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 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
```

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```
##    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
```

```r
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

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