Model call record

Sasha D. Hafner

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.dk app.timing  air.temp  wind.2m  rain.rate             app.mthd
## 1          Marts      March  4.431012 4.058916 0.05996290        Trailing hose
## 2          April      April  8.236460 3.844456 0.05521194        Trailing hose
## 3            Maj        May 12.449250 3.483915 0.07029935        Trailing hose
## 4         Sommer     Summer 16.876226 3.156240 0.10592531        Trailing hose
```

```
## 5        Efterår     Autumn 14.497748 3.322770 0.12826017         Trailing hose
## 6          Marts      March  4.431012 4.058916 0.05996290   Open slot injection
## 7          April      April  8.236460 3.844456 0.05521194   Open slot injection
## 8            Maj        May 12.449250 3.483915 0.07029935   Open slot injection
## 9         Sommer     Summer 16.876226 3.156240 0.10592531   Open slot injection
## 10       Efterår     Autumn 14.497748 3.322770 0.12826017   Open slot injection
## 11         Marts      March  4.431012 4.058916 0.05996290 Closed slot injection
## 12         April      April  8.236460 3.844456 0.05521194 Closed slot injection
## 13           Maj        May 12.449250 3.483915 0.07029935 Closed slot injection
## 14        Sommer     Summer 16.876226 3.156240 0.10592531 Closed slot injection
## 15       Efterår     Autumn 14.497748 3.322770 0.12826017 Closed slot injection
## 16         Marts      March  4.431012 4.058916 0.05996290         Trailing hose
## 17         April      April  8.236460 3.844456 0.05521194         Trailing hose
## 18           Maj        May 12.449250 3.483915 0.07029935         Trailing hose
## 19        Sommer     Summer 16.876226 3.156240 0.10592531         Trailing hose
## 20       Efterår     Autumn 14.497748 3.322770 0.12826017         Trailing hose
## 21         Marts      March  4.431012 4.058916 0.05996290         Trailing hose
## 22         April      April  8.236460 3.844456 0.05521194         Trailing hose
## 23           Maj        May 12.449250 3.483915 0.07029935         Trailing hose
## 24        Sommer     Summer 16.876226 3.156240 0.10592531         Trailing hose
## 25       Efterår     Autumn 14.497748 3.322770 0.12826017         Trailing hose
## 26         Marts      March  4.431012 4.058916 0.05996290         Trailing hose
## 27         April      April  8.236460 3.844456 0.05521194         Trailing hose
## 28           Maj        May 12.449250 3.483915 0.07029935         Trailing hose
## 29        Sommer     Summer 16.876226 3.156240 0.10592531         Trailing hose
## 30       Efterår     Autumn 14.497748 3.322770 0.12826017         Trailing hose
##    app.rate.ni        man.source     acid man.dm man.ph  ct tan.app id
## 1           30 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  1
## 2           30 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  2
## 3           30 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  3
## 4           30 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  4
## 5           30 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  5
## 6            0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  6
## 7            0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  7
## 8            0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  8
## 9            0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100  9
## 10           0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100 10
## 11           0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100 11
## 12           0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100 12
```

```
## 13           0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100 13
## 14           0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100 14
## 15           0 Afgasset biomasse   0 kg/t    5.9 7.9000 168     100 15
## 16          30 Afgasset biomasse  11 kg/t    5.9 6.5200 168     100 16
## 17          30 Afgasset biomasse  11 kg/t    5.9 6.5200 168     100 17
## 18          30 Afgasset biomasse  11 kg/t    5.9 6.5200 168     100 18
## 19          30 Afgasset biomasse  11 kg/t    5.9 6.5200 168     100 19
## 20          30 Afgasset biomasse  11 kg/t    5.9 6.5200 168     100 20
## 21          30 Afgasset biomasse 3.4 kg/t    5.9 7.0813 168     100 21
## 22          30 Afgasset biomasse 3.4 kg/t    5.9 7.0813 168     100 22
## 23          30 Afgasset biomasse 3.4 kg/t    5.9 7.0813 168     100 23
## 24          30 Afgasset biomasse 3.4 kg/t    5.9 7.0813 168     100 24
## 25          30 Afgasset biomasse 3.4 kg/t    5.9 7.0813 168     100 25
## 26          30 Afgasset biomasse 7.5 kg/t    5.9 6.7900 168     100 26
## 27          30 Afgasset biomasse 7.5 kg/t    5.9 6.7900 168     100 27
## 28          30 Afgasset biomasse 7.5 kg/t    5.9 6.7900 168     100 28
## 29          30 Afgasset biomasse 7.5 kg/t    5.9 6.7900 168     100 29
## 30          30 Afgasset biomasse 7.5 kg/t    5.9 6.7900 168     100 30
```

Run model

With set 2 parameters

```
preds <- ALFAM2mod(dat, pars = ALFAM2pars02, app.name = 'tan.app', time.name = 'ct', group = 'id', warn = TRUE, prep = TRUE, parallel = TR
```

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

```
## Warning in ALFAM2mod(dat, pars = ALFAM2pars02, app.name = "tan.app", time.name = "ct", : Running with 15 parameters. Dropped 9 with no
## These secondary parameters have been dropped:
##   man.source.pig.f0
##   app.mthd.bc.r1
##   app.mthd.ts.r1
##   ts.cereal.hght.r1
##   app.mthd.bc.r3
##   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
##   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
```

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)
```