

# Model call record

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15 November, 2021

Calculates emission factors

Check package version.

```
packageVersion('ALFAM2')
```

```
## [1] '1.5.1'
```

Parameter values.

```
ALFAM2pars02
```

##	int.f0	app.mthd.os.f0	app.rate.ni.f0	man.dm.f0	man.source.pig.f0	app.mthd.cs.f0
##	-0.60568338	-1.74351499	-0.01114900	0.39967070	-0.59202858	-7.63373787
##	int.r1	app.mthd.bc.r1	man.dm.r1	air.temp.r1	wind.2m.r1	app.mthd.ts.r1
##	-0.93921516	0.79352480	-0.13988189	0.07354268	0.15026720	-0.45907135
##	ts.cereal.hght.r1	man.ph.r1	int.r2	rain.rate.r2	int.r3	app.mthd.bc.r3
##	-0.24471238	0.66500000	-1.79918546	0.39402156	-3.22841225	0.56153956
##	app.mthd.cs.r3	man.ph.r3	incorp.shallow.f4	incorp.shallow.r3	incorp.deep.f4	incorp.deep.r3
##	-0.66647417	0.23800000	-0.96496655	-0.58052689	-3.69494954	-1.26569562

```
dat
```

##	app.timing	air.temp	wind.2m	rain.rate	app.mthd	incorp	t.incorp	app.rate.ni	man.source	acid
## 1	Marts	4.431012	4.058916	0.05996290	Trailing hose	None	NA	30	Svinegylle	FALSE
## 2	April	8.236460	3.844456	0.05521194	Trailing hose	None	NA	30	Svinegylle	FALSE
## 3	Maj	12.449250	3.483915	0.07029935	Trailing hose	None	NA	30	Svinegylle	FALSE
## 4	Sommer	16.876226	3.156240	0.10592531	Trailing hose	None	NA	30	Svinegylle	FALSE
## 5	Efterår	14.497748	3.322770	0.12826017	Trailing hose	None	NA	30	Svinegylle	FALSE
## 6	Marts	4.431012	4.058916	0.05996290	Trailing hose	Deep	4	30	Svinegylle	FALSE
## 7	April	8.236460	3.844456	0.05521194	Trailing hose	Deep	4	30	Svinegylle	FALSE

## 8	Maj	12.449250	3.483915	0.07029935	Trailing hose	Deep	4	30	Svinegylle	FALSE
## 9	Sommer	16.876226	3.156240	0.10592531	Trailing hose	Deep	4	30	Svinegylle	FALSE
## 10	Efterår	14.497748	3.322770	0.12826017	Trailing hose	Deep	4	30	Svinegylle	FALSE
## 11	Marts	4.431012	4.058916	0.05996290	Open slot injection	None	NA	0	Svinegylle	FALSE
## 12	April	8.236460	3.844456	0.05521194	Open slot injection	None	NA	0	Svinegylle	FALSE
## 13	Maj	12.449250	3.483915	0.07029935	Open slot injection	None	NA	0	Svinegylle	FALSE
## 14	Sommer	16.876226	3.156240	0.10592531	Open slot injection	None	NA	0	Svinegylle	FALSE
## 15	Efterår	14.497748	3.322770	0.12826017	Open slot injection	None	NA	0	Svinegylle	FALSE
## 16	Marts	4.431012	4.058916	0.05996290	Closed slot injection	None	NA	0	Svinegylle	FALSE
## 17	April	8.236460	3.844456	0.05521194	Closed slot injection	None	NA	0	Svinegylle	FALSE
## 18	Maj	12.449250	3.483915	0.07029935	Closed slot injection	None	NA	0	Svinegylle	FALSE
## 19	Sommer	16.876226	3.156240	0.10592531	Closed slot injection	None	NA	0	Svinegylle	FALSE
## 20	Efterår	14.497748	3.322770	0.12826017	Closed slot injection	None	NA	0	Svinegylle	FALSE
## 21	Marts	4.431012	4.058916	0.05996290	Trailing hose	None	NA	30	Kvæggylle	FALSE
## 22	April	8.236460	3.844456	0.05521194	Trailing hose	None	NA	30	Kvæggylle	FALSE
## 23	Maj	12.449250	3.483915	0.07029935	Trailing hose	None	NA	30	Kvæggylle	FALSE
## 24	Sommer	16.876226	3.156240	0.10592531	Trailing hose	None	NA	30	Kvæggylle	FALSE
## 25	Efterår	14.497748	3.322770	0.12826017	Trailing hose	None	NA	30	Kvæggylle	FALSE
## 26	Marts	4.431012	4.058916	0.05996290	Trailing hose	Deep	4	30	Kvæggylle	FALSE
## 27	April	8.236460	3.844456	0.05521194	Trailing hose	Deep	4	30	Kvæggylle	FALSE
## 28	Maj	12.449250	3.483915	0.07029935	Trailing hose	Deep	4	30	Kvæggylle	FALSE
## 29	Sommer	16.876226	3.156240	0.10592531	Trailing hose	Deep	4	30	Kvæggylle	FALSE
## 30	Efterår	14.497748	3.322770	0.12826017	Trailing hose	Deep	4	30	Kvæggylle	FALSE
## 31	Marts	4.431012	4.058916	0.05996290	Open slot injection	None	NA	0	Kvæggylle	FALSE
## 32	April	8.236460	3.844456	0.05521194	Open slot injection	None	NA	0	Kvæggylle	FALSE
## 33	Maj	12.449250	3.483915	0.07029935	Open slot injection	None	NA	0	Kvæggylle	FALSE
## 34	Sommer	16.876226	3.156240	0.10592531	Open slot injection	None	NA	0	Kvæggylle	FALSE
## 35	Efterår	14.497748	3.322770	0.12826017	Open slot injection	None	NA	0	Kvæggylle	FALSE
## 36	Marts	4.431012	4.058916	0.05996290	Closed slot injection	None	NA	0	Kvæggylle	FALSE
## 37	April	8.236460	3.844456	0.05521194	Closed slot injection	None	NA	0	Kvæggylle	FALSE
## 38	Maj	12.449250	3.483915	0.07029935	Closed slot injection	None	NA	0	Kvæggylle	FALSE
## 39	Sommer	16.876226	3.156240	0.10592531	Closed slot injection	None	NA	0	Kvæggylle	FALSE
## 40	Efterår	14.497748	3.322770	0.12826017	Closed slot injection	None	NA	0	Kvæggylle	FALSE
## 41	Marts	4.431012	4.058916	0.05996290	Trailing hose	None	NA	30	Afgasset biomasse	FALSE
## 42	April	8.236460	3.844456	0.05521194	Trailing hose	None	NA	30	Afgasset biomasse	FALSE
## 43	Maj	12.449250	3.483915	0.07029935	Trailing hose	None	NA	30	Afgasset biomasse	FALSE
## 44	Sommer	16.876226	3.156240	0.10592531	Trailing hose	None	NA	30	Afgasset biomasse	FALSE
## 45	Efterår	14.497748	3.322770	0.12826017	Trailing hose	None	NA	30	Afgasset biomasse	FALSE
## 46	Marts	4.431012	4.058916	0.05996290	Trailing hose	Deep	4	30	Afgasset biomasse	FALSE

## 47	April	8.236460	3.844456	0.05521194	Trailing hose	Deep	4	30	Afgasset biomasse	FALSE
## 48	Maj	12.449250	3.483915	0.07029935	Trailing hose	Deep	4	30	Afgasset biomasse	FALSE
## 49	Sommer	16.876226	3.156240	0.10592531	Trailing hose	Deep	4	30	Afgasset biomasse	FALSE
## 50	Efterår	14.497748	3.322770	0.12826017	Trailing hose	Deep	4	30	Afgasset biomasse	FALSE
## 51	Marts	4.431012	4.058916	0.05996290	Open slot injection	None	NA	0	Afgasset biomasse	FALSE
## 52	April	8.236460	3.844456	0.05521194	Open slot injection	None	NA	0	Afgasset biomasse	FALSE
## 53	Maj	12.449250	3.483915	0.07029935	Open slot injection	None	NA	0	Afgasset biomasse	FALSE
## 54	Sommer	16.876226	3.156240	0.10592531	Open slot injection	None	NA	0	Afgasset biomasse	FALSE
## 55	Efterår	14.497748	3.322770	0.12826017	Open slot injection	None	NA	0	Afgasset biomasse	FALSE
## 56	Marts	4.431012	4.058916	0.05996290	Closed slot injection	None	NA	0	Afgasset biomasse	FALSE
## 57	April	8.236460	3.844456	0.05521194	Closed slot injection	None	NA	0	Afgasset biomasse	FALSE
## 58	Maj	12.449250	3.483915	0.07029935	Closed slot injection	None	NA	0	Afgasset biomasse	FALSE
## 59	Sommer	16.876226	3.156240	0.10592531	Closed slot injection	None	NA	0	Afgasset biomasse	FALSE
## 60	Efterår	14.497748	3.322770	0.12826017	Closed slot injection	None	NA	0	Afgasset biomasse	FALSE
## 61	Marts	4.431012	4.058916	0.05996290	Trailing hose	None	NA	30	Svinegylle	TRUE
## 62	April	8.236460	3.844456	0.05521194	Trailing hose	None	NA	30	Svinegylle	TRUE
## 63	Maj	12.449250	3.483915	0.07029935	Trailing hose	None	NA	30	Svinegylle	TRUE
## 64	Sommer	16.876226	3.156240	0.10592531	Trailing hose	None	NA	30	Svinegylle	TRUE
## 65	Efterår	14.497748	3.322770	0.12826017	Trailing hose	None	NA	30	Svinegylle	TRUE
## 66	Marts	4.431012	4.058916	0.05996290	Trailing hose	None	NA	30	Kvæggylle	TRUE
## 67	April	8.236460	3.844456	0.05521194	Trailing hose	None	NA	30	Kvæggylle	TRUE
## 68	Maj	12.449250	3.483915	0.07029935	Trailing hose	None	NA	30	Kvæggylle	TRUE
## 69	Sommer	16.876226	3.156240	0.10592531	Trailing hose	None	NA	30	Kvæggylle	TRUE
## 70	Efterår	14.497748	3.322770	0.12826017	Trailing hose	None	NA	30	Kvæggylle	TRUE
## 71	Marts	4.431012	4.058916	0.05996290	Trailing hose	None	NA	30	Afgasset biomasse	TRUE
## 72	April	8.236460	3.844456	0.05521194	Trailing hose	None	NA	30	Afgasset biomasse	TRUE
## 73	Maj	12.449250	3.483915	0.07029935	Trailing hose	None	NA	30	Afgasset biomasse	TRUE
## 74	Sommer	16.876226	3.156240	0.10592531	Trailing hose	None	NA	30	Afgasset biomasse	TRUE
## 75	Efterår	14.497748	3.322770	0.12826017	Trailing hose	None	NA	30	Afgasset biomasse	TRUE
##	man.dm	man.ph	ct	tan.app	id					
## 1	3.9	7.20	168	100	1					
## 2	3.9	7.20	168	100	2					
## 3	3.9	7.20	168	100	3					
## 4	3.9	7.20	168	100	4					
## 5	3.9	7.20	168	100	5					
## 6	3.9	7.20	168	100	6					
## 7	3.9	7.20	168	100	7					
## 8	3.9	7.20	168	100	8					
## 9	3.9	7.20	168	100	9					

## 10	3.9	7.20	168	100	10
## 11	3.9	7.20	168	100	11
## 12	3.9	7.20	168	100	12
## 13	3.9	7.20	168	100	13
## 14	3.9	7.20	168	100	14
## 15	3.9	7.20	168	100	15
## 16	3.9	7.20	168	100	16
## 17	3.9	7.20	168	100	17
## 18	3.9	7.20	168	100	18
## 19	3.9	7.20	168	100	19
## 20	3.9	7.20	168	100	20
## 21	6.5	7.00	168	100	21
## 22	6.5	7.00	168	100	22
## 23	6.5	7.00	168	100	23
## 24	6.5	7.00	168	100	24
## 25	6.5	7.00	168	100	25
## 26	6.5	7.00	168	100	26
## 27	6.5	7.00	168	100	27
## 28	6.5	7.00	168	100	28
## 29	6.5	7.00	168	100	29
## 30	6.5	7.00	168	100	30
## 31	6.5	7.00	168	100	31
## 32	6.5	7.00	168	100	32
## 33	6.5	7.00	168	100	33
## 34	6.5	7.00	168	100	34
## 35	6.5	7.00	168	100	35
## 36	6.5	7.00	168	100	36
## 37	6.5	7.00	168	100	37
## 38	6.5	7.00	168	100	38
## 39	6.5	7.00	168	100	39
## 40	6.5	7.00	168	100	40
## 41	5.9	7.90	168	100	41
## 42	5.9	7.90	168	100	42
## 43	5.9	7.90	168	100	43
## 44	5.9	7.90	168	100	44
## 45	5.9	7.90	168	100	45
## 46	5.9	7.90	168	100	46
## 47	5.9	7.90	168	100	47
## 48	5.9	7.90	168	100	48

```
## 49    5.9    7.90 168    100 49
## 50    5.9    7.90 168    100 50
## 51    5.9    7.90 168    100 51
## 52    5.9    7.90 168    100 52
## 53    5.9    7.90 168    100 53
## 54    5.9    7.90 168    100 54
## 55    5.9    7.90 168    100 55
## 56    5.9    7.90 168    100 56
## 57    5.9    7.90 168    100 57
## 58    5.9    7.90 168    100 58
## 59    5.9    7.90 168    100 59
## 60    5.9    7.90 168    100 60
## 61    3.9    6.47 168    100 61
## 62    3.9    6.47 168    100 62
## 63    3.9    6.47 168    100 63
## 64    3.9    6.47 168    100 64
## 65    3.9    6.47 168    100 65
## 66    6.5    6.47 168    100 66
## 67    6.5    6.47 168    100 67
## 68    6.5    6.47 168    100 68
## 69    6.5    6.47 168    100 69
## 70    6.5    6.47 168    100 70
## 71    5.9    6.52 168    100 71
## 72    5.9    6.52 168    100 72
## 73    5.9    6.52 168    100 73
## 74    5.9    6.52 168    100 74
## 75    5.9    6.52 168    100 75
```

Run model

With set 2 parameters

```
preds <- ALFAM2mod(dat, pars = ALFAM2pars02, app.name = 'tan.app', time.name = 'ct',
                  time.incorp = 't.incorp', group = 'id', warn = TRUE, prep = TRUE)
```

```
## User-supplied parameters are being used.
## Incorporation applied (for group 10).
## Incorporation applied (for group 26).
## Incorporation applied (for group 27).
```

```

## Incorporation applied (for group 28).
## Incorporation applied (for group 29).
## Incorporation applied (for group 30).
## Incorporation applied (for group 46).
## Incorporation applied (for group 47).
## Incorporation applied (for group 48).
## Incorporation applied (for group 49).
## Incorporation applied (for group 50).
## Incorporation applied (for group 6).
## Incorporation applied (for group 7).
## Incorporation applied (for group 8).
## Incorporation applied (for group 9).

## Warning in ALFAM2mod(dat, pars = ALFAM2pars02, app.name = "tan.app", time.name = "ct", : Running with 18 parameters. Dropped 6 with no
## These secondary parameters have been dropped:
##   app.mthd.bc.r1
##   app.mthd.ts.r1
##   ts.cereal.hght.r1
##   app.mthd.bc.r3
##   incorp.shallow.f4
##   incorp.shallow.r3
##
## These secondary parameters are being used:
##   int.f0
##   app.mthd.os.f0
##   app.rate.ni.f0
##   man.dm.f0
##   man.source.pig.f0
##   app.mthd.cs.f0
##   int.r1
##   man.dm.r1
##   air.temp.r1
##   wind.2m.r1
##   man.ph.r1

```

```
## int.r2
## rain.rate.r2
## int.r3
## app.mthd.cs.r3
## man.ph.r3
## incorp.deep.f4
## incorp.deep.r3
```

Check reference condition.

```
ALFAM2mod(ref, pars = ALFAM2pars01, app.name = 'tan.app', time.name = 'ct',
          time.incorp = 't.incorp', warn = TRUE)
```

```
## User-supplied parameters are being used.
```

```
## Warning in ALFAM2mod(ref, pars = ALFAM2pars01, app.name = "tan.app", time.name = "ct", : No matching column for
## incorporation parameter(s): incorp.deep, incorp.shallow. Skipping incorporation.
```

```
## Warning in ALFAM2mod(ref, pars = ALFAM2pars01, app.name = "tan.app", time.name = "ct", : Running with 15 parameters. Dropped 5 with no
## These secondary parameters have been dropped:
```

```
## app.rate.f0
## incorp.deep.f4
## incorp.shallow.f4
## incorp.deep.r3
## rain.cum.r3
##
```

```
## These secondary parameters are being used:
```

```
## int.f0
## int.r1
## int.r2
## int.r3
## app.mthd.os.f0
## man.dm.f0
## app.mthd.bc.r1
## man.dm.r1
## air.temp.r1
## wind.2m.r1
## man.ph.r1
## air.temp.r3
## app.mthd.os.r3
## man.ph.r3
```

```

## rain.rate.r2

## ct dt f0 r1 r2 r3 f4 f s j e e.int er
## 1 168 168 0.3237724 0.06628499 0.1110777 0.001255181 1 3.7119e-12 71.30525 0.1708021 28.69475 28.69475 0.2869475

ALFAM2mod(ref, pars = ALFAM2pars02, app.name = 'tan.app', time.name = 'ct',
          time.incorp = 't.incorp', warn = TRUE)

## User-supplied parameters are being used.

## Warning in ALFAM2mod(ref, pars = ALFAM2pars02, app.name = "tan.app", time.name = "ct", : No matching column for
## incorporation parameter(s): incorp.shallow, incorp.deep. Skipping incorporation.

## Warning in ALFAM2mod(ref, pars = ALFAM2pars02, app.name = "tan.app", time.name = "ct", : Running with 20 parameters. Dropped 4 with no
## These secondary parameters have been dropped:
## incorp.shallow.f4
## incorp.shallow.r3
## incorp.deep.f4
## incorp.deep.r3
##
## These secondary parameters are being used:
## int.f0
## app.mthd.os.f0
## app.rate.ni.f0
## man.dm.f0
## man.source.pig.f0
## app.mthd.cs.f0
## int.r1
## app.mthd.bc.r1
## man.dm.r1
## air.temp.r1
## wind.2m.r1
## app.mthd.ts.r1
## ts.cereal.hght.r1
## man.ph.r1
## int.r2
## rain.rate.r2
## int.r3
## app.mthd.bc.r3
## app.mthd.cs.r3
## man.ph.r3

```



```
##      ct  dt      f0      r1      r2      r3 f4      f      s      j      e      e.int      er
## 1 168 168 0.2589096 0.115023 0.01587869 0.0005910004 1 7.283926e-09 69.96107 0.1788032 30.03893 30.03893 0.3003893
```

Add results to main df

```
dat$EF <- signif(preds$er, 2)
dat$EFp <- 100 * signif(preds$er, 2)
```