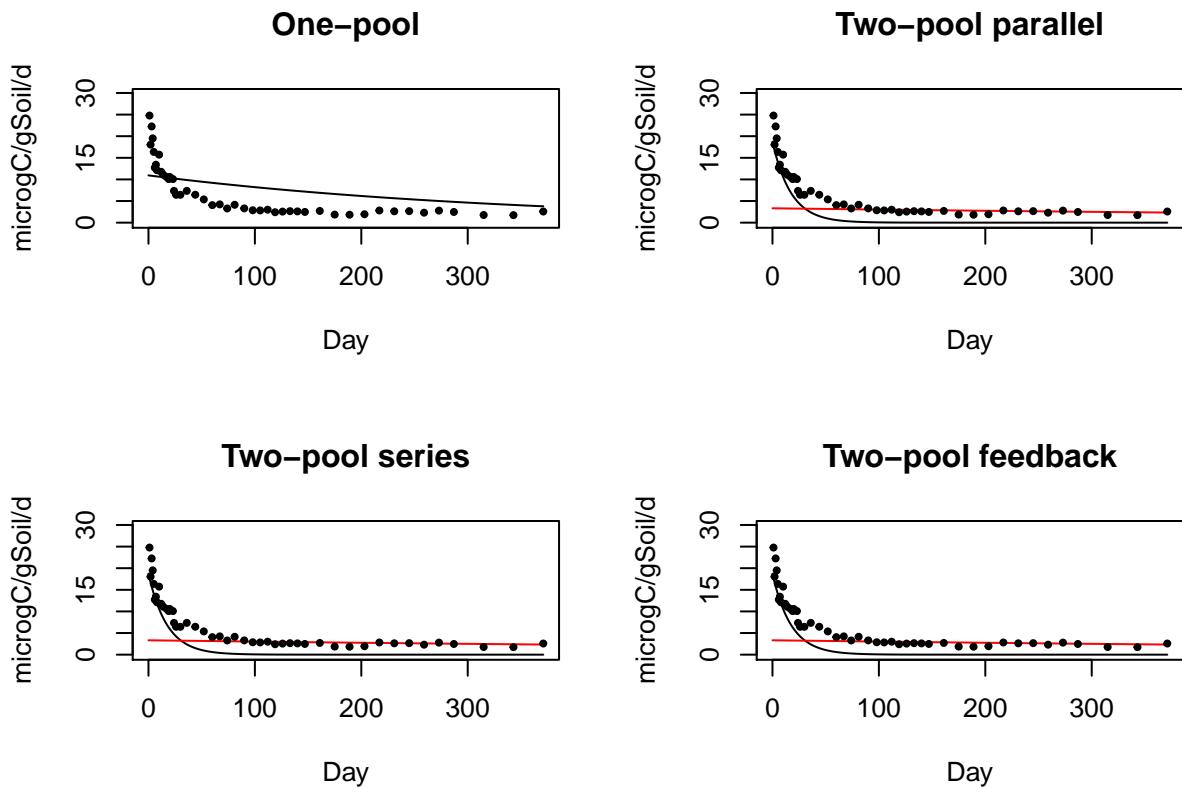
two pool_feedback structure



```

## [1] "AIC = 11.2167963736965"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----
## One-pool        -0.0029
## Two-pool parallel 0.0573  0.001   0.0855
## Two-pool series  0.0573  0.001   0.0861  0.0062
## Two-pool feedback 0.0573  0.001   0.0859  0.0038  0.0861  86.36  1.837
##
##
## Model           AIC     BIC    AICn    AICc     wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        8.228  12.14  1157.4  8.239  0.3130  3820.00
## Two-pool parallel 7.217  18.97  231.7   7.282  0.5052  173.25  15.40
## Two-pool series  9.217  24.88  233.7   9.326  0.1818  23.92  12.20
## Two-pool feedback 11.217 30.80  235.7  11.381  0.0651  21.39  12.16
```

Variable Site63;

CO₂ production rate

```
Crow_V64=modelFitTS_Markdown(db = db[[9]], ts.col = 64, ic.col = 63, unitConverter = 1e3 )
```

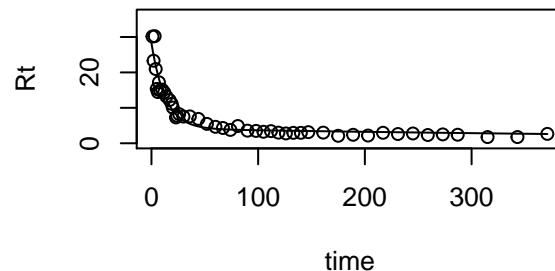
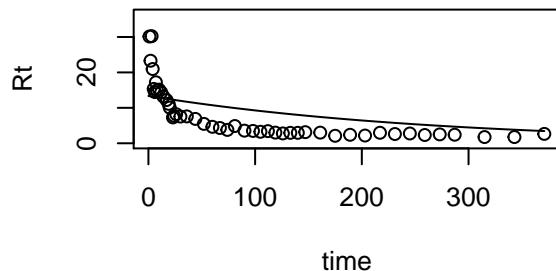
```
## [1] "Crow2019a; variable: Site63"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00365117034588636"
## [1] "AIC = 8.8991847580209"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0766218283257824"
```

```

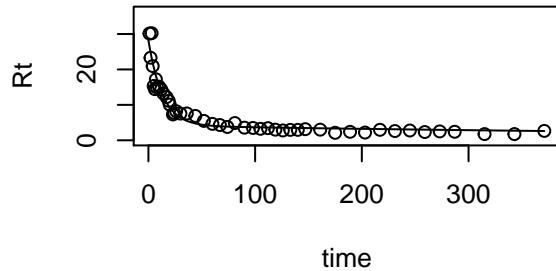
## [2] "k2= 0.00123827128060193"
## [3] "proportion of C0 in pool 1= 0.0861756221342051"
## [1] "AIC = 8.3440137786963"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0766217885262299"
## [2] "k2= 0.00123827085941168"
## [3] "a21= 0.0683250711320479"
## [4] "Proportion of C0 in pool 1= 0.0926068211293873"
## [1] "AIC = 10.3440137782466"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.076623665369663"
## [2] "k2= 0.00123829026911457"
## [3] "a21= 0.00259644671520182"
## [4] "a12= 1.3812989799189e-06"
## [5] "Proportion of C0 in pool 1= 0.0864020353665764"

```

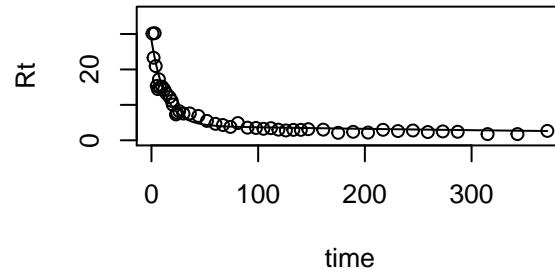
two pool_parallel structure



two pool_Series structure



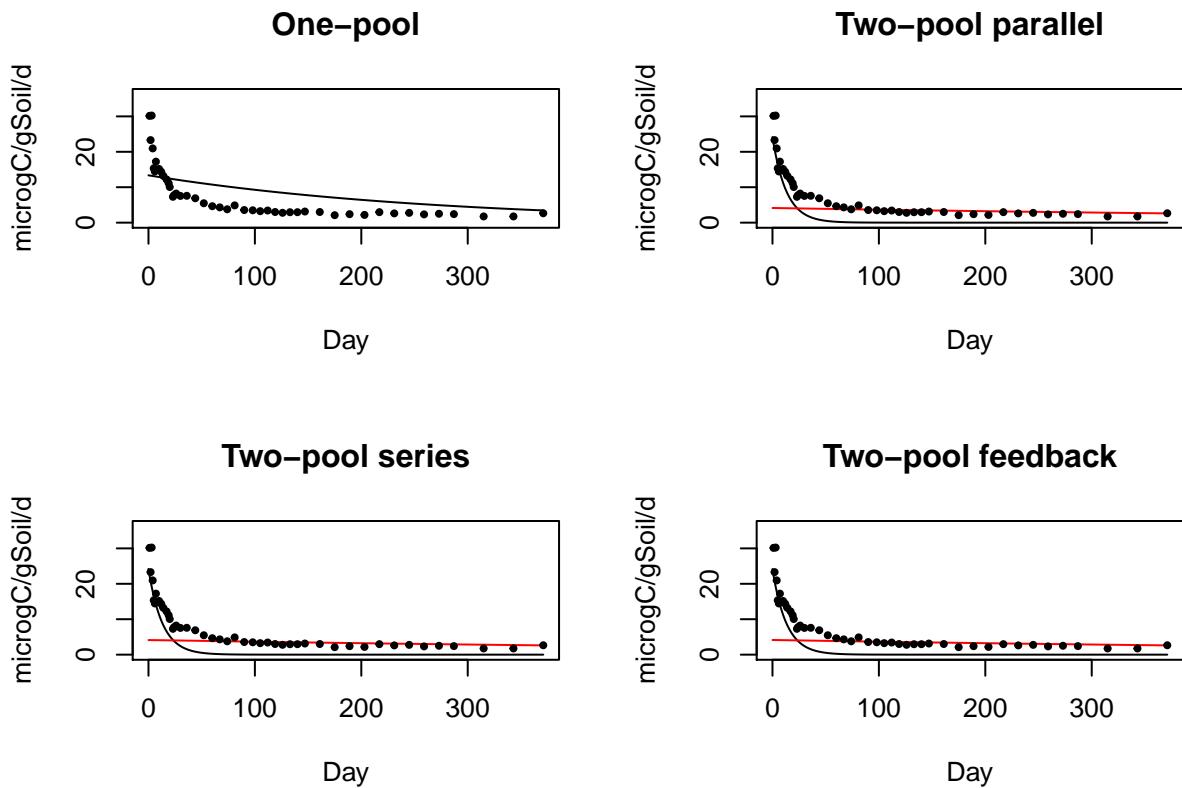
two pool_feedback structure



```

## [1] "AIC = 12.3440137771952"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0037
## Two-pool parallel 0.0766  0.0012  0.0862
## Two-pool series  0.0766  0.0012  0.0926  0.0683
## Two-pool feedback 0.0766  0.0012  0.0864  0.0026  0.0926  151.7  3.228
##
##
## Model          AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----
## One-pool        8.899   12.82   1281.8   8.910   0.3641  3660.00
## Two-pool parallel 8.344   20.09   440.8    8.409   0.4676  129.29  11.42
## Two-pool series 10.344  26.01   442.8   10.453   0.1683  68.23   10.03
## Two-pool feedback 12.344  31.93   444.8   12.508   0.0602  15.15   9.08
```

Variable Site64;

CO₂ production rate

```
Crow_V65=modelFitTS_Markdown(db = db[[9]], ts.col = 65, ic.col = 64, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)) )
```

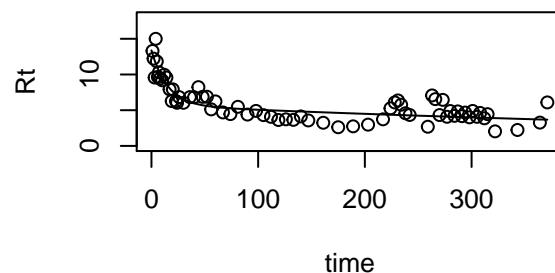
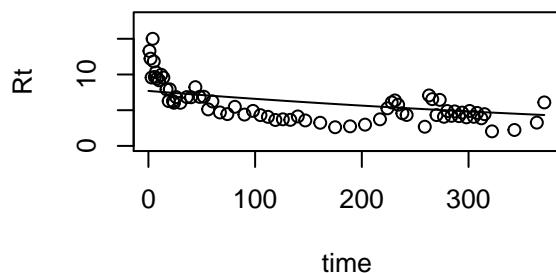
```
## [1] "Crow2019a; variable: Site64"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00155534943569791"
```

```

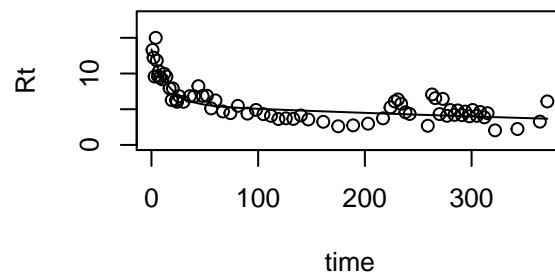
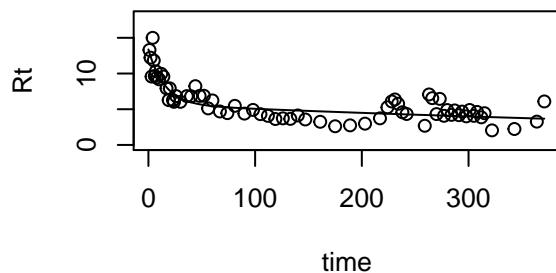
## [1] "AIC = 4.98289514636734"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0659934253915603"
## [2] "k2= 0.00117524422543583"
## [3] "proportion of C0 in pool 1= 0.0235517711914062"
## [1] "AIC = 6.86360463199999"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0659939732956714"
## [2] "k2= 0.00117524520807183"
## [3] "a21= 0.629026737870161"
## [4] "Proportion of C0 in pool 1= 0.0654999343084283"
## [1] "AIC = 8.86360463064614"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0659948259123614"
## [2] "k2= 0.00117538039652984"
## [3] "a21= 0.659679455864047"
## [4] "a12= 0.000171518954349914"
## [5] "Proportion of C0 in pool 1= 0.0717273431386732"

```

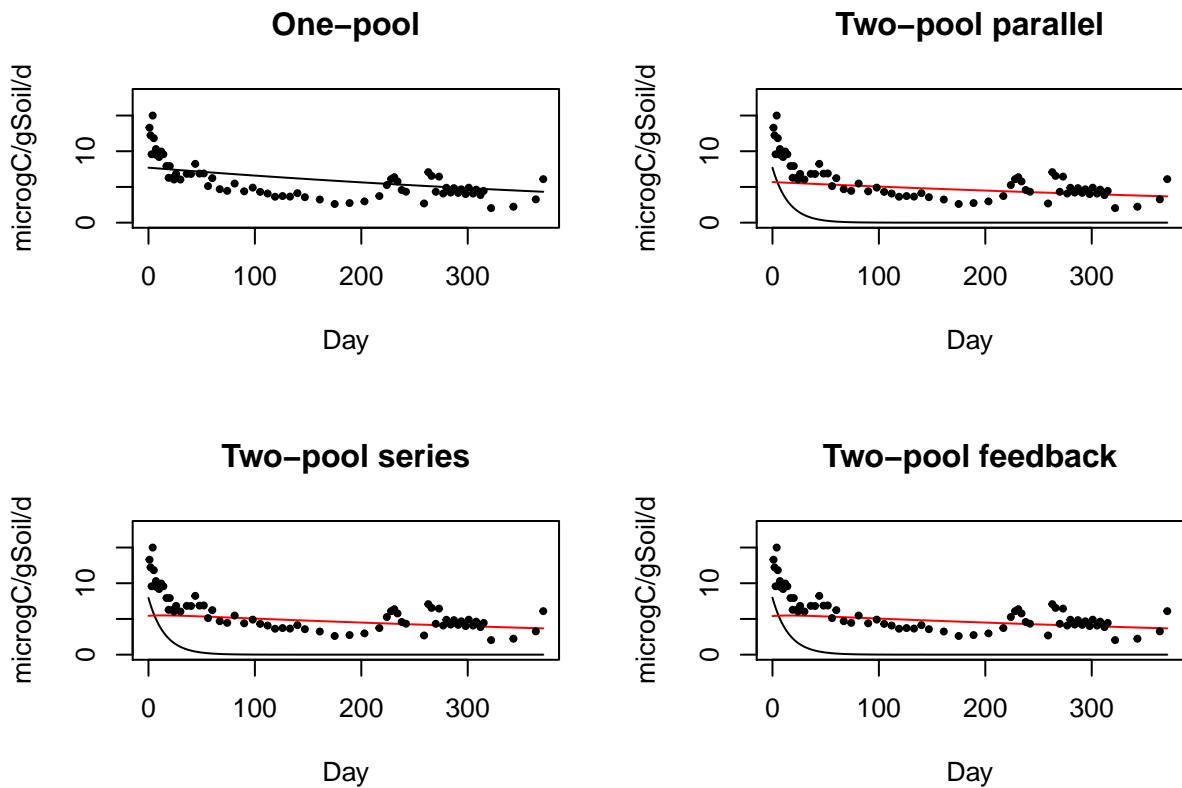
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = 10.8636046305976"
```



```
##
##
## Model           k1      k2   COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0016
## Two-pool parallel 0.0660  0.0012  0.0236
## Two-pool series  0.0660  0.0012  0.0655  0.6290
## Two-pool feedback 0.0660  0.0012  0.0717  0.6597  0.0655  106.3  1.540
##
##
## Model           AIC      BIC   AICn     AICC     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        4.983   8.899  555.3   4.994   0.6593  4950.0
## Two-pool parallel 6.864  18.612  166.2   6.929   0.2505  370.1   28.26
## Two-pool series  8.864  24.528  168.2   8.973   0.0902  550.4   210.62
## Two-pool feedback 10.864 30.445  170.2  11.028   0.0323  576.5   251.11
```

Variable Site65;

CO2 production rate

```
Crow_V66=modelFitTS_Markdown(db = db[[9]], ts.col = 66, ic.col = 65, unitConverter = 1e3 ,
  inipars=list(oneP=0.5,
               parallel=c(0.01, 0.001, 0.1),
               series=c(0.05, 0.0001, 0.01, 0.1),
               feedback=c(0.05, 0.0005, 0.1, 0.01, 0.1)))

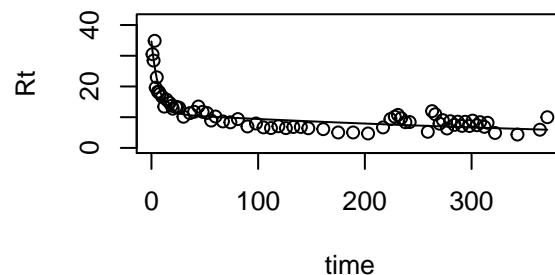
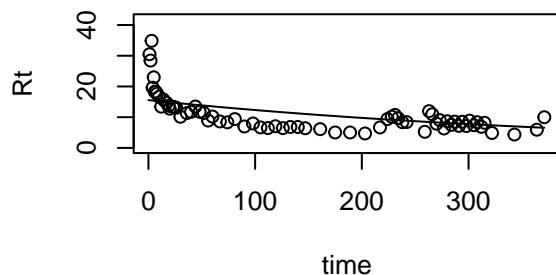
## [1] "Crow2019a; variable: Site65"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00232493409786372"
```

```

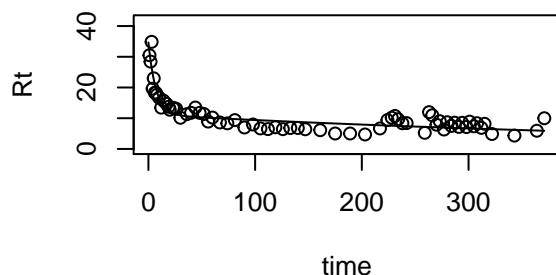
## [1] "AIC = 8.05088054598856"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.141887797837117"
## [2] "k2= 0.00171129836675125"
## [3] "proportion of C0 in pool 1= 0.0247401237556527"
## [1] "AIC = 9.25189663999678"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.141883841841211"
## [2] "k2= 0.00171129254550969"
## [3] "a21= 0.212271335100896"
## [4] "Proportion of C0 in pool 1= 0.031509714247478"
## [1] "AIC = 11.2518966589856"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.141596420170169"
## [2] "k2= 0.00200268414127625"
## [3] "a21= 0.653895229900314"
## [4] "a12= 0.219848506839395"
## [5] "Proportion of C0 in pool 1= 0.0762324355780884"

```

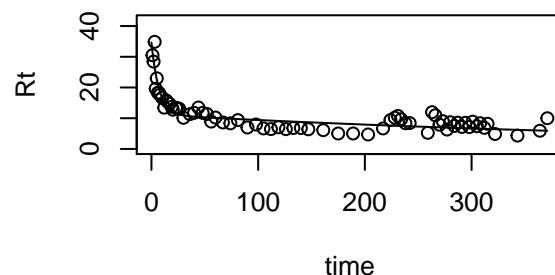
two pool_parallel structure



two pool_Series structure



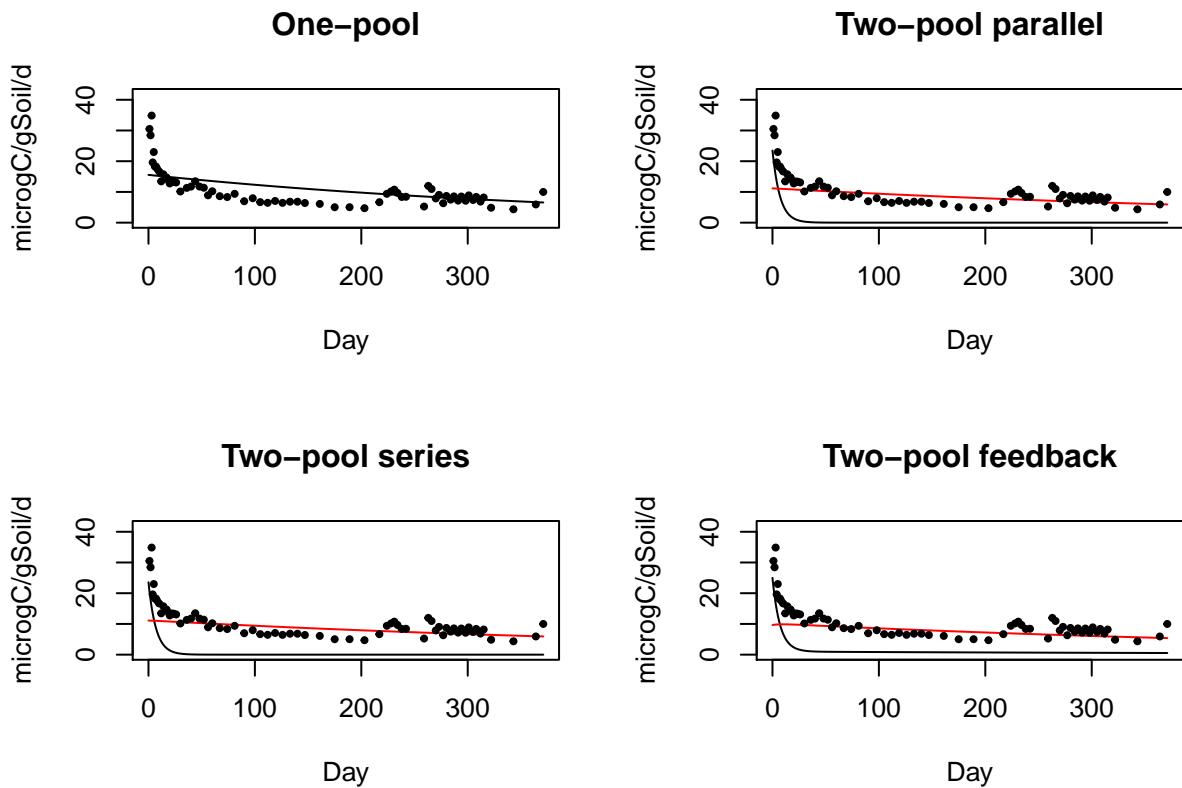
two pool_feedback structure



```

## [1] "AIC = 13.2518966408604"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0023
## Two-pool parallel 0.1419  0.0017  0.0247
## Two-pool series  0.1419  0.0017  0.0315  0.2123
## Two-pool feedback 0.1416  0.0020  0.0762  0.6539  0.0315  350.7  5.083
##
##
## Model           AIC     BIC    AICn    AICC     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        8.051   11.97  1124.4  8.062   0.5794  6690.0
## Two-pool parallel 9.252   21.00  609.2   9.317   0.3093  193.1   9.235
## Two-pool series  11.252  26.92  611.2   11.361  0.1113  131.1   7.075
## Two-pool feedback 13.252  32.83  613.2   13.416  0.0398  389.6  164.533
```

Variable Site66;

CO2 production rate

```
Crow_V67=modelFitTS_Markdown(db = db[[9]], ts.col = 67, ic.col = 66, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))
```

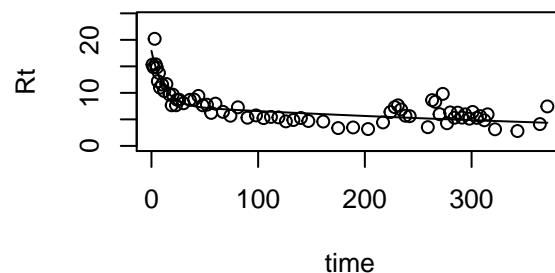
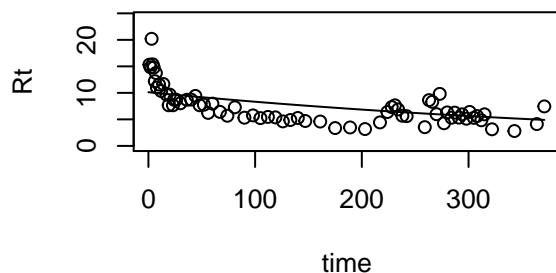
```
## [1] "Crow2019a; variable: Site66"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00195477303534908"
```

```

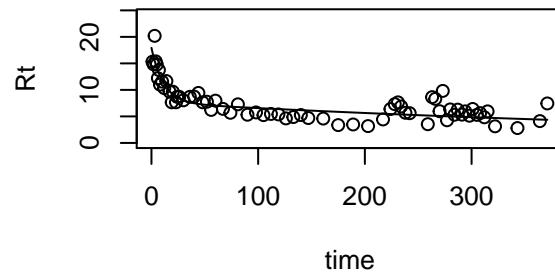
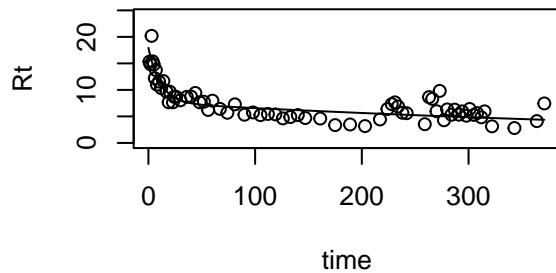
## [1] "AIC = 5.79627013016618"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0882689801121668"
## [2] "k2= 0.00150768503858564"
## [3] "proportion of C0 in pool 1= 0.022534052998378"
## [1] "AIC = 7.80583583485937"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0882783849553695"
## [2] "k2= 0.00150769783902133"
## [3] "a21= 0.790210636279919"
## [4] "Proportion of C0 in pool 1= 0.114928740309113"
## [1] "AIC = 9.80583584966497"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0882696747738629"
## [2] "k2= 0.0015077420415871"
## [3] "a21= 0.633434958032472"
## [4] "a12= 5.76017217974734e-05"
## [5] "Proportion of C0 in pool 1= 0.0633774194676255"

```

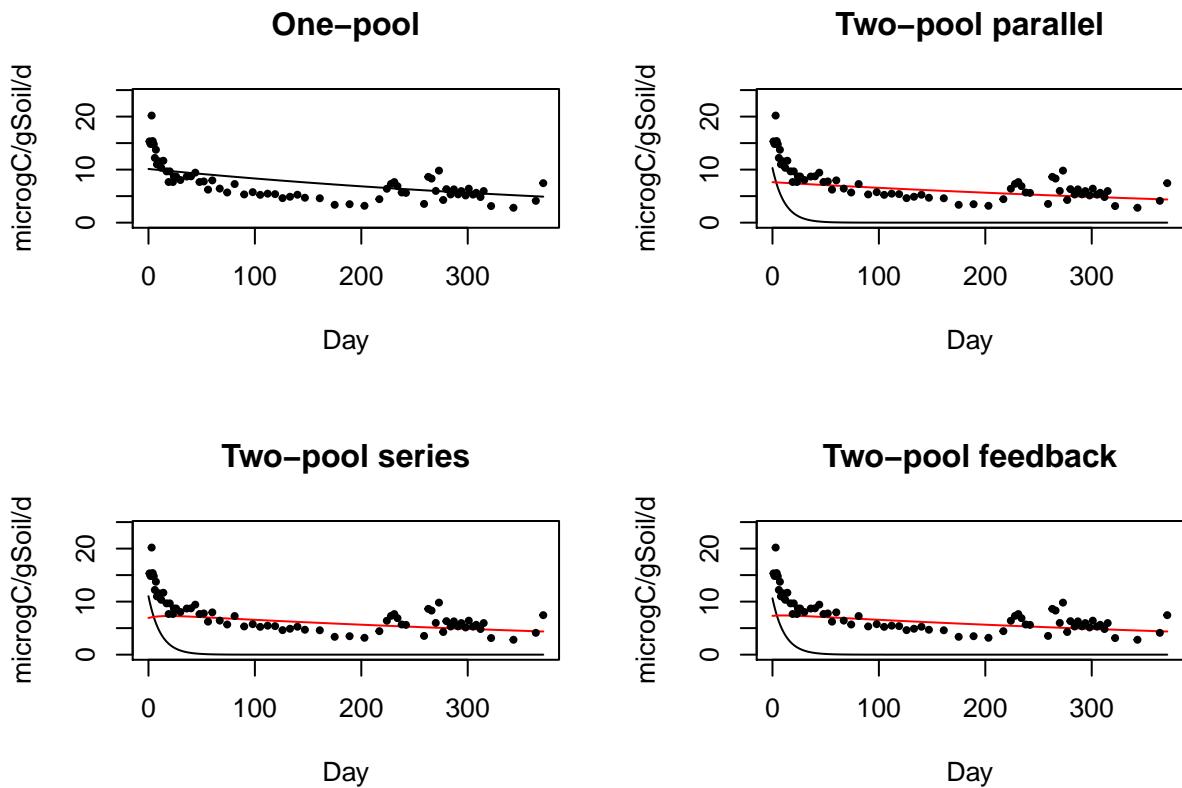
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = 11.8058358407243"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0020
## Two-pool parallel 0.0883  0.0015  0.0225
## Two-pool series  0.0883  0.0015  0.1149  0.7902
## Two-pool feedback 0.0883  0.0015  0.0634  0.6334  0.1149  170.2  2.467
##
##
## Model           AIC      BIC    AICn     AICC     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        5.796   9.713  706.2   5.807  0.6736  5180.0
## Two-pool parallel 7.806  19.554  341.0   7.871  0.2400  288.8   21.27
## Two-pool series  9.806  25.471  343.0   9.915  0.0864  535.4   315.00
## Two-pool feedback 11.806 31.387  345.0  11.970  0.0309  431.5   168.32
```

Variable Site67;

CO₂ production rate

```
##
Crow_V68=modelFitTS_Markdown(db = db[[9]], ts.col = 68, ic.col = 67, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0005, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)) )
```

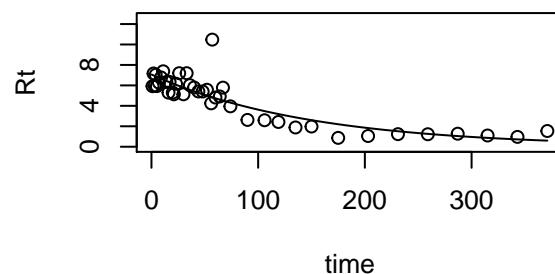
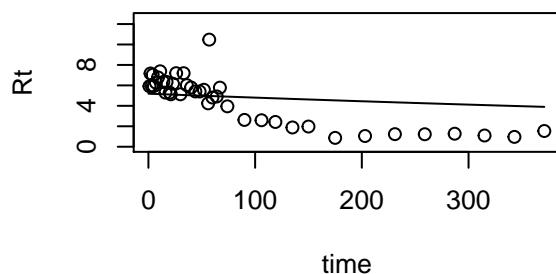
```
## [1] "Crow2019a; variable: Site67"
## [1] "One pool model"
```

```

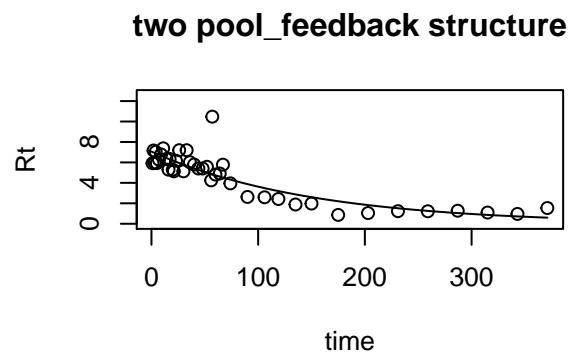
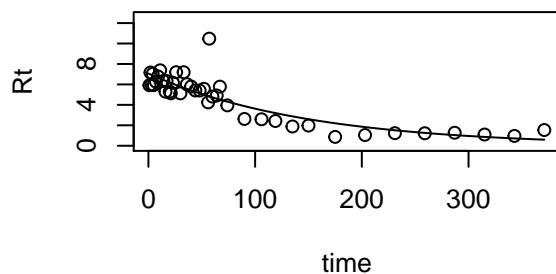
## [1] "Best fit parameter: -0.000768490196854543"
## [1] "AIC = 4.86217728634526"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00666649704285578"
## [2] "k2= 2.4060972785591e-10"
## [3] "proportion of C0 in pool 1= 0.157014394727763"
## [1] "AIC = 6.54701823650904"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00666651726183574"
## [2] "k2= 2.07439903271072e-09"
## [3] "a21= 0.00114398967917534"
## [4] "Proportion of C0 in pool 1= 0.157193486525866"
## [1] "AIC = 8.54701835887871"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00666652143209384"
## [2] "k2= 2.2216708867705e-09"
## [3] "a21= 0.0357987871850963"
## [4] "a12= 9.35923974361152e-05"
## [5] "Proportion of C0 in pool 1= 0.162842895329501"

```

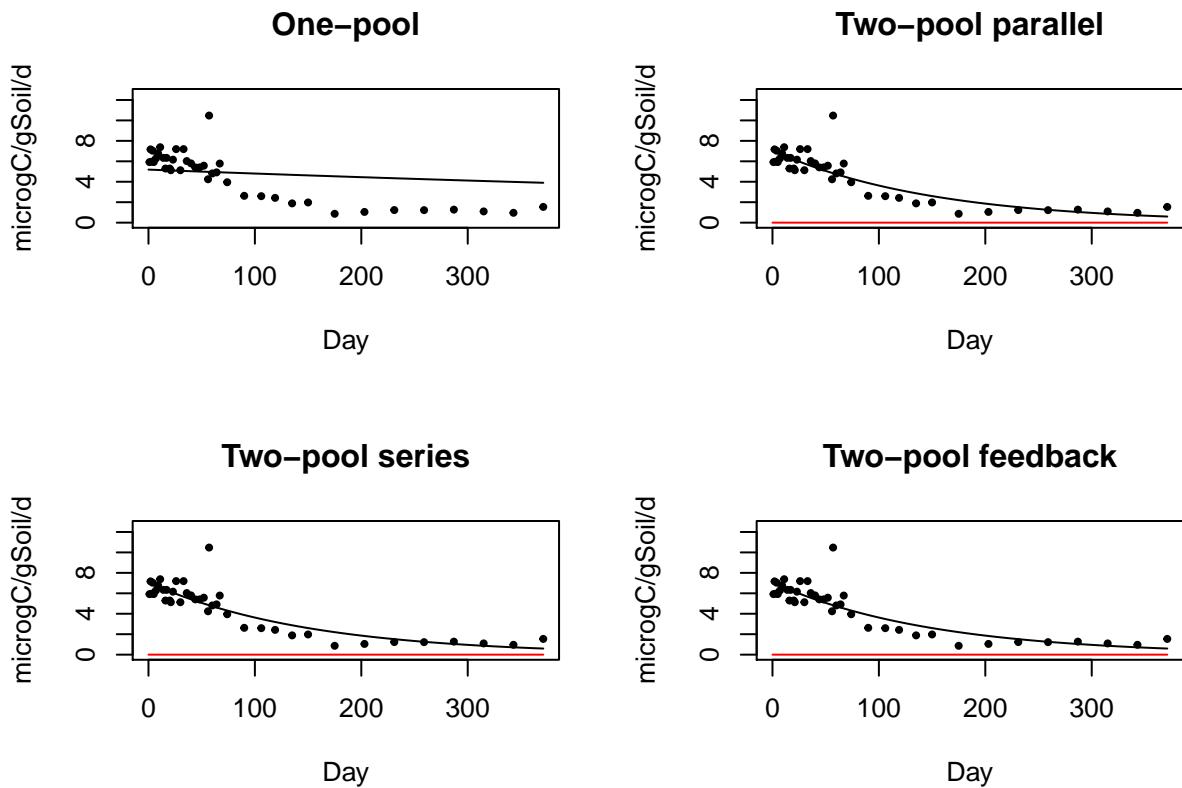
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = 10.5470183688303"
```



```
##
##
## Model           k1    k2   COInp1      a21      a12    SSR    MSR
## -----          ---  ---  -----      ----  -----  -----
## One-pool        -0.0008
## Two-pool parallel 0.0067  0  0.1570
## Two-pool series  0.0067  0  0.1572  0.0011
## Two-pool feedback 0.0067  0  0.1628  0.0358  0.1572  53.9  1.315
##
##
## Model           AIC     BIC    AICn    AICc      wi    MeanTrT    q05
## -----          ----  -----  -----  -----  -----
## One-pool        4.862   8.778  532.9   4.873  0.6370  6.750e+03
## Two-pool parallel 6.547  18.296  107.5   6.612  0.2669  9.554e+02  104.0
## Two-pool series  8.547  24.212  109.5   8.656  0.0961  5.516e+05  104.1
## Two-pool feedback 10.547 30.128  111.5  10.711  0.0344  1.611e+07  109.6
```

Variable Site68;

CO2 production rate

```
Crow_V69=modelFitTS_Markdown(db = db[[9]], ts.col = 69, ic.col = 68, unitConverter = 1e3 )
```

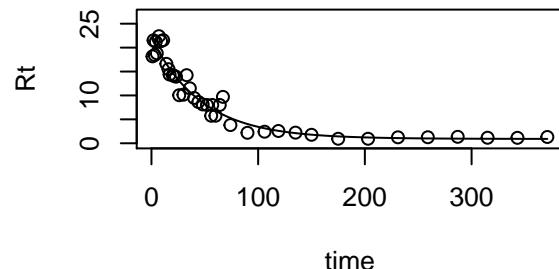
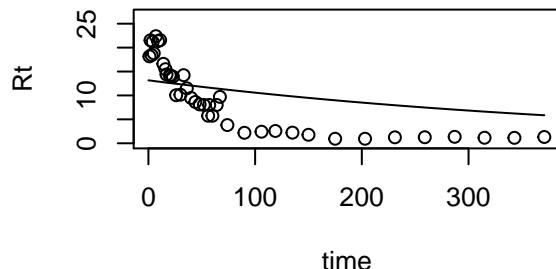
```
## [1] "Crow2019a; variable: Site68"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00218262209974185"
## [1] "AIC = 8.96109133468233"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0214221020711252"
```

```

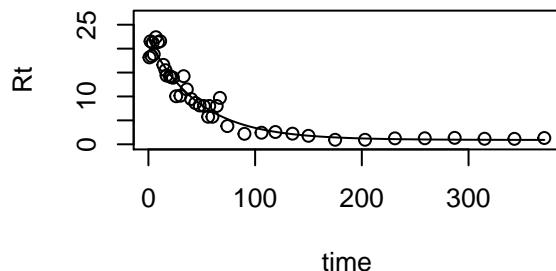
## [2] "k2= 0.000192903592586185"
## [3] "proportion of C0 in pool 1= 0.163289353293293"
## [1] "AIC = 7.90741386885734"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0214220949716466"
## [2] "k2= 0.000192903254042044"
## [3] "a21= 0.000708004933330897"
## [4] "Proportion of C0 in pool 1= 0.163405641994491"
## [1] "AIC = 9.90741386975809"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0214221350773314"
## [2] "k2= 0.000192905055684686"
## [3] "a21= 0.00117406451068519"
## [4] "a12= 9.20238133111928e-06"
## [5] "Proportion of C0 in pool 1= 0.163482844085706"

```

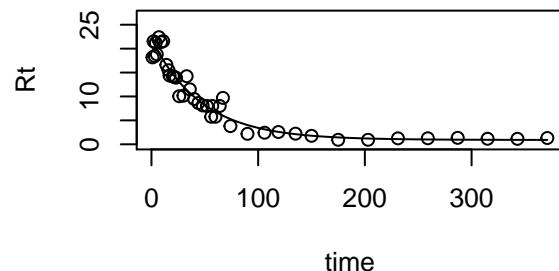
two pool_parallel structure



two pool_Series structure



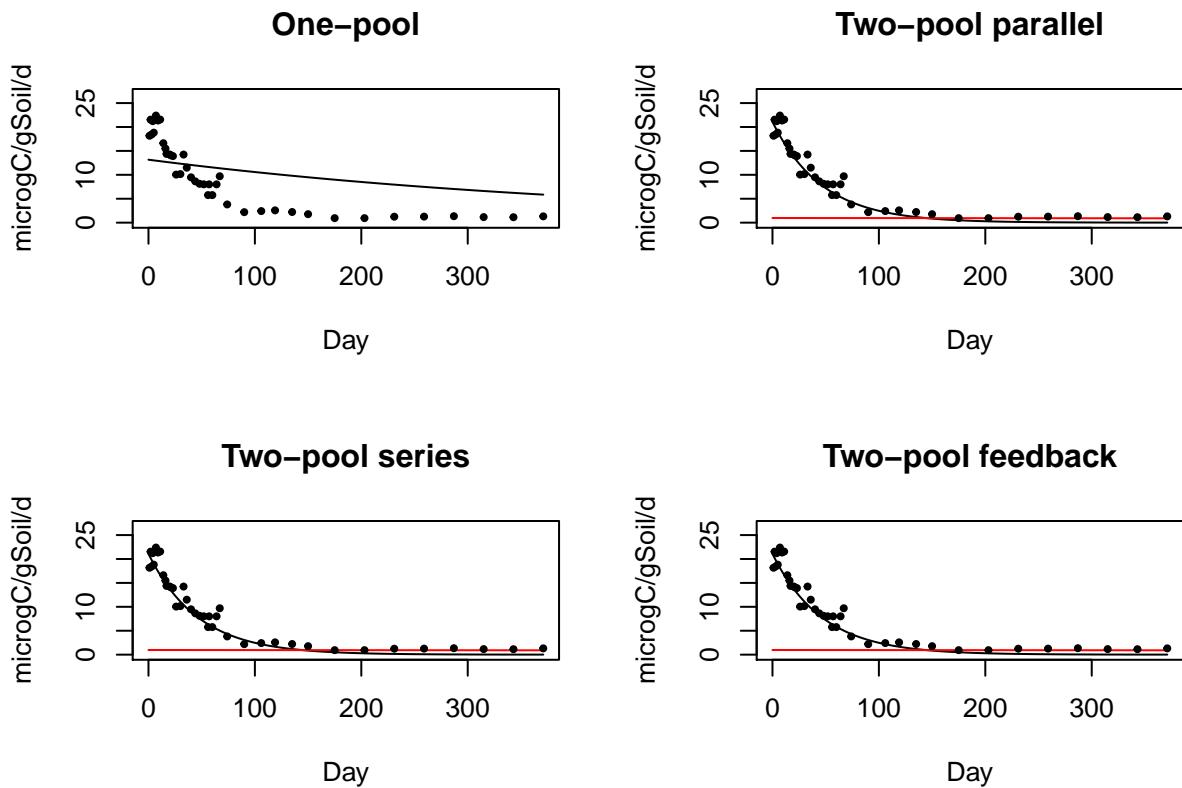
two pool_feedback structure



```

## [1] "AIC = 11.9074138688779"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        -----  -----  -----  -----  -----  -----
## One-pool       0.0022
## Two-pool parallel 0.0214  2e-04  0.1633
## Two-pool series   0.0214  2e-04  0.1634  0.0007
## Two-pool feedback  0.0214  2e-04  0.1635  0.0012  0.1634  106.4  2.595
##
##
## Model          AIC     BIC    AICn    AICc     wi  MeanTrT   q05
## -----        -----  -----  -----  -----  -----
## One-pool       8.961   12.88  1293.3  8.972  0.3085  6030.00
## Two-pool parallel 7.907   19.66  359.8   7.973  0.5085  273.27  34.53
## Two-pool series   9.907   25.57  361.8   10.017 0.1830  50.35  32.39
## Two-pool feedback 11.907   31.49  363.8   12.072 0.0655  52.77  32.41
```

Variable Site69;

CO₂ production rate

```
Crow_V70=modelFitTS_Markdown(db = db[[9]], ts.col = 70, ic.col = 69, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.05, 0.001, 0.1),
                                             series=c(0.5, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))
```

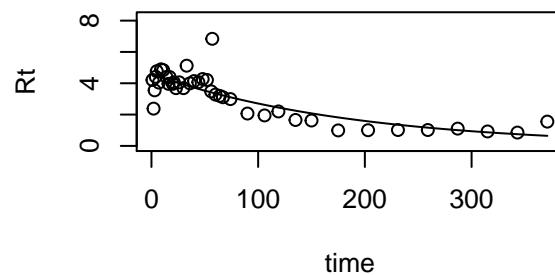
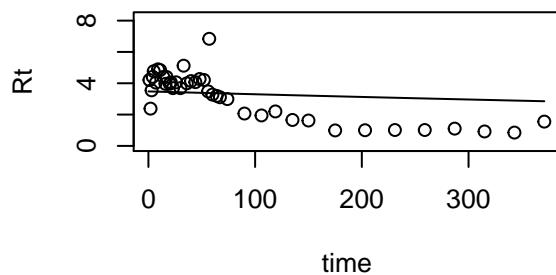
```
## [1] "Crow2019a; variable: Site69"
## [1] "One pool model"
## [1] "Best fit parameter: -0.000535260307566787"
```

```

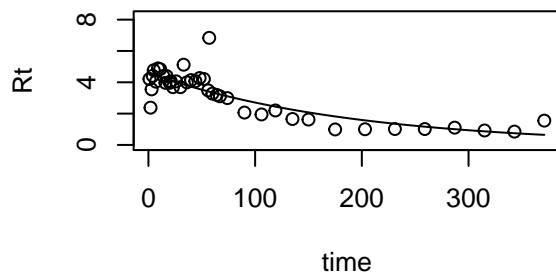
## [1] "AIC = 3.07847186258911"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00529771114667627"
## [2] "k2= 1.38759342623958e-10"
## [3] "proportion of C0 in pool 1= 0.133516919063079"
## [1] "AIC = 5.04791736753145"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00529771439151761"
## [2] "k2= 6.7282840069215e-13"
## [3] "a21= 1.41211357485016e-06"
## [4] "Proportion of C0 in pool 1= 0.133517066722726"
## [1] "AIC = 7.04791736152411"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00529772105382624"
## [2] "k2= 8.72479096099369e-10"
## [3] "a21= 0.00574546190338204"
## [4] "a12= 2.596756626011e-05"
## [5] "Proportion of C0 in pool 1= 0.134287897757174"

```

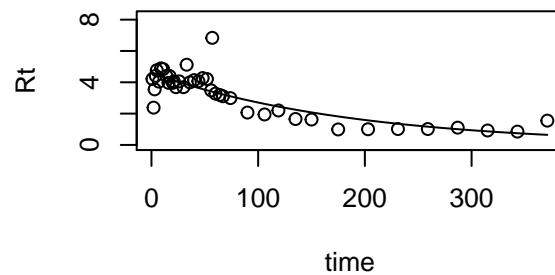
two pool_parallel structure



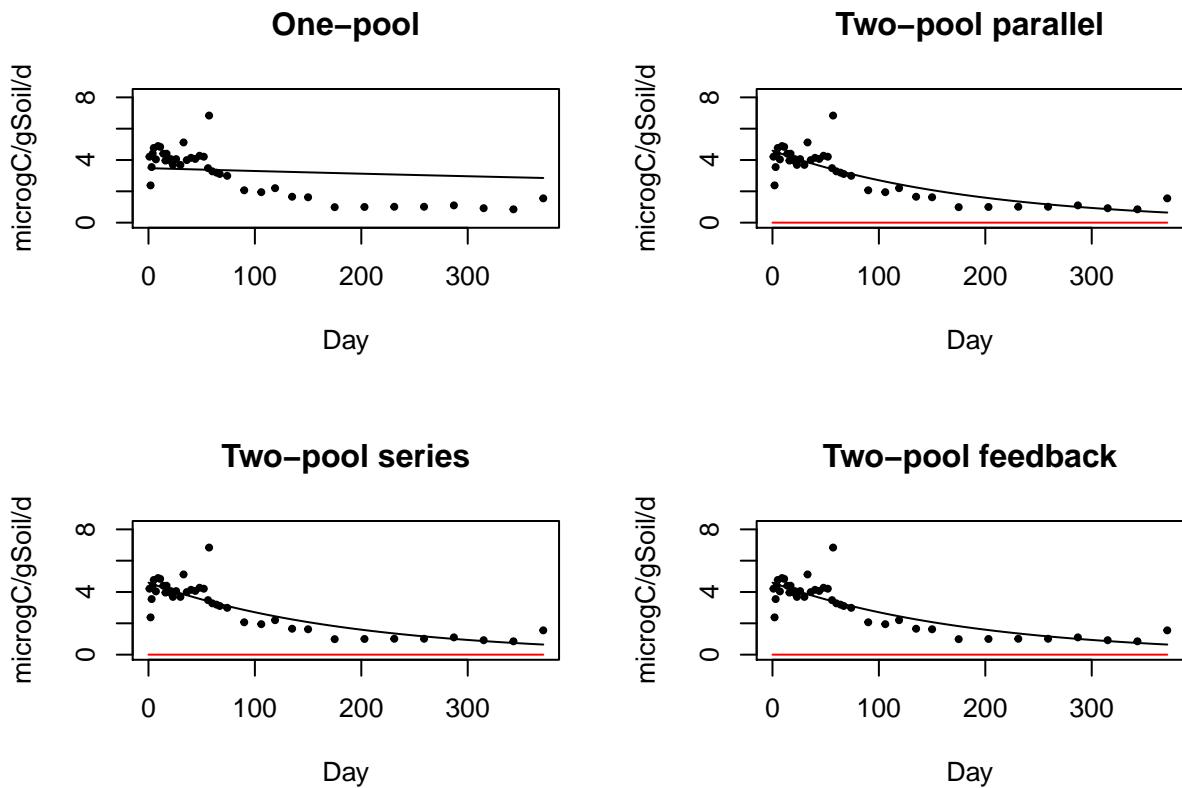
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 9.04791739952717"
```



```
##
##
## Model           k1    k2   COInp1      a21      a12    SSR     MSR
## -----          ---  ---  -----      ----  -----  ----  -----
## One-pool        -0.0005
## Two-pool parallel 0.0053  0  0.1335
## Two-pool series  0.0053  0  0.1335  0.0000
## Two-pool feedback 0.0053  0  0.1343  0.0057  0.1335  25.47  0.6212
##
##
## Model           AIC    BIC   AICn    AICc      wi  MeanTrT    q05
## -----          ----  ----  ----  -----  -----  -----  -----
## One-pool        3.079  6.995 202.1  3.089  0.6692  6500
## Two-pool parallel 5.048 16.797 -170.6 5.113  0.2433  1414  130.8
## Two-pool series  7.048 22.713 -168.6 7.157  0.0875 2098961 130.8
## Two-pool feedback 9.048 28.629 -166.6 9.212  0.0313 6585404 131.9
```

Variable Site70;

CO2 production rate

```
Crow_V71=modelFitTS_Markdown(db = db[[9]], ts.col = 71, ic.col = 70, unitConverter = 1e3)
```

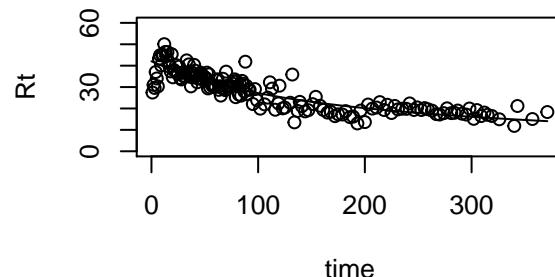
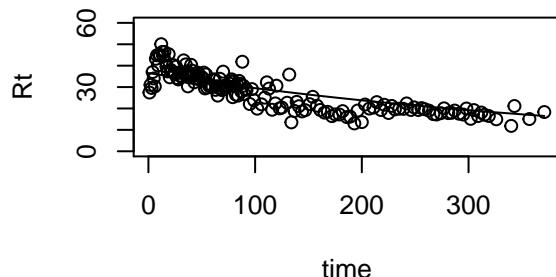
```
## [1] "Crow2019a; variable: Site70"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00214382759353349"
## [1] "AIC = 8.38681415387391"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0106148623331065"
```

```

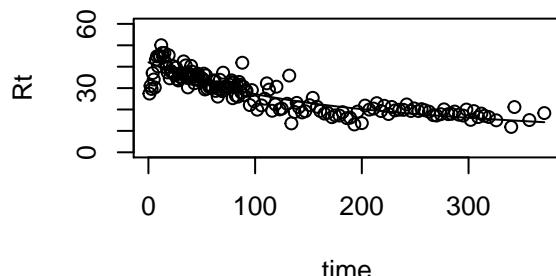
## [2] "k2= 0.00162345552980326"
## [3] "proportion of C0 in pool 1= 0.0938265764871061"
## [1] "AIC = 11.6219435832025"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0106182018399101"
## [2] "k2= 0.00162359037585378"
## [3] "a21= 0.170861778436967"
## [4] "Proportion of C0 in pool 1= 0.117479366920074"
## [1] "AIC = 13.6219435857725"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0106149302743929"
## [2] "k2= 0.00162345828733144"
## [3] "a21= 0.000668578144410514"
## [4] "a12= 4.48265533320447e-06"
## [5] "Proportion of C0 in pool 1= 0.0939005444791489"

```

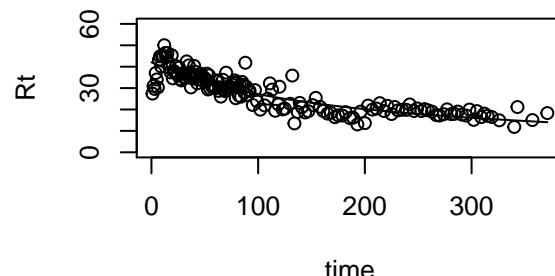
two pool_parallel structure



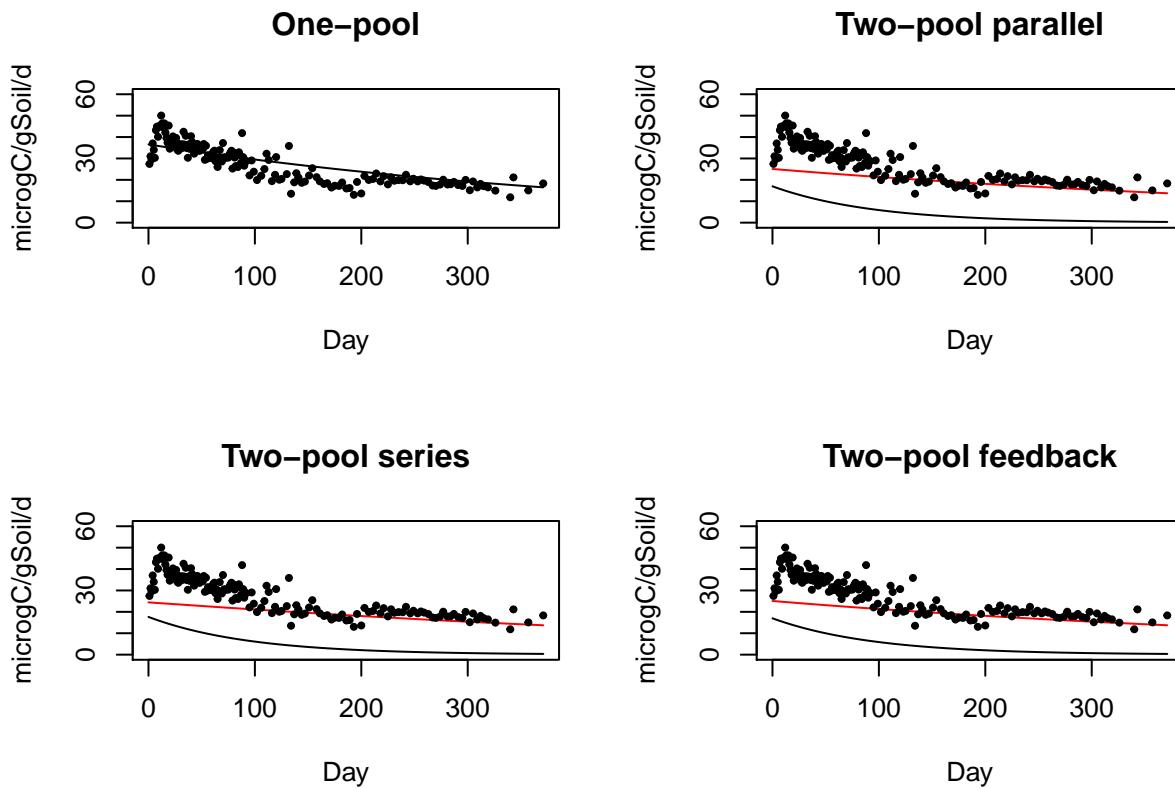
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 15.6219435827176"
```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0021 & 4070 24.37  
## Two-pool parallel 0.0106 0.0016 0.0938 & 2777 16.63  
## Two-pool series 0.0106 0.0016 0.1175 0.1709 & 2777 16.63  
## Two-pool feedback 0.0106 0.0016 0.0939 0.0007 0.1175 & 2777 16.63  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool 8.387 12.30 1187 8.398 0.7921 17050.00  
## Two-pool parallel 11.622 23.37 1049 11.687 0.1529 405.34 183.68  
## Two-pool series 13.622 29.29 1051 13.731 0.0550 199.41 84.85  
## Two-pool feedback 15.622 35.20 1053 15.786 0.0197 94.62 65.36
```

Variable Site71;

CO2 production rate

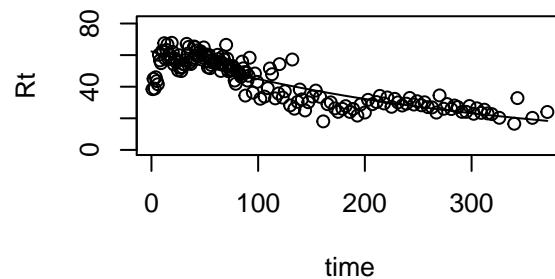
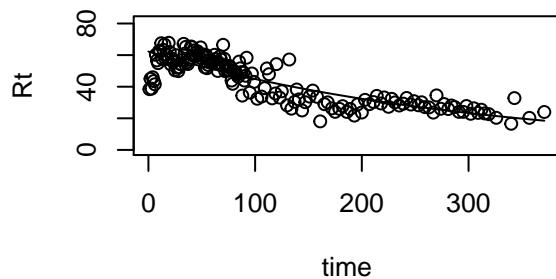
```
Crow_V72=modelFitTS_Markdown(db = db[[9]], ts.col = 72, ic.col = 71, unitConverter = 1e3,  
  inipars=list(oneP=0.5,  
               parallel=c(0.05, 0.001, 0.1),  
               series=c(0.01, 0.0005, 0.01, 0.1),  
               feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))  
  
## [1] "Crow2019a; variable: Site71"  
## [1] "One pool model"  
## [1] "Best fit parameter: -0.00327057313104717"
```

```

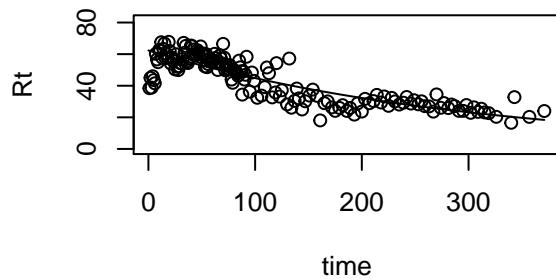
## [1] "AIC = 9.93168212334149"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00330621015747063"
## [2] "k2= 0.000956021896529675"
## [3] "proportion of C0 in pool 1= 0.986690527575216"
## [1] "AIC = 13.9314557975723"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00330627265210472"
## [2] "k2= 0.000954901004899192"
## [3] "a21= 0.00013595510643194"
## [4] "Proportion of C0 in pool 1= 0.98687170762015"
## [1] "AIC = 15.9314557945984"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.000967549613681786"
## [2] "k2= 0.00330658786374384"
## [3] "a21= 0.00750690961917333"
## [4] "a12= 5.45045559230406e-05"
## [5] "Proportion of C0 in pool 1= 0.0133977706553653"

```

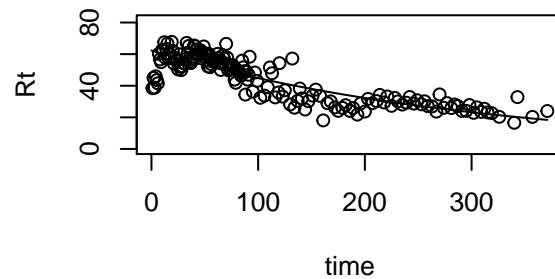
two pool_parallel structure



two pool_Series structure



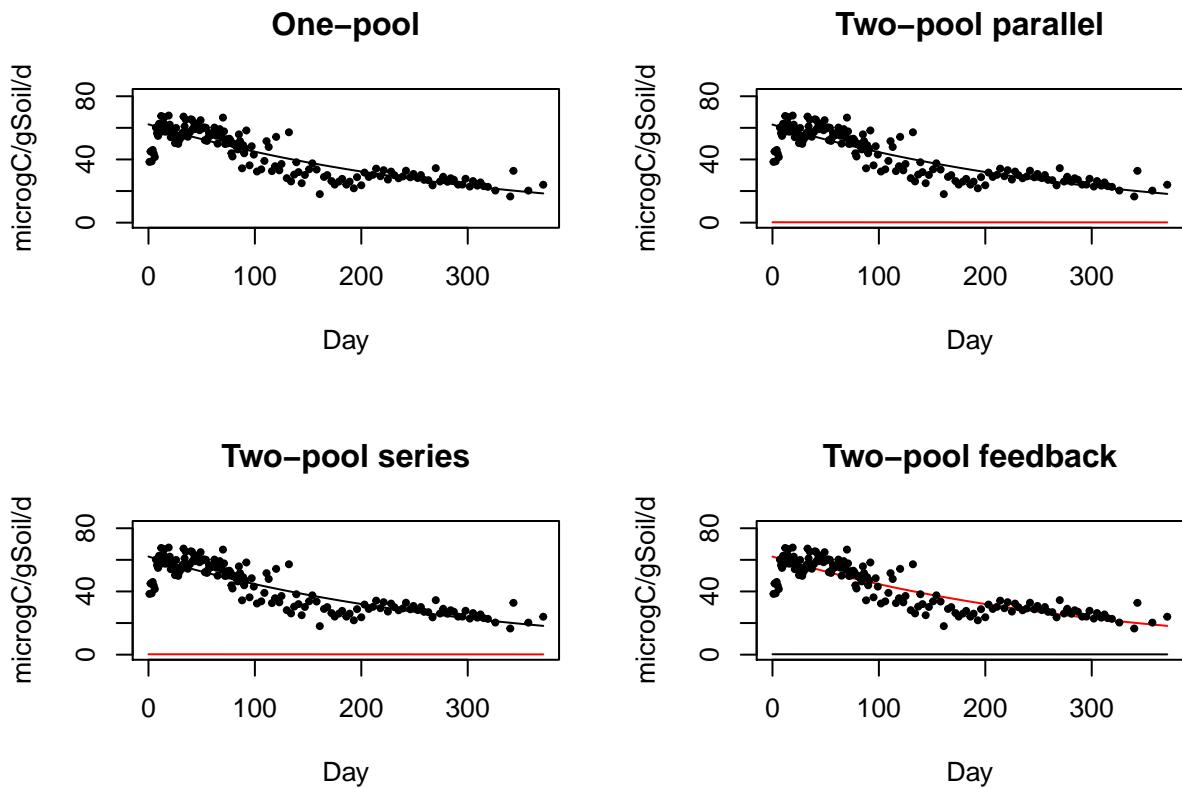
two pool_feedback structure



```

## [1] "AIC = 17.9314558049784"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0033
## Two-pool parallel 0.0033  0.0010  0.9867
## Two-pool series  0.0033  0.0010  0.9869  0.0001
## Two-pool feedback 0.0010  0.0033  0.0134  0.0075  0.9869  8811  52.76
##
##
## Model          AIC      BIC     AICn     AICC      wi   MeanTrT    q05
## -----
## One-pool        9.932   13.85   1473    9.943   0.8481  19030.0
## Two-pool parallel 13.931  25.68   1477   13.997   0.1117   305.4   210.4
## Two-pool series  15.931  31.60   1479   16.041   0.0402   302.6   209.7
## Two-pool feedback 17.931  37.51   1481   18.096   0.0144   1035.8  719.0
```

Variable Site72;

CO₂ production rate

```
Crow_V73=modelFitTS_Markdown(db = db[[9]], ts.col = 73, ic.col = 72, unitConverter = 1e3)
```

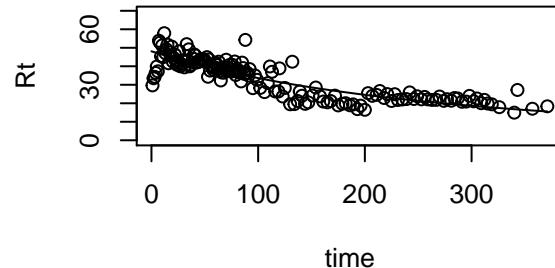
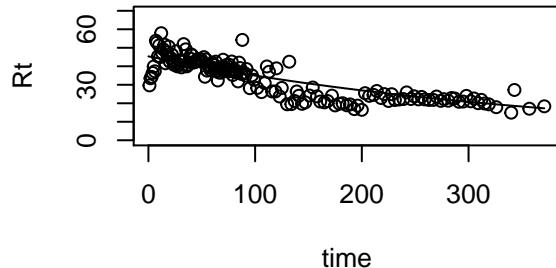
```
## [1] "Crow2019a; variable: Site72"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00260229548731594"
## [1] "AIC = 8.71725315399741"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00686293553941449"
```

```

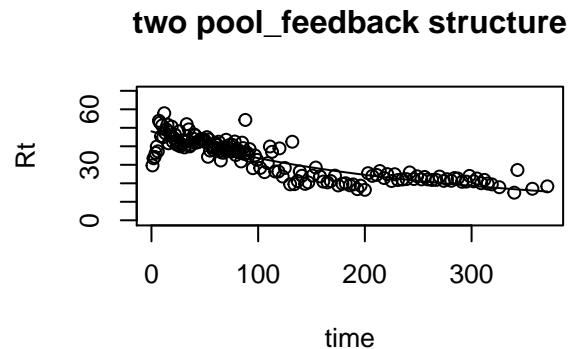
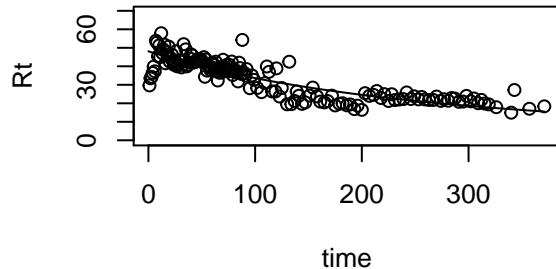
## [2] "k2= 0.00202624540176353"
## [3] "proportion of C0 in pool 1= 0.15184995163043"
## [1] "AIC = 12.5085116482954"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00686146388495034"
## [2] "k2= 0.00202609191154242"
## [3] "a21= 0.398307180112567"
## [4] "Proportion of C0 in pool 1= 0.349392864293654"
## [1] "AIC = 14.5085116554959"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00202626565824871"
## [2] "k2= 0.00686334191620983"
## [3] "a21= 0.0064225440566496"
## [4] "a12= 6.71875563851287e-06"
## [5] "Proportion of C0 in pool 1= 0.845886966858025"

```

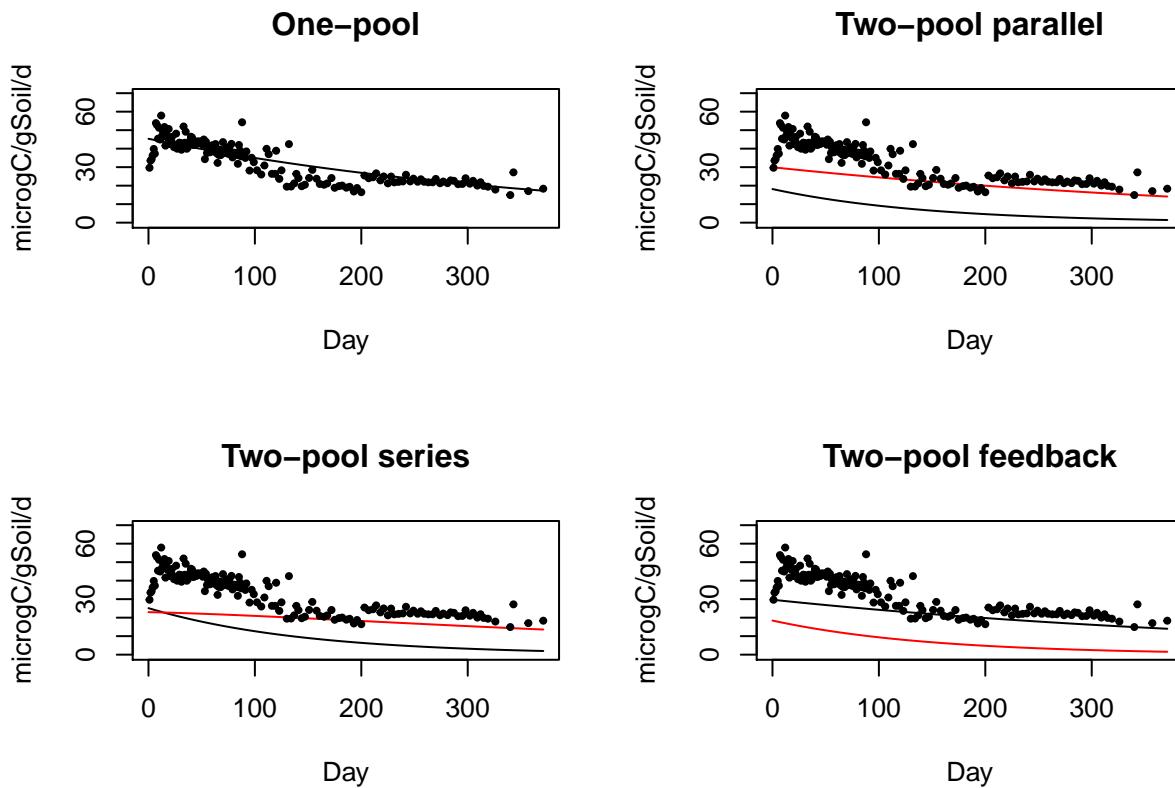
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = 16.5085116490582"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0026
## Two-pool parallel 0.0069  0.0020  0.1518
## Two-pool series  0.0069  0.0020  0.3494  0.3983
## Two-pool feedback 0.0020  0.0069  0.8459  0.0064  0.3494  4325  25.90
##
##
## Model           AIC     BIC    AICn    AICc     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        8.717  12.63  1248   8.728  0.8342 17430.0
## Two-pool parallel 12.508 24.26  1213  12.574  0.1219  362.2  207.3
## Two-pool series  14.508 30.17  1215  14.618  0.0439  342.3  191.7
## Two-pool feedback 16.509 36.09  1217  16.673  0.0157  494.5  343.2
```

Variable Site73;

CO2 production rate

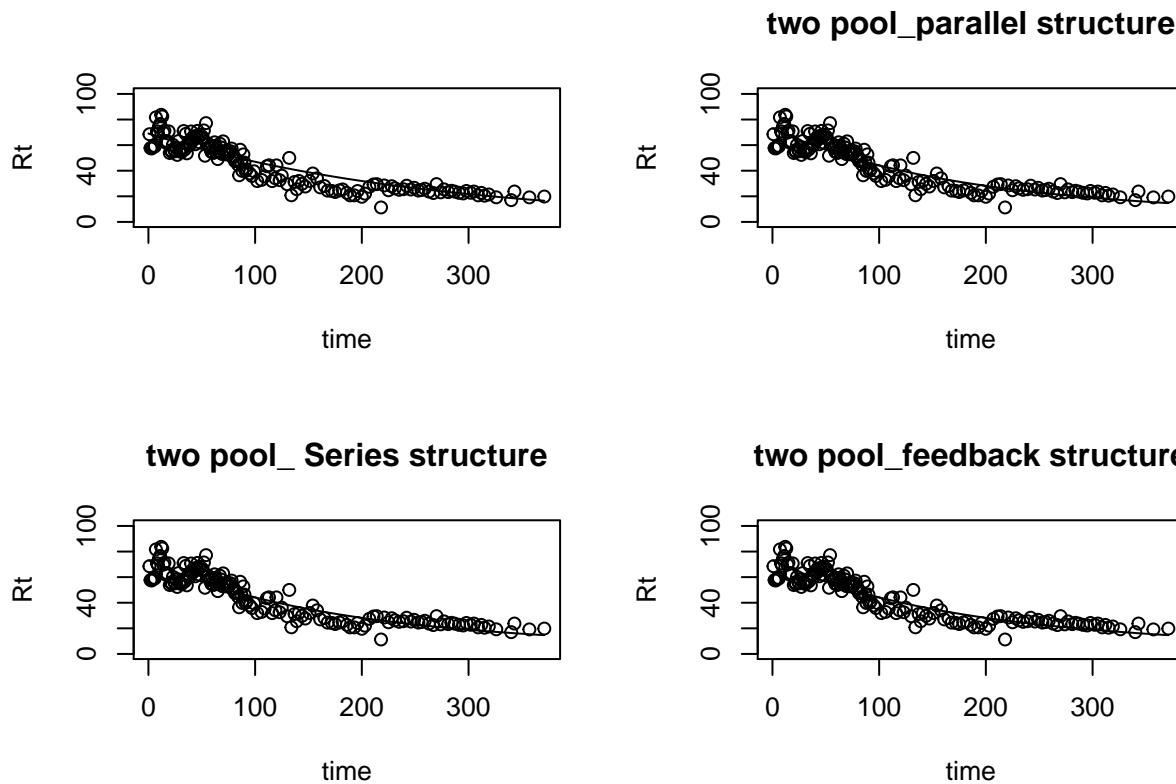
```
Crow_V74=modelFitTS_Markdown(db = db[[9]], ts.col = 74, ic.col = 73, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.05, 0.001, 0.1),
                                             series=c(0.01, 0.0005, 0.01, 0.1),
                                             feedback=c(0.05, 0.0001, 0.1, 0.01, 0.1)))
```

```
## [1] "Crow2019a; variable: Site73"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00385456800651873"
```

```

## [1] "AIC = 10.1062650892643"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00710899373325262"
## [2] "k2= 0.00243425307591868"
## [3] "proportion of C0 in pool 1= 0.352610215771724"
## [1] "AIC = 13.847021655882"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00710730140661983"
## [2] "k2= 0.0024337373665815"
## [3] "a21= 2.94605297613271e-05"
## [4] "Proportion of C0 in pool 1= 0.352815802357431"
## [1] "AIC = 15.8470216470236"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00710864896344611"
## [2] "k2= 0.00243416942941452"
## [3] "a21= 0.0292649403782294"
## [4] "a12= 2.35351760630165e-06"
## [5] "Proportion of C0 in pool 1= 0.369070788263296"

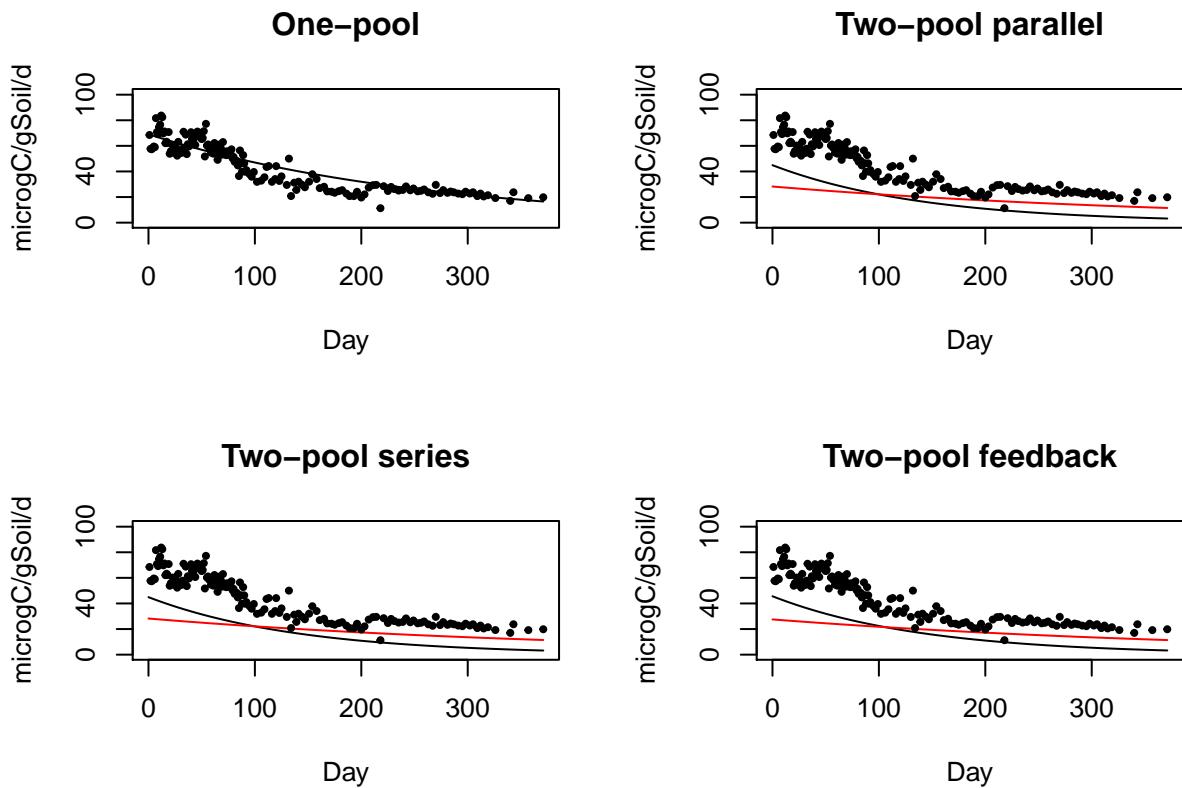
```



```

## [1] "AIC = 17.8470216526015"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0039
## Two-pool parallel 0.0071  0.0024  0.3526
## Two-pool series  0.0071  0.0024  0.3528  0.0000
## Two-pool feedback 0.0071  0.0024  0.3691  0.0293  0.3528  8446  50.58
##
##
## Model           AIC     BIC    AICn    AICc     wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        10.11  14.02  1506   10.12  0.8307  17920.0
## Two-pool parallel 13.85  25.60  1462   13.91  0.1245   244.9   140.65
## Two-pool series  15.85  31.51  1464   15.96  0.0448   140.7   97.53
## Two-pool feedback 17.85  37.43  1466   18.01  0.0160   152.7  101.25
```

Variable Site74;

CO₂ production rate

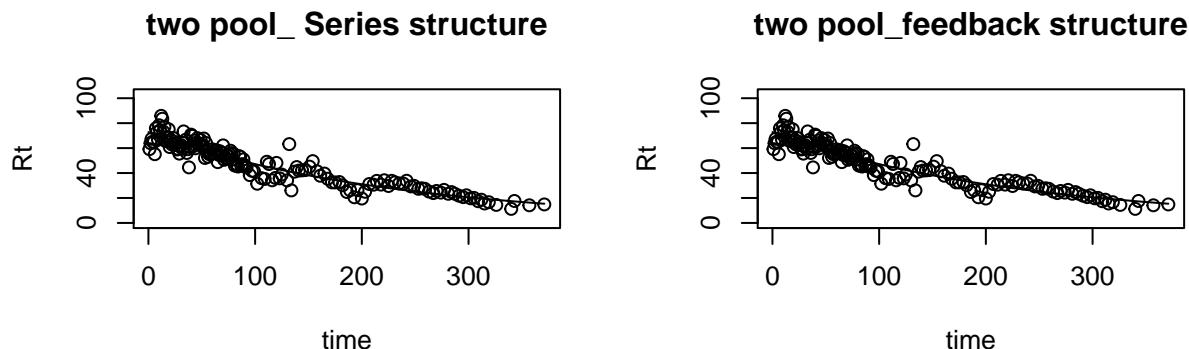
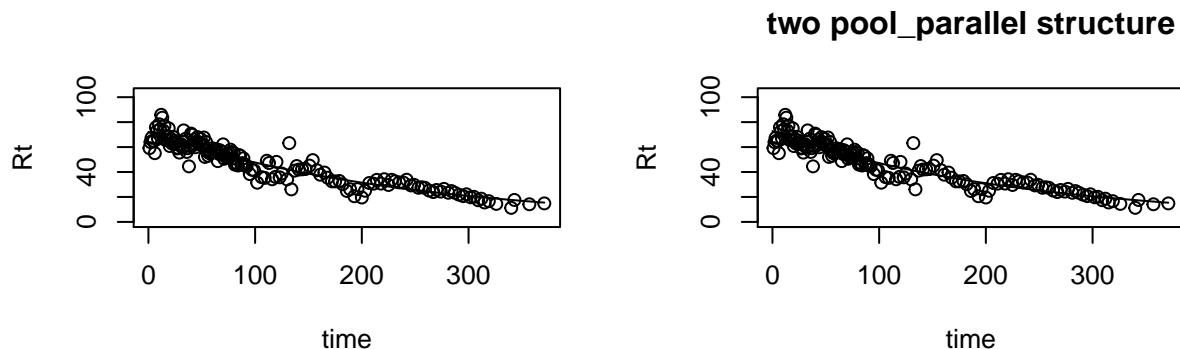
```
Crow_V75=modelFitTS_Markdown(db = db[[9]], ts.col = 75, ic.col = 74, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.1, 0.005, 0.1),
                                             series=c(0.01, 0.005, 0.01, 0.1),
                                             feedback=c(0.01, 0.005, 0.01, 0.01, 0.1)))

## [1] "Crow2019a; variable: Site74"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00414351670146829"
```

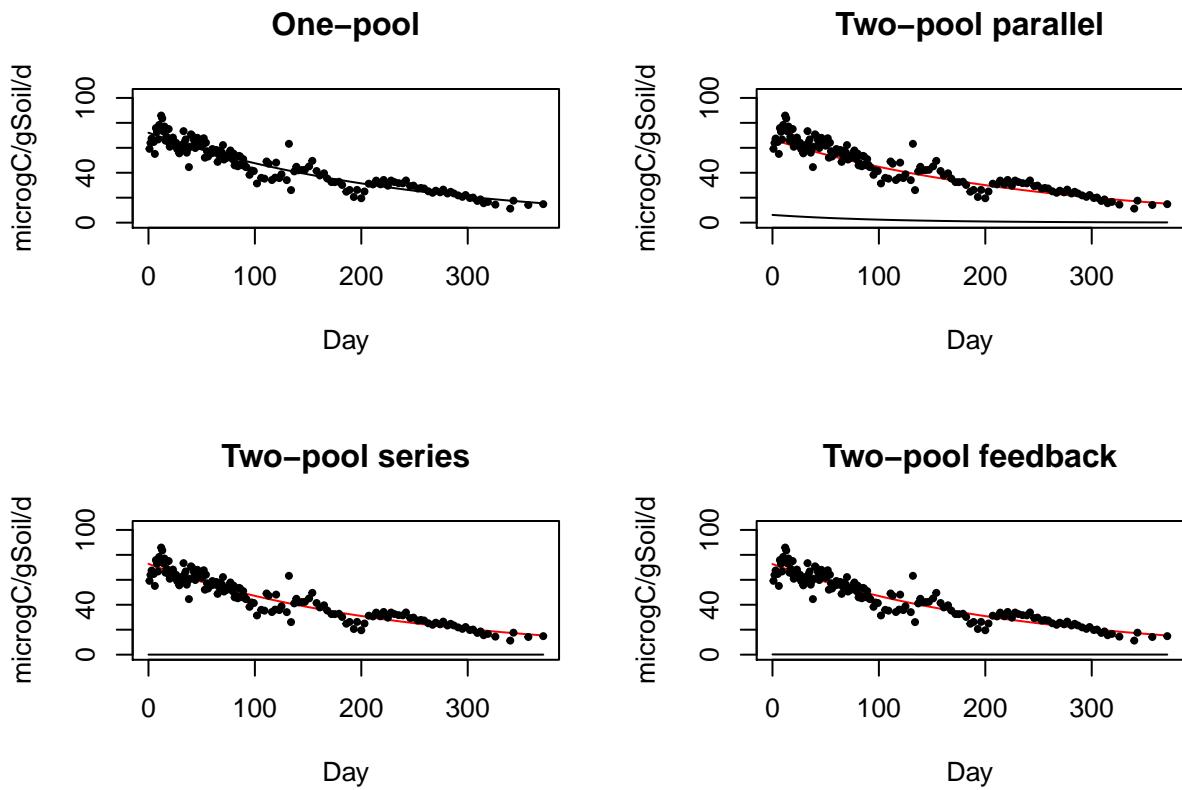
```

## [1] "AIC = 9.14490808992723"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00948959503354297"
## [2] "k2= 0.00397928126492799"
## [3] "proportion of C0 in pool 1= 0.0375604226028503"
## [1] "AIC = 13.1366314490417"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00397962716036035"
## [2] "k2= 0.00950447589890239"
## [3] "a21= 0.999323645985735"
## [4] "Proportion of C0 in pool 1= 0.559704727523374"
## [1] "AIC = 15.1366314397475"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0084301921896063"
## [2] "k2= 0.00504535510195316"
## [3] "a21= 0.982575174916696"
## [4] "a12= 0.113522143955845"
## [5] "Proportion of C0 in pool 1= 0.0661930343218197"

```



```
## [1] "AIC = 17.1366314422335"
```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0041 & 5946 35.60  
## Two-pool parallel 0.0095 0.0040 0.0376 & 5921 35.46  
## Two-pool series 0.0040 0.0095 0.5597 0.9993 & 5921 35.46  
## Two-pool feedback 0.0084 0.0050 0.0662 0.9826 0.5597 & 5921 35.46  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool 9.145 13.06 1327 9.156 0.8476 17400.0  
## Two-pool parallel 13.137 24.89 1330 13.202 0.1121 238.9 161.3  
## Two-pool series 15.137 30.80 1332 15.246 0.0403 356.4 288.0  
## Two-pool feedback 17.137 36.72 1334 17.301 0.0144 352.7 284.3
```

Variable Site75;

CO2 production rate

```
##  
Crow_V76=modelFitTS_Markdown(db = db[[9]], ts.col = 76, ic.col = 75, unitConverter = 1e3 ,  
inipars=list(oneP=0.5,  
parallel=c(0.5, 0.001, 0.1),  
series=c(0.01, 0.0005, 0.01, 0.1),  
feedback=c(0.05, 0.0001, 0.1, 0.01, 0.1)))
```

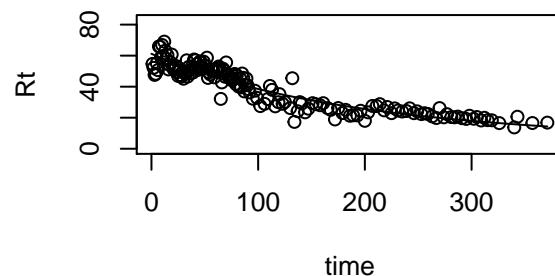
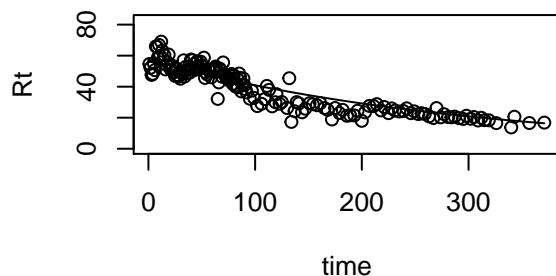
```
## [1] "Crow2019a; variable: Site75"  
## [1] "One pool model"
```

```

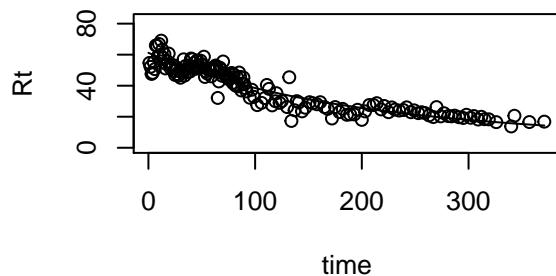
## [1] "Best fit parameter: -0.00337264899467193"
## [1] "AIC = 8.95183968557241"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00705729491419424"
## [2] "k2= 0.00222231045169627"
## [3] "proportion of C0 in pool 1= 0.285526124019436"
## [1] "AIC = 12.5305804826291"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0070584970128739"
## [2] "k2= 0.00222258971744504"
## [3] "a21= 6.83146983154193e-05"
## [4] "Proportion of C0 in pool 1= 0.285446958284214"
## [1] "AIC = 14.5305804902721"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00705686062016721"
## [2] "k2= 0.0022221033852614"
## [3] "a21= 0.0163165356634843"
## [4] "a12= 2.13679725341587e-06"
## [5] "Proportion of C0 in pool 1= 0.29253267200858"

```

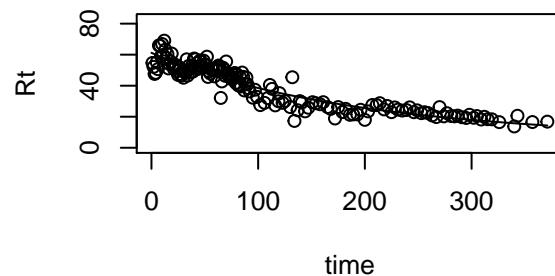
two pool_parallel structure



two pool_Series structure



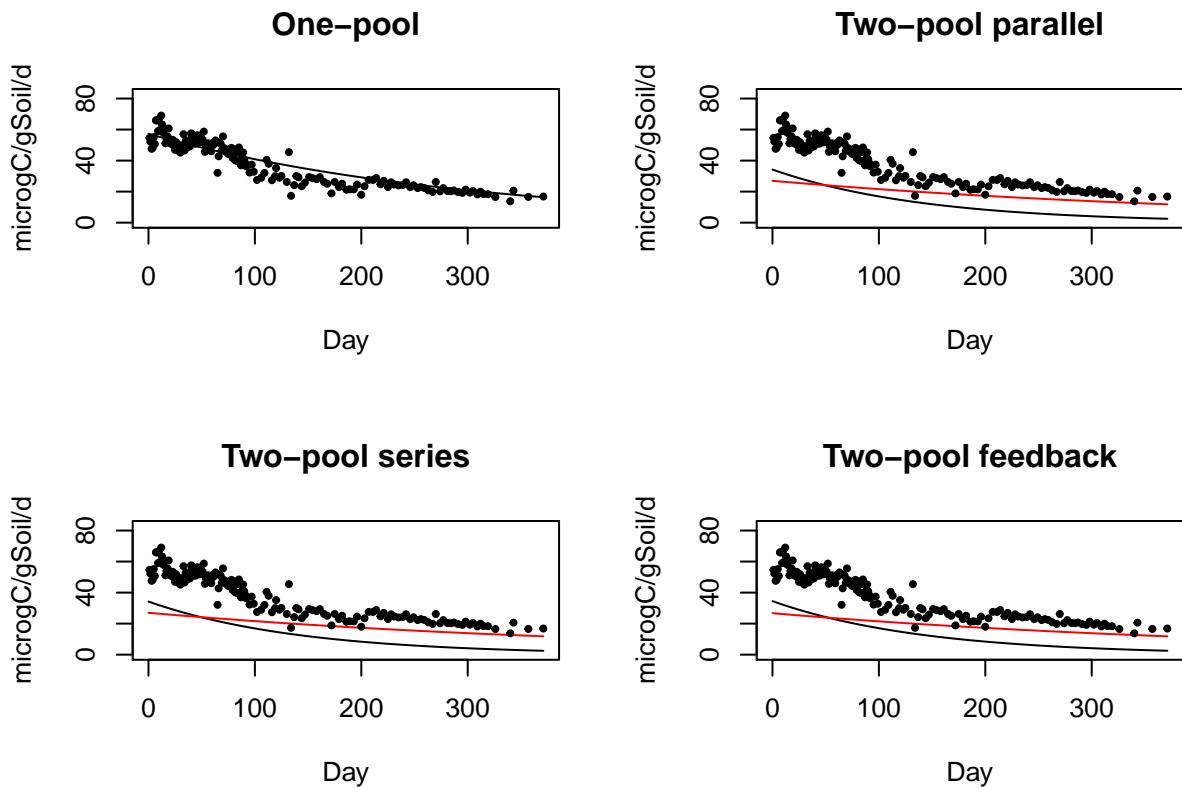
two pool_feedback structure



```

## [1] "AIC = 16.5305804822382"

```



```
##
##
## Model           k1      k2   COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0034
## Two-pool parallel 0.0071  0.0022  0.2855
## Two-pool series  0.0071  0.0022  0.2854  0.0001
## Two-pool feedback 0.0071  0.0022  0.2925  0.0163  0.2854  4373  26.19
##
##
## Model           AIC      BIC     AICn     AICC      wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        8.952   12.87   1292    8.963  0.8189  16990.0
## Two-pool parallel 12.531  24.28   1217   12.596  0.1331   277.6  154.80
## Two-pool series  14.531  30.20   1219   14.640  0.0479   141.7  98.21
## Two-pool feedback 16.531  36.11   1221   16.695  0.0171   149.0  100.31
```

Variable Site76;

CO2 production rate

```
Crow_V77=modelFitTS_Markdown(db = db[[9]], ts.col = 77, ic.col = 76, unitConverter = 1e3)
```

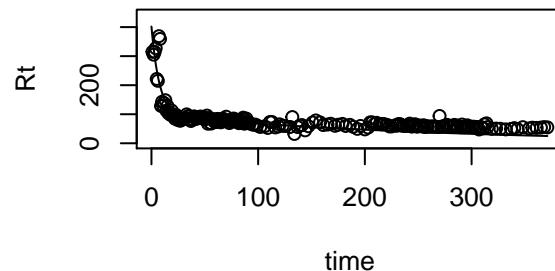
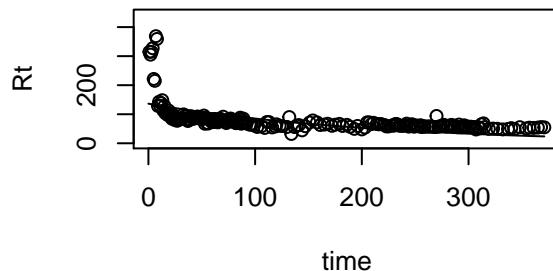
```
## [1] "Crow2019a; variable: Site76"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00472796834398892"
## [1] "AIC = 16.8854255192051"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.134540334779172"
```

```

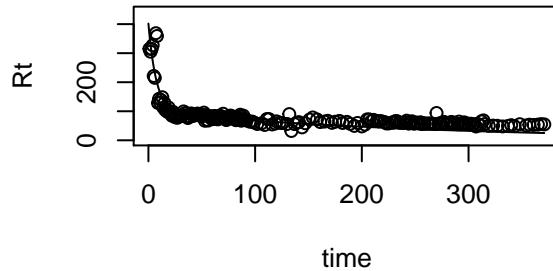
## [2] "k2= 0.00367881880017175"
## [3] "proportion of C0 in pool 1= 0.0783779736684117"
## [1] "AIC = 18.7438407241509"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.134529085220941"
## [2] "k2= 0.00367874644977943"
## [3] "a21= 9.59466368086193e-05"
## [3] "a21= 9.59466368086193e-05"
## [4] "Proportion of C0 in pool 1= 0.0783896306282388"
## [1] "AIC = 20.7438407205117"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.134538149690646"
## [2] "k2= 0.00367880472917513"
## [3] "a21= 0.000166430732526202"
## [4] "a12= 3.19708395868368e-07"
## [5] "Proportion of C0 in pool 1= 0.0783921646487686"

```

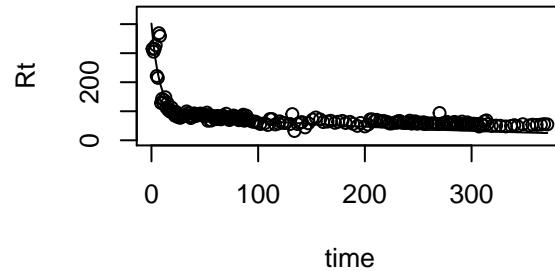
two pool_parallel structure



two pool_Series structure



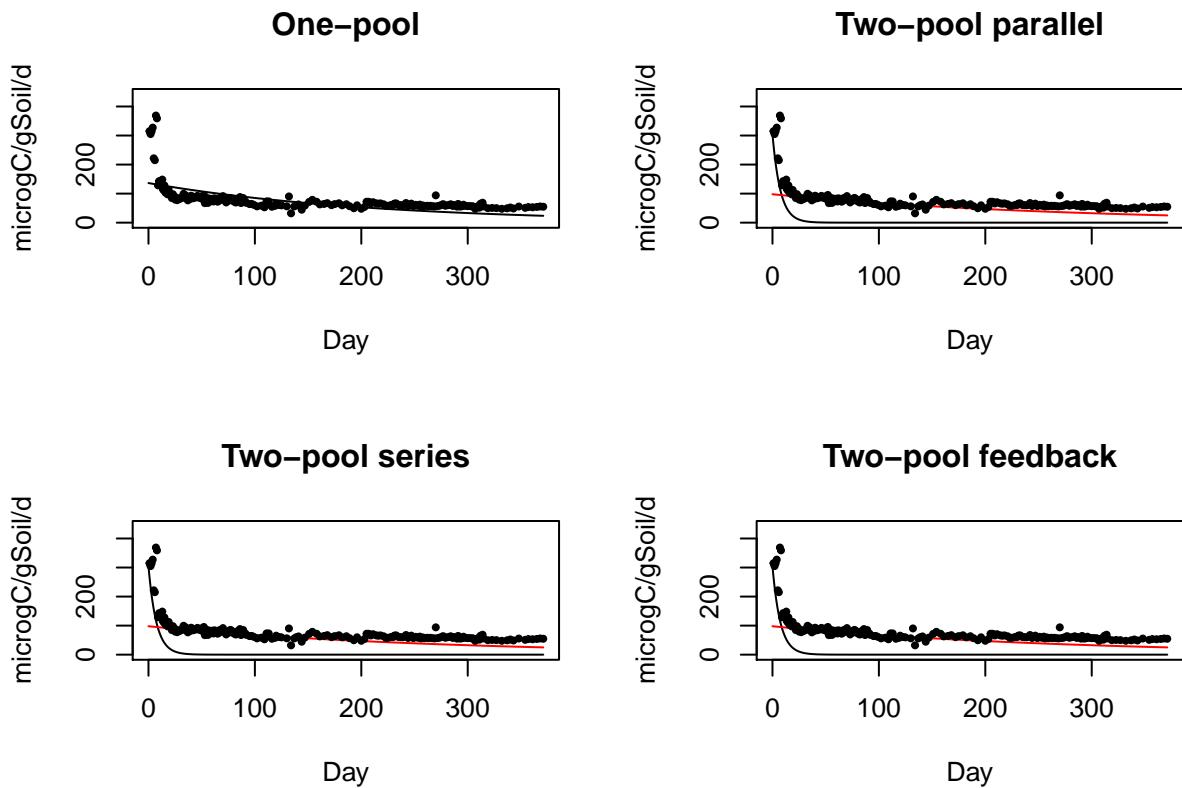
two pool_feedback structure



```

## [1] "AIC = 22.7438407217626"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0047
## Two-pool parallel 0.1345  0.0037  0.0784
## Two-pool series  0.1345  0.0037  0.0784  1e-04
## Two-pool feedback 0.1345  0.0037  0.0784  2e-04  0.0784  119962  585.2
##
##
## Model           AIC     BIC    AICn    AICc     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        16.89  20.80  2763   16.90  0.6568  28840.000
## Two-pool parallel 18.74  30.49  2370   18.81  0.2524   71.759  7.838
## Two-pool series  20.74  36.41  2372   20.85  0.0908   7.459  5.153
## Two-pool feedback 22.74  42.32  2374   22.91  0.0325   7.478  5.153
```

Variable Site77;

CO₂ production rate

```
Crow_V78=modelFitTS_Markdown(db = db[[9]], ts.col = 78, ic.col = 77, unitConverter = 1e3,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.05, 0.001, 0.1),
                                             series=c(0.01, 0.0005, 0.01, 0.1),
                                             feedback=c(0.01, 0.0005, 0.1, 0.01, 0.1)))

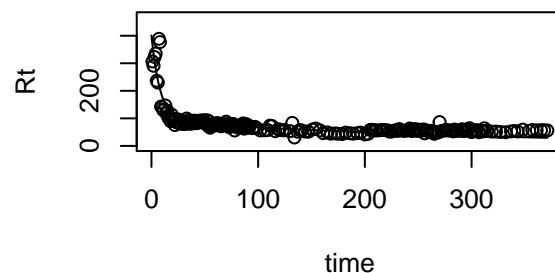
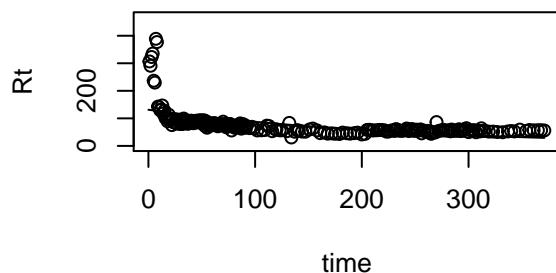
## [1] "Crow2019a; variable: Site77"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00405386358186632"
```

```

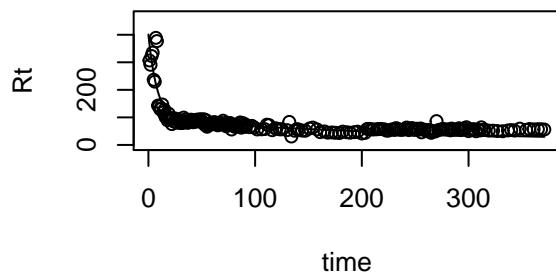
## [1] "AIC = 17.0200869983437"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.121950125544076"
## [2] "k2= 0.00305127156203094"
## [3] "proportion of C0 in pool 1= 0.0785005025574233"
## [1] "AIC = 18.5399606951098"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.121957482642928"
## [2] "k2= 0.00305131414554864"
## [3] "a21= 7.83086736083627e-06"
## [4] "Proportion of C0 in pool 1= 0.0784982624582405"
## [1] "AIC = 20.5399606929435"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.121956849268284"
## [2] "k2= 0.00305133195217245"
## [3] "a21= 0.399313933863679"
## [4] "a12= 1.71947985881937e-05"
## [5] "Proportion of C0 in pool 1= 0.13294876572769"

```

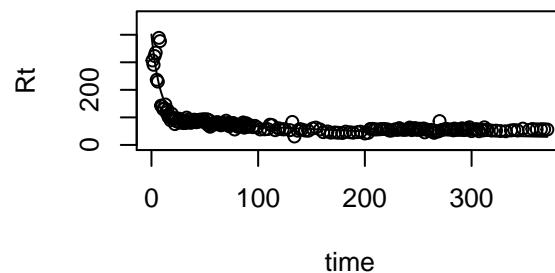
two pool_parallel structure



two pool_Series structure



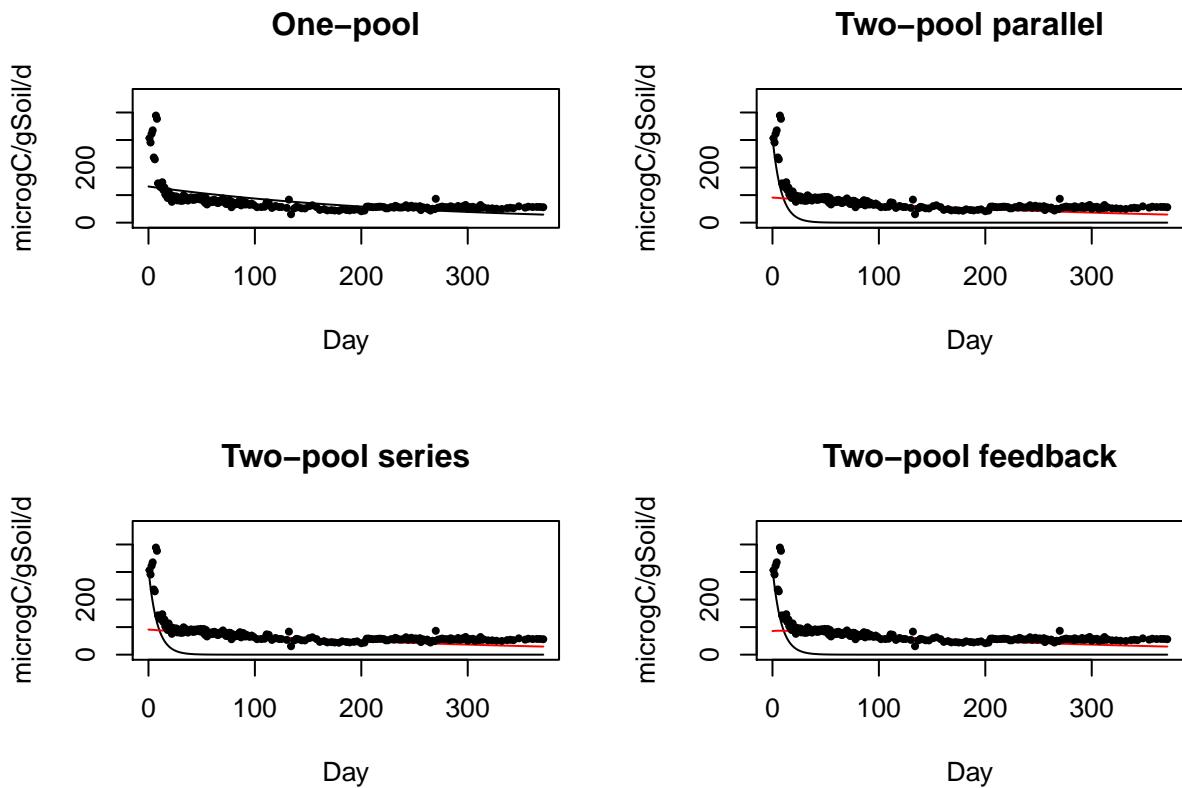
two pool_feedback structure



```

## [1] "AIC = 22.5399606928747"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----
## One-pool        0.0041
## Two-pool parallel 0.1220  0.0031  0.0785
## Two-pool series  0.1220  0.0031  0.0785  0.0000
## Two-pool feedback 0.1220  0.0031  0.1329  0.3993  0.0785  108336  528.5
##
##
## Model           AIC     BIC    AICn    AICc     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        17.02  20.94  2788  17.03  0.6177  32380.000
## Two-pool parallel 18.54  30.29  2332  18.61  0.2811  80.743   8.365
## Two-pool series  20.54  36.20  2334  20.65  0.1012   8.202   5.684
## Two-pool feedback 22.54  42.12  2336  22.70  0.0362  139.066  13.965
```

Variable Site78;

CO₂ production rate

```
Crow_V79=modelFitTS_Markdown(db = db[[9]], ts.col = 79, ic.col = 78, unitConverter = 1e3)
```

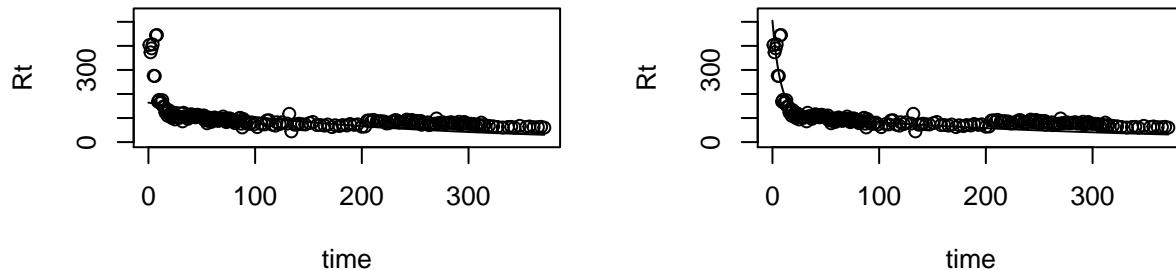
```
## [1] "Crow2019a; variable: Site78"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00454234608683279"
## [1] "AIC = 17.8472915947332"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.135774996018178"
```

```

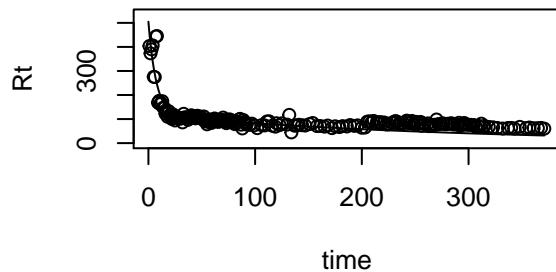
## [2] "k2= 0.00352327431213903"
## [3] "proportion of C0 in pool 1= 0.0789822277884253"
## [1] "AIC = 19.6827342376979"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.135776927760255"
## [2] "k2= 0.00352328710825069"
## [3] "a21= 9.09868798236735e-05"
## [4] "Proportion of C0 in pool 1= 0.0789888591907253"
## [1] "AIC = 21.6827342353157"
## [1] "Two pool model-feedback structure"
## Warning in newf - reff: longer object length is not a multiple of shorter object
## length
## Warning in del - (newf - reff)/delt[j]: longer object length is not a multiple
## of shorter object length
## Error in jacob[, j] <- del: number of items to replace is not a multiple of replacement length

```

two pool_parallel structure



two pool_Series structure



Dataset Haddix2011SSSJA

Variable C_SasNG_15;

Decomposition rates over time at 15 degrees for Saskatchewan, native grassland

```

Haddix_V2=modelFitTS_Markdown(db = db[[15]], ts.col = 2, ic.col = 1, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.1, 0.01, 0.01)) )

```

```

## [1] "Haddix2011SSSJA; variable: C_SasNG_15"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00282454420772105"

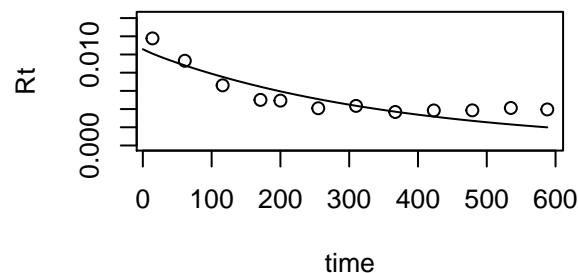
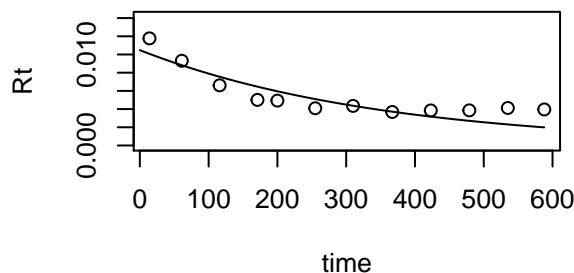
## [1] "AIC = -24.9195346371546"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.069215619569333"
## [2] "k2= 0.00281893598631422"
## [3] "proportion of C0 in pool 1= 0.000513856435812143"

## [1] "AIC = -20.9387182957149"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00232765069520952"
## [2] "k2= 0.0208094150634683"
## [3] "a21= 0.999504665017962"
## [4] "Proportion of C0 in pool 1= 0.827191031275621"

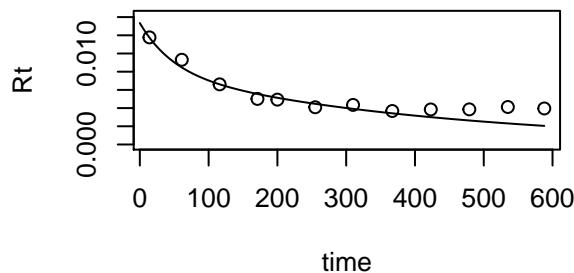
## [1] "AIC = -19.8853258188166"
## [1] "Two pool model-feedback structure"
## [1] "k1= 5.29616143238766e-15"
## [2] "k2= 0.00282455712539001"
## [3] "a21= 0.997023922479369"
## [4] "a12= 3.47489897967179e-09"
## [5] "Proportion of C0 in pool 1= 2.35501911305391e-08"

```

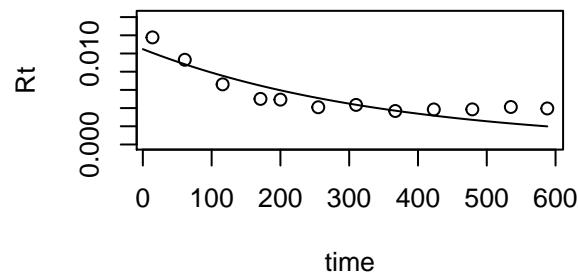
two pool_parallel structure



two pool_Series structure



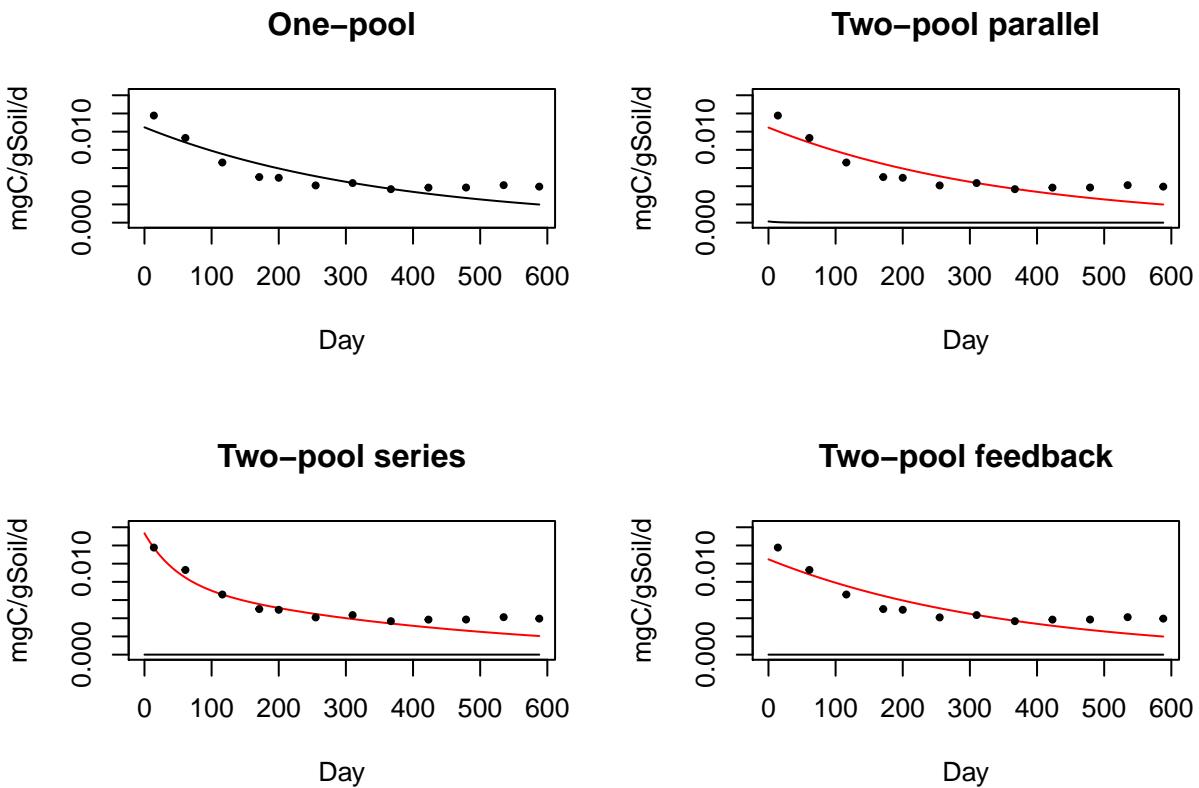
two pool_feedback structure



```

## [1] "AIC = -16.9195345946833"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0028
## Two-pool parallel 0.0692  0.0028  0.0005
## Two-pool series  0.0023  0.0208  0.8272  0.9995
## Two-pool feedback 0.0000  0.0028  0.0000  0.9970  0.8272  0  0
##
##
## Model           AIC      BIC     AICn     AICc      wi   MeanTrT     q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -24.92  -24.35  -173.0  -24.556  0.9513  3.710e+00
## Two-pool parallel -20.94  -19.24  -169.1  -18.272  0.0411  3.505e+02  2.414e+02
## Two-pool series  -19.89  -17.63  -173.3  -14.885  0.0076  4.776e+02  3.486e+02
## Two-pool feedback -16.92  -14.09  -165.0  -8.348  0.0003  1.888e+14  1.309e+14
```

Variable C_SasNG_25;

Decomposition rates over time at 25 degrees for Saskatchewan, native grassland

```
Haddix_V3=modelFitTS_Markdown(db = db[[15]], ts.col = 3, ic.col = 1, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.0001, 0.1),
                                             series=c(0.1, 0.0001, 0.01, 0.1),
                                             feedback=c(0.1, 0.0001, 0.1, 0.005, 0.01)))

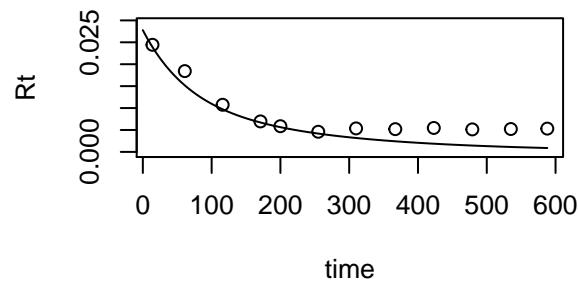
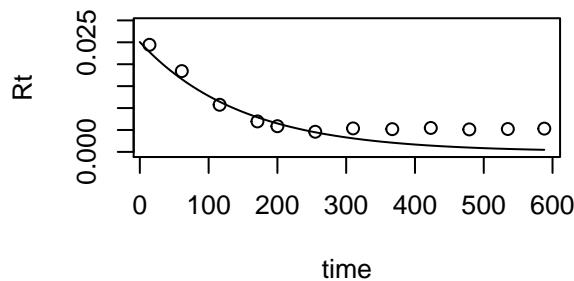
## [1] "Haddix2011SSSJA; variable: C_SasNG_25"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00675590507954382"
```

```

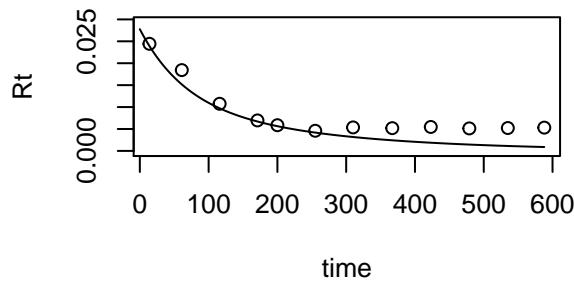
## [1] "AIC = -21.3921571440399"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00446524573537702"
## [2] "k2= 0.0159870743079966"
## [3] "proportion of C0 in pool 1= 0.737828287050434"
## [1] "AIC = -17.6571719434054"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00446579401714651"
## [2] "k2= 0.01598830433186"
## [3] "a21= 4.97110643041809e-05"
## [4] "Proportion of C0 in pool 1= 0.737861262741875"
## [1] "AIC = -15.6571719478072"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0159892617425954"
## [2] "k2= 0.00446580124106446"
## [3] "a21= 0.531693531443446"
## [4] "a12= 7.09843434365531e-07"
## [5] "Proportion of C0 in pool 1= 0.99937478944701"

```

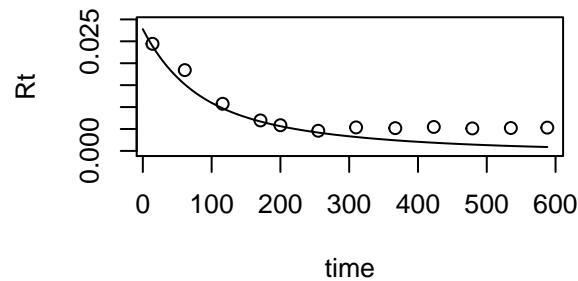
two pool_parallel structure



two pool_Series structure



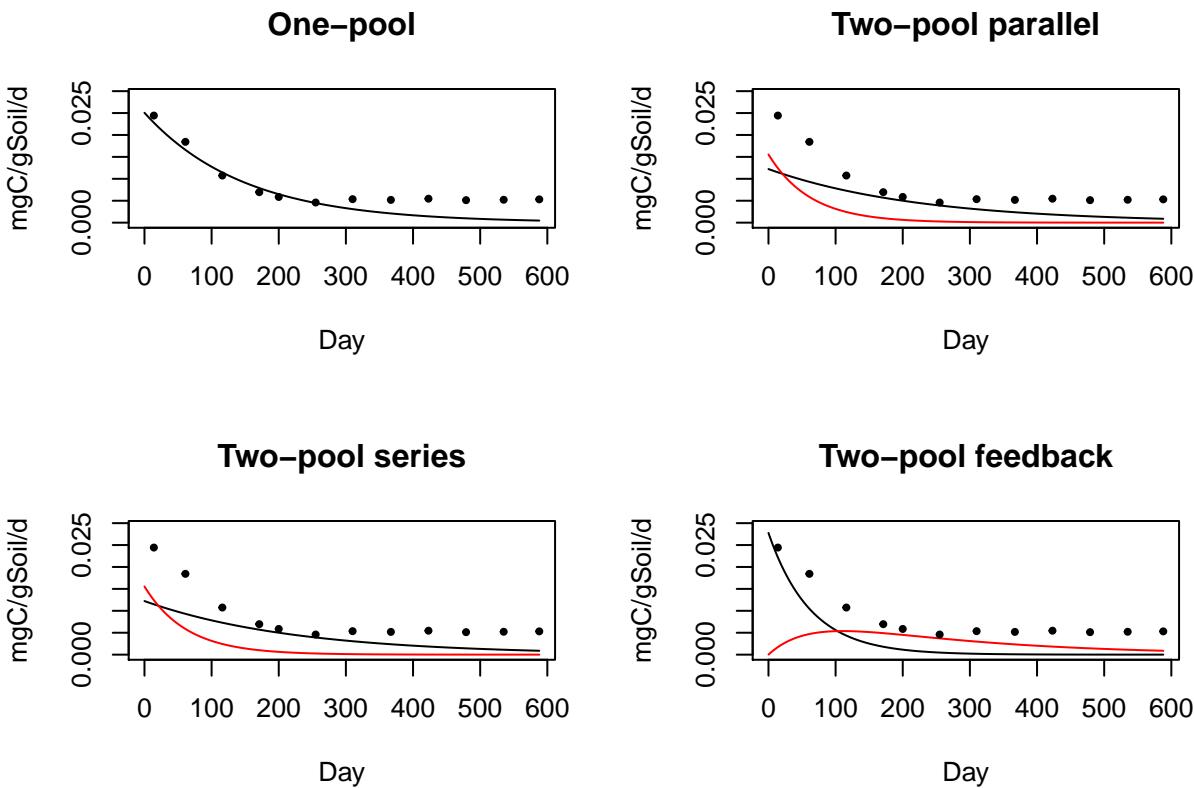
two pool_feedback structure



```

## [1] "AIC = -13.6571735744031"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        0.0068
## Two-pool parallel 0.0045  0.0160  0.7378
## Two-pool series  0.0045  0.0160  0.7379  0.0000
## Two-pool feedback 0.0160  0.0045  0.9994  0.5317  0.7379  1e-04  0
##
##
## Model          AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----
## One-pool       -21.39  -20.83  -150.0  -21.029  0.9484    3.71
## Two-pool parallel -17.66 -15.96  -147.8  -14.991  0.0463  133.58  71.11
## Two-pool series  -15.66 -13.40  -145.8  -10.657  0.0053  223.93  155.22
## Two-pool feedback -13.66 -10.83  -143.8  -5.086  0.0003  181.60  108.76
```

Variable C_SasNG_35;

Decomposition rates over time at 35 degrees for Saskatchewan, native grassland

```
Haddix_V4=modelFitTS_Markdown(db = db[[15]], ts.col = 4, ic.col = 1, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.1, 0.01, 0.01)))
```

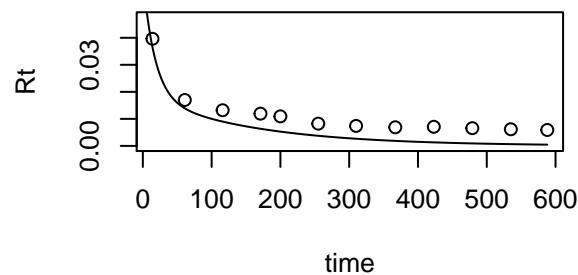
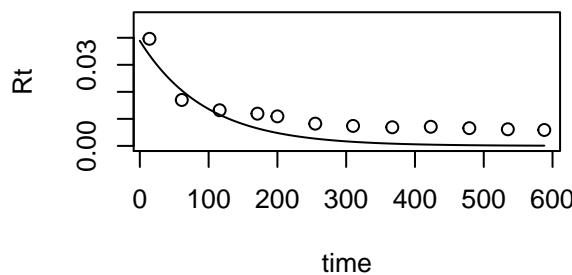
```
## [1] "Haddix2011SSSJA; variable: C_SasNG_35"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0104821427280886"
```

```

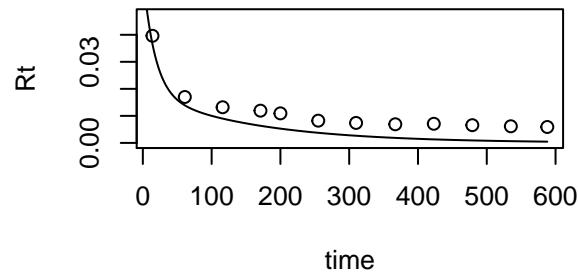
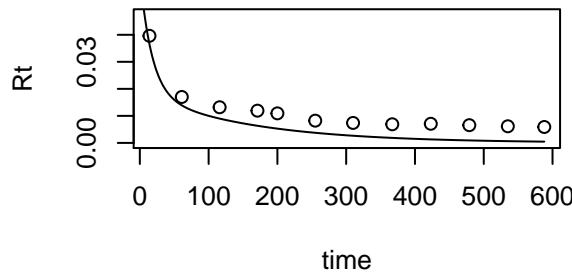
## [1] "AIC = -18.7495037376223"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0579891360817989"
## [2] "k2= 0.00627266160730566"
## [3] "proportion of C0 in pool 1= 0.204847407346169"
## [1] "AIC = -15.2409350675142"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.057982230119423"
## [2] "k2= 0.00627288958022402"
## [3] "a21= 0.000234711437498758"
## [4] "Proportion of C0 in pool 1= 0.204888560291734"
## [1] "AIC = -13.2409350770715"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0579939947126304"
## [2] "k2= 0.00627297054084845"
## [3] "a21= 0.00100932361051836"
## [4] "a12= 2.04361753824434e-05"
## [5] "Proportion of C0 in pool 1= 0.205057468554461"

```

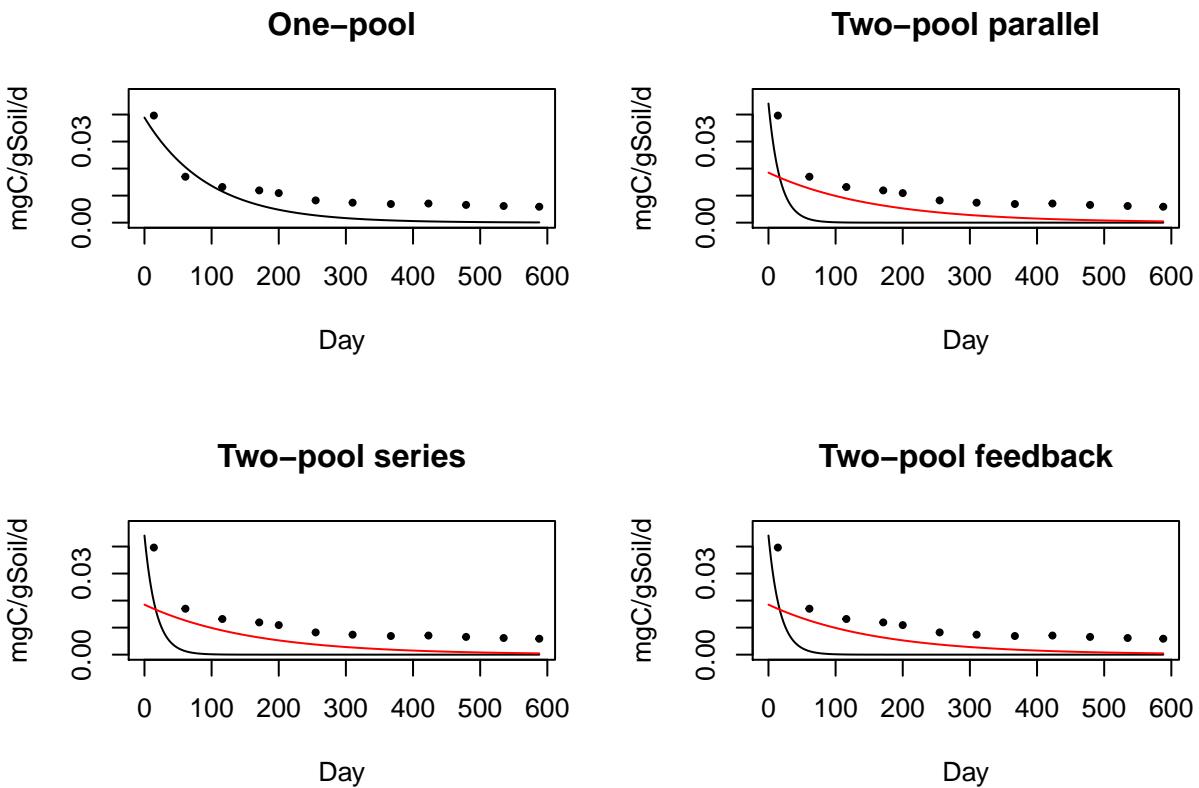
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = -11.2409350712026"
```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0105
## Two-pool parallel 0.0580  0.0063  0.2048
## Two-pool series   0.0580  0.0063  0.2049  2e-04
## Two-pool feedback 0.0580  0.0063  0.2051  1e-03  0.2049  3e-04  0
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----
## One-pool        -18.75  -18.185 -132.9  -18.386  0.9425    3.71
## Two-pool parallel -15.24  -13.546 -132.1  -12.574  0.0516  59.29  18.77
## Two-pool series   -13.24  -10.981 -130.1  -8.241   0.0059  17.28  11.96
## Two-pool feedback  -11.24  -8.416  -128.1  -2.670   0.0004  17.40  11.97
```

Variable C_SasCul_15;

Decomposition rates over time at 15 degrees for Saskatchewan, cultivated

```
Haddix_V5=modelFitTS_Markdown(db = db[[15]], ts.col = 5, ic.col = 2, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.05, 0.01, 0.01)))

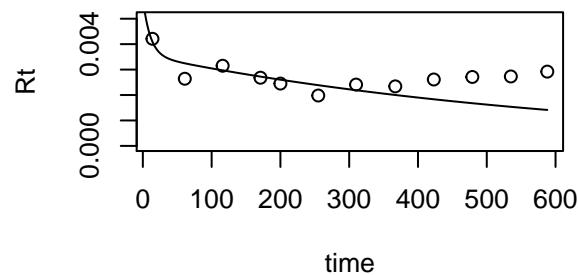
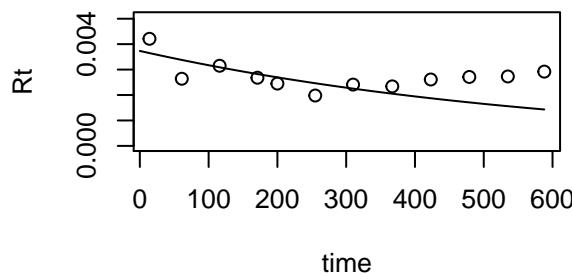
## [1] "Haddix2011SSSJA; variable: C_SasCul_15"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00163025606405576"
```

```

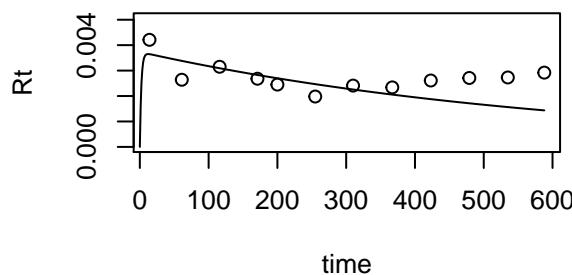
## [1] "AIC = -26.8838217206659"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0928877212798501"
## [2] "k2= 0.00157349911725238"
## [3] "proportion of C0 in pool 1= 0.0104205213254541"
## [1] "AIC = -22.9739841676677"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.474091735417855"
## [2] "k2= 0.00162519245461989"
## [3] "a21= 0.99999974735414"
## [4] "Proportion of C0 in pool 1= 0.999760252060302"
## [1] "AIC = -20.8937398438122"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0814946122474001"
## [2] "k2= 0.00162747381666344"
## [3] "a21= 0.00399479805998182"
## [4] "a12= 5.98099821185194e-05"
## [5] "Proportion of C0 in pool 1= 0.000482315342358763"

```

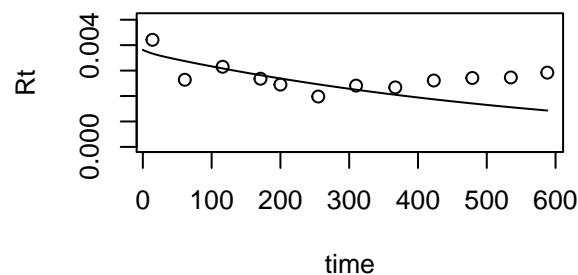
two pool_parallel structure



two pool_Series structure



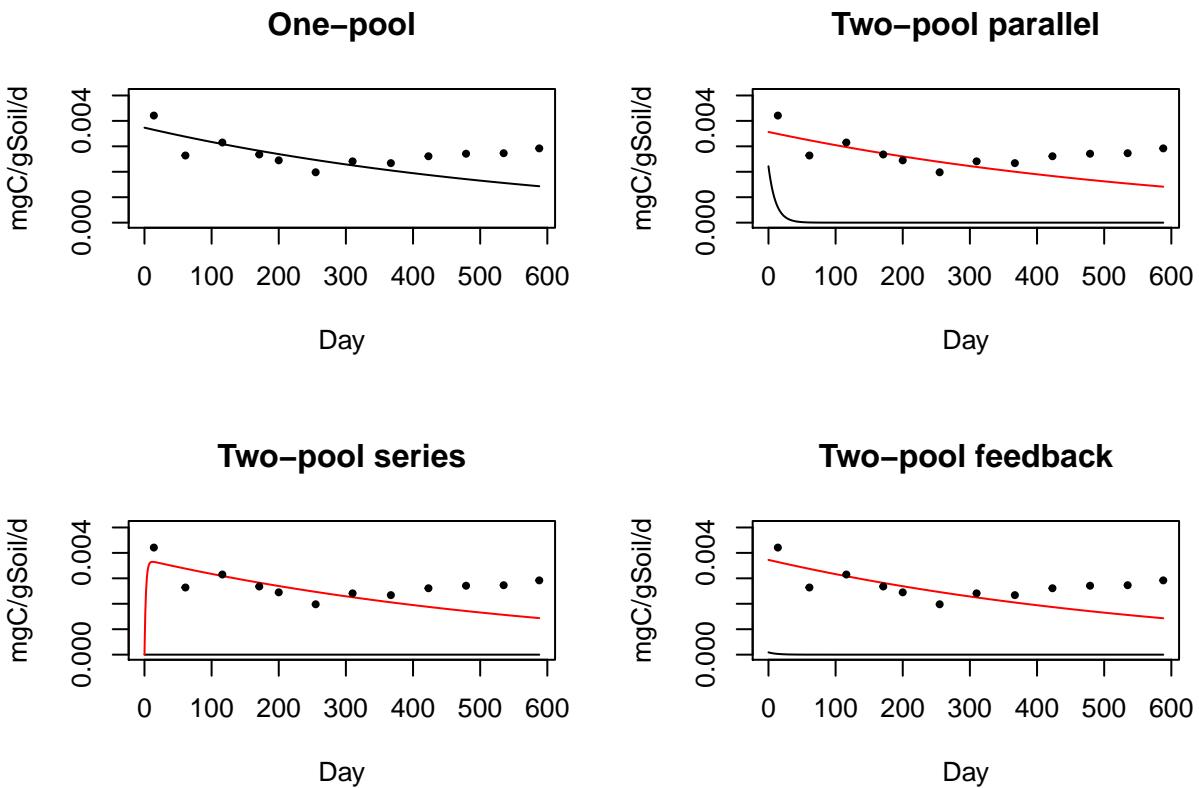
two pool_feedback structure



```

## [1] "AIC = -18.8917304861799"

```



```
##
##
## Model           k1      k2    COInp1   a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0016
## Two-pool parallel 0.0929  0.0016  0.0104
## Two-pool series  0.4741  0.0016  0.9998  1.000   0.004  0.9998  0   0
## Two-pool feedback 0.0815  0.0016  0.0005
## 
## Model           AIC     BIC    AICn    AICc    wi    MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        -26.88 -26.32 -185.7  -26.52  0.9527  2.29
## Two-pool parallel -22.97 -21.28 -182.3  -20.31  0.0426 396.03 133.282
## Two-pool series  -20.89 -18.63 -179.8  -15.89  0.0047 617.42 428.614
## Two-pool feedback -18.89 -16.07 -177.8  -10.32  0.0003 14.73  8.554
```

Variable C_SasCul_25;

Decomposition rates over time at 25 degrees for Saskatchewan, cultivated

```
Haddix_V6=modelFitTS_Markdown(db = db[[15]], ts.col = 6, ic.col = 2, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.1, 0.1, 0.01))))
```

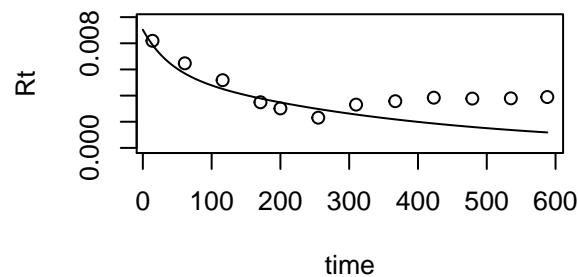
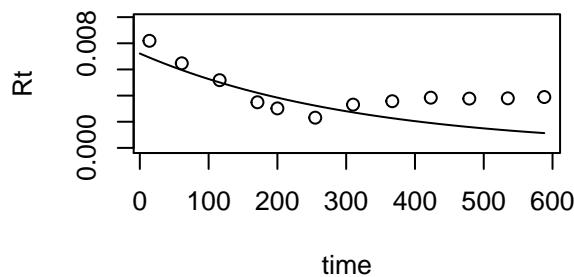
```
## [1] "Haddix2011SSSJA; variable: C_SasCul_25"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0031522744336403"
```

```

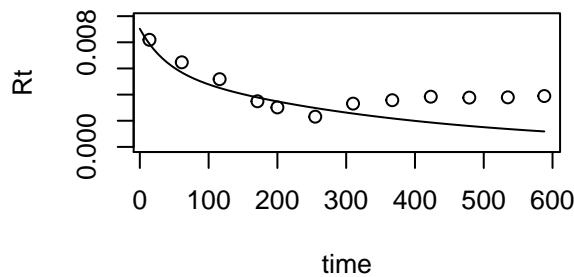
## [1] "AIC = -23.9263084407018"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0262133197632922"
## [2] "k2= 0.00276664905688465"
## [3] "proportion of C0 in pool 1= 0.050308753794764"
## [1] "AIC = -20.0703952366319"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0262156026707755"
## [2] "k2= 0.00276662271804184"
## [3] "a21= 4.20548686279609e-05"
## [4] "Proportion of C0 in pool 1= 0.0503126183536207"
## [1] "AIC = -18.0703952298501"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0262002574972653"
## [2] "k2= 0.00276988974733568"
## [3] "a21= 0.00660813752990325"
## [4] "a12= 0.162226996781052"
## [5] "Proportion of C0 in pool 1= 0.0685648122177098"

```

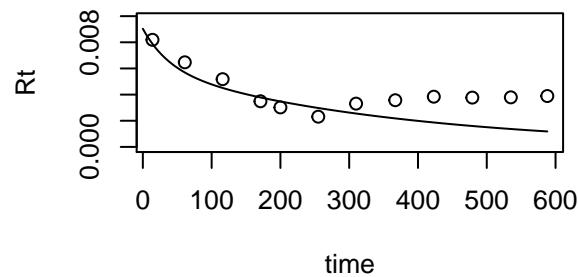
two pool_parallel structure



two pool_Series structure



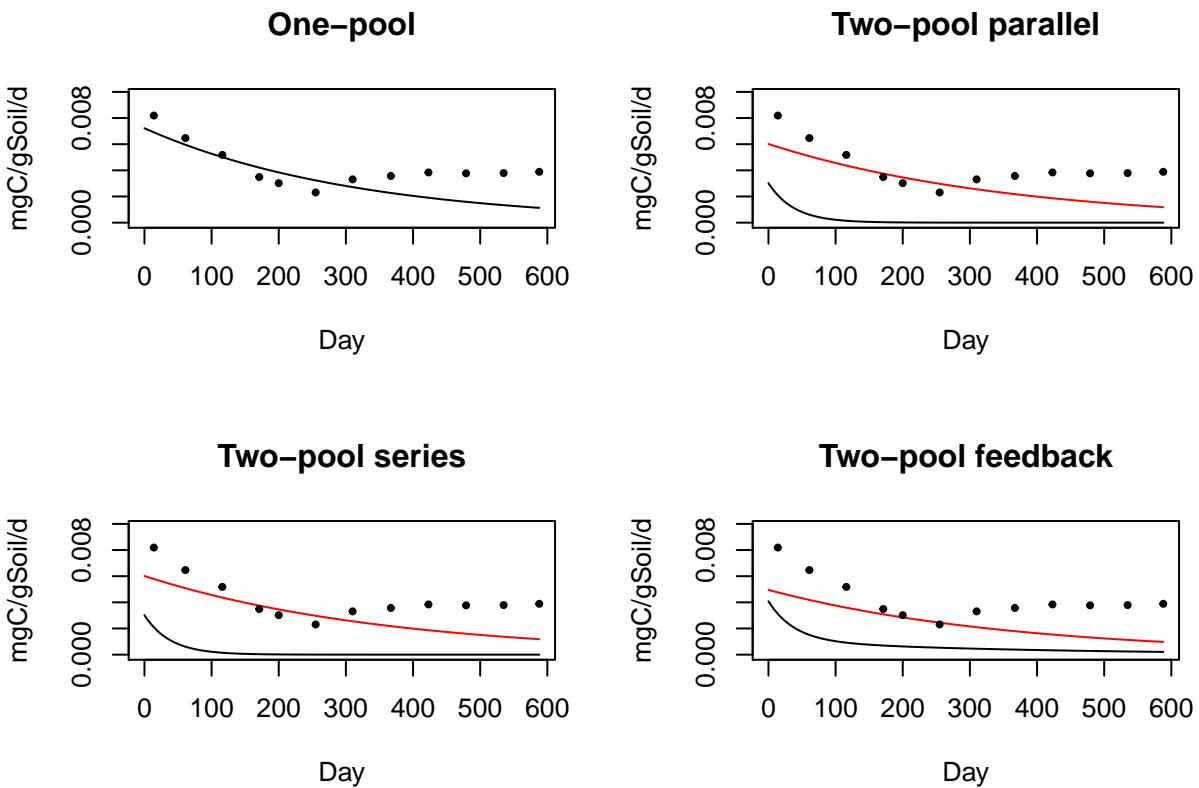
two pool_feedback structure



```

## [1] "AIC = -16.0703952404297"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0032
## Two-pool parallel 0.0262  0.0028  0.0503
## Two-pool series   0.0262  0.0028  0.0503  0.0000
## Two-pool feedback 0.0262  0.0028  0.0686  0.0066  0.0503  0  0
##
##
## Model          AIC      BIC    AICn     AICc      wi  MeanTrT    q05
## -----
## One-pool       -23.93  -23.36  -166.5  -23.563  0.9512    2.29
## Two-pool parallel -20.07  -18.38  -163.5  -17.404  0.0437  253.41  115.44
## Two-pool series   -18.07  -15.81  -161.5  -13.070  0.0050   38.16  26.44
## Two-pool feedback  -16.07  -13.25  -159.5  -7.499  0.0003   40.60  26.70
```

Variable C_SasCul_35;

Decomposition rates over time at 35 degrees for Saskatchewan, cultivated

```
Haddix_V7=modelFitTS_Markdown(db = db[[15]], ts.col = 7, ic.col = 2, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.001, 0.01, 0.1),
                                             feedback=c(0.05, 0.001, 0.01, 0.1, 0.01)))
```

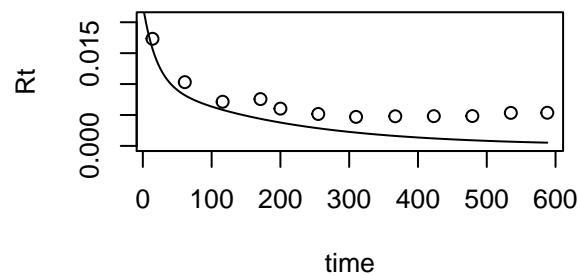
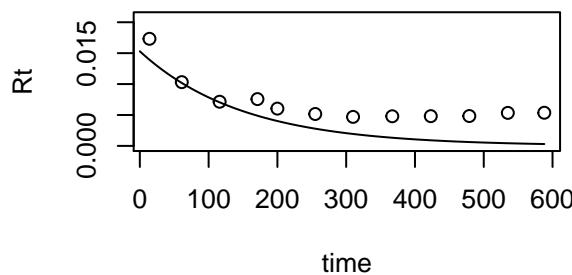
```
## [1] "Haddix2011SSSJA; variable: C_SasCul_35"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00668133723097242"
```

```

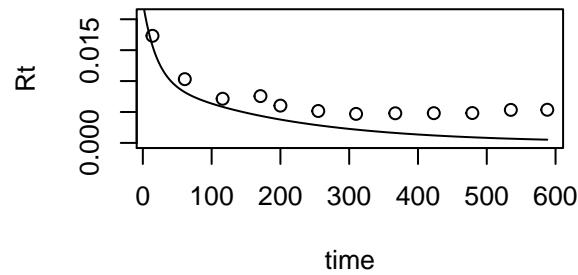
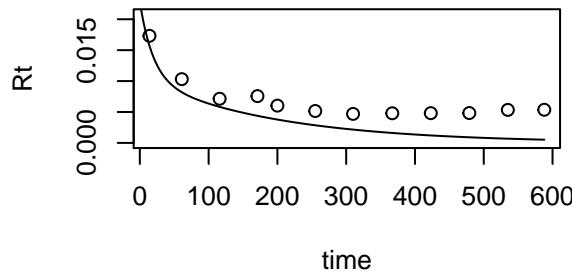
## [1] "AIC = -20.8545885362689"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0518999974227983"
## [2] "k2= 0.00510901093337175"
## [3] "proportion of C0 in pool 1= 0.103453118213234"
## [1] "AIC = -17.0360777985029"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0518848382069728"
## [2] "k2= 0.00510900583600204"
## [3] "a21= 0.000149788456234479"
## [4] "Proportion of C0 in pool 1= 0.103476698942596"
## [1] "AIC = -15.036077797385"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.051902931701332"
## [2] "k2= 0.00510910926373444"
## [3] "a21= 0.000176621533738985"
## [4] "a12= 0.0240978209411382"
## [5] "Proportion of C0 in pool 1= 0.105818743602123"

```

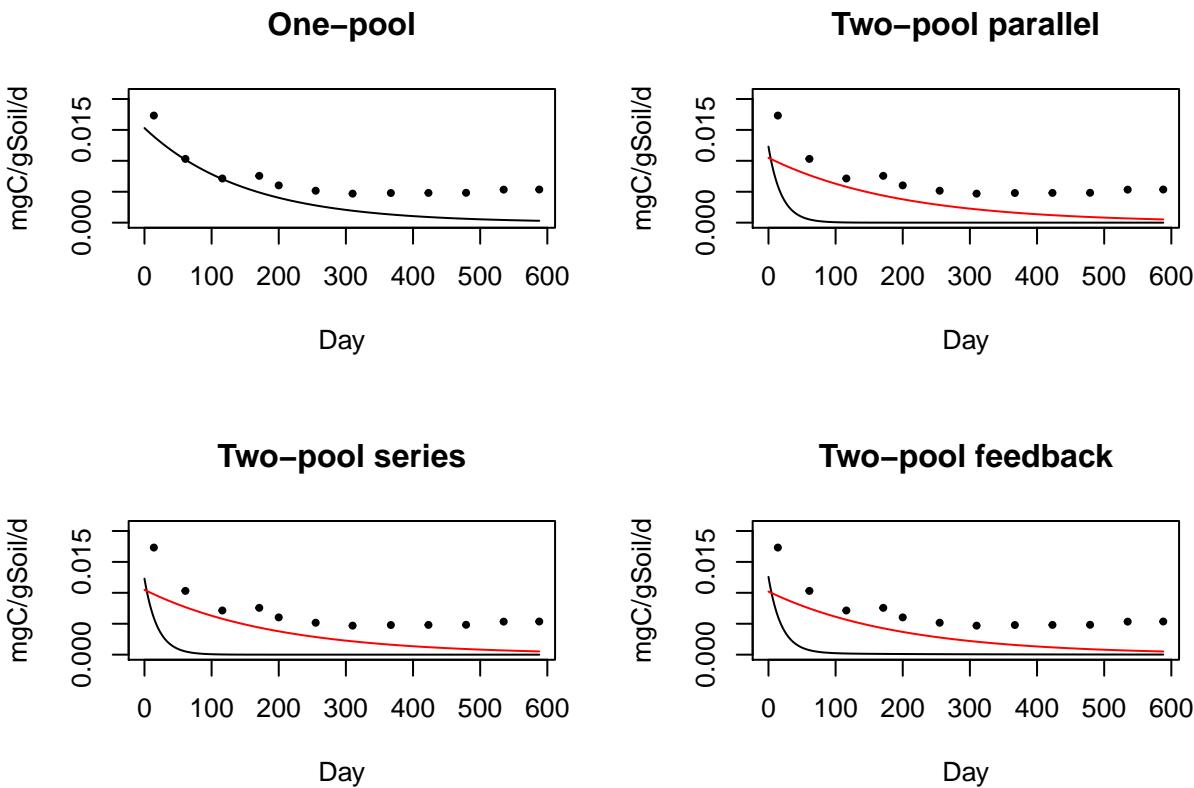
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = -13.03607779171"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        0.0067
## Two-pool parallel 0.0519  0.0051  0.1035
## Two-pool series  0.0519  0.0051  0.1035  1e-04
## Two-pool feedback 0.0519  0.0051  0.1058  2e-04  0.1035  1e-04  0
##
##
## Model          AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----
## One-pool       -20.85  -20.29  -146.6  -20.491  0.9504    2.29
## Two-pool parallel -17.04  -15.34  -143.7  -14.369  0.0445  100.51  31.12
## Two-pool series   -15.04  -12.78  -141.7  -10.036  0.0051   19.30  13.36
## Two-pool feedback  -13.04  -10.21  -139.7  -4.465  0.0003   19.30  13.36
```

Variable C_NDakNG_15;

Decomposition rates over time at 15 degrees for North Dakota, native grassland

```
Haddix_V8=modelFitTS_Markdown(db = db[[15]], ts.col = 8, ic.col = 3, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.1, 0.0001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.1, 0.01, 0.01)))
```

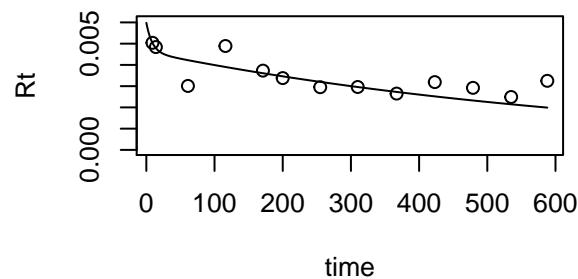
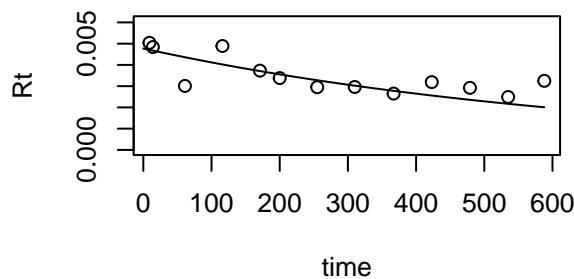
```
## [1] "Haddix2011SSSJA; variable: C_NDakNG_15"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00147256779459681"
```

```

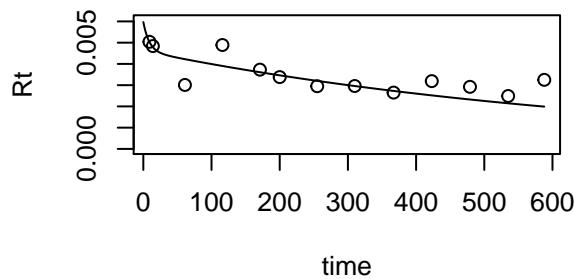
## [1] "AIC = -27.449049992237"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.115408630570874"
## [2] "k2= 0.00142661891280698"
## [3] "proportion of C0 in pool 1= 0.00368122120348469"
## [1] "AIC = -23.5233466522375"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.115205203126337"
## [2] "k2= 0.0014268617037639"
## [3] "a21= 0.983873736635901"
## [4] "Proportion of C0 in pool 1= 0.966167865255788"
## [1] "AIC = -21.5233483613068"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.115295196971676"
## [2] "k2= 0.00142744670526433"
## [3] "a21= 0.472210803592139"
## [4] "a12= 0.00083621182019461"
## [5] "Proportion of C0 in pool 1= 0.00702136938154568"

```

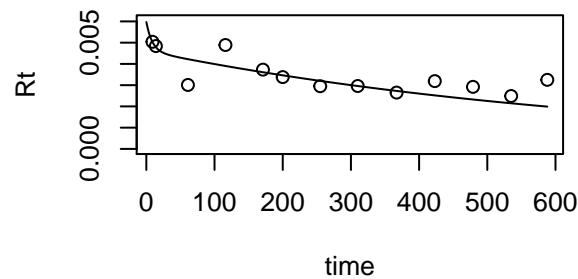
two pool_parallel structure



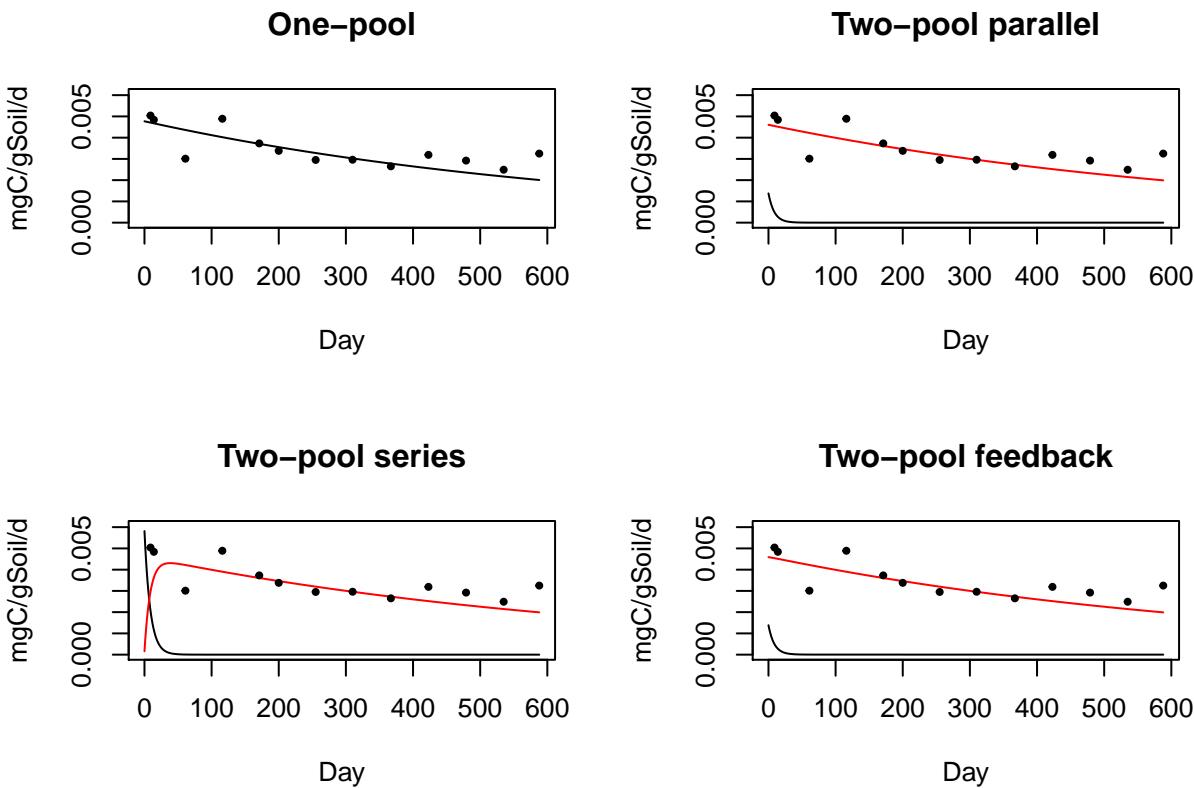
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -19.523349159331"
```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0015 0 0 0 0  
## Two-pool parallel 0.1154 0.0014 0.0037 0 0 0 0  
## Two-pool series 0.1152 0.0014 0.9662 0.9839 0 0 0 0  
## Two-pool feedback 0.1153 0.0014 0.0070 0.4722 0.9662 0 0 0  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -27.45 -26.88 -189.4 -27.09 0.9528 3.24  
## Two-pool parallel -23.52 -21.83 -185.9 -20.86 0.0423 541.65 302.6  
## Two-pool series -21.52 -19.26 -183.9 -16.52 0.0048 698.22 483.1  
## Two-pool feedback -19.52 -16.70 -181.9 -10.95 0.0003 339.62 22.9
```

Variable C_NDakNG_25;

Decomposition rates over time at 25 degrees for North Dakota, native grassland

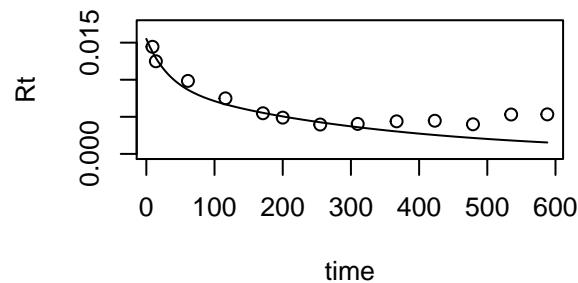
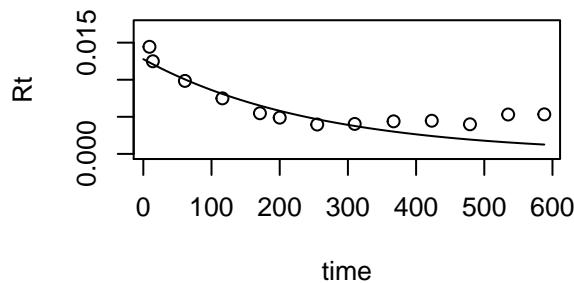
```
Haddix_V9=modelFitTS_Markdown(db = db[[15]], ts.col = 9, ic.col = 3, unitConverter = 0.1,  
inipars=list(oneP=0.01,  
parallel=c(0.1, 0.001, 0.1),  
series=c(0.1, 0.0001, 0.01, 0.1),  
feedback=c(0.05, 0.001, 0.1, 0.01, 0.01)))  
  
## [1] "Haddix2011SSSJA; variable: C_NDakNG_25"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.00394355741294206"
```

```

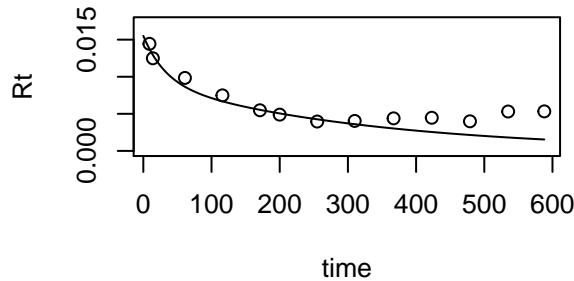
## [1] "AIC = -22.9930020449078"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0308986013990452"
## [2] "k2= 0.00305558930684744"
## [3] "proportion of C0 in pool 1= 0.0621990063911722"
## [1] "AIC = -19.4541243986502"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0309059697408072"
## [2] "k2= 0.0030557459519976"
## [3] "a21= 0.455485158229715"
## [4] "Proportion of C0 in pool 1= 0.12573326811833"
## [1] "AIC = -17.4541250889526"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.075965601174065"
## [2] "k2= 0.00318116207070912"
## [3] "a21= 0.00199961006689703"
## [4] "a12= 0.000162681632600692"
## [5] "Proportion of C0 in pool 1= 0.0357817375012389"

```

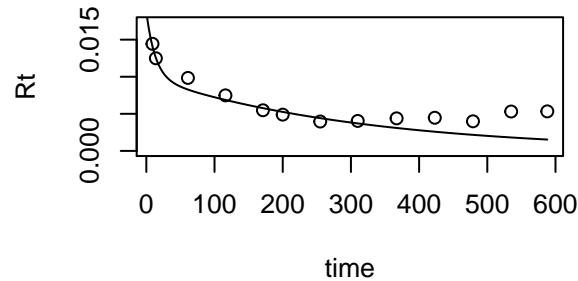
two pool_parallel structure



two pool_Series structure



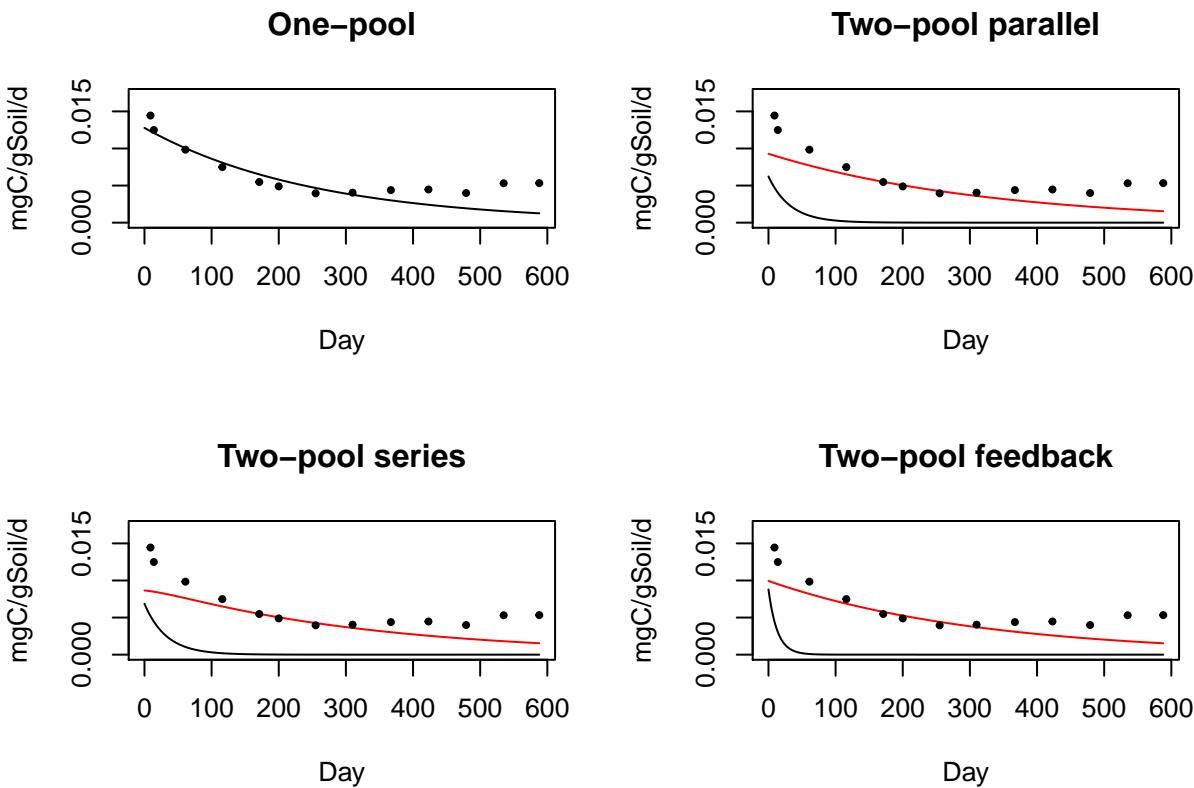
two pool_feedback structure



```

## [1] "AIC = -15.4481441875614"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0039
## Two-pool parallel 0.0309  0.0031  0.0622
## Two-pool series   0.0309  0.0031  0.1257  0.4555
## Two-pool feedback  0.0760  0.0032  0.0358  0.0020  0.1257
##
##
## Model          AIC      BIC    AICn     AICc      wi  MeanTrT   q05
## -----
## One-pool       -22.99  -22.43 -160.5  -22.629  0.9433    3.24
## Two-pool parallel -19.45 -17.76 -159.5  -16.788  0.0508 208.88 81.08
## Two-pool series   -17.45 -15.19 -157.5  -12.454  0.0058 181.41 59.52
## Two-pool feedback  -15.45 -12.62 -155.4  -6.877  0.0004 13.79  9.15
```

Variable C_NDakNG_35;

Decomposition rates over time at 35 degrees for North Dakota, native grassland

```
Haddix_V10=modelFitTS_Markdown(db = db[[15]], ts.col = 10, ic.col = 3, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.1, 0.0001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.1, 0.01))))
```

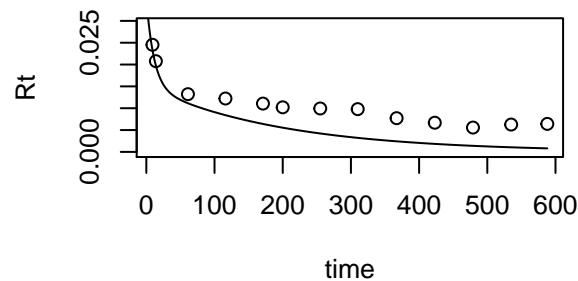
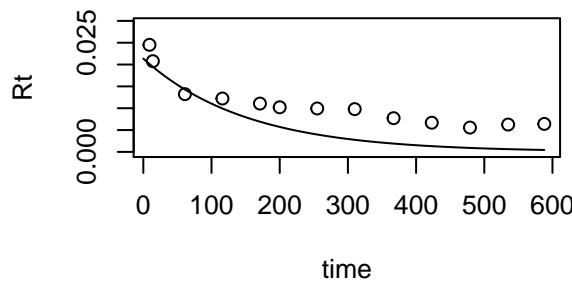
```
## [1] "Haddix2011SSSJA; variable: C_NDakNG_35"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00659229778342407"
```

```

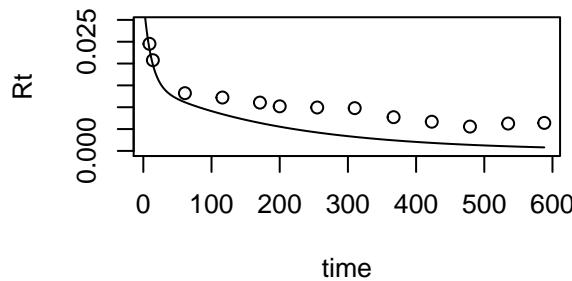
## [1] "AIC = -19.3450469298579"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0882595703415934"
## [2] "k2= 0.00496198431204862"
## [3] "proportion of C0 in pool 1= 0.0697592757295348"
## [1] "AIC = -15.5766269621378"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00496222723122372"
## [2] "k2= 0.0882556874252316"
## [3] "a21= 0.000167963733834875"
## [4] "Proportion of C0 in pool 1= 0.930237198000176"
## [1] "AIC = -13.5766269623741"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00496221008859525"
## [2] "k2= 0.0882509604745554"
## [3] "a21= 0.000820085829125849"
## [4] "a12= 2.03455367172589e-05"
## [5] "Proportion of C0 in pool 1= 0.930199102057368"

```

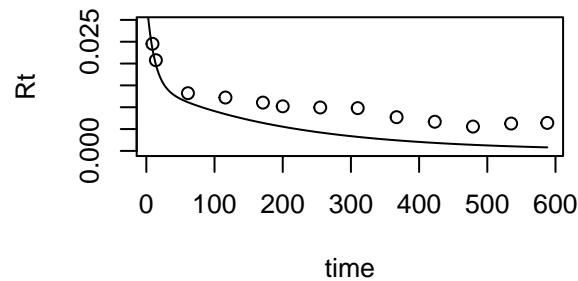
two pool_parallel structure



two pool_Series structure



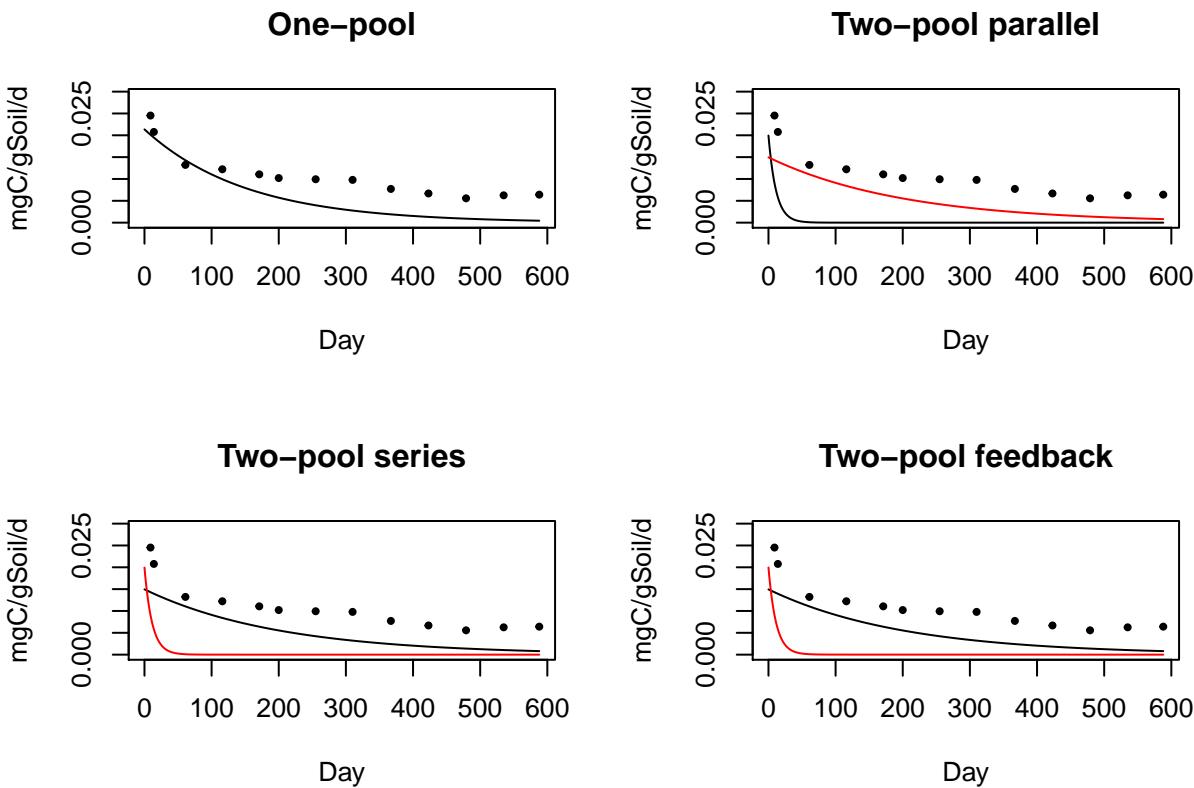
two pool_feedback structure



```

## [1] "AIC = -11.5766269645321"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        0.0066
## Two-pool parallel 0.0883  0.0050  0.0698
## Two-pool series   0.0050  0.0883  0.9302  2e-04
## Two-pool feedback  0.0050  0.0883  0.9302  8e-04  0.9302  3e-04  0
##
##
## Model          AIC      BIC     AICn     AICc      wi    MeanTrT     q05
## -----
## One-pool       -19.34  -18.780  -136.7  -18.981  0.9492     3.24
## Two-pool parallel -15.58  -13.882  -134.2  -12.910  0.0456    92.83  18.72
## Two-pool series    -13.58  -11.317  -132.2  -8.577  0.0052  201.52 139.69
## Two-pool feedback  -11.58  -8.752  -130.2  -3.005  0.0003  201.53 139.69
```

Variable C_NDakCul_15;

Decomposition rates over time at 15 degrees for North Dakota, cultivated

```
Haddix_V11=modelFitTS_Markdown(db = db[[15]], ts.col = 11, ic.col = 4, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.1, 0.0001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.1, 0.01, 0.01)))
```

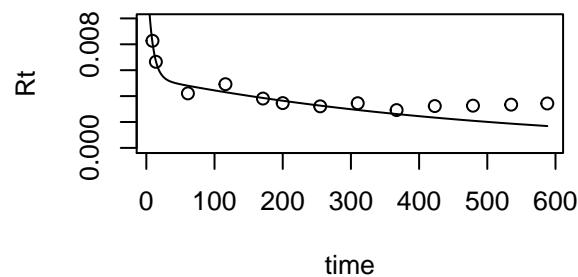
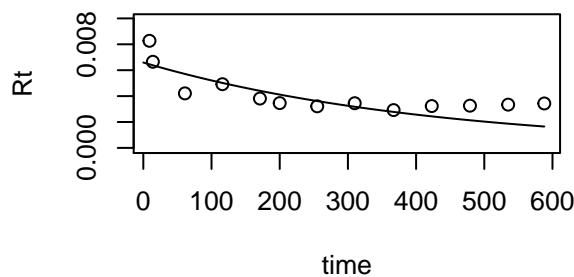
```
## [1] "Haddix2011SSSJA; variable: C_NDakCul_15"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00235459172572838"
```

```

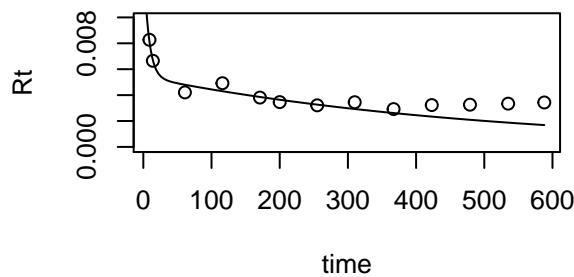
## [1] "AIC = -25.4969302519179"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.134371744183914"
## [2] "k2= 0.00198315714982559"
## [3] "proportion of C0 in pool 1= 0.0250202413006507"
## [1] "AIC = -22.4818009356302"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.134350359313636"
## [2] "k2= 0.0019831341018292"
## [3] "a21= 0.804943518080824"
## [4] "Proportion of C0 in pool 1= 0.136720049708119"
## [1] "AIC = -20.4818015053381"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.1343346779528"
## [2] "k2= 0.00198312073110085"
## [3] "a21= 0.016002831125737"
## [4] "a12= 2.9432288444875e-05"
## [5] "Proportion of C0 in pool 1= 0.0254321880625703"

```

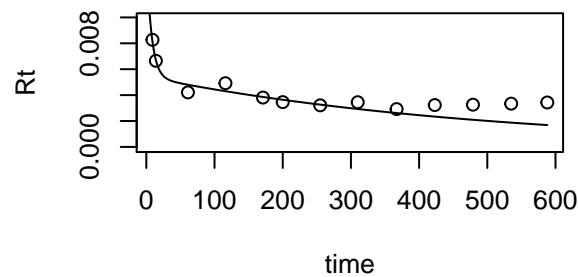
two pool_parallel structure



two pool_Series structure



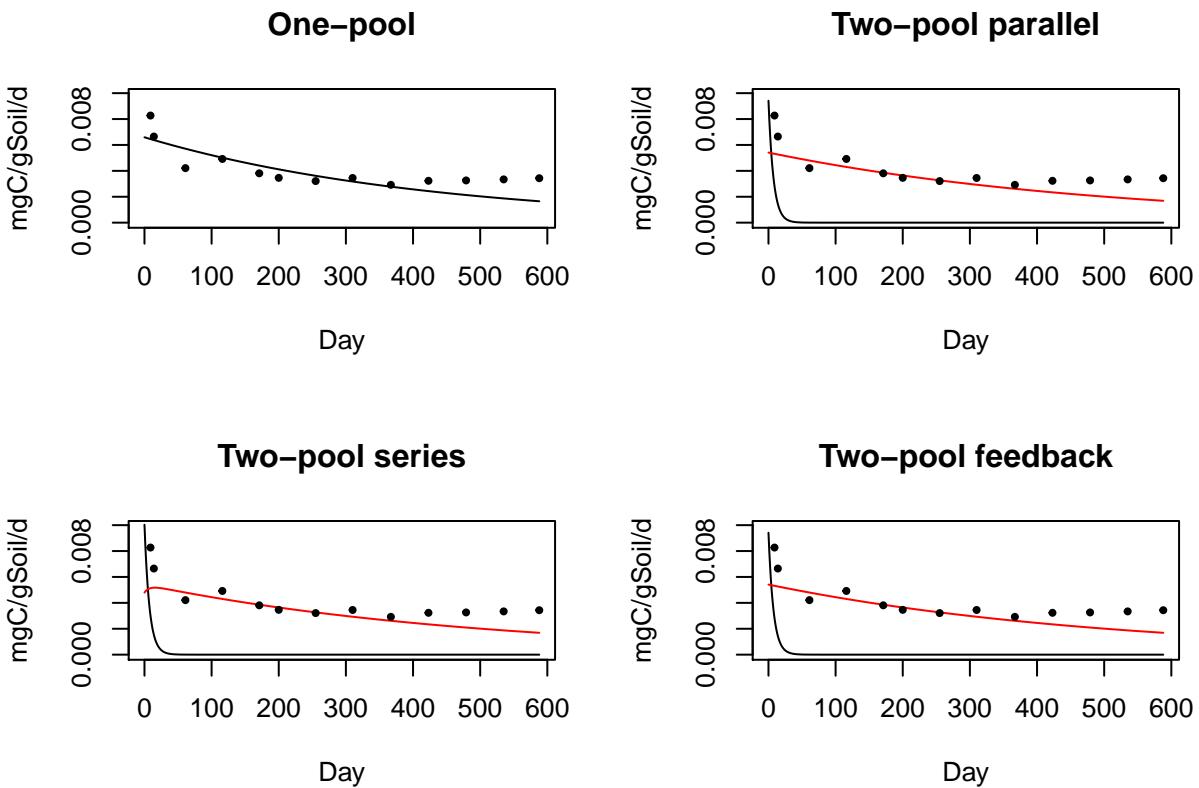
two pool_feedback structure



```

## [1] "AIC = -18.481800919227"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0024
## Two-pool parallel 0.1344  0.002   0.0250
## Two-pool series  0.1344  0.002   0.1367  0.8049
## Two-pool feedback 0.1343  0.002   0.0254  0.0160  0.1367  0   0
##
##
## Model           AIC      BIC     AICn     AICc     wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        -25.50  -24.93  -176.7  -25.13  0.9276  2.80
## Two-pool parallel -22.48  -20.79  -179.1  -19.82  0.0649 188.84 11.102
## Two-pool series  -20.48  -18.22  -177.1  -15.48  0.0074 413.34 247.606
## Two-pool feedback -18.48  -15.66  -175.1  -9.91  0.0005  15.51  5.281
```

Variable C_NDakCul_25;

Decomposition rates over time at 25 degrees for North Dakota, cultivated

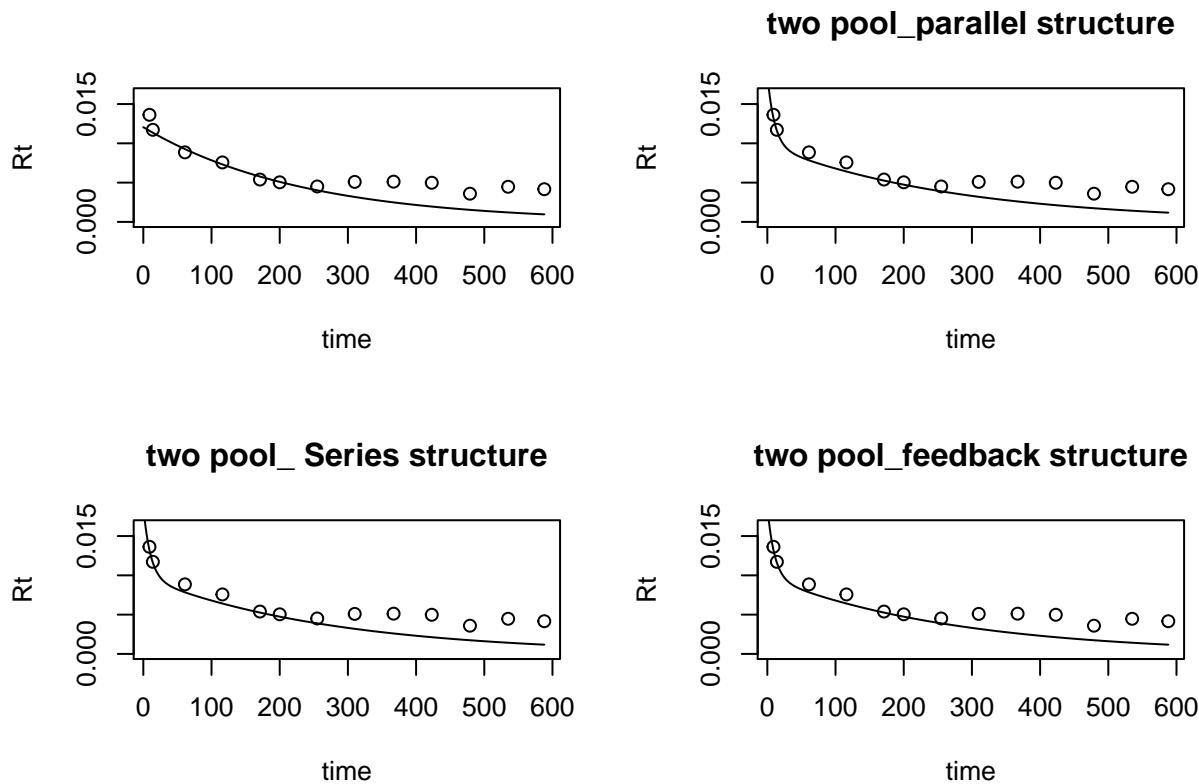
```
Haddix_V12=modelFitTS_Markdown(db = db[[15]], ts.col = 12, ic.col = 4, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.05, 0.0001, 0.01, 0.1),
                                             feedback=c(0.05, 0.001, 0.01, 0.01, 0.01)))

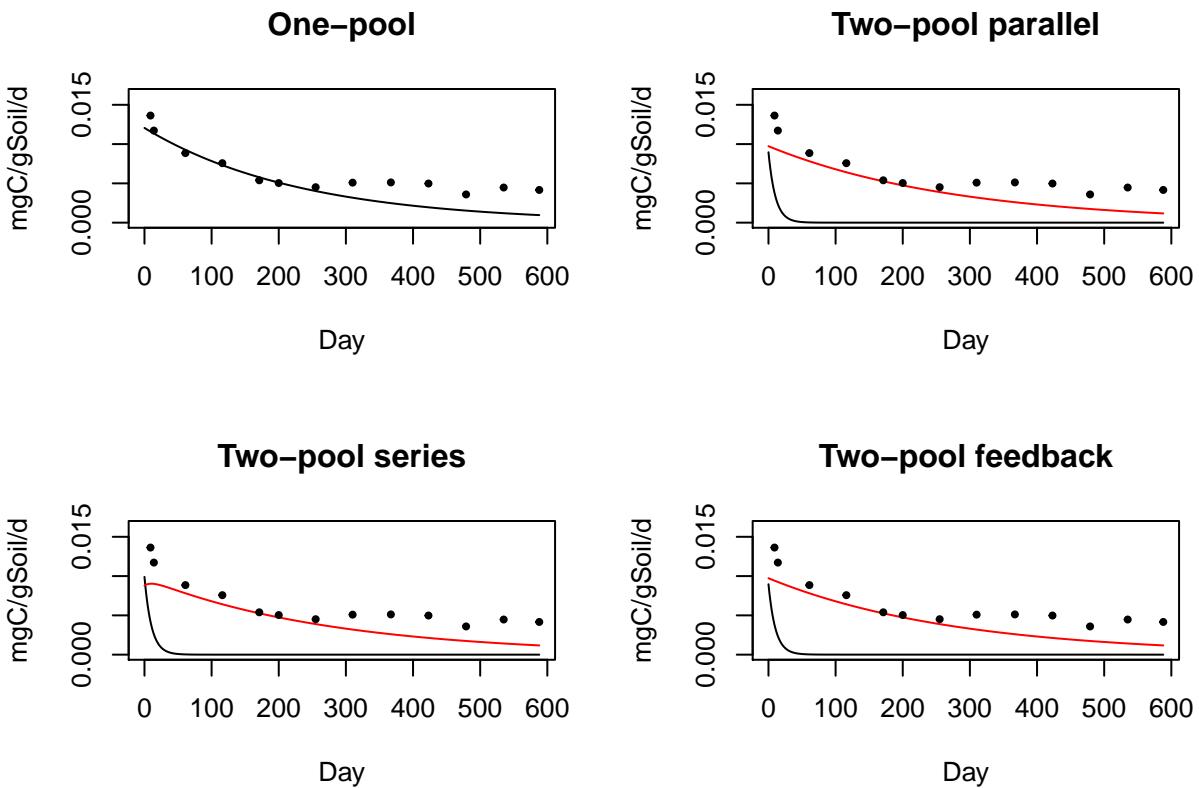
## [1] "Haddix2011SSSJA; variable: C_NDakCul_25"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00430519918472783"
```

```

## [1] "AIC = -22.94304709086"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0957152520917848"
## [2] "k2= 0.00359575233905355"
## [3] "proportion of C0 in pool 1= 0.0334275379704883"
## [1] "AIC = -19.249614771036"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0957254004720582"
## [2] "k2= 0.00359583549626528"
## [3] "a21= 0.708352412819303"
## [4] "Proportion of C0 in pool 1= 0.126607829771937"
## [1] "AIC = -17.2496131907692"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0957256997853642"
## [2] "k2= 0.00359583899195762"
## [3] "a21= 0.00022224382164171"
## [4] "a12= 0.000554351506841577"
## [5] "Proportion of C0 in pool 1= 0.0334519974732039"

```





```
##
##
## Model           k1      k2    COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0043
## Two-pool parallel 0.0957  0.0036  0.0334
## Two-pool series  0.0957  0.0036  0.1266  0.7084
## Two-pool feedback 0.0957  0.0036  0.0335  0.0002  0.1266  0  0
##
##
## Model           AIC      BIC     AICn     AICc      wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -22.94  -22.38  -160.1  -22.579  0.9473  2.80
## Two-pool parallel -19.25  -17.55  -158.1  -16.583  0.0472  149.81  28.777
## Two-pool series  -17.25  -14.99  -156.1  -12.250  0.0054  207.44  107.524
## Two-pool feedback -15.25  -12.42  -154.1  -6.678  0.0003  10.51   7.243
```

Variable C_NDakCul_35;

Decomposition rates over time at 35 degrees for North Dakota, cultivated

```
Haddix_V13=modelFitTS_Markdown(db = db[[15]], ts.col = 13, ic.col = 4, unitConverter = 0.1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.1, 0.01, 0.01)))

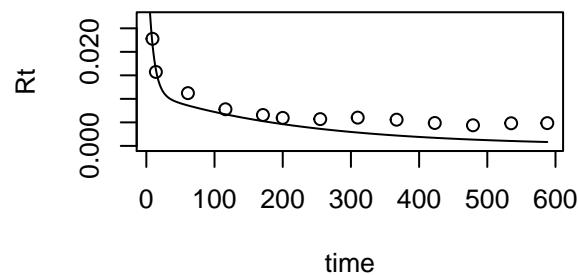
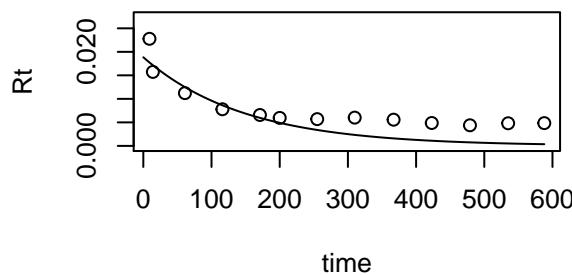
## [1] "Haddix2011SSSJA; variable: C_NDakCul_35"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00673051687475557"
```

```

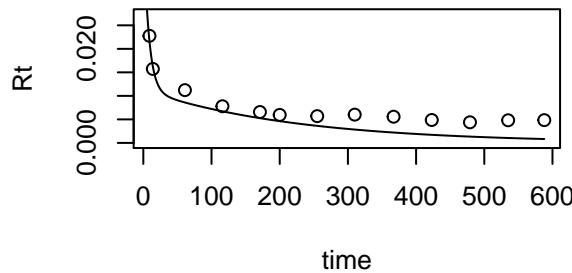
## [1] "AIC = -20.9998862140413"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.129963300439319"
## [2] "k2= 0.00444303827892964"
## [3] "proportion of C0 in pool 1= 0.0955532435324784"
## [1] "AIC = -17.8024727548598"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.129989864887884"
## [2] "k2= 0.00444322133652534"
## [3] "a21= 0.000118621606649993"
## [4] "Proportion of C0 in pool 1= 0.0955666082027605"
## [1] "AIC = -15.8024727653843"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.129981991070813"
## [2] "k2= 0.00444316127087432"
## [3] "a21= 0.00461175232788991"
## [4] "a12= 9.61938430149578e-06"
## [5] "Proportion of C0 in pool 1= 0.0960143673716852"

```

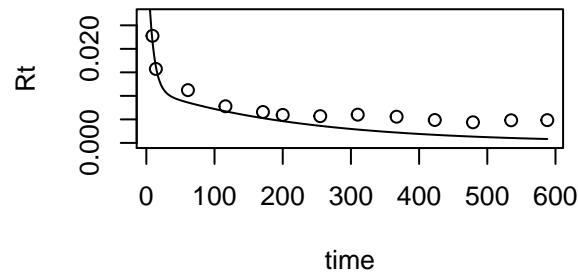
two pool_parallel structure



two pool_Series structure



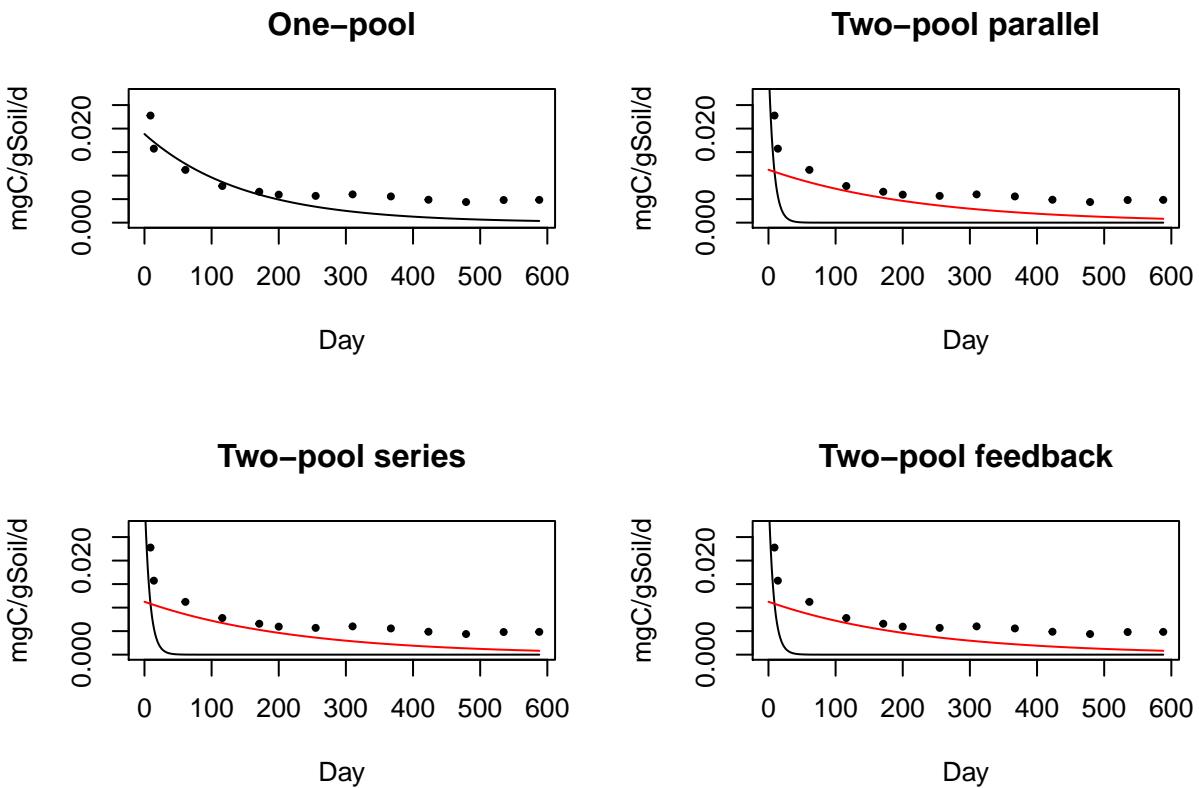
two pool_feedback structure



```

## [1] "AIC = -13.8024727728031"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        -----  -----  -----  -----  -----  -----  -----
## One-pool       0.0067
## Two-pool parallel 0.1300  0.0044  0.0956
## Two-pool series   0.1300  0.0044  0.0956  0.0001
## Two-pool feedback 0.1300  0.0044  0.0960  0.0046  0.0956  1e-04  0
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----        -----  -----  -----  -----  -----  -----  -----
## One-pool      -21.0   -20.43  -147.5  -20.636  0.9335  2.800
## Two-pool parallel -17.8   -16.11  -148.7  -15.136  0.0597 60.839  8.086
## Two-pool series   -15.8   -13.54  -146.7  -10.803  0.0068  7.720  5.333
## Two-pool feedback  -13.8   -10.98  -144.7  -5.231  0.0004  8.731  5.368
```

Dataset NeffHooper2002

Variable CO2_Fair_30;

CO2 Flux of Fairbanks soils incubated at 30deg

```
Nethooper_V2= modelFitTS_Markdown(db = db[[19]], ts.col = 2, ic.col = 2, unitConverter = 10,
                                     inipars=list(oneP=0.5,
                                                 parallel=c(0.01, 0.001, 0.01),
                                                 series=c(0.01, 0.00001, 0.01, 0.01),
                                                 feedback=c(0.01, 0.00001, 0.01, 0.01, 0.05)))
```

```

## [1] "NeffHooper2002; variable: CO2_Fair_30"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00282996189182505"

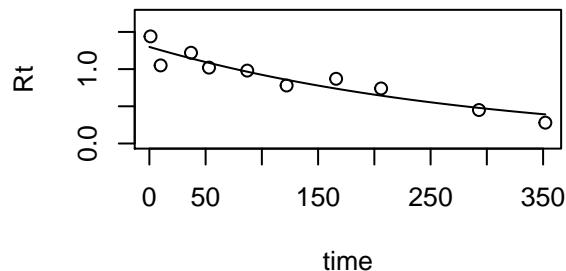
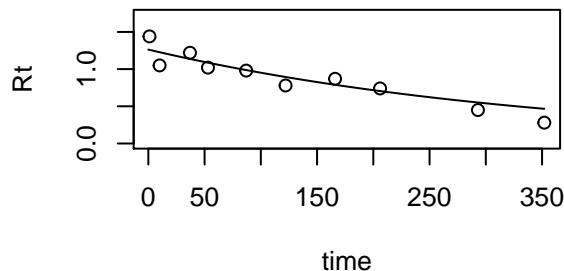
## [1] "AIC = -6.51953466687475"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00340652739445484"
## [2] "k2= 7.2322143484134e-13"
## [3] "proportion of CO in pool 1= 0.854155990974105"

## [1] "AIC = -2.85834513152239"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00340652692365376"
## [2] "k2= 7.28543500003743e-12"
## [3] "a21= 1.3760989359124e-06"
## [4] "Proportion of CO in pool 1= 0.85415714867035"

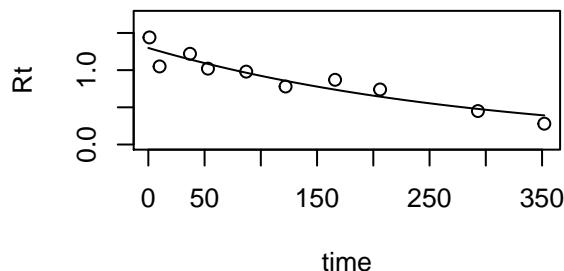
## [1] "AIC = -0.858345131228635"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.003406529490734"
## [2] "k2= 1.0702022806556e-08"
## [3] "a21= 0.000155056436091483"
## [4] "a12= 1.27508708497315e-06"
## [5] "Proportion of CO in pool 1= 0.854287444004229"

```

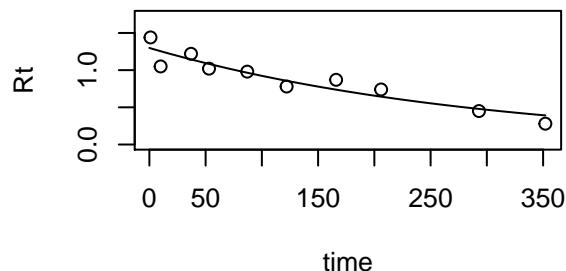
two pool_parallel structure



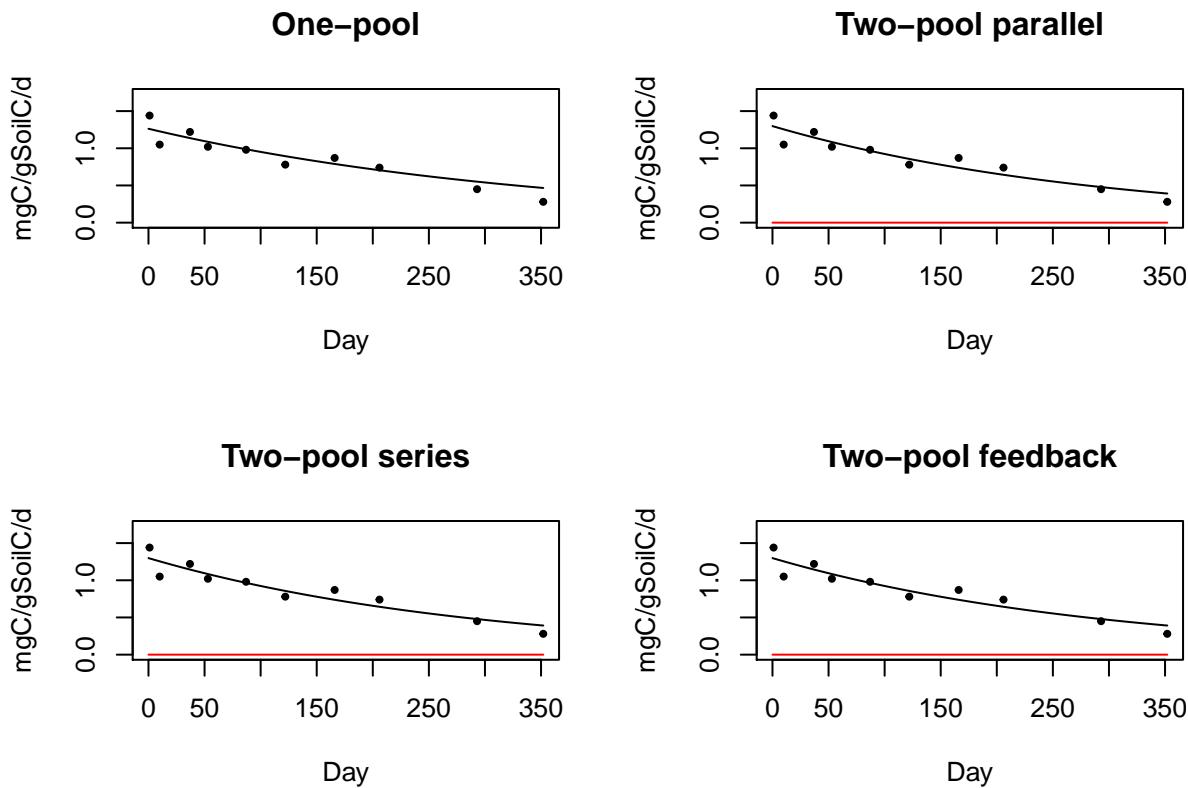
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 1.14165534355202"
```



```
##
##
## Model          k1    k2   COInp1      a21      a12     SSR      MSR
## -----        ----  ----  -----  -----  -----  -----
## One-pool       0.0028          0.1413  0.0141
## Two-pool parallel 0.0034    0  0.8542  0.1192  0.0119
## Two-pool series 0.0034    0  0.8542  0e+00  0.1192  0.0119
## Two-pool feedback 0.0034    0  0.8543  2e-04  0.8542  0.1192  0.0119
##
##
## Model          AIC      BIC     AICn     AICc      wi    MeanTrT     q05
## -----        -----  -----  -----  -----  -----
## One-pool      -6.5195 -6.217  -40.60  -6.019  0.9716  446.2
## Two-pool parallel -2.8583 -1.951  -38.29  1.142  0.0271  343.7  203.5
## Two-pool series -0.8583  0.352  -36.29  7.142  0.0013  189177.1 203.5
## Two-pool feedback 1.1417  2.655  -34.29  16.142 0.0000  14782.1  203.5
```

Variable CO2_Chan_30;

CO2 Flux of Chandalar soils incubated at 30deg

```
Nethooper_V3= modelFitTS_Markdown(db = db[[19]], ts.col = 3, ic.col = 3, unitConverter = 10,
                                     inipars=list(oneP=0.5,
                                                 parallel=c(0.01, 0.001, 0.1),
                                                 series=c(0.05, 0.0001, 0.01, 0.1),
                                                 feedback=c(0.01, 0.0001, 0.01, 0.01, 0.01)))
```

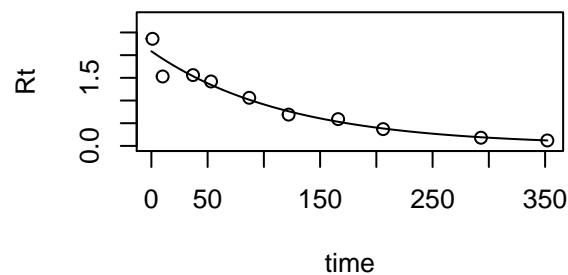
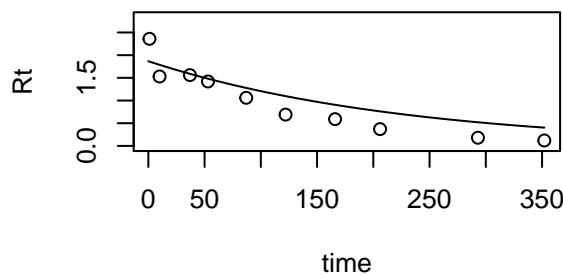
```
## [1] "NeffHooper2002; variable: CO2_Chan_30"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00435517124449625"
```

```

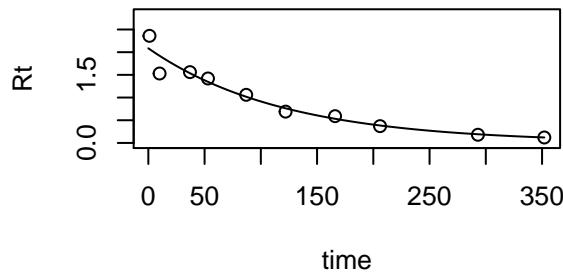
## [1] "AIC = -2.63724618002183"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00830173526897007"
## [2] "k2= 4.99037691664537e-05"
## [3] "proportion of C0 in pool 1= 0.583782588382955"
## [1] "AIC = -1.3457635119217"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00830173187128849"
## [2] "k2= 4.99019535237434e-05"
## [3] "a21= 1.83664622346313e-05"
## [4] "Proportion of C0 in pool 1= 0.583793573286207"
## [1] "AIC = 0.654236488082112"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00830173233790673"
## [2] "k2= 4.99021264131247e-05"
## [3] "a21= 3.09011294818973e-06"
## [4] "a12= 3.56637169478535e-05"
## [5] "Proportion of C0 in pool 1= 0.583784747590498"

```

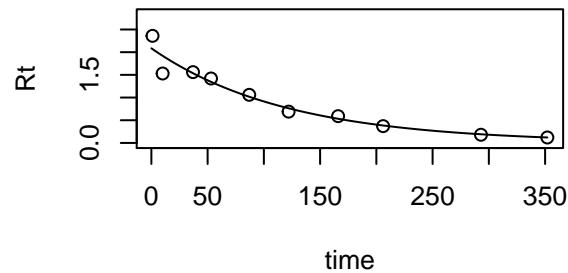
two pool_parallel structure



two pool_Series structure



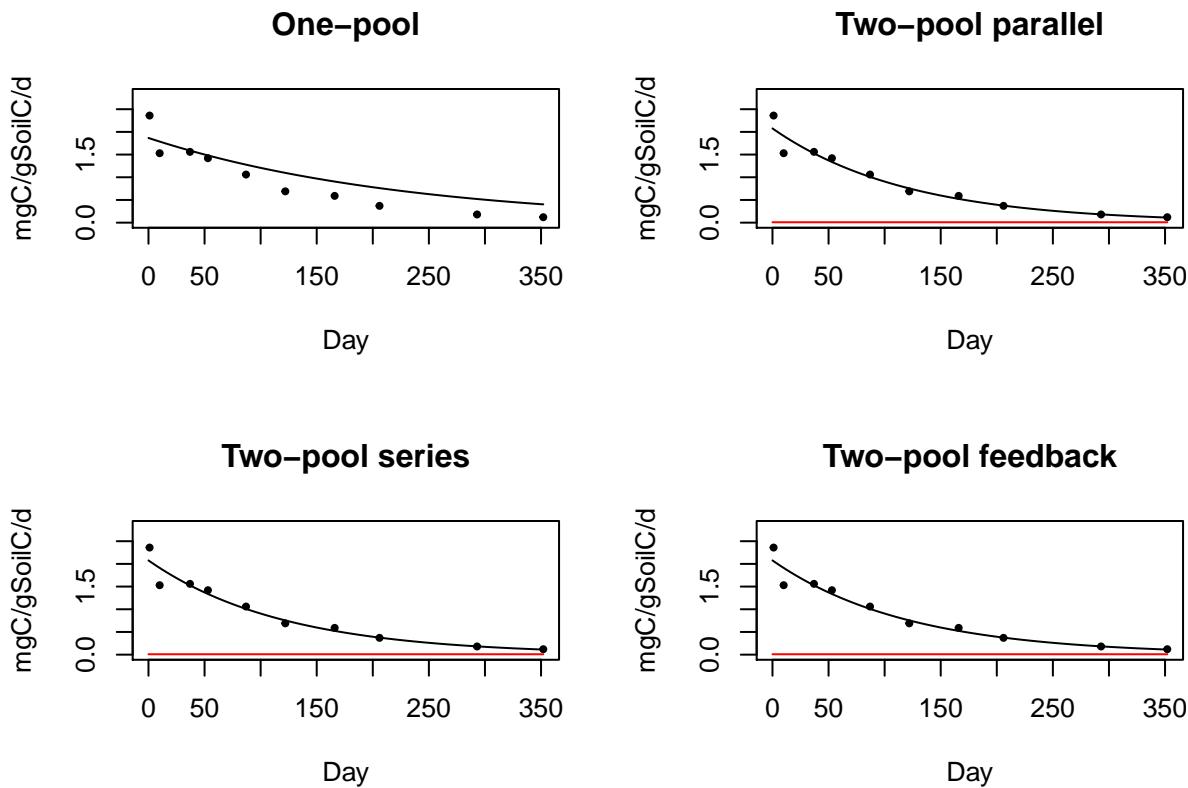
two pool_feedback structure



```

## [1] "AIC = 2.65423648807819"

```



```
##
##
## Model           k1    k2   COInp1   a21    a12    SSR    MSR
## -----          ---  ---  -----  -----  -----  -----  -----
## One-pool        -0.0044
## Two-pool parallel 0.0083  0  0.5838
## Two-pool series  0.0083  0  0.5838   0
## Two-pool feedback 0.0083  0  0.5838   0  0.5838  0.2540  0.0254
##
##
## Model           AIC     BIC    AICn   AICc    wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----  -----
## One-pool        -2.6372 -2.335 -21.19 -2.137  0.9127  428.5
## Two-pool parallel -1.3458 -0.438 -30.73  2.654  0.0832  205.5  84.01
## Two-pool series   0.6542  1.865 -28.73  8.654  0.0041  120.8  83.50
## Two-pool feedback  2.6542  4.167 -26.73 17.654  0.0000  120.5  83.49
```

Variable CO2_Too_30;

CO2 Flux of Toolik Lake soils incubated at 30deg

```
Nethooper_V4= modelFitTS_Markdown(db = db[[19]], ts.col = 4, ic.col = 4, unitConverter = 10,
                                     inipars=list(oneP=0.5,
                                                 parallel=c(0.01, 0.001, 0.1),
                                                 series=c(0.05, 0.0001, 0.01, 0.1),
                                                 feedback=c(0.01, 0.0001, 0.01, 0.01, 0.01)))
```

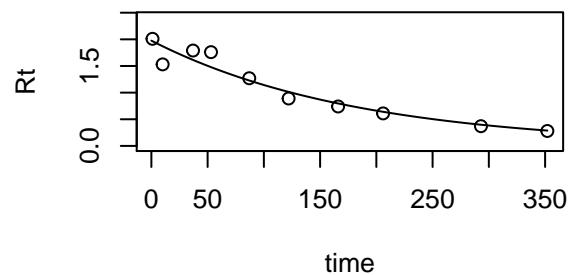
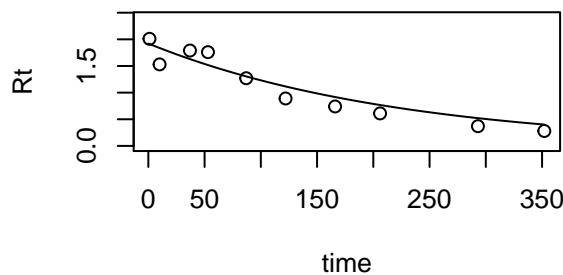
```
## [1] "NeffHooper2002; variable: CO2_Too_30"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00445430027158977"
```

```

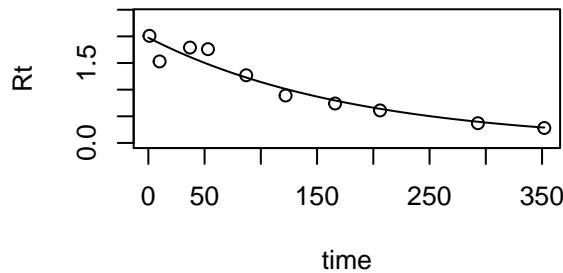
## [1] "AIC = -4.79477988221544"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00547121721686497"
## [2] "k2= 2.99964731892586e-12"
## [3] "proportion of C0 in pool 1= 0.837160375956941"
## [1] "AIC = -1.37448877033818"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00547121323503841"
## [2] "k2= 3.34028939585593e-09"
## [3] "a21= 0.00161528790731219"
## [4] "Proportion of C0 in pool 1= 0.838510517381541"
## [1] "AIC = 0.625511391405791"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00547135439053624"
## [2] "k2= 4.0546938298538e-07"
## [3] "a21= 0.000164357660082382"
## [4] "a12= 0.993169347872421"
## [5] "Proportion of C0 in pool 1= 0.837278012852619"

```

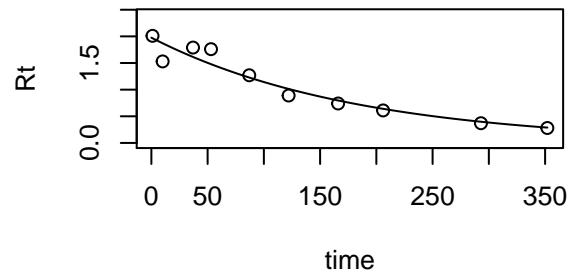
two pool_parallel structure



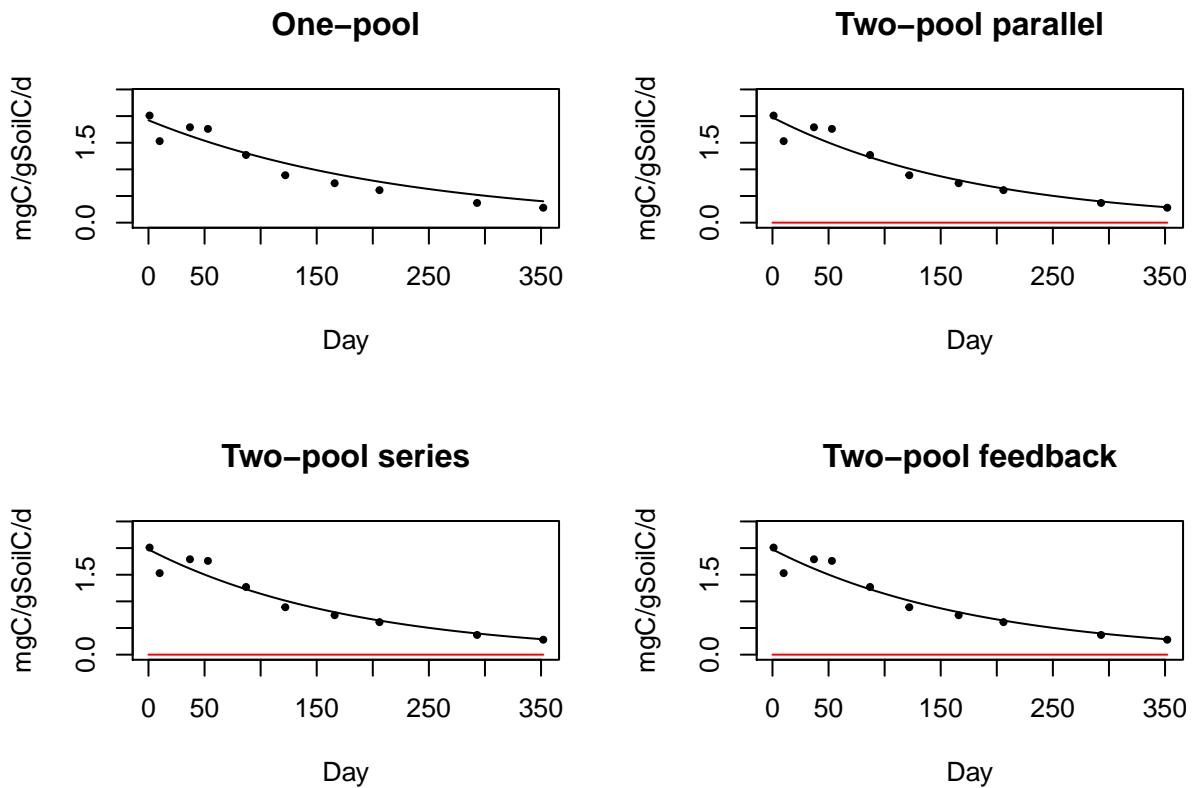
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = 2.62553040978085"
```



```
##
##
## Model           k1    k2   COInp1      a21     a12   SSR      MSR
## -----          ---  ---  -----      ----  ----  ----  -----
## One-pool        -0.0045
## Two-pool parallel 0.0055  0  0.8372
## Two-pool series  0.0055  0  0.8385  0.0016
## Two-pool feedback 0.0055  0  0.8373  0.0002  0.8385  0.2504  0.0250
##
##
## Model           AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -4.7948 -4.4922 -31.97 -4.295  0.9681  431.4
## Two-pool parallel -1.3745 -0.4667 -30.87  2.626  0.0304  218.3  126.7
## Two-pool series   0.6255  1.8359 -28.87  8.626  0.0015 483760.0 127.0
## Two-pool feedback  0.6255  4.1385 -26.87 17.625  0.0000   588.2 126.7
```

Variable CO2_Sag_30;

CO2 Flux of Sagwon soils incubated at 30deg

```
Nethooper_V5= modelFitTS_Markdown(db = db[[19]], ts.col = 5, ic.col = 7, unitConverter = 10)

## [1] "NeffHooper2002; variable: CO2_Sag_30"
## [1] "One pool model"
## [1] "Best fit parameter: 0.002587373703255"

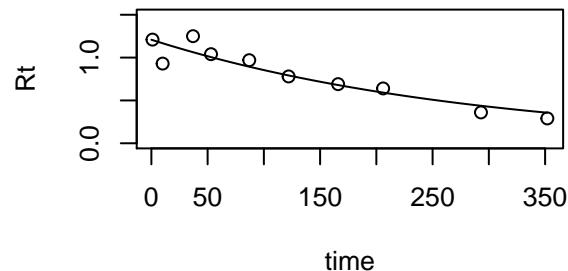
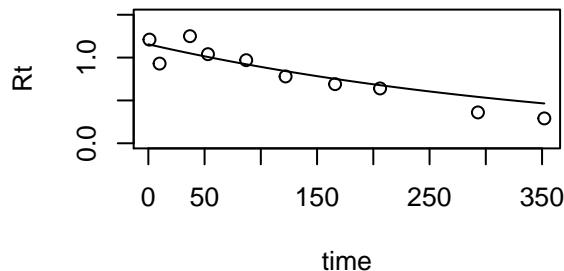
## [1] "AIC = -6.30106644137066"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00346767981356344"
```

```

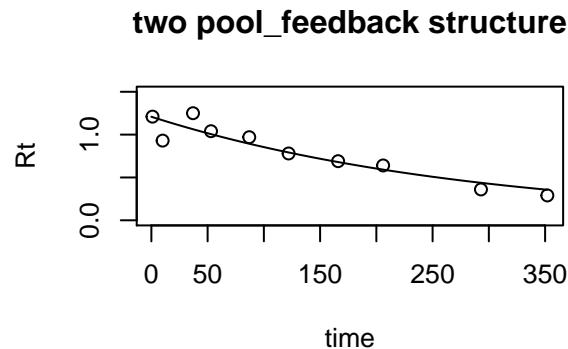
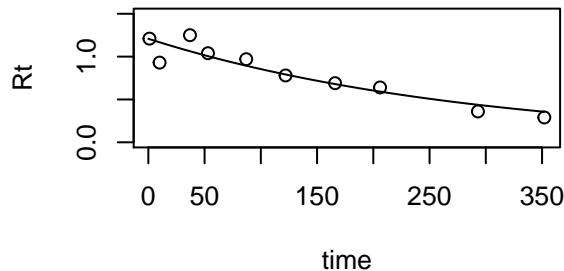
## [2] "k2= 9.03921679400822e-11"
## [3] "proportion of C0 in pool 1= 0.780720884903023"
## [1] "AIC = -2.99539147618225"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0034676808496077"
## [2] "k2= 1.92866522260162e-18"
## [3] "a21= 1.31770885346549e-05"
## [4] "Proportion of C0 in pool 1= 0.780729662499856"
## [1] "AIC = -0.995391485675896"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00346768798101175"
## [2] "k2= 2.1680237427581e-08"
## [3] "a21= 0.00806114566118521"
## [4] "a12= 2.76397143017526e-06"
## [5] "Proportion of C0 in pool 1= 0.787060130680808"

```

two pool_parallel structure



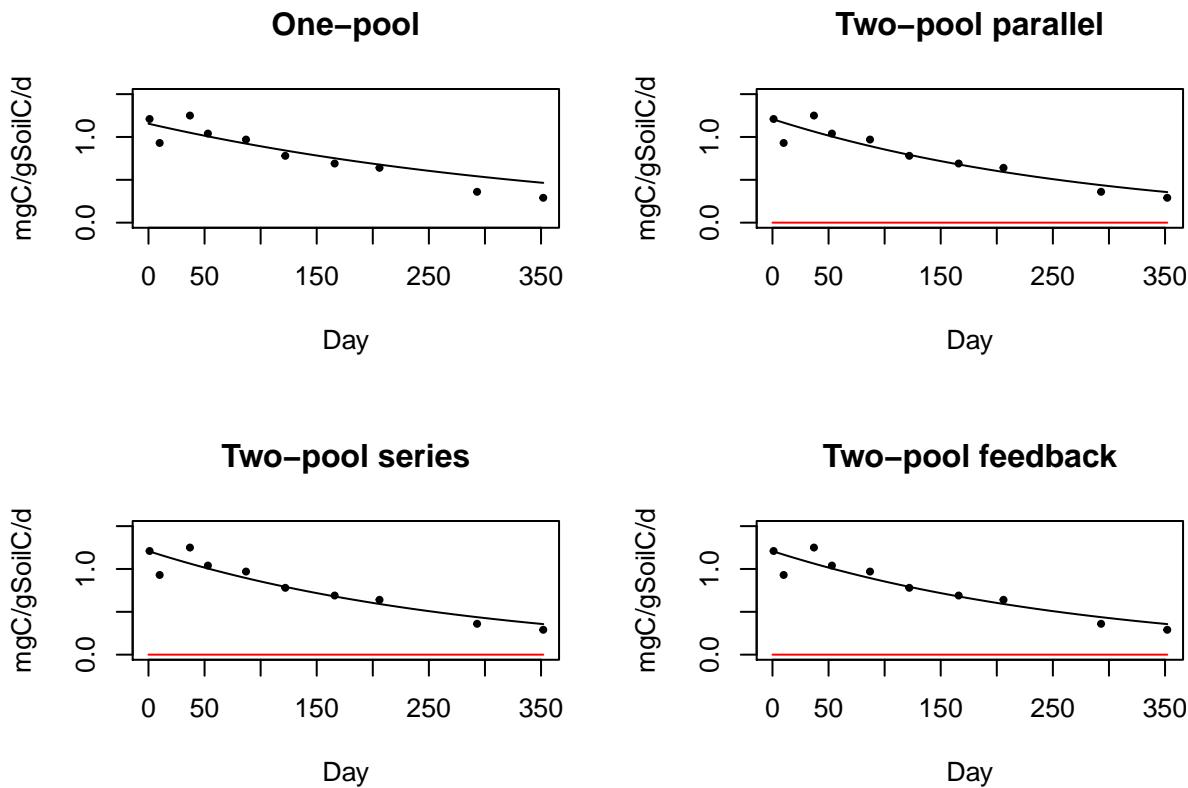
two pool_Series structure



```

## [1] "AIC = 1.00461088517365"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0026 0.1576 0.0158  
## Two-pool parallel 0.0035 0 0.7807 0.1113 0.0111  
## Two-pool series 0.0035 0 0.7807 0.0000 0.1113 0.0111  
## Two-pool feedback 0.0035 0 0.7871 0.0081 0.7807 0.1113 0.0111  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -6.3011 -5.9985 -39.51 -5.801 0.9662 4.464e+02  
## Two-pool parallel -2.9954 -2.0876 -38.98 1.005 0.0322 3.694e+02 199.9  
## Two-pool series -0.9954 0.2149 -36.98 7.005 0.0016 6.832e+12 199.9  
## Two-pool feedback 1.0046 2.5175 -34.98 16.005 0.0000 3.721e+05 202.2
```

Variable CO2_Fair_10;

CO2 Flux of Fairbanks soils incubated at 10deg

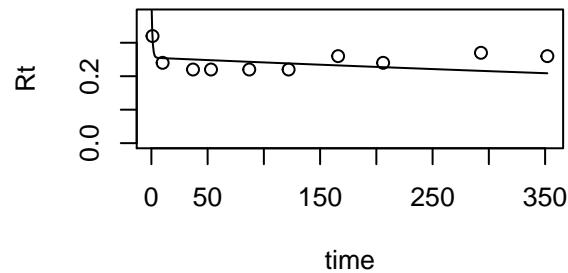
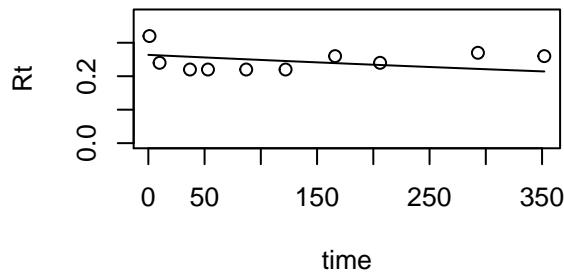
```
##  
Nethooper_V6= modelFitTS_Markdown(db = db[[19]], ts.col = 6, ic.col = 2, unitConverter = 10)  
  
## [1] "NeffHooper2002; variable: C02_Fair_10"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.000591170061905899"  
## [1] "AIC = -11.3115219627325"  
## [1] "Two pool model-parallel structure"
```

```

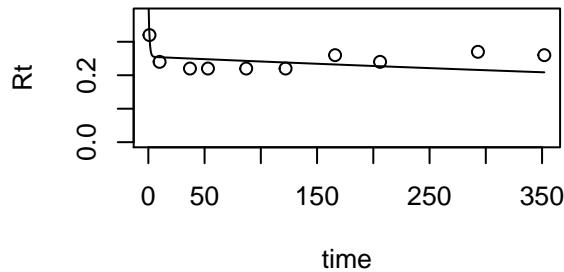
## [1] "k1= 1.14083597253487"
## [2] "k2= 0.000572717257602006"
## [3] "proportion of C0 in pool 1= 0.000363271940456433"
## [1] "AIC = -7.97954445750539"
## [1] "Two pool model-Series structure"
## [1] "k1= 1.13874820801039"
## [2] "k2= 0.000572366937541497"
## [3] "a21= 0.995437196648395"
## [4] "Proportion of C0 in pool 1= 0.0911384145340213"
## [1] "AIC = -5.97982602434811"
## [1] "Two pool model-feedback structure"
## [1] "k1= 1.13722394078202"
## [2] "k2= 0.000589837208900386"
## [3] "a21= 2.48654763145284e-05"
## [4] "a12= 6.74523638388713e-07"
## [5] "Proportion of C0 in pool 1= 2.60707176160113e-05"

```

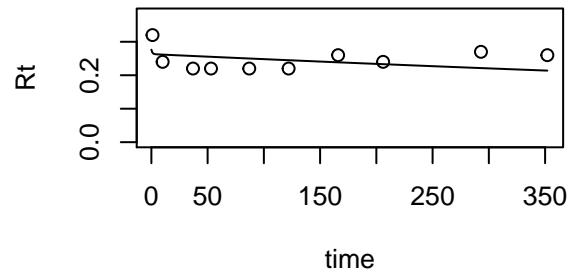
two pool_parallel structure



two pool_Series structure



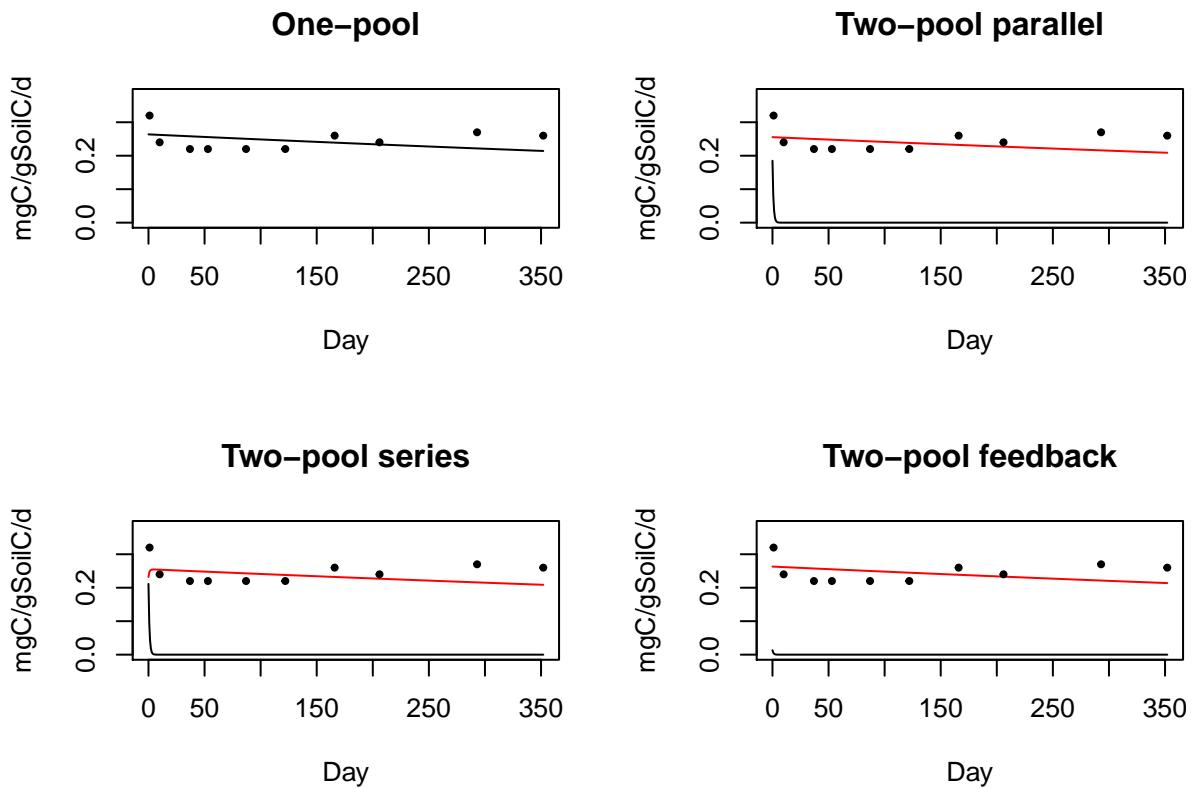
two pool_feedback structure



```

## [1] "AIC = -3.39021824930255"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR     MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0006
## Two-pool parallel 1.1408  6e-04  0.0004
## Two-pool series  1.1387  6e-04  0.0911  0.9954
## Two-pool feedback 1.1372  6e-04  0.0000  0.0000  0.0911  0.0124  0.0012
##
##
## Model           AIC      BIC     AICn     AICc     wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----
## One-pool       -11.312 -11.009 -64.56 -10.812  0.9667  446.2000
## Two-pool parallel -7.979 -7.072 -63.90 -3.979  0.0317 1013.2298 259.4017
## Two-pool series  -5.980 -4.769 -61.90  2.020  0.0016 1740.0373 1203.9072
## Two-pool feedback -3.390 -1.877 -56.95 11.610  0.0000  0.9215  0.6095
```

Variable CO2_Chan_10;

CO₂ Flux of Chandalar soils incubated at 10deg

```
Nethooper_V7= modelFitTS_Markdown(db = db[[19]], ts.col = 7, ic.col = 3, unitConverter = 10)
```

```
## [1] "NeffHooper2002; variable: CO2_Chan_10"
## [1] "One pool model"
## [1] "Best fit parameter: 0.000960952200690812"

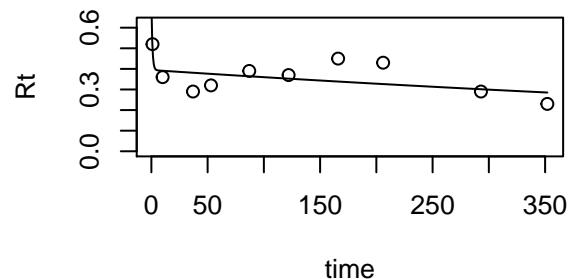
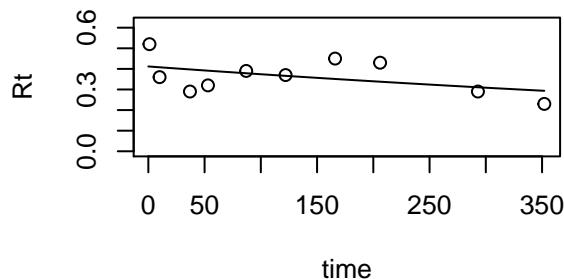
## [1] "AIC = -8.45725697534865"
## [1] "Two pool model-parallel structure"
## [1] "k1= 1.14802813127432"
```

```

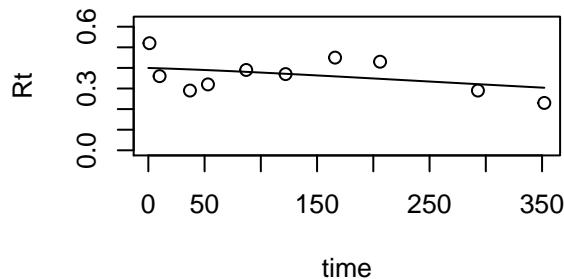
## [2] "k2= 0.000921256983458107"
## [3] "proportion of C0 in pool 1= 0.00067197807944791"
## [1] "AIC = -5.04908771996605"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00748946476316104"
## [2] "k2= 0.00100795116093573"
## [3] "a21= 0.997452931784446"
## [4] "Proportion of C0 in pool 1= 0.0759206477190379"
## [1] "AIC = -2.48137557739767"
## [1] "Two pool model-feedback structure"
## [1] "k1= 1.27022532619793"
## [2] "k2= 0.000916086502097438"
## [3] "a21= 0.861193668206007"
## [4] "a12= 8.82505288632429e-05"
## [5] "Proportion of C0 in pool 1= 0.0055425686702929"

```

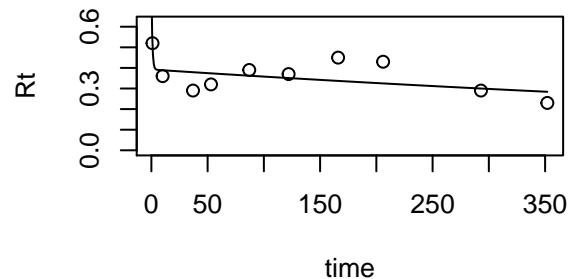
two pool_parallel structure



two pool_Series structure



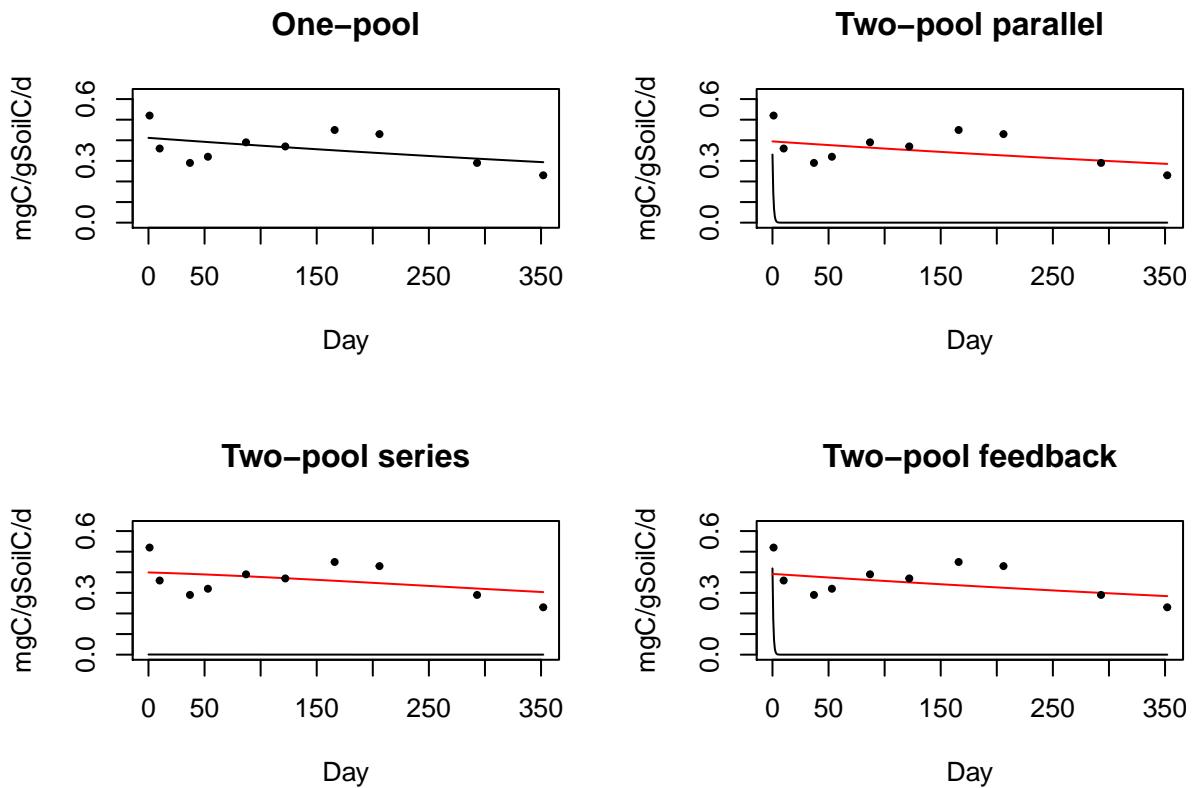
two pool_feedback structure



```

## [1] "AIC = -1.05886450265665"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0010
## Two-pool parallel 1.1480  9e-04  0.0007
## Two-pool series   0.0075  1e-03  0.0759  0.9975
## Two-pool feedback  1.2702  9e-04  0.0055  0.8612  0.0759  0.0397  0.0040
##
##
## Model           AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----
## One-pool        -8.457  -8.1547  -50.29  -7.957  0.9682  428.5
## Two-pool parallel -5.049  -4.1413  -49.25  -1.049  0.0306  591.0  91.72
## Two-pool series   -2.481  -1.2710  -44.41  5.519   0.0011  1123.1 827.94
## Two-pool feedback  -1.059  0.4541  -45.29  13.941  0.0000  940.9  594.35
```

Variable CO2_Sag_10;

CO2 Flux of Sagwon soils incubated at 10deg

```
Nethooper_V9= modelFitTS_Markdown(db = db[[19]], ts.col = 9, ic.col = 7, unitConverter = 10)

## [1] "NeffHooper2002; variable: CO2_Sag_10"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0005574827703132"

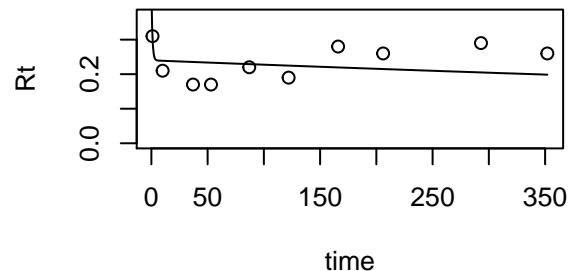
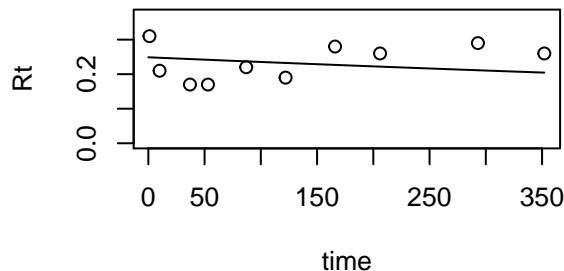
## [1] "AIC = -9.52895418890783"
## [1] "Two pool model-parallel structure"
## [1] "k1= 1.15794204142952"
```

```

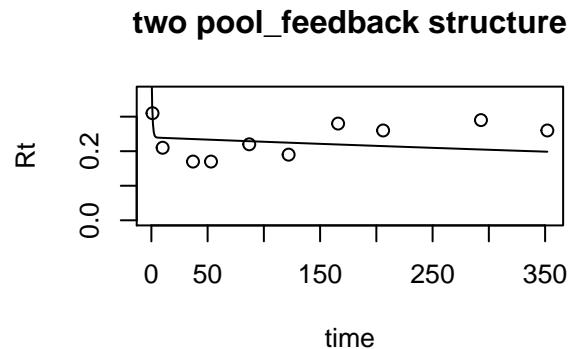
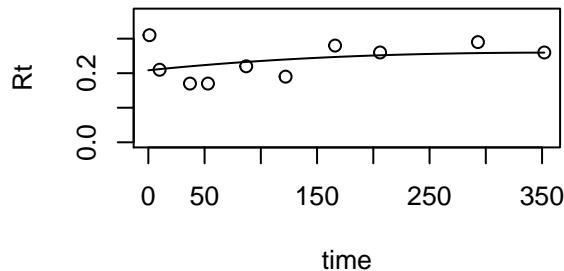
## [2] "k2= 0.000537930714891926"
## [3] "proportion of C0 in pool 1= 0.000394234991664133"
## [1] "AIC = -5.82380335966976"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00144984699075584"
## [2] "k2= 0.00144983203224256"
## [3] "a21= 0.999512843890927"
## [4] "Proportion of C0 in pool 1= 0.678153794612704"
## [1] "AIC = -4.3817602244931"
## [1] "Two pool model-feedback structure"
## [1] "k1= 1.27118402858565"
## [2] "k2= 0.000537682786144492"
## [3] "a21= 0.941449278140383"
## [4] "a12= 0.000146144508502588"
## [5] "Proportion of C0 in pool 1= 0.00692864554416689"

```

two pool_parallel structure



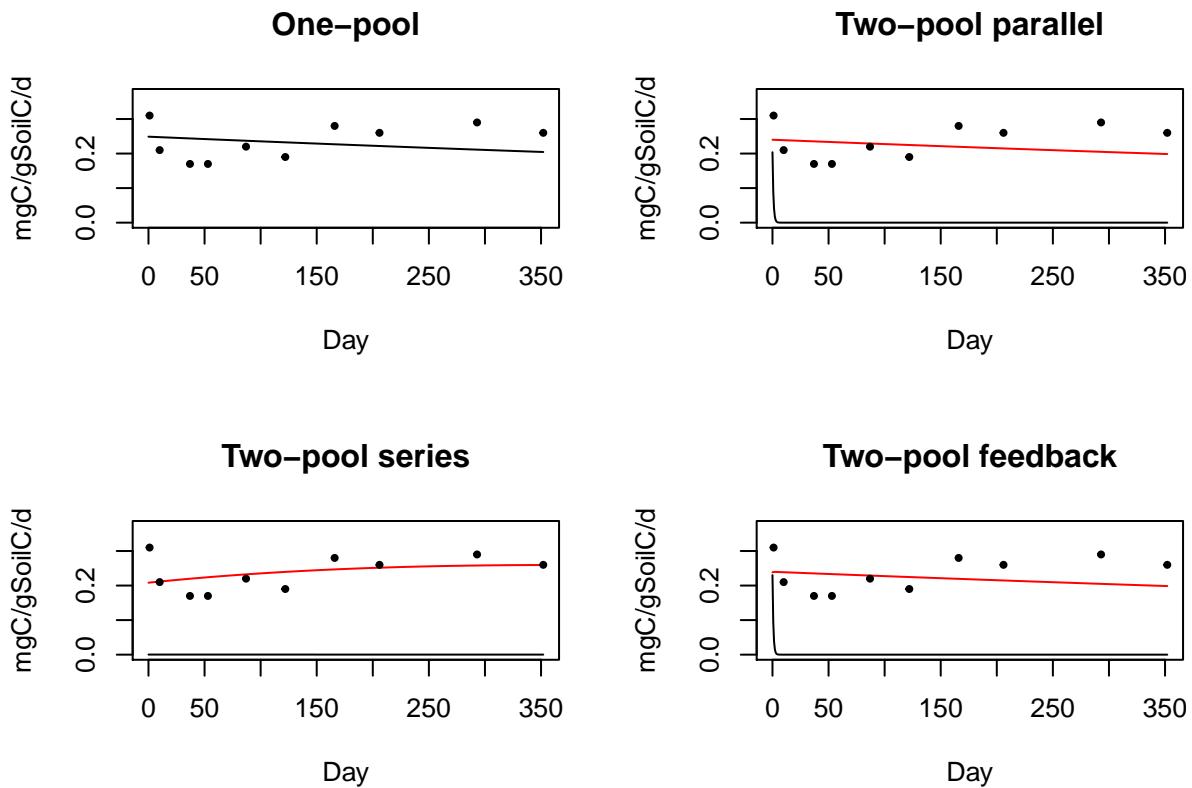
two pool_Series structure



```

## [1] "AIC = -1.823892378973"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0006  
## Two-pool parallel 1.1579 0.0005 0.0004  
## Two-pool series 0.0014 0.0014 0.6782 0.9995 0.9414 0.6782 0.0205 0.0020  
## Two-pool feedback 1.2712 0.0005 0.0069  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -9.529 -9.226 -55.64 -9.029 0.9718 446.4  
## Two-pool parallel -5.824 -4.916 -53.12 -1.824 0.0265 1005.8 146  
## Two-pool series -4.382 -3.171 -53.91 3.618 0.0017 1379.1 1157  
## Two-pool feedback -1.824 -0.311 -49.12 13.176 0.0000 1752.0 1178
```

Variable CO2_FairTuss_30;

CO₂ Flux of Fairbanks soils incubated at 10deg

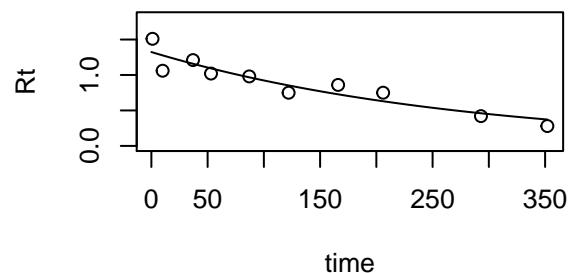
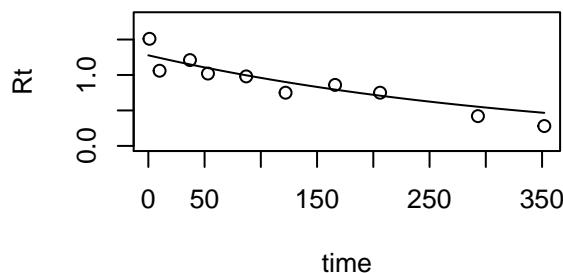
```
Nethooper_V10= modelFitTS_Markdown(db = db[[19]], ts.col = 10, ic.col = 2, unitConverter = 10,  
inipars=list(oneP=0.5,  
parallel=c(0.01, 0.001, 0.1),  
series=c(0.01, 0.0001, 0.01, 0.1),  
feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))  
  
## [1] "NeffHooper2002; variable: CO2_FairTuss_30"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.0028628696876023"
```

```

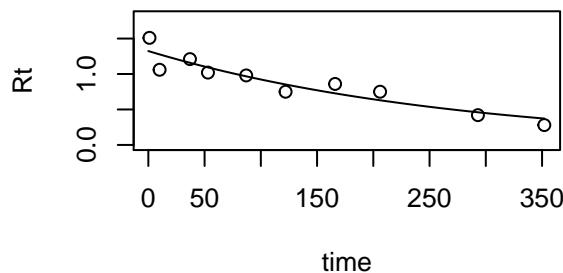
## [1] "AIC = -6.0383834506853"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00360506851388163"
## [2] "k2= 1.31615084135274e-13"
## [3] "proportion of C0 in pool 1= 0.822753615750975"
## [1] "AIC = -2.47620751789857"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00360507180293347"
## [2] "k2= 9.96919858976937e-09"
## [3] "a21= 0.00040287281615442"
## [4] "Proportion of C0 in pool 1= 0.823083028873616"
## [1] "AIC = -0.476207168222833"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00360508633908426"
## [2] "k2= 5.32557316552129e-08"
## [3] "a21= 0.000318693622608557"
## [4] "a12= 5.51551202928602e-05"
## [5] "Proportion of C0 in pool 1= 0.823009155720176"

```

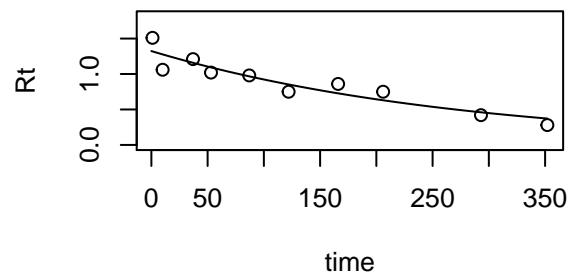
two pool_parallel structure



two pool_Series structure



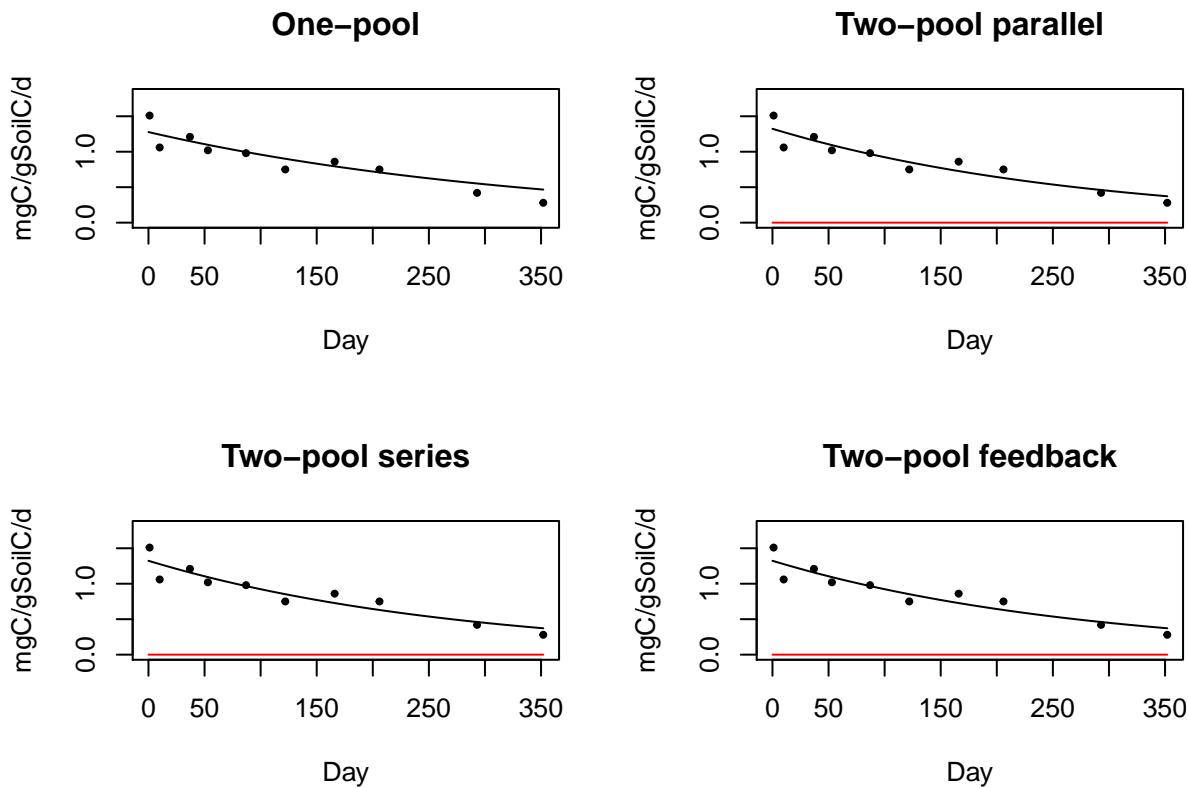
two pool_feedback structure



```

## [1] "AIC = 1.52379434920231"

```



```
##
##
## Model          k1    k2   COInp1      a21      a12     SSR      MSR
## -----        ----  ----  -----      ----  -----  -----  -----
## One-pool       0.0029          0.1797  0.0180
## Two-pool parallel 0.0036    0  0.8228  0.1443  0.0144
## Two-pool series 0.0036    0  0.8231  4e-04   0.1443  0.0144
## Two-pool feedback 0.0036    0  0.8230  3e-04   0.8231  0.1443  0.0144
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT     q05
## -----        -----  -----  -----  -----  -----  -----  -----
## One-pool       -6.0384 -5.7358 -38.19  -5.538  0.9702  446.2
## Two-pool parallel -2.4762 -1.5685 -36.38  1.524  0.0284  337.1  192.3
## Two-pool series -0.4762  0.7341 -34.38  7.524  0.0014  40689.1 192.4
## Two-pool feedback 1.5238  3.0367 -32.38 16.524  0.0000  6261.6  192.4
```

Variable CO2_FairSprus_30;

CO2 Flux of Fairbanks soils incubated at 10deg

```
Nethooper_V11= modelFitTS_Markdown(db = db[[19]], ts.col = 11, ic.col = 1, unitConverter = 10,
                                         inipars=list(oneP=0.5,
                                                      parallel=c(0.01, 0.001, 0.1),
                                                      series=c(0.05, 0.0001, 0.01, 0.1),
                                                      feedback=c(0.05, 0.0001, 0.01, 0.01, 0.1)))
```

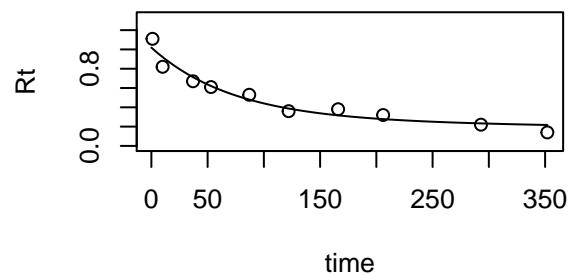
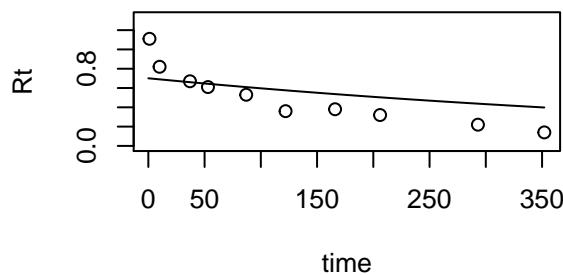
```
## [1] "NeffHooper2002; variable: CO2_FairSprus_30"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00160595158243559"
```

```

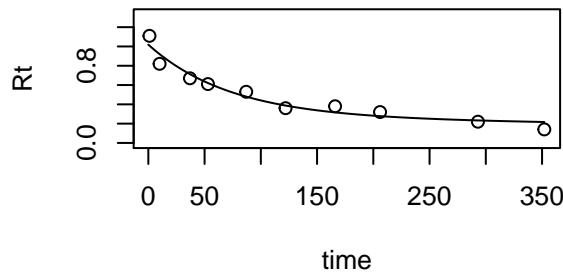
## [1] "AIC = -4.37859705660741"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0137963574125607"
## [2] "k2= 0.000708831045204358"
## [3] "proportion of C0 in pool 1= 0.12418271684091"
## [1] "AIC = -5.16952373628992"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0137968764154185"
## [2] "k2= 0.000708850204912635"
## [3] "a21= 0.0625830366980329"
## [4] "Proportion of C0 in pool 1= 0.132947523545877"
## [1] "AIC = -3.16952373538479"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0137492397431484"
## [2] "k2= 0.000757002867191511"
## [3] "a21= 0.0603107848837692"
## [4] "a12= 0.999993687586094"
## [5] "Proportion of C0 in pool 1= 0.180656457998744"

```

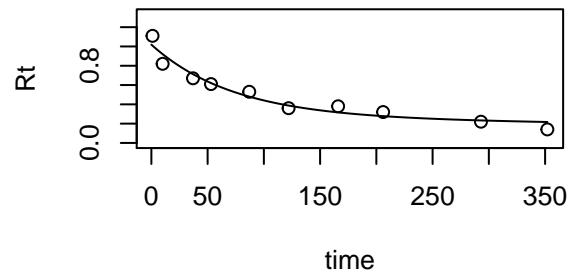
two pool_parallel structure



two pool_Series structure



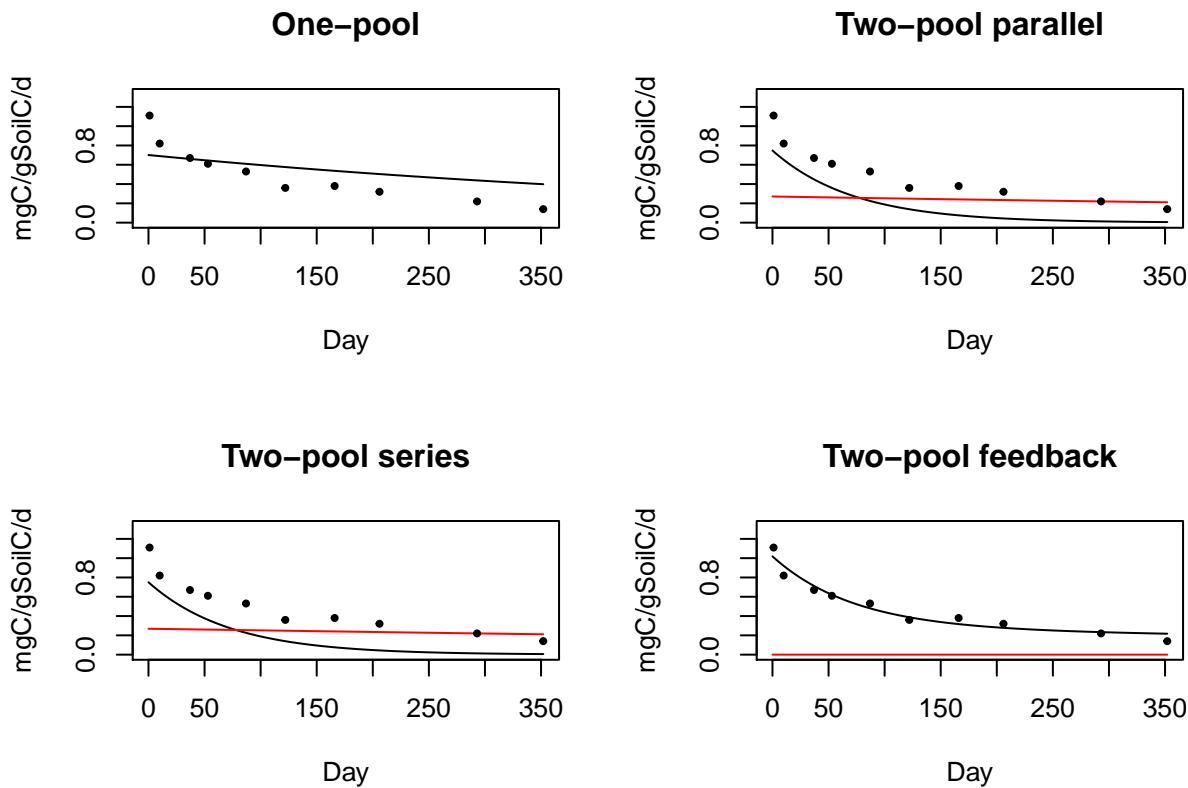
two pool_feedback structure



```

## [1] "AIC = -1.16952372988843"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        0.0016
## Two-pool parallel 0.0138  7e-04  0.1242
## Two-pool series  0.0138  7e-04  0.1329  0.0626
## Two-pool feedback 0.0137  8e-04  0.1807  0.0603  0.1329  0.0375  0.0038
##
##
## Model           AIC      BIC     AICn     AICc     wi   MeanTrT   q05
## -----
## One-pool        -4.379  -4.0760  -29.89  -3.879  0.7868  436.5
## Two-pool parallel -5.170  -4.2618  -49.85  -1.169  0.2031  428.4  78.53
## Two-pool series  -3.170  -1.9592  -47.85  4.830   0.0101  160.8  55.13
## Two-pool feedback -1.169  0.3434  -45.85  13.831  0.0001  162.2  55.21
```

Variable CO2_TooTuss_30;

CO2 Flux of Fairbanks soils incubated at 10deg

```
Nethooper_V12= modelFitTS_Markdown(db = db[[19]], ts.col = 12, ic.col = 4, unitConverter = 10,
                                         inipars=list(oneP=0.5,
                                                      parallel=c(0.01, 0.001, 0.1),
                                                      series=c(0.05, 0.0001, 0.01, 0.1),
                                                      feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))
```

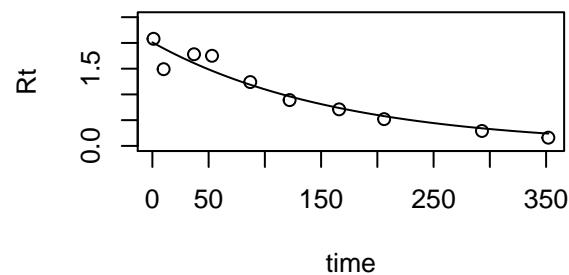
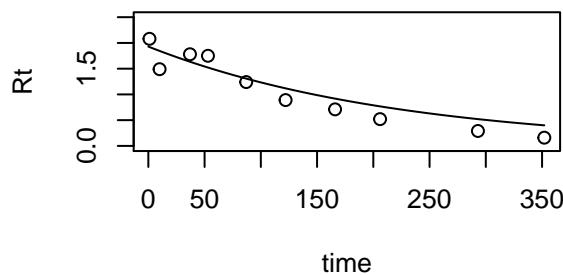
```
## [1] "NeffHooper2002; variable: CO2_TooTuss_30"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00447206172074566"
```

```

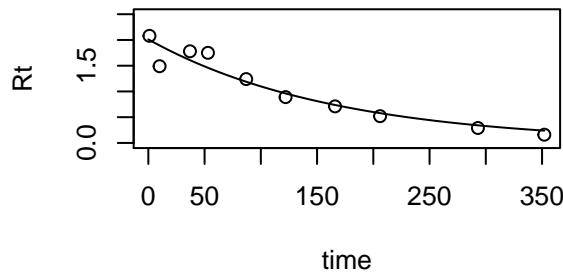
## [1] "AIC = -4.00684822137856"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00604860844834223"
## [2] "k2= 2.88729989267623e-12"
## [3] "proportion of C0 in pool 1= 0.770831908882579"
## [1] "AIC = -0.987017622170018"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00604860950519125"
## [2] "k2= 9.25851786769527e-09"
## [3] "a21= 0.00156809517594392"
## [4] "Proportion of C0 in pool 1= 0.772040886353123"
## [1] "AIC = 1.01298354627253"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00604860578980392"
## [2] "k2= 3.92235624427197e-10"
## [3] "a21= 5.69325820333755e-05"
## [4] "a12= 0.99998215449408"
## [5] "Proportion of C0 in pool 1= 0.770874824894638"

```

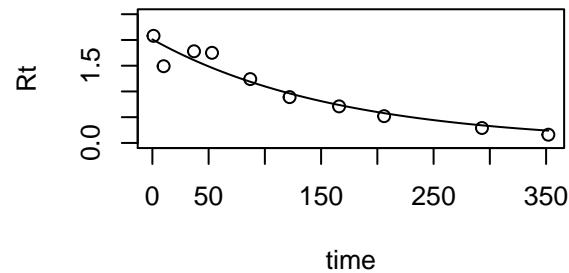
two pool_parallel structure



two pool_Series structure



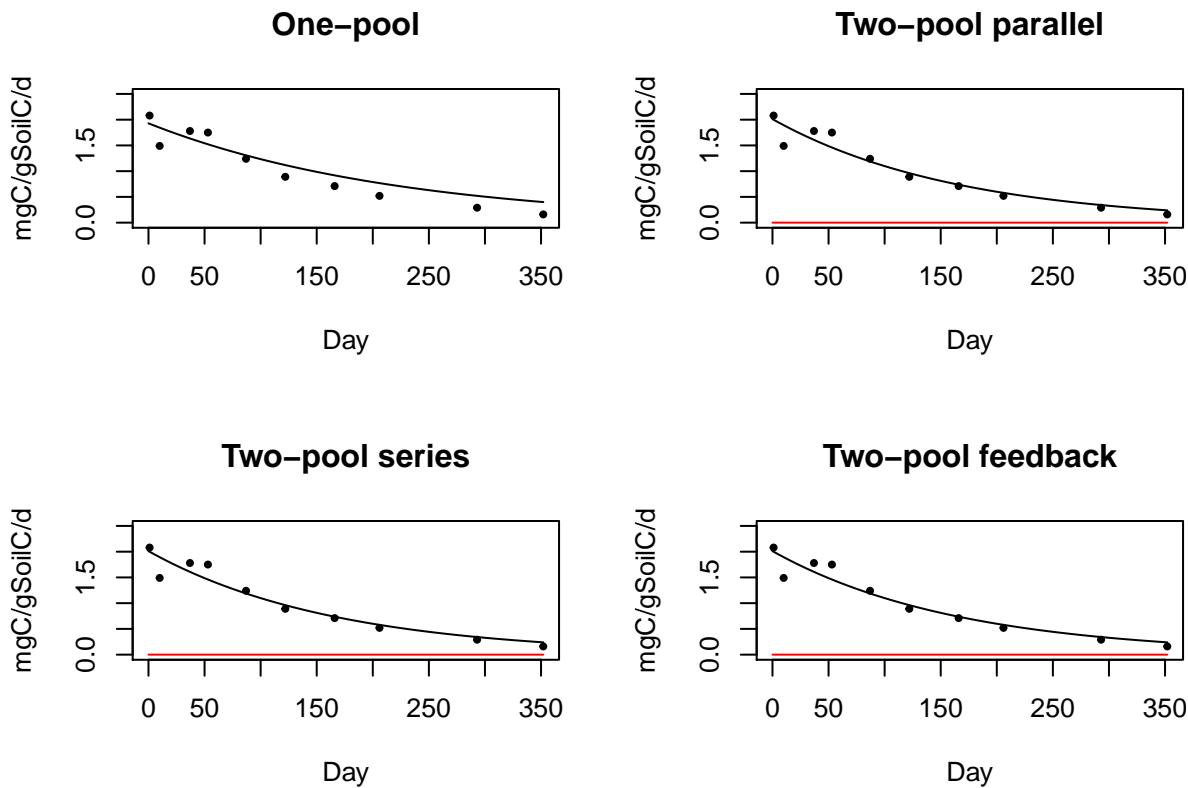
two pool_feedback structure



```

## [1] "AIC = 3.01298242722229"

```



```
##
##
## Model           k1    k2   COInp1      a21     a12    SSR    MSR
## -----          ---  ---  -----      ----  ----  ----  -----
## One-pool        -0.0045
## Two-pool parallel 0.0060  0  0.7708
## Two-pool series  0.0060  0  0.7720  0.0016
## Two-pool feedback 0.0060  0  0.7709  0.0001  0.772  0.3039  0.0304
##
##
## Model           AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -4.007  -3.7043 -28.03  -3.507  0.9613  431.4
## Two-pool parallel -0.987  -0.0793 -28.94  3.013  0.0369  214.5  114.6
## Two-pool series   1.013   2.2233 -26.94  9.013  0.0018 169533.2  114.9
## Two-pool feedback  3.013   4.5259 -24.94 18.013  0.0000 145322.5  114.6
```

Variable CO2_TooWet_30;

CO2 Flux of Toolik Lake soils incubated at 10deg

```
Nethooper_V13= modelFitTS_Markdown(db = db[[19]], ts.col = 13, ic.col = 6, unitConverter = 10,
                                         inipars=list(oneP=0.5,
                                                      parallel=c(0.01, 0.001, 0.1),
                                                      series=c(0.05, 0.0001, 0.01, 0.1),
                                                      feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))
```

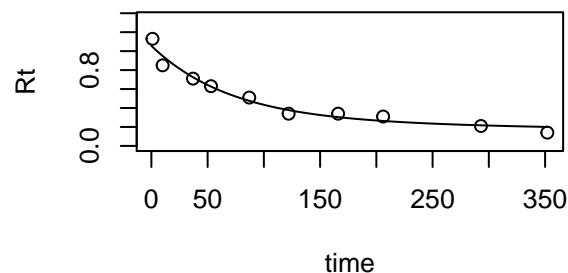
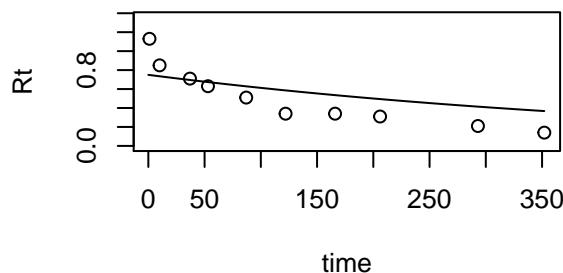
```
## [1] "NeffHooper2002; variable: CO2_TooWet_30"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00202419764395678"
```

```

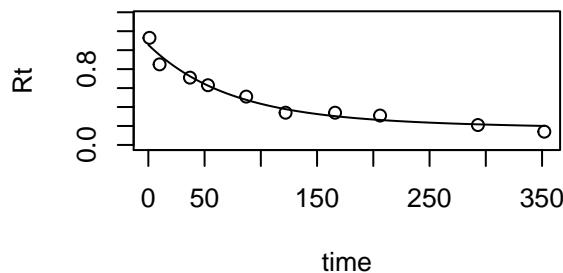
## [1] "AIC = -4.43075813268474"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0141199530311996"
## [2] "k2= 0.000830715251307785"
## [3] "proportion of C0 in pool 1= 0.152071417636296"
## [1] "AIC = -5.81721338680921"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.014120632449714"
## [2] "k2= 0.000830747821457996"
## [3] "a21= 0.216636994202605"
## [4] "Proportion of C0 in pool 1= 0.197529282239993"
## [1] "AIC = -3.8172133768443"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0141201123743514"
## [2] "k2= 0.000830723626270603"
## [3] "a21= 0.00160142677552771"
## [4] "a12= 0.000505979976593685"
## [5] "Proportion of C0 in pool 1= 0.152355330269443"

```

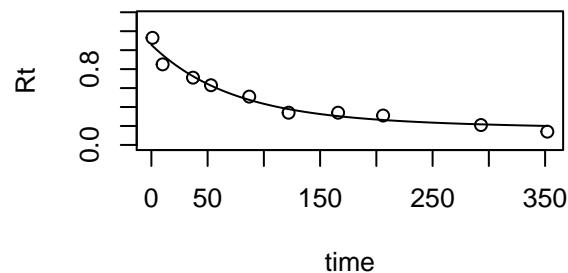
two pool_parallel structure



two pool_Series structure



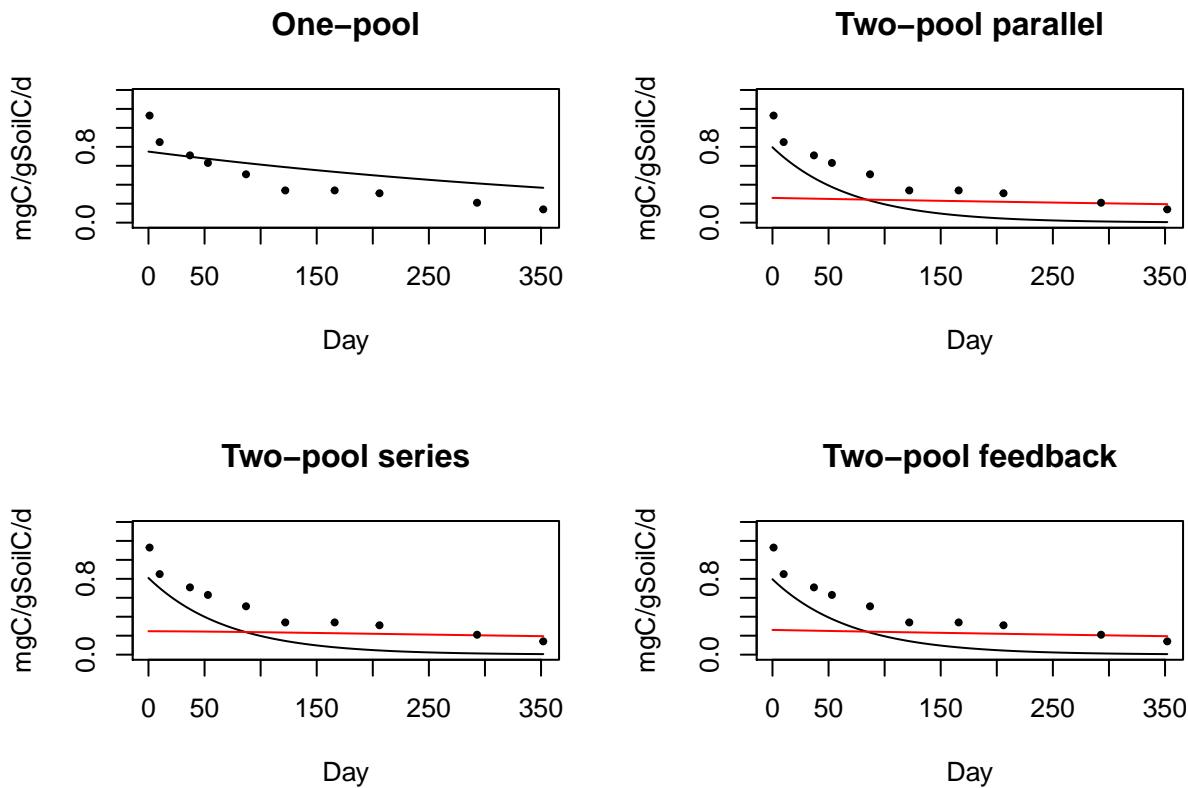
two pool_feedback structure



```

## [1] "AIC = -1.81721338641972"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0020
## Two-pool parallel 0.0141  8e-04  0.1521
## Two-pool series  0.0141  8e-04  0.1975  0.2166
## Two-pool feedback 0.0141  8e-04  0.1524  0.0016  0.1975  0.0272  0.0027
##
##
## Model           AIC      BIC     AICn     AICc     wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----
## One-pool        -4.431  -4.1282 -30.15  -3.931  0.7327  370.40
## Two-pool parallel -5.817  -4.9095 -53.09  -1.817  0.2547  350.68  73.28
## Two-pool series  -3.817  -2.6069 -51.09  4.183   0.0127  331.59  70.87
## Two-pool feedback -1.817  -0.3043 -49.09  13.183  0.0001  72.75  49.20
```

Variable CO2_TooShru_30;

CO2 Flux of Fairbanks soils incubated at 10deg

```
Nethooper_V14= modelFitTS_Markdown(db = db[[19]], ts.col = 14, ic.col = 5, unitConverter = 10,
                                         inipars=list(oneP=0.5,
                                                      parallel=c(0.01, 0.001, 0.1),
                                                      series=c(0.01, 0.0001, 0.01, 0.1),
                                                      feedback=c(0.01, 0.001, 0.01, 0.1, 0.1)))
```

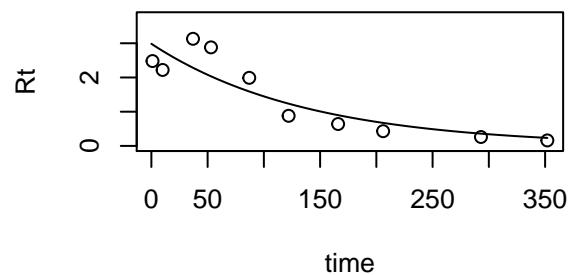
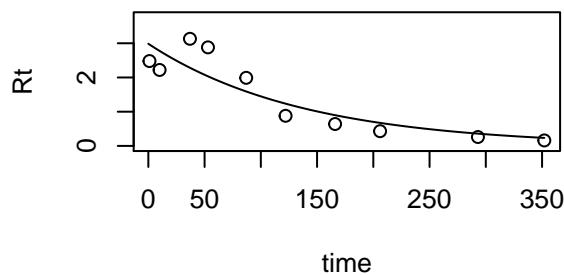
```
## [1] "NeffHooper2002; variable: CO2_TooShru_30"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00723331772796065"
```

```

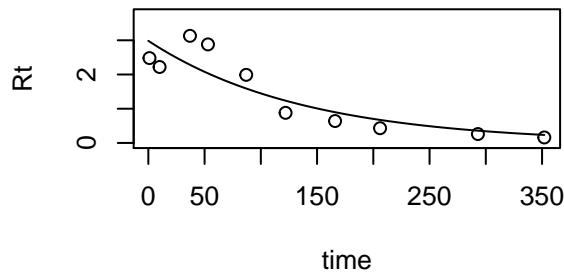
## [1] "AIC = -0.853782888038007"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0072332219957851"
## [2] "k2= 0.00723301259961696"
## [3] "proportion of C0 in pool 1= 0.985143287699674"
## [1] "AIC = 3.1462171119981"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0072334080041594"
## [2] "k2= 0.00734488209299154"
## [3] "a21= 1.91706401161951e-05"
## [4] "Proportion of C0 in pool 1= 0.999372168804045"
## [1] "AIC = 5.14621692526934"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0119833960412033"
## [2] "k2= 0.0374233794380268"
## [3] "a21= 6.78824535046418e-05"
## [4] "a12= 0.90178447631674"
## [5] "Proportion of C0 in pool 1= 0.18832050975986"

```

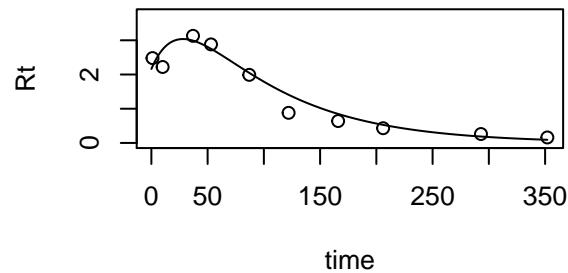
two pool_parallel structure



two pool_Series structure



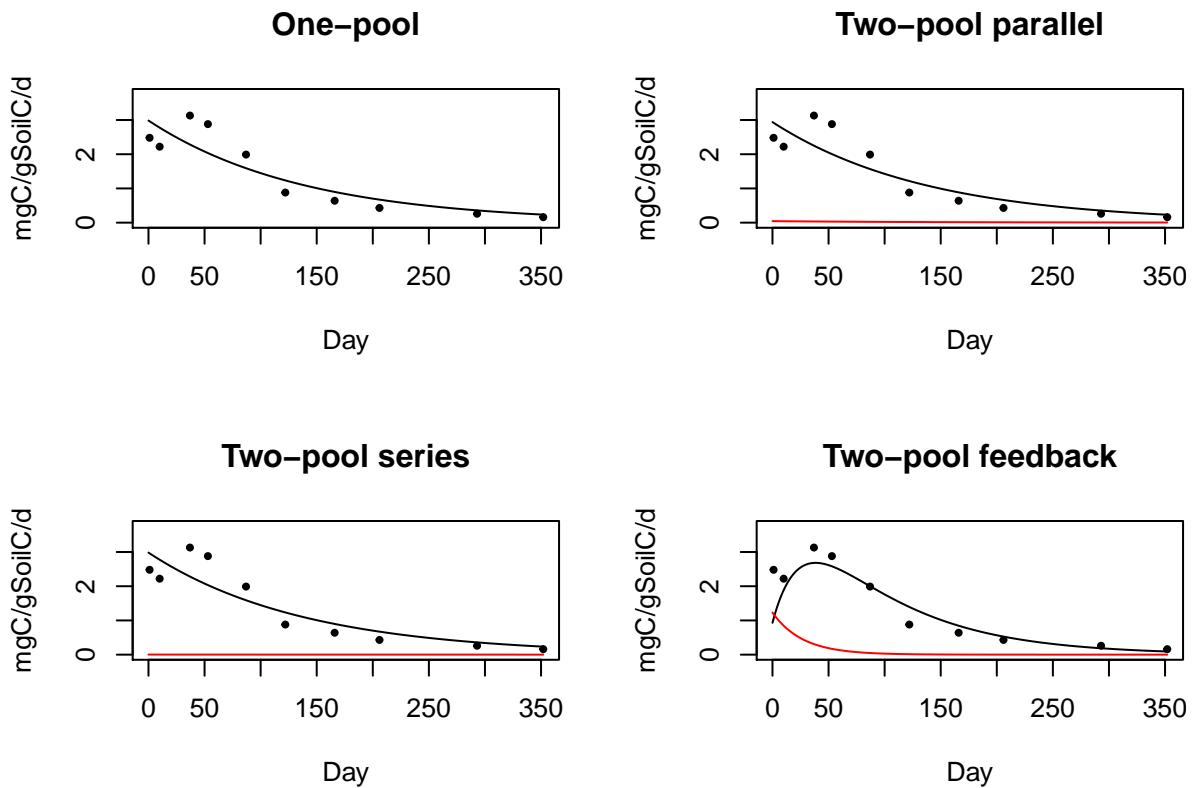
two pool_feedback structure



```

## [1] "AIC = 4.68806756435614"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0072
## Two-pool parallel 0.0072  0.0072  0.9851
## Two-pool series 0.0072  0.0073  0.9994  0e+00
## Two-pool feedback 0.0120  0.0374  0.1883  1e-04  0.9994  0.7023  0.0702
##
##
## Model          AIC      BIC     AICn     AICC      wi   MeanTrT    q05
## -----
## One-pool       -0.8538 -0.5512 -12.269  -0.3538  0.9759  412.60
## Two-pool parallel 3.1462  4.0540 -8.269   7.1462  0.0230  138.25  95.83
## Two-pool series 5.1462  6.3566 -6.269   13.1462 0.0011  138.25  95.83
## Two-pool feedback 4.6881  6.2010 -16.560  19.6881 0.0000  83.46  57.85
```

Dataset Rey2008EJSS

Variable CMin_Hain_0_5;

Carbon mineralization rates for the 0–5 cm soil layer at the Hainich site

```
Rey_V2= modelFitTS_Markdown(db = db[[22]], ts.col = 2, ic.col = 1, unitConverter = 1,
                           inipars=list(oneP=0.5,
                                         parallel=c(0.05, 0.001, 0.01),
                                         series=c(0.05, 0.001, 0.01, 0.01),
                                         feedback=c(0.05, 0.001, 0.01, 0.01))))
```

```

## [1] "Rey2008EJSS; variable: CMin_Hain_0_5"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00599201119844928"

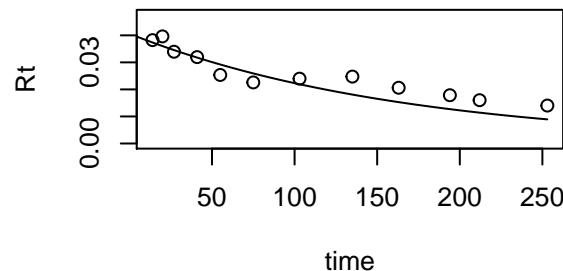
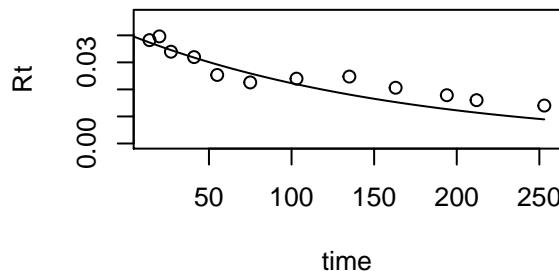
## [1] "AIC = -20.0997321008122"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00599200643146245"
## [2] "k2= 0.00599199078900209"
## [3] "proportion of C0 in pool 1= 0.999489788794494"

## [1] "AIC = -16.0997321008249"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0059920763278164"
## [2] "k2= 0.00614371304574222"
## [3] "a21= 2.37720884070369e-05"
## [4] "Proportion of C0 in pool 1= 0.999516401829794"

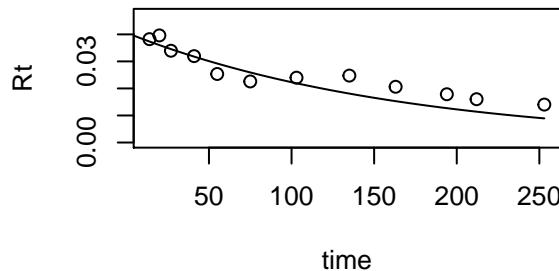
## [1] "AIC = -14.0997329676528"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00599206515202245"
## [2] "k2= 0.0061116263978495"
## [3] "a21= 1.78671080623416e-05"
## [4] "a12= 9.35421194521724e-05"
## [5] "Proportion of C0 in pool 1= 0.999579675886899"

```

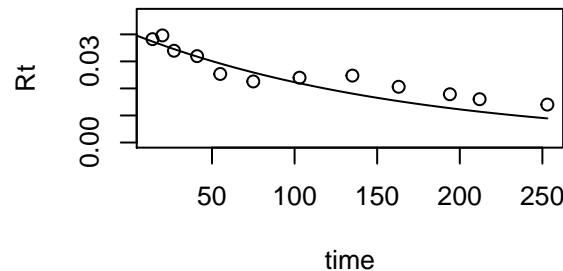
two pool_parallel structure



two pool_Series structure



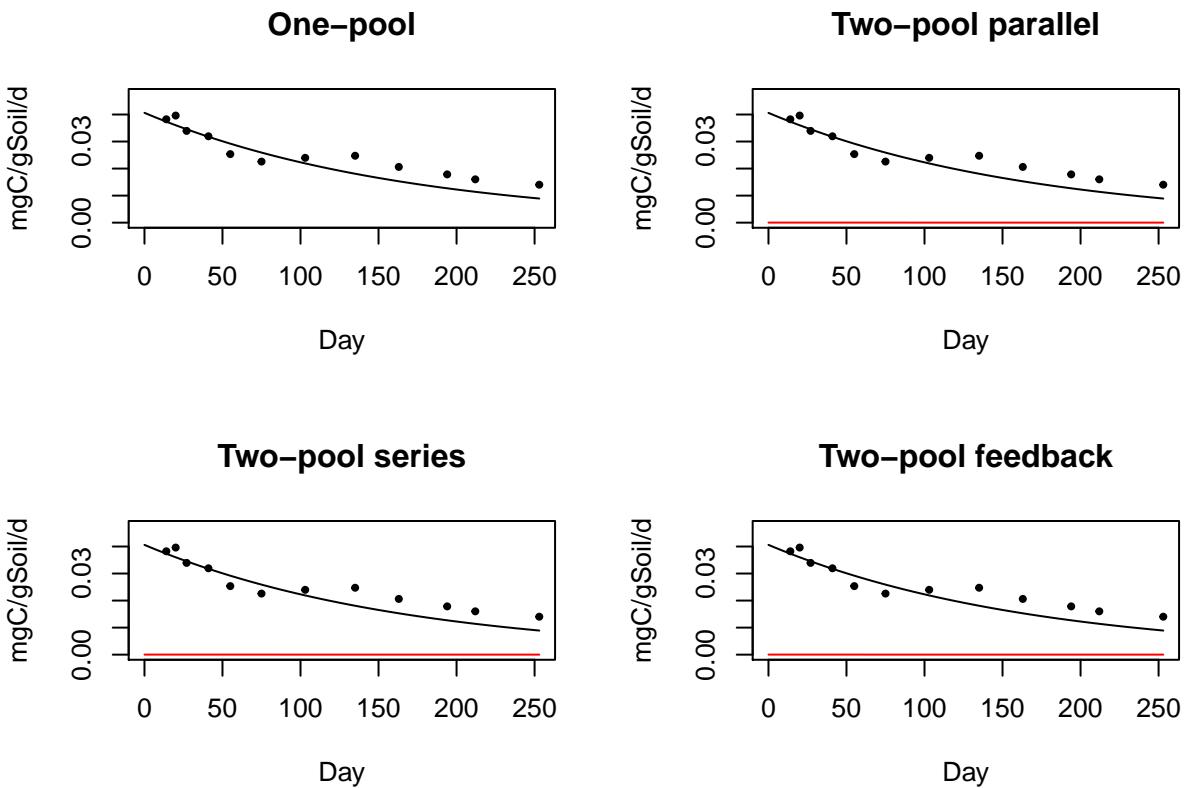
two pool_feedback structure



```

## [1] "AIC = -12.0997326626691"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.006 0.006 0.9995 0.006 0.006 2e-04 0  
## Two-pool parallel 0.006 0.0060 0.9995 0.006 0.006 2e-04 0  
## Two-pool series 0.006 0.0061 0.9995 0.006 0.006 2e-04 0  
## Two-pool feedback 0.006 0.0061 0.9996 0.006 0.006 0.9995 2e-04 0  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -20.1 -18.039 -638.9 -20.03 0.8713 6.78  
## Two-pool parallel -16.1 -9.918 -634.9 -15.66 0.0979 166.89 115.7  
## Two-pool series -14.1 -5.858 -632.9 -13.35 0.0308 166.89 115.7  
## Two-pool feedback -12.1 -1.798 -630.9 -10.95 0.0093 166.89 115.7
```

Variable CMin_Hain_5_10;

Carbon mineralization rates for the 5–10 cm soil layer at the Hainich site

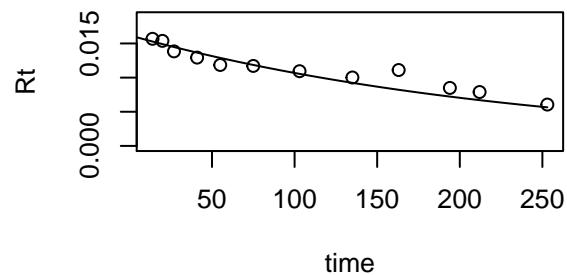
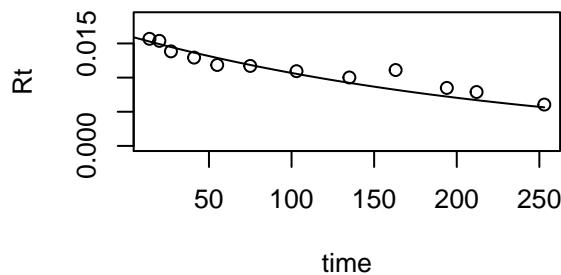
```
Rey_V3= modelFitTS_Markdown(db = db[[22]], ts.col = 3, ic.col = 2, unitConverter = 1,  
    inipars=list(oneP=0.01,  
                 parallel=c(0.1, 0.001, 0.01),  
                 series=c(0.1, 0.001, 0.01, 0.1),  
                 feedback=c(0.01, 0.0001, 0.1, 0.01, 0.01)))  
  
## [1] "Rey2008EJSS; variable: CMin_Hain_5_10"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.00416489279799315"
```

```

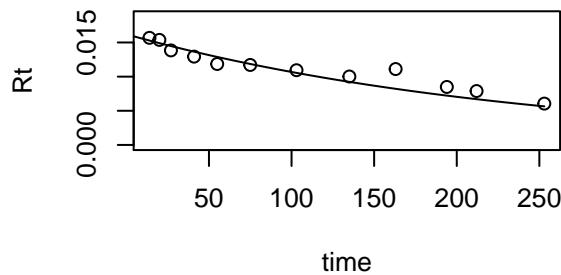
## [1] "AIC = -25.2204614855343"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00416490251393256"
## [2] "k2= 0.00416483601436849"
## [3] "proportion of C0 in pool 1= 0.958051214326367"
## [1] "AIC = -21.2204614842261"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00416566588142223"
## [2] "k2= 0.00416489377499742"
## [3] "a21= 0.00028937272119206"
## [4] "Proportion of C0 in pool 1= 0.0211809551638743"
## [1] "AIC = -19.2204614882997"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00655947430854529"
## [2] "k2= 0.00656832323665791"
## [3] "a21= 0.000691777399018545"
## [4] "a12= 0.444422208886095"
## [5] "Proportion of C0 in pool 1= 0.0777907441269782"

```

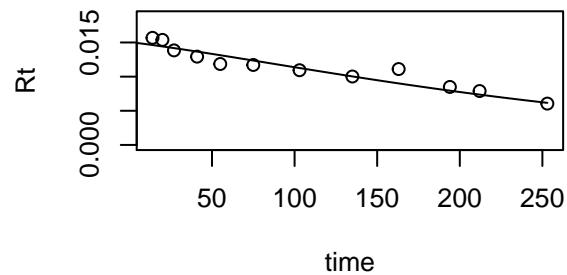
two pool_parallel structure



two pool_Series structure



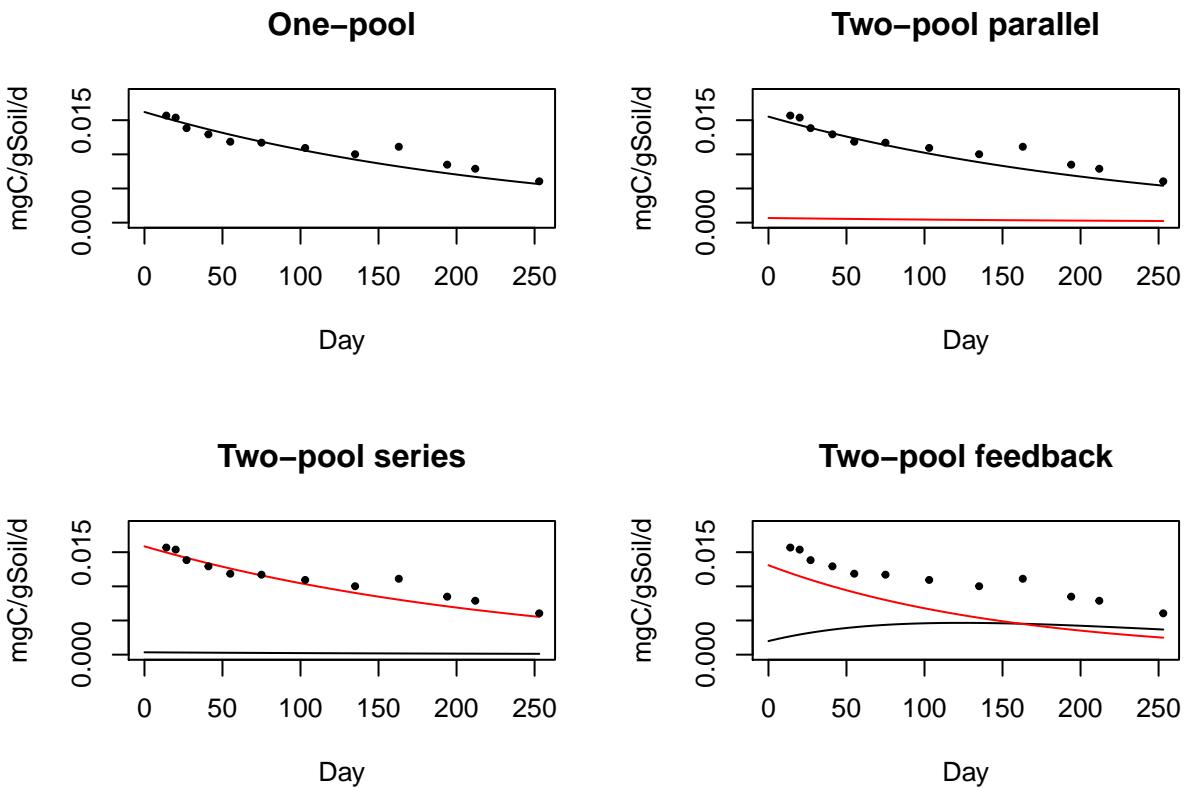
two pool_feedback structure



```

## [1] "AIC = -18.0234943679052"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0042
## Two-pool parallel 0.0042  0.0042  0.9581
## Two-pool series   0.0042  0.0042  0.0212  3e-04
## Two-pool feedback 0.0066  0.0066  0.0778  7e-04  0.0212  0  0
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT   q05
## -----
## One-pool        -25.22  -23.160  -787.4  -25.15  0.8713  3.89
## Two-pool parallel -21.22  -15.039  -783.4  -20.78  0.0979  240.10 166.4
## Two-pool series   -19.22  -10.979  -781.4  -18.47  0.0308  240.13 166.4
## Two-pool feedback  -18.02  -7.721  -802.7  -16.87  0.0139  152.60 105.8
```

Variable CMin_Hain_10_20;

Carbon mineralization rates for the 10–20 cm soil layer at the Hainich site

```
Rey_V4= modelFitTS_Markdown(db = db[[22]], ts.col = 4, ic.col = 3, unitConverter = 1,
                             inipars=list(oneP=0.01,
                                         parallel=c(0.01, 0.001, 0.01),
                                         series=c(0.01, 0.001, 0.001, 0.01),
                                         feedback=c(0.01, 0.001, 0.01, 0.01, 0.01)))

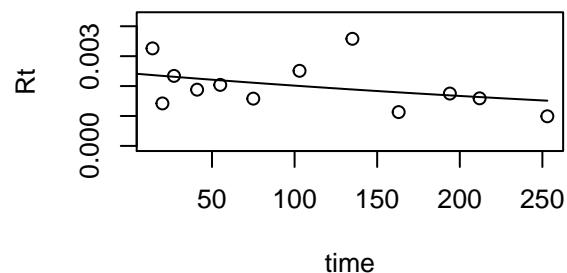
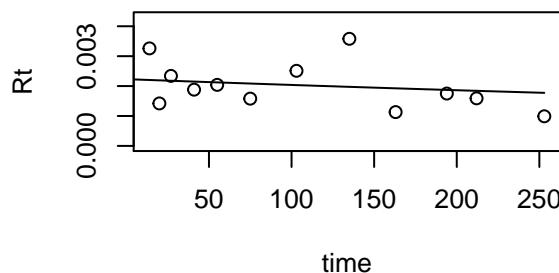
## [1] "Rey2008EJSS; variable: CMin_Hain_10_20"
## [1] "One pool model"
## [1] "Best fit parameter: -0.000907191183216582"
```

```

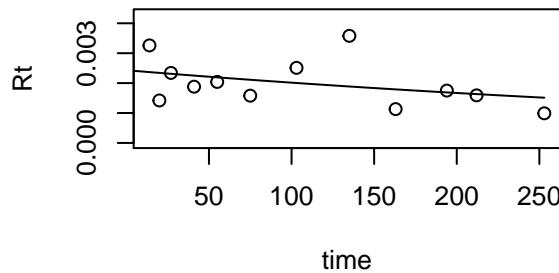
## [1] "AIC = -26.9508345677703"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00187740991095897"
## [2] "k2= 9.42099459555559e-10"
## [3] "proportion of C0 in pool 1= 0.526394724442702"
## [1] "AIC = -23.0420059942164"
## [1] "Two pool model-Series structure"
## [1] "k1= 1.10237306770682e-13"
## [2] "k2= 0.00187740977085379"
## [3] "a21= 0.999996651951855"
## [4] "Proportion of C0 in pool 1= 0.473605093163378"
## [1] "AIC = -21.0420060093531"
## [1] "Two pool model-feedback structure"
## [1] "k1= 8.50330390312578e-10"
## [2] "k2= 0.00187740344691326"
## [3] "a21= 0.998593095526145"
## [4] "a12= 0.468867878258444"
## [5] "Proportion of C0 in pool 1= 0.00891893788803177"

```

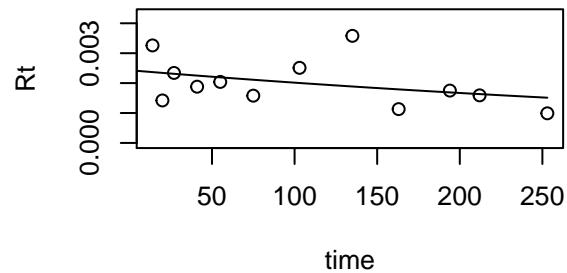
two pool_parallel structure



two pool_Series structure



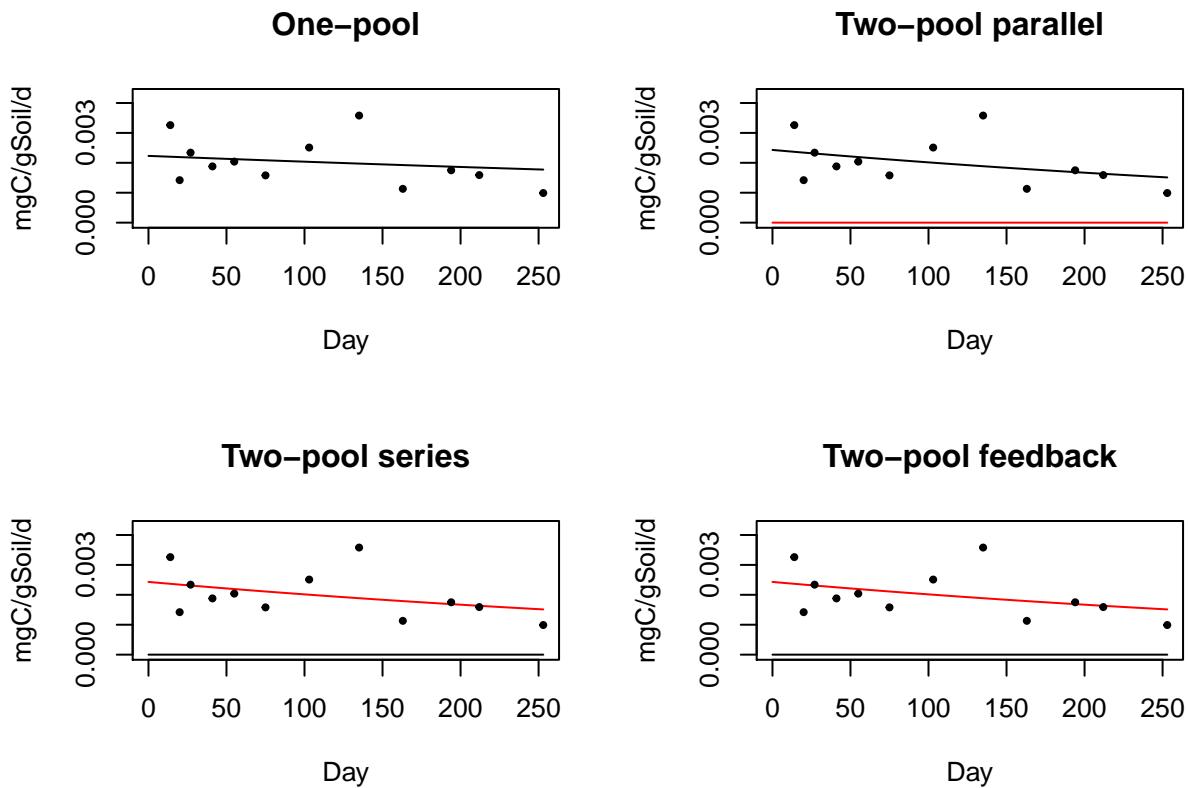
two pool_feedback structure



```

## [1] "AIC = -19.0420060019604"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0009 0 0 0 0  
## Two-pool parallel 0.0019 0.0000 0.5264 0 0 0 0  
## Two-pool series 0.0000 0.0019 0.4736 1.0000 0 0 0 0  
## Two-pool feedback 0.0000 0.0019 0.0089 0.9986 0.4736 0 0 0  
##  
##  
## Model AIC BIC AICn AICc wi MeanTrT q05  
## -----  
## One-pool -26.95 -24.89 -837.6 -26.88 0.8661 2.460e+00  
## Two-pool parallel -23.04 -16.86 -836.2 -22.60 0.1018 1.012e+03 3.692e+02  
## Two-pool series -21.04 -12.80 -834.2 -20.29 0.0321 9.071e+12 6.288e+12  
## Two-pool feedback -19.04 -8.74 -832.2 -17.89 0.0097 2.211e+09 1.533e+09
```

Variable CMin_Coll_0_5;

Carbon mineralization rates for the 0-5 cm soil layer at the Collelongo site

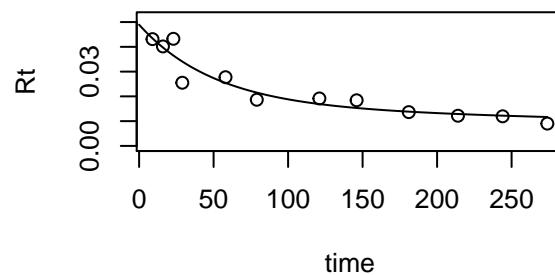
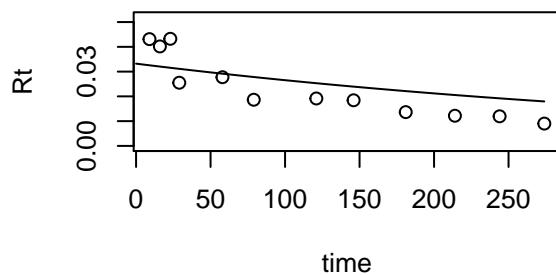
```
Rey_V5= modelFitTS_Markdown(db = db[[22]], ts.col = 5, ic.col = 4, unitConverter = 1,  
    inipars=list(oneP=0.01,  
                parallel=c(0.01, 0.001, 0.01),  
                series=c(0.01, 0.0001, 0.01, 0.01),  
                feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))  
  
## [1] "Rey2008EJSS; variable: CMin_Coll_0_5"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.00224409612889076"
```

```

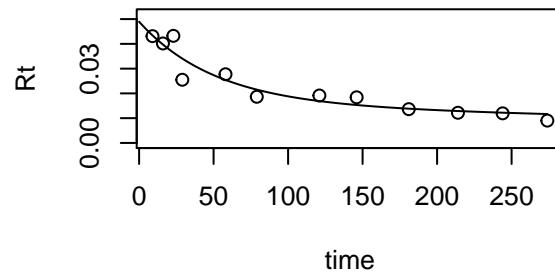
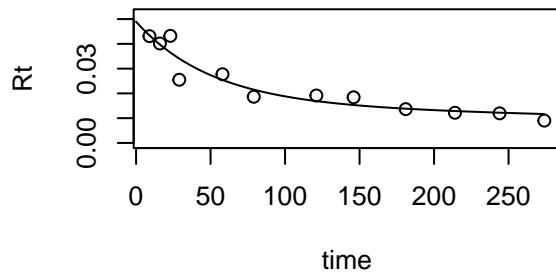
## [1] "AIC = -17.2946253168033"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0197756350981442"
## [2] "k2= 0.00122753515026248"
## [3] "proportion of C0 in pool 1= 0.112127886008492"
## [1] "AIC = -16.5180614774468"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0197752255027508"
## [2] "k2= 0.00122752576933307"
## [3] "a21= 3.32080680887081e-06"
## [4] "Proportion of C0 in pool 1= 0.112130203735501"
## [1] "AIC = -14.5180614781381"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0197742707215175"
## [2] "k2= 0.00122750427222813"
## [3] "a21= 7.08600285861394e-05"
## [4] "a12= 7.25619012073575e-05"
## [5] "Proportion of C0 in pool 1= 0.112147485581738"

```

two pool_parallel structure



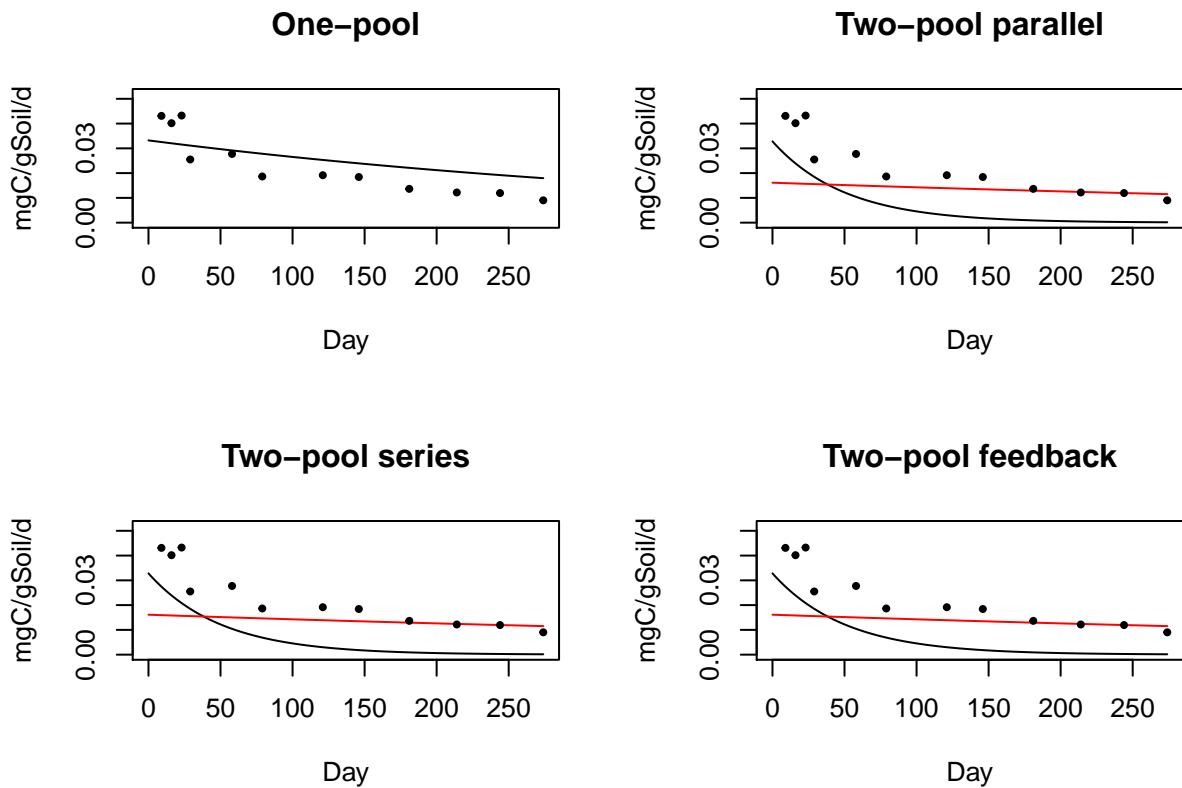
two pool_Series structure



```

## [1] "AIC = -12.5180614769254"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        -----  -----  -----  -----  -----  -----
## One-pool       0.0022
## Two-pool parallel 0.0198  0.0012  0.1121
## Two-pool series   0.0198  0.0012  0.1121  0e+00
## Two-pool feedback  0.0198  0.0012  0.1121  1e-04  0.1121  2e-04  0e+00
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----        -----  -----  -----  -----  -----
## One-pool      -17.29  -15.234  -557.5  -17.22  0.5747  14.80
## Two-pool parallel -16.52  -10.337  -647.0  -16.07  0.3234  302.36  62.50
## Two-pool series    -14.52  -6.276  -645.0  -13.76  0.1019  50.57  35.05
## Two-pool feedback  -12.52  -2.216  -643.0  -11.36  0.0307  50.63  35.06
```

Variable CMin_Coll_5_10;

Carbon mineralization rates for the 5-10 cm soil layer at the Collelongo site

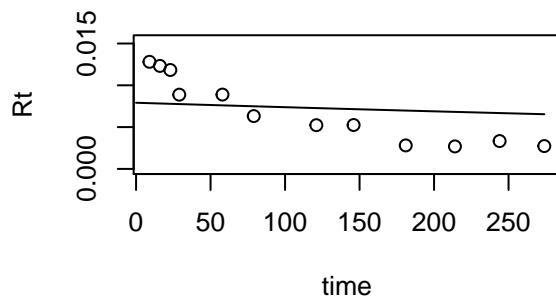
```
Rey_V6= modelFitTS_Markdown(db = db[[22]], ts.col = 6, ic.col = 5, unitConverter = 1,
                             inipars=list(oneP=0.01,
                                         parallel=c(0.01, 0.001, 0.01),
                                         series=c(0.01, 0.0001, 0.01, 0.1),
                                         feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

## [1] "Rey2008EJSS; variable: CMin_Coll_5_10"
## [1] "One pool model"
## [1] "Best fit parameter: -0.000694143175341111"
```

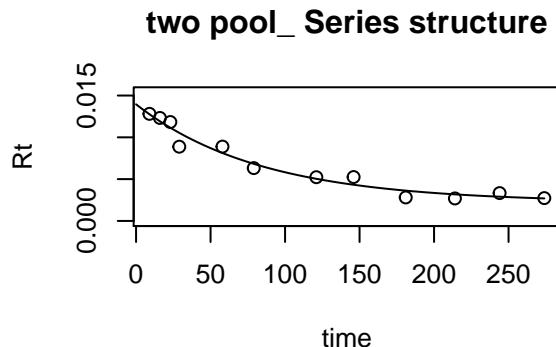
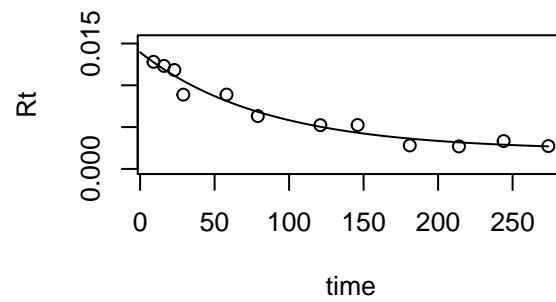
```

## [1] "AIC = -20.8156440263306"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0120373912420161"
## [2] "k2= 0.000231644283093826"
## [3] "proportion of C0 in pool 1= 0.0840409504477862"
## [1] "AIC = -22.9531552970634"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0120373807021141"
## [2] "k2= 0.000231644030224667"
## [3] "a21= 0.0702473334879171"
## [4] "Proportion of C0 in pool 1= 0.0905247099895606"
## [1] "AIC = -20.9531552962599"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0120373846344617"
## [2] "k2= 0.00023164656604323"
## [3] "a21= 0.0486347983233075"
## [4] "a12= 0.000207175877889931"
## [5] "Proportion of C0 in pool 1= 0.0884295658238198"

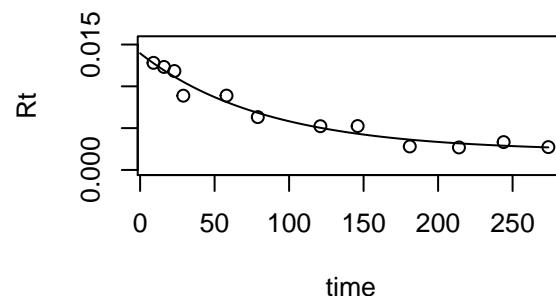
```



two pool_parallel structure



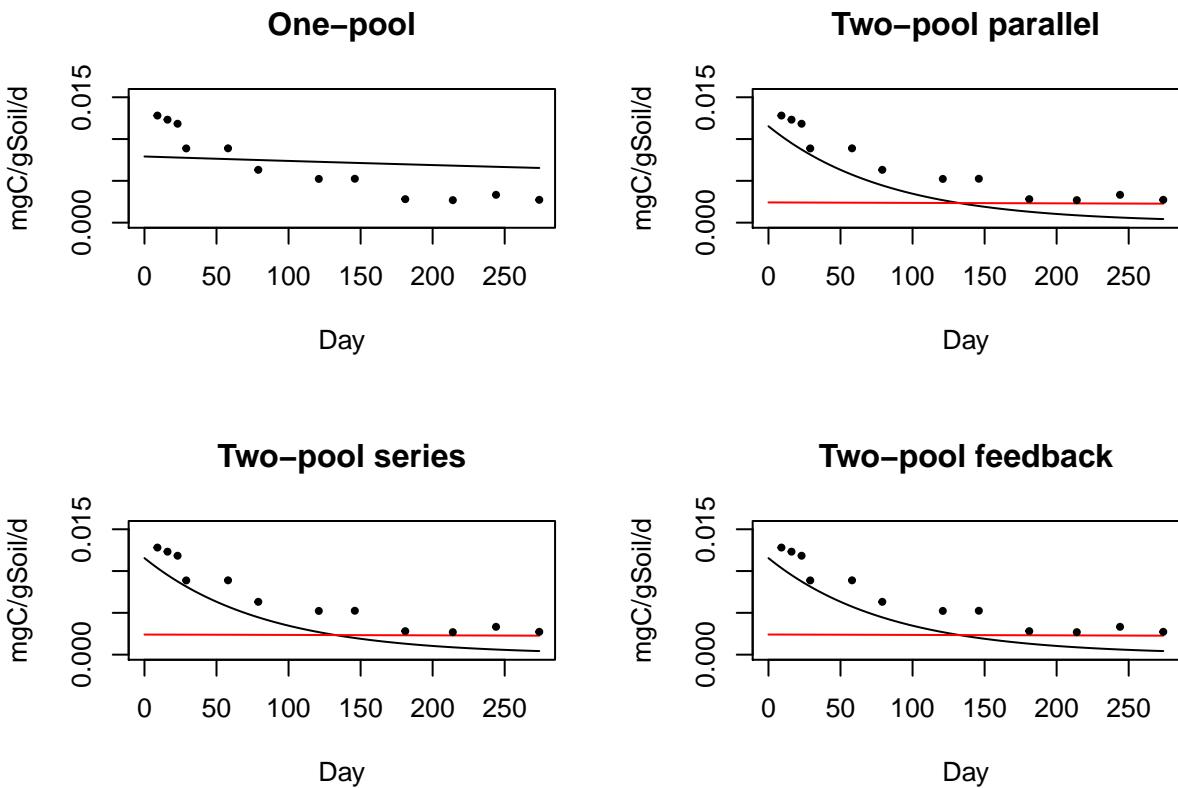
two pool_Series structure



```

## [1] "AIC = -18.9531552969041"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0007 1e-04 0  
## Two-pool parallel 0.0120 2e-04 0.0840 0e+00 0  
## Two-pool series 0.0120 2e-04 0.0905 0.0702 0e+00 0  
## Two-pool feedback 0.0120 2e-04 0.0884 0.0486 0.0905 0e+00 0  
##  
##  
## Model AIC BIC AICn AICc wi MeanTrT q05  
## -----  
## One-pool -20.82 -18.755 -659.7 -20.74 0.2394 11.4  
## Two-pool parallel -22.95 -16.772 -833.6 -22.51 0.5784 817.1 76.37  
## Two-pool series -20.95 -12.711 -831.6 -20.20 0.1822 386.3 64.05  
## Two-pool feedback -18.95 -8.651 -829.6 -17.80 0.0549 293.0 61.90
```

Variable CMin_Coll_10_20;

Carbon mineralization rates for the 10-20 cm soil layer at the Collelongo site

```
Rey_V7= modelFitTS(db = db[[22]], ts.col = 7, ic.col = 6, unitConverter = 1,  
    inipars=list(oneP=0.01,  
                parallel=c(0.1, 0.001, 0.01),  
                series=c(0.01, 0.0001, 0.01, 0.1),  
                feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))
```

```
## Error in modelFitTS(db = db[[22]], ts.col = 7, ic.col = 6, unitConverter = 1, : could not find function
```

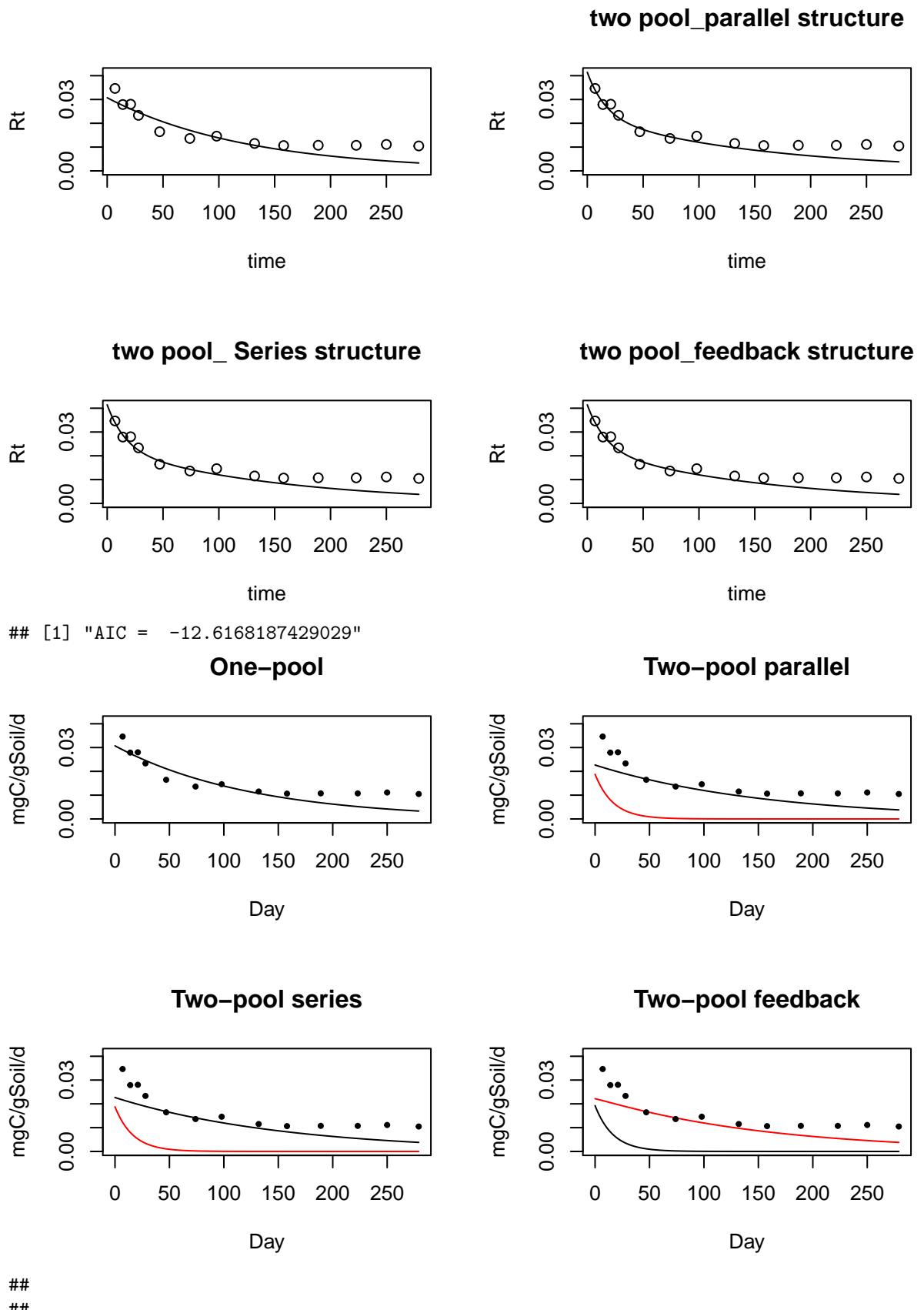
Variable CMin_Hess_0_5;

Carbon mineralization rates for the 0-5 cm soil layer at the Hesse site

```
Rey_V8= modelFitTS_Markdown(db = db[[22]], ts.col = 8, ic.col = 7, unitConverter = 1,
                           inipars=list(oneP=0.01,
                                         parallel=c(0.1, 0.001, 0.01),
                                         series=c(0.1, 0.001, 0.01, 0.01),
                                         feedback=c(0.1, 0.001, 0.1, 0.01, 0.1)))
```



```
## [1] "Rey2008EJSS; variable: CMin_Hess_0_5"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00798222227145651"
## [1] "AIC = -19.9652760072041"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00639877822874555"
## [2] "k2= 0.0607428116161617"
## [3] "proportion of C0 in pool 1= 0.919737301796924"
## [1] "AIC = -16.61681843325"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00639889198724119"
## [2] "k2= 0.0607407517909104"
## [3] "a21= 4.63977542262128e-05"
## [4] "Proportion of C0 in pool 1= 0.919737000729432"
## [1] "AIC = -14.6168184446373"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0607352061805527"
## [2] "k2= 0.00639891167994319"
## [3] "a21= 0.172523604457401"
## [4] "a12= 8.17258099363727e-05"
## [5] "Proportion of C0 in pool 1= 0.0994477460903646"
```



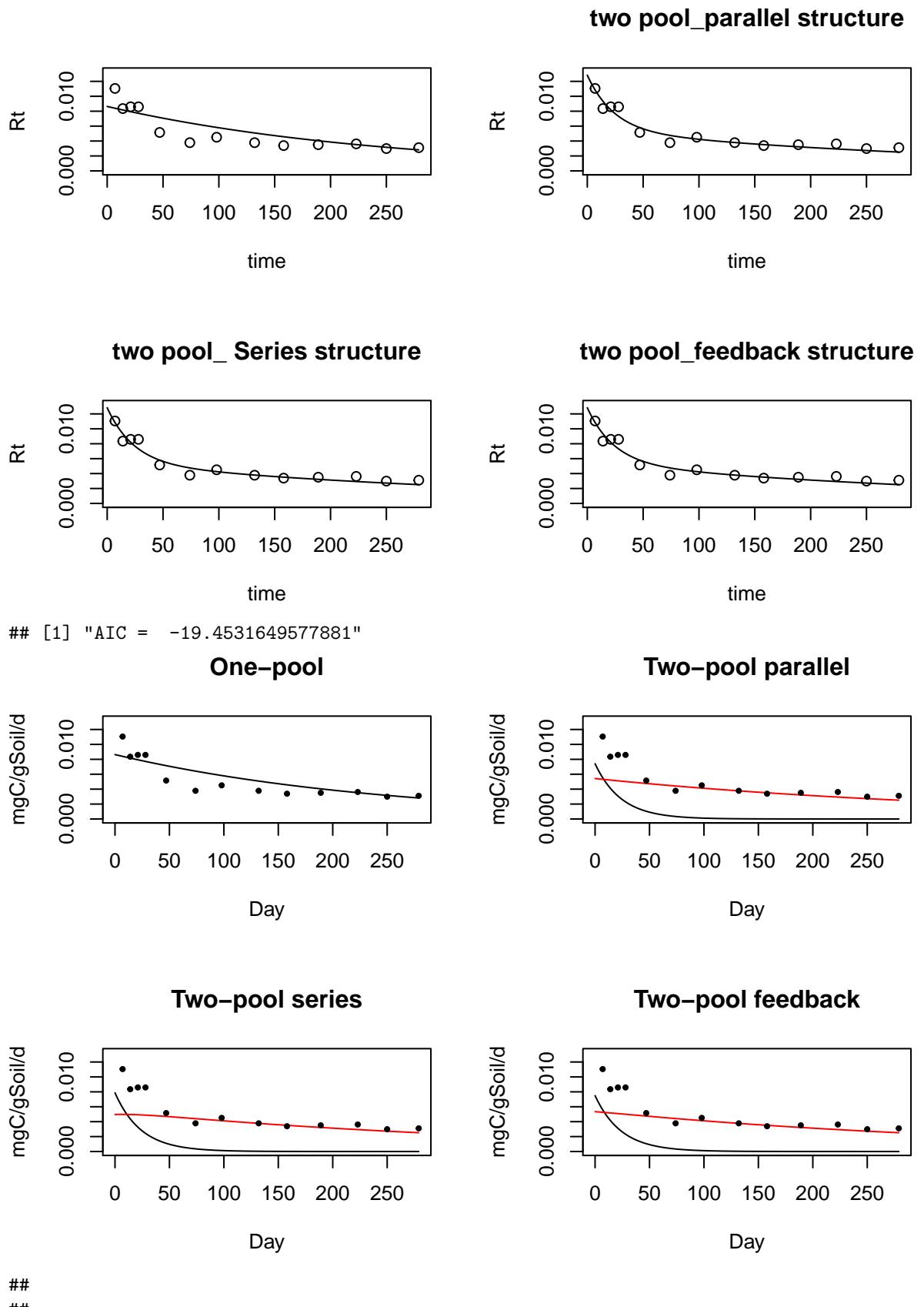
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## -----	-----	-----	-----	-----	-----	-----	-----
## One-pool	0.0080					2e-04	0
## Two-pool parallel	0.0064	0.0607	0.9197			2e-04	0
## Two-pool series	0.0064	0.0607	0.9197	0.0000		2e-04	0
## Two-pool feedback	0.0607	0.0064	0.0994	0.1725	0.9197	2e-04	0
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## -----	-----	-----	-----	-----	-----	-----	-----
## One-pool	-19.97	-17.905	-635.0	-19.89	0.8302	3.85	
## Two-pool parallel	-16.62	-10.435	-649.9	-16.17	0.1291	92.93	33.60
## Two-pool series	-14.62	-6.375	-647.9	-13.86	0.0407	156.28	108.32
## Two-pool feedback	-12.62	-2.315	-645.9	-11.46	0.0123	43.43	14.99

Variable CMin_Hess_5_10;

Carbon mineralization rates for the 5-10 cm soil layer at the Hesse site

```
Rey_V9= modelFitTS_Markdown(db = db[[22]], ts.col = 9, ic.col = 8, unitConverter = 1,
                           inipars=list(oneP=0.01,
                                         parallel=c(0.1, 0.001, 0.1),
                                         series=c(0.1, 0.001, 0.1, 0.1),
                                         feedback=c(0.1, 0.001, 0.1, 0.01, 0.1)))
```

```
## [1] "Rey2008EJSS; variable: CMin_Hess_5_10"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00401669887825484"
## [1] "AIC = -24.3671254321913"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0418524138795985"
## [2] "k2= 0.00274738519482259"
## [3] "proportion of CO in pool 1= 0.0823389853673454"
## [1] "AIC = -23.4531649566329"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0418539746316553"
## [2] "k2= 0.00274740736225372"
## [3] "a21= 0.454019124990053"
## [4] "Proportion of CO in pool 1= 0.160160597398161"
## [1] "AIC = -21.4531649580379"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0418527384503194"
## [2] "k2= 0.00274743461359252"
## [3] "a21= 0.131846519194495"
## [4] "a12= 0.000113990345432025"
## [5] "Proportion of CO in pool 1= 0.0958733331229079"
```



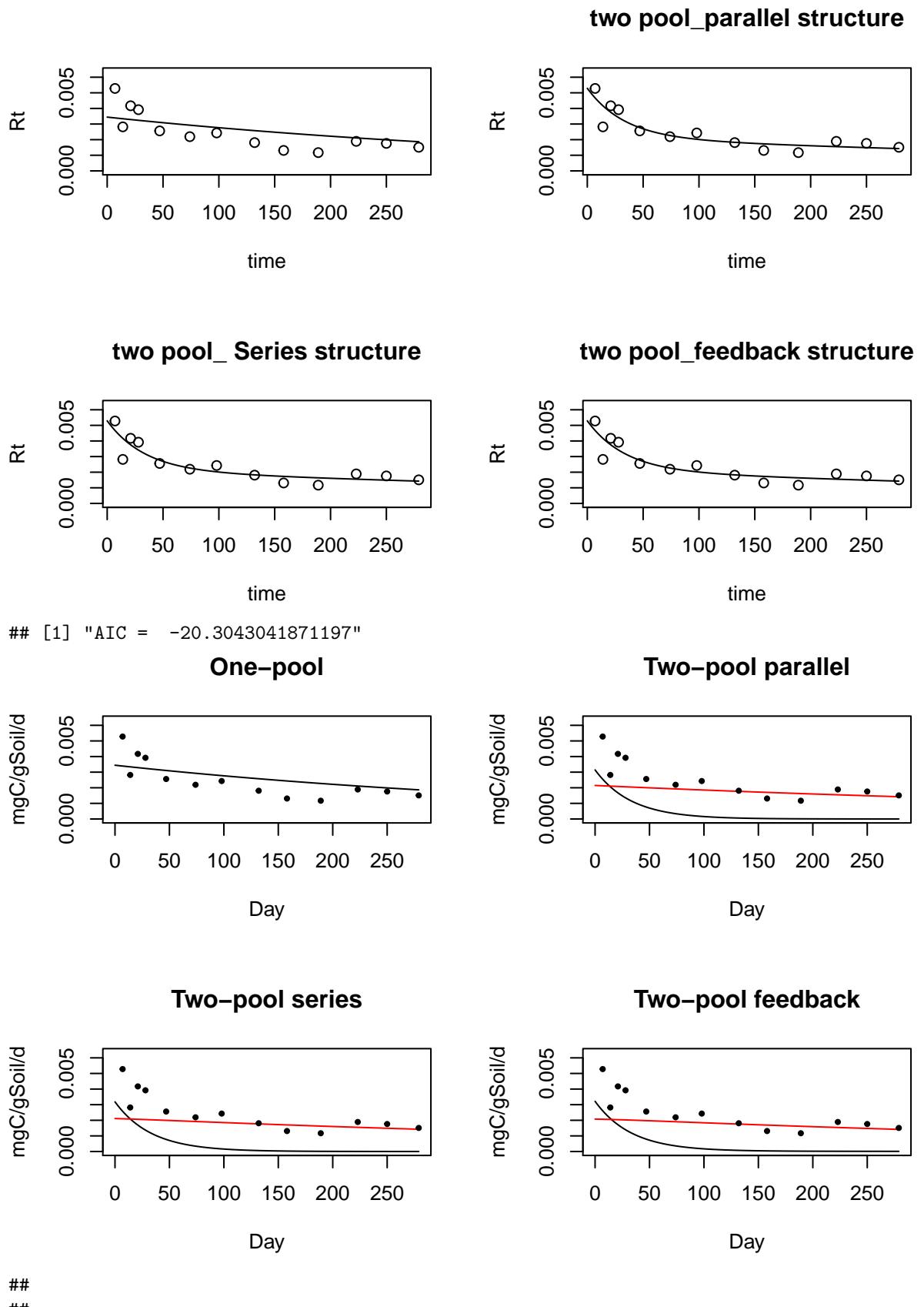
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0040					0	0
## Two-pool parallel	0.0419	0.0027	0.0823			0	0
## Two-pool series	0.0419	0.0027	0.1602	0.4540		0	0
## Two-pool feedback	0.0419	0.0027	0.0959	0.1318	0.1602	0	0
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	-24.37	-22.307	-762.6	-24.30	0.5914	2.15	
## Two-pool parallel	-23.45	-17.272	-848.1	-23.01	0.3107	167.58	37.72
## Two-pool series	-21.45	-13.211	-846.1	-20.70	0.0979	189.15	46.75
## Two-pool feedback	-19.45	-9.151	-844.1	-18.30	0.0295	71.88	20.34

Variable CMin_Hess_10_20;

Carbon mineralization rates for the 10-20 cm soil layer at the Hesse site

```
Rey_V10= modelFitTS_Markdown(db = db[[22]], ts.col = 10, ic.col = 9, unitConverter = 1,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.1, 0.01, 0.1)))
```

```
## [1] "Rey2008EJSS; variable: CMin_Hess_10_20"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00219336809642812"
## [1] "AIC = -26.2904677473518"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0300764266800117"
## [2] "k2= 0.00146547802388957"
## [3] "proportion of CO in pool 1= 0.0665976860067198"
## [1] "AIC = -24.3043041875216"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0300762133362918"
## [2] "k2= 0.0014654762168454"
## [3] "a21= 0.182974612797645"
## [4] "Proportion of CO in pool 1= 0.0824586319043898"
## [1] "AIC = -22.3043041874305"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0300722679083828"
## [2] "k2= 0.00146886646342768"
## [3] "a21= 0.2571797318016"
## [4] "a12= 0.008554231296797"
## [5] "Proportion of CO in pool 1= 0.091685543890726"
```



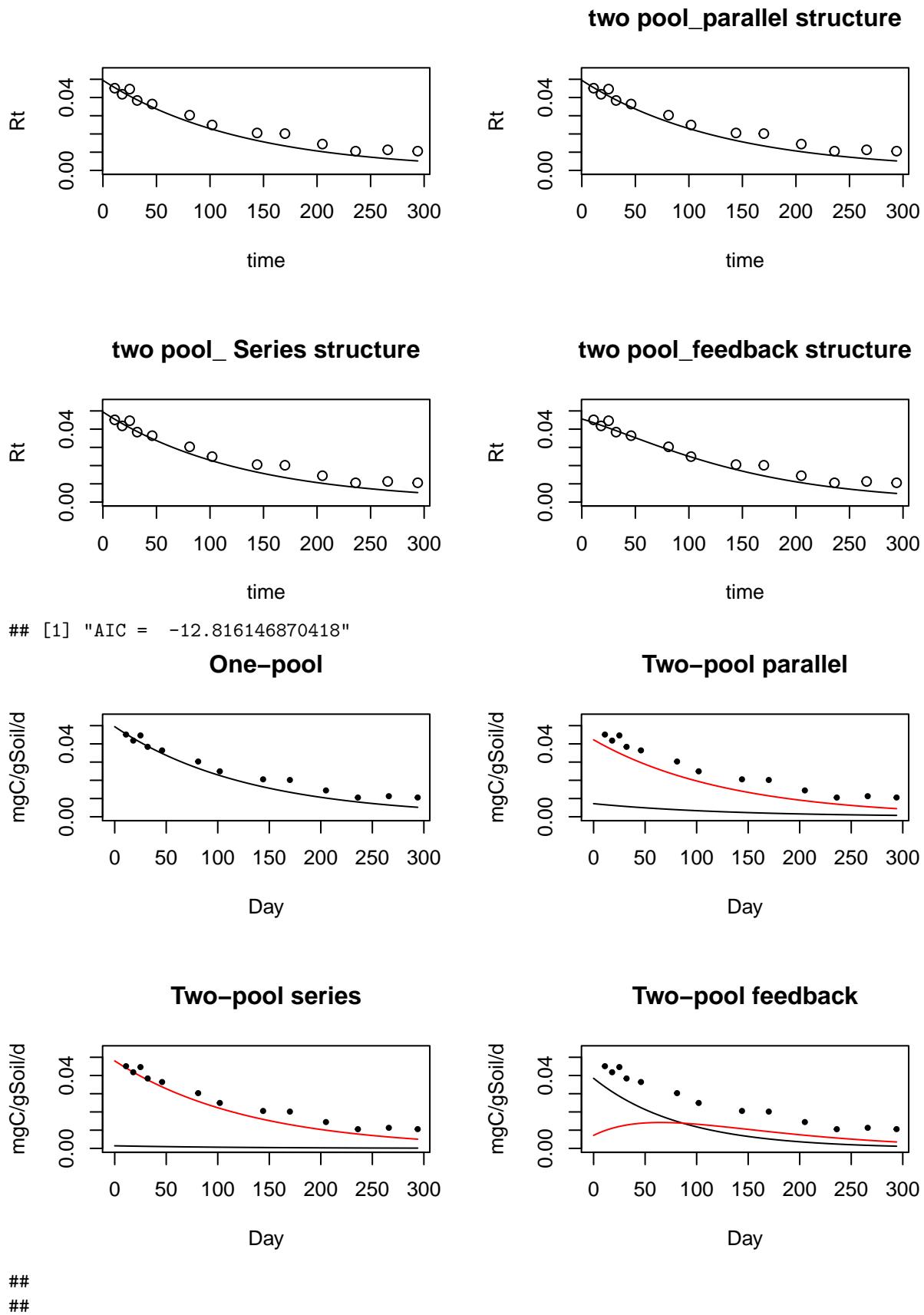
## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0022					0	0
## Two-pool parallel	0.0301	0.0015	0.0666			0	0
## Two-pool series	0.0301	0.0015	0.0825	0.1830		0	0
## Two-pool feedback	0.0301	0.0015	0.0917	0.2572	0.0825	0	0
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	-26.29	-24.23	-818.4	-26.22	0.7121	1.57	
## Two-pool parallel	-24.30	-18.12	-872.8	-23.86	0.2189	296.66	52.09
## Two-pool series	-22.30	-14.06	-870.8	-21.55	0.0690	158.11	31.17
## Two-pool feedback	-20.30	-10.00	-868.8	-19.15	0.0208	208.80	36.47

Variable CMin_Rocc_0_5;

Carbon mineralization rates for the 0-5 cm soil layer at the Hesse site

```
Rey_V11= modelFitTS_Markdown(db = db[[22]], ts.col = 11, ic.col = 10, unitConverter = 1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.001, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.1, 0.01, 0.1)))
```

```
## [1] "Rey2008EJSS; variable: CMin_Rocc_0_5"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0076640252165241"
## [1] "AIC = -20.4097621152791"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00766459537011852"
## [2] "k2= 0.0076639322856976"
## [3] "proportion of CO in pool 1= 0.145285336431667"
## [1] "AIC = -16.4097621113496"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00766743709200427"
## [2] "k2= 0.00766408038809593"
## [3] "a21= 0.000710353570204825"
## [4] "Proportion of CO in pool 1= 0.0285585965270308"
## [1] "AIC = -14.4097621297447"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0118108444286954"
## [2] "k2= 0.0118102392813238"
## [3] "a21= 0.442912975968421"
## [4] "a12= 1.3341258949251e-05"
## [5] "Proportion of CO in pool 1= 0.90629293634115"
```



## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	0.0077					2e-04	0
## Two-pool parallel	0.0077	0.0077	0.1453			2e-04	0
## Two-pool series	0.0077	0.0077	0.0286	0.0007		2e-04	0
## Two-pool feedback	0.0118	0.0118	0.9063	0.4429	0.0286	1e-04	0
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	-20.41	-18.349	-647.9	-20.34	0.8713	6.45	
## Two-pool parallel	-16.41	-10.228	-643.9	-15.97	0.0979	130.48	90.44
## Two-pool series	-14.41	-6.168	-641.9	-13.65	0.0308	130.51	90.47
## Two-pool feedback	-12.82	-2.514	-651.7	-11.66	0.0114	122.17	91.93

Variable CMin_Rocc_5_10;

Carbon mineralization rates for the 5-10 cm soil layer at the Hesse site

```
Rey_V12= modelFitTS(db = db[[22]], ts.col = 12, ic.col = 11, unitConverter = 1,
                     inipars=list(oneP=0.01,
                                 parallel=c(0.01, 0.001, 0.1),
                                 series=c(0.01, 0.0001, 0.01, 0.1),
                                 feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)))
```

```
## Error in modelFitTS(db = db[[22]], ts.col = 12, ic.col = 11, unitConverter = 1, : could not find function
```

Variable CMin_Rocc_10_20;

Carbon mineralization rate for the 10-20 cm soil layer at the Hesse site

```
Rey_V13= modelFitTS(db = db[[22]], ts.col = 13, ic.col = 12, unitConverter = 1,
                     inipars=list(oneP=0.01,
                                 parallel=c(0.01, 0.001, 0.1),
                                 series=c(0.01, 0.0001, 0.01, 0.1),
                                 feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)))
```

```
## Error in modelFitTS(db = db[[22]], ts.col = 13, ic.col = 12, unitConverter = 1, : could not find function
```

Variable CMin_Thar_0_5;

Carbon mineralization rate for the 0-5 cm soil layer at the Tharandt site

```
Rey_V14= modelFitTS_Markdown(db = db[[22]], ts.col = 14, ic.col = 13, unitConverter = 1,
                               inipars=list(oneP=0.01,
                                           parallel=c(0.01, 0.001, 0.1),
                                           series=c(0.01, 0.001, 0.01, 0.1),
                                           feedback=c(0.01, 0.001, 0.1, 0.01, 0.1)))
```

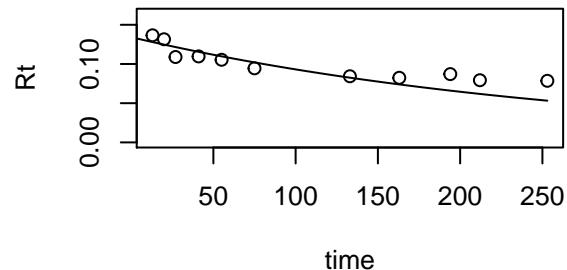
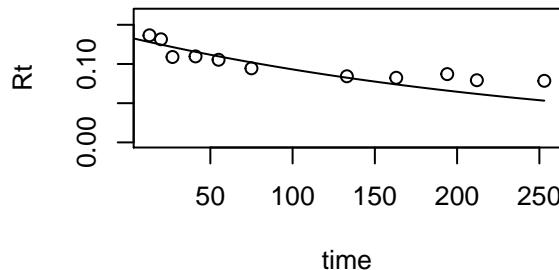
```
## [1] "Rey2008EJSS; variable: CMin_Thar_0_5"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00365694256523064"
## [1] "AIC = -15.373825767986"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00365691339436086"
## [2] "k2= 0.00365693452816643"
```

```

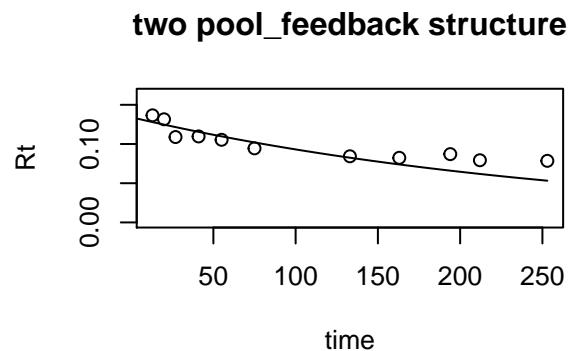
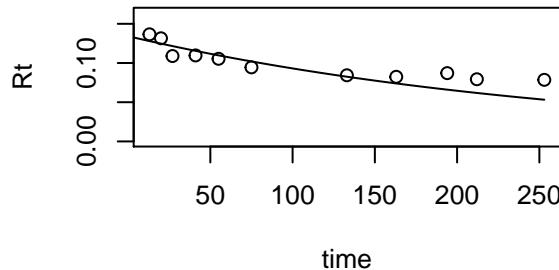
## [3] "proportion of C0 in pool 1= 0.14198773226237"
## [1] "AIC = -11.3738257687478"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00365729123017795"
## [2] "k2= 0.0036570023899794"
## [3] "a21= 0.000198754432879644"
## [4] "Proportion of C0 in pool 1= 0.160079034413211"
## [1] "AIC = -9.37382577580256"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00370875481130138"
## [2] "k2= 0.00366681510514345"
## [3] "a21= 0.0278667012949267"
## [4] "a12= 0.000155928215545165"
## [5] "Proportion of C0 in pool 1= 0.153867060510198"

```

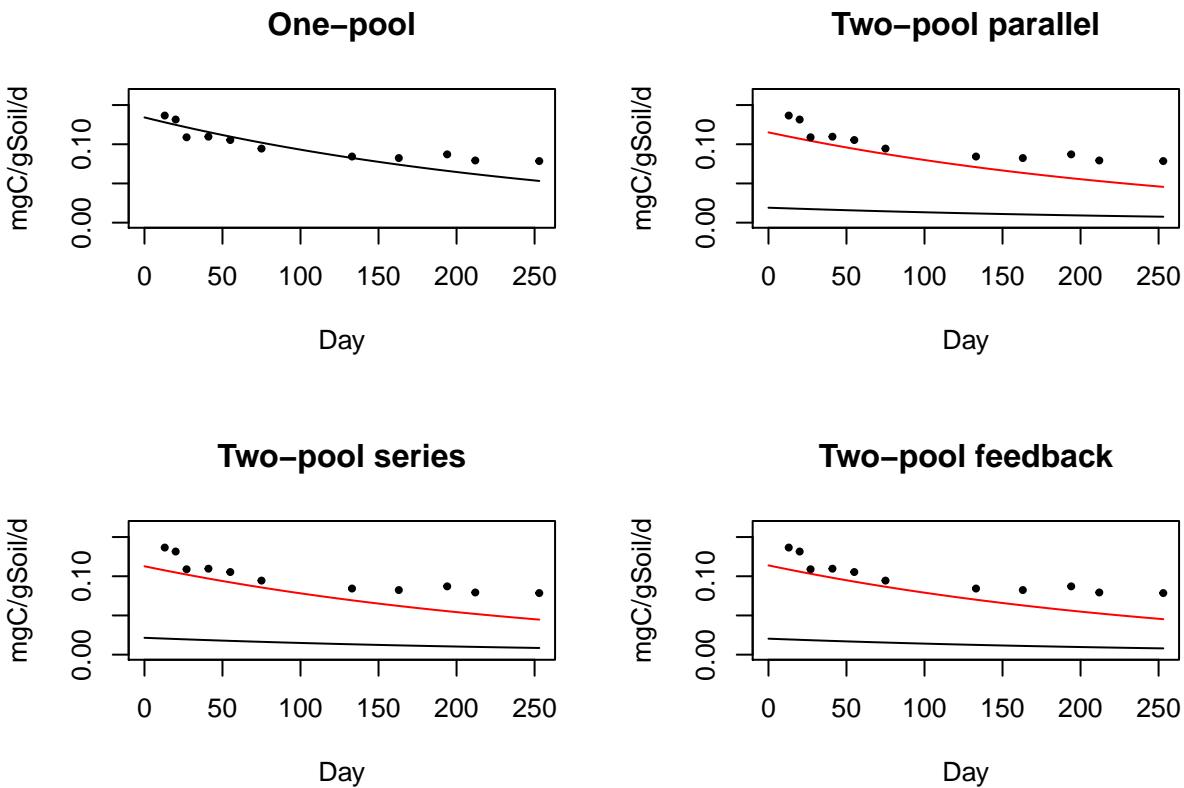
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = -7.37395231594999"
```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       0.0037
## Two-pool parallel 0.0037  0.0037  0.1420
## Two-pool series   0.0037  0.0037  0.1601  0.0002
## Two-pool feedback 0.0037  0.0037  0.1539  0.0279  0.1601  0.0019  2e-04
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----
## One-pool       -15.374 -13.313 -501.8  -15.302  0.8713    36.7
## Two-pool parallel -11.374 -5.192 -497.8  -10.929  0.0979  273.5  189.5
## Two-pool series    -9.374 -1.132 -495.8  -8.619  0.0308  273.5  189.6
## Two-pool feedback  -7.374  2.928 -493.8  -6.220  0.0093  277.2  192.2
```

Variable CMin_Thar_5_10;

Carbon mineralization rate for the 5-10 cm soil layer at the Tharandt site

```
Rey_V15= modelFitTS(db = db[[22]], ts.col = 15, ic.col = 14, unitConverter = 1,
                     inipars=list(oneP=0.01,
                                 parallel=c(0.01, 0.001, 0.1),
                                 series=c(0.01, 0.0001, 0.01, 0.1),
                                 feedback=c(0.01, 0.0001, 0.1, 0.01, 0.1)))
```

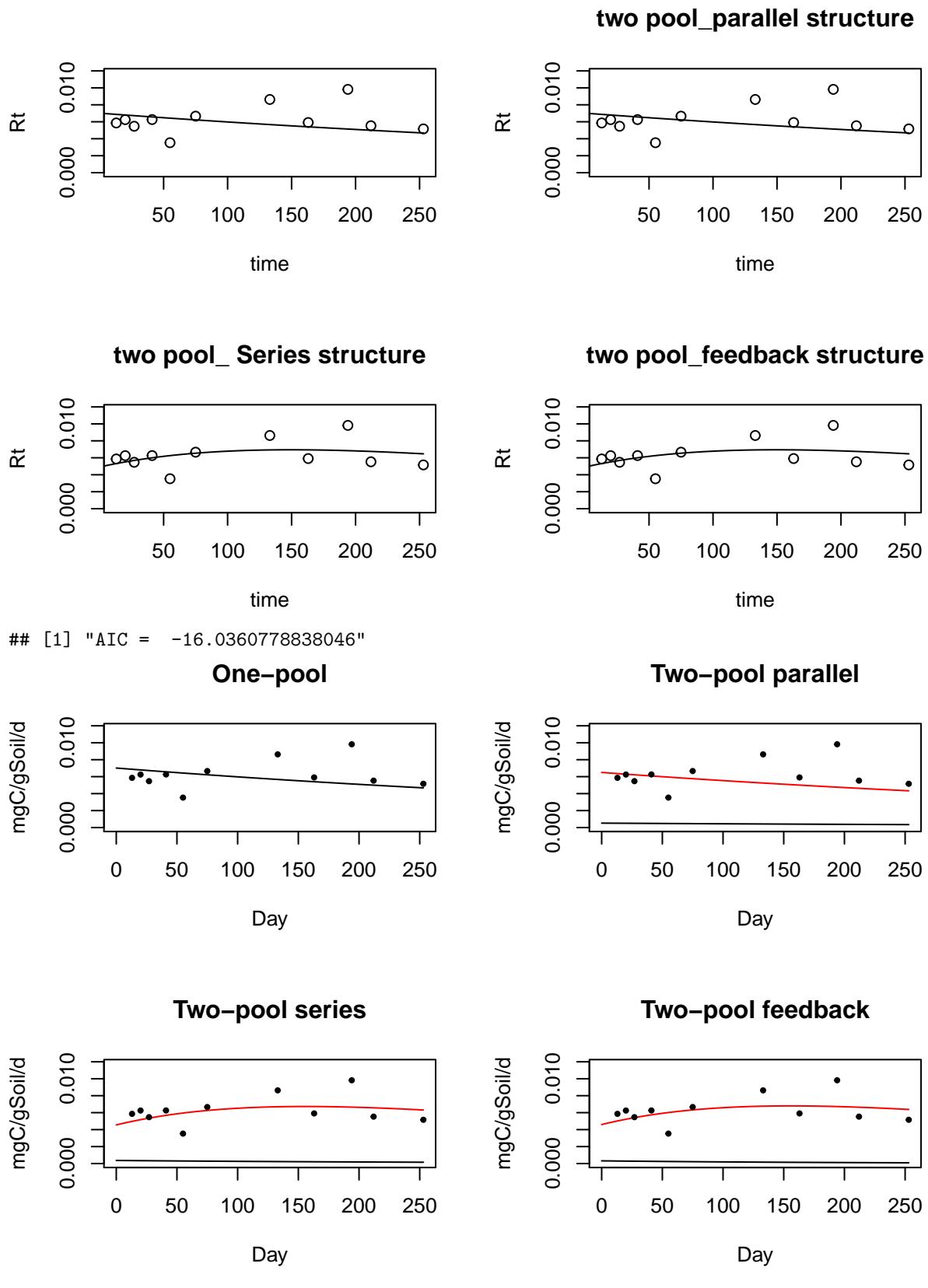
```
## Error in modelFitTS(db = db[[22]], ts.col = 15, ic.col = 14, unitConverter = 1, : could not find function
```

Variable CMin_Thar_10_20;

Carbon mineralization rate for the 10-20 cm soil layer at the Tharandt site

```
Rey_V16= modelFitTS_Markdown(db = db[[22]], ts.col = 16, ic.col = 15, unitConverter = 1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.1, 0.01, 0.1)))
```

```
## [1] "Rey2008EJSS; variable: CMin_Thar_10_20"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00160199210604794"
## [1] "AIC = -22.9060150873769"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00160205361998759"
## [2] "k2= 0.001601991403537"
## [3] "proportion of C0 in pool 1= 0.0741606783031207"
## [1] "AIC = -18.9060150873653"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00338111565468777"
## [2] "k2= 0.00503275175178553"
## [3] "a21= 0.969093467707109"
## [4] "Proportion of C0 in pool 1= 0.793452243228595"
## [1] "AIC = -18.0360778962444"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00502204350019608"
## [2] "k2= 0.00338986582525079"
## [3] "a21= 0.979025207769542"
## [4] "a12= 0.000685111893126811"
## [5] "Proportion of C0 in pool 1= 0.690109958427786"
```



```
##  
##
```

## Model	k1	k2	COInp1	a21	a12	SSR	MSR
## One-pool	-0.0016					0	0
## Two-pool parallel	0.0016	0.0016	0.0742			0	0
## Two-pool series	0.0034	0.0050	0.7935	0.9691		0	0
## Two-pool feedback	0.0050	0.0034	0.6901	0.9790	0.7935	0	0
##							
##							
## Model	AIC	BIC	AICn	AICc	wi	MeanTrT	q05
## One-pool	-22.91	-20.846	-720.3	-22.83	0.8514	4.38	
## Two-pool parallel	-18.91	-12.725	-716.3	-18.46	0.0956	624.22	432.7
## Two-pool series	-18.04	-9.794	-747.0	-17.28	0.0530	488.32	405.2
## Two-pool feedback	-16.04	-5.734	-745.0	-14.88	0.0160	488.26	405.2

Variable CMin_Harw_0_5;

Carbon mineralization rate for the 0-5 cm soil layer at the Harwood site

```
Rey_V17= modelFitTS(db = db[[22]], ts.col = 17, ic.col = 16, unitConverter = 1,
                     inipars=list(oneP=0.01,
                                  parallel=c(0.01, 0.001, 0.1),
                                  series=c(0.01, 0.0001, 0.01, 0.1),
                                  feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))
```

```
## Error in modelFitTS(db = db[[22]], ts.col = 17, ic.col = 16, unitConverter = 1, : could not find function
```

Variable CMin_Harw_5_10;

Carbon mineralization rate for the 5-10 cm soil layer at the Harwood site

```
Rey_V18= modelFitTS_Markdown(db = db[[22]], ts.col = 18, ic.col = 17, unitConverter = 1,
                               inipars=list(oneP=0.01,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.001, 0.01, 0.1)))
```

```
## [1] "Rey2008EJSS; variable: CMin_Harw_5_10"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00243439340622409"

## [1] "AIC = -24.6204653083711"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00243447130336399"
## [2] "k2= 0.00243438206579037"
## [3] "proportion of CO in pool 1= 0.088462232656213"

## [1] "AIC = -20.6204653083984"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.079744723842811"
## [2] "k2= 0.00257176882917051"
## [3] "a21= 0.999944046344616"
## [4] "Proportion of CO in pool 1= 0.267247385768679"

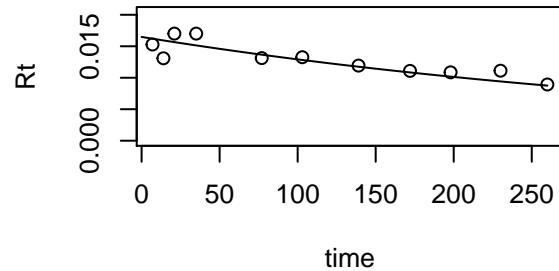
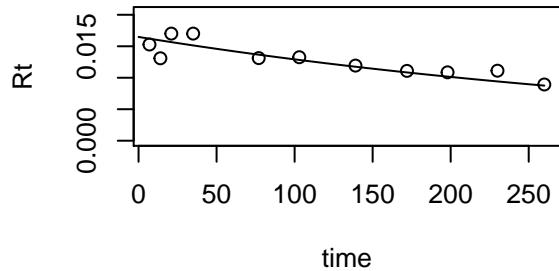
## [1] "AIC = -19.3151769206377"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.079748424955664"
```

```

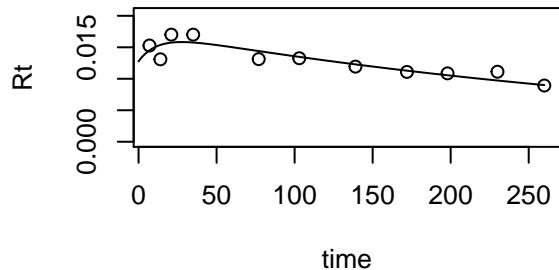
## [2] "k2= 0.00257194222353812"
## [3] "a21= 0.999991481303087"
## [4] "a12= 6.46933349344736e-05"
## [5] "Proportion of C0 in pool 1= 0.266873710810401"

```

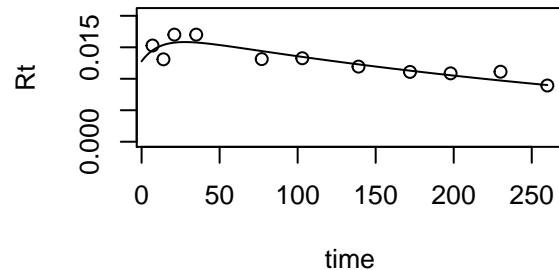
two pool_parallel structure



two pool_Series structure



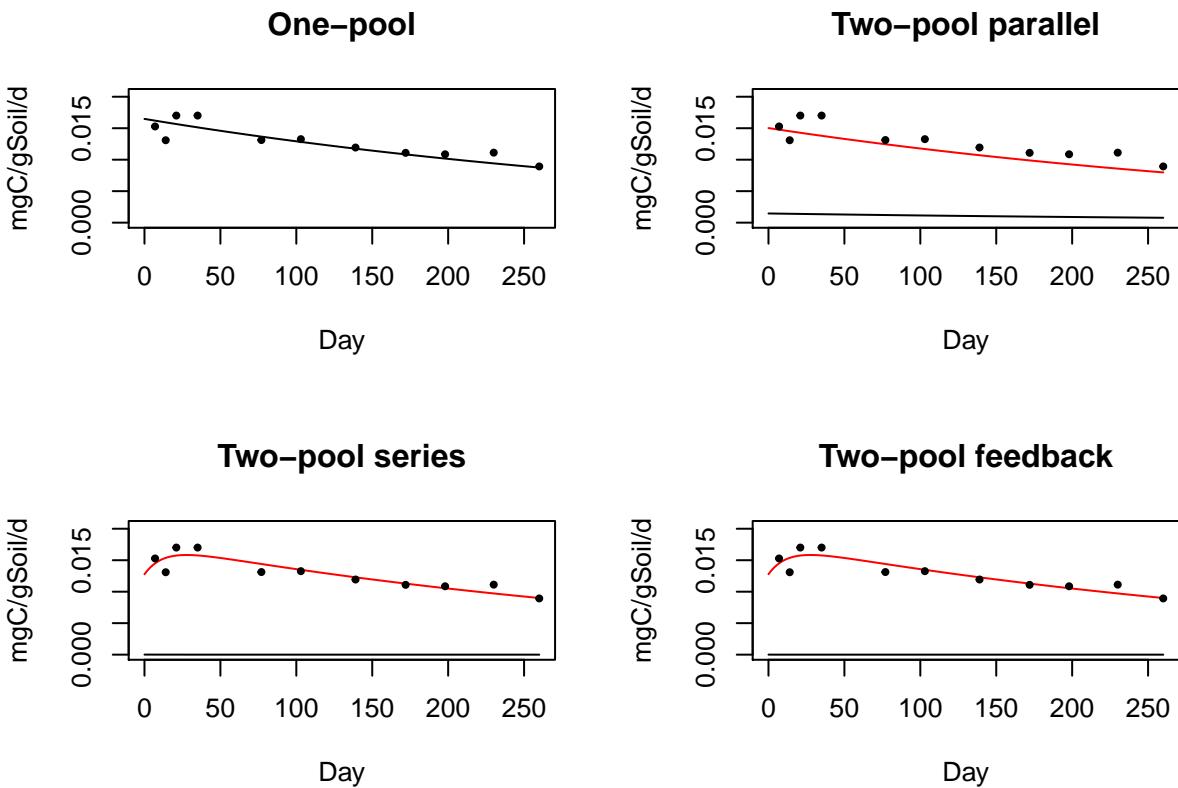
two pool_feedback structure



```

## [1] "AIC = -17.3151769169099"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0024 0 0 0 0  
## Two-pool parallel 0.0024 0.0024 0.0885 0.9999 0.2672 0 0  
## Two-pool series 0.0797 0.0026 0.2672 1.0000 0.2672 0 0  
## Two-pool feedback 0.0797 0.0026 0.2669 0.9999 0.2672 0 0  
##  
##  
## Model AIC BIC AICn AICc wi MeanTrT q05  
## -----  
## One-pool -24.62 -22.560 -770.0 -24.55 0.8603 6.77  
## Two-pool parallel -20.62 -14.439 -766.0 -20.18 0.0966 410.78 284.7  
## Two-pool series -19.32 -11.073 -784.1 -18.56 0.0431 401.36 282.2  
## Two-pool feedback -17.32 -7.013 -782.1 -16.16 0.0130 401.37 282.3
```

Variable CMin_Harw_10_20;

Carbon mineralization rate for the 10-20 cm soil layer at the Harwood site

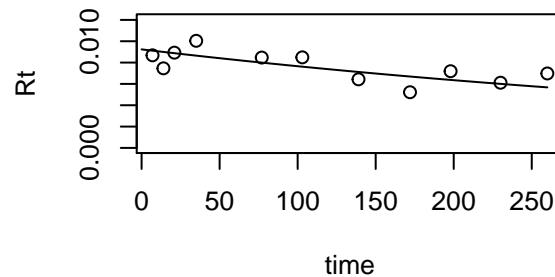
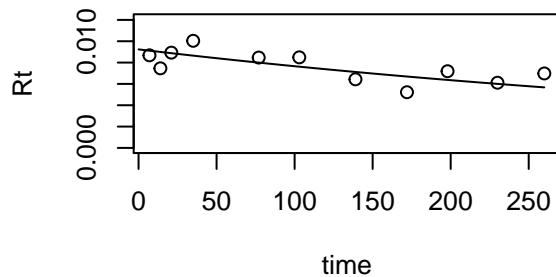
```
Rey_V19= modelFitTS_Markdown(db = db[[22]], ts.col = 19, ic.col = 18, unitConverter = 1,  
inipars=list(oneP=0.01,  
parallel=c(0.01, 0.001, 0.1),  
series=c(0.01, 0.001, 0.01, 0.1),  
feedback=c(0.01, 0.001, 0.001, 0.01, 0.1)))  
  
## [1] "Rey2008EJSS; variable: CMin_Harw_10_20"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.00187360487497834"
```

```

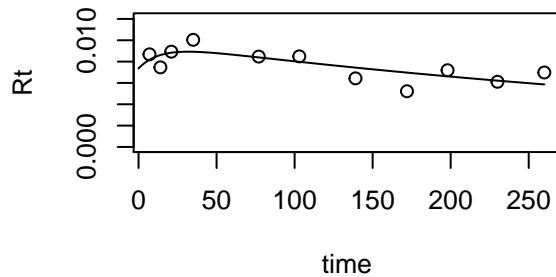
## [1] "AIC = -25.7241391736271"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00187367841793035"
## [2] "k2= 0.00187359903273309"
## [3] "proportion of C0 in pool 1= 0.0454164147794608"
## [1] "AIC = -21.7241391736562"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0705967276263966"
## [2] "k2= 0.00196981436202842"
## [3] "a21= 0.999971238199059"
## [4] "Proportion of C0 in pool 1= 0.242260428037501"
## [1] "AIC = -20.0835233339483"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0706027795922913"
## [2] "k2= 0.00197020008721511"
## [3] "a21= 0.999999186269298"
## [4] "a12= 0.000191937919100715"
## [5] "Proportion of C0 in pool 1= 0.242035275415387"

```

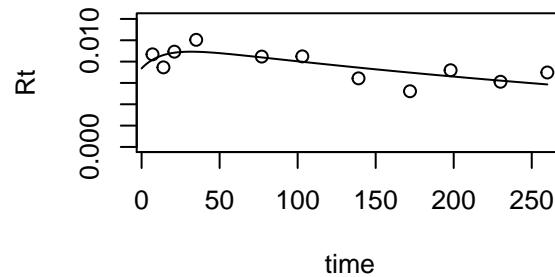
two pool_parallel structure



two pool_Series structure



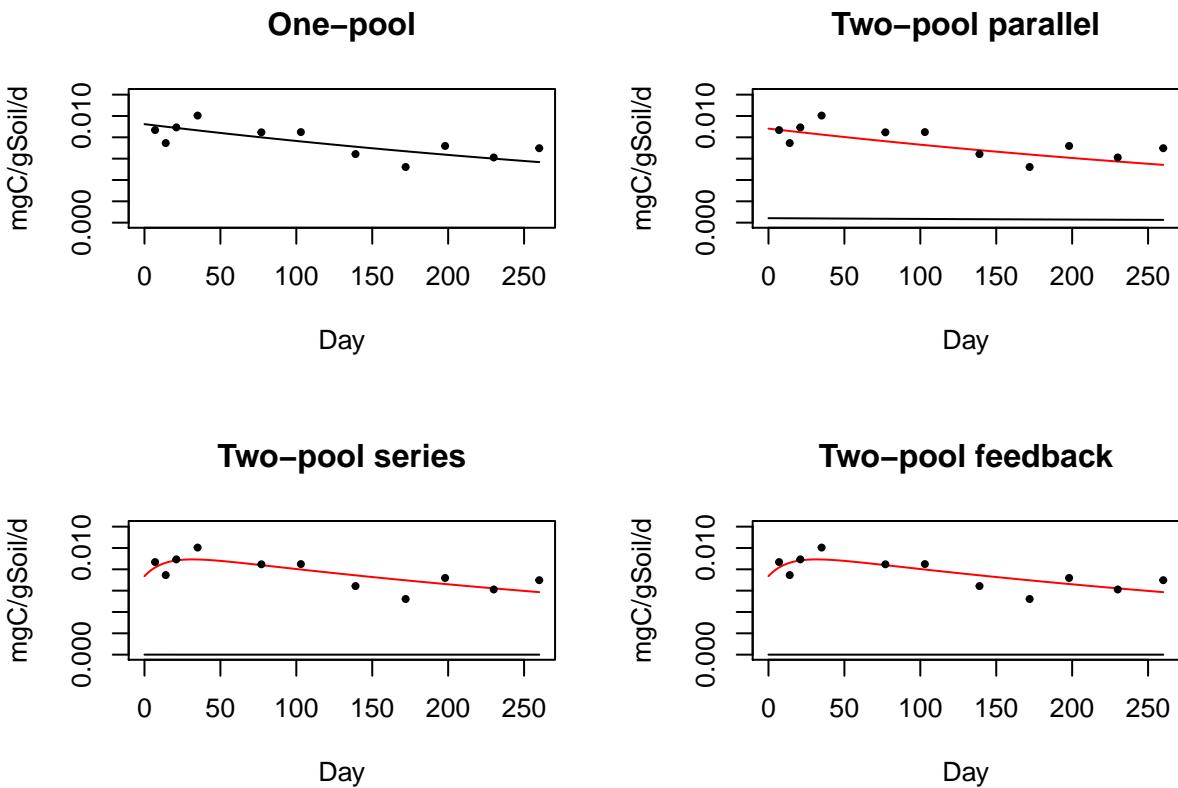
two pool_feedback structure



```

## [1] "AIC = -18.0835233320625"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0019 0 0 0  
## Two-pool parallel 0.0019 0.0019 0.0454 0 0 0 0  
## Two-pool series 0.0706 0.0020 0.2423 1 0 0 0  
## Two-pool feedback 0.0706 0.0020 0.2420 1 0.2423 0 0  
##  
##  
## Model AIC BIC AICn AICc wi MeanTrT q05  
## -----  
## One-pool -25.72 -23.664 -802.0 -25.65 0.8661 4.93  
## Two-pool parallel -21.72 -15.543 -798.0 -21.28 0.0973 533.73 370.0  
## Two-pool series -20.08 -11.842 -806.4 -19.33 0.0367 521.81 366.2  
## Two-pool feedback -18.08 -7.781 -804.4 -16.93 0.0111 521.83 366.2
```

Variable CMin_Wetz_0_5;

Carbon mineralization rate for the 0-5 cm soil layer at the Wetzstein site

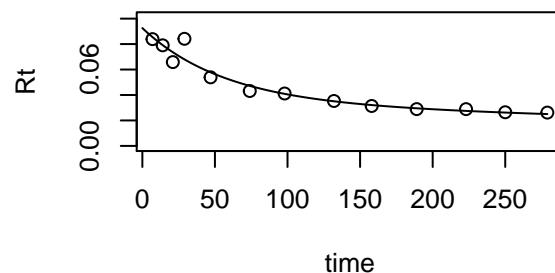
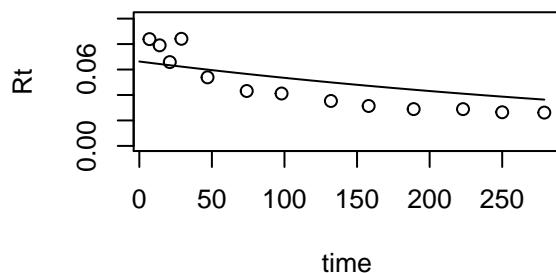
```
Rey_V20= modelFitTS_Markdown(db = db[[22]], ts.col = 20, ic.col = 19, unitConverter = 1,  
inipars=list(oneP=0.1,  
parallel=c(0.01, 0.001, 0.1),  
series=c(0.01, 0.0001, 0.01, 0.1),  
feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))  
  
## [1] "Rey2008EJSS; variable: CMin_Wetz_0_5"  
## [1] "One pool model"  
## [1] "Best fit parameter: -0.00215200185464681"
```

```

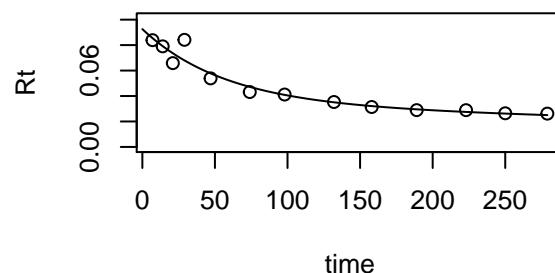
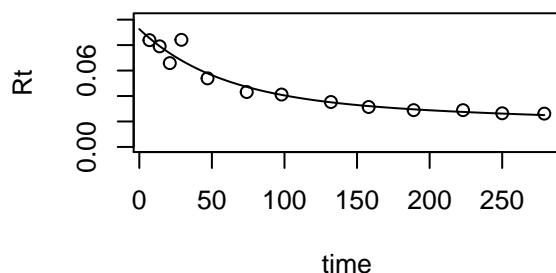
## [1] "AIC = -15.0999988069587"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0179473195404873"
## [2] "k2= 0.00127186527964327"
## [3] "proportion of C0 in pool 1= 0.103905531885232"
## [1] "AIC = -14.9903837371113"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0179475519923864"
## [2] "k2= 0.00127187082935072"
## [3] "a21= 3.66519258772624e-05"
## [4] "Proportion of C0 in pool 1= 0.103908181762003"
## [1] "AIC = -12.9903837374152"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0179475421452021"
## [2] "k2= 0.00127187061167374"
## [3] "a21= 0.000268245222333985"
## [4] "a12= 2.75564988760357e-05"
## [5] "Proportion of C0 in pool 1= 0.103935885257379"

```

two pool_parallel structure



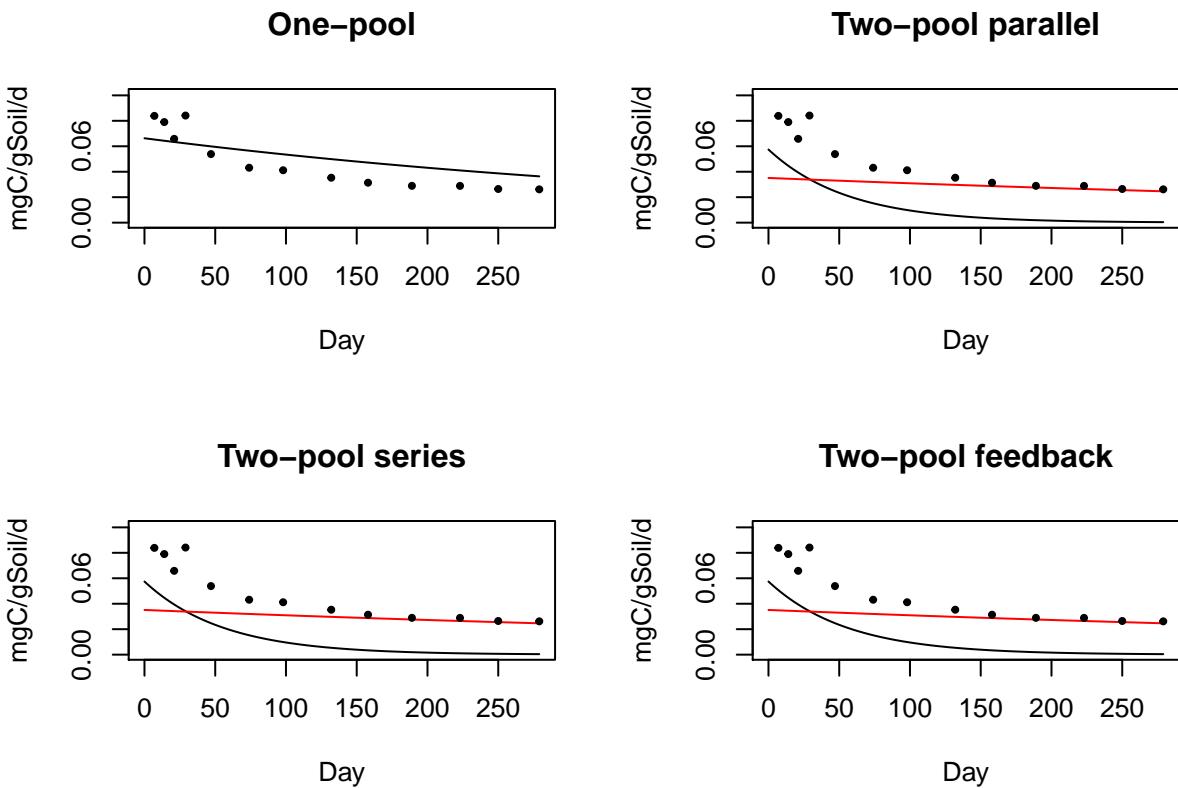
two pool_Series structure



```

## [1] "AIC = -10.9903837372896"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0022
## Two-pool parallel 0.0179  0.0013  0.1039
## Two-pool series  0.0179  0.0013  0.1039  0e+00
## Two-pool feedback 0.0179  0.0013  0.1039  3e-04  0.1039  0.0004  0e+00
##
##
## Model           AIC      BIC     AICn     AICc     wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -15.10  -13.0396 -493.9  -15.029  0.4919  30.81
## Two-pool parallel -14.99  -8.8091 -602.7  -14.546  0.3864  332.83  76.93
## Two-pool series  -12.99  -4.7486 -600.7  -12.236  0.1217  55.75  38.62
## Two-pool feedback -10.99  -0.6882 -598.7  -9.836  0.0367  55.93  38.64
```

Variable CMin_Wetz_5_10;

Carbon mineralization rate for the 5-10 cm soil layer at the Wetzstein site

```
Rey_V21= modelFitTS_Markdown(db = db[[22]], ts.col = 21, ic.col = 20, unitConverter = 1,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

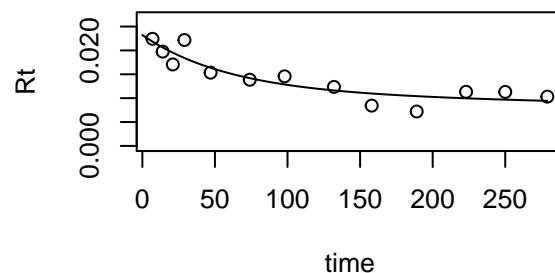
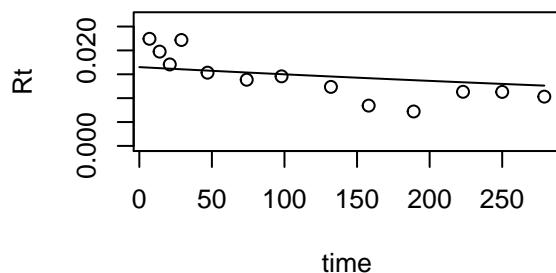
## [1] "Rey2008EJSS; variable: CMin_Wetz_5_10"
## [1] "One pool model"
## [1] "Best fit parameter: 0.000959475464012982"
```

```

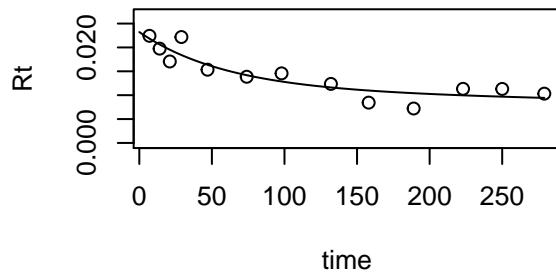
## [1] "AIC = -20.3494912711312"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0167206994351073"
## [2] "k2= 0.000684384528950328"
## [3] "proportion of C0 in pool 1= 0.0415182819194316"
## [1] "AIC = -19.0202904441982"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0167204510462161"
## [2] "k2= 0.000684382440030114"
## [3] "a21= 0.205610134785591"
## [4] "Proportion of C0 in pool 1= 0.0528488491022207"
## [1] "AIC = -17.0202904443908"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.016720226273187"
## [2] "k2= 0.00068451844334772"
## [3] "a21= 0.0855740497558526"
## [4] "a12= 0.00223951061320615"
## [5] "Proportion of C0 in pool 1= 0.0456781970546792"

```

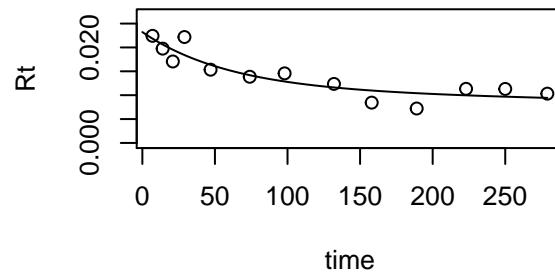
two pool_parallel structure



two pool_Series structure



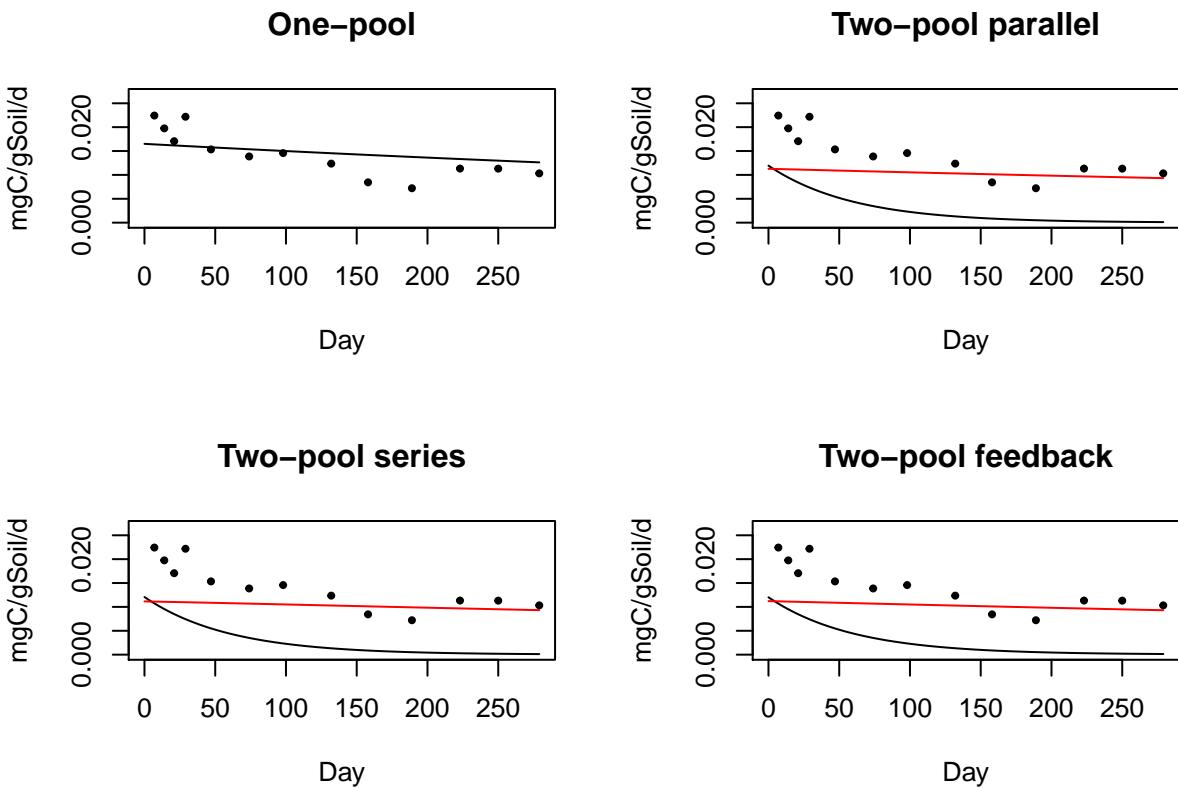
two pool_feedback structure



```

## [1] "AIC = -15.0202904443703"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0010
## Two-pool parallel 0.0167  7e-04  0.0415
## Two-pool series  0.0167  7e-04  0.0528  0.2056
## Two-pool feedback 0.0167  7e-04  0.0457  0.0856  0.0528  0e+00  0
##
##
## Model           AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -20.35 -18.289 -646.1   -20.28  0.6404    17.2
## Two-pool parallel -19.02 -12.839 -719.6   -18.58  0.2734  740.6  132.35
## Two-pool series   -17.02 -8.778 -717.6   -16.27  0.0861  360.2  58.77
## Two-pool feedback  -15.02 -4.718 -715.6   -13.87  0.0260  184.9  47.21
```

Variable CMin_Wetz_10_20;

Carbon mineralization rate for the 10-20 cm soil layer at the Wetzstein site

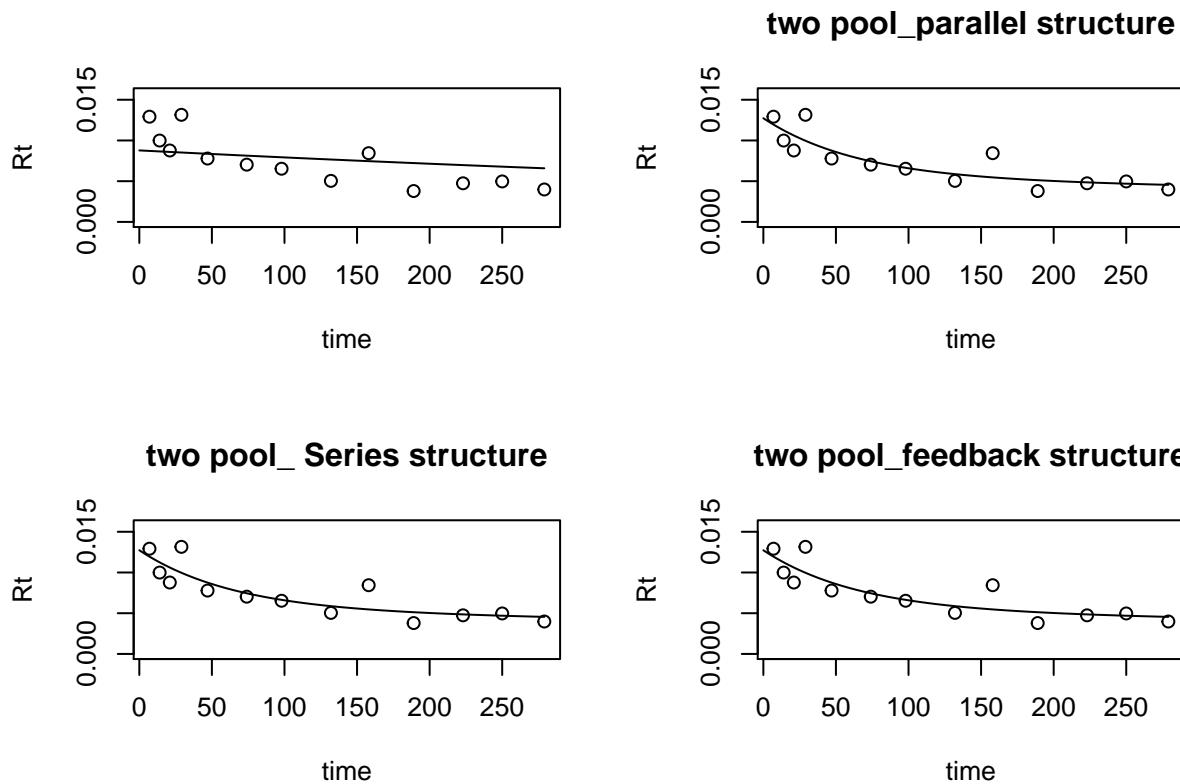
```
Rey_V22= modelFitTS_Markdown(db = db[[22]], ts.col = 22, ic.col = 21, unitConverter = 1,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

## [1] "Rey2008EJSS; variable: CMin_Wetz_10_20"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0010317139618099"
```

```

## [1] "AIC = -22.0182974841439"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0154731228673834"
## [2] "k2= 0.000667618084369137"
## [3] "proportion of C0 in pool 1= 0.0559682923910525"
## [1] "AIC = -20.031173401277"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0154731768785485"
## [2] "k2= 0.000667618775975008"
## [3] "a21= 0.000298905514174386"
## [4] "Proportion of C0 in pool 1= 0.0559854423785616"
## [1] "AIC = -18.0311734012626"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0154698964916717"
## [2] "k2= 0.000667591576684462"
## [3] "a21= 0.209266410301978"
## [4] "a12= 9.87392217062233e-05"
## [5] "Proportion of C0 in pool 1= 0.0716544157495264"

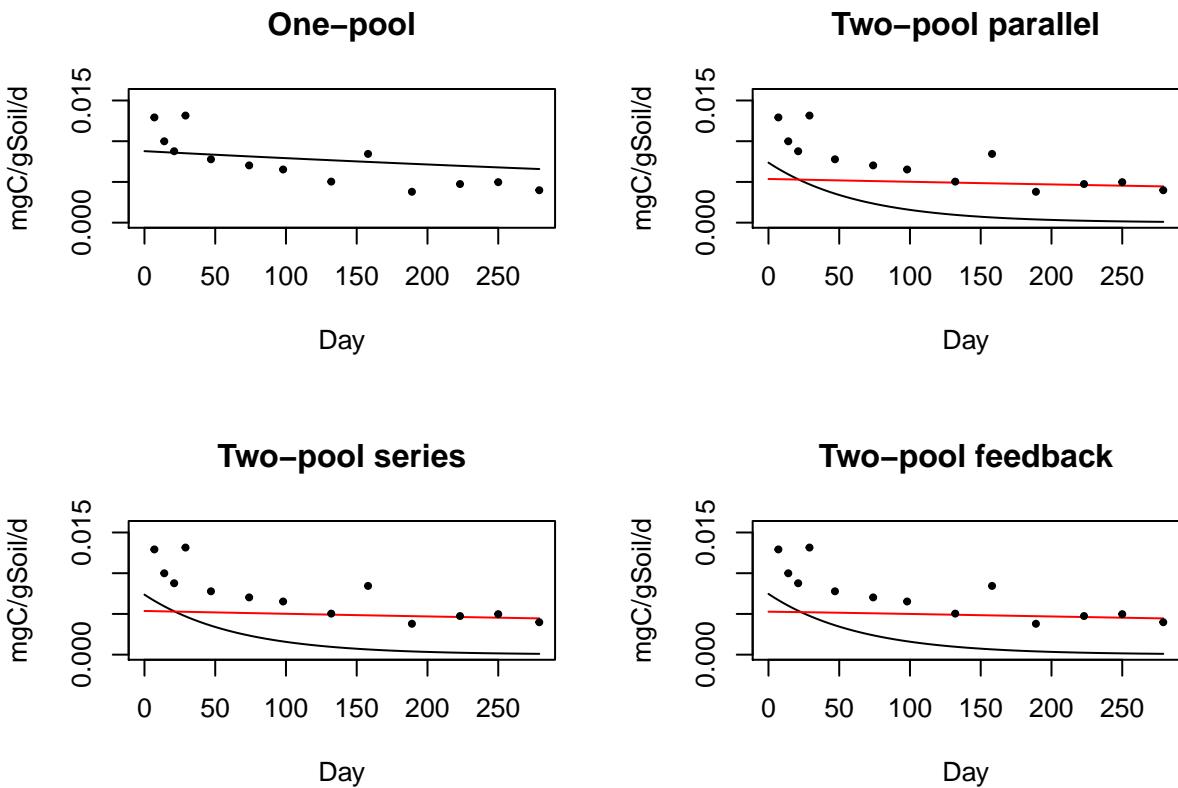
```



```

## [1] "AIC = -16.031173383949"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0010
## Two-pool parallel 0.0155  7e-04  0.0560
## Two-pool series  0.0155  7e-04  0.0560  0.0003
## Two-pool feedback 0.0155  7e-04  0.0717  0.2093  0.056  0e+00  0
##
##
## Model           AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -22.02  -19.958  -694.5  -21.95  0.7122    8.51
## Two-pool parallel -20.03  -13.850  -748.9  -19.59  0.2188  668.33  108.39
## Two-pool series  -18.03  -9.789  -746.9  -17.28  0.0689  65.08   44.82
## Two-pool feedback -16.03  -5.729  -744.9  -14.88  0.0208  378.11  63.97
```

Variable CMin_Loob_0_5;

Carbon mineralization rate for the 0-5 cm soil layer at the Loobos site

```
Rey_V23= modelFitTS_Markdown(db = db[[22]], ts.col = 23, ic.col = 22, unitConverter = 1,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.001, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

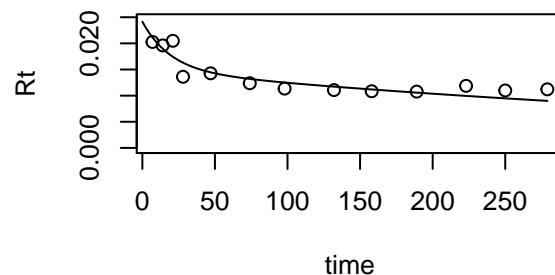
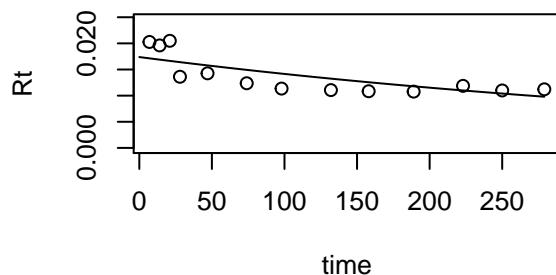
## [1] "Rey2008EJSS; variable: CMin_Loob_0_5"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00205459785955675"
```

```

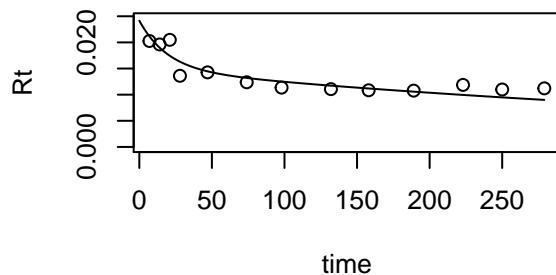
## [1] "AIC = -22.2984638096724"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.051657403870677"
## [2] "k2= 0.00179258396530236"
## [3] "proportion of C0 in pool 1= 0.0213135605326547"
## [1] "AIC = -19.8783571510111"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0516573796274855"
## [2] "k2= 0.00179258369869427"
## [3] "a21= 1.3798065121029e-06"
## [4] "Proportion of C0 in pool 1= 0.0213136107870494"
## [1] "AIC = -17.8783571510905"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0516529732125001"
## [2] "k2= 0.00179311981106231"
## [3] "a21= 0.65687245918879"
## [4] "a12= 0.000446127988195599"
## [5] "Proportion of C0 in pool 1= 0.0667251492889481"

```

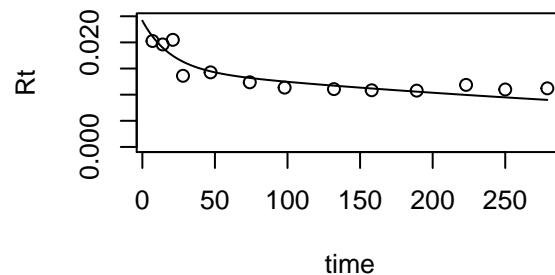
two pool_parallel structure



two pool_Series structure



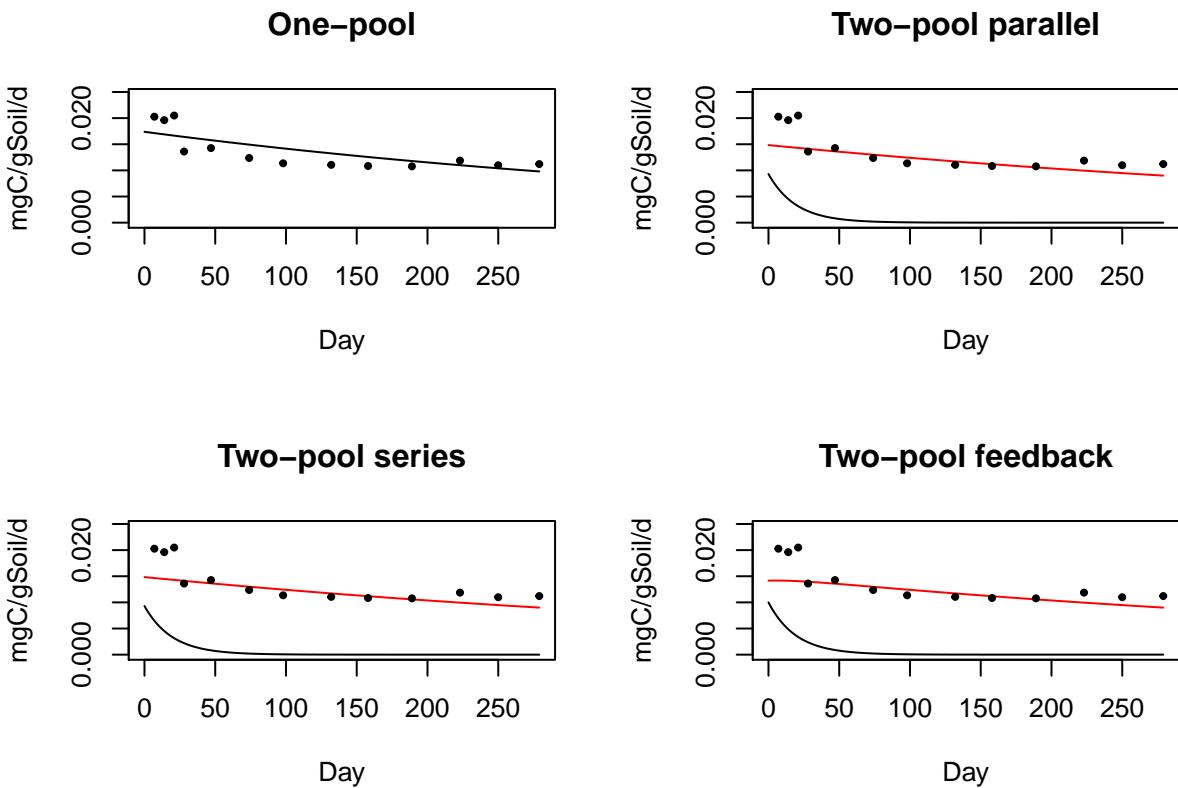
two pool_feedback structure



```

## [1] "AIC = -15.8783572909532"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR   MSR
## -----
## One-pool       0.0021
## Two-pool parallel 0.0517  0.0018  0.0213
## Two-pool series  0.0517  0.0018  0.0213  0.0000
## Two-pool feedback 0.0517  0.0018  0.0667  0.6569  0.0213  0e+00  0
##
##
## Model          AIC      BIC     AICn     AICc     wi  MeanTrT   q05
## -----
## One-pool       -22.30  -20.238  -702.7  -22.23  0.7545    8.46
## Two-pool parallel -19.88 -13.697  -744.5  -19.43  0.1867  350.22 116.02
## Two-pool series  -17.88 -9.637   -742.5  -17.12  0.0588  19.36 13.42
## Two-pool feedback -15.88 -5.576   -740.5  -14.72  0.0177  385.80 171.99
```

Variable CMin_Loob_5_10;

Carbon mineralization rate for the 5-10 cm soil layer at the Loobos site

```
Rey_V24= modelFitTS_Markdown(db = db[[22]], ts.col = 24, ic.col = 23, unitConverter = 1,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.001, 0.01, 0.01, 0.1)))

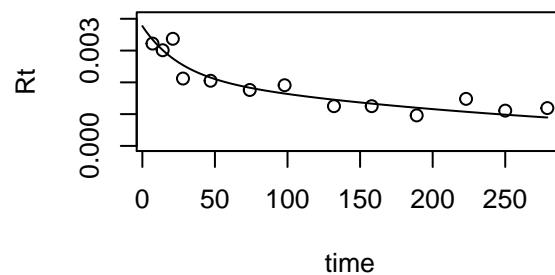
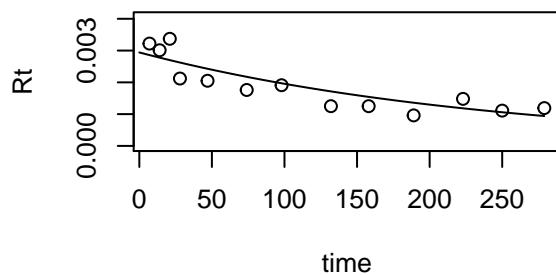
## [1] "Rey2008EJSS; variable: CMin_Loob_5_10"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00408553558468938"
```

```

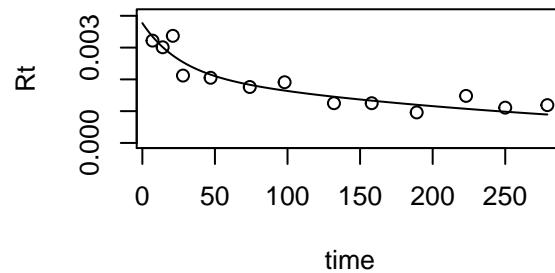
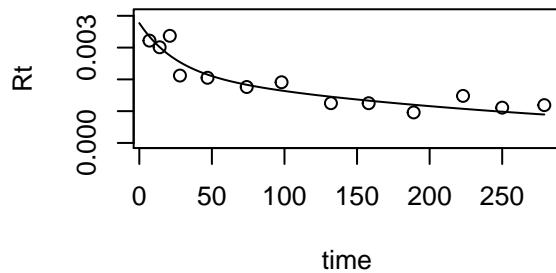
## [1] "AIC = -29.5637999141256"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0394817855551339"
## [2] "k2= 0.00326836929110455"
## [3] "proportion of C0 in pool 1= 0.0543989903079291"
## [1] "AIC = -26.6926412723244"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0394763517211301"
## [2] "k2= 0.00326831225303179"
## [3] "a21= 0.407116072890037"
## [4] "Proportion of C0 in pool 1= 0.0978259965795457"
## [1] "AIC = -24.6926412744566"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0394794764281946"
## [2] "k2= 0.00326834505037992"
## [3] "a21= 0.000376808951525365"
## [4] "a12= 5.89291780025425e-05"
## [5] "Proportion of C0 in pool 1= 0.0544290867657969"

```

two pool_parallel structure



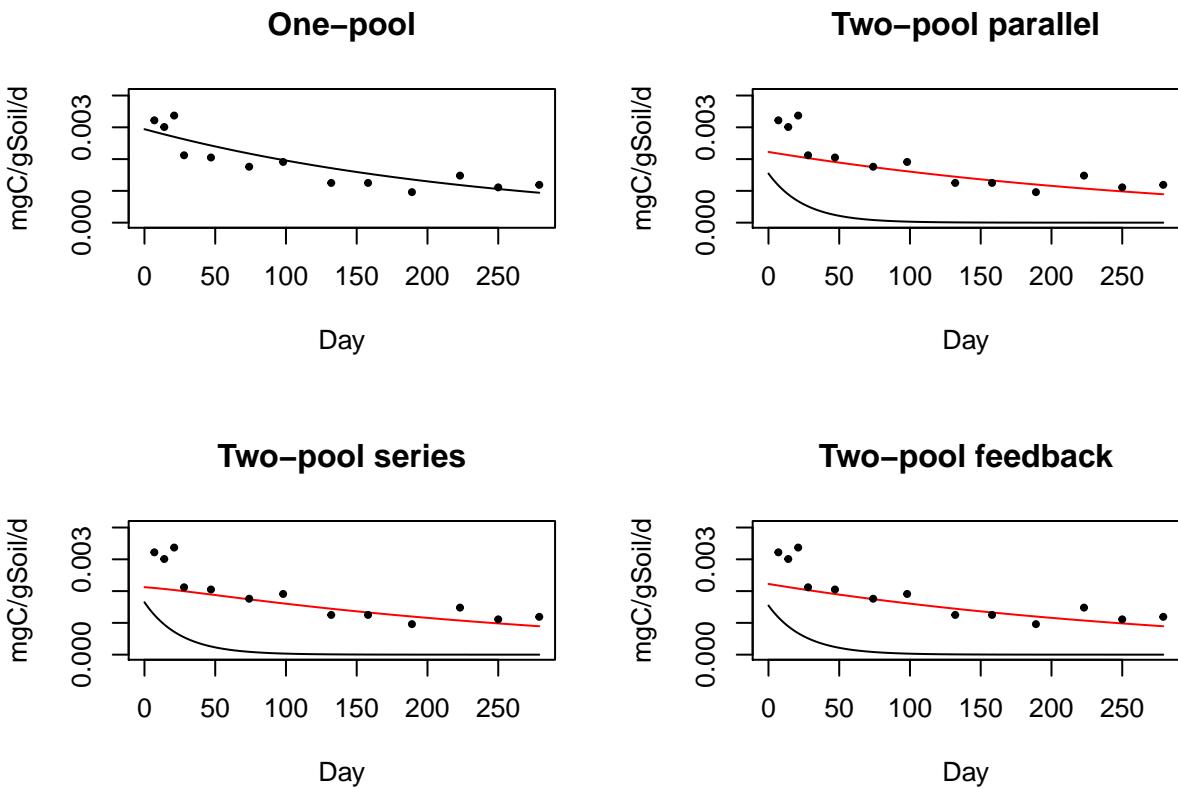
two pool_Series structure



```

## [1] "AIC = -22.6926412761818"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0041 0 0 0 0  
## Two-pool parallel 0.0395 0.0033 0.0544 0 0 0 0  
## Two-pool series 0.0395 0.0033 0.0978 0.4071 0 0 0 0  
## Two-pool feedback 0.0395 0.0033 0.0544 0.0004 0.0978 0 0 0  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -29.56 -27.50 -913.4 -29.49 0.7938 0.72  
## Two-pool parallel -26.69 -20.51 -942.1 -26.25 0.1568 190.90 68.15  
## Two-pool series -24.69 -16.45 -940.1 -23.94 0.0494 149.90 40.72  
## Two-pool feedback -22.69 -12.39 -938.1 -21.54 0.0149 25.44 17.57
```

Variable CMin_Loob_10_20;

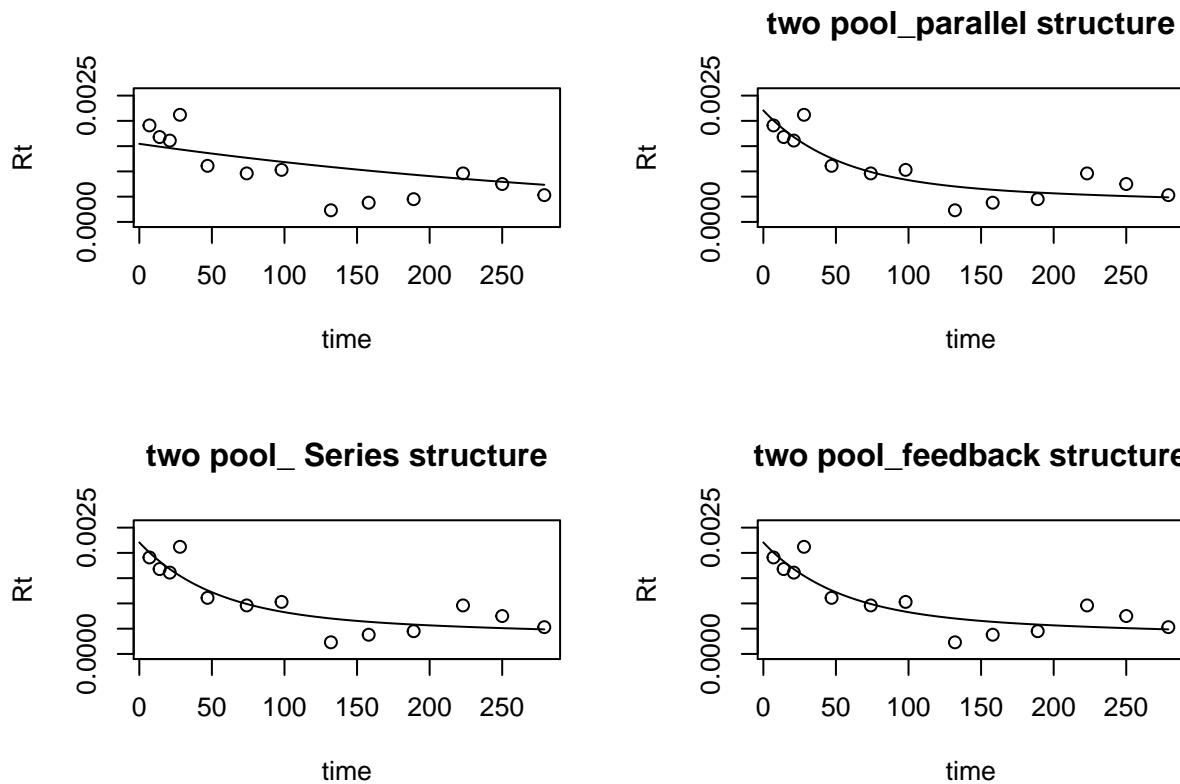
Carbon mineralization rate for the 10-20 cm soil layer at the Loobos site

```
Rey_V25= modelFitTS_Markdown(db = db[[22]], ts.col = 25, ic.col = 24, unitConverter = 1,  
inipars=list(oneP=0.1,  
parallel=c(0.01, 0.001, 0.1),  
series=c(0.01, 0.001, 0.001, 0.5),  
feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))  
  
## [1] "Rey2008EJSS; variable: CMin_Loob_10_20"  
## [1] "One pool model"  
## [1] "Best fit parameter: -0.00266504072471818"
```

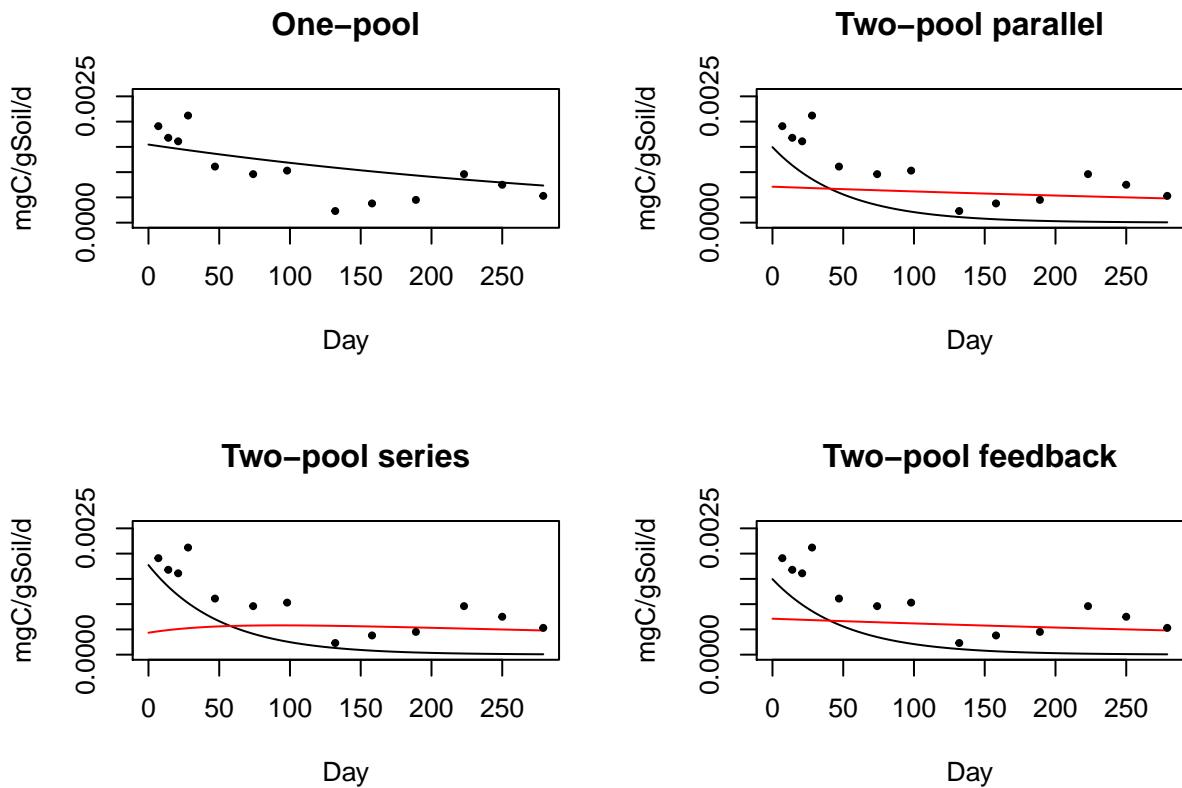
```

## [1] "AIC = -29.0990354498405"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0197005082086124"
## [2] "k2= 0.00141191098166028"
## [3] "proportion of C0 in pool 1= 0.130888648556385"
## [1] "AIC = -26.8209888779019"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0196968485073309"
## [2] "k2= 0.00141180449216173"
## [3] "a21= 0.670051652110726"
## [4] "Proportion of C0 in pool 1= 0.470549803525138"
## [1] "AIC = -24.8209888732296"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0196984986052281"
## [2] "k2= 0.00141185373775661"
## [3] "a21= 0.000914933423719344"
## [4] "a12= 2.71288802861092e-06"
## [5] "Proportion of C0 in pool 1= 0.131031312310194"

```



```
## [1] "AIC = -22.8209888828348"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0027
## Two-pool parallel 0.0197  0.0014  0.1309
## Two-pool series  0.0197  0.0014  0.4705  0.6701
## Two-pool feedback 0.0197  0.0014  0.1310  0.0009  0.4705  0   0
##
##
## Model          AIC      BIC     AICn     AICc      wi    MeanTrT    q05
## -----
## One-pool       -29.10  -27.04  -899.9  -29.03  0.7411    0.58
## Two-pool parallel -26.82 -20.64  -945.8  -26.38  0.1969  262.77  60.90
## Two-pool series  -24.82 -16.58  -943.8  -24.07  0.0620  525.38  262.29
## Two-pool feedback -22.82 -12.52  -941.8  -21.67  0.0187  51.41   35.23
```

Dataset Sierra2017BG

Variable TMO_25_15_20;

Respiration rates

```
Sierra_V2=modelFitTS_Markdown(db = db[[24]], ts.col = 2, ic.col = 1, unitConverter = 0.01,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.5, 0.01, 0.5),
                                             series=c(0.5, 0.01, 0.01, 0.5),
                                             feedback=c(0.1, 0.01, 0.01, 0.1, 0.5)))
```

```

## [1] "Sierra2017BG; variable: TM0_25_15_20"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0634010138240182"

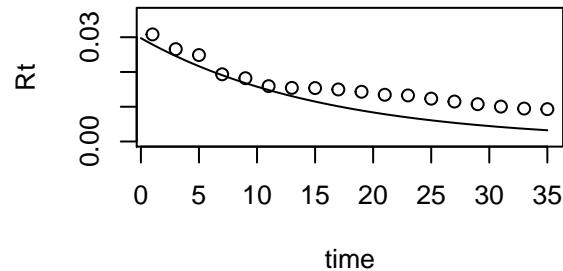
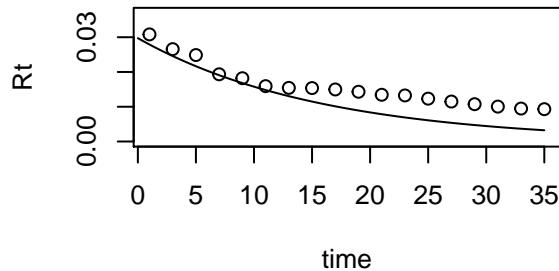
## [1] "AIC = -19.4894784146389"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0633997095834992"
## [2] "k2= 0.0634099515601571"
## [3] "proportion of C0 in pool 1= 0.990902515856532"

## [1] "AIC = -15.4894784144744"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.063411807801869"
## [2] "k2= 0.0639618721106547"
## [3] "a21= 0.000360063665485466"
## [4] "Proportion of C0 in pool 1= 0.980062699517281"

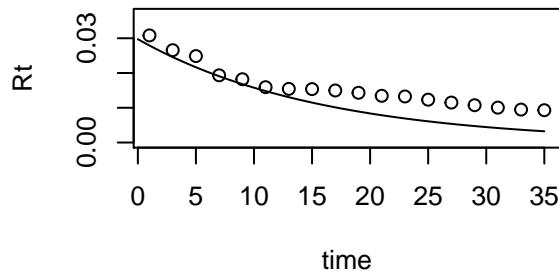
## [1] "AIC = -13.4894815238068"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0947504110410315"
## [2] "k2= 0.0947023648946911"
## [3] "a21= 0.000375345527407978"
## [4] "a12= 0.749321733139767"
## [5] "Proportion of C0 in pool 1= 0.46235658075635"

```

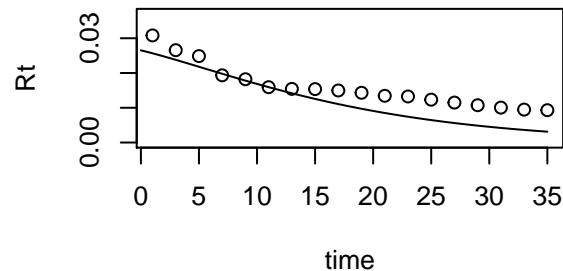
two pool_parallel structure



two pool_Series structure



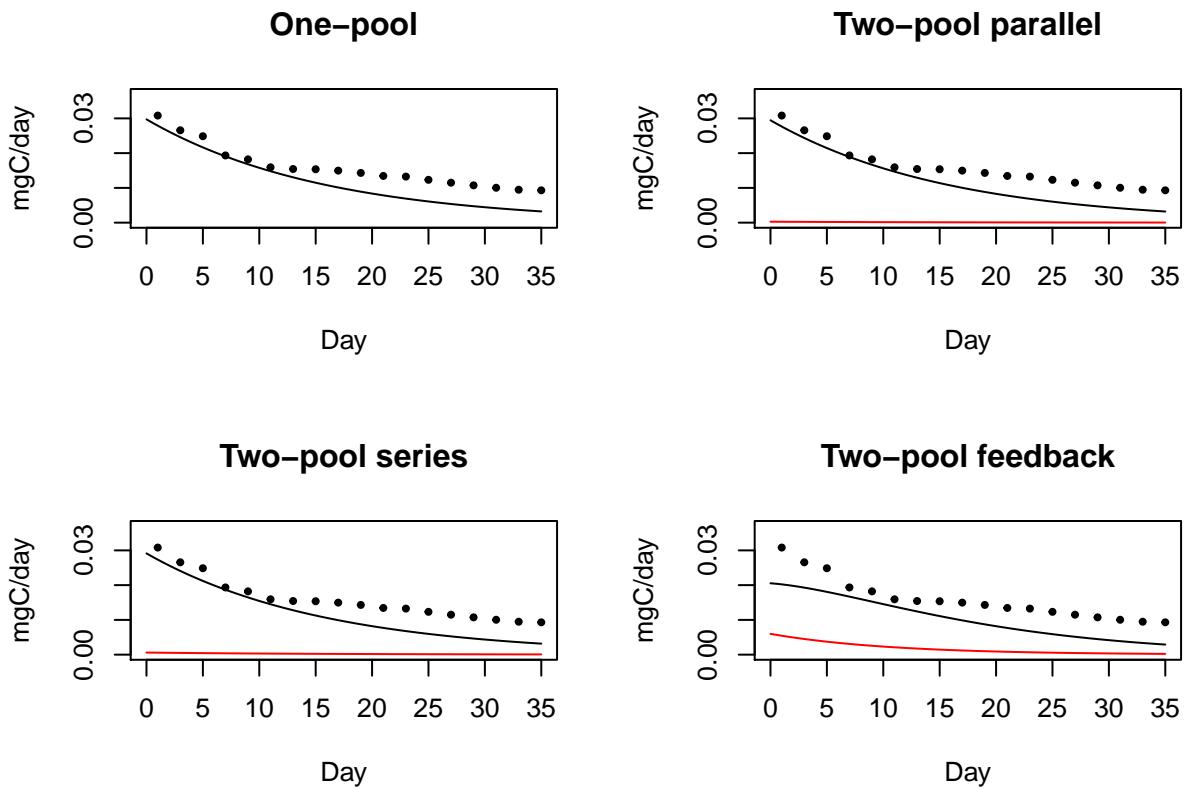
two pool_feedback structure



```

## [1] "AIC = -11.6469633210259"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0634   0.0634   0.9909   4e-04   4e-04   4e-04   0
## Two-pool parallel 0.0634  0.0634   0.9909   4e-04   4e-04   4e-04   0
## Two-pool series  0.0634  0.0640   0.9801   4e-04   4e-04   4e-04   0
## Two-pool feedback 0.0948  0.0947   0.4624   4e-04   0.9801   4e-04   0
##
##
## Model           AIC      BIC     AICn     AICc      wi    MeanTrT     q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -19.49  -18.599  -191.4  -19.239  0.9283  0.469
## Two-pool parallel -15.49  -12.818  -187.4  -13.775  0.0604  15.773  10.933
## Two-pool series  -13.49  -9.928  -185.4  -10.413  0.0112  15.776  10.935
## Two-pool feedback -11.65  -7.195  -184.8  -6.647  0.0017  10.561  7.319
```

Variable TMO_25_15_1;

Respiration rates

```
##
## Sierra_V3=modelFitTS_Markdown(db = db[[24]], ts.col = 3, ic.col = 1, unitConverter = 0.01,
##                                inipars=list(oneP=0.01,
##                                             parallel=c(0.5, 0.01, 0.5),
##                                             series=c(0.5, 0.01, 0.01, 0.5),
##                                             feedback=c(0.1, 0.01, 0.01, 0.1, 0.5)))
```

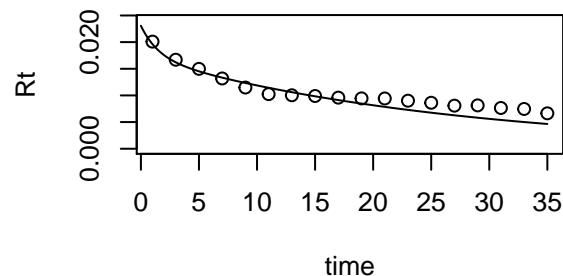
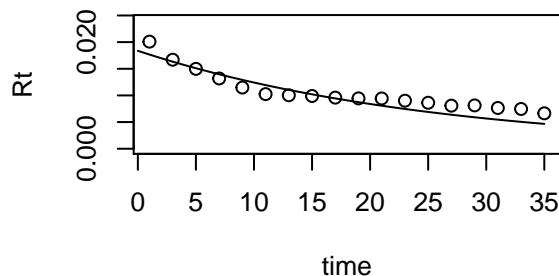
```
## [1] "Sierra2017BG; variable: TMO_25_15_1"
## [1] "One pool model"
```

```

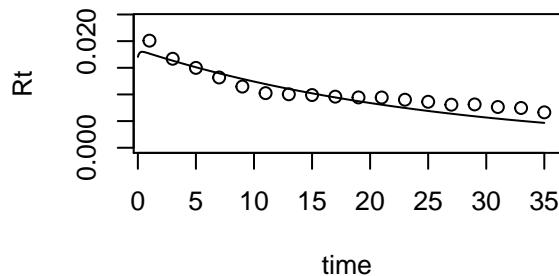
## [1] "Best fit parameter: 0.0391734998728843"
## [1] "AIC = -23.8962203013413"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.66643046564617"
## [2] "k2= 0.0375203715981409"
## [3] "proportion of C0 in pool 1= 0.0185629045475175"
## [1] "AIC = -20.1936000988707"
## [1] "Two pool model-Series structure"
## [1] "k1= 6.7831893658569"
## [2] "k2= 0.0391560143543456"
## [3] "a21= 0.999494419281067"
## [4] "Proportion of C0 in pool 1= 0.0781393937437794"
## [1] "AIC = -17.8990443052435"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0519016363760811"
## [2] "k2= 0.0517260160572143"
## [3] "a21= 0.00427826395190817"
## [4] "a12= 0.426832350448702"
## [5] "Proportion of C0 in pool 1= 0.376922082385348"

```

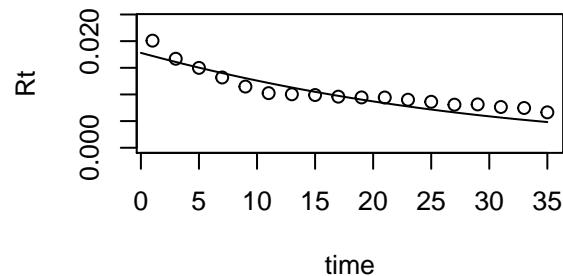
two pool_parallel structure



two pool_Series structure



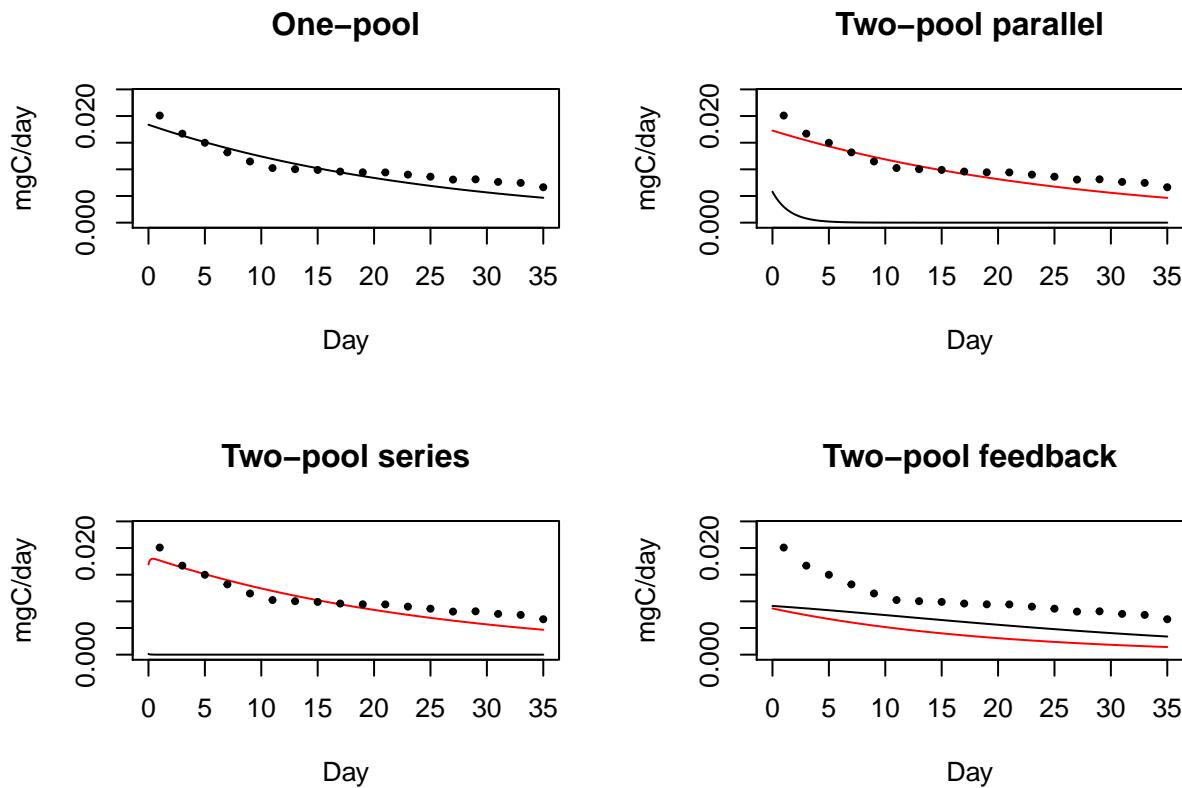
two pool_feedback structure



```

## [1] "AIC = -15.9979549751448"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0392
## Two-pool parallel 0.6664  0.0375  0.0186
## Two-pool series  6.7832  0.0392  0.0781  0.9995
## Two-pool feedback 0.0519  0.0517  0.3769  0.0043  0.0781  0  0
##
##
## Model           AIC      BIC     AICn     AICc      wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -23.90  -23.01  -231.1  -23.65  0.9194  0.469
## Two-pool parallel -20.19  -17.52  -229.7  -18.48  0.0694  20.327 10.76
## Two-pool series  -17.90  -14.34  -225.1  -14.82  0.0112  25.673 17.84
## Two-pool feedback -16.00  -11.55  -224.0  -11.00  0.0016  19.385 13.42
```

Variable TMO_25_30_20;

Respiration rates

```
Sierra_V4=modelFitTS_Markdown(db = db[[24]], ts.col = 4, ic.col = 1, unitConverter = 0.01,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.5, 0.01, 0.5),
                                             series=c(0.5, 0.01, 0.01, 0.5),
                                             feedback=c(0.5, 0.01, 0.1, 0.01, 0.1)))

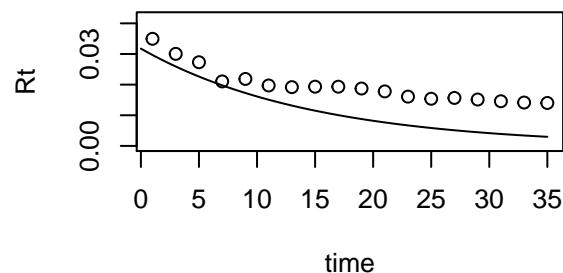
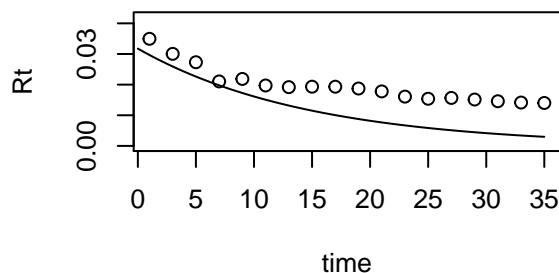
## [1] "Sierra2017BG; variable: TMO_25_30_20"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0676938737125798"
```

```

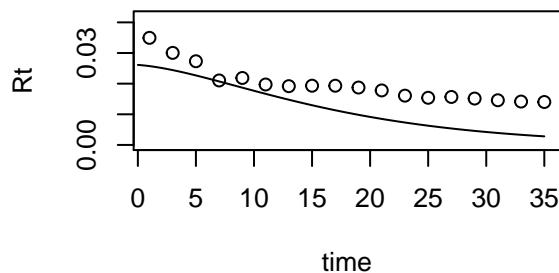
## [1] "AIC = -17.1465221031884"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0676986594644449"
## [2] "k2= 0.0676955850870589"
## [3] "proportion of C0 in pool 1= 0.171462356919713"
## [1] "AIC = -13.1465221032178"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.105457801223113"
## [2] "k2= 0.105469422317892"
## [3] "a21= 0.904842053899052"
## [4] "Proportion of C0 in pool 1= 0.521507303790924"
## [1] "AIC = -11.262269027528"
## [1] "Two pool model-feedback structure"
## [1] "k1= 1.95505383709971"
## [2] "k2= 0.0676974069608627"
## [3] "a21= 0.996396479980015"
## [4] "a12= 3.09337804027532e-06"
## [5] "Proportion of C0 in pool 1= 0.000970286884844185"

```

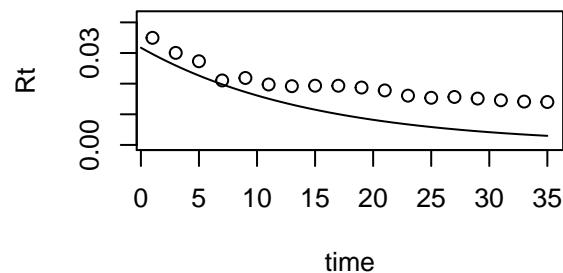
two pool_parallel structure



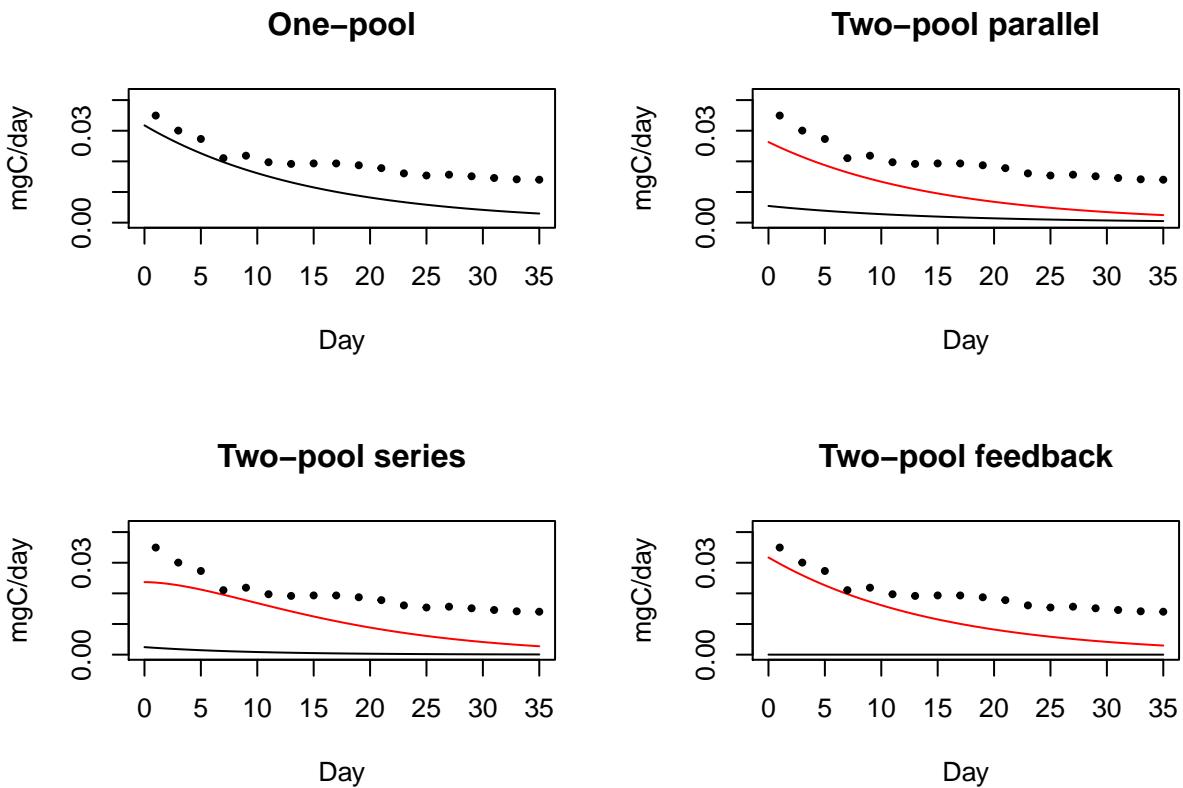
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -9.14658165699713"
```



```
##  
##  
## Model           k1      k2   COInp1     a21     a12   SSR   MSR  
## -----  
## One-pool        0.0677  
## Two-pool parallel 0.0677  0.0677  0.1715  
## Two-pool series  0.1055  0.1055  0.5215  0.9048  
## Two-pool feedback 1.9551  0.0677  0.0010  0.9964  0.5215  0.0013  1e-04  
##  
##  
## Model          AIC      BIC     AICn     AICc     wi  MeanTrT   q05  
## -----  
## One-pool       -17.146 -16.256 -170.3   -16.896  0.9277  0.469  
## Two-pool parallel -13.146 -10.475 -166.3   -11.432  0.0604 14.772  10.24  
## Two-pool series  -11.262 -7.701  -165.4   -8.185  0.0119 18.062  14.99  
## Two-pool feedback -9.147 -4.695  -162.3   -4.147  0.0016 15.230  10.71
```

Variable TMO_25_30_1;

Respiration rates

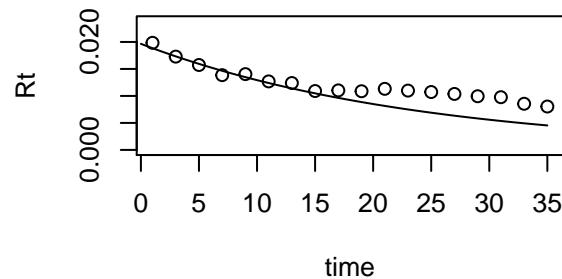
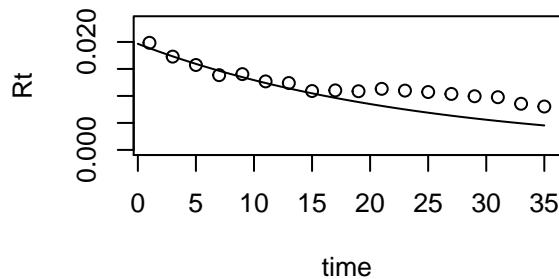
```
Sierra_V5=modelFitTS_Markdown(db = db[[24]], ts.col = 5, ic.col = 1, unitConverter = 0.01,  
                                inipars=list(oneP=0.01,  
                                             parallel=c(0.1, 0.05, 0.5),  
                                             series=c(0.1, 0.01, 0.01, 0.5),  
                                             feedback=c(0.1, 0.01, 0.5, 0.01, 0.5)))  
  
## [1] "Sierra2017BG; variable: TMO_25_30_1"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.0419124981572594"
```

```

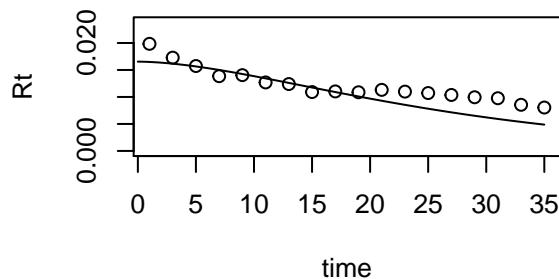
## [1] "AIC = -21.7708874124789"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0419126926613915"
## [2] "k2= 0.0419125148387614"
## [3] "proportion of C0 in pool 1= 0.157529414219687"
## [1] "AIC = -17.7708874122907"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0697578120141554"
## [2] "k2= 0.0697624569759173"
## [3] "a21= 0.845614542056609"
## [4] "Proportion of C0 in pool 1= 0.58445489254306"
## [1] "AIC = -16.3844743887716"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.055945545436614"
## [2] "k2= 19133.3054842101"
## [3] "a21= 0.250835439225442"
## [4] "a12= 0.999995802425993"
## [5] "Proportion of C0 in pool 1= 0.952637261674645"

```

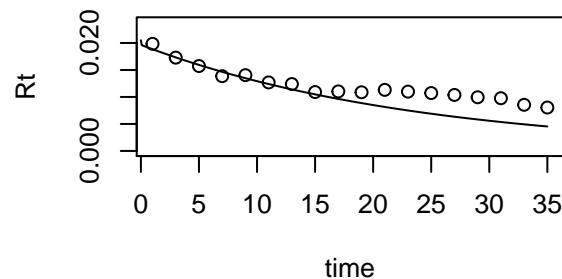
two pool_parallel structure



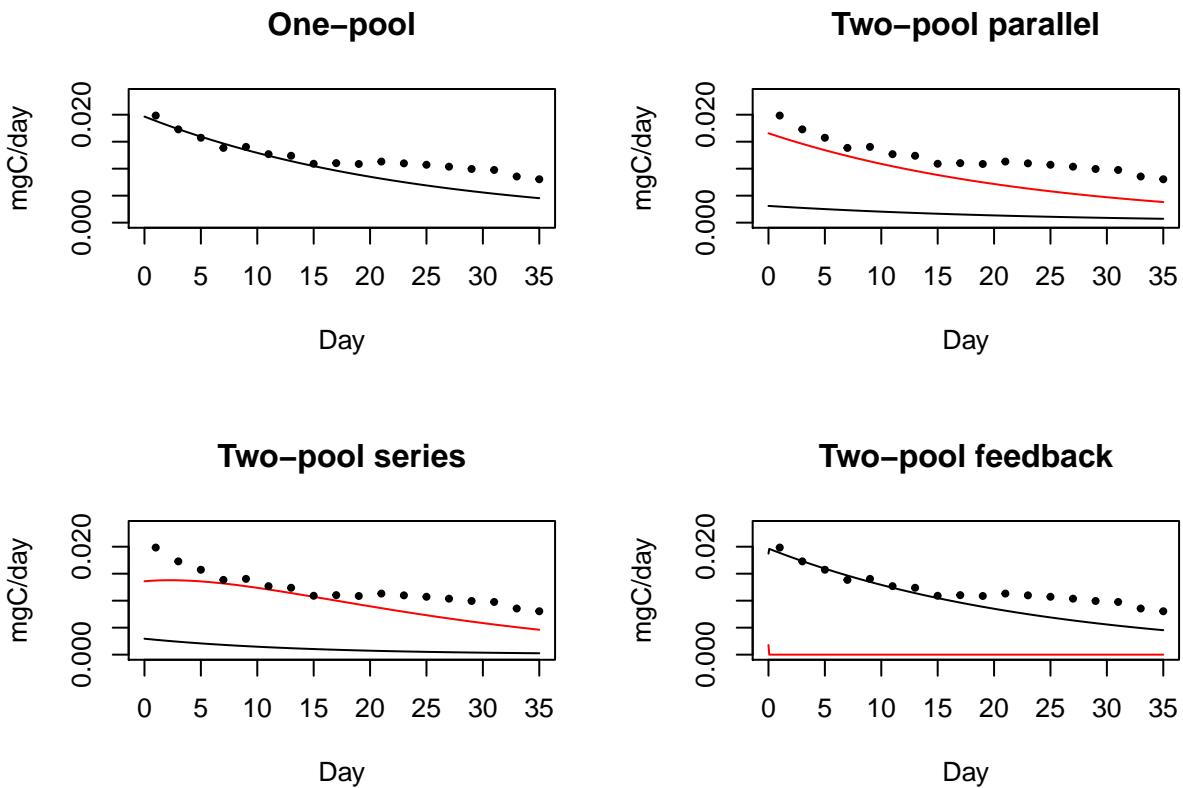
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -13.7708903955068"
```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0419  
## Two-pool parallel 0.0419 4.190e-02 0.1575  
## Two-pool series 0.0698 6.980e-02 0.5845 0.8456  
## Two-pool feedback 0.0559 1.913e+04 0.9526 0.2508 0.5845 1e-04 0  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -21.77 -20.881 -211.9 -21.521 0.9246 0.469  
## Two-pool parallel -17.77 -15.100 -207.9 -16.057 0.0602 23.859 16.54  
## Two-pool series -16.38 -12.823 -211.5 -13.308 0.0152 26.457 21.78  
## Two-pool feedback -13.77 -9.319 -203.9 -8.771 0.0016 23.859 16.54
```

Variable TMO_25_60_20;

Respiration rates

```
Sierra_V6=modelFitTS_Markdown(db = db[[24]], ts.col = 6, ic.col = 1, unitConverter = 0.1,  
inipars=list(oneP=0.01,  
            parallel=c(0.5, 0.01, 0.5),  
            series=c(0.5, 0.01, 0.01, 0.5),  
            feedback=c(0.5, 0.01, 0.1, 0.01, 0.1)))  
  
## [1] "Sierra2017BG; variable: TMO_25_60_20"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.00804040612543311"
```

```

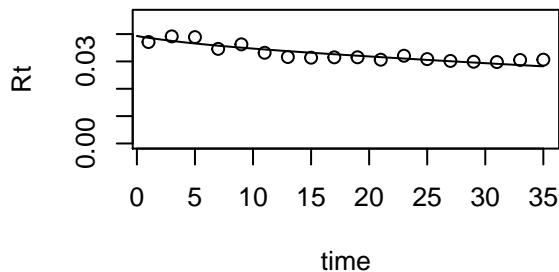
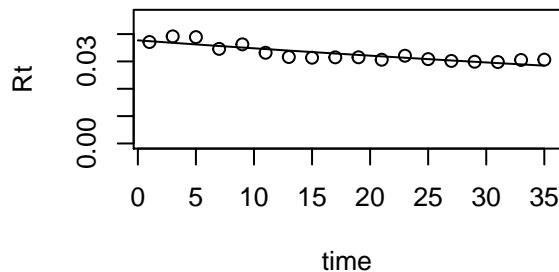
## [1] "AIC = -24.0825247469671"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.199144741956716"
## [2] "k2= 0.00796511636394155"
## [3] "proportion of CO in pool 1= 0.0021650430617618"

## [1] "AIC = -20.2328662797862"
## [1] "Two pool model-Series structure"
## DLSODA- Warning..Internal T (=R1) and H (=R2) are
##           such that in the machine, T + H = T on the next step
##           (H = step size). Solver will continue anyway.
## In above message, R1 = 0, R2 = 0
##
## DINTDY- T (=R1) illegal
## In above message, R1 = 0.0701403
##
##           T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DINTDY- T (=R1) illegal
## In above message, R1 = 0.140281
##
##           T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DLSODA- Trouble in DINTDY. ITASK = I1, TOUT = R1
## In above message, I1 = 1
##
## In above message, R1 = 0.140281
##

## Error in lsoda(startValues, t, lsexamp): illegal input detected before taking any integration steps ...

```

two pool_parallel structure



Variable TMO_25_60_1;

Respiration rates

```

Sierra_V7=modelFitTS_Markdown(db = db[[24]], ts.col = 7, ic.col = 1, unitConverter = 0.1,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.1, 0.01, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.01, 0.1, 0.1)))

```

```

## [1] "Sierra2017BG; variable: TMO_25_60_1"

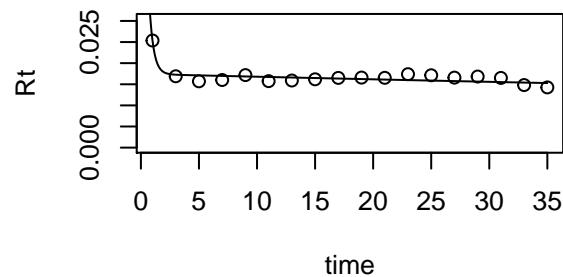
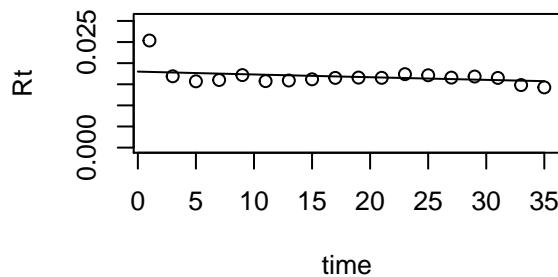
```

```

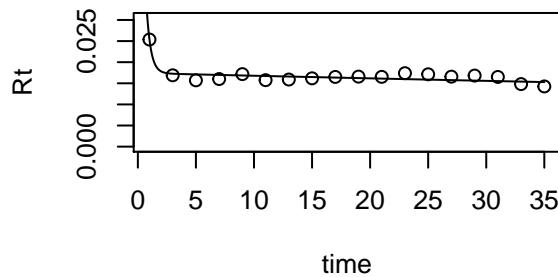
## [1] "One pool model"
## [1] "Best fit parameter: -0.00383783084773448"
## [1] "AIC = -22.8451700431341"
## [1] "Two pool model-parallel structure"
## [1] "k1= 2.71774839884543"
## [2] "k2= 0.00375263816212352"
## [3] "proportion of C0 in pool 1= 0.00946035610686302"
## [1] "AIC = -22.2684223170803"
## [1] "Two pool model-Series structure"
## [1] "k1= 2.71743529637375"
## [2] "k2= 0.00375263002750823"
## [3] "a21= 0.891894555312746"
## [4] "Proportion of C0 in pool 1= 0.0885030162634368"
## [1] "AIC = -20.2684220950003"
## [1] "Two pool model-feedback structure"
## [1] "k1= 2.70560387626236"
## [2] "k2= 0.0154874724842391"
## [3] "a21= 0.772987632578469"
## [4] "a12= 0.978862049734523"
## [5] "Proportion of C0 in pool 1= 0.0473873793619041"

```

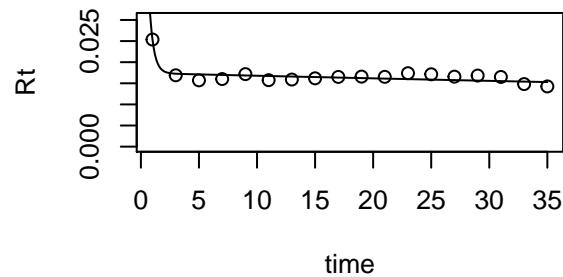
two pool_parallel structure



two pool_Series structure



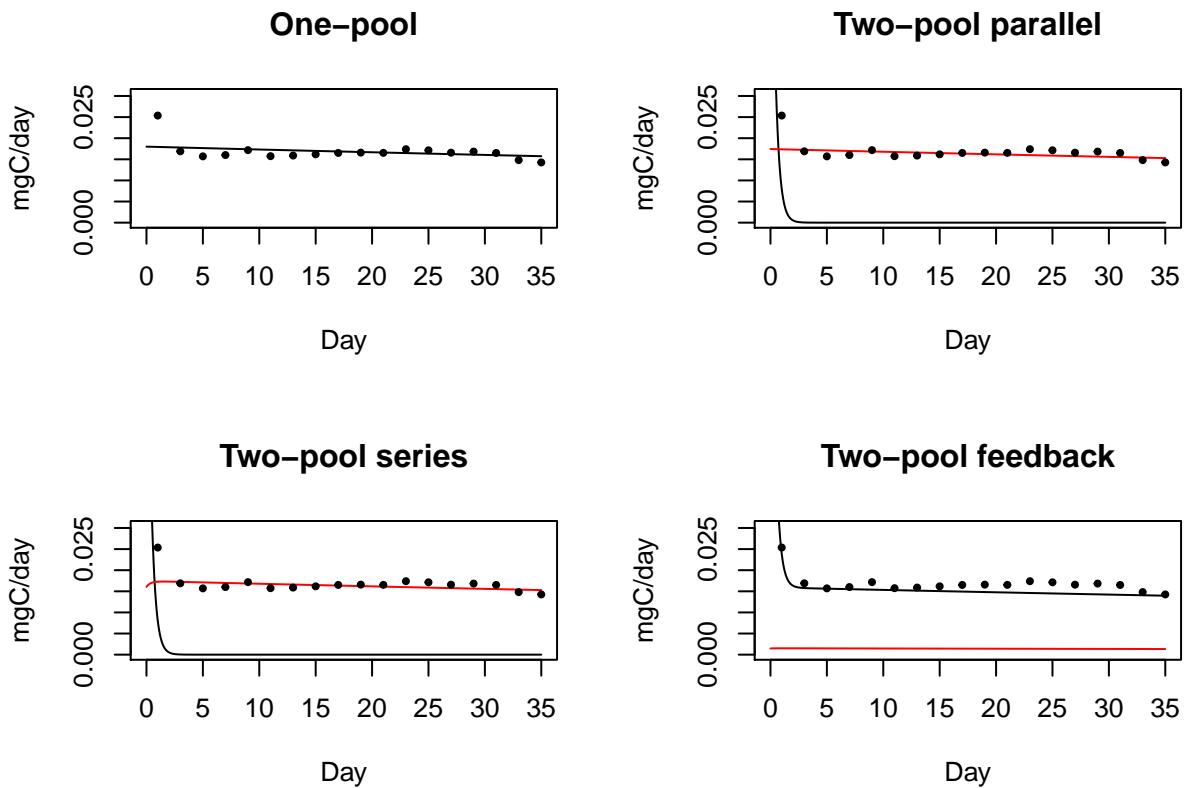
two pool_feedback structure



```

## [1] "AIC = -18.2684219014502"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0038 & 1e-04 0  
## Two-pool parallel 2.7177 0.0038 0.0095 & 0e+00 0  
## Two-pool series 2.7174 0.0038 0.0885 0.8919 & 0e+00 0  
## Two-pool feedback 2.7056 0.0155 0.0474 0.7730 0.0885 & 0e+00 0  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -22.85 -21.95 -221.6 -22.60 0.7005 4.69  
## Two-pool parallel -22.27 -19.60 -248.4 -20.55 0.2525 33.98 0.3124  
## Two-pool series -20.27 -16.71 -246.4 -17.19 0.0470 238.04 154.5907  
## Two-pool feedback -18.27 -13.82 -244.4 -13.27 0.0066 206.62 116.7993
```

Variable TMO_25_90_20;

Respiration rates

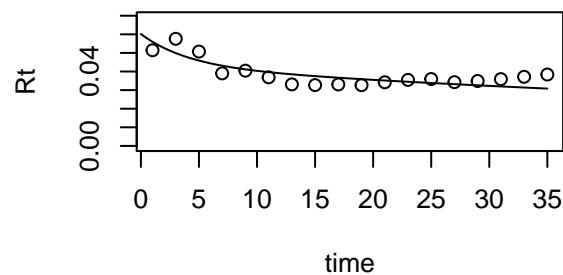
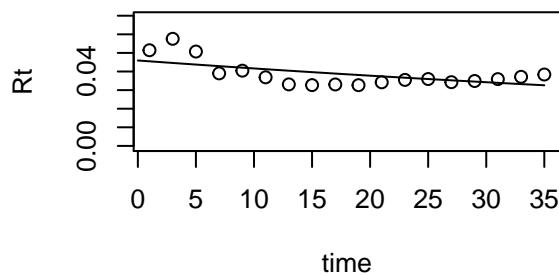
```
Sierra_V8=modelFitTS_Markdown(db = db[[24]], ts.col = 8, ic.col = 1, unitConverter = 0.1,  
inipars=list(oneP=0.1,  
parallel=c(0.1, 0.001, 0.01),  
series=c(0.1, 0.001, 0.01, 0.1),  
feedback=c(0.1, 0.001, 0.01, 0.1, 0.1)))  
  
## [1] "Sierra2017BG; variable: TMO_25_90_20"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.00979439471187149"
```

```

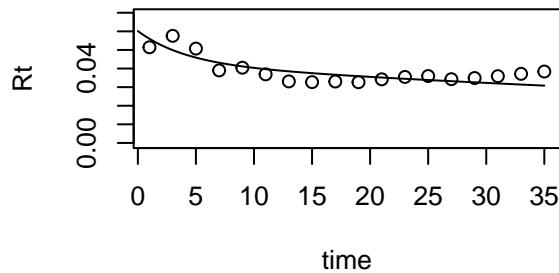
## [1] "AIC = -18.8968419750451"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.242145207169139"
## [2] "k2= 0.00921438498101344"
## [3] "proportion of C0 in pool 1= 0.0155299247069662"
## [1] "AIC = -15.853818583212"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.242133511391939"
## [2] "k2= 0.00921438908136032"
## [3] "a21= 0.276191407704774"
## [4] "Proportion of C0 in pool 1= 0.021784619849034"
## [1] "AIC = -13.8538185865309"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.242125776425774"
## [2] "k2= 0.00922745287557585"
## [3] "a21= 0.00155250995309886"
## [4] "a12= 0.876811512879359"
## [5] "Proportion of C0 in pool 1= 0.0486046310901709"

```

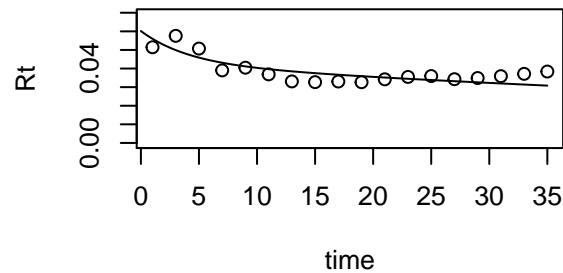
two pool_parallel structure



two pool_Series structure



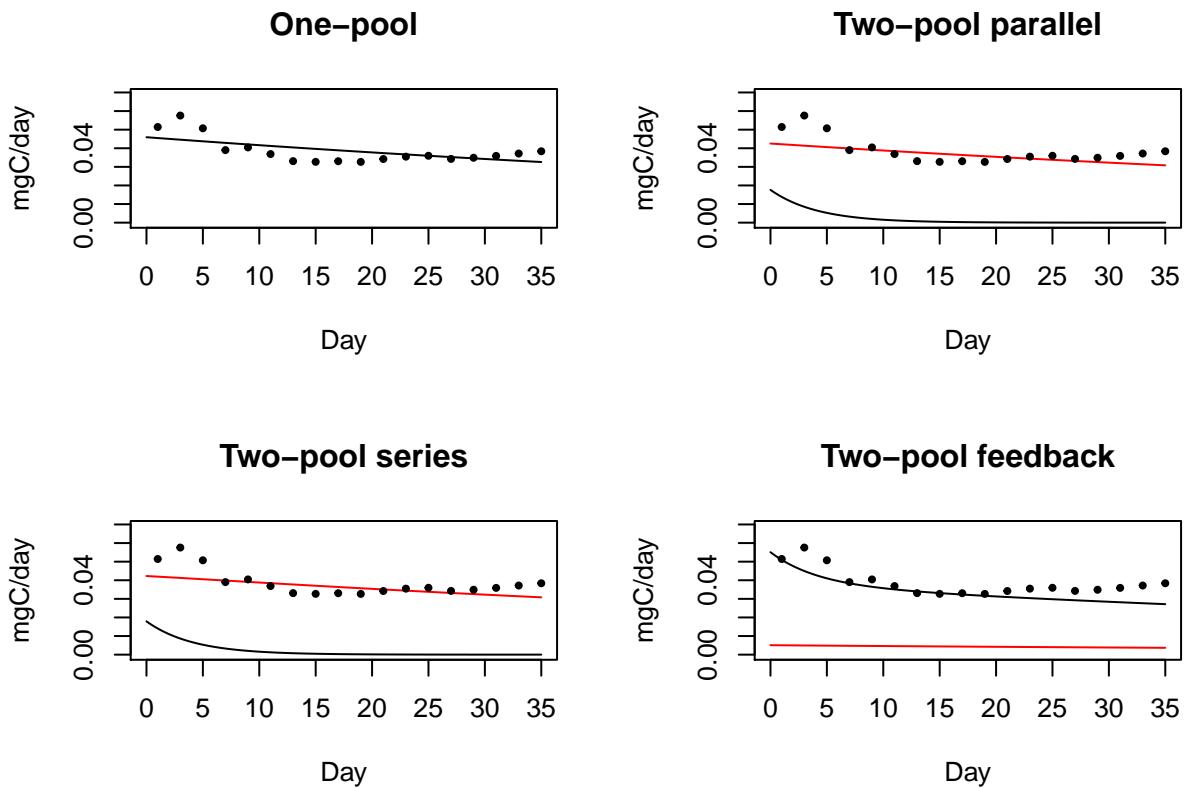
two pool_feedback structure



```

## [1] "AIC = -11.8538185863904"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0098 5e-04 0  
## Two-pool parallel 0.2421 0.0092 0.0155 3e-04 0  
## Two-pool series 0.2421 0.0092 0.0218 0.2762 3e-04 0  
## Two-pool feedback 0.2421 0.0092 0.0486 0.0016 0.0218 3e-04 0  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -18.90 -18.006 -186.1 -18.647 0.8892 4.690  
## Two-pool parallel -15.85 -13.183 -190.7 -14.139 0.0934 77.931 37.593  
## Two-pool series -13.85 -10.292 -188.7 -10.777 0.0174 34.104 4.759  
## Two-pool feedback -11.85 -7.402 -186.7 -6.854 0.0024 4.304 2.869
```

Variable TMO_25_90_1;

Respiration rates

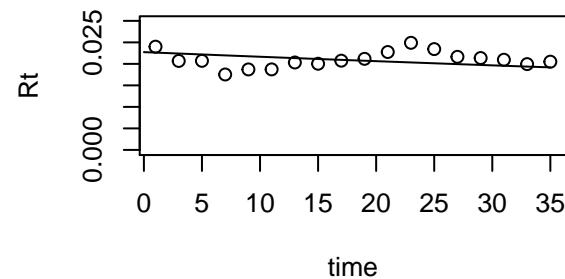
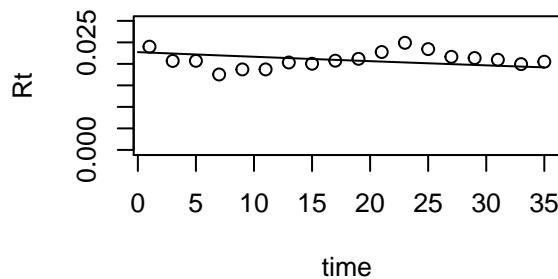
```
Sierra_V9=modelFitTS_Markdown(db = db[[24]], ts.col = 9, ic.col = 1, unitConverter = 0.1,  
inipars=list(oneP=0.1,  
            parallel=c(0.1, 0.001, 0.01),  
            series=c(0.1, 0.001, 0.01, 0.1),  
            feedback=c(0.1, 0.001, 0.01, 0.1, 0.1)))  
  
## [1] "Sierra2017BG; variable: TMO_25_90_1"  
## [1] "One pool model"  
## [1] "Best fit parameter: -0.00484707192136113"
```

```

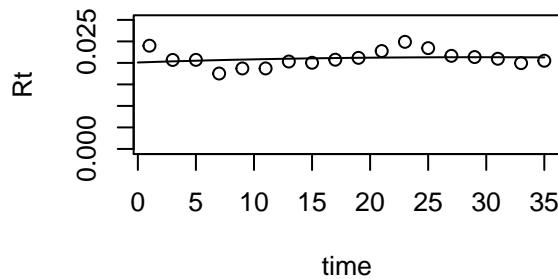
## [1] "AIC = -22.3522612886269"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00484684773185837"
## [2] "k2= 0.00484707506791384"
## [3] "proportion of C0 in pool 1= 0.0109027672852986"
## [1] "AIC = -18.3522612886077"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0104529080573136"
## [2] "k2= 0.0104567380828499"
## [3] "a21= 0.953552984502086"
## [4] "Proportion of C0 in pool 1= 0.618916761076603"
## [1] "AIC = -17.3043435905911"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0104912936202699"
## [2] "k2= 0.0105146743738521"
## [3] "a21= 0.00759417883423119"
## [4] "a12= 0.650856755513648"
## [5] "Proportion of C0 in pool 1= 0.0910968819450941"

```

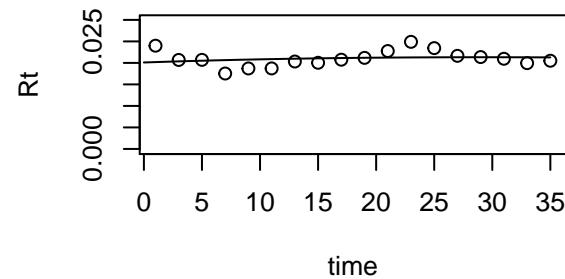
two pool_parallel structure



two pool_Series structure



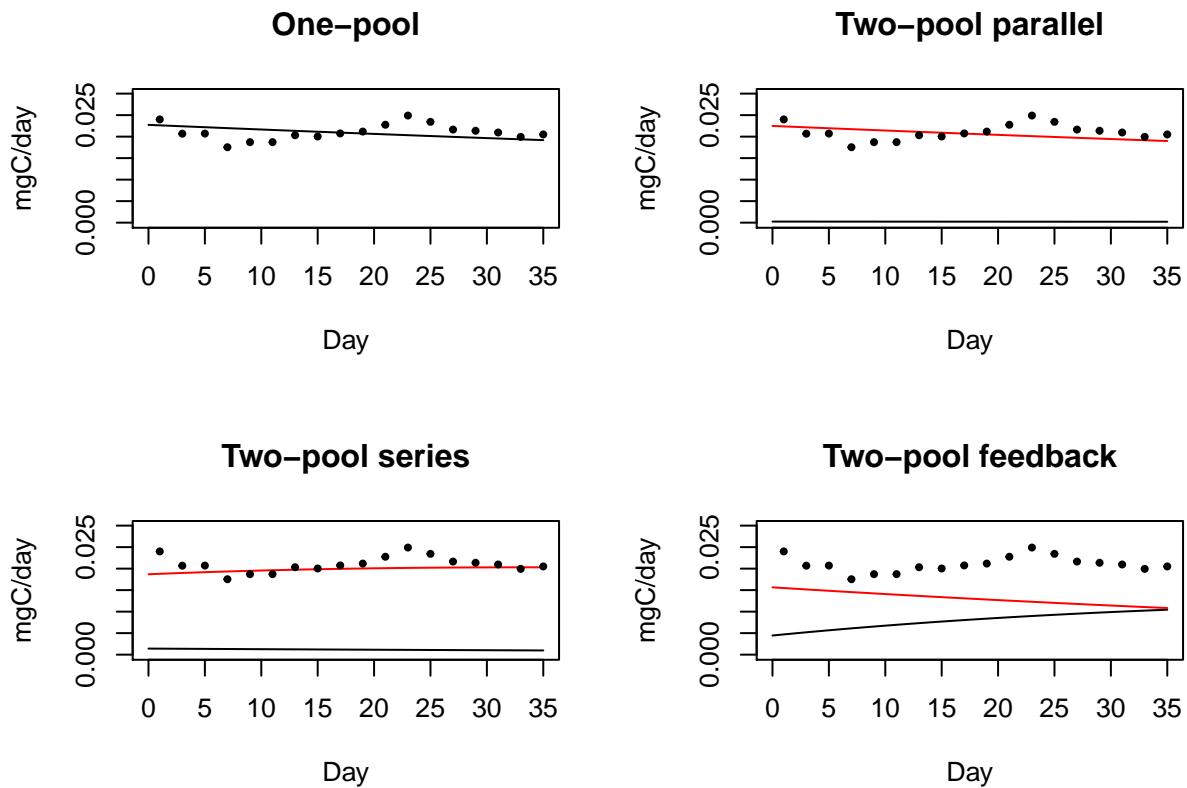
two pool_feedback structure



```

## [1] "AIC = -15.3041191471546"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool -0.0048 1e-04 0  
## Two-pool parallel 0.0048 0.0048 0.0109 1e-04 0  
## Two-pool series 0.0105 0.0105 0.6189 0.9536 1e-04 0  
## Two-pool feedback 0.0105 0.0105 0.0911 0.0076 0.6189 1e-04 0  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -22.35 -21.46 -217.2 -22.10 0.9220 4.69  
## Two-pool parallel -18.35 -15.68 -213.2 -16.64 0.0600 206.31 143.00  
## Two-pool series -17.30 -13.74 -219.7 -14.23 0.0180 186.86 156.05  
## Two-pool feedback -15.30 -10.85 -217.7 -10.30 0.0025 96.52 66.69
```

Variable TMO_35_15_20;

Respiration rates

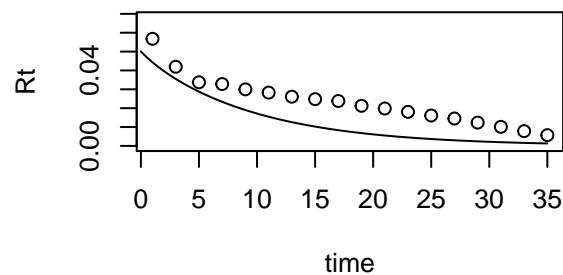
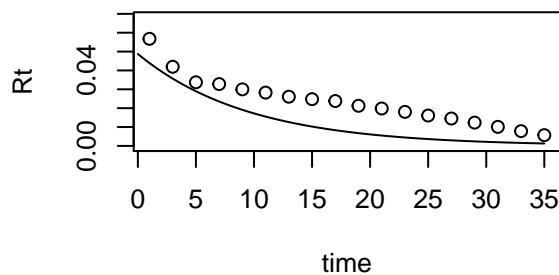
```
Sierra_V10=modelFitTS_Markdown(db = db[[24]], ts.col = 10, ic.col = 1, unitConverter = 0.01,  
inipars=list(oneP=0.1,  
parallel=c(0.1, 0.01, 0.1),  
series=c(0.05, 0.005, 0.01, 0.1),  
feedback=c(0.05, 0.005, 0.01, 0.01, 0.1)))  
  
## [1] "Sierra2017BG; variable: TMO_35_15_20"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.103896242996102"
```

```

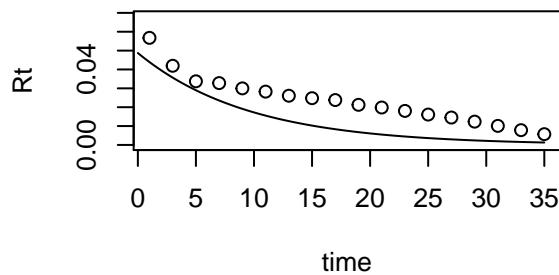
## [1] "AIC = -15.900276606293"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.103116609877834"
## [2] "k2= 0.746976559798496"
## [3] "proportion of C0 in pool 1= 0.994399534715289"
## [1] "AIC = -11.9005923305351"
## [1] "Two pool model-Series structure"
## [1] "k1= 0"
## [2] "k2= 0.103898531921234"
## [3] "a21= 1.63235380490345e-07"
## [4] "Proportion of C0 in pool 1= 2.42402188876945e-08"
## [1] "AIC = -9.90027650944934"
## [1] "Two pool model-feedback structure"
## [1] "k1= 3.41517162505302"
## [2] "k2= 0.104683039058698"
## [3] "a21= 3.20272850129477e-07"
## [4] "a12= 0.999999061550661"
## [5] "Proportion of C0 in pool 1= 0.000425063376878587"

```

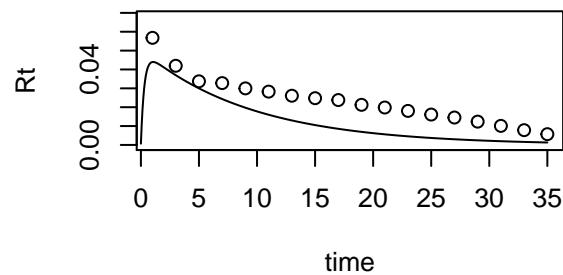
two pool_parallel structure



two pool_Series structure



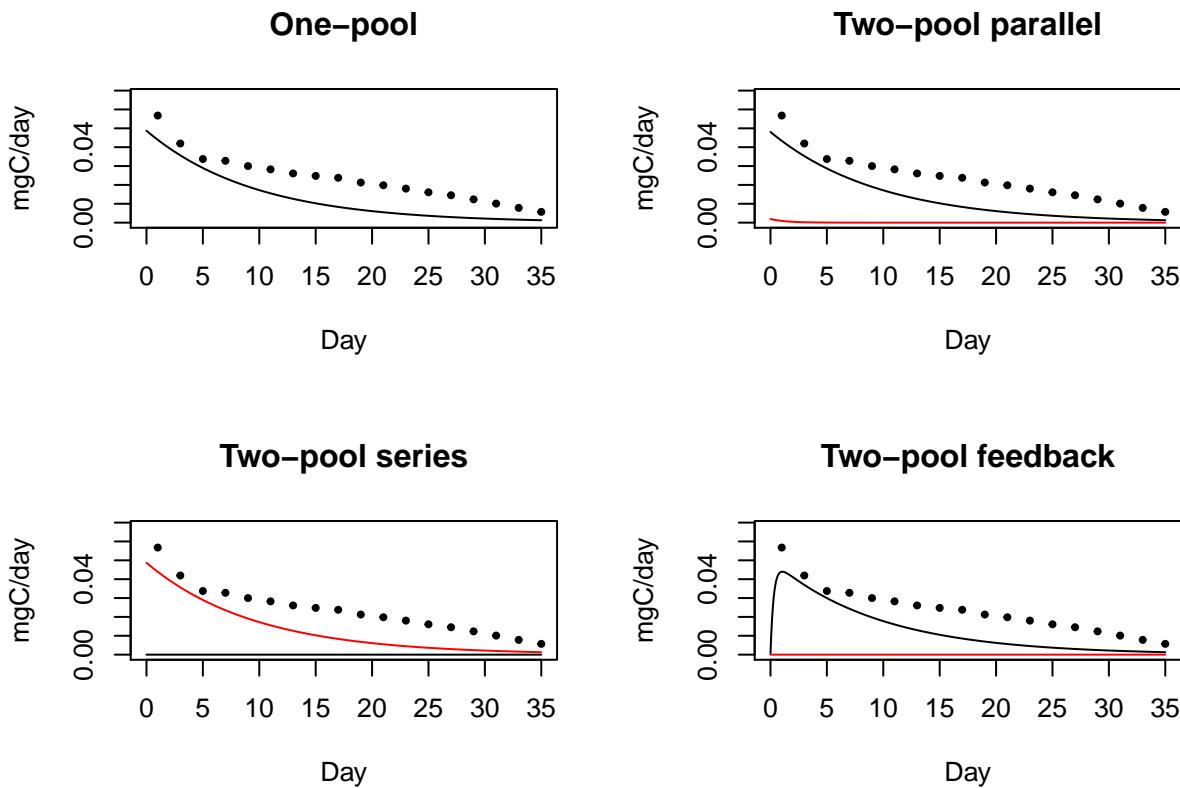
two pool_feedback structure



```

## [1] "AIC = -7.9886747281586"
## Error in solve.default(A): Lapack routine dgesv: system is exactly singular: U[1,1] = 0

```



Variable TMO_35_15_1;

Respiration rates

```
Sierra_V11=modelFitTS_Markdown(db = db[[24]], ts.col = 11, ic.col = 1, unitConverter = 0.01,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.1, 0.001, 0.01),
                                             series=c(0.05, 0.0005, 0.01, 0.1),
                                             feedback=c(0.05, 0.0005, 0.01, 0.01, 0.1)))

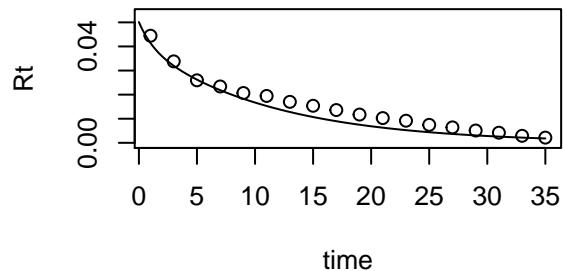
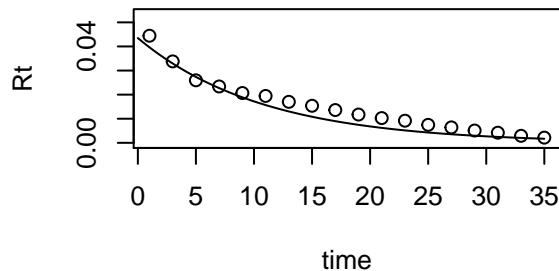
## [1] "Sierra2017BG; variable: TMO_35_15_1"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0927380893610756"
## [1] "AIC = -21.0322221919536"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.811478630606962"
## [2] "k2= 0.0889153078458389"
## [3] "proportion of CO in pool 1= 0.0248930042948379"
## [1] "AIC = -17.1146187162203"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0927458411858057"
## [2] "k2= 0.0927413354432247"
## [3] "a21= 0.000179432102169585"
## [4] "Proportion of CO in pool 1= 0.259759247747212"
## [1] "AIC = -15.032222198201"
## [1] "Two pool model-feedback structure"
## [1] "k1= 3.56660965579611"
## [2] "k2= 652726039.068209"
```

```

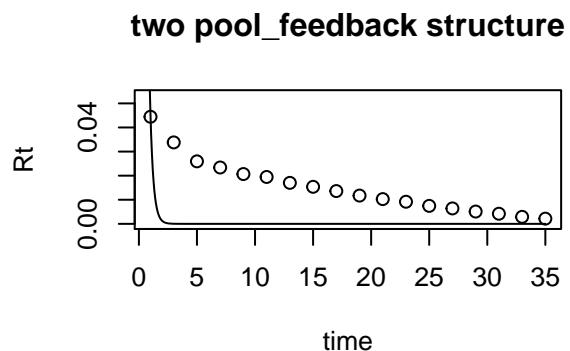
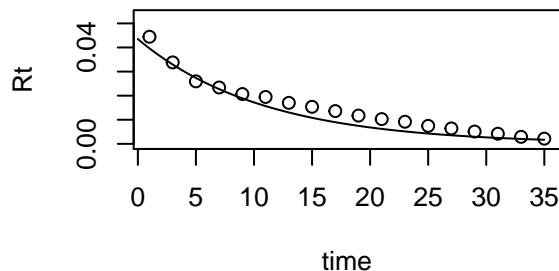
## [3] "a21= 3.8000259024229e-05"
## [4] "a12= 3.47196881445022e-06"
## [5] "Proportion of C0 in pool 1= 0.949337795407256"

```

two pool_parallel structure



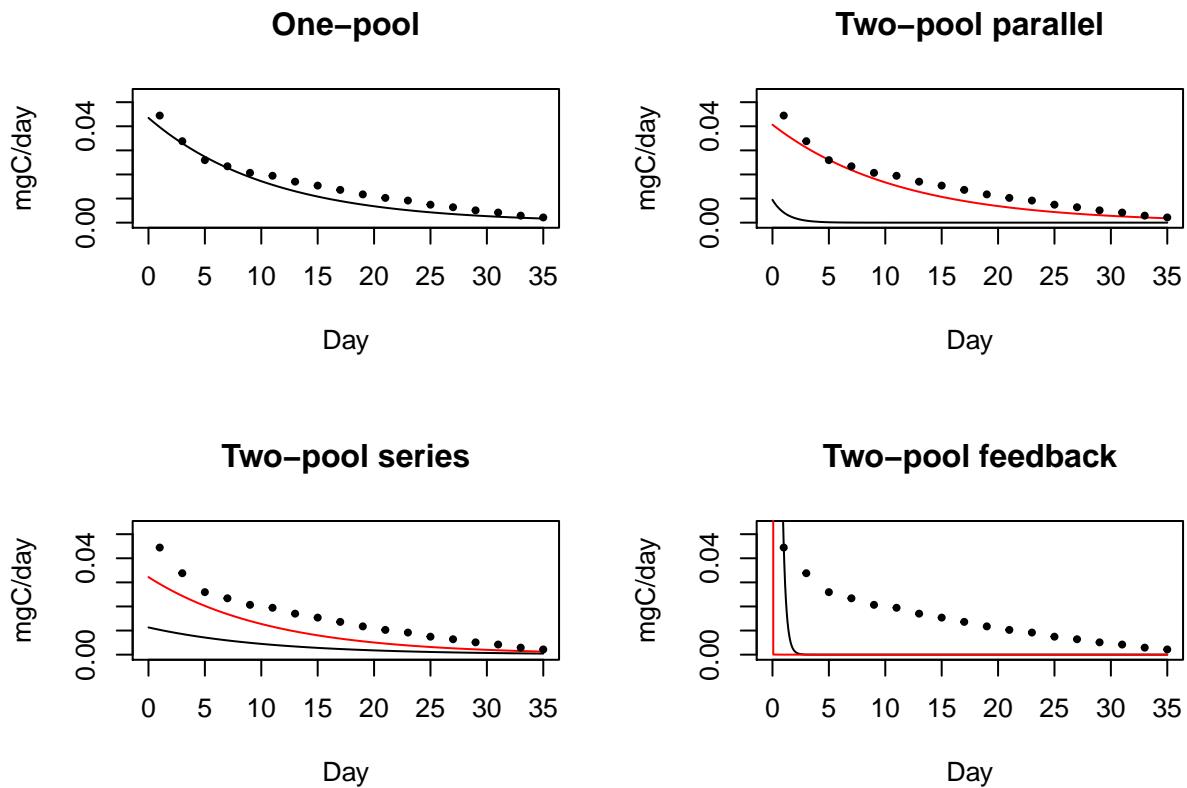
two pool_Series structure



```

## [1] "AIC = -6.65202876821027"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0927 0.0002 0e+00  
## Two-pool parallel 0.8115 8.890e-02 0.0249 0.0002 0e+00  
## Two-pool series 0.0927 9.270e-02 0.2598 2e-04 0.0002 0e+00  
## Two-pool feedback 3.5666 6.527e+08 0.9493 0e+00 0.2598 0.0044 2e-04  
##  
##  
## Model AIC BIC AICn AICC wi MeanTrT q05  
## -----  
## One-pool -21.032 -20.14 -205.3 -20.782 0.9260 0.4690  
## Two-pool parallel -17.115 -14.44 -202.0 -15.400 0.0628 9.3544 5.4896  
## Two-pool series -15.032 -11.47 -199.3 -11.955 0.0112 10.7841 7.4749  
## Two-pool feedback -6.652 -2.20 -139.9 -1.652 0.0001 0.2804 0.1943
```

Variable TMO_35_30_20;

Respiration rates

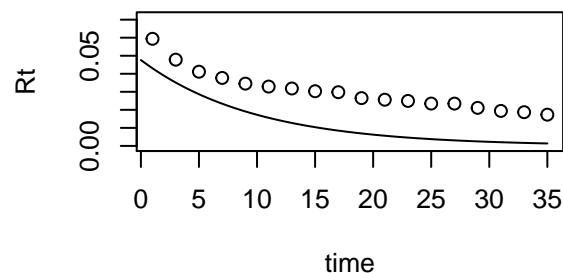
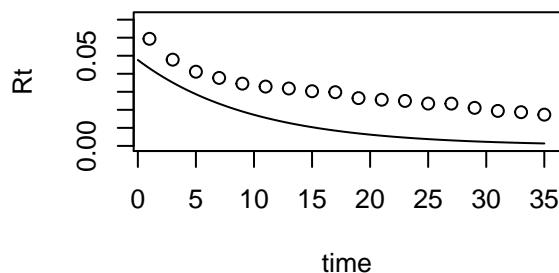
```
Sierra_V12=modelFitTS_Markdown(db = db[[24]], ts.col = 12, ic.col = 1, unitConverter = 0.01,  
inipars=list(oneP=0.01,  
parallel=c(0.5, 0.005, 0.5),  
series=c(0.05, 0.005, 0.05, 0.5),  
feedback=c(0.05, 0.005, 0.005, 0.05, 0.5)))  
  
## [1] "Sierra2017BG; variable: TMO_35_30_20"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.101570671926165"
```

```

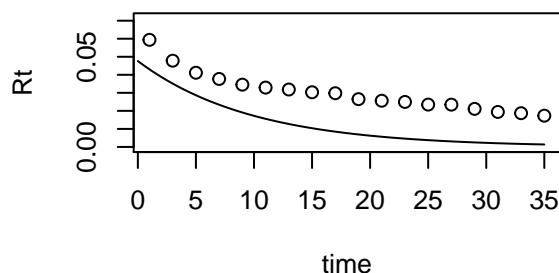
## [1] "AIC = -14.1032626614821"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.10156546232431"
## [2] "k2= 0.101585410104657"
## [3] "proportion of C0 in pool 1= 0.995618373573876"
## [1] "AIC = -10.1032626634066"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.101711303932509"
## [2] "k2= 0.118416483065139"
## [3] "a21= 0.00264176276327543"
## [4] "Proportion of C0 in pool 1= 0.993563670511161"
## [1] "AIC = -8.1033422331886"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.101569864416043"
## [2] "k2= 0.101617599080784"
## [3] "a21= 3.57158216744424e-05"
## [4] "a12= 0.000356367609371688"
## [5] "Proportion of C0 in pool 1= 0.952241242924385"

```

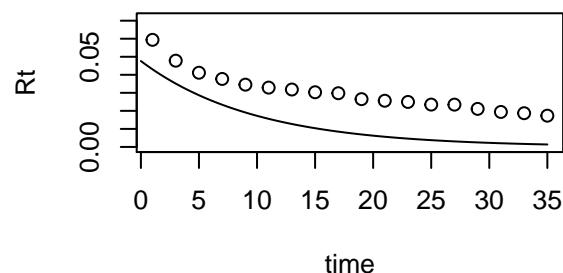
two pool_parallel structure



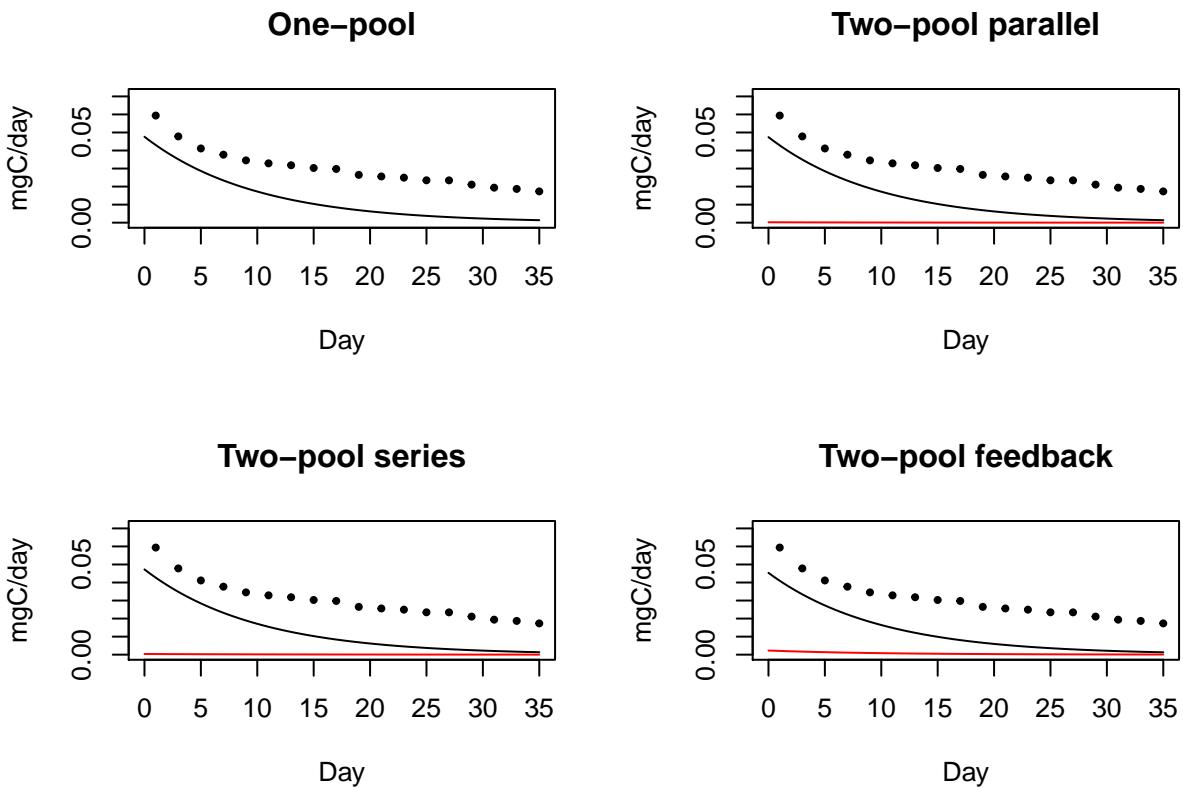
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -6.10326266419986"
```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.1016 0.0057 3e-04  
## Two-pool parallel 0.1016 0.1016 0.9956 0.0057 3e-04  
## Two-pool series 0.1017 0.1184 0.9936 0.0026 0.0057 3e-04  
## Two-pool feedback 0.1016 0.1016 0.9522 0.0000 0.9936 0.0057 3e-04  
##  
##  
## Model AIC BIC AICn AICc wi MeanTrT q05  
## -----  
## One-pool -14.103 -13.213 -142.9 -13.853 0.9283 0.469  
## Two-pool parallel -10.103 -7.432 -138.9 -8.389 0.0604 9.846 6.825  
## Two-pool series -8.103 -4.542 -136.9 -5.026 0.0112 9.854 6.832  
## Two-pool feedback -6.103 -1.651 -134.9 -1.103 0.0016 9.846 6.825
```

Variable TMO_35_30_1;

Respiration rates

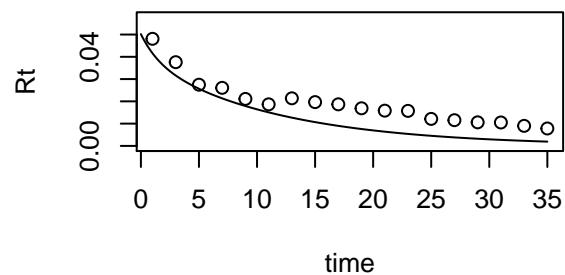
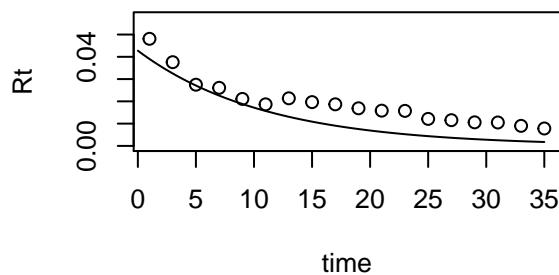
```
Sierra_V13=modelFitTS_Markdown(db = db[[24]], ts.col = 13, ic.col = 1, unitConverter = 0.01,  
inipars=list(oneP=0.01,  
parallel=c(0.5, 0.005, 0.5),  
series=c(0.05, 0.005, 0.05, 0.5),  
feedback=c(0.05, 0.005, 0.005, 0.05, 0.5)))  
  
## [1] "Sierra2017BG; variable: TMO_35_30_1"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.0911515160910099"
```

```

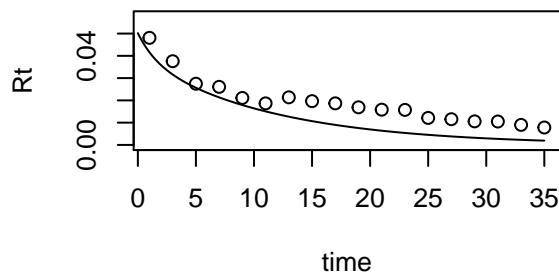
## [1] "AIC = -17.6246168427478"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0857289825140905"
## [2] "k2= 0.634324560190079"
## [3] "proportion of C0 in pool 1= 0.961231728936691"
## [1] "AIC = -13.6545662901398"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0857171406405631"
## [2] "k2= 0.633977930710207"
## [3] "a21= 0.0568261781350035"
## [4] "Proportion of C0 in pool 1= 0.952670381642104"
## [1] "AIC = -11.6545664583159"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0911629374605839"
## [2] "k2= 0.091181521990308"
## [3] "a21= 5.21354701417676e-05"
## [4] "a12= 0.000517209627125592"
## [5] "Proportion of C0 in pool 1= 0.719600204411137"

```

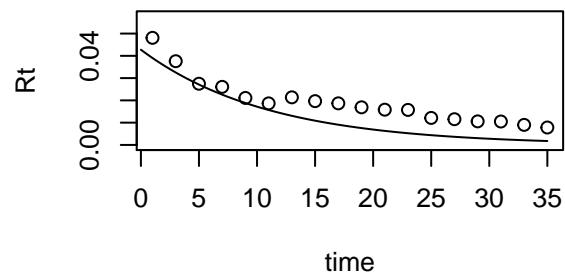
two pool_parallel structure



two pool_Series structure



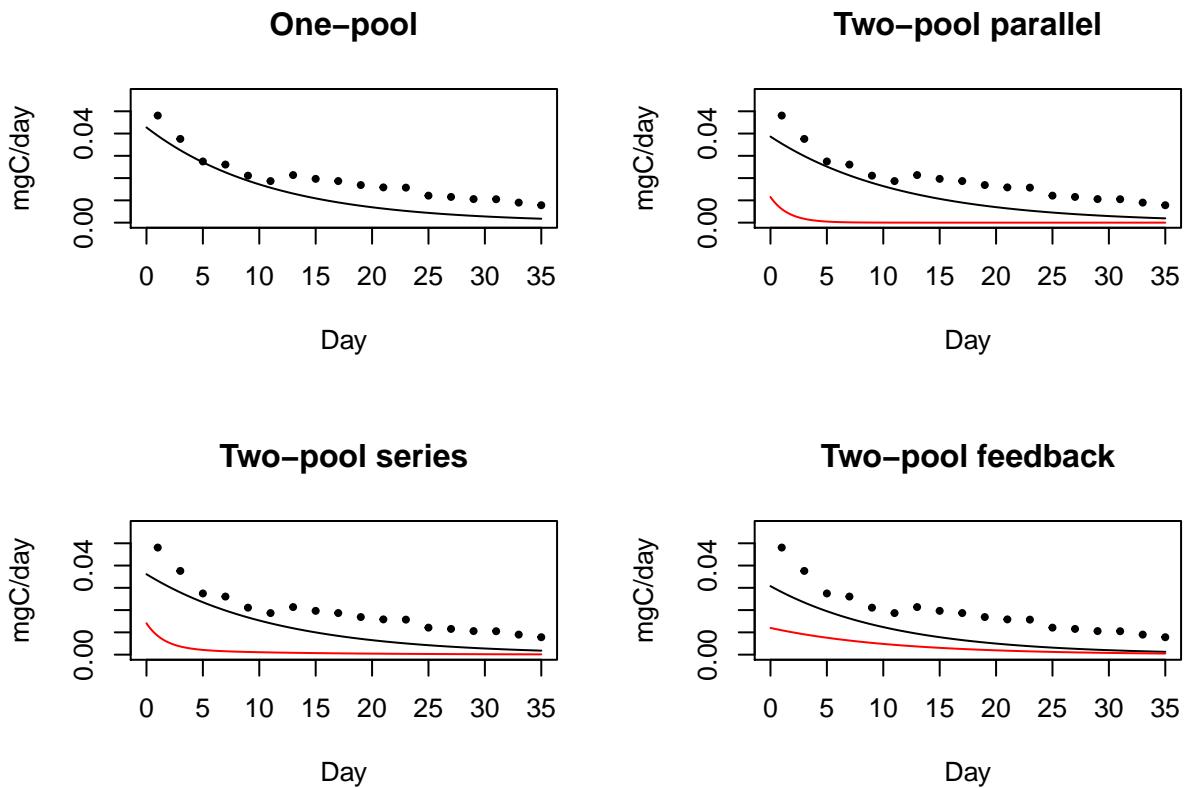
two pool_feedback structure



```

## [1] "AIC = -9.62461685312029"

```



```
##  
##  
## Model k1 k2 COInp1 a21 a12 SSR MSR  
## -----  
## One-pool 0.0912 0.001 1e-04  
## Two-pool parallel 0.0857 0.6343 0.9612 0.001 1e-04  
## Two-pool series 0.0857 0.6340 0.9527 0.0568 0.001 1e-04  
## Two-pool feedback 0.0912 0.0912 0.7196 0.0001 0.9527 0.001 1e-04  
##  
##  
## Model AIC BIC AICn AICc wi MeanTrT q05  
## -----  
## One-pool -17.625 -16.734 -174.6 -17.375 0.9273 0.469  
## Two-pool parallel -13.655 -10.983 -170.9 -11.940 0.0613 9.346 5.234  
## Two-pool series -11.655 -8.093 -168.9 -8.578 0.0114 11.756 8.188  
## Two-pool feedback -9.625 -5.173 -166.6 -4.625 0.0016 10.970 7.604
```

Variable TMO_35_60_20;

Respiration rates

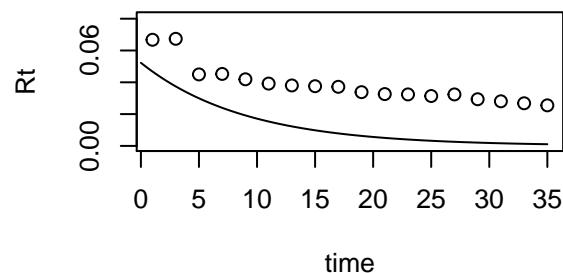
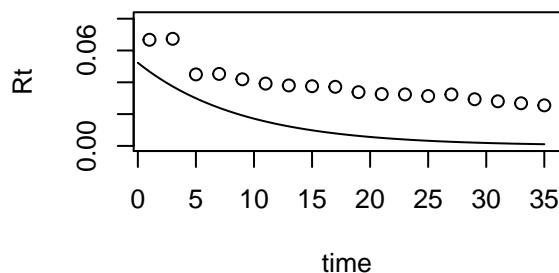
```
Sierra_V14=modelFitTS_Markdown(db = db[[24]], ts.col = 14, ic.col = 1, unitConverter = 0.01,  
inipars=list(oneP=0.01,  
parallel=c(0.5, 0.005, 0.5),  
series=c(0.05, 0.005, 0.05, 0.5),  
feedback=c(0.05, 0.005, 0.005, 0.05, 0.5)))  
  
## [1] "Sierra2017BG; variable: TMO_35_60_20"  
## [1] "One pool model"  
## [1] "Best fit parameter: 0.111472633133213"
```

```

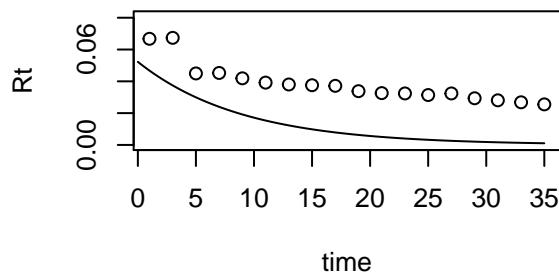
## [1] "AIC = -12.6198529914779"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.111464200938747"
## [2] "k2= 0.111653562823049"
## [3] "proportion of C0 in pool 1= 0.993037185527919"
## [1] "AIC = -8.61985298970423"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.111648616981119"
## [2] "k2= 0.145567464388313"
## [3] "a21= 0.00273730349762402"
## [4] "Proportion of C0 in pool 1= 0.997539924771378"
## [1] "AIC = -6.61993266213984"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.111421017274407"
## [2] "k2= 13545.0220267096"
## [3] "a21= 9.37626521063661e-06"
## [4] "a12= 0.999890725479839"
## [5] "Proportion of C0 in pool 1= 0.977700796246615"

```

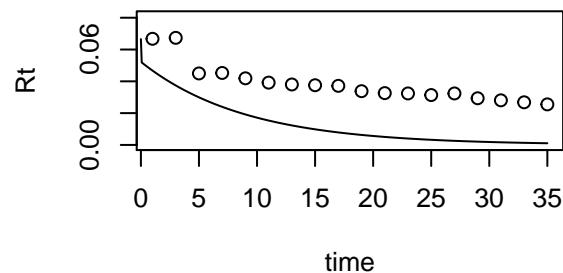
two pool_parallel structure



two pool_Series structure



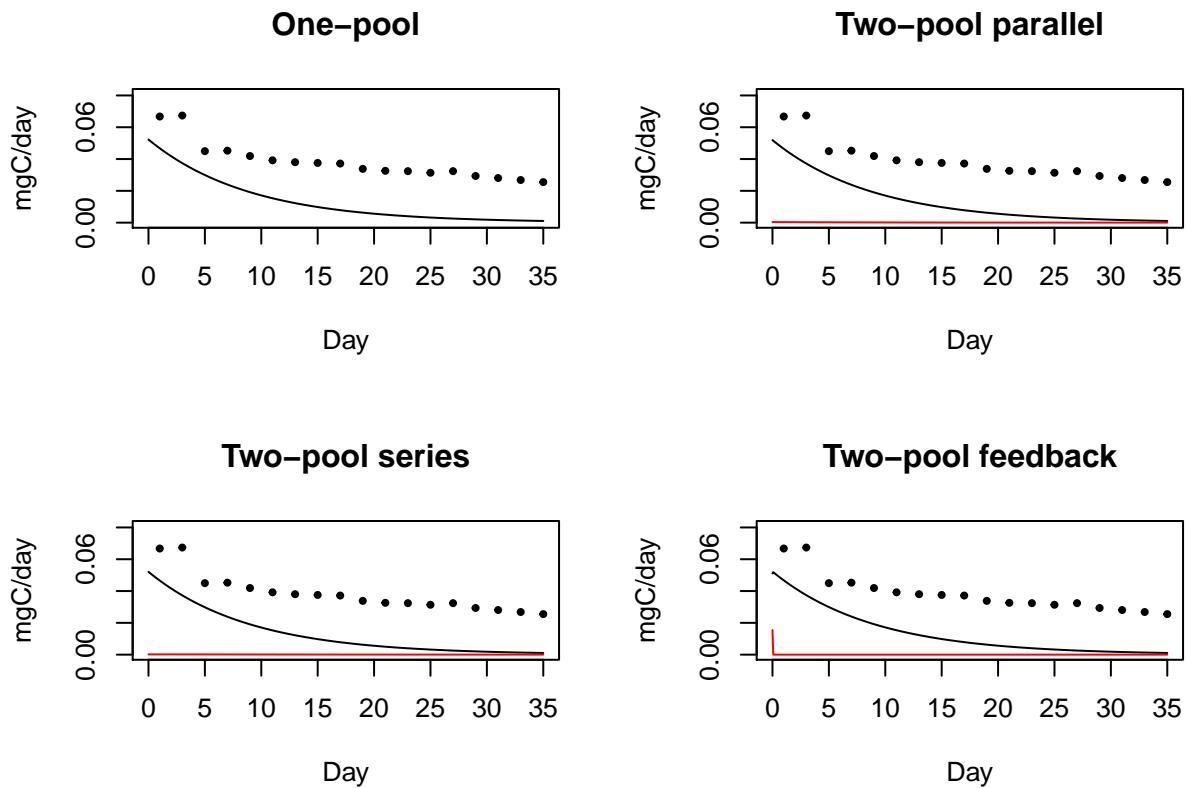
two pool_feedback structure



```

## [1] "AIC = -4.61985565194716"

```



```
##
##
## Model          k1        k2    COInp1      a21      a12    SSR     MSR
## -----          ----      ----  -----      ----      ----  ----  -----
## One-pool       0.1115
## Two-pool parallel 0.1115  1.117e-01  0.9930
## Two-pool series   0.1116  1.456e-01  0.9975  0.0027
## Two-pool feedback  0.1114  1.355e+04  0.9777  0.0000  0.9975  0.012  7e-04
##
##
## Model          AIC       BIC      AICn      AICc      wi  MeanTrT    q05
## -----          ----      ----  -----      ----  ----  -----
## One-pool       -12.62   -11.729  -129.6  -12.3699  0.9283  0.469
## Two-pool parallel -8.62    -5.949  -125.6  -6.9056  0.0604  8.971  6.218
## Two-pool series    -6.62   -3.058  -123.6  -3.5430  0.0112  8.976  6.224
## Two-pool feedback  -4.62   -0.168  -121.6  0.3801  0.0016  8.975  6.221
```

Variable TMO_35_60_1;

Respiration rates

```
Sierra_V15=modelFitTS(db = db[[24]], ts.col = 15, ic.col = 1, unitConverter = 0.01,
                      inipars=list(oneP=0.01,
                                   parallel=c(0.5, 0.005, 0.5),
                                   series=c(0.05, 0.005, 0.05, 0.5),
                                   feedback=c(0.05, 0.005, 0.05, 0.05, 0.5)))
```

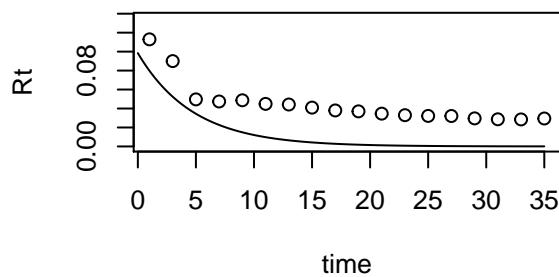
```
## Error in modelFitTS(db = db[[24]], ts.col = 15, ic.col = 1, unitConverter = 0.01, : could not find f
```

Variable TMO_35_90_20;

Respiration rates

```
Sierra_V16=modelFitTS_Markdown(db = db[[24]], ts.col = 16, ic.col = 1, unitConverter = 0.01,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.5, 0.005, 0.5),
                                             series=c(0.05, 0.005, 0.05, 0.5),
                                             feedback=c(0.05, 0.005, 0.005, 0.05, 0.5)))

## [1] "Sierra2017BG; variable: TMO_35_90_20"
## [1] "One pool model"
## [1] "Best fit parameter: 0.209861804787913"
## [1] "AIC = -11.7625305692785"
## [1] "Two pool model-parallel structure"
## DLSODA- Warning..Internal T (=R1) and H (=R2) are
##           such that in the machine, T + H = T on the next step
##           (H = step size). Solver will continue anyway.
## In above message, R1 = 0, R2 = 0
##
## DINTDY- T (=R1) illegal
## In above message, R1 = 0.0701403
##
##           T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DINTDY- T (=R1) illegal
## In above message, R1 = 0.140281
##
##           T not in interval TCUR - HU (= R1) to TCUR (=R2)
## In above message, R1 = 0, R2 = 0
##
## DLSODA- Trouble in DINTDY. ITASK = I1, TOUT = R1
## In above message, I1 = 1
##
## In above message, R1 = 0.140281
##
## Error in lsoda(startValues, t, lsexamp): illegal input detected before taking any integration steps .
```



Variable TMO_35_90_1;

Respiration rates

```
Sierra_V17=modelFitTS_Markdown(db = db[[24]], ts.col = 17, ic.col = 1, unitConverter = 0.01,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.5, 0.005, 0.5),
```

```

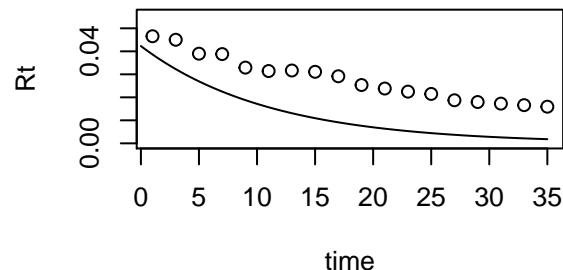
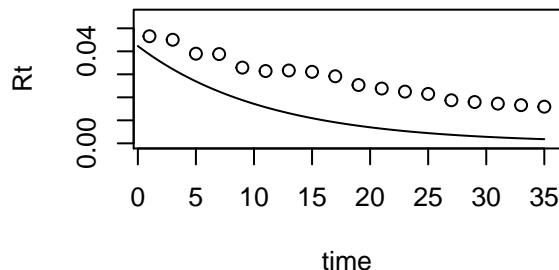
series=c(0.05, 0.005, 0.05, 0.5),
feedback=c(0.05, 0.005, 0.005, 0.05, 0.5)))

## [1] "Sierra2017BG; variable: TMO_35_90_1"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0901659306465952"

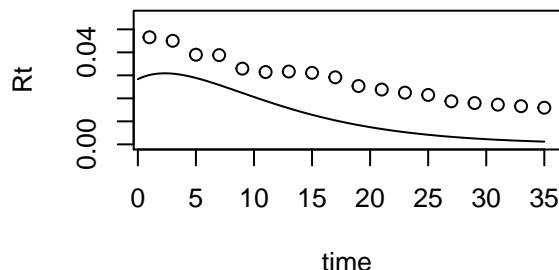
## [1] "AIC = -14.5835699416659"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0901655993445609"
## [2] "k2= 0.0902041838596388"
## [3] "proportion of C0 in pool 1= 0.997160576514246"
## [1] "AIC = -10.5835699416962"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.154796564049314"
## [2] "k2= 0.154819730813484"
## [3] "a21= 0.630087488929504"
## [4] "Proportion of C0 in pool 1= 0.96764356857254"
## [1] "AIC = -8.68647598027081"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0901478947376146"
## [2] "k2= 14480.6589016955"
## [3] "a21= 5.13098665833045e-07"
## [4] "a12= 0.99999738981686"
## [5] "Proportion of C0 in pool 1= 0.99626929791891"

```

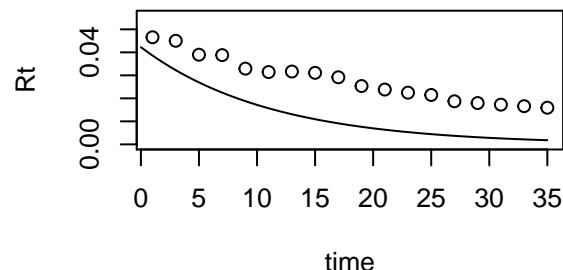
two pool_parallel structure



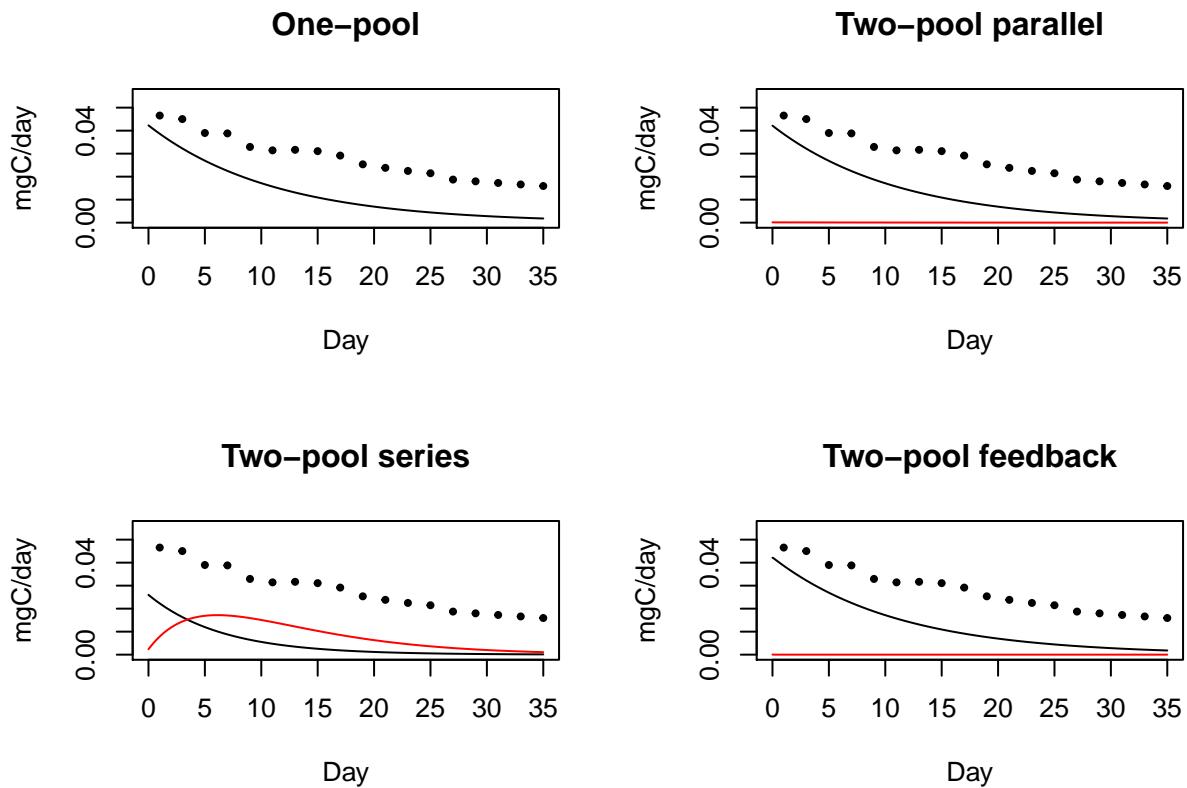
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -6.58357986610532"
```



```
##
##
## Model           k1          k2    COInp1      a21      a12    SSR     MSR
## -----          -----      -----  -----      -----  -----  -----  -----
## One-pool        0.0902
## Two-pool parallel 0.0902  9.020e-02  0.9972
## Two-pool series   0.1548  1.548e-01  0.9676  0.6301
## Two-pool feedback  0.0901  1.448e+04  0.9963  0.0000  0.9676  0.0045  3e-04
##
##
## Model           AIC         BIC       AICn      AICc      wi  MeanTrT    q05
## -----          -----      -----  -----      -----  -----  -----  -----
## One-pool        -14.584   -13.693   -147.3   -14.334   0.9278  0.469
## Two-pool parallel -10.584   -7.912   -143.3   -8.869   0.0604  11.091  7.688
## Two-pool series   -8.687   -5.125   -142.2   -5.610   0.0118  10.530  8.314
## Two-pool feedback  -6.584   -2.132   -139.3   -1.584   0.0016  11.093  7.689
```

Dataset Winkler1996

Variable CO2_22_A;

Mean rate of CO₂ evolution for A-horizon soils at 22 degrees during the incubation.

```
Winkler_V5=modelFitTS_Markdown(db = db[[30]], ts.col = 5, ic.col = 1, unitConverter = 1,
                                inipars=list(oneP=0.1,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.5),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.5)))
```

```

## [1] "Winkler1996; variable: CO2_22_A"
## [1] "One pool model"
## [1] "Best fit parameter: 0.000369560889375009"

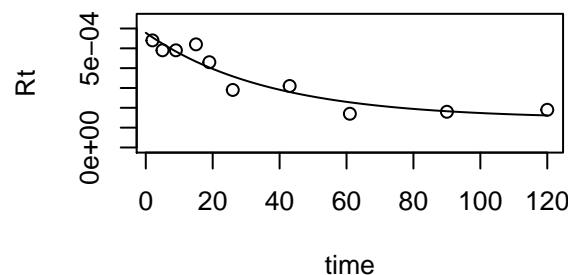
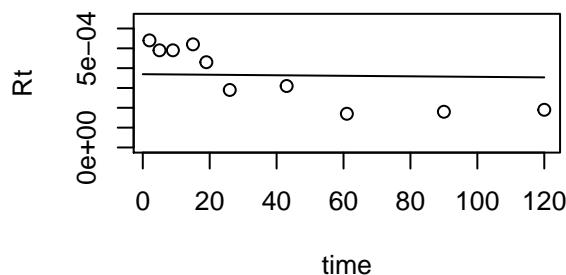
## [1] "AIC = -33.5645210852189"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0273761154836114"
## [2] "k2= 0.000150453249936418"
## [3] "proportion of CO in pool 1= 0.0157170790219642"

## [1] "AIC = -34.1200768989542"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0273764226608711"
## [2] "k2= 0.00015045468105189"
## [3] "a21= 0.963840600553574"
## [4] "Proportion of CO in pool 1= 0.509739787030696"

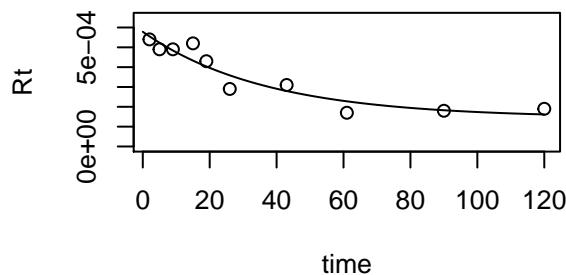
## [1] "AIC = -32.1200768981167"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0273759436254808"
## [2] "k2= 0.000150452449384554"
## [3] "a21= 4.41079151203283e-07"
## [4] "a12= 1.60808154237024e-07"
## [5] "Proportion of CO in pool 1= 0.0157171982132354"

```

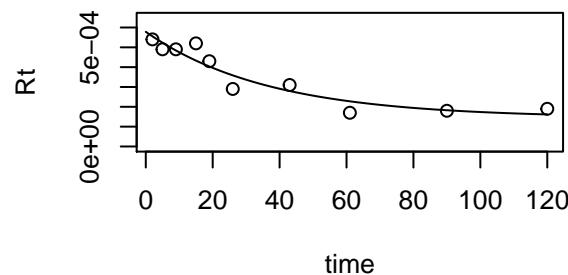
two pool_parallel structure



two pool_Series structure



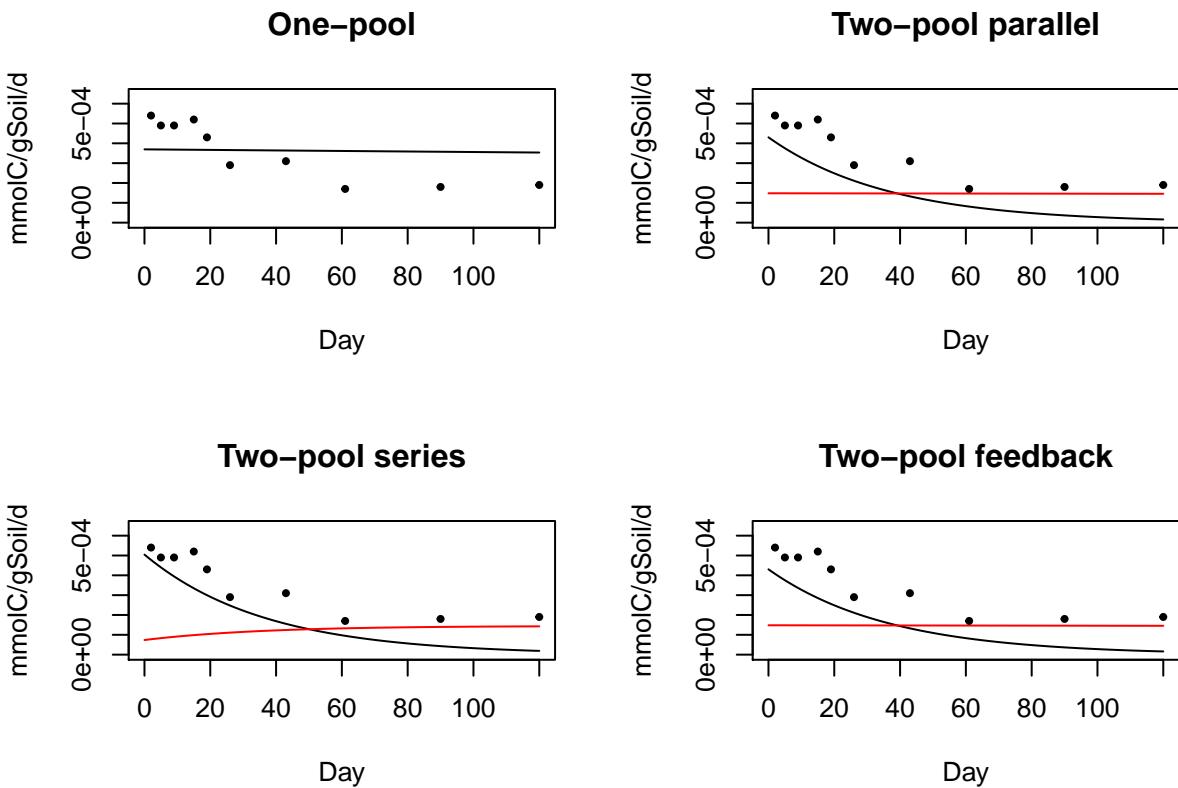
two pool_feedback structure



```

## [1] "AIC = -30.1200768988878"

```



```

## 
## 
## Model           k1      k2    COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0004
## Two-pool parallel 0.0274  2e-04  0.0157
## Two-pool series  0.0274  2e-04  0.5097  0.9638
## Two-pool feedback 0.0274  2e-04  0.0157  0.0000  0.5097  0  0
## 
## 
## Model           AIC      BIC     AICn     AICc      wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -33.56  -32.86  -264.7  -33.26  0.6274    1.00
## Two-pool parallel -34.12  -32.00  -294.9  -31.94  0.3245  1729.02  40.50
## Two-pool series   -32.12  -29.29  -292.9  -28.12  0.0481  6442.71  4398.86
## Two-pool feedback  -30.12  -26.58  -290.9  -23.45  0.0047   36.53   25.32

```

Variable CO2_22_B;

Mean rate of CO₂ evolution for B-horizon soils at 22 degrees during the incubation.

```

Winkler_V6=modelFitTS_Markdown(db = db[[30]], ts.col = 6, ic.col = 3, unitConverter = 1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.5, 0.05, 0.5),
                                             series=c(0.05, 0.0005, 0.01, 0.5),
                                             feedback=c(0.01, 0.001, 0.1, 0.01, 0.5)))

```

```

## [1] "Winkler1996; variable: CO2_22_B"
## [1] "One pool model"
## [1] "Best fit parameter: 0.00235899067358147"

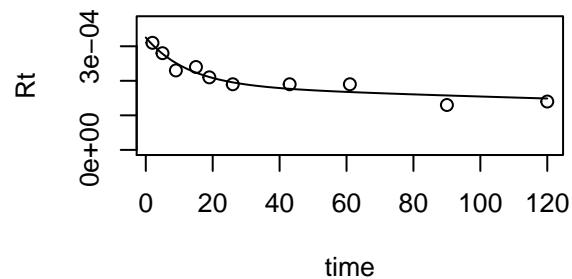
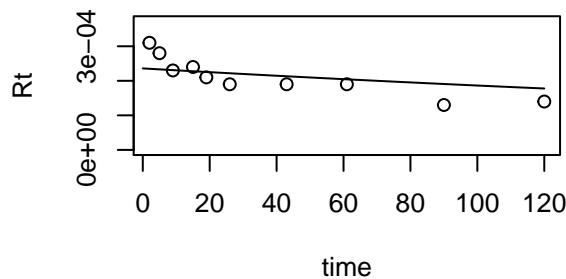
```

```

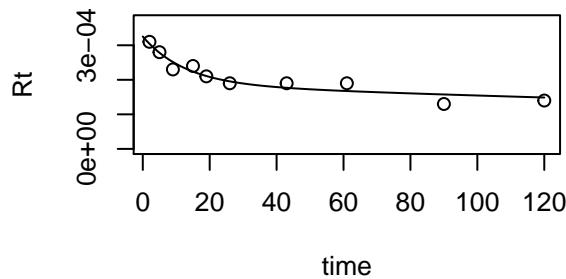
## [1] "AIC = -38.6195896332671"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0792426642628606"
## [2] "k2= 0.00190194786914736"
## [3] "proportion of C0 in pool 1= 0.0174819544506131"
## [1] "AIC = -38.3757283620397"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0792357758051094"
## [2] "k2= 0.00190192767782511"
## [3] "a21= 0.86686614867059"
## [4] "Proportion of C0 in pool 1= 0.156360164965116"
## [1] "AIC = -36.375728963786"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0792348146193545"
## [2] "k2= 0.00190340246383332"
## [3] "a21= 0.000756160723017207"
## [4] "a12= 0.999999499699191"
## [5] "Proportion of C0 in pool 1= 0.0410985871753264"

```

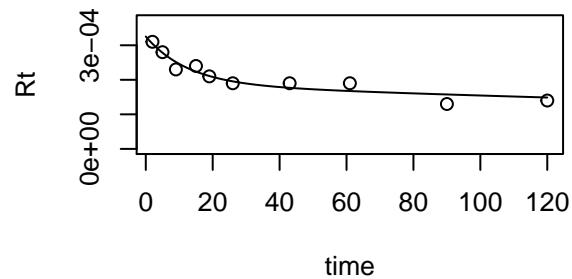
two pool_parallel structure



two pool_Series structure



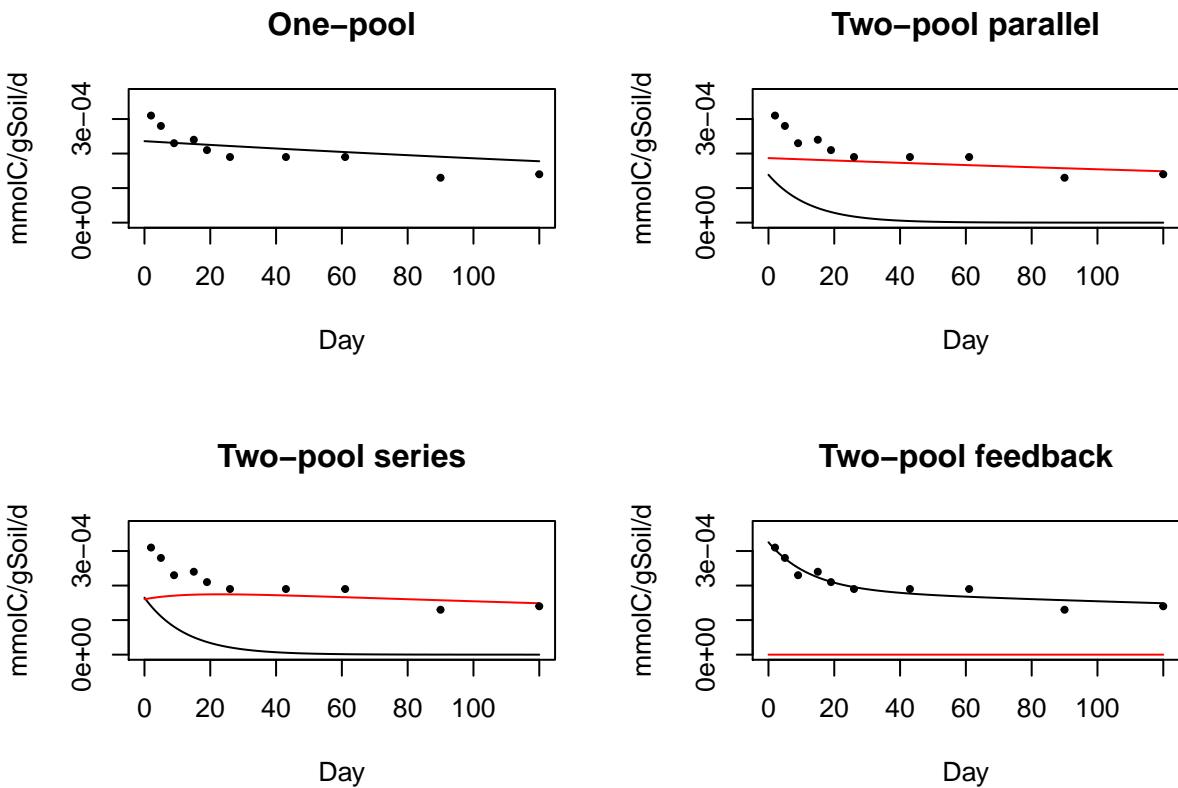
two pool_feedback structure



```

## [1] "AIC = -34.3757283663587"

```



```
##
##
## Model           k1      k2   COInp1    a21    a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0024
## Two-pool parallel 0.0792  0.0019  0.0175
## Two-pool series  0.0792  0.0019  0.1564  0.8669
## Two-pool feedback 0.0792  0.0019  0.0411  0.0008  0.1564
##
##
## Model           AIC     BIC   AICn    AICc    wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        -38.62 -37.91 -302.6 -38.31  0.7152    0.10
## Two-pool parallel -38.38 -36.25 -326.8 -36.19  0.2480 307.31 74.084
## Two-pool series  -36.38 -33.54 -324.8 -32.38  0.0368 468.40 302.100
## Two-pool feedback -34.38 -30.84 -322.8 -27.71  0.0036 13.03  8.758
```

Variable CO2_22_E;

Mean rate of CO₂ evolution for E-horizon soils at 22 degrees during the incubation.

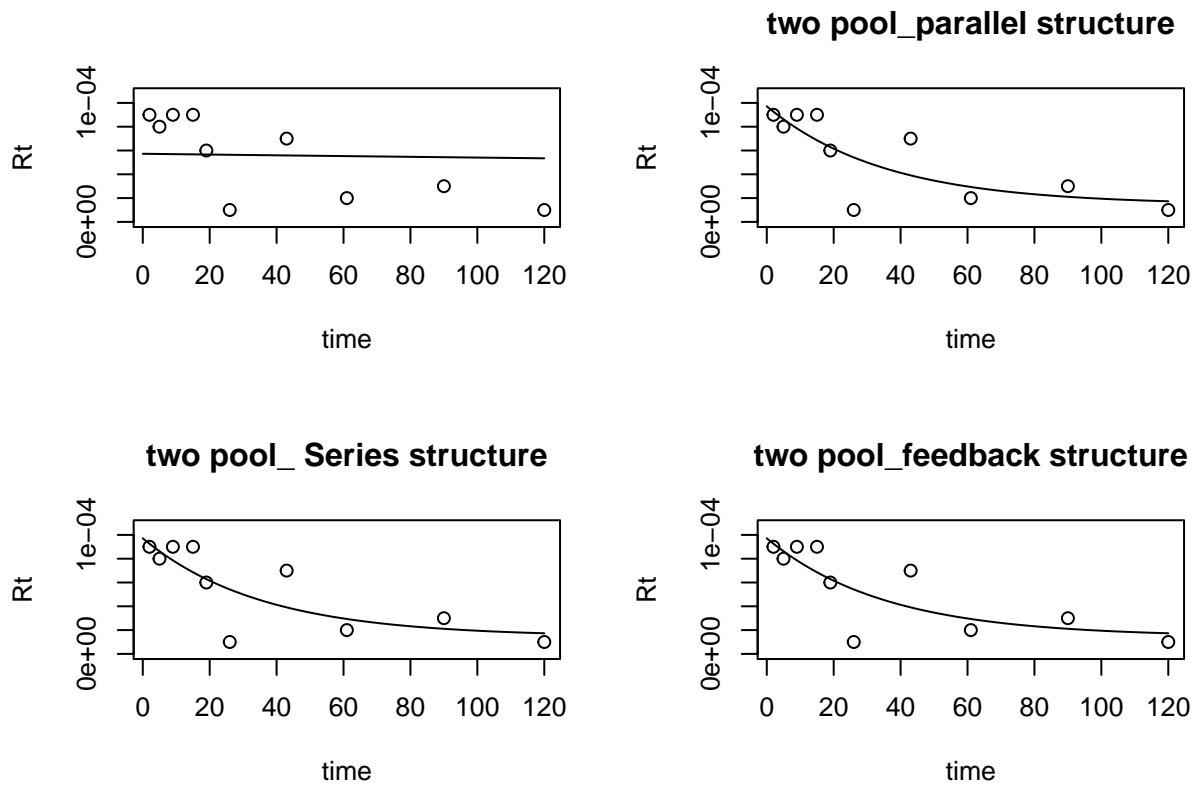
```
Winkler_V7=modelFitTS_Markdown(db = db[[30]], ts.col = 7, ic.col = 2, unitConverter = 1,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

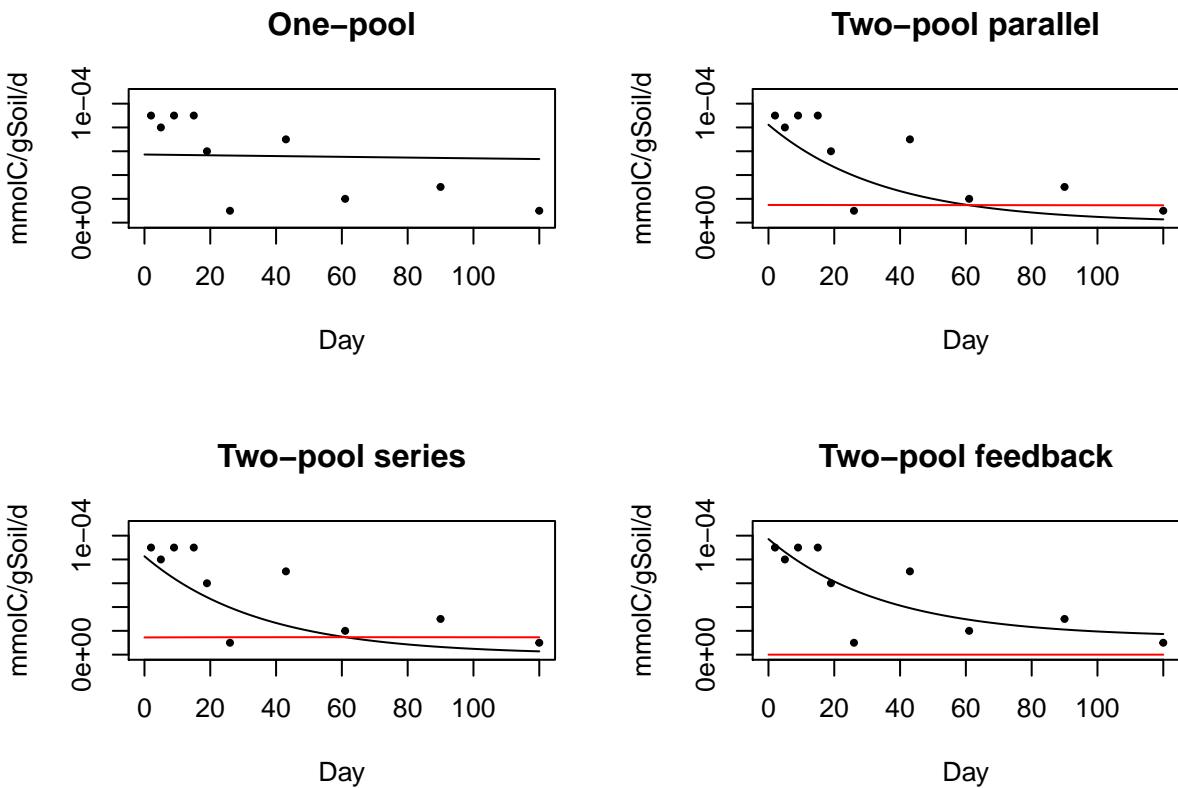
## [1] "Winkler1996; variable: CO2_22_E"
## [1] "One pool model"
## [1] "Best fit parameter: -0.000572501140927884"
```

```

## [1] "AIC = -39.468578258378"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0283222070656399"
## [2] "k2= 0.000153035393155407"
## [3] "proportion of C0 in pool 1= 0.0290525410214272"
## [1] "AIC = -37.397829892106"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0283214444781189"
## [2] "k2= 0.000153028939176087"
## [3] "a21= 0.463908003783965"
## [4] "Proportion of C0 in pool 1= 0.0544506711988189"
## [1] "AIC = -35.3978298921902"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0281851849625416"
## [2] "k2= 0.000289589122443097"
## [3] "a21= 0.469057072345573"
## [4] "a12= 0.999880095390798"
## [5] "Proportion of C0 in pool 1= 0.064911632718845"

```





```

## 
## 
## Model           k1      k2    COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0006
## Two-pool parallel 0.0283  2e-04  0.0291
## Two-pool series  0.0283  2e-04  0.0545  0.4639
## Two-pool feedback 0.0282  3e-04  0.0649  0.4691  0.0545  0  0
## 
## 
## Model           AIC      BIC     AICn     AICc     wi  MeanTrT   q05
## -----          ----  -----  -----  -----  -----
## One-pool        -39.47  -38.76  -309.0  -39.16  0.8623  0.1
## Two-pool parallel -37.40  -35.27  -319.5  -35.22  0.1200  1029.4  31.43
## Two-pool series  -35.40  -32.57  -317.5  -31.40  0.0178  3066.8  91.43
## Two-pool feedback -33.40  -29.86  -315.5  -26.73  0.0017  3117.2  97.89

```

Variable CO2_15_A;

Mean rate of CO₂ evolution for A-horizon soils at 15 degrees during the incubation.

```

Winkler_V8=modelFitTS_Markdown(db = db[[30]], ts.col = 8, ic.col = 1, unitConverter = 0.1,
                                inipars=list(oneP=0.05,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

```

```

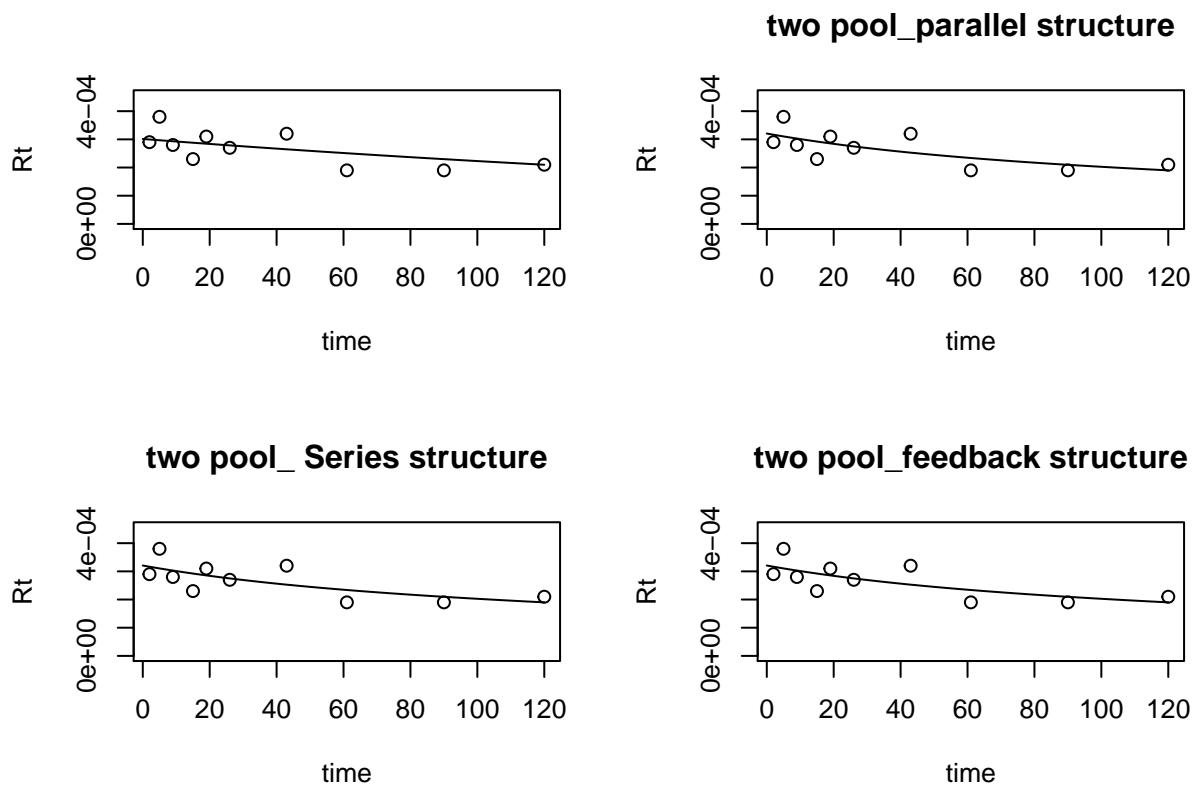
## [1] "Winkler1996; variable: CO2_15_A"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00301340673082251"

```

```

## [1] "AIC = -38.1008536668322"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0216122059662621"
## [2] "k2= 0.00261140597329116"
## [3] "proportion of C0 in pool 1= 0.0313372959655876"
## [1] "AIC = -34.2968280371486"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0216219353076615"
## [2] "k2= 0.00261153945095664"
## [3] "a21= 0.000274222475125596"
## [4] "Proportion of C0 in pool 1= 0.031325554841114"
## [1] "AIC = -32.296828035751"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0216156058895733"
## [2] "k2= 0.0026115141831617"
## [3] "a21= 0.223060856529292"
## [4] "a12= 9.16022077231959e-05"
## [5] "Proportion of C0 in pool 1= 0.0419928409261071"

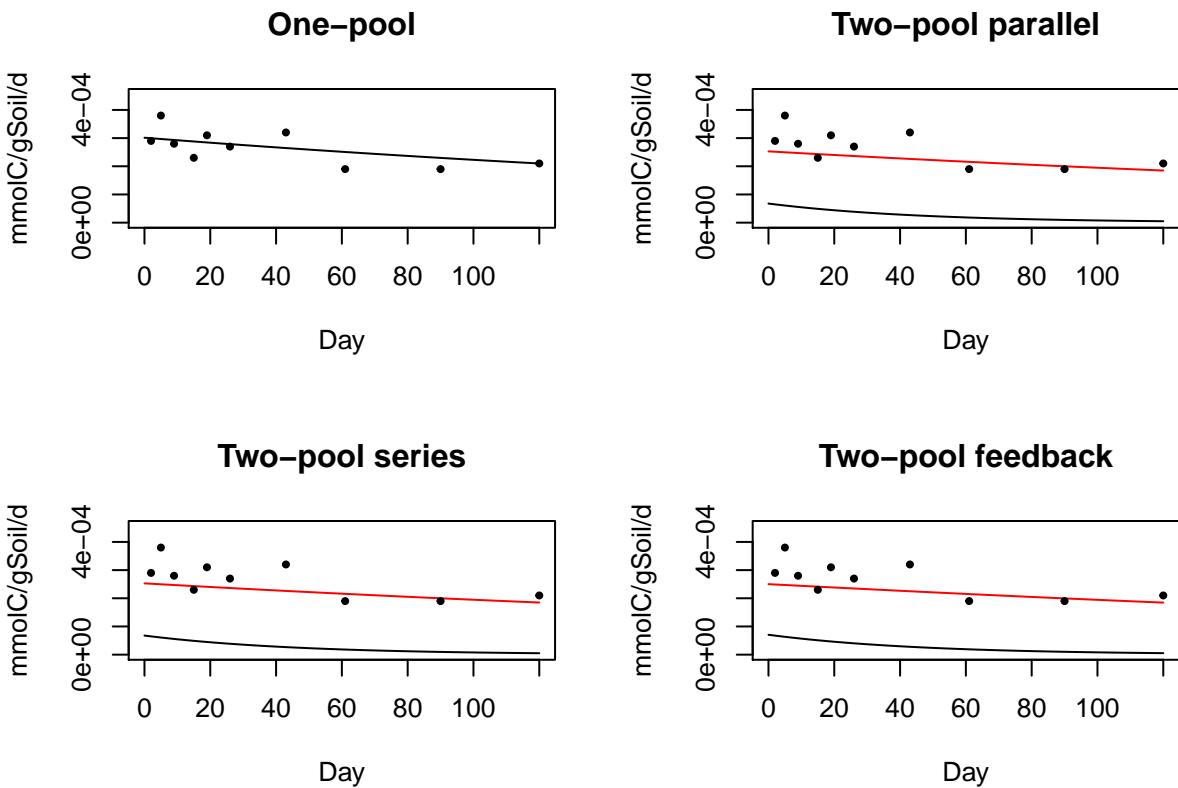
```



```

## [1] "AIC = -30.2968280379506"

```



```
##
##
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       -0.0030
## Two-pool parallel  0.0216  0.0026  0.0313
## Two-pool series   0.0216  0.0026  0.0313  0.0003
## Two-pool feedback  0.0216  0.0026  0.0420  0.2231  0.0313  0  0
##
##
## Model          AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----
## One-pool        -38.1   -37.39  -298.8  -37.79  0.9371   0.10
## Two-pool parallel -34.3   -32.17  -296.2  -32.12  0.0548  311.83  178.05
## Two-pool series   -32.3   -29.46  -294.2  -28.30  0.0081  46.35   32.07
## Two-pool feedback  -30.3   -26.76  -292.2  -23.63  0.0008  131.68  46.17
```

Variable CO2_15_B;

Mean rate of CO₂ evolution for B-horizon soils at 15 degrees during the incubation.

```
Winkler_V9=modelFitTS_Markdown(db = db[[30]], ts.col = 9, ic.col = 3, unitConverter = 1,
                                inipars=list(oneP=0.05,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

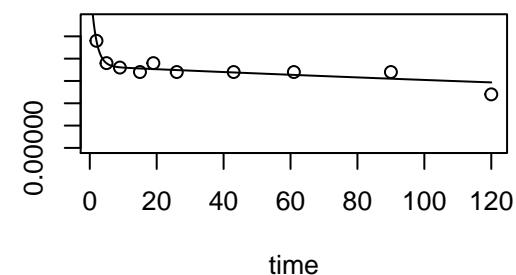
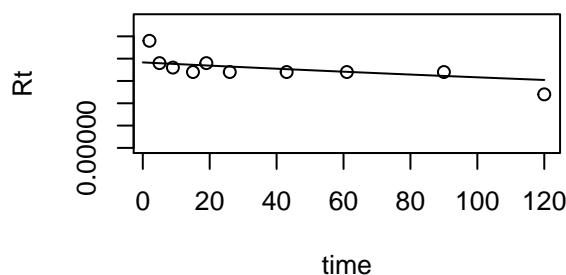
## [1] "Winkler1996; variable: CO2_15_B"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00191599071091986"
```

```

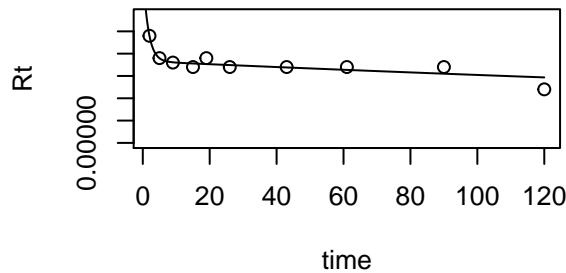
## [1] "AIC = -41.2387624237038"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.637332171316983"
## [2] "k2= 0.00183555978410273"
## [3] "proportion of C0 in pool 1= 0.00323506239392257"
## [1] "AIC = -39.6164582080787"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.637378938797546"
## [2] "k2= 0.0018355522857806"
## [3] "a21= 0.906489917168363"
## [4] "Proportion of C0 in pool 1= 0.0355785518781209"
## [1] "AIC = -37.6164500712906"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.637469648659605"
## [2] "k2= 0.00183557098375322"
## [3] "a21= 0.789115873075394"
## [4] "a12= 9.08031930069164e-06"
## [5] "Proportion of C0 in pool 1= 0.0155065320195011"

```

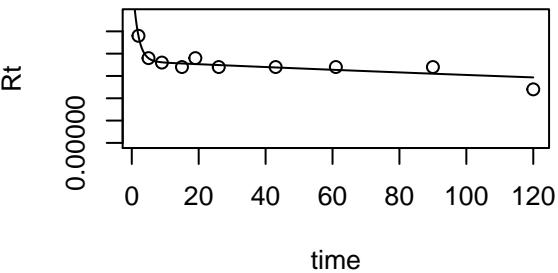
two pool_parallel structure



two pool_Series structure



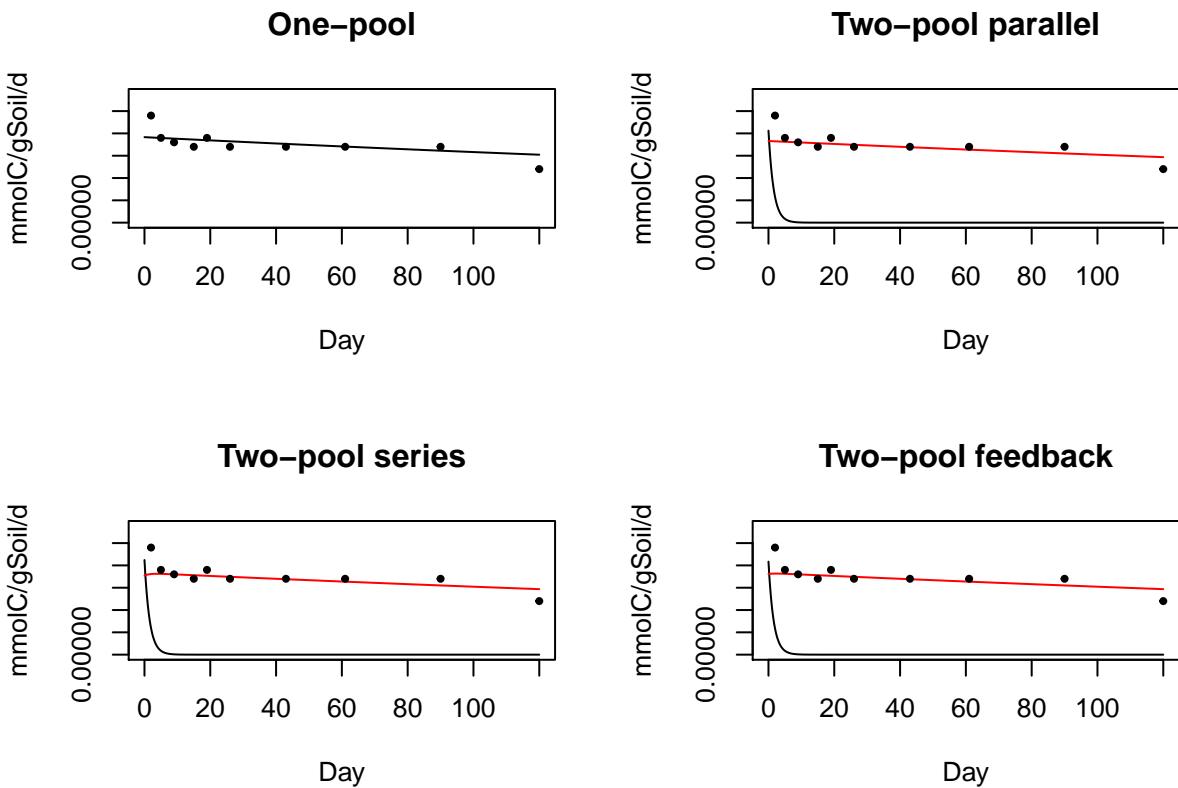
two pool_feedback structure



```

## [1] "AIC = -35.6164537542782"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        -0.0019
## Two-pool parallel 0.6373  0.0018  0.0032
## Two-pool series  0.6374  0.0018  0.0356  0.9065
## Two-pool feedback 0.6375  0.0018  0.0155  0.7891  0.0356  0   0
##
##
## Model          AIC      BIC     AICn     AICc      wi    MeanTrT    q05
## -----
## One-pool       -41.24  -40.53  -322.3  -40.93  0.8334      0.1
## Two-pool parallel -39.62 -37.49  -336.1  -37.43  0.1451  257.0    4.33
## Two-pool series   -37.62 -34.78  -334.1  -33.62  0.0215  495.4   325.71
## Two-pool feedback  -35.62 -32.08  -332.1  -28.95  0.0021  431.5   250.16
```

Variable CO2_15_E;

Mean rate of CO₂ evolution for E-horizon soils at 15 degrees during the incubation.

```
Winkler_V10=modelFitTS_Markdown(db = db[[30]], ts.col = 10, ic.col = 2, unitConverter = 1,
                                inipars=list(oneP=0.05,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0005, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

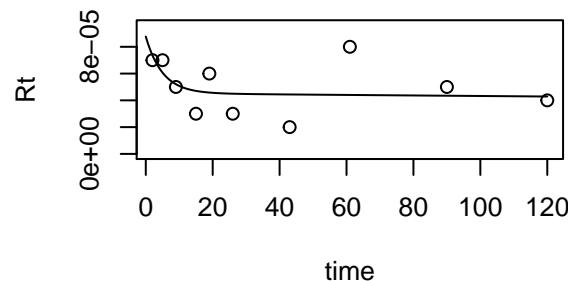
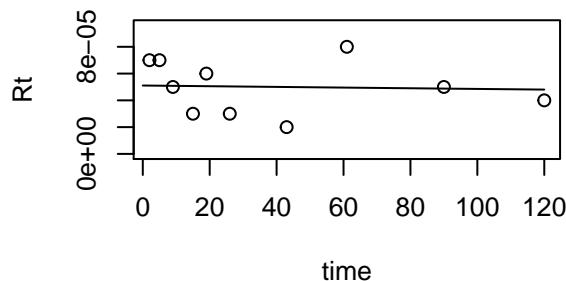
## [1] "Winkler1996; variable: CO2_15_E"
## [1] "One pool model"
## [1] "Best fit parameter: 0.000510797541679153"
```

```

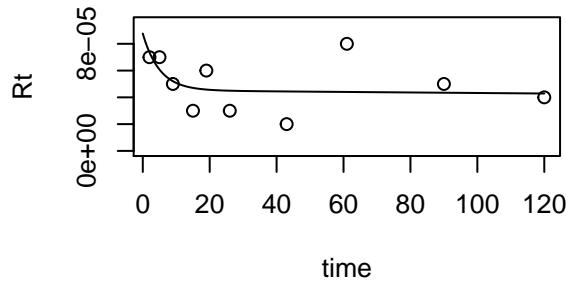
## [1] "AIC = -41.5175148382874"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.200175633341896"
## [2] "k2= 0.000453640256404535"
## [3] "proportion of C0 in pool 1= 0.00211767905981969"
## [1] "AIC = -38.021556685336"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.000453641477050314"
## [2] "k2= 0.200176602759477"
## [3] "a21= 0.999982963639014"
## [4] "Proportion of C0 in pool 1= 0.995620974046784"
## [1] "AIC = -36.0215566852585"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.195867587143965"
## [2] "k2= 0.00474005647896768"
## [3] "a21= 0.902321435228735"
## [4] "a12= 0.999868180028192"
## [5] "Proportion of C0 in pool 1= 0.045784858232886"

```

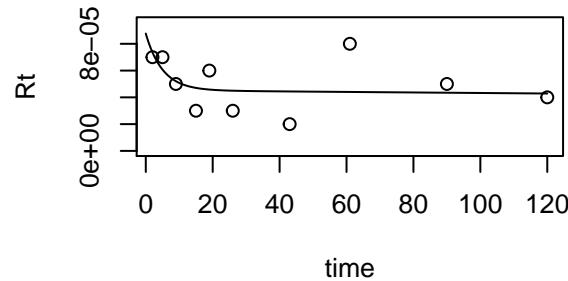
two pool_parallel structure



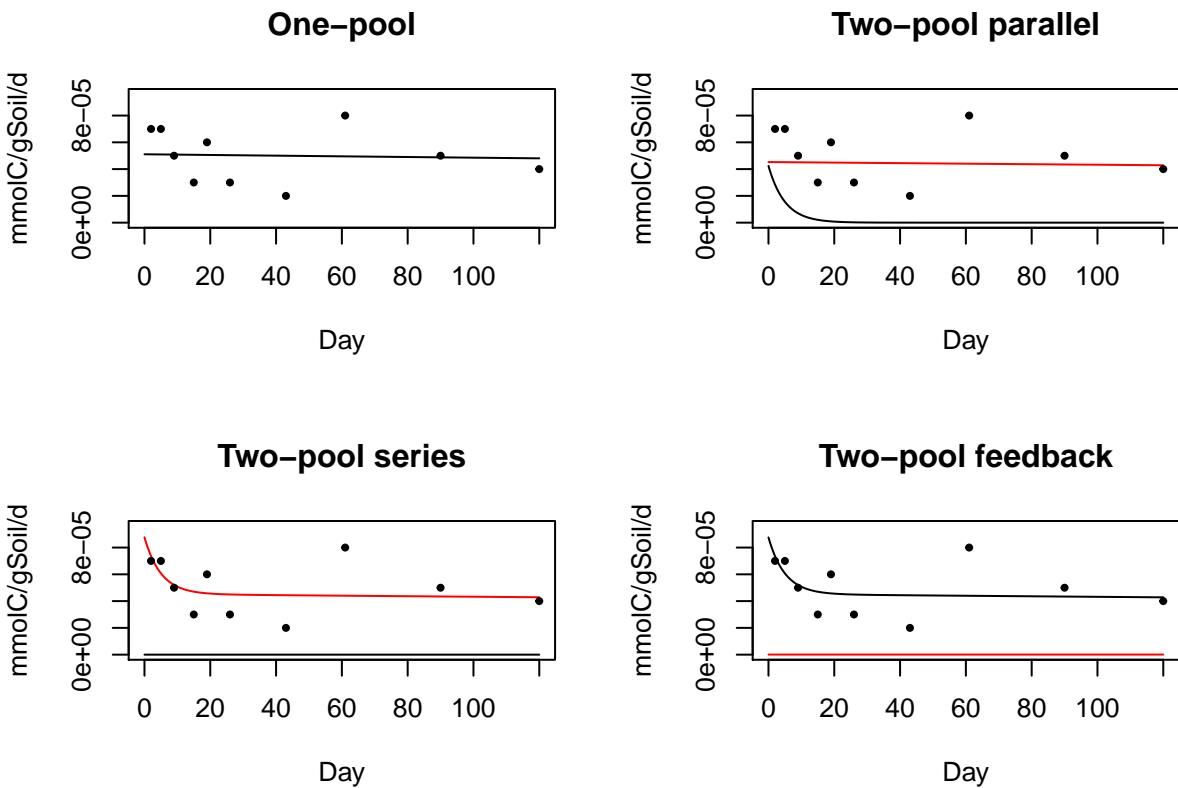
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -34.0215511494001"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12   SSR   MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0005
## Two-pool parallel 0.2002  0.0005  0.0021
## Two-pool series  0.0005  0.2002  0.9956  1.0000
## Two-pool feedback 0.1959  0.0047  0.0458  0.9023  0.9956
##
##
## Model           AIC      BIC     AICn     AICc      wi  MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -41.52  -40.81  -324.4  -41.21  0.9274    0.1
## Two-pool parallel -38.02  -35.90  -324.2  -35.84  0.0633  1140.8  71.19
## Two-pool series  -36.02  -33.19  -322.2  -32.02  0.0094  2209.4 1532.96
## Two-pool feedback -34.02  -30.48  -320.2  -27.35  0.0009  1998.7 1311.50
```

Variable CO2_4_B;

Mean rate of CO₂ evolution for B-horizon soils at 4 degrees during the incubation.

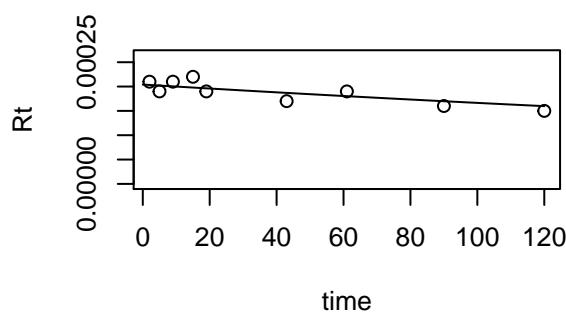
```
Winkler_V12=modelFitTS_Markdown(db = db[[30]], ts.col = 12, ic.col = 3, unitConverter = 1,
                                inipars=list(oneP=0.05,
                                             parallel=c(0.01, 0.001, 0.1),
                                             series=c(0.01, 0.0001, 0.01, 0.1),
                                             feedback=c(0.01, 0.0001, 0.01, 0.01, 0.1)))

## [1] "Winkler1996; variable: CO2_4_B"
## [1] "One pool model"
## [1] "Best fit parameter: -0.00204096604061199"
```

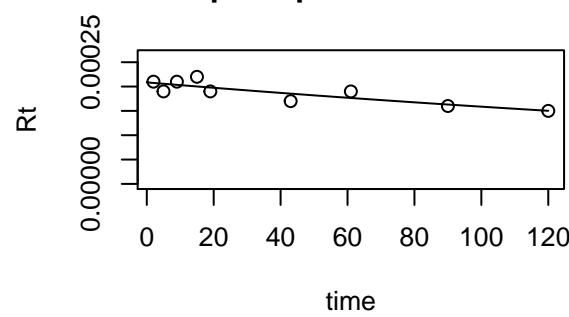
```

## [1] "AIC = -43.1902566227718"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.00273516683300598"
## [2] "k2= 4.58209243700562e-09"
## [3] "proportion of C0 in pool 1= 0.762519097234029"
## [1] "AIC = -39.5059418045806"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.00273619395682277"
## [2] "k2= 2.82869217560914e-06"
## [3] "a21= 0.0005877101774307"
## [4] "Proportion of C0 in pool 1= 0.762435600173826"
## [1] "AIC = -37.5059391205743"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.00273516923945223"
## [2] "k2= 0"
## [3] "a21= 6.97627713208693e-07"
## [4] "a12= 0.999999974446043"
## [5] "Proportion of C0 in pool 1= 0.762518781792948"

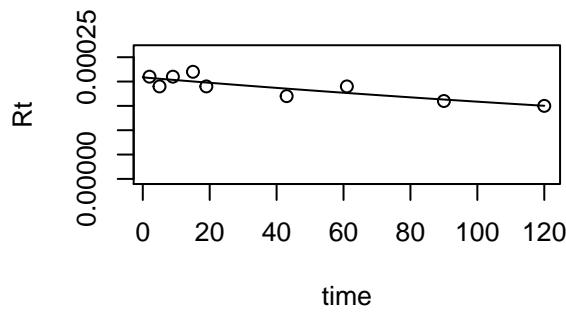
```



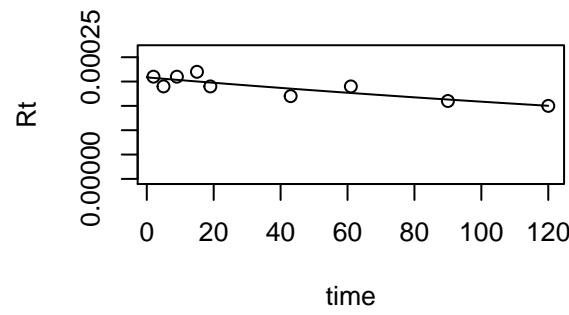
two pool_parallel structure



two pool_Series structure



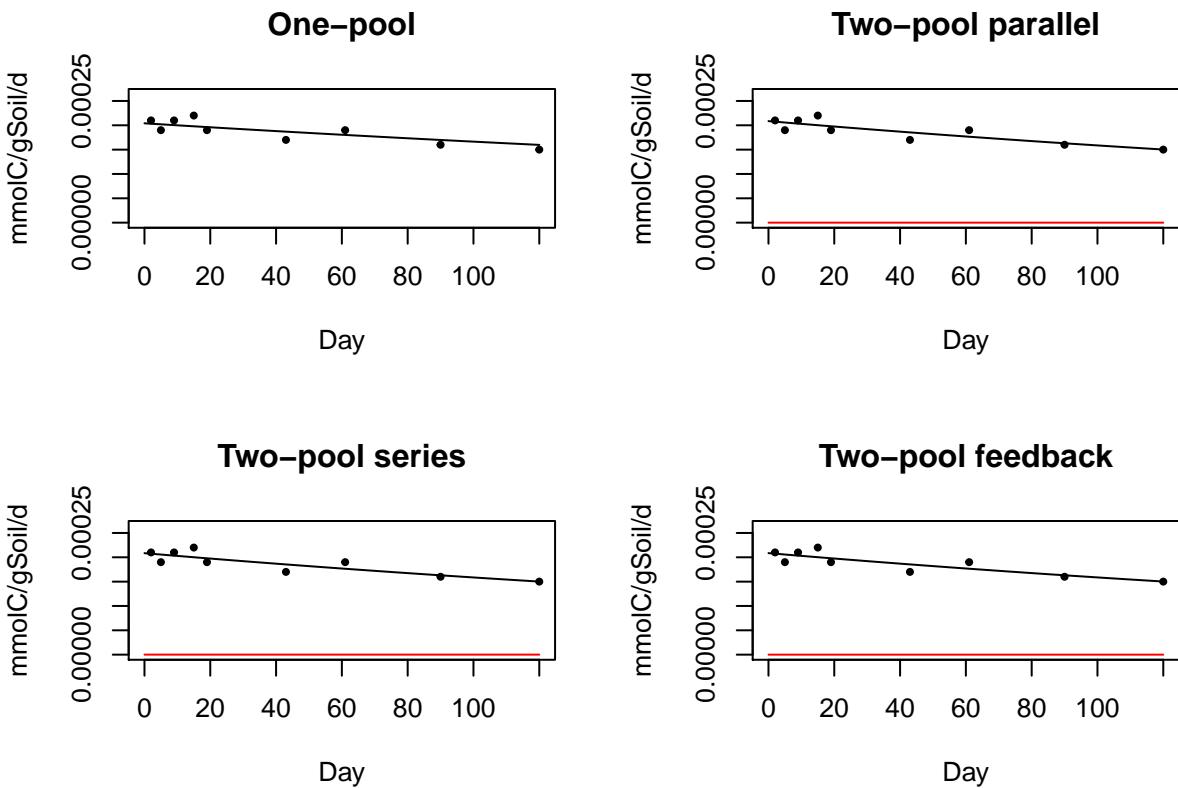
two pool_feedback structure



```

## [1] "AIC = -35.5059418093633"
## Error in solve.default(A): Lapack routine dgesv: system is exactly singular: U[2,2] = 0

```



Dataset Zhang2007

Variable CO2_u20_PP;

Dynamics of C mineralization as CO2 evolution during the incubation under 20 degrees for soil sample PP

```
Zhang_V2=modelFitTS_Markdown(db = db[[31]], ts.col = 2, ic.col = 1, unitConverter = 10,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.1, 0.01, 0.1),
                                             series=c(0.1, 0.01, 0.01, 0.1),
                                             feedback=c(0.1, 0.01, 0.01, 0.1))))
```

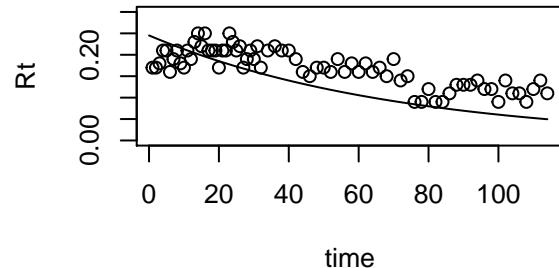
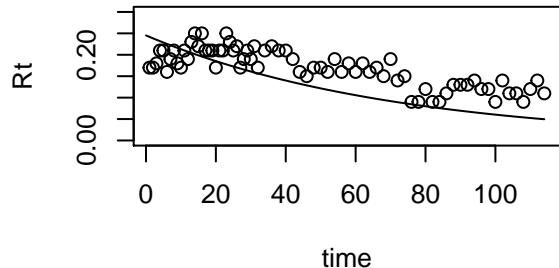
```
## [1] "Zhang2007; variable: CO2_u20_PP"
## [1] "One pool model"
## [1] "Best fit parameter: -0.0140272264861068"
## [1] "AIC = -9.93295163733557"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0140273120030108"
## [2] "k2= 0.014027306387606"
## [3] "proportion of C0 in pool 1= 0.0474046542208587"
## [1] "AIC = -5.93295163773028"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0303333179246488"
## [2] "k2= 0.030333318140341"
## [3] "a21= 0.999743443221028"
## [4] "Proportion of C0 in pool 1= 0.725631620168249"
## [1] "AIC = -5.38458123062772"
```

```

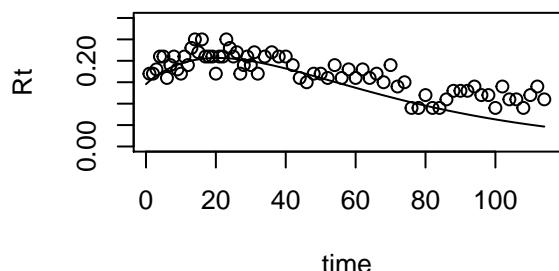
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0303354450771037"
## [2] "k2= 0.0303320857697031"
## [3] "a21= 1.04376875818546e-05"
## [4] "a12= 0.997506002781085"
## [5] "Proportion of C0 in pool 1= 0.272721140750275"

```

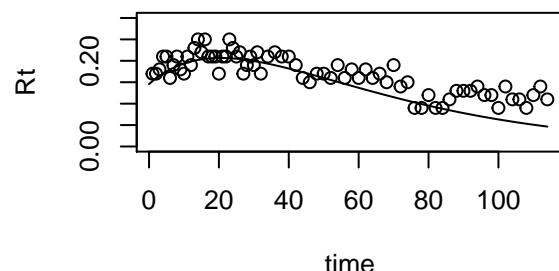
two pool_parallel structure



two pool_Series structure



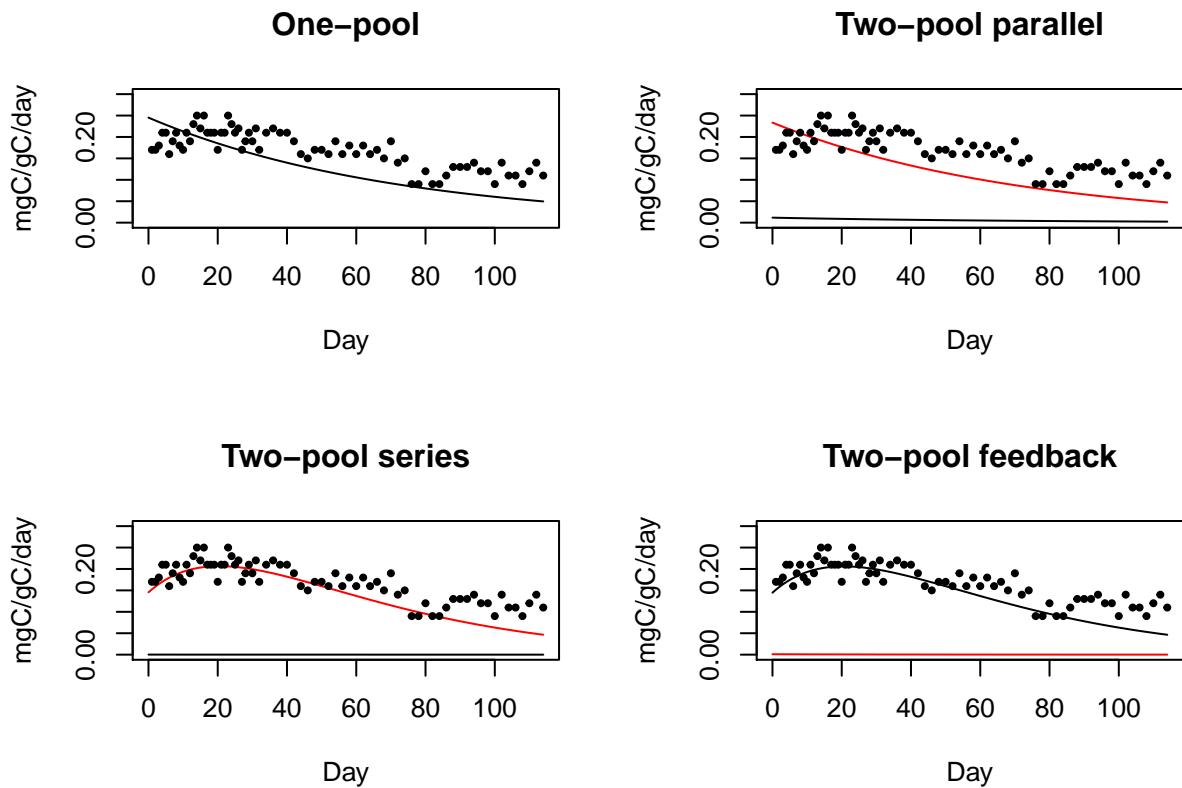
two pool_feedback structure



```

## [1] "AIC = -3.38457110575652"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool       -0.0140
## Two-pool parallel  0.0140  0.0140  0.0474
## Two-pool series   0.0303  0.0303  0.7256  0.9997
## Two-pool feedback  0.0303  0.0303  0.2727  0.0000  0.7256  0.0906  0.0012
##
##
## Model          AIC      BIC    AICn     AICc      wi  MeanTrT    q05
## -----
## One-pool        -9.933  -7.6425 -433.6  -9.877  0.8362   17.48
## Two-pool parallel -5.933  0.9384 -429.6  -5.585  0.0978   71.29  49.41
## Two-pool series   -5.385  3.7773 -480.5  -4.796  0.0659   65.93  55.32
## Two-pool feedback  -3.385  8.0677 -478.5  -2.489  0.0208   32.97  22.85
```

Variable CO2_u20_RP;

Dynamics of C mineralization as CO₂ evolution during the incubation under 20 degrees for soil sample RP

```
Zhang_V3=modelFitTS_Markdown(db = db[[31]], ts.col = 3, ic.col = 2, unitConverter = 10,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.1, 0.01, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.01, 0.01, 0.01, 0.1)))

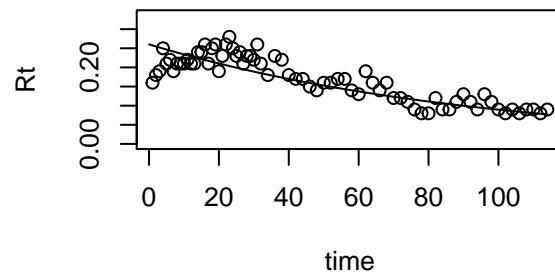
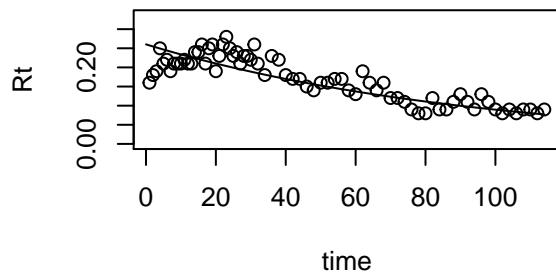
## [1] "Zhang2007; variable: CO2_u20_RP"
## [1] "One pool model"
## [1] "Best fit parameter: -0.0106716516375442"
```

```

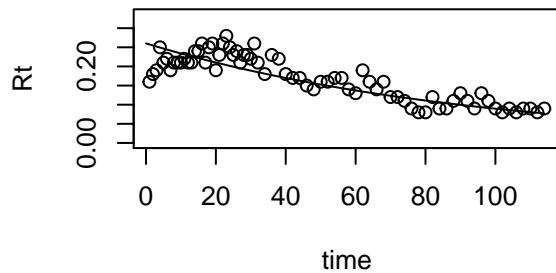
## [1] "AIC = -11.7396354537799"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0106716209821603"
## [2] "k2= 0.010671663425873"
## [3] "proportion of C0 in pool 1= 0.0128360481254196"
## [1] "AIC = -7.7396354538503"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0106791306945341"
## [2] "k2= 0.0106728225374116"
## [3] "a21= 0.00133737386553578"
## [4] "Proportion of C0 in pool 1= 0.144389401223363"
## [1] "AIC = -5.73963560351646"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.109247691460875"
## [2] "k2= 0.0141185034097038"
## [3] "a21= 0.120473274039591"
## [4] "a12= 0.857334899124581"
## [5] "Proportion of C0 in pool 1= 0.0459115911275149"

```

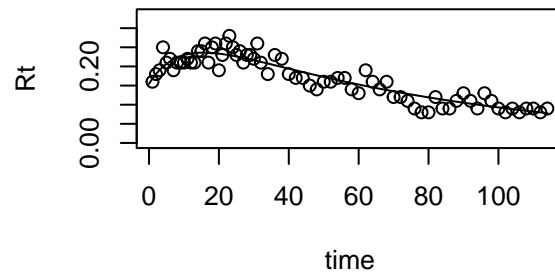
two pool_parallel structure



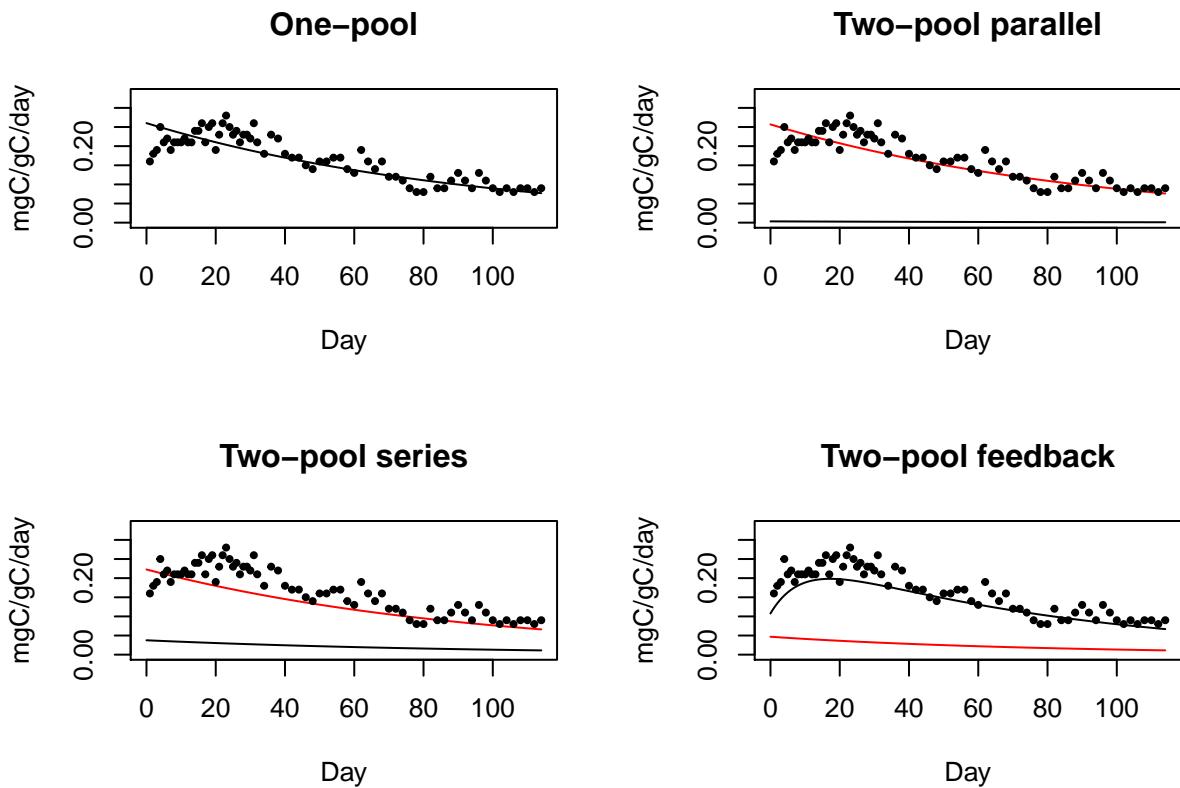
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -5.3645055518868"
```



```

## 
## 
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0107
## Two-pool parallel 0.0107  0.0107  0.0128
## Two-pool series  0.0107  0.0107  0.1444  0.0013
## Two-pool feedback 0.1092  0.0141  0.0459  0.1205  0.1444  0.0336  5e-04
## 
## 
## Model           AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -11.740 -9.4492 -499.5  -11.683  0.8657  24.39
## Two-pool parallel -7.740 -0.8683 -495.5  -7.392  0.1013  93.71  64.952
## Two-pool series  -5.740  3.4222 -493.5  -5.151  0.0330  93.77  64.994
## Two-pool feedback -5.364  6.0878 -550.8  -4.469  0.0235  19.72  7.661

```

Variable CO2_u20_EP;

Dynamics of C mineralization as CO₂ evolution during the incubation under 20 degrees for soil sample EP

```

Zhang_V4=modelFitTS_Markdown(db = db[[31]], ts.col = 4, ic.col = 3, unitConverter = 10,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.1, 0.01, 0.1),
                                             series=c(0.1, 0.001, 0.01, 0.1),
                                             feedback=c(0.1, 0.001, 0.01, 0.01, 0.1)))

```

```

## [1] "Zhang2007; variable: CO2_u20_EP"
## [1] "One pool model"
## [1] "Best fit parameter: -0.0109370136568661"

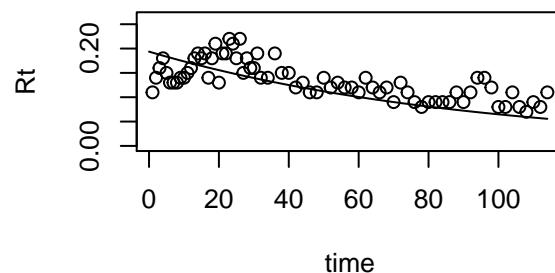
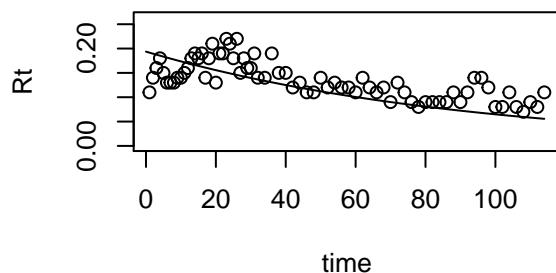
```

```

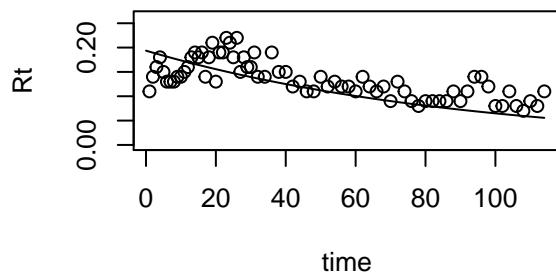
## [1] "AIC = -11.459166707735"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0109369724907247"
## [2] "k2= 0.0109369578486384"
## [3] "proportion of C0 in pool 1= 0.0430573872103394"
## [1] "AIC = -7.45916670788057"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0109417963753061"
## [2] "k2= 0.0109375406386679"
## [3] "a21= 0.00103537714443713"
## [4] "Proportion of C0 in pool 1= 0.0754582553972337"
## [1] "AIC = -5.45916675546942"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0109647772150373"
## [2] "k2= 0.0109399592646807"
## [3] "a21= 0.00268854466461804"
## [4] "a12= 0.00025642627792638"
## [5] "Proportion of C0 in pool 1= 0.0969500442207764"

```

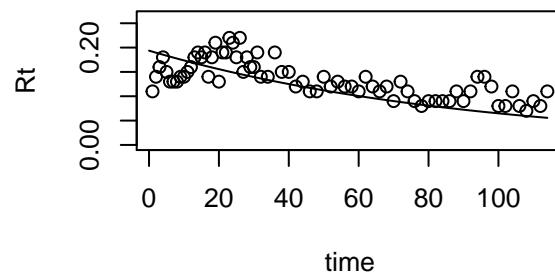
two pool_parallel structure



two pool_Series structure



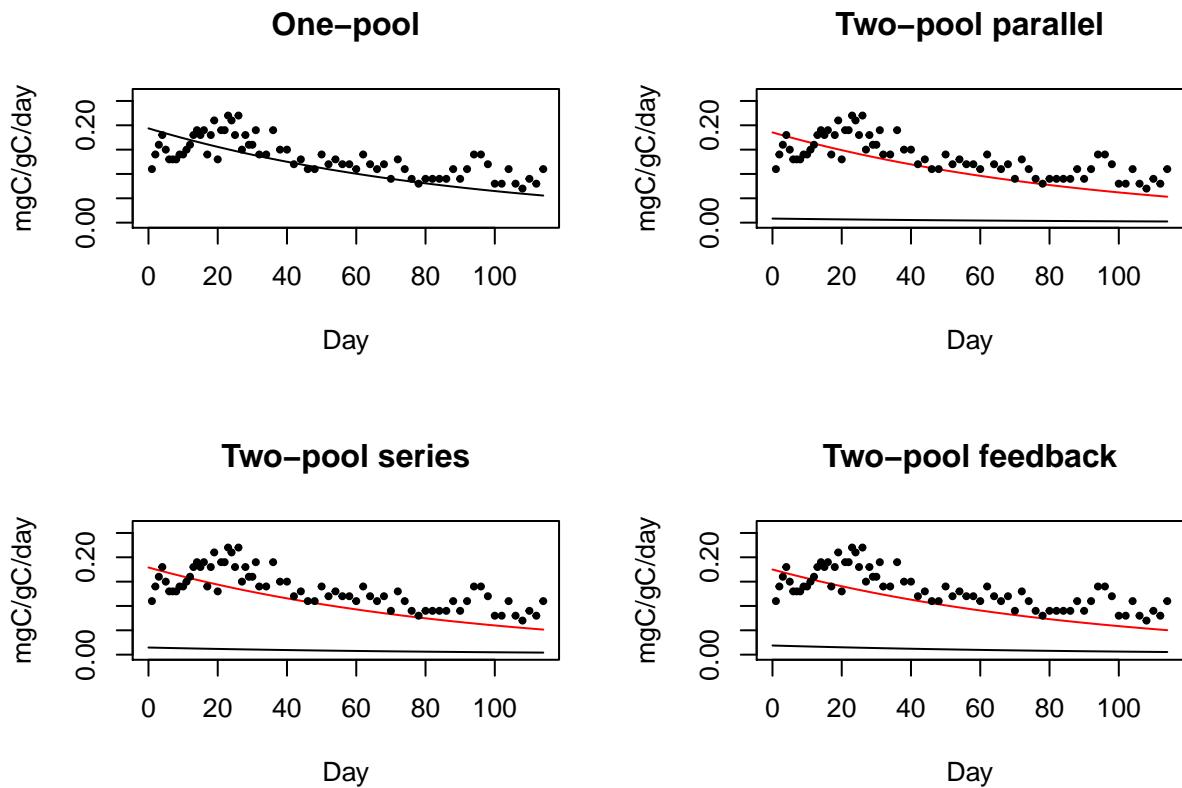
two pool_feedback structure



```

## [1] "AIC = -3.45916671353797"

```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -0.0109
## Two-pool parallel 0.0109  0.0109  0.0431
## Two-pool series  0.0109  0.0109  0.0755  0.0010  0.0755  0.0872  0.0012
## Two-pool feedback 0.0110  0.0109  0.0970  0.0027  0.0755  0.0872  0.0012
##
##
## Model           AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -11.459  -9.1687 -489.3  -11.403  0.8657  17.71
## Two-pool parallel -7.459  -0.5878 -485.3  -7.111  0.1013  91.43  63.38
## Two-pool series  -5.459  3.7027 -483.3  -4.871  0.0330  91.49  63.41
## Two-pool feedback -3.459  7.9931 -481.3  -2.564  0.0104  91.45  63.39
```

Variable CO2_u25_PP;

Dynamics of C mineralization as CO₂ evolution during the incubation under 25 degrees for soil sample PP

```
Zhang_V5=modelFitTS_Markdown(db = db[[31]], ts.col = 5, ic.col = 1, unitConverter = 10,
                                inipars=list(oneP=0.5,
                                             parallel=c(0.1, 0.01, 0.1),
                                             series=c(0.1, 0.01, 0.01, 0.1),
                                             feedback=c(0.1, 0.01, 0.01, 0.1, 0.1)))

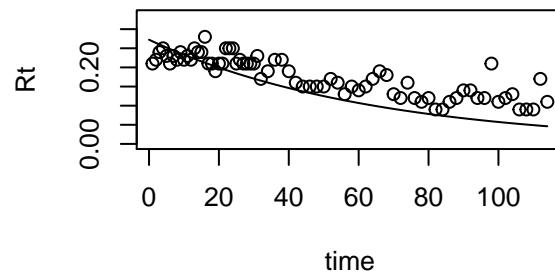
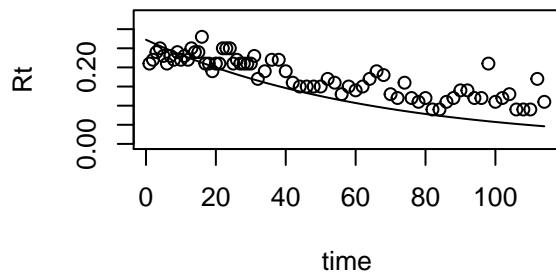
## [1] "Zhang2007; variable: CO2_u25_PP"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0155849235268679"
```

```

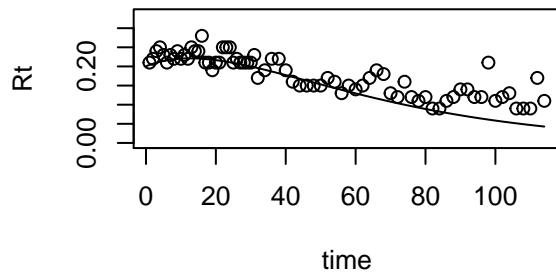
## [1] "AIC = -10.0776994105693"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0155845924539174"
## [2] "k2= 0.0155849800951874"
## [3] "proportion of C0 in pool 1= 0.0448093678075369"
## [1] "AIC = -6.07769941010793"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0299649282235931"
## [2] "k2= 0.0299617232176383"
## [3] "a21= 0.999787339967037"
## [4] "Proportion of C0 in pool 1= 0.61739878660574"
## [1] "AIC = -4.84446668130323"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0299634732016305"
## [2] "k2= 0.0299631722843068"
## [3] "a21= 1.47531946407264e-05"
## [4] "a12= 0.996646415051976"
## [5] "Proportion of C0 in pool 1= 0.380645766799381"

```

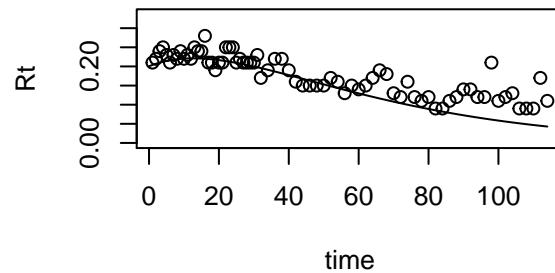
two pool_parallel structure



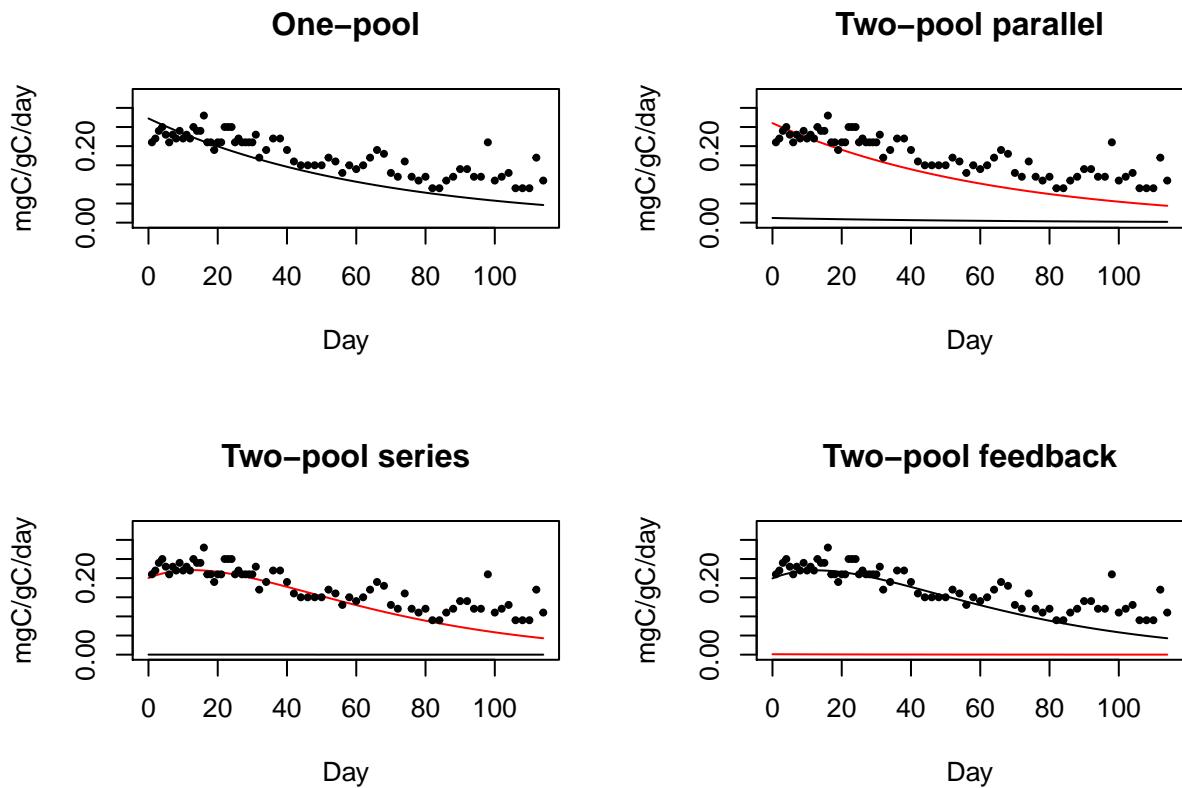
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -2.84445675860182"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----
## One-pool        0.0156
## Two-pool parallel 0.0156  0.0156  0.0448
## Two-pool series  0.0300  0.0300  0.6174  0.9998
## Two-pool feedback 0.0300  0.0300  0.3806  0.0000  0.6174  0.1186  0.0016
##
##
## Model          AIC      BIC     AICn     AICc      wi   MeanTrT    q05
## -----
## One-pool       -10.078  -7.7872 -438.8   -10.021  0.8525  17.48
## Two-pool parallel -6.078   0.7937 -434.8   -5.730   0.0997  64.16  44.48
## Two-pool series   -4.845  4.3174 -460.8   -4.256   0.0477  66.74  56.01
## Two-pool feedback -2.845  8.6078 -458.8   -1.949   0.0151  33.38  23.13
```

Variable CO2_u25_RP;

Dynamics of C mineralization as CO₂ evolution during the incubation under 25 degrees for soil sample RP

```
Zhang_V6=modelFitTS_Markdown(db = db[[31]], ts.col = 6, ic.col = 2, unitConverter = 10,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.01, 0.1),
                                             series=c(0.1, 0.01, 0.01, 0.1),
                                             feedback=c(0.1, 0.01, 0.01, 0.1, 0.1)))
```

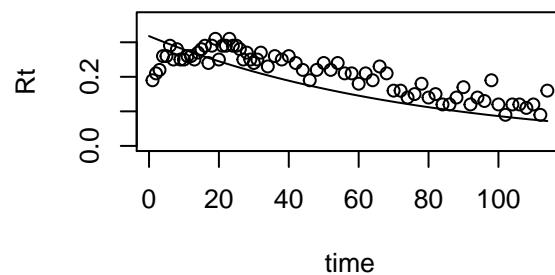
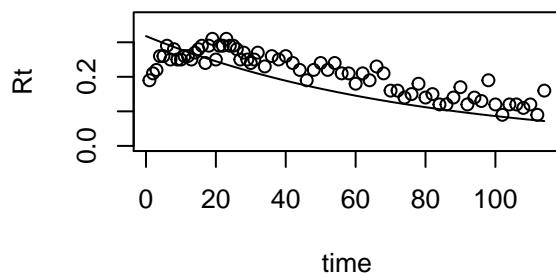
```
## [1] "Zhang2007; variable: CO2_u25_RP"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0130341382607462"
```

```

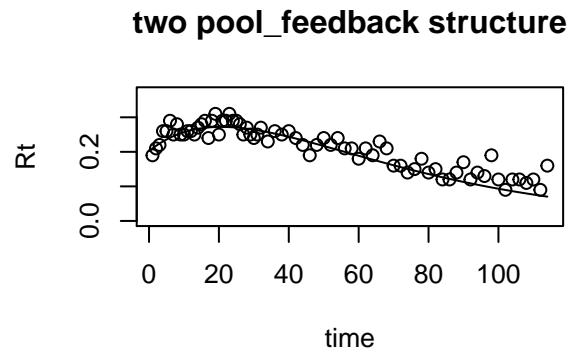
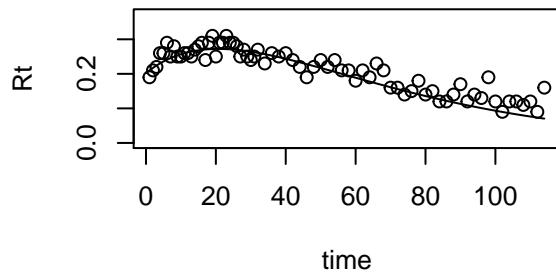
## [1] "AIC = -9.8882765230313"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0130354162681822"
## [2] "k2= 0.013034000972658"
## [3] "proportion of C0 in pool 1= 0.053127896215498"
## [1] "AIC = -5.8882765214107"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0283535570952899"
## [2] "k2= 0.0283553329005997"
## [3] "a21= 0.999738962639891"
## [4] "Proportion of C0 in pool 1= 0.707782345913561"
## [1] "AIC = -6.3500441704926"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0284029282344168"
## [2] "k2= 0.0285049325284346"
## [3] "a21= 0.00485017783852176"
## [4] "a12= 0.750423290066158"
## [5] "Proportion of C0 in pool 1= 0.0553326105628333"

```

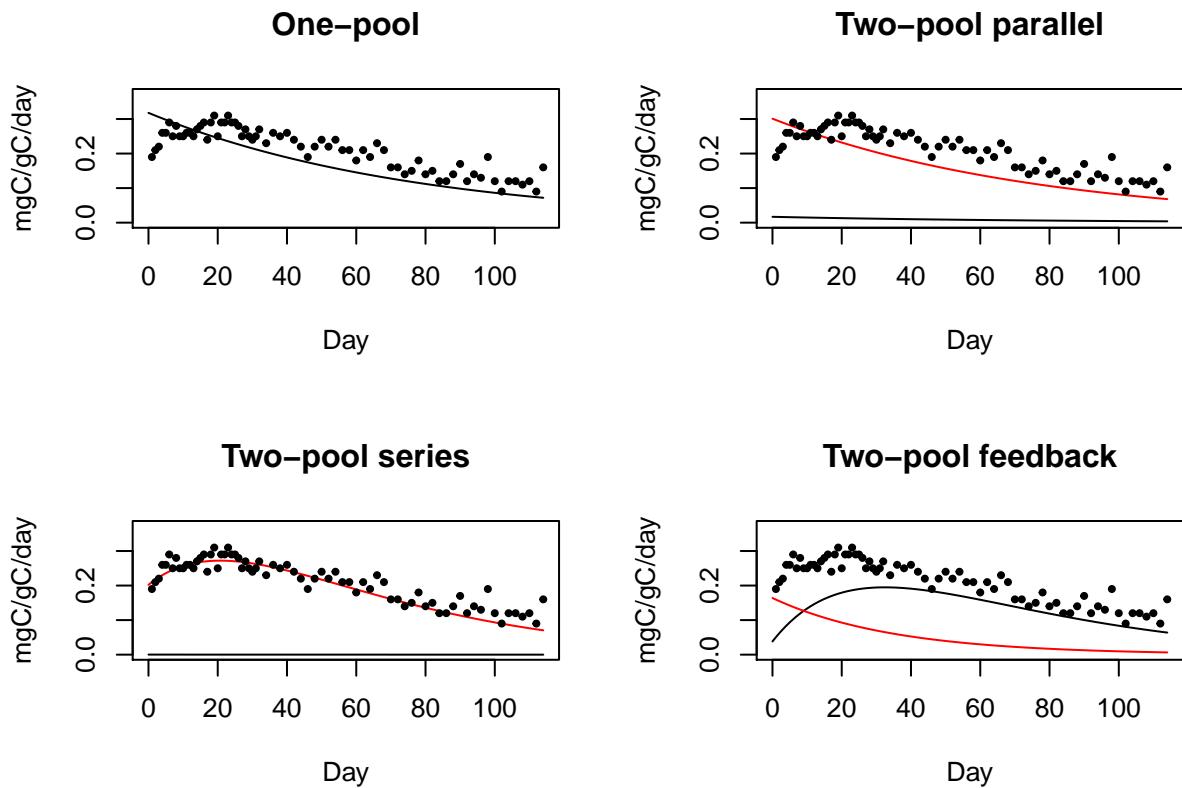
two pool_parallel structure



two pool_Series structure



```
## [1] "AIC = -4.3457352421983"
```



```
##
##
## Model           k1      k2    COInp1     a21     a12    SSR    MSR
## -----          ----  -----  -----  -----  -----  -----
## One-pool        0.0130
## Two-pool parallel 0.0130  0.0130  0.0531
## Two-pool series  0.0284  0.0284  0.7078  0.9997
## Two-pool feedback 0.0284  0.0285  0.0553  0.0049  0.7078  0.0560  0.0008
##
##
## Model           AIC     BIC    AICn    AICc     wi   MeanTrT   q05
## -----          ----  -----  -----  -----  -----  -----
## One-pool        -9.888 -7.5978 -431.9  -9.832  0.8015  24.39
## Two-pool parallel -5.888  0.9831 -427.9  -5.540  0.0938  76.72  53.18
## Two-pool series  -6.350  2.8118 -515.8  -5.762  0.1047  70.53  59.18
## Two-pool feedback -4.346  7.1066 -513.6  -3.450  0.0330  35.51  24.55
```

Variable CO2_u25_EP;

Dynamics of C mineralization as CO₂ evolution during the incubation under 25 degrees for soil sample PP

```
Zhang_V7=modelFitTS_Markdown(db = db[[31]], ts.col = 7, ic.col = 3, unitConverter = 10,
                                inipars=list(oneP=0.01,
                                             parallel=c(0.1, 0.05, 0.1),
                                             series=c(0.1, 0.01, 0.01, 0.1),
                                             feedback=c(0.1, 0.01, 0.01, 0.1, 0.1)))
```

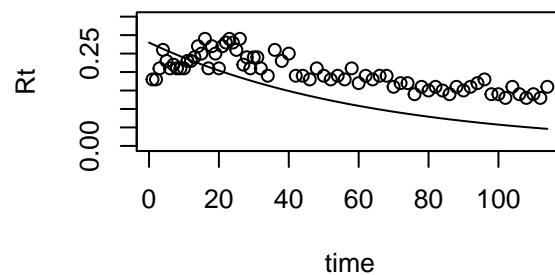
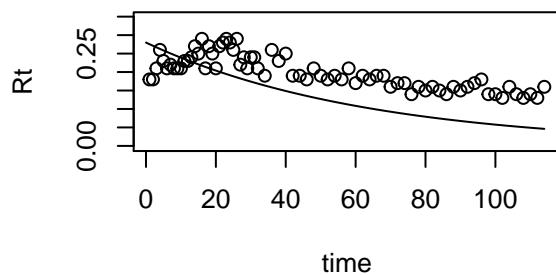
```
## [1] "Zhang2007; variable: CO2_u25_EP"
## [1] "One pool model"
## [1] "Best fit parameter: 0.0158017315815755"
```

```

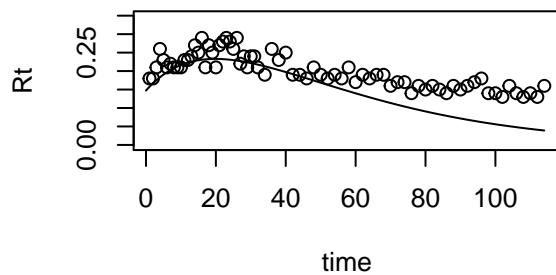
## [1] "AIC = -8.54807204096702"
## [1] "Two pool model-parallel structure"
## [1] "k1= 0.0158016397573127"
## [2] "k2= 0.0157974080117701"
## [3] "proportion of C0 in pool 1= 0.997452527618144"
## [1] "AIC = -4.54807203991437"
## [1] "Two pool model-Series structure"
## [1] "k1= 0.0342648892926461"
## [2] "k2= 0.0342665932890576"
## [3] "a21= 0.999547975459067"
## [4] "Proportion of C0 in pool 1= 0.757806984032394"
## [1] "AIC = -3.57158303349365"
## [1] "Two pool model-feedback structure"
## [1] "k1= 0.0342669933794757"
## [2] "k2= 0.0342659970098714"
## [3] "a21= 6.1933339436937e-06"
## [4] "a12= 0.99906610908327"
## [5] "Proportion of C0 in pool 1= 0.241832427358005"

```

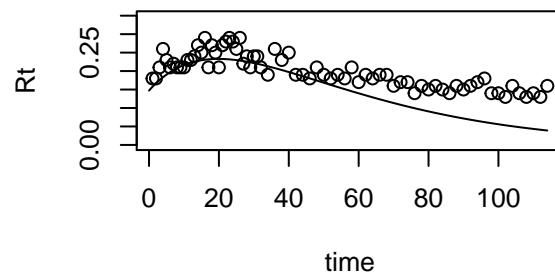
two pool_parallel structure



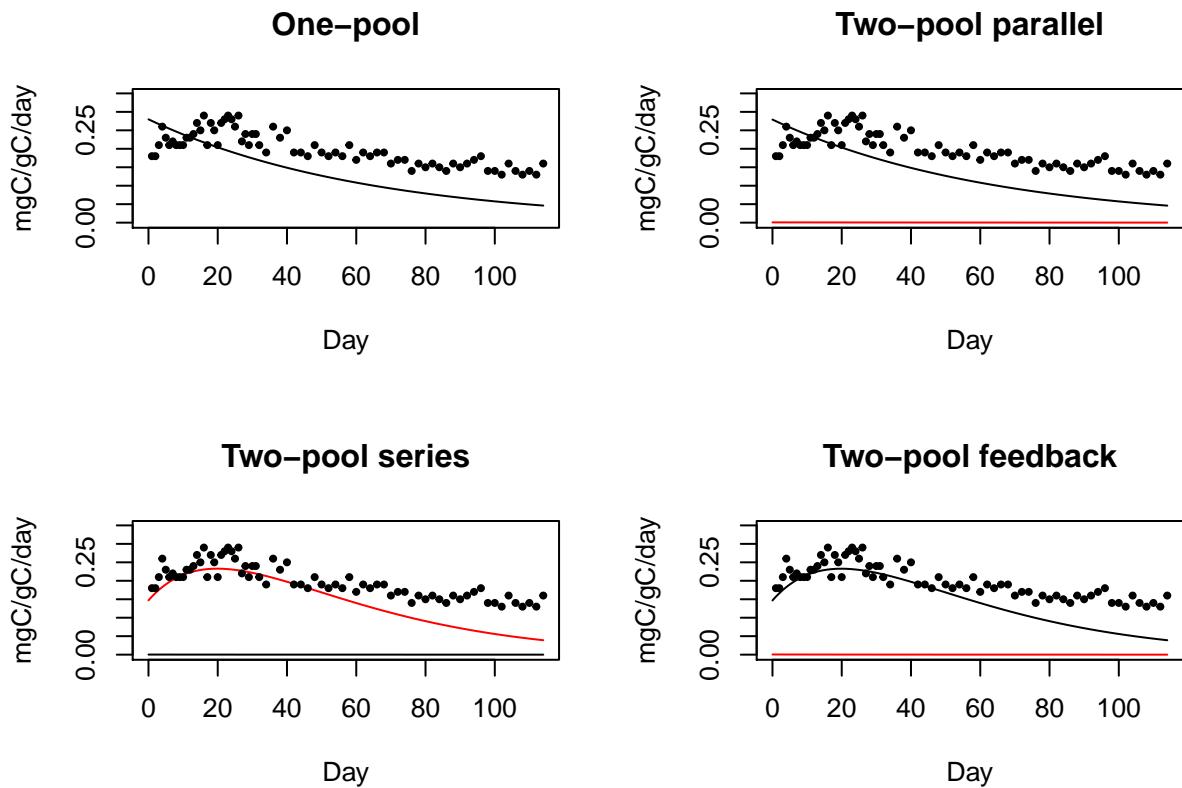
two pool_Series structure



two pool_feedback structure



```
## [1] "AIC = -1.57157907989044"
```



```

## 
## 
## Model          k1      k2    COInp1     a21     a12    SSR    MSR
## -----        ----  -----  -----  -----  -----  -----
## One-pool       0.0158
## Two-pool parallel 0.0158  0.0158  0.9975
## Two-pool series   0.0343  0.0343  0.7578  0.9995
## Two-pool feedback  0.0343  0.0343  0.2418  0.0000  0.7578  0.2242  0.0031
## 
## 
## Model          AIC     BIC    AICn    AICc     wi  MeanTrT   q05
## -----        ----  -----  -----  -----  -----  -----
## One-pool      -8.548 -6.258 -383.0 -8.4917  0.8470   17.71
## Two-pool parallel -4.548  2.323 -379.0 -4.2002  0.0991   63.28  43.87
## Two-pool series    -3.572  5.590 -414.4 -2.9833  0.0539   58.35  48.97
## Two-pool feedback  -1.572  9.881 -412.4 -0.6761  0.0170   29.18  20.23

```

End