Model call record

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Calculates emission factors

Check package version.

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

```
## [1] '3.7'
```

Parameter values.

```
ALFAM2pars02
```

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

```
dat
```

```
##      app.timing  air.temp  wind.2m  rain.rate  scenario        man.source fraction red.dm man.dm man.ph incorp      app.mthd t.incorp
## 1         Marts  4.431012 4.058916 0.05996290 reference       Svinegylle      raw      0   3.90    7.2   none Trailing hose       NA
```

```
## 2         April  8.236460 3.844456 0.05521194 reference        Svinegylle      raw      0   3.90    7.2   none Trailing hose       NA
## 3           Maj 12.449250 3.483915 0.07029935 reference        Svinegylle      raw      0   3.90    7.2   none Trailing hose       NA
## 4        Sommer 16.876226 3.156240 0.10592531 reference        Svinegylle      raw      0   3.90    7.2   none Trailing hose       NA
## 5      Efterår 14.497748 3.322770 0.12826017 reference        Svinegylle      raw      0   3.90    7.2   none Trailing hose       NA
## 1.1      Marts  4.431012 4.058916 0.05996290 reference         Kvæggylle      raw      0   6.50    7.0   none Trailing hose       NA
## 2.1      April  8.236460 3.844456 0.05521194 reference         Kvæggylle      raw      0   6.50    7.0   none Trailing hose       NA
## 3.1        Maj 12.449250 3.483915 0.07029935 reference         Kvæggylle      raw      0   6.50    7.0   none Trailing hose       NA
## 4.1     Sommer 16.876226 3.156240 0.10592531 reference         Kvæggylle      raw      0   6.50    7.0   none Trailing hose       NA
## 5.1    Efterår 14.497748 3.322770 0.12826017 reference         Kvæggylle      raw      0   6.50    7.0   none Trailing hose       NA
## 1.2      Marts  4.431012 4.058916 0.05996290 reference Afgasset biomasse      raw      0   5.90    7.9   none Trailing hose       NA
## 2.2      April  8.236460 3.844456 0.05521194 reference Afgasset biomasse      raw      0   5.90    7.9   none Trailing hose       NA
## 3.2        Maj 12.449250 3.483915 0.07029935 reference Afgasset biomasse      raw      0   5.90    7.9   none Trailing hose       NA
## 4.2     Sommer 16.876226 3.156240 0.10592531 reference Afgasset biomasse      raw      0   5.90    7.9   none Trailing hose       NA
## 5.2    Efterår 14.497748 3.322770 0.12826017 reference Afgasset biomasse      raw      0   5.90    7.9   none Trailing hose       NA
## 1.3      Marts  4.431012 4.058916 0.05996290       low        Svinegylle   liquid    0.6   1.56    7.4   none Trailing hose       NA
## 2.3      April  8.236460 3.844456 0.05521194       low        Svinegylle   liquid    0.6   1.56    7.4   none Trailing hose       NA
## 3.3        Maj 12.449250 3.483915 0.07029935       low        Svinegylle   liquid    0.6   1.56    7.4   none Trailing hose       NA
## 4.3     Sommer 16.876226 3.156240 0.10592531       low        Svinegylle   liquid    0.6   1.56    7.4   none Trailing hose       NA
## 5.3    Efterår 14.497748 3.322770 0.12826017       low        Svinegylle   liquid    0.6   1.56    7.4   none Trailing hose       NA
## 1.4      Marts  4.431012 4.058916 0.05996290       low         Kvæggylle   liquid    0.6   2.60    7.2   none Trailing hose       NA
## 2.4      April  8.236460 3.844456 0.05521194       low         Kvæggylle   liquid    0.6   2.60    7.2   none Trailing hose       NA
## 3.4        Maj 12.449250 3.483915 0.07029935       low         Kvæggylle   liquid    0.6   2.60    7.2   none Trailing hose       NA
## 4.4     Sommer 16.876226 3.156240 0.10592531       low         Kvæggylle   liquid    0.6   2.60    7.2   none Trailing hose       NA
## 5.4    Efterår 14.497748 3.322770 0.12826017       low         Kvæggylle   liquid    0.6   2.60    7.2   none Trailing hose       NA
## 1.5      Marts  4.431012 4.058916 0.05996290       low Afgasset biomasse   liquid    0.6   2.36    8.1   none Trailing hose       NA
## 2.5      April  8.236460 3.844456 0.05521194       low Afgasset biomasse   liquid    0.6   2.36    8.1   none Trailing hose       NA
## 3.5        Maj 12.449250 3.483915 0.07029935       low Afgasset biomasse   liquid    0.6   2.36    8.1   none Trailing hose       NA
## 4.5     Sommer 16.876226 3.156240 0.10592531       low Afgasset biomasse   liquid    0.6   2.36    8.1   none Trailing hose       NA
## 5.5    Efterår 14.497748 3.322770 0.12826017       low Afgasset biomasse   liquid    0.6   2.36    8.1   none Trailing hose       NA
## 1.6      Marts  4.431012 4.058916 0.05996290       mid        Svinegylle   liquid    0.4   2.34    7.4   none Trailing hose       NA
## 2.6      April  8.236460 3.844456 0.05521194       mid        Svinegylle   liquid    0.4   2.34    7.4   none Trailing hose       NA
## 3.6        Maj 12.449250 3.483915 0.07029935       mid        Svinegylle   liquid    0.4   2.34    7.4   none Trailing hose       NA
## 4.6     Sommer 16.876226 3.156240 0.10592531       mid        Svinegylle   liquid    0.4   2.34    7.4   none Trailing hose       NA
## 5.6    Efterår 14.497748 3.322770 0.12826017       mid        Svinegylle   liquid    0.4   2.34    7.4   none Trailing hose       NA
## 1.7      Marts  4.431012 4.058916 0.05996290       mid         Kvæggylle   liquid    0.4   3.90    7.2   none Trailing hose       NA
## 2.7      April  8.236460 3.844456 0.05521194       mid         Kvæggylle   liquid    0.4   3.90    7.2   none Trailing hose       NA
## 3.7        Maj 12.449250 3.483915 0.07029935       mid         Kvæggylle   liquid    0.4   3.90    7.2   none Trailing hose       NA
## 4.7     Sommer 16.876226 3.156240 0.10592531       mid         Kvæggylle   liquid    0.4   3.90    7.2   none Trailing hose       NA
## 5.7    Efterår 14.497748 3.322770 0.12826017       mid         Kvæggylle   liquid    0.4   3.90    7.2   none Trailing hose       NA
```

```
## 1.8       Marts  4.431012 4.058916 0.05996290       mid Afgasset biomasse   liquid    0.4   3.54    8.1   none Trailing hose       NA
## 2.8       April  8.236460 3.844456 0.05521194       mid Afgasset biomasse   liquid    0.4   3.54    8.1   none Trailing hose       NA
## 3.8         Maj 12.449250 3.483915 0.07029935       mid Afgasset biomasse   liquid    0.4   3.54    8.1   none Trailing hose       NA
## 4.8      Sommer 16.876226 3.156240 0.10592531       mid Afgasset biomasse   liquid    0.4   3.54    8.1   none Trailing hose       NA
## 5.8     Efterår 14.497748 3.322770 0.12826017       mid Afgasset biomasse   liquid    0.4   3.54    8.1   none Trailing hose       NA
## 1.9       Marts  4.431012 4.058916 0.05996290      high        Svinegylle   liquid    0.2   3.12    7.4   none Trailing hose       NA
## 2.9       April  8.236460 3.844456 0.05521194      high        Svinegylle   liquid    0.2   3.12    7.4   none Trailing hose       NA
## 3.9         Maj 12.449250 3.483915 0.07029935      high        Svinegylle   liquid    0.2   3.12    7.4   none Trailing hose       NA
## 4.9      Sommer 16.876226 3.156240 0.10592531      high        Svinegylle   liquid    0.2   3.12    7.4   none Trailing hose       NA
## 5.9     Efterår 14.497748 3.322770 0.12826017      high        Svinegylle   liquid    0.2   3.12    7.4   none Trailing hose       NA
## 1.10      Marts  4.431012 4.058916 0.05996290      high         Kvæggylle   liquid    0.2   5.20    7.2   none Trailing hose       NA
## 2.10      April  8.236460 3.844456 0.05521194      high         Kvæggylle   liquid    0.2   5.20    7.2   none Trailing hose       NA
## 3.10        Maj 12.449250 3.483915 0.07029935      high         Kvæggylle   liquid    0.2   5.20    7.2   none Trailing hose       NA
## 4.10     Sommer 16.876226 3.156240 0.10592531      high         Kvæggylle   liquid    0.2   5.20    7.2   none Trailing hose       NA
## 5.10    Efterår 14.497748 3.322770 0.12826017      high         Kvæggylle   liquid    0.2   5.20    7.2   none Trailing hose       NA
## 1.11      Marts  4.431012 4.058916 0.05996290      high Afgasset biomasse   liquid    0.2   4.72    8.1   none Trailing hose       NA
## 2.11      April  8.236460 3.844456 0.05521194      high Afgasset biomasse   liquid    0.2   4.72    8.1   none Trailing hose       NA
## 3.11        Maj 12.449250 3.483915 0.07029935      high Afgasset biomasse   liquid    0.2   4.72    8.1   none Trailing hose       NA
##      app.rate.ni  ct tan.app id
## 1             30 168     100  1
## 2             30 168     100  2
## 3             30 168     100  3
## 4             30 168     100  4
## 5             30 168     100  5
## 1.1           30 168     100  6
## 2.1           30 168     100  7
## 3.1           30 168     100  8
## 4.1           30 168     100  9
## 5.1           30 168     100 10
## 1.2           30 168     100 11
## 2.2           30 168     100 12
## 3.2           30 168     100 13
## 4.2           30 168     100 14
## 5.2           30 168     100 15
## 1.3           30 168     100 16
## 2.3           30 168     100 17
## 3.3           30 168     100 18
## 4.3           30 168     100 19
## 5.3           30 168     100 20
```

```
## 1.4          30 168     100 21
## 2.4          30 168     100 22
## 3.4          30 168     100 23
## 4.4          30 168     100 24
## 5.4          30 168     100 25
## 1.5          30 168     100 26
## 2.5          30 168     100 27
## 3.5          30 168     100 28
## 4.5          30 168     100 29
## 5.5          30 168     100 30
## 1.6          30 168     100 31
## 2.6          30 168     100 32
## 3.6          30 168     100 33
## 4.6          30 168     100 34
## 5.6          30 168     100 35
## 1.7          30 168     100 36
## 2.7          30 168     100 37
## 3.7          30 168     100 38
## 4.7          30 168     100 39
## 5.7          30 168     100 40
## 1.8          30 168     100 41
## 2.8          30 168     100 42
## 3.8          30 168     100 43
## 4.8          30 168     100 44
## 5.8          30 168     100 45
## 1.9          30 168     100 46
## 2.9          30 168     100 47
## 3.9          30 168     100 48
## 4.9          30 168     100 49
## 5.9          30 168     100 50
## 1.10         30 168     100 51
## 2.10         30 168     100 52
## 3.10         30 168     100 53
## 4.10         30 168     100 54
## 5.10         30 168     100 55
## 1.11         30 168     100 56
## 2.11         30 168     100 57
## 3.11         30 168     100 58
##  [ reached 'max' / getOption("max.print") -- omitted 137 rows ]
```

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 groups: 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 136, 137, 138, 139, 140, 1

## Warning in ALFAM2mod(dat, pars = ALFAM2pars02, app.name = "tan.app", time.name = "ct", : Running with 17 parameters. Dropped 7 with no
## These secondary parameters have been dropped:
##   app.mthd.os.f0
##   app.mthd.cs.f0
##   app.mthd.ts.r1
##   ts.cereal.hght.r1
##   app.mthd.cs.r3
##   incorp.shallow.f4
##   incorp.shallow.r3
##
## These secondary parameters are being used:
##   int.f0
##   app.rate.ni.f0
##   man.dm.f0
##   man.source.pig.f0
##   int.r1
##   app.mthd.bc.r1
##   man.dm.r1
##   air.temp.r1
##   wind.2m.r1
##   man.ph.r1
##   int.r2
##   rain.rate.r2
##   int.r3
##   app.mthd.bc.r3
##   man.ph.r3
##   incorp.deep.f4
##   incorp.deep.r3
```

Add results to main df

```
dat$EF <- signif(preds$er, 4)
dat$EFp <- 100 * signif(preds$er, 4)
```