Model call record

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

```
dat
```

```
##    app.timing  air.temp  wind.2m  rain.rate             app.mthd incorp
## 1       Marts  4.431012 4.058916 0.05996290        Trailing hose   None
## 2       April  8.236460 3.844456 0.05521194        Trailing hose   None
## 3         Maj 12.449250 3.483915 0.07029935        Trailing hose   None
```

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

```
## 43        Maj 12.449250 3.483915 0.07029935         Trailing hose   None
## 44     Sommer 16.876226 3.156240 0.10592531         Trailing hose   None
## 45    Efterår 14.497748 3.322770 0.12826017         Trailing hose   None
## 46      Marts  4.431012 4.058916 0.05996290         Trailing hose   Deep
## 47      April  8.236460 3.844456 0.05521194         Trailing hose   Deep
## 48        Maj 12.449250 3.483915 0.07029935         Trailing hose   Deep
## 49     Sommer 16.876226 3.156240 0.10592531         Trailing hose   Deep
## 50    Efterår 14.497748 3.322770 0.12826017         Trailing hose   Deep
## 51      Marts  4.431012 4.058916 0.05996290   Open slot injection   None
## 52      April  8.236460 3.844456 0.05521194   Open slot injection   None
## 53        Maj 12.449250 3.483915 0.07029935   Open slot injection   None
## 54     Sommer 16.876226 3.156240 0.10592531   Open slot injection   None
## 55    Efterår 14.497748 3.322770 0.12826017   Open slot injection   None
## 56      Marts  4.431012 4.058916 0.05996290 Closed slot injection   None
## 57      April  8.236460 3.844456 0.05521194 Closed slot injection   None
## 58        Maj 12.449250 3.483915 0.07029935 Closed slot injection   None
## 59     Sommer 16.876226 3.156240 0.10592531 Closed slot injection   None
## 60    Efterår 14.497748 3.322770 0.12826017 Closed slot injection   None
## 61      Marts  4.431012 4.058916 0.05996290         Trailing hose   None
## 62      April  8.236460 3.844456 0.05521194         Trailing hose   None
## 63        Maj 12.449250 3.483915 0.07029935         Trailing hose   None
## 64     Sommer 16.876226 3.156240 0.10592531         Trailing hose   None
## 65    Efterår 14.497748 3.322770 0.12826017         Trailing hose   None
## 66      Marts  4.431012 4.058916 0.05996290         Trailing hose   None
## 67      April  8.236460 3.844456 0.05521194         Trailing hose   None
## 68        Maj 12.449250 3.483915 0.07029935         Trailing hose   None
## 69     Sommer 16.876226 3.156240 0.10592531         Trailing hose   None
## 70    Efterår 14.497748 3.322770 0.12826017         Trailing hose   None
## 71      Marts  4.431012 4.058916 0.05996290         Trailing hose   None
## 72      April  8.236460 3.844456 0.05521194         Trailing hose   None
## 73        Maj 12.449250 3.483915 0.07029935         Trailing hose   None
## 74     Sommer 16.876226 3.156240 0.10592531         Trailing hose   None
## 75    Efterår 14.497748 3.322770 0.12826017         Trailing hose   None
##    t.incorp app.rate.ni        man.source  acid man.dm man.ph  ct tan.app id
## 1        NA          30        Svinegylle FALSE    3.9   7.20 168     100  1
## 2        NA          30        Svinegylle FALSE    3.9   7.20 168     100  2
## 3        NA          30        Svinegylle FALSE    3.9   7.20 168     100  3
## 4        NA          30        Svinegylle FALSE    3.9   7.20 168     100  4
## 5        NA          30        Svinegylle FALSE    3.9   7.20 168     100  5
```

```
## 6         4          30        Svinegylle FALSE    3.9   7.20 168     100  6
## 7         4          30        Svinegylle FALSE    3.9   7.20 168     100  7
## 8         4          30        Svinegylle FALSE    3.9   7.20 168     100  8
## 9         4          30        Svinegylle FALSE    3.9   7.20 168     100  9
## 10        4          30        Svinegylle FALSE    3.9   7.20 168     100 10
## 11       NA           0        Svinegylle FALSE    3.9   7.20 168     100 11
## 12       NA           0        Svinegylle FALSE    3.9   7.20 168     100 12
## 13       NA           0        Svinegylle FALSE    3.9   7.20 168     100 13
## 14       NA           0        Svinegylle FALSE    3.9   7.20 168     100 14
## 15       NA           0        Svinegylle FALSE    3.9   7.20 168     100 15
## 16       NA           0        Svinegylle FALSE    3.9   7.20 168     100 16
## 17       NA           0        Svinegylle FALSE    3.9   7.20 168     100 17
## 18       NA           0        Svinegylle FALSE    3.9   7.20 168     100 18
## 19       NA           0        Svinegylle FALSE    3.9   7.20 168     100 19
## 20       NA           0        Svinegylle FALSE    3.9   7.20 168     100 20
## 21       NA          30         Kvæggylle FALSE    6.5   7.00 168     100 21
## 22       NA          30         Kvæggylle FALSE    6.5   7.00 168     100 22
## 23       NA          30         Kvæggylle FALSE    6.5   7.00 168     100 23
## 24       NA          30         Kvæggylle FALSE    6.5   7.00 168     100 24
## 25       NA          30         Kvæggylle FALSE    6.5   7.00 168     100 25
## 26        4          30         Kvæggylle FALSE    6.5   7.00 168     100 26
## 27        4          30         Kvæggylle FALSE    6.5   7.00 168     100 27
## 28        4          30         Kvæggylle FALSE    6.5   7.00 168     100 28
## 29        4          30         Kvæggylle FALSE    6.5   7.00 168     100 29
## 30        4          30         Kvæggylle FALSE    6.5   7.00 168     100 30
## 31       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 31
## 32       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 32
## 33       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 33
## 34       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 34
## 35       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 35
## 36       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 36
## 37       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 37
## 38       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 38
## 39       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 39
## 40       NA           0         Kvæggylle FALSE    6.5   7.00 168     100 40
## 41       NA          30 Afgasset biomasse FALSE    6.9   7.90 168     100 41
## 42       NA          30 Afgasset biomasse FALSE    6.9   7.90 168     100 42
## 43       NA          30 Afgasset biomasse FALSE    6.9   7.90 168     100 43
## 44       NA          30 Afgasset biomasse FALSE    6.9   7.90 168     100 44
```

```
## 45       NA          30 Afgasset biomasse FALSE    6.9   7.90 168     100 45
## 46        4          30 Afgasset biomasse FALSE    6.9   7.90 168     100 46
## 47        4          30 Afgasset biomasse FALSE    6.9   7.90 168     100 47
## 48        4          30 Afgasset biomasse FALSE    6.9   7.90 168     100 48
## 49        4          30 Afgasset biomasse FALSE    6.9   7.90 168     100 49
## 50        4          30 Afgasset biomasse FALSE    6.9   7.90 168     100 50
## 51       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 51
## 52       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 52
## 53       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 53
## 54       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 54
## 55       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 55
## 56       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 56
## 57       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 57
## 58       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 58
## 59       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 59
## 60       NA           0 Afgasset biomasse FALSE    6.9   7.90 168     100 60
## 61       NA          30        Svinegylle  TRUE    3.9   6.47 168     100 61
## 62       NA          30        Svinegylle  TRUE    3.9   6.47 168     100 62
## 63       NA          30        Svinegylle  TRUE    3.9   6.47 168     100 63
## 64       NA          30        Svinegylle  TRUE    3.9   6.47 168     100 64
## 65       NA          30        Svinegylle  TRUE    3.9   6.47 168     100 65
## 66       NA          30         Kvæggylle  TRUE    6.5   6.47 168     100 66
## 67       NA          30         Kvæggylle  TRUE    6.5   6.47 168     100 67
## 68       NA          30         Kvæggylle  TRUE    6.5   6.47 168     100 68
## 69       NA          30         Kvæggylle  TRUE    6.5   6.47 168     100 69
## 70       NA          30         Kvæggylle  TRUE    6.5   6.47 168     100 70
## 71       NA          30 Afgasset biomasse  TRUE    6.9   6.52 168     100 71
## 72       NA          30 Afgasset biomasse  TRUE    6.9   6.52 168     100 72
## 73       NA          30 Afgasset biomasse  TRUE    6.9   6.52 168     100 73
## 74       NA          30 Afgasset biomasse  TRUE    6.9   6.52 168     100 74
## 75       NA          30 Afgasset biomasse  TRUE    6.9   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
## 1 168 168 0.3237724 0.06628499 0.1110777 0.001255181  1 3.7119e-12 71.30525
##           j        e    e.int        er
## 1 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
## 1 168 168 0.2589096 0.115023 0.01587869 0.0005910004  1 7.283926e-09 69.96107
##           j        e    e.int        er
## 1 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)
```