

# Testing multi models to data (Cumulative)

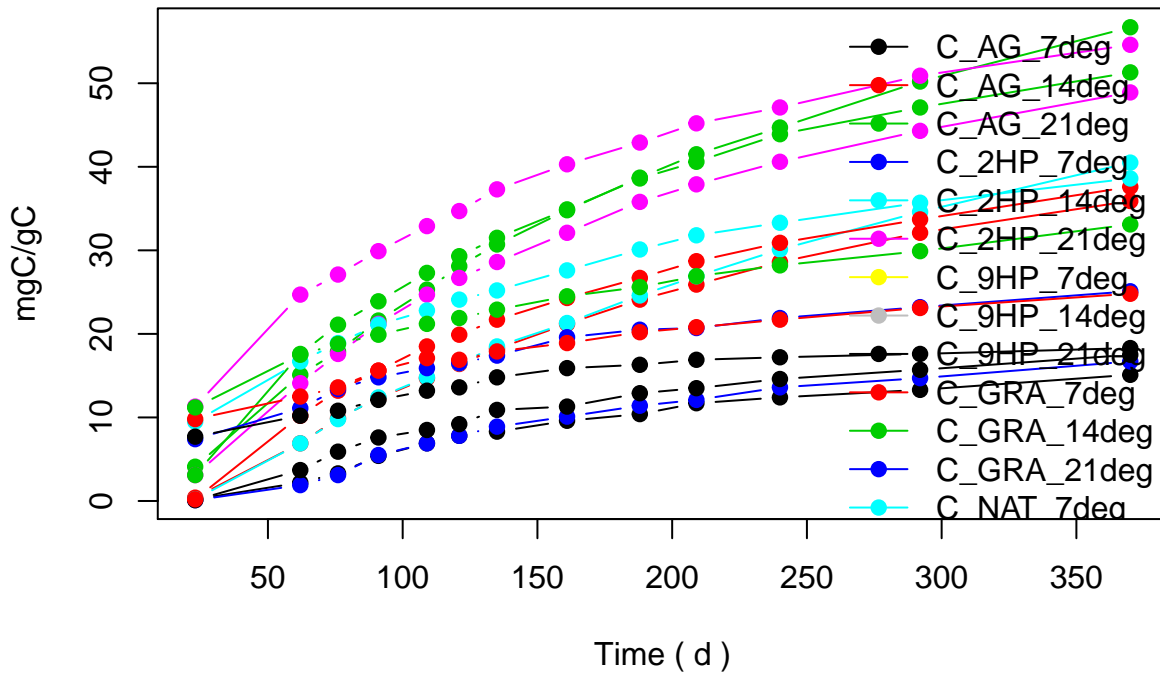
Mina Azizi-Rad

Testing multi models to the datasets of SidB database

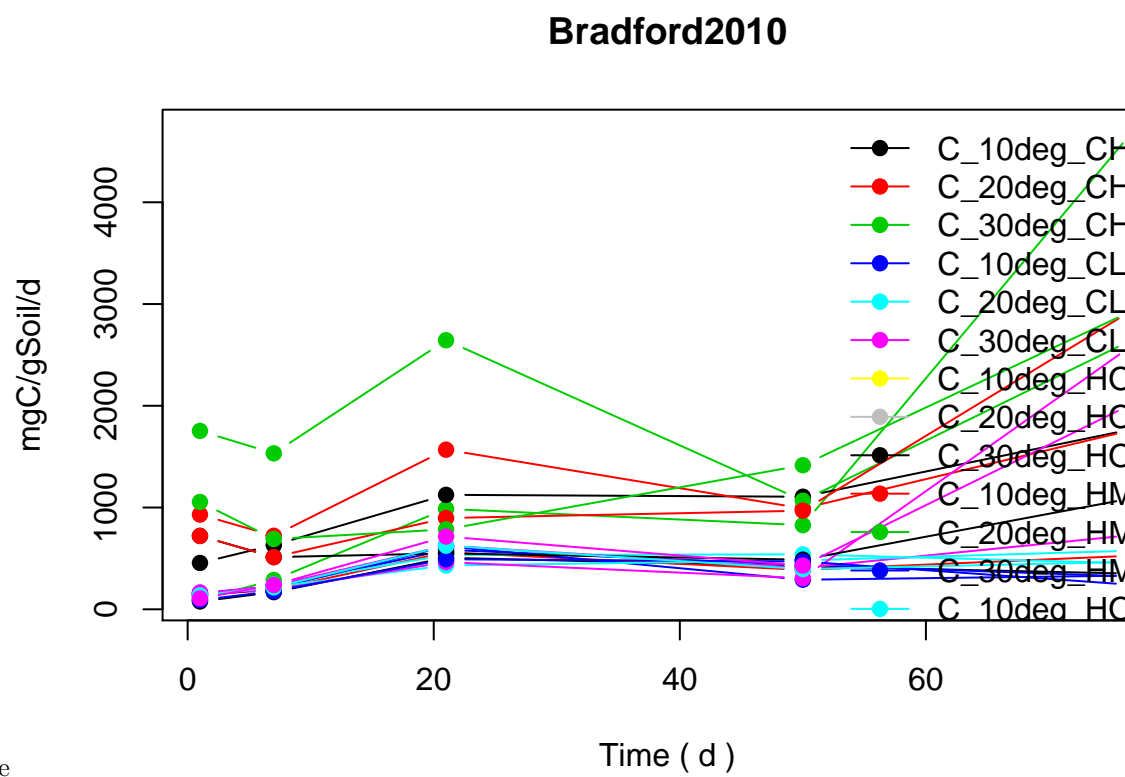
## Dataset Arevalo2012

In this dataset the CO2 respiration has been reported as cumulative. mean initial carbon

### Arevalo2012



Dataset Bradford2010



## Dataset Conant2008

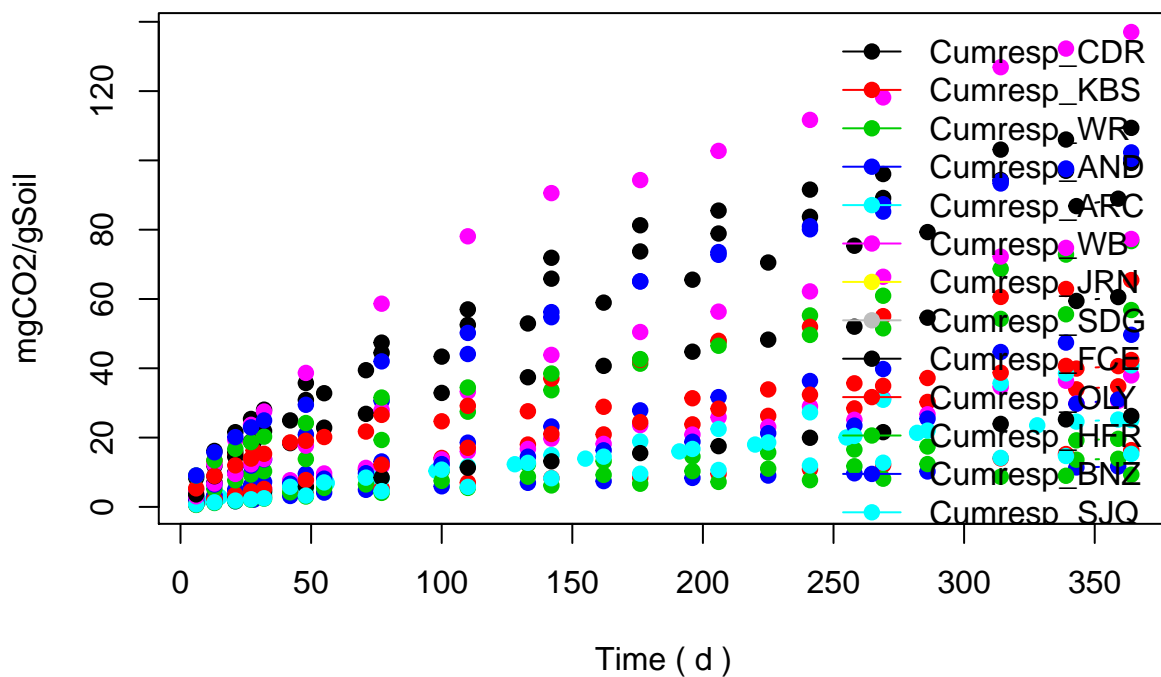
A dataset with 41 variables of Soil respiration rates were determined through periodic analysis of CO<sub>2</sub> concentration of headspace gas samples using a LI-COR 6525 in three levels of temperature (4, 15, 25) The dataset is cumulative

## Dataset Craine2010NatGeo

A dataset with 29 variables of We adjusted seven replicates of 20 g dry-equivalent soil to 35% water-holding capacity and placed them in 50 ml polyethylene centrifuge tubes. Replicates were then incubated at 20 °C. Periodically, the five replicates for each soil were sealed with a cap containing a rubber septum, and then distributed over five temperatures (10, 15, 20, 25 and 30 °C). Two additional replicates were maintained at 20 °C. These soils were incubated for 18–72 h and then respiration rates for each determined by removing 4 ml of gas. They were then injected in-line into a N<sub>2</sub> gas stream and the peak heights measured with a Licor 6252 infrared gas analyser. Using a set of calibrations, peak heights were converted to CO<sub>2</sub> concentrations in the tubes and then to respiration rates that were scaled relative to soil organic C; preincubationTime varied between 10 and 60 days

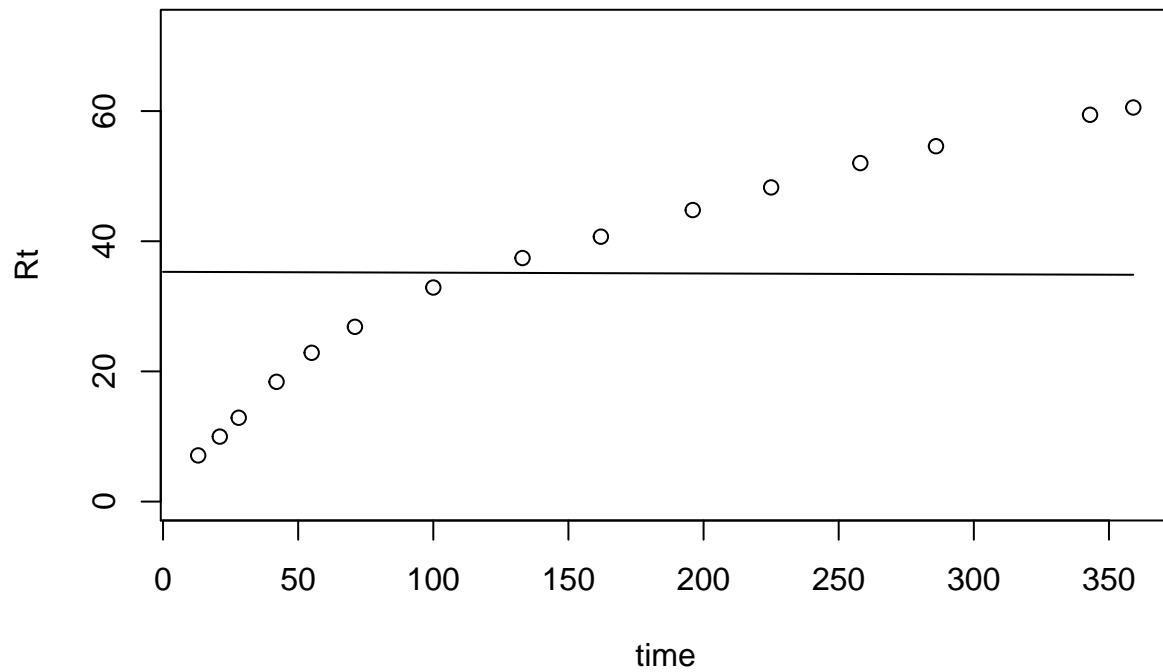
It is not clear if the dataset is cumulative or not

### Craine2010NatGeo

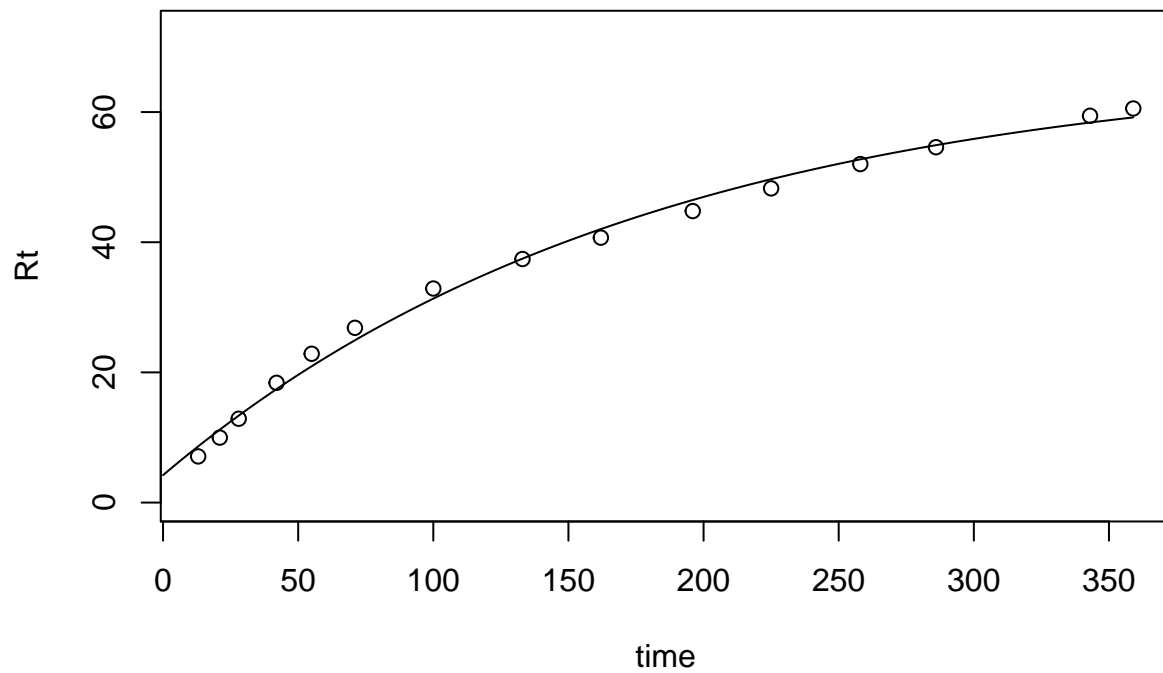


### V2: Dataset Craine2010NatGeo, variable Cumresp\_CDR, site

```
## [1] "k1= 3.56409629247248e-05"
## [2] "k2= 3.56545501182572e-05"
## [3] "proportion of C0 in pool 1= 0.00417203328437454"
```

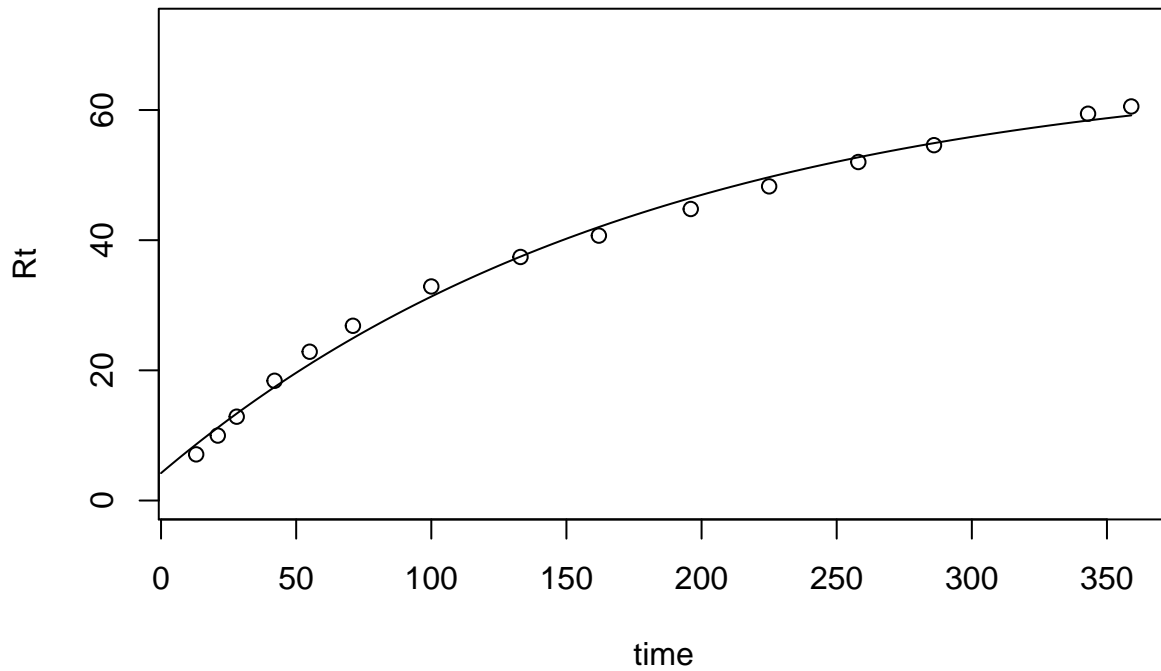


```
## [1] "AIC = -5.49236507747717"
## [1] "k1= 0.00519892445693052"
## [2] "k2= 0.000259131812672943"
## [3] "a21= 0.718643588800708"
## [4] "a12= 0.999987431155748"
## [5] "Proportion of C0 in pool 1= 0.00290573722230197"
```



```
## [1] "AIC = 8.97890373833154"
## [1] "k1= 0.00538768600632158"
## [2] "k2= 7.035610730292e-05"
```

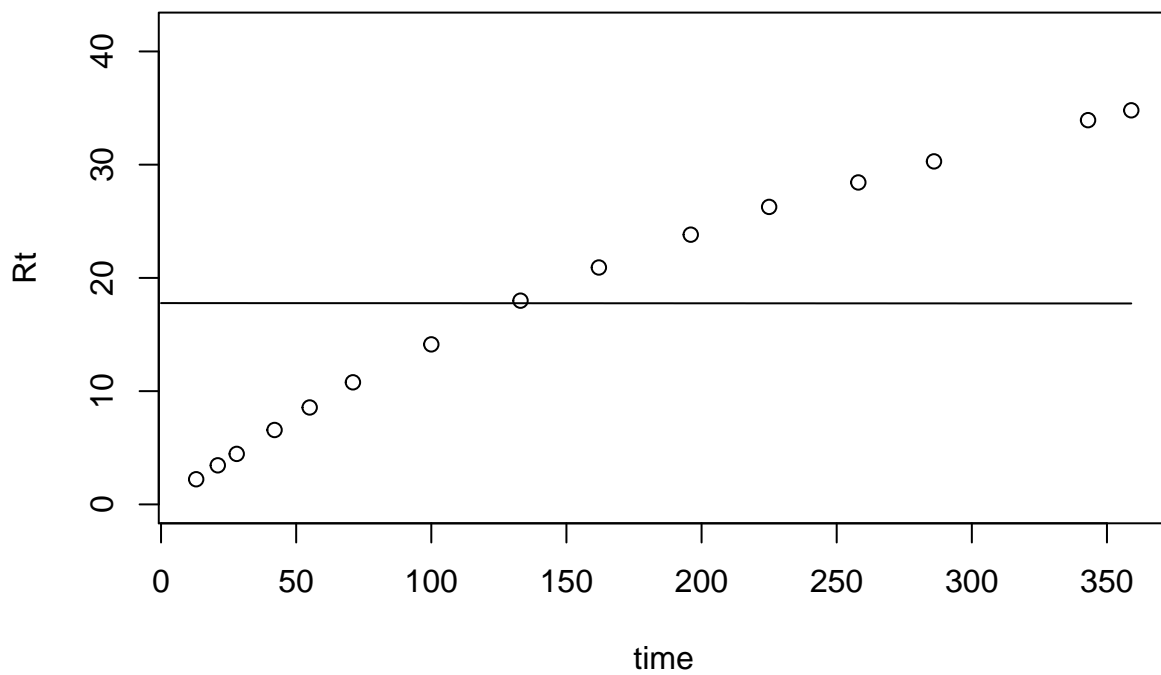
```
## [3] "a21= 0.999274818058645"
## [4] "Proportion of C0 in pool 1= 0.994783996088877"
```



```
## [1] "AIC = 6.97890373869341"
```

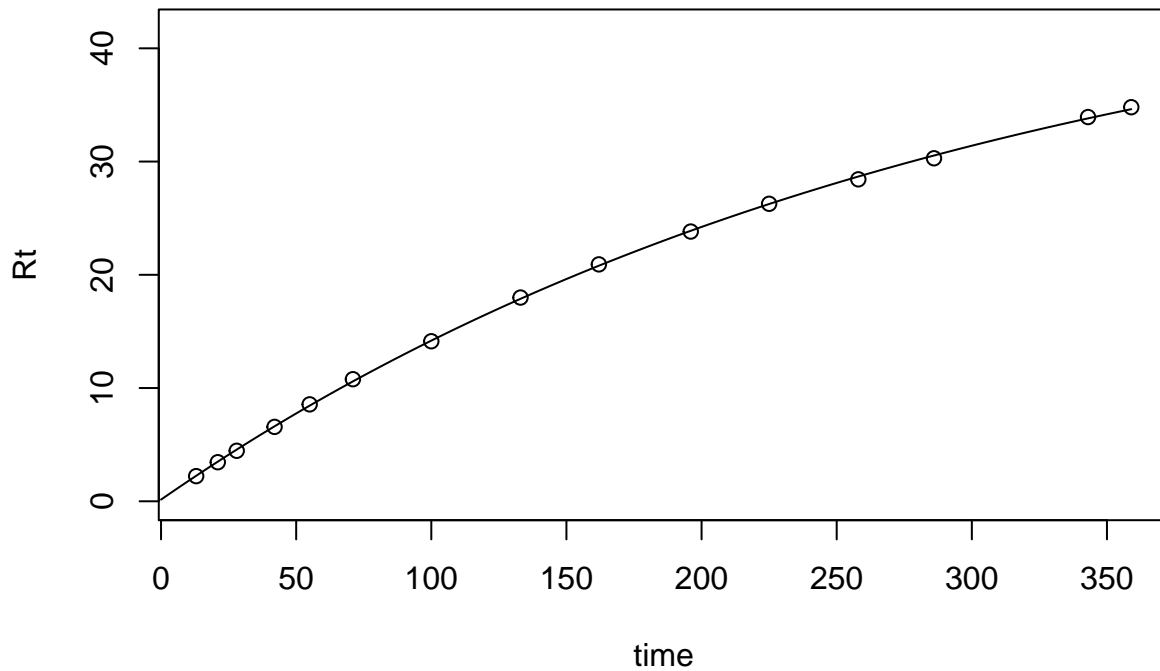
### V3: Dataset Craine2010NatGeo, variable Cumresp\_KBS, site

```
## [1] "k1= 1.28916431797638e-13"
## [2] "k2= 5.04994142334596e-06"
## [3] "proportion of C0 in pool 1= 9.88979711796789e-06"
```



```
## [1] "AIC = -3.6191206484348"
```

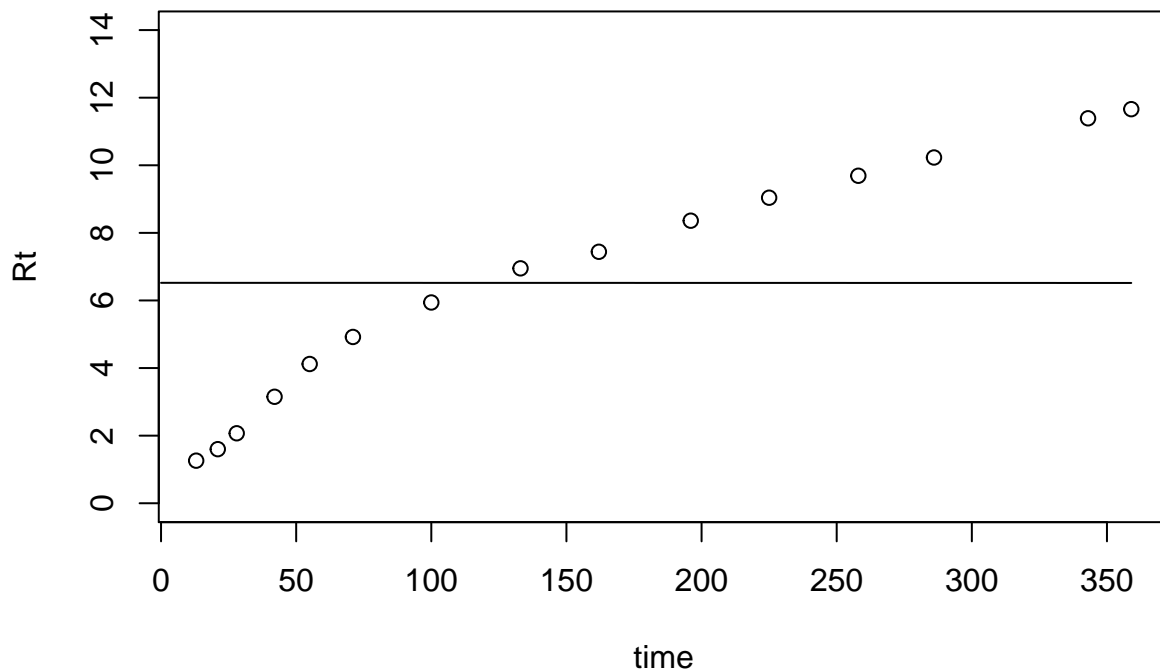
```
## [1] "k1= 0.00333370042292458"
## [2] "k2= 1.41208269824271e-05"
## [3] "a21= 0.999987408396686"
## [4] "Proportion of C0 in pool 1= 0.999990557146394"
```



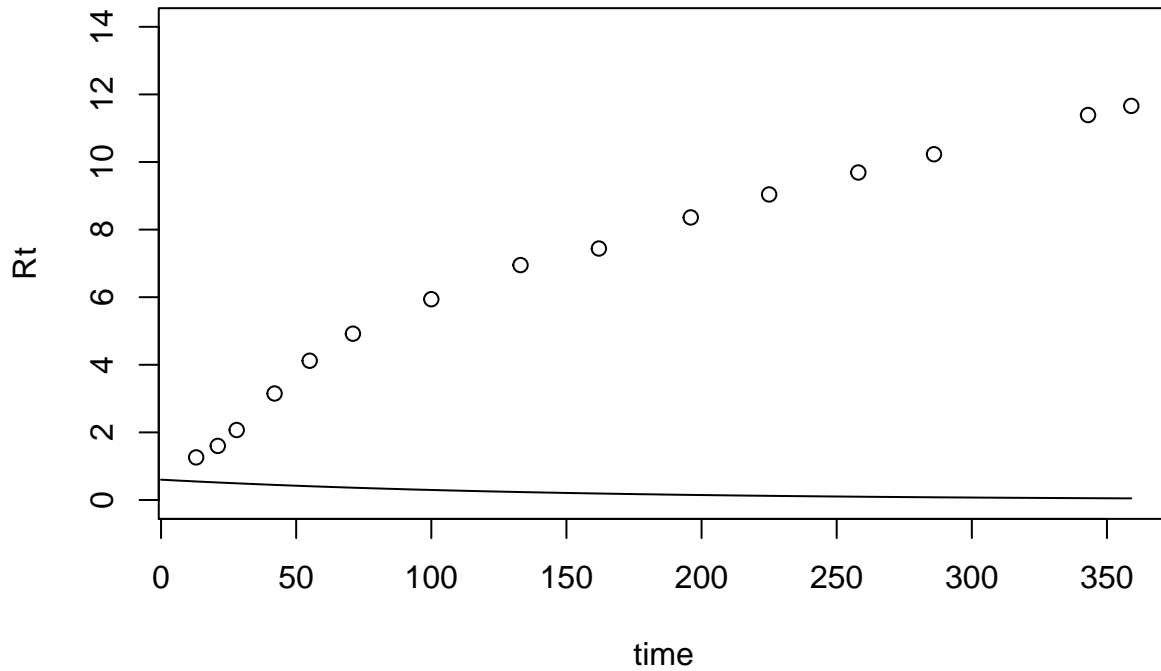
```
## [1] "AIC = 16.0722539033383"
```

**V5: Dataset Craine2010NatGeo, variable Cumresp\_AND, site**

```
## [1] "k1= 1.06712760795624e-37"
## [2] "k2= 1.54916909115044e-06"
## [3] "proportion of C0 in pool 1= 6.24432779631756e-05"
```

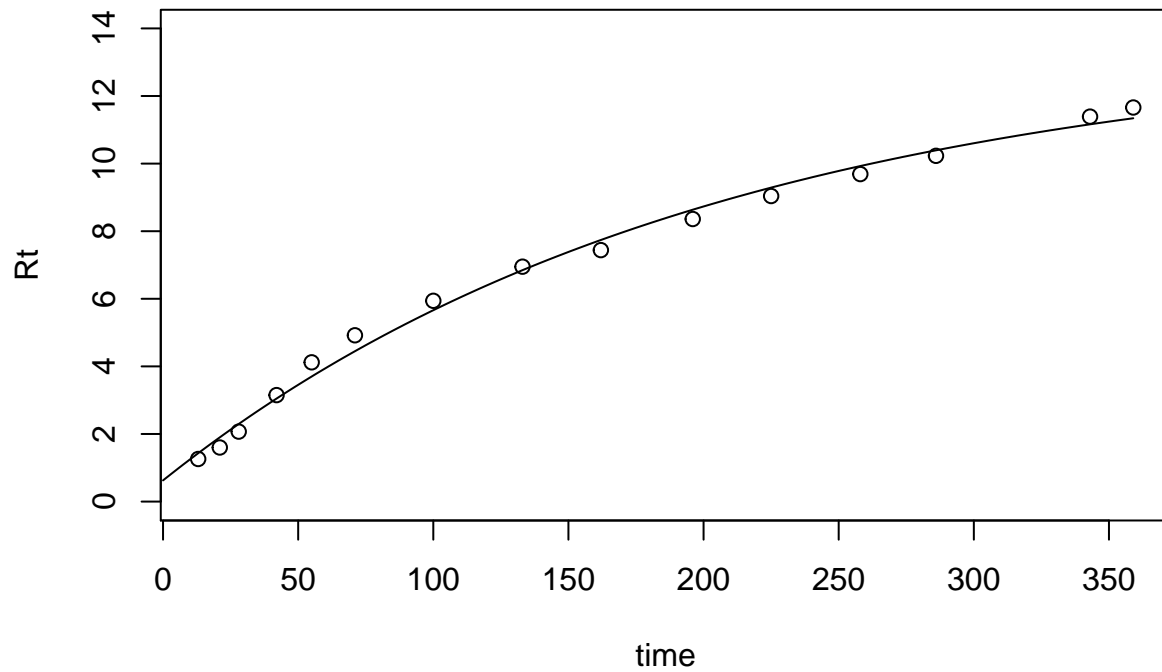


```
## [1] "AIC = 1.06919284023117"
## [1] "k1= 0.00706630722351705"
## [2] "k2= 2.02155659274751e-41"
## [3] "a21= 3.18003594937388e-05"
## [4] "a12= 1.27743858324703e-07"
## [5] "Proportion of C0 in pool 1= 2.01864847564903e-05"
```



```
## [1] "AIC = 2.09528942897876"
## [1] "k1= 0.00494314723046184"
## [2] "k2= 3.21608190313011e-06"
## [3] "a21= 0.999969898183753"
## [4] "Proportion of C0 in pool 1= 0.999967529573838"
```





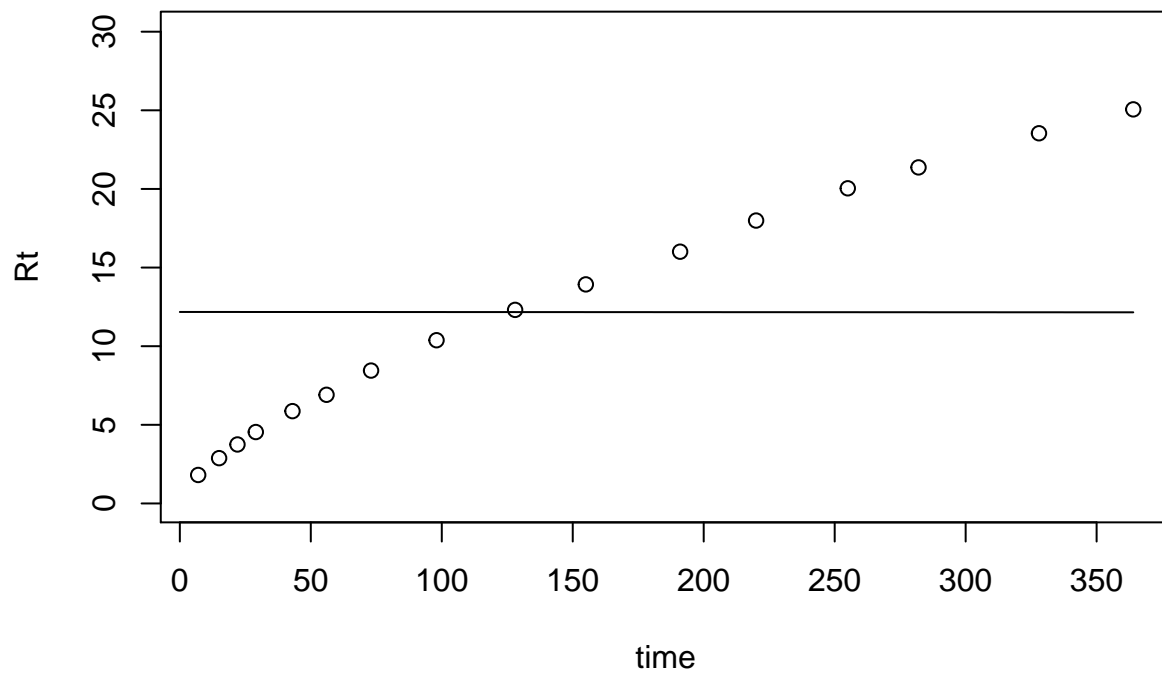
```
## [1] "AIC = 13.1691988005497"
```

#### V6: Dataset Craine2010NatGeo, variable Cumresp\_ARC, site

```
## [1] "k1= 2.15153097000388e-22"
```

```
## [2] "k2= 5.31784118788952e-06"
```

```
## [3] "proportion of C0 in pool 1= 2.49069093321563e-05"
```

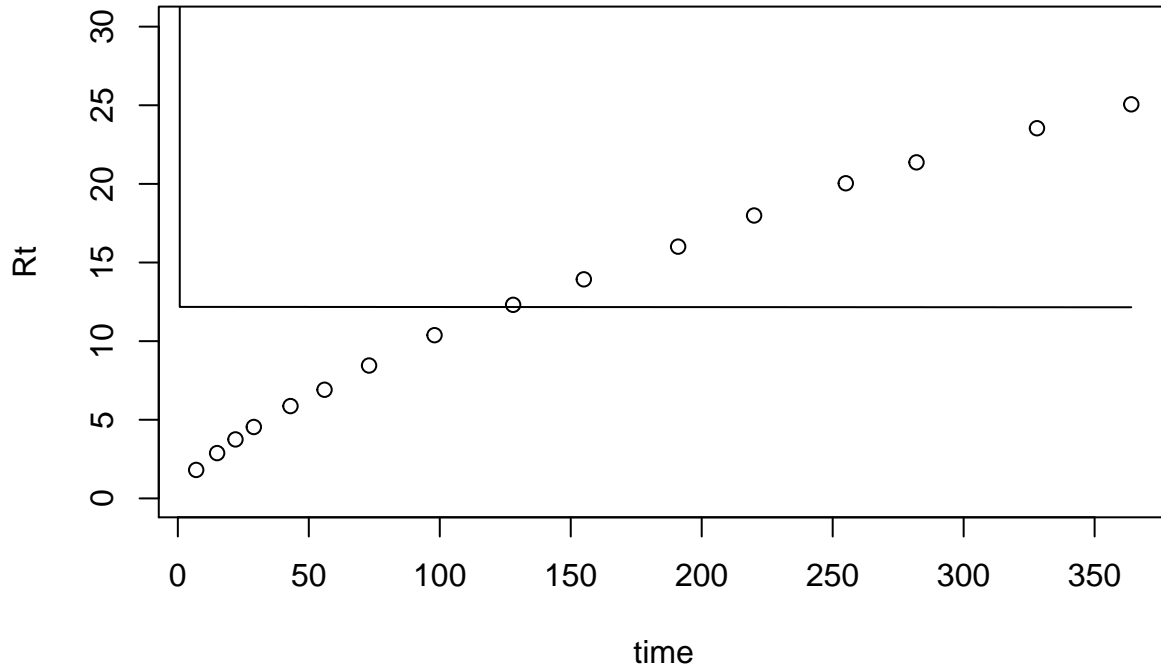


```
## [1] "AIC = -2.06551367541675"
```

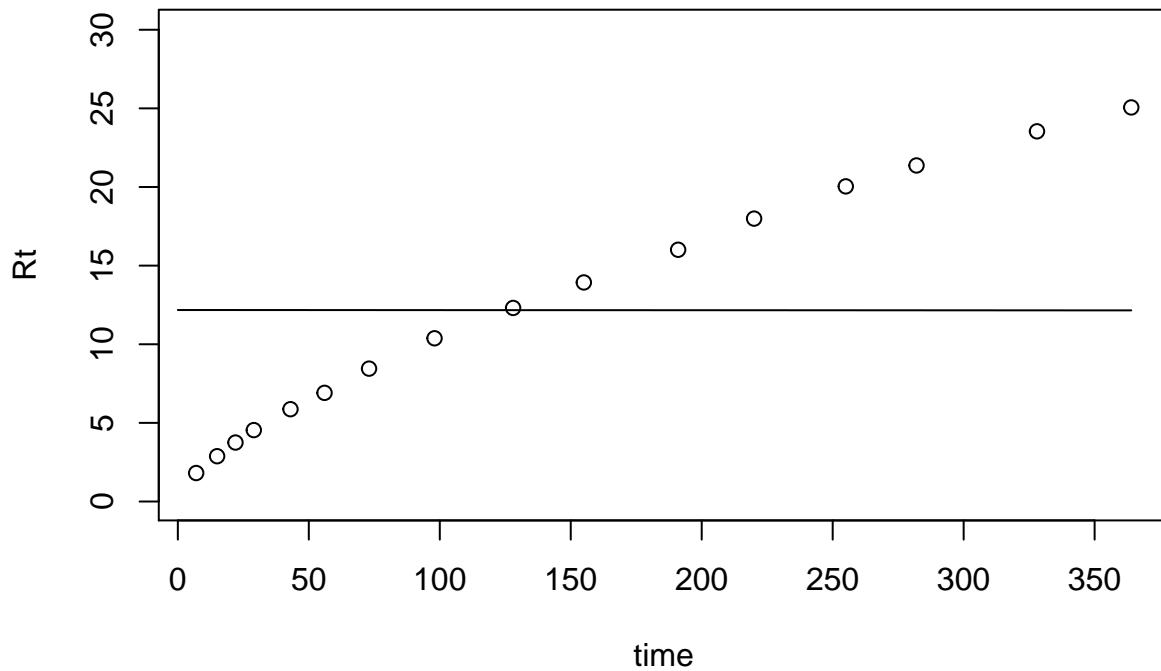
```
## [1] "k1= 0.0863555749026516"
```

```
## [2] "k2= 7.39687533042094e+77"
```

```
## [3] "a21= 0.999938488176788"
## [4] "a12= 0.99999993255701"
## [5] "Proportion of C0 in pool 1= 0.999978253758902"
```



```
## [1] "AIC = 1.93448642242981"
## [1] "k1= 1.22933305459562e-28"
## [2] "k2= 5.31771766492418e-06"
## [3] "a21= 2.60568859066224e-05"
## [4] "Proportion of C0 in pool 1= 1.04193035821432e-06"
```



```
## [1] "AIC = -0.0655135816632679"
```

## **Dataset Crow2019b**

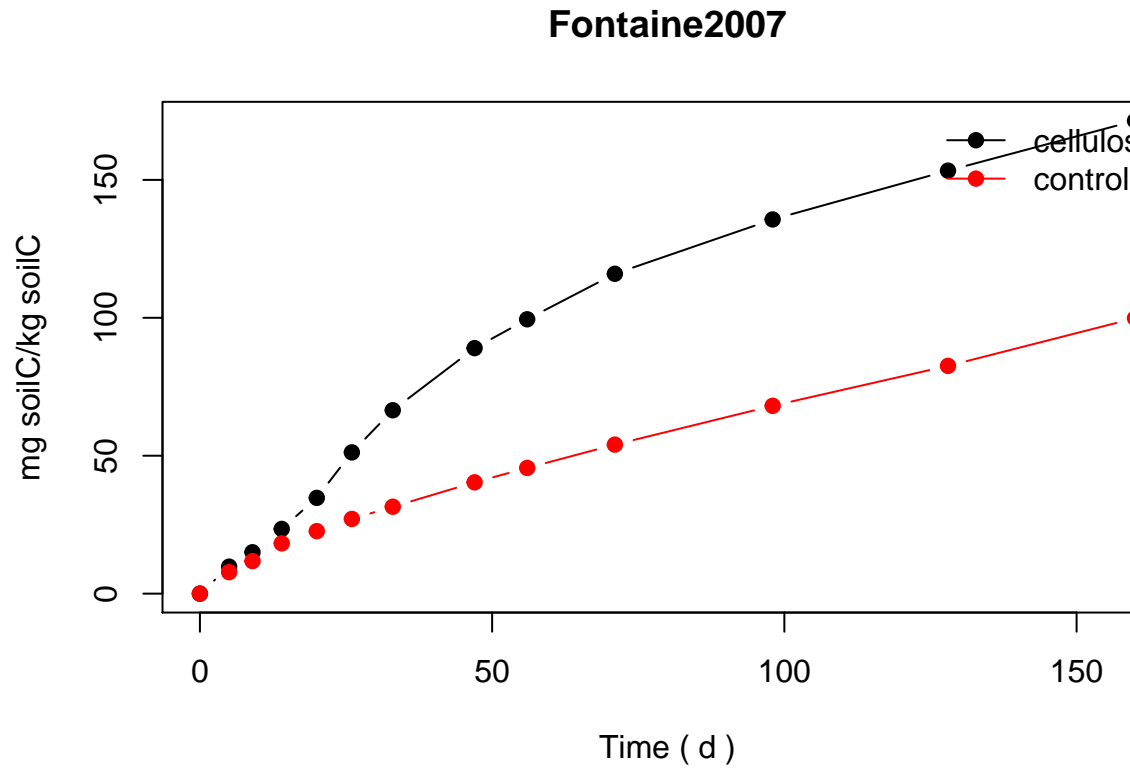
A dataset with 28 variables of Sub-samples of the 0-15 cm depth section of the mineral transition layer from each plot were incubated at 16, 21, and 26°C, to determine the apparent temperature sensitivity , with 3 levels of temperature (16, 21, 26) in 9 different sites

This dataset is cumulative.

**V2: Dataset Crow2019b, variable SPE800\_16C, site SPE800, temperature**

## Dataset Fontaine2007

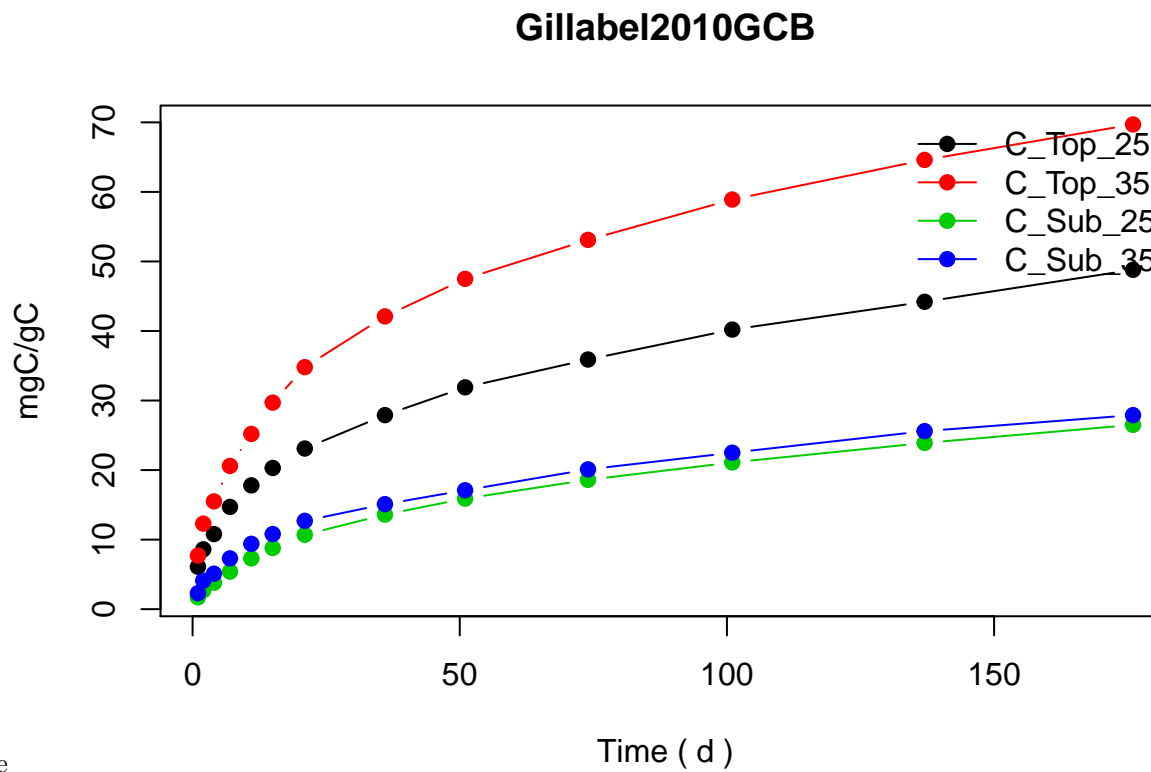
A dataset with 2 variables of 160 day incubation of subsoil comparing control and soil amended with cellulose while under incubation , one variable of cellulose amended and one control



This dataset is cumulative.

# Dataset Gillabel2010GCB

A dataset with 5 variables of



This dataset is cumulative

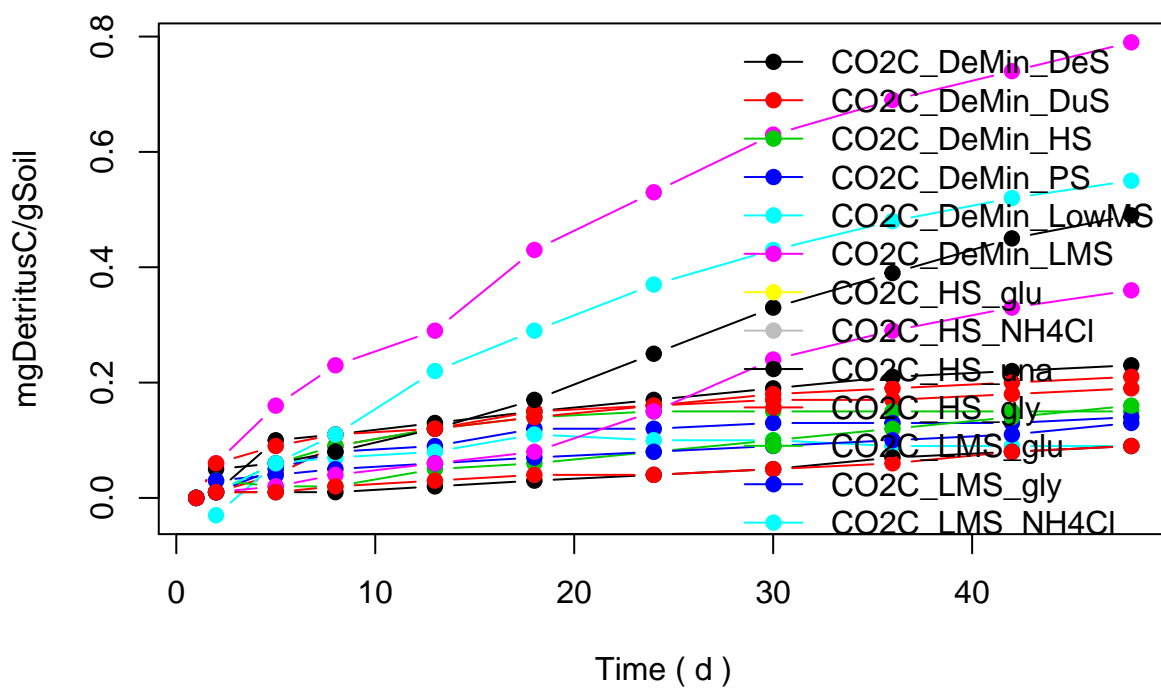
## Dataset Hopkins2006

A dataset with 15 variables of Five laboratory replicates from composite field samples were incubated at 10deg for 48 d and CO2 production was measured using a Respicond IV respirometer. 6 different soil types

This dataset is cumulative.

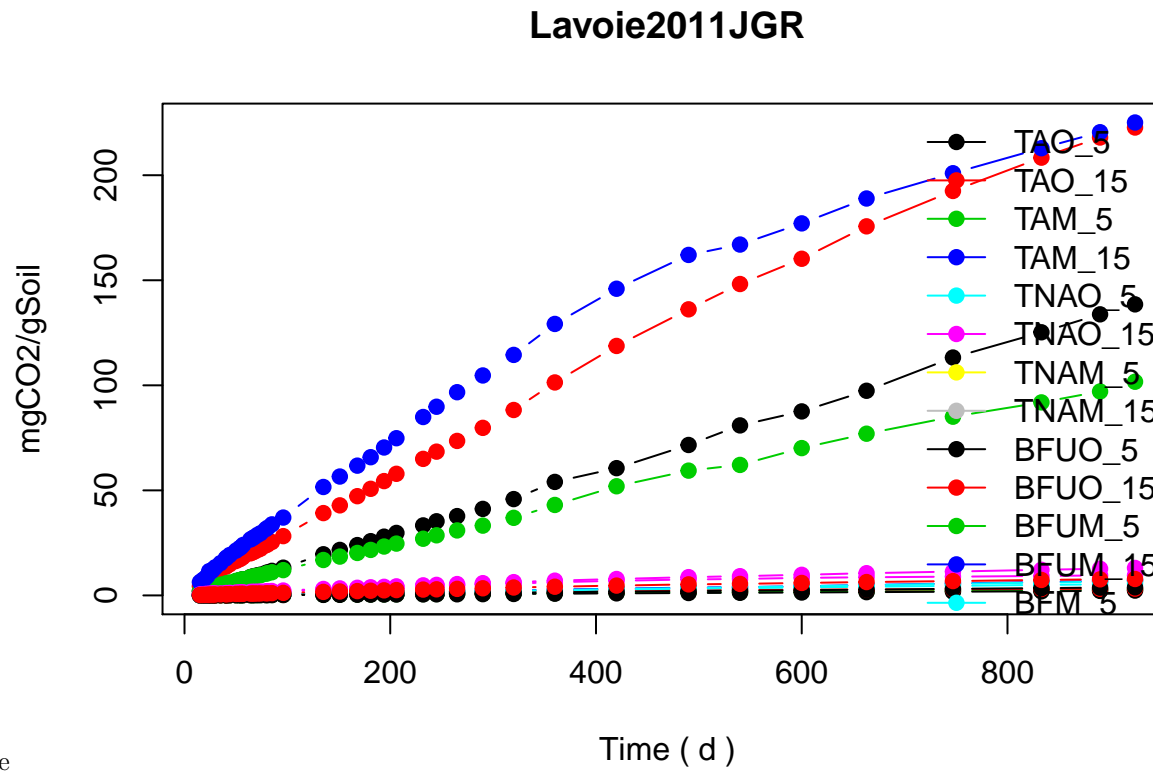
## Warning: Multiple units are present in timeseries data and will be plotted together

### Hopkins2006



## Dataset Lavoie2011JGR

A dataset with 15 variables of 2 different sites, 2 levels of temperature as treatment (5,15)

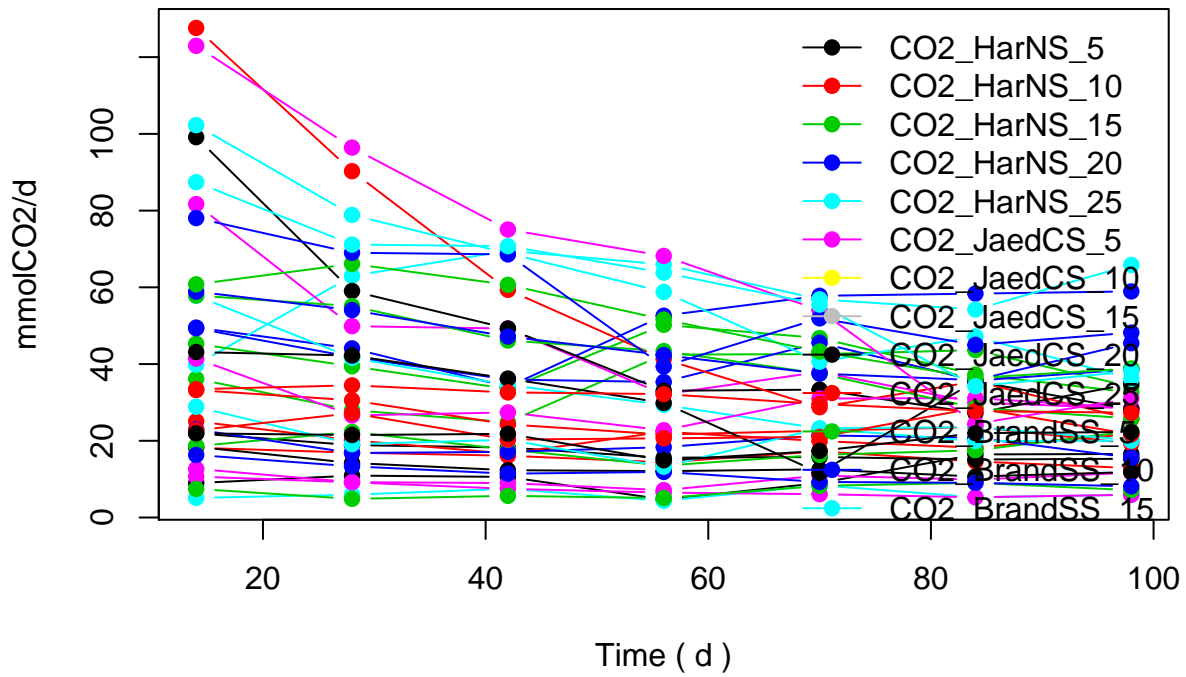


## Dataset Niklinska1999

A dataset with 36 variables of Five samples of 5 g DWT humus from each site were incubated at 50 percent WHC at 5, 10, 15, 20 and 25 degrees. Respiration rates were measured every second week for 14 weeks..

\*\* This dataset is too short. There is only 7 observation per variables This dataset is cumulative \*\*

### Niklinska1999

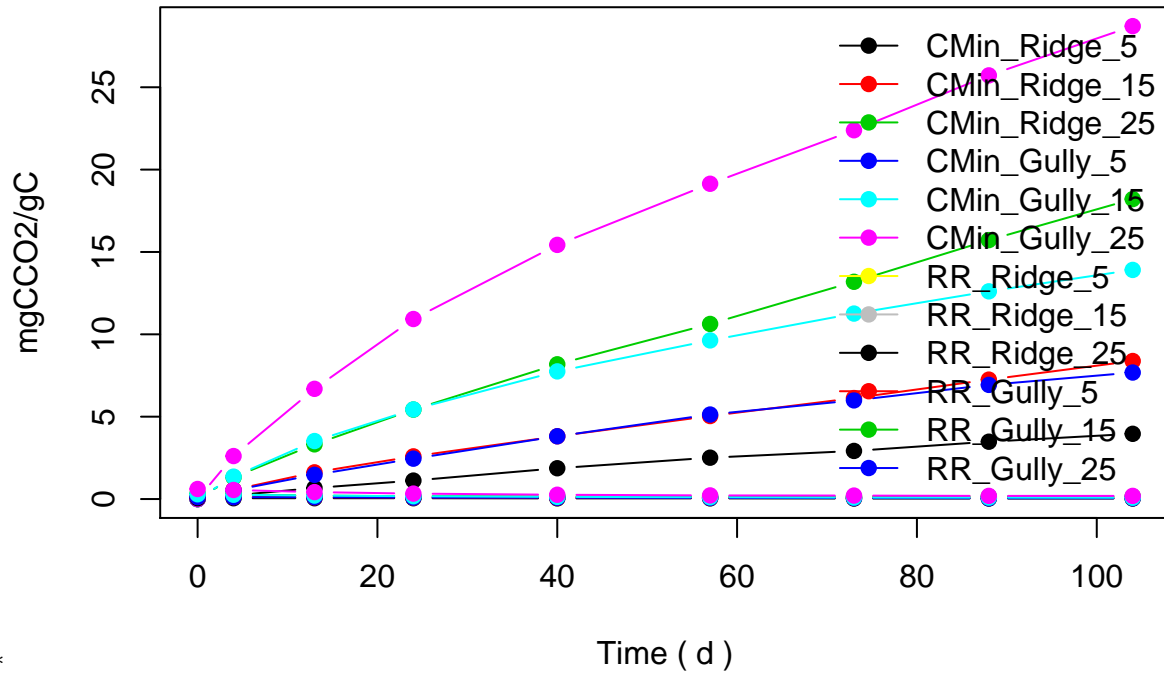




## Dataset Reichstein2000

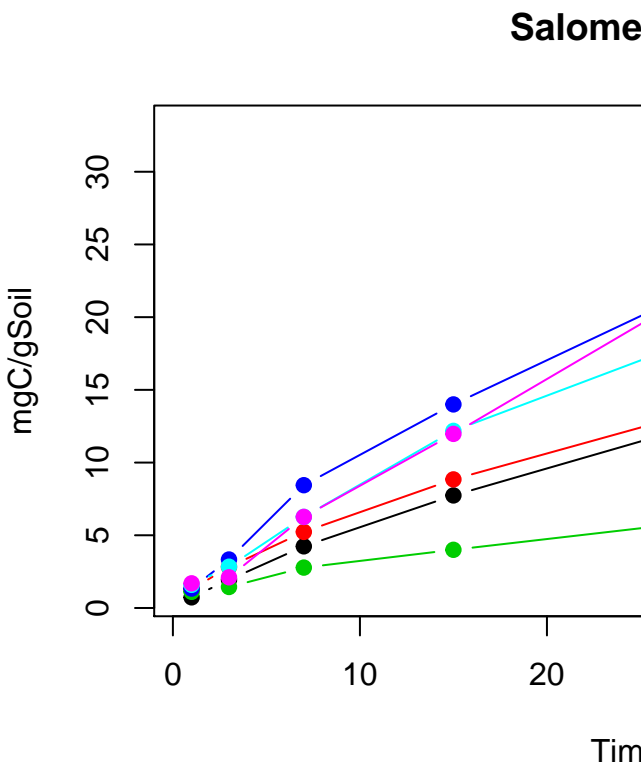
A dataset with 13 variables of Three ridge and three gully soils were incubated at 5, 15, and 25deg for 104 d. A closed gas-cycle apparatus including an IRGA was used to measure CO<sub>2</sub>-flux \*\* This dataset is cumulative

### Reichstein2000



# Dataset Salome2010GCB

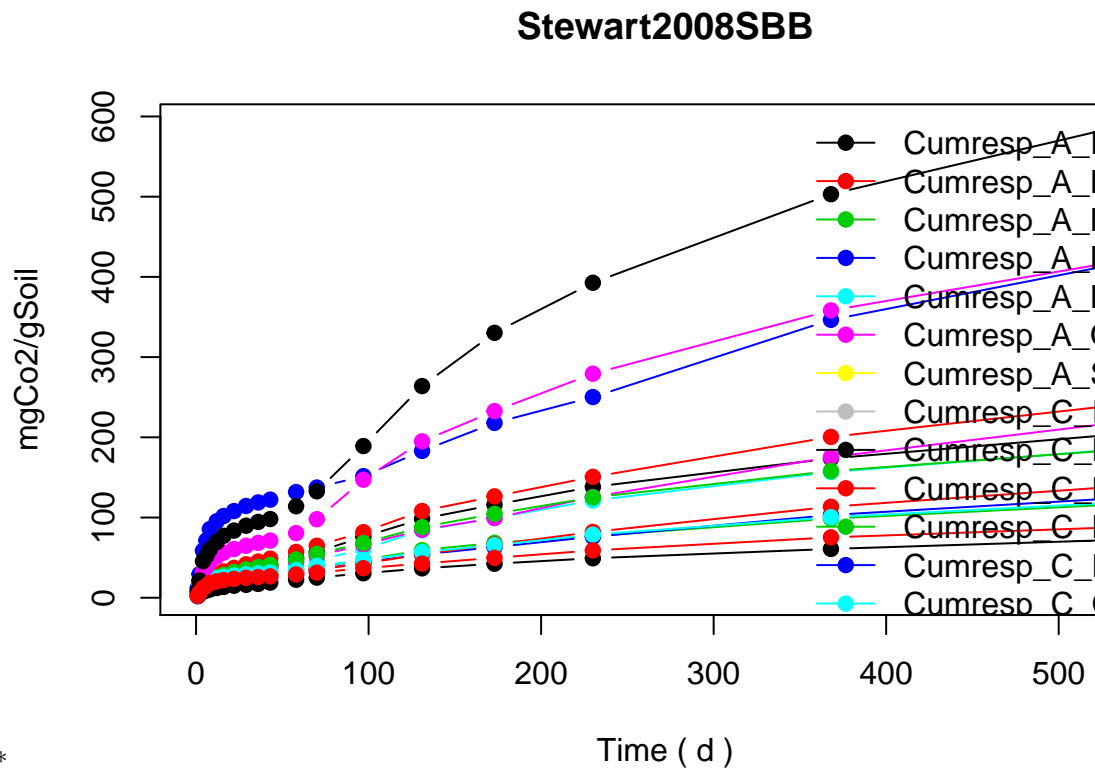
A dataset with 7 variables of



\*\* the dataset is cumulative The dataset is too short. 6 observation \*\*

# Dataset Stewart2008SBB

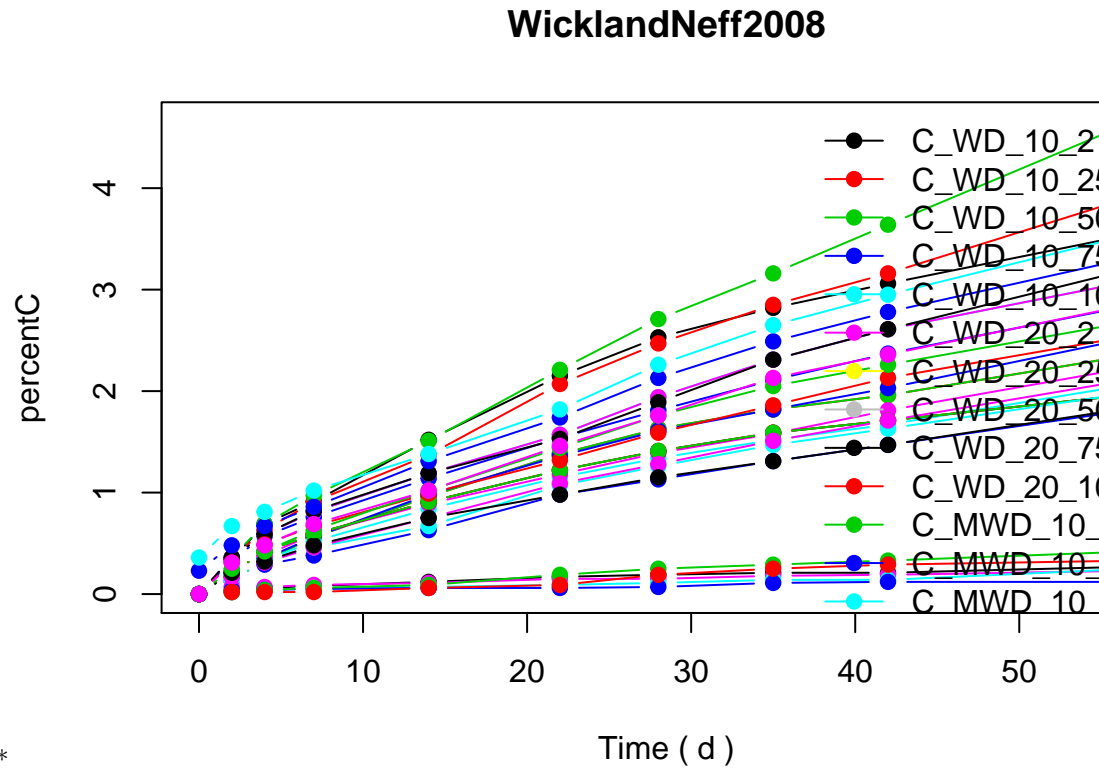
A dataset with 15 variables of soil incubation study that each treatment consisted of four 200 g replicates of A- and C- horizen soils mixed with 0.26 g <sup>13</sup>C wheat straw for 2.5 years.



\*\* The dataset is cumulative \*\*

## Dataset WicklandNeff2008

A dataset with 31 variables of five laboratory replicates were incubated at five different moisture contents (2, 25, 50, 75, and 100 percent saturation) and two different temperatures (10 and 20 deg) in a full factorial design for 57 days.. 10 observation



\*\* this dataset is cumulative \*\*