# Basic tests using `abm_regular()` and `abm_variable()`

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## Overview

Objective is to test relatively basic operation of the `abm()` functions during simplification.
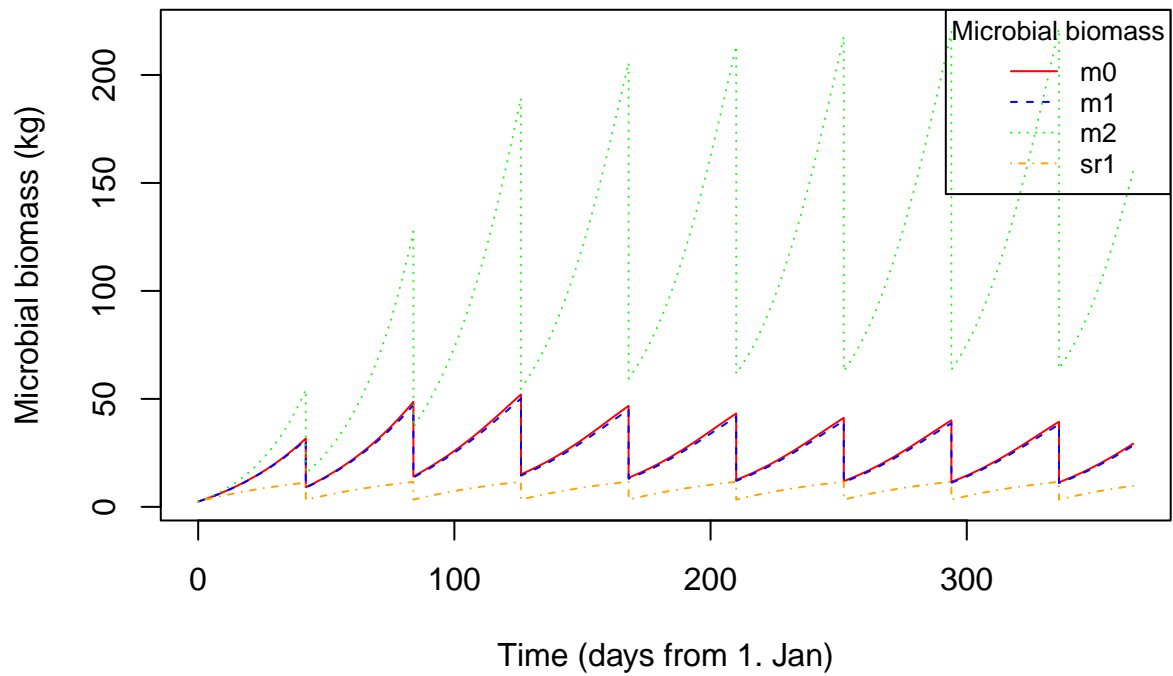
## Prep
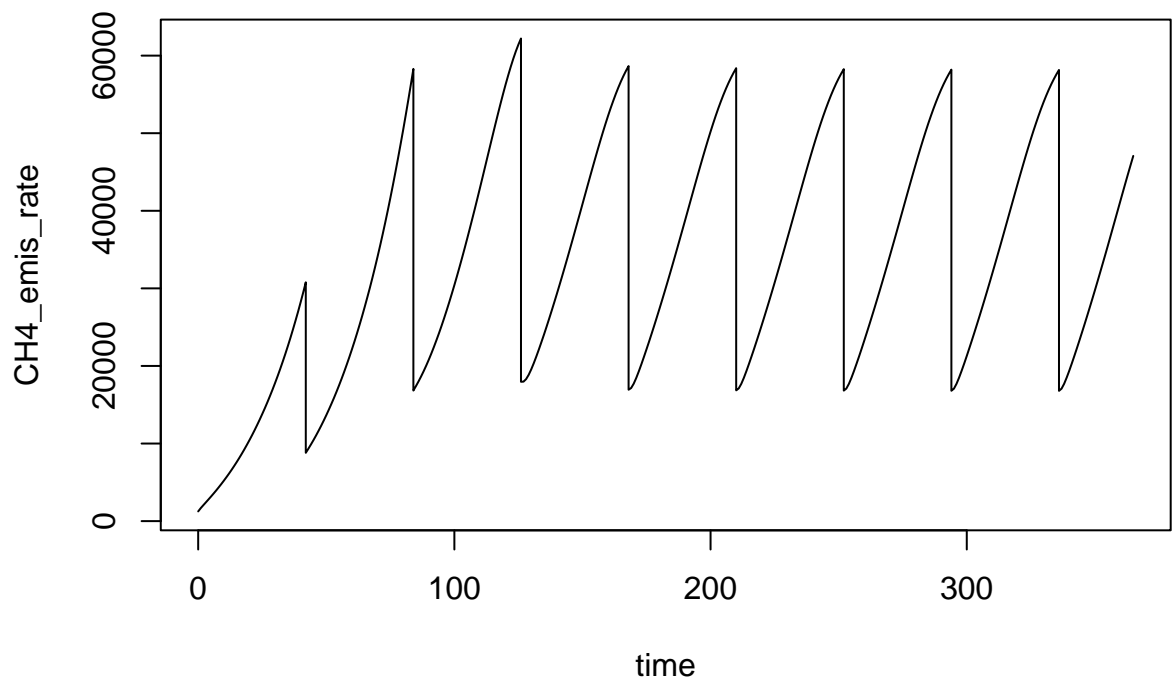
```
devtools::load_all()
```

```
## i Loading ABM
```

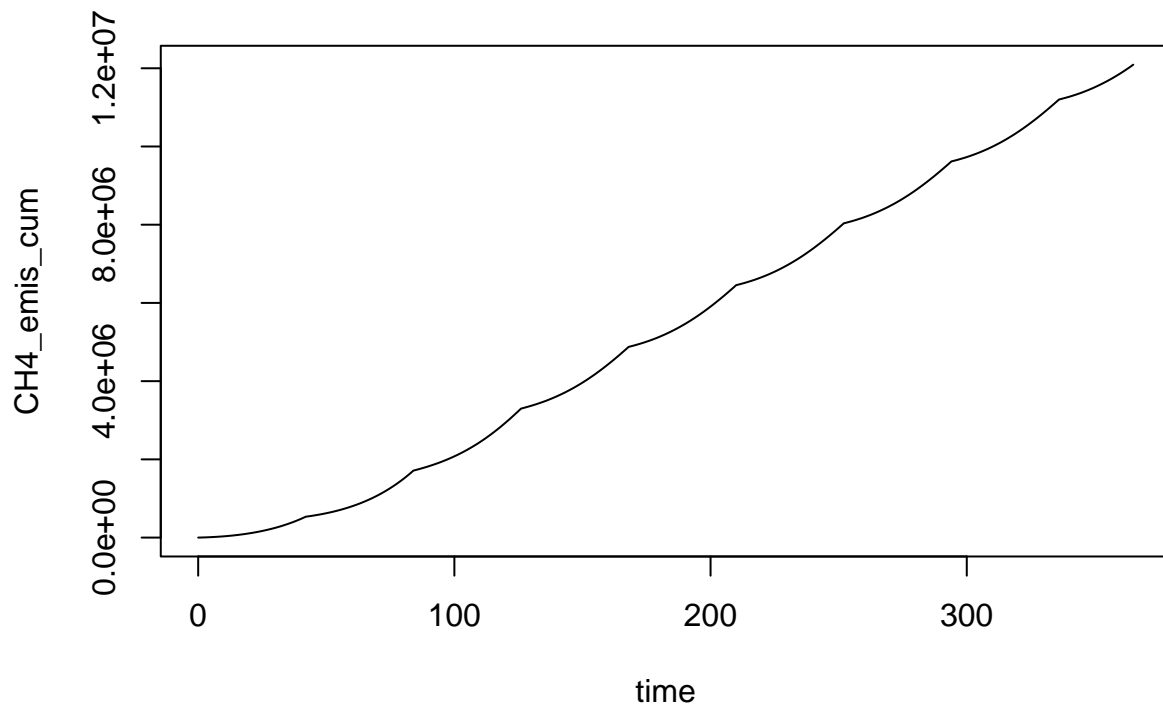## Case 1, defaults

```
out0 <- abm(365)
```

```
line_colors <- c('red', 'blue', 'green','orange')
matplot(out0$time, out0[, nn <- c('m0','m1','m2','sr1')]/1000,
        type = 'l', lty = c(1:length(nn)), col = line_colors, xlab = 'Time (days from 1. Jan)',
        ylab = 'Microbial biomass (kg)')
legend("topright", legend = nn, lty = c(1:length(nn)), col = line_colors, lwd = 1,
        title = "Microbial biomass", cex = 0.8)
```
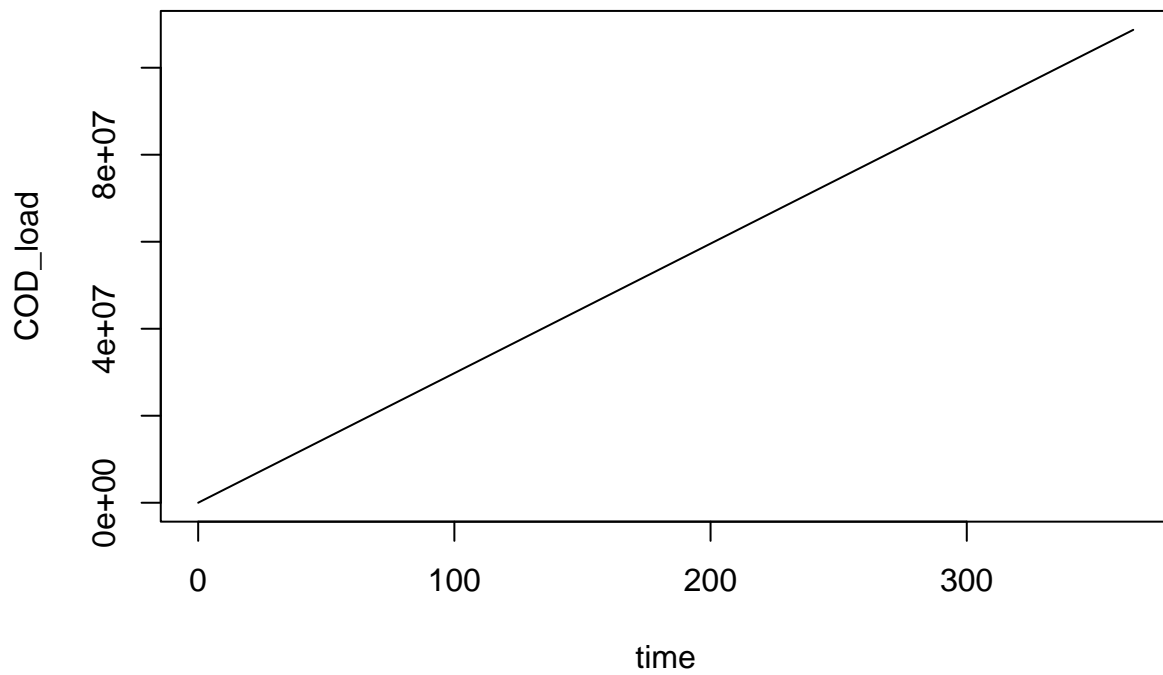
```
plot(CH4_emis_rate ~ time, data = out0, type = 'l')
```
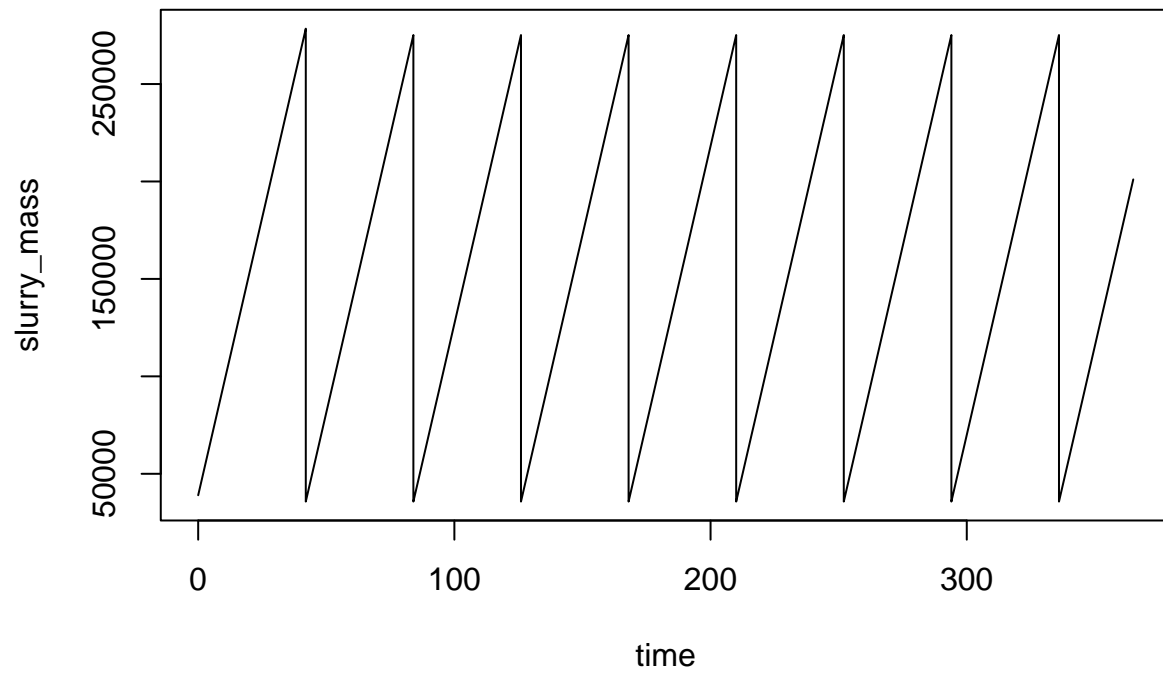


```
plot(CH4_emis_cum ~ time, data = out0, type = 'l')
```
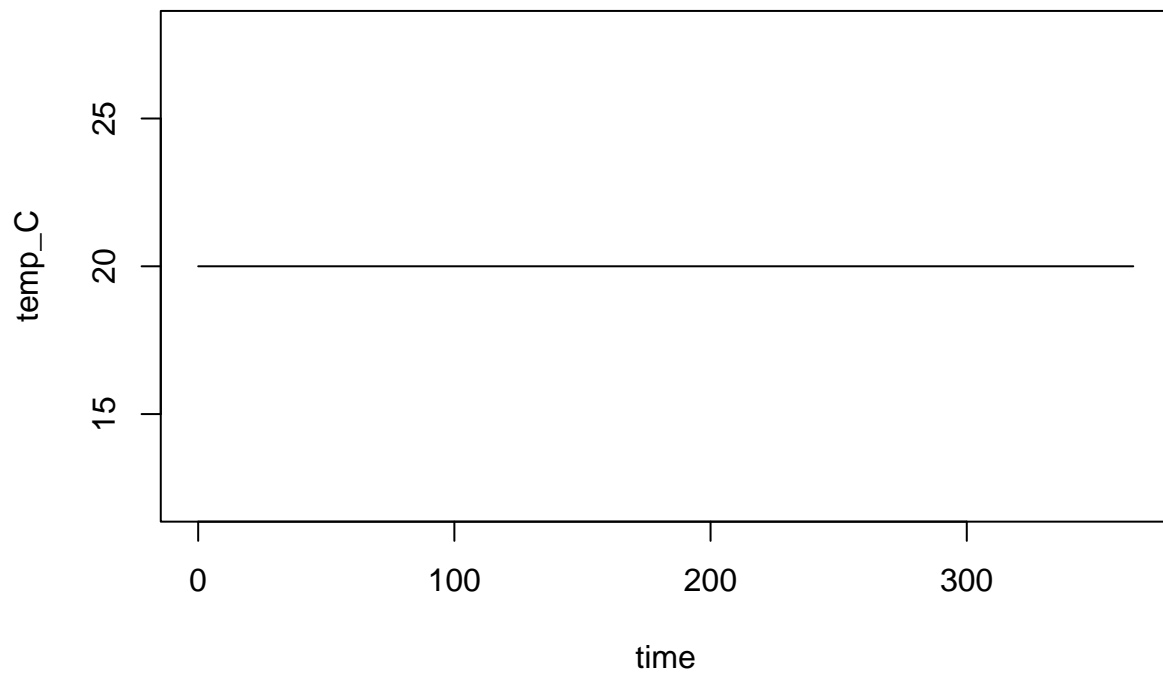
```r
plot(COD_load ~ time, data = out0, type = 'l')
```
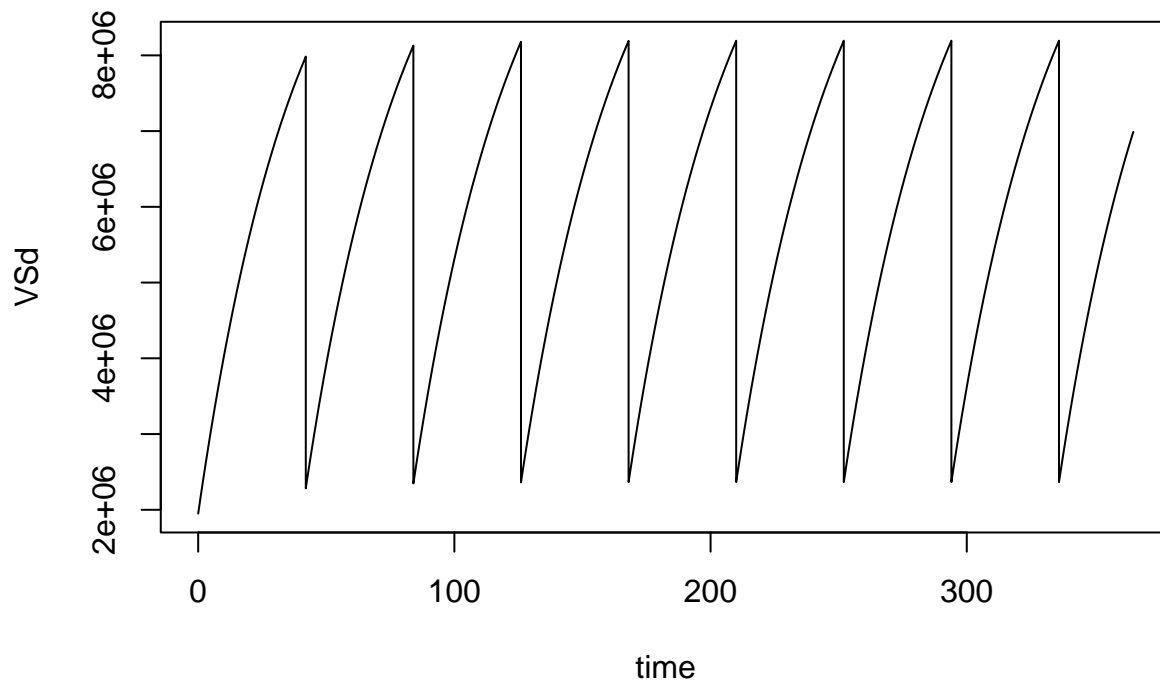


```r
plot(slurry_mass ~ time, data = out0, type = 'l')
```
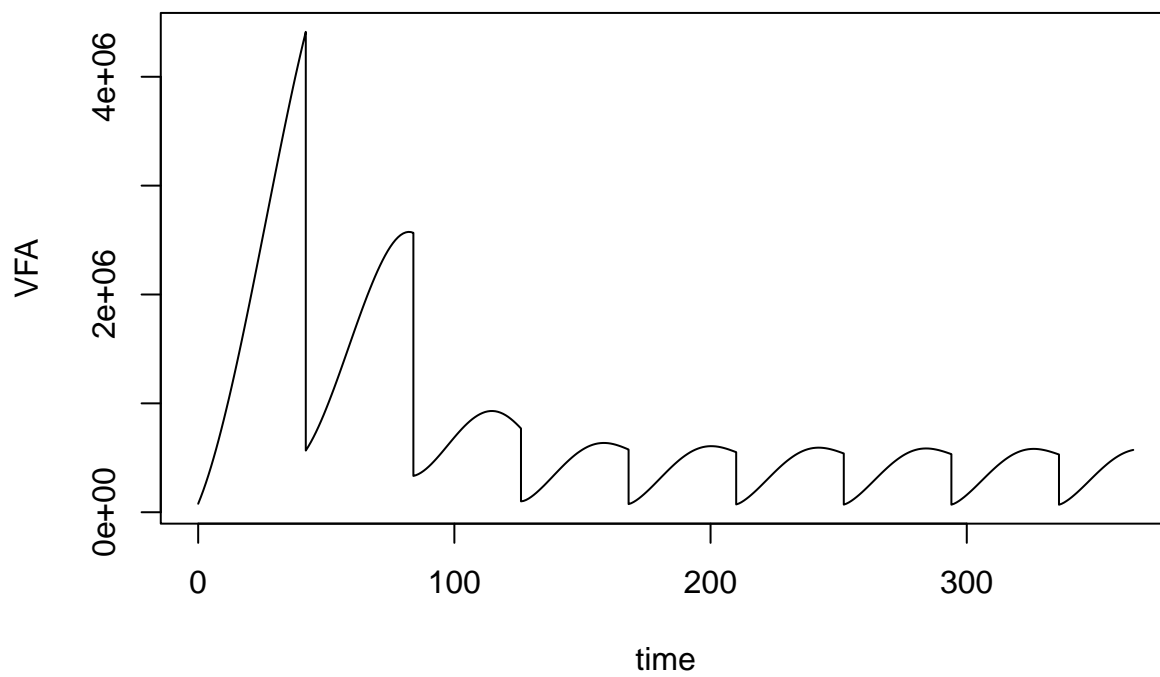
```r
plot(temp_C ~ time, data = out0, type = 'l')
```



```r
plot(VSd ~ time, data = out0, type = 'l')
```
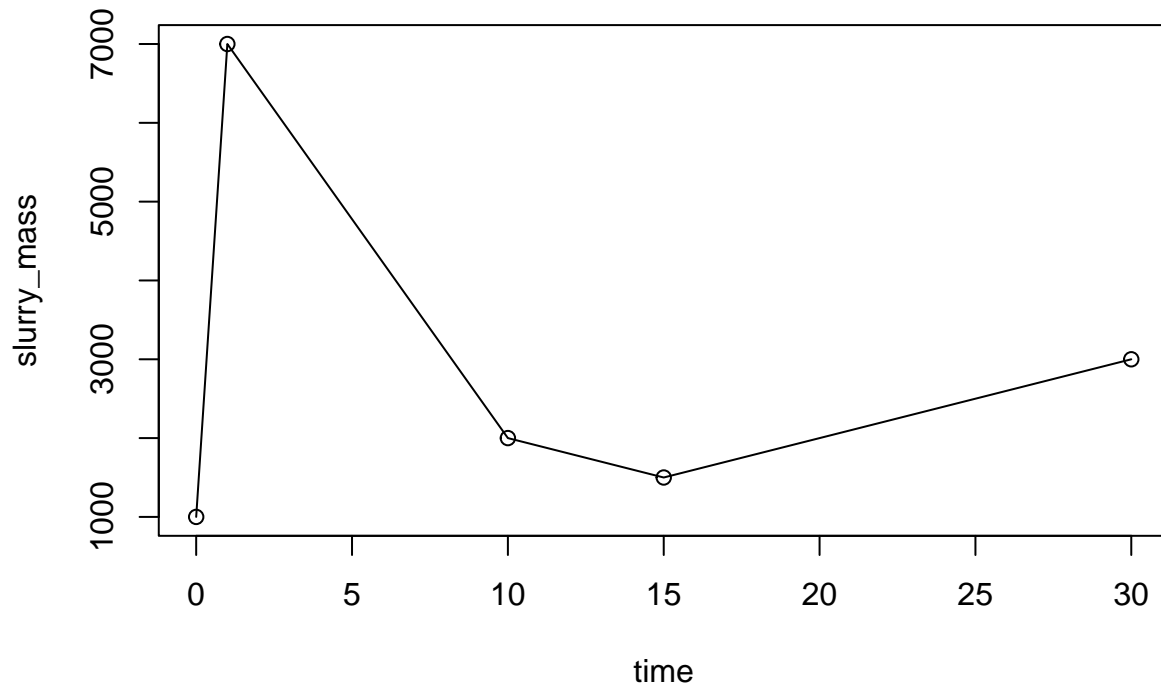
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```r
plot(VFA ~ time, data = out0, type = 'l')
```



Slurry mass data.

```r
slurry_mass_dat <- data.frame(time = c(0, 1, 10, 15, 30), slurry_mass = c(1000, 7000, 2000, 1500, 3000))
plot(slurry_mass ~ time, data = slurry_mass_dat, type = 'o')
```
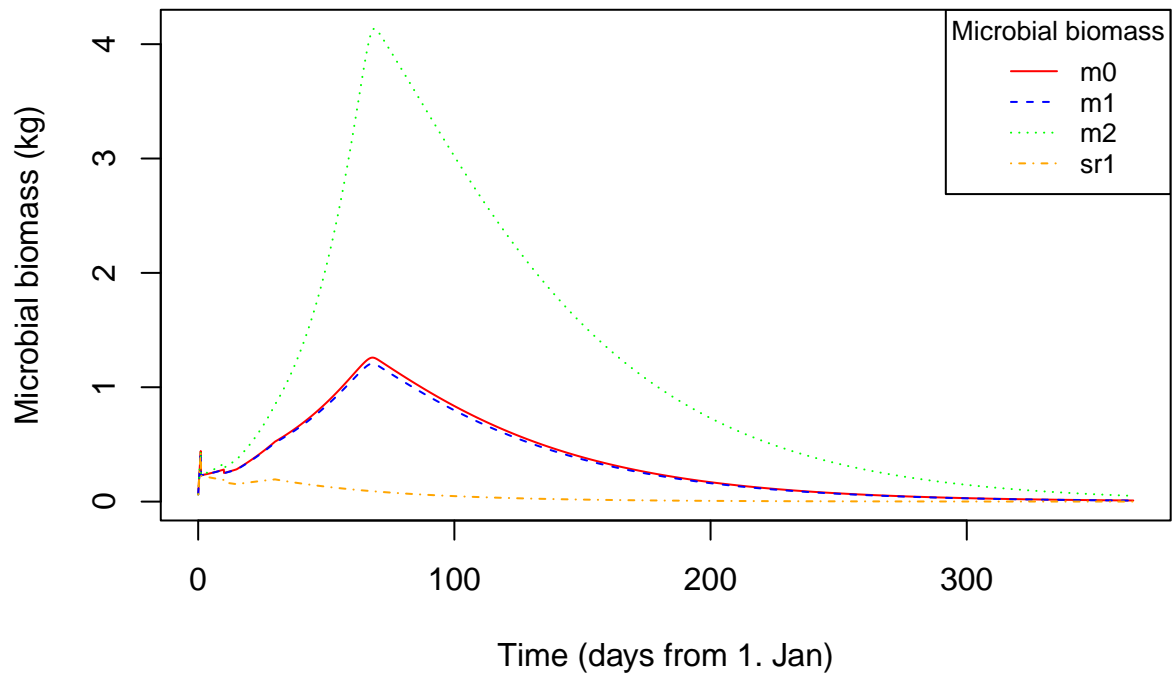
Default, with "early" behavior.

```
devtools::load_all()
```
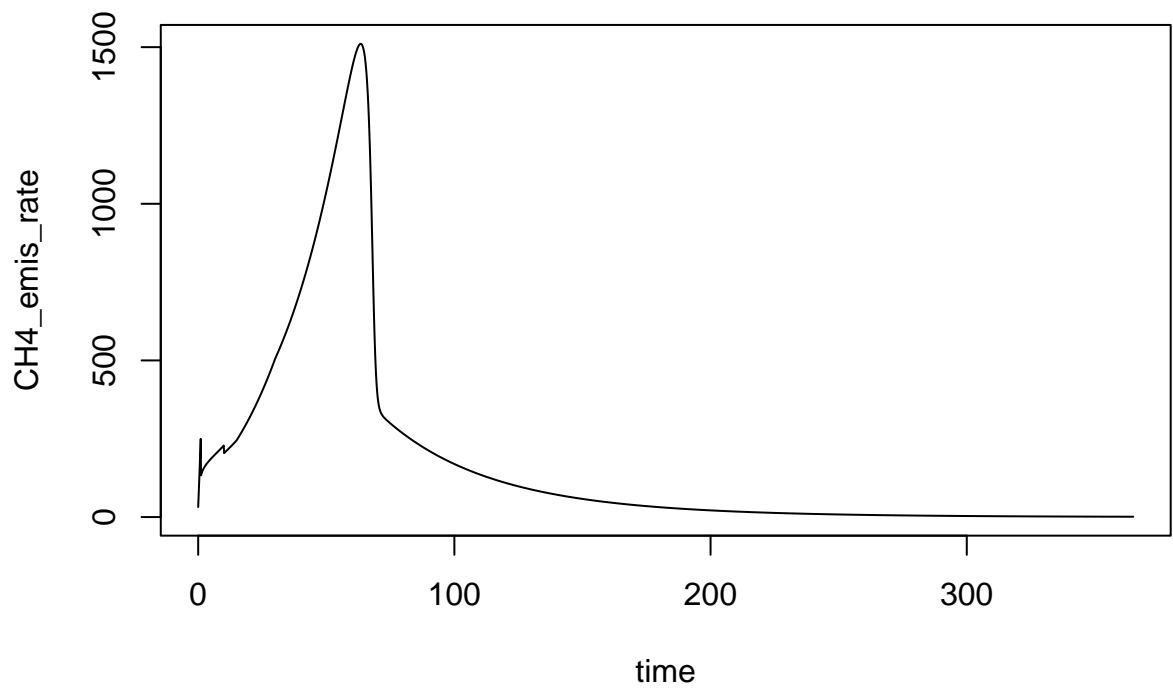
```
## i Loading ABM
```

```
out1 <- abm(365, delta_t = 0.1,
            add_pars = list(storage_depth = 4, area = 1000,
                            slurry_mass = slurry_mass_dat))
```
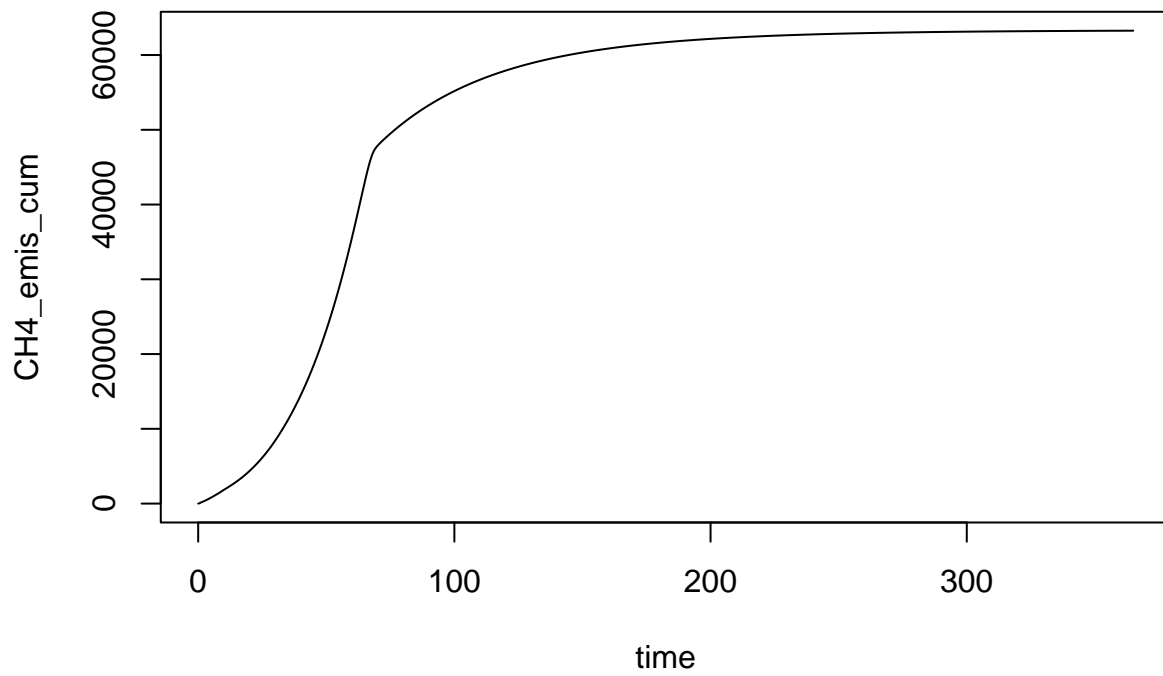
```
line_colors <- c('red', 'blue', 'green','orange')
matplot(out1$time, out1[, nn <- c('m0','m1','m2','sr1')]/1000,
        type = 'l', lty = c(1:length(nn)), col = line_colors, xlab = 'Time (days from 1. Jan)',
        ylab = 'Microbial biomass (kg)')
legend("topright", legend = nn, lty = c(1:length(nn)), col = line_colors, lwd = 1,
        title = "Microbial biomass", cex = 0.8)
```
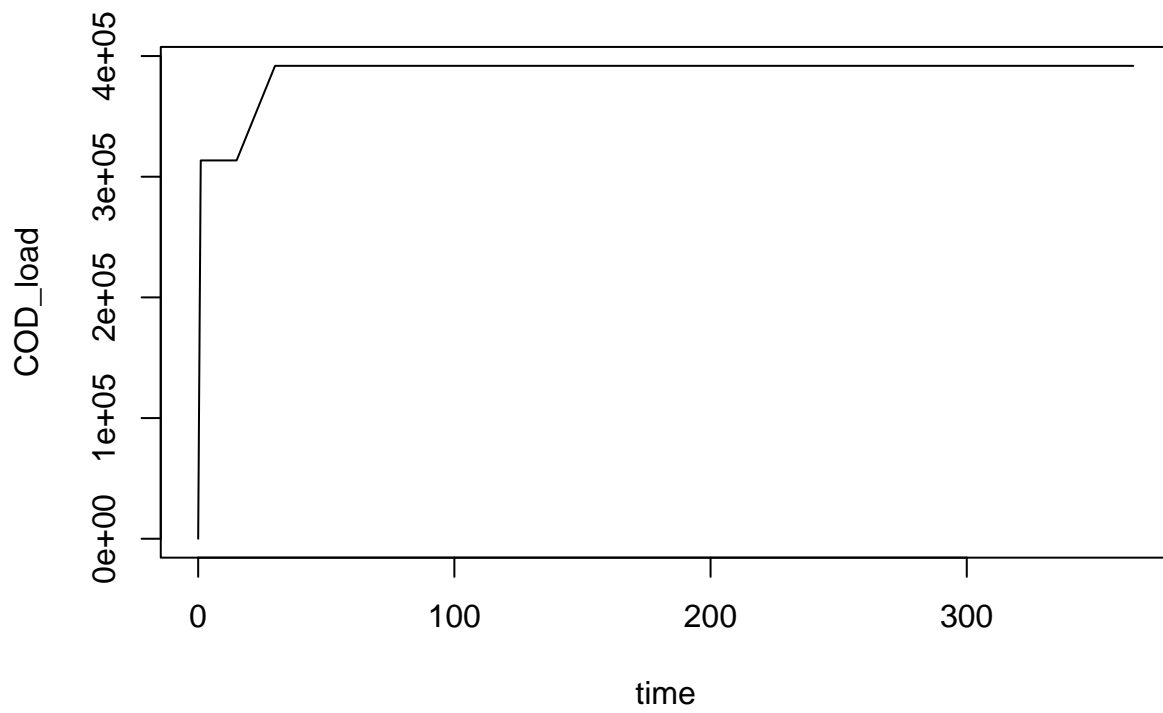
```
plot(CH4_emis_rate ~ time, data = out1, type = 'l')
```



```
plot(CH4_emis_cum ~ time, data = out1, type = 'l')
```
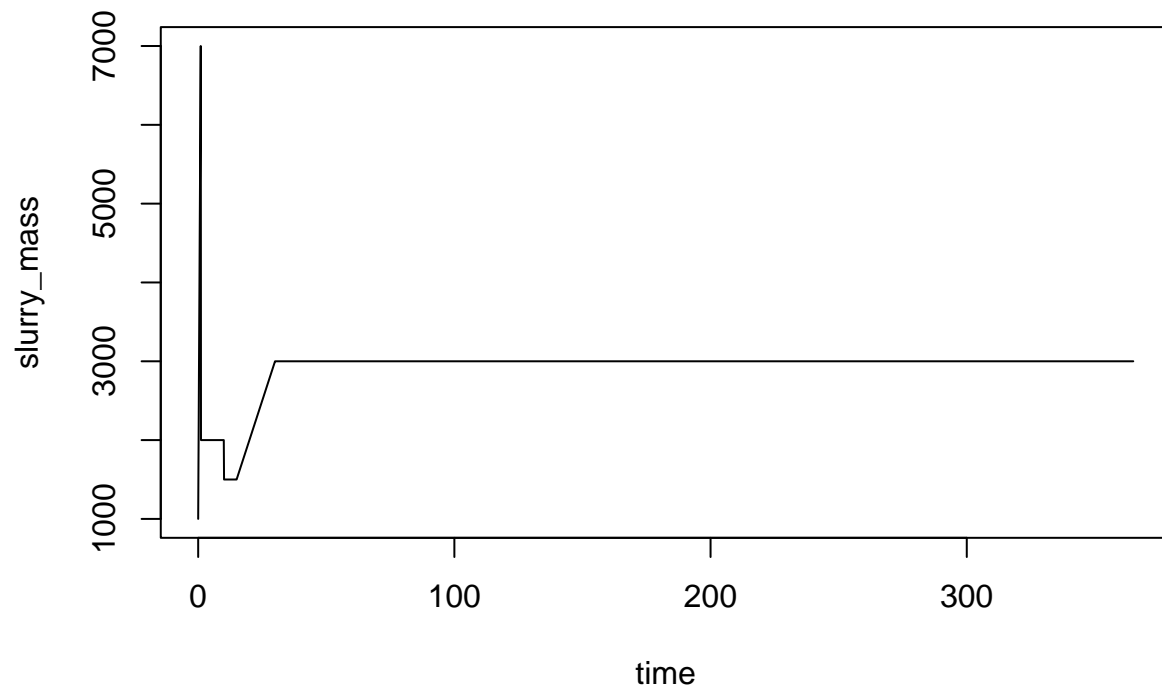
```r
plot(COD_load ~ time, data = out1, type = 'l')
```
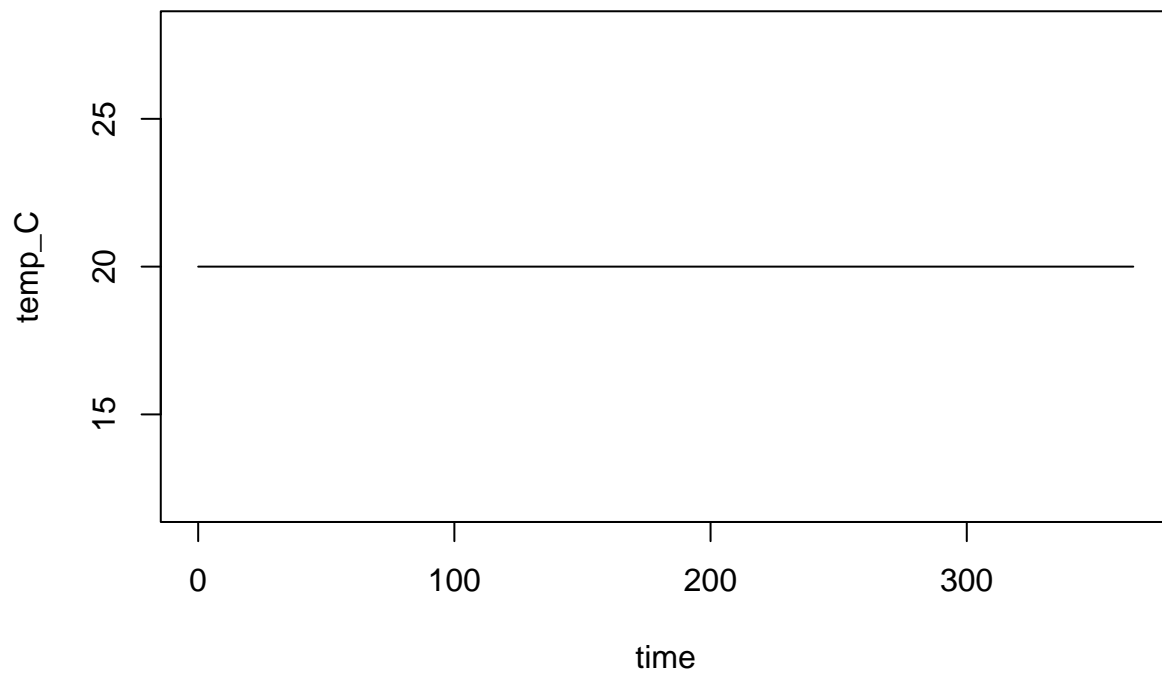


```r
plot(slurry_mass ~ time, data = out1, type = 'l')
```
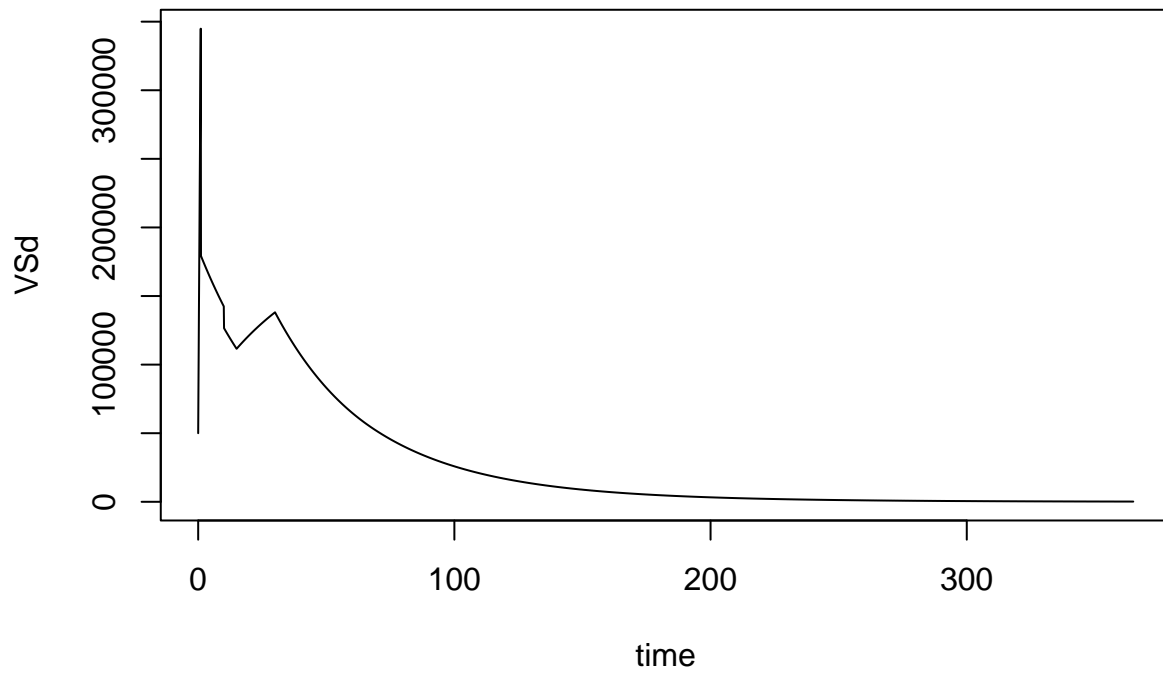
```r
plot(temp_C ~ time, data = out1, type = 'l')
```



```r
plot(VSd ~ time, data = out1, type = 'l')
```

```
plot(VFA ~ time, data = out1, type = 'l')
```



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