

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

Sasha D. Hafner

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Overview

Objective is to test relatively basic operation of the `abm()` functions during simplification.

Prep

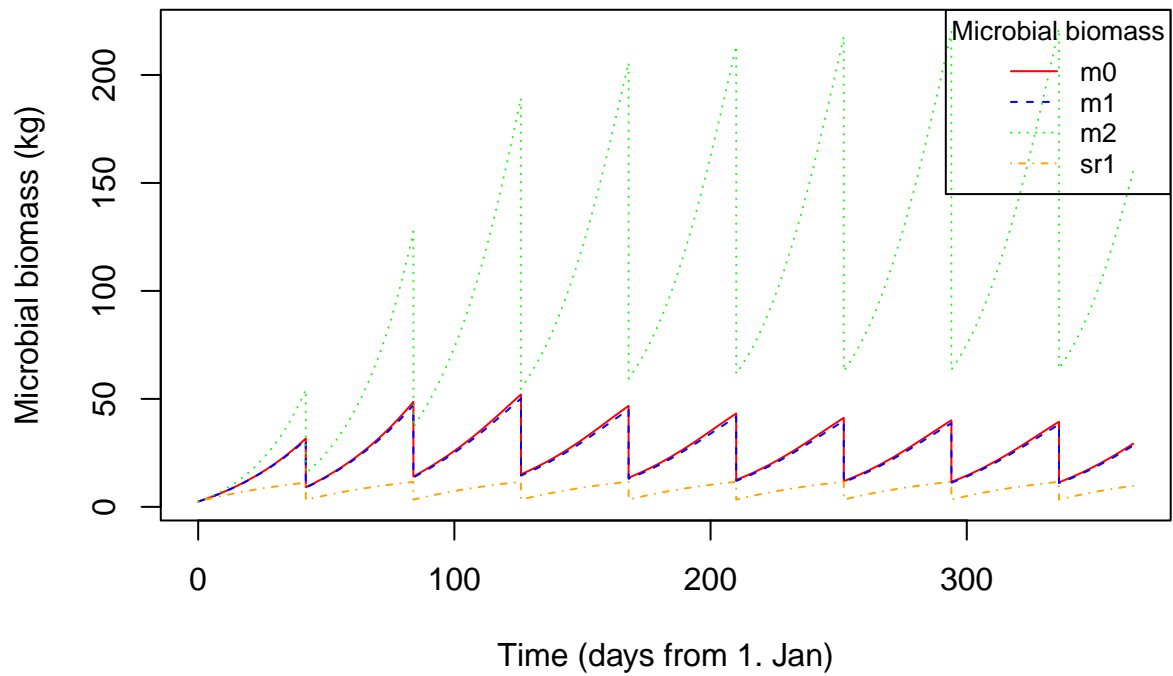
```
devtools::load_all()
```

```
## i Loading ABM
```

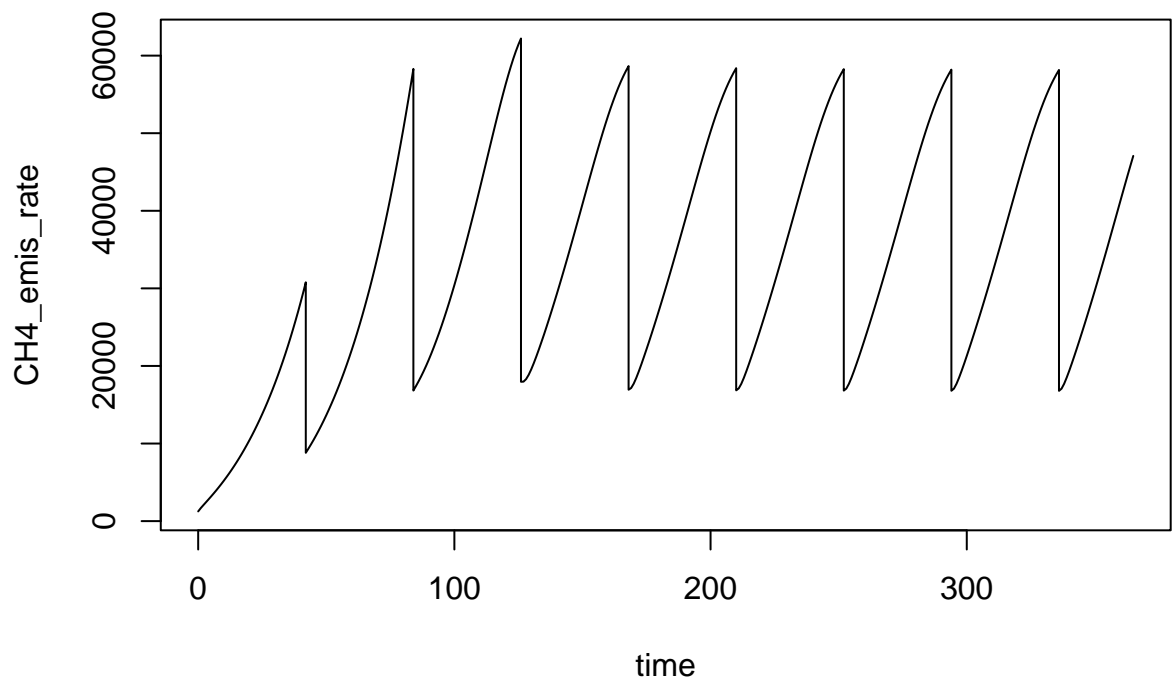
1. Regular

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

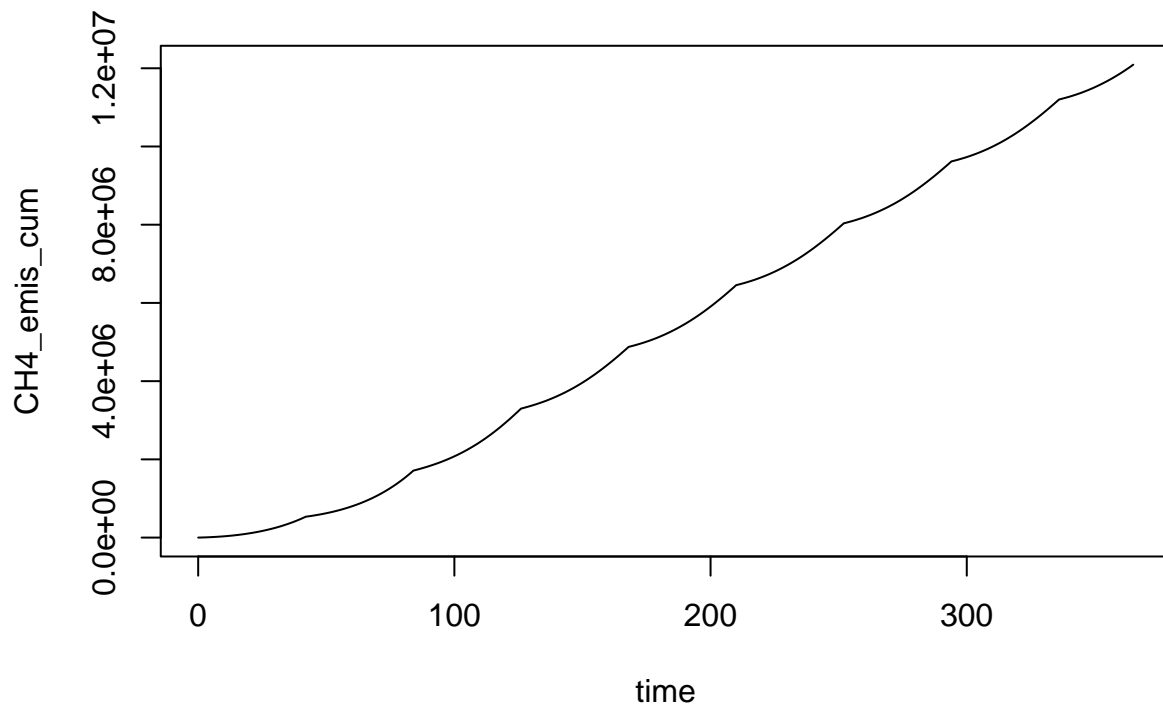
```
line_colors <- c('red', 'blue', 'green', 'orange')
matplot(out0$time, out0[, nn <- c('m0', 'm1', 'm2', 'sr1')]/1000,
        type = 'l', lty = c(1:length(nn)), col = line_colors, xlab = 'Time (days from 1. Jan)',
        ylab = 'Microbial biomass (kg)')
legend("topright", legend = nn, lty = c(1:length(nn)),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



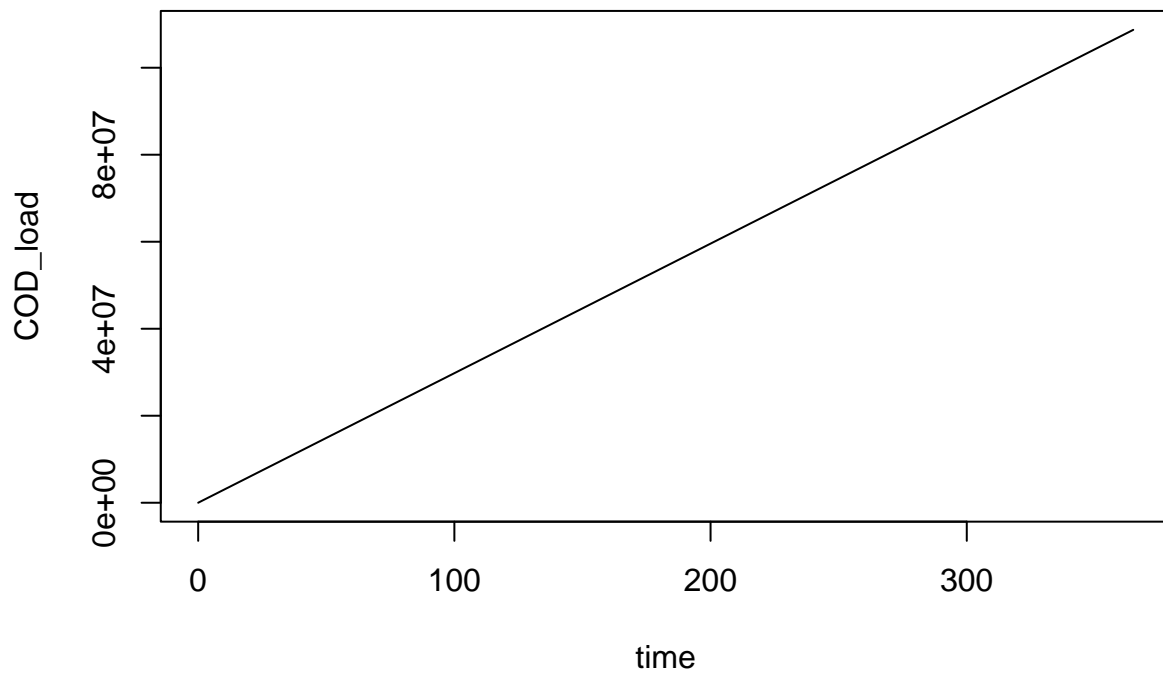
```
plot(CH4_emis_rate ~ time, data = out0, type = 'l')
```



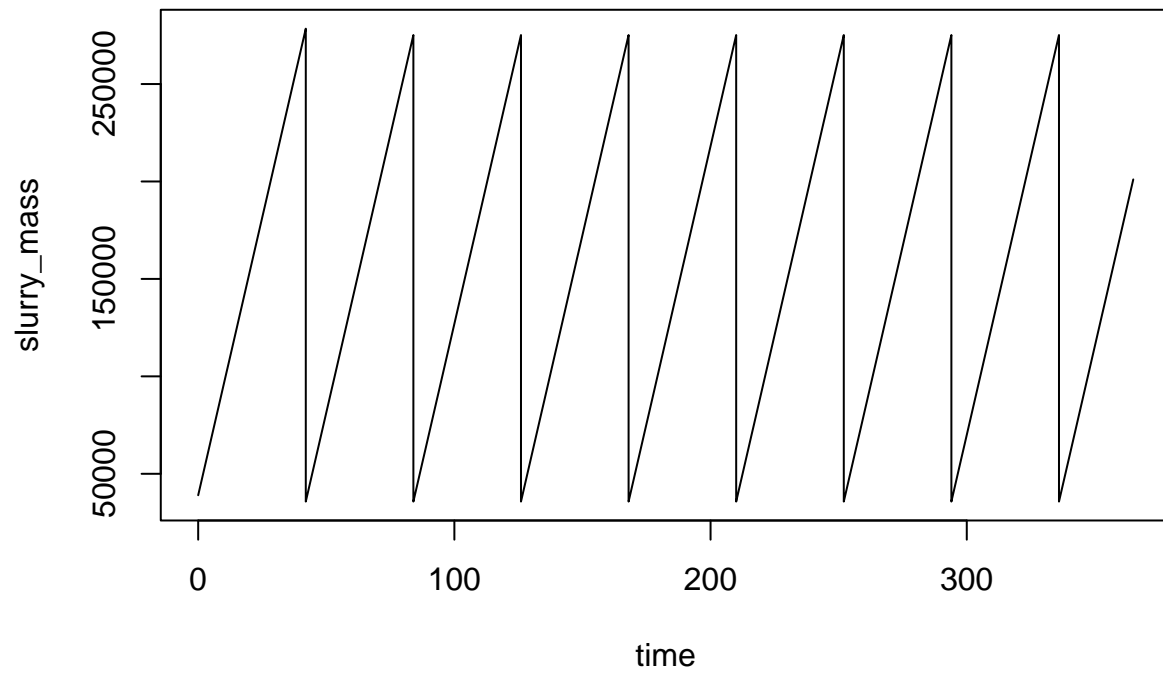
```
plot(CH4_emis_cum ~ time, data = out0, type = 'l')
```



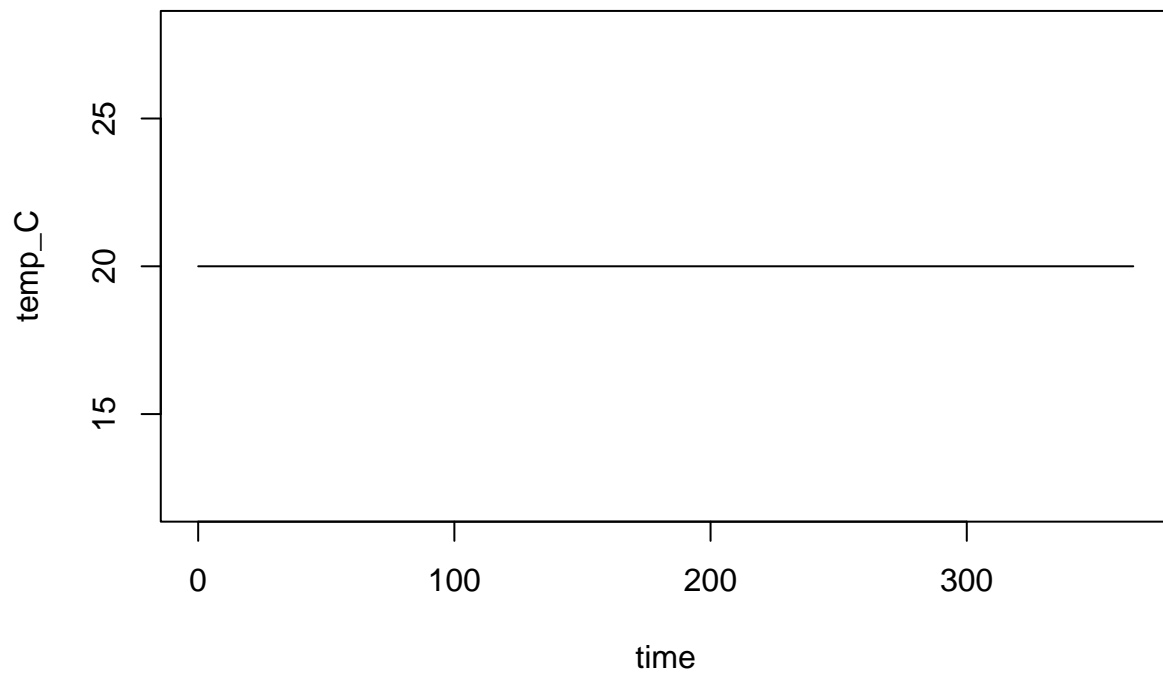
```
plot(COD_load ~ time, data = out0, type = 'l')
```



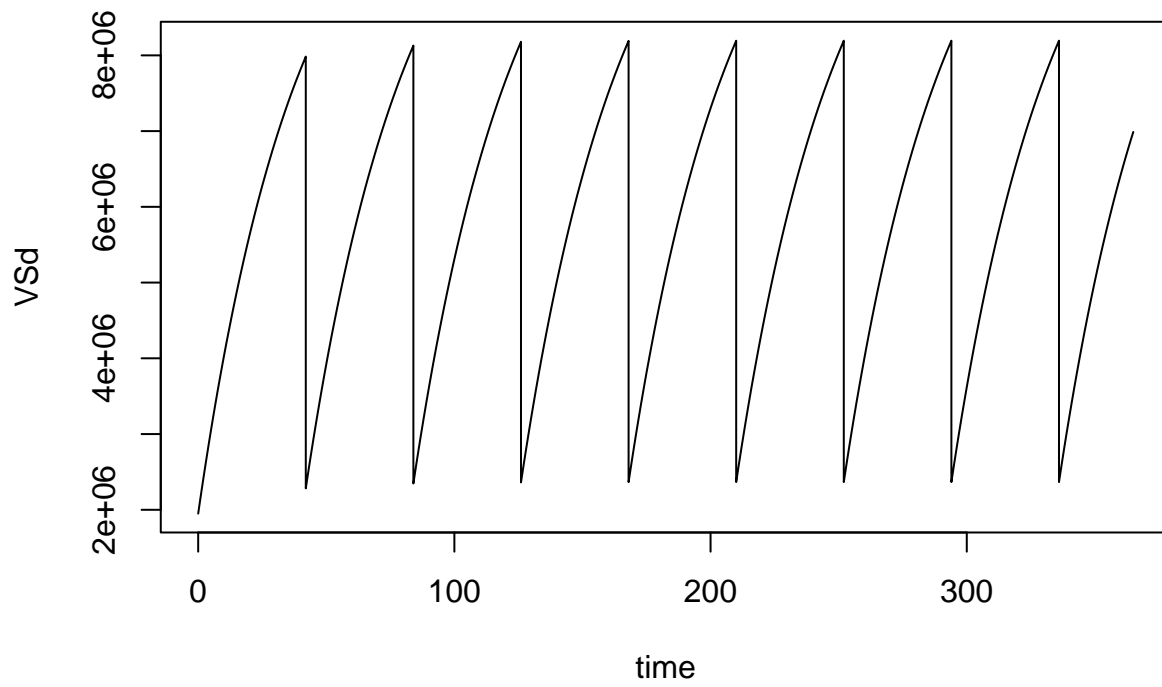
```
plot(slurry_mass ~ time, data = out0, type = 'l')
```



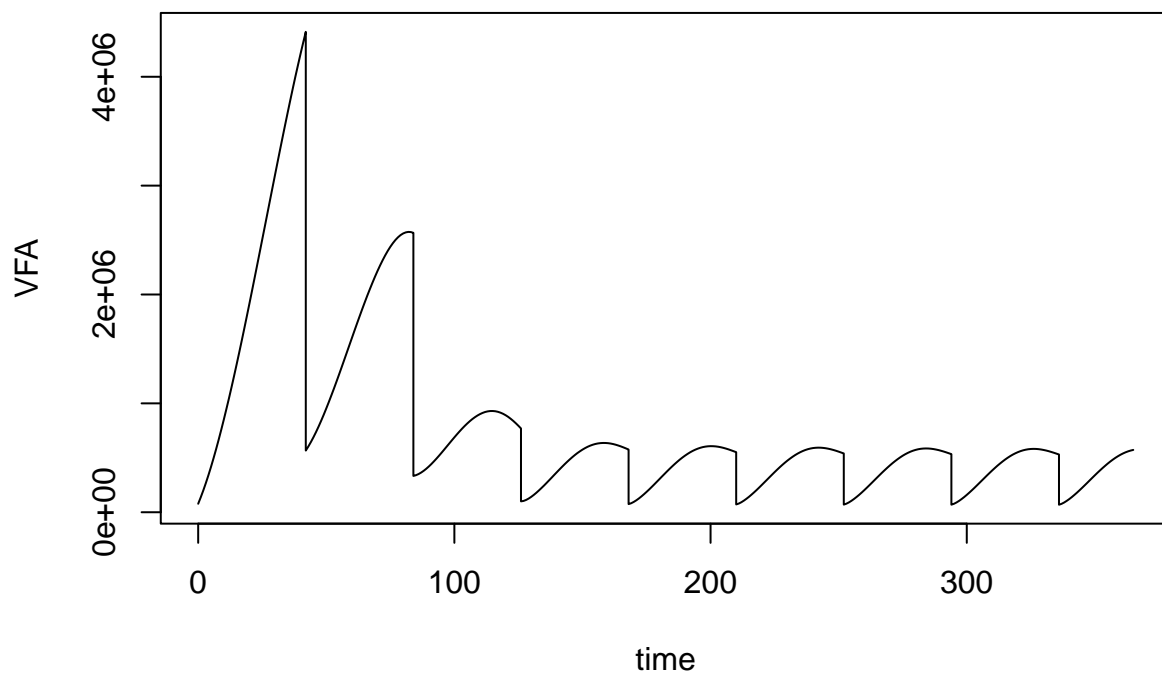
```
plot(temp_C ~ time, data = out0, type = 'l')
```



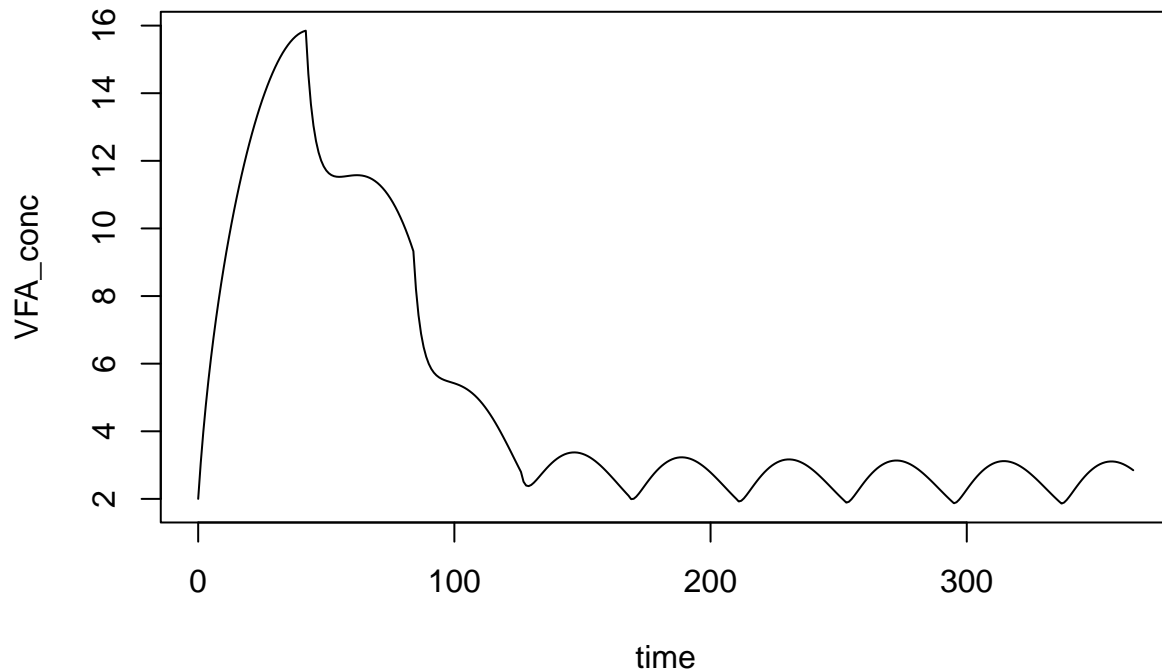
```
plot(VSd ~ time, data = out0, type = 'l')
```



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



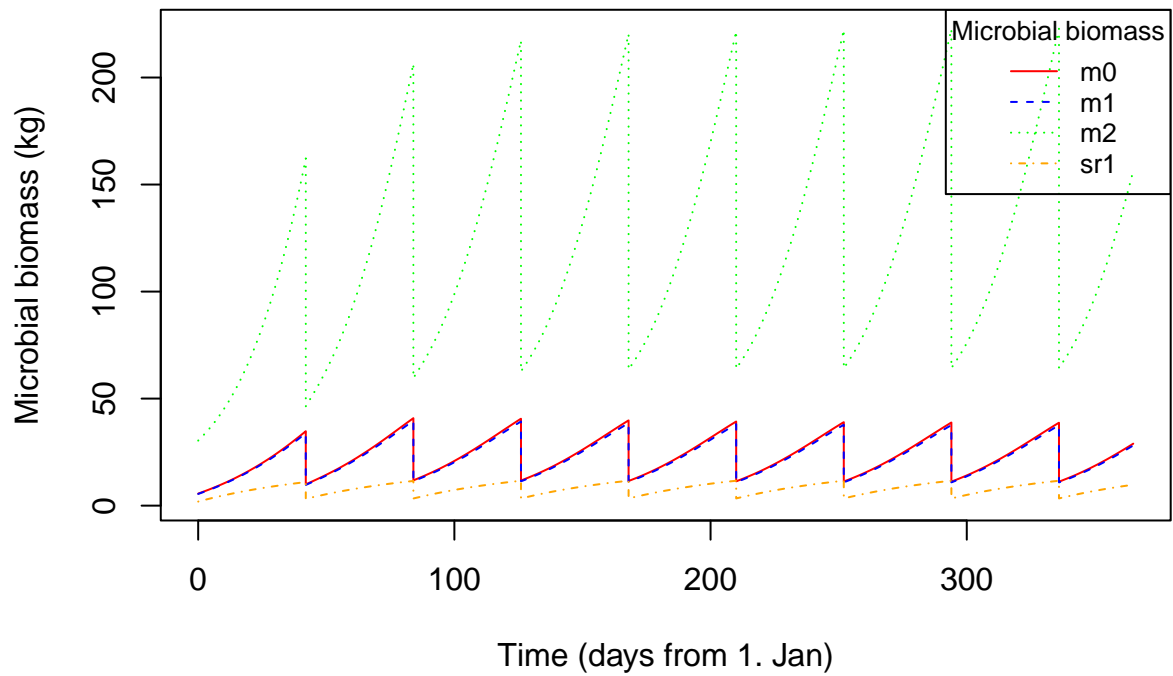
```
plot(VFA_conc ~ time, data = out0, type = 'l')
```



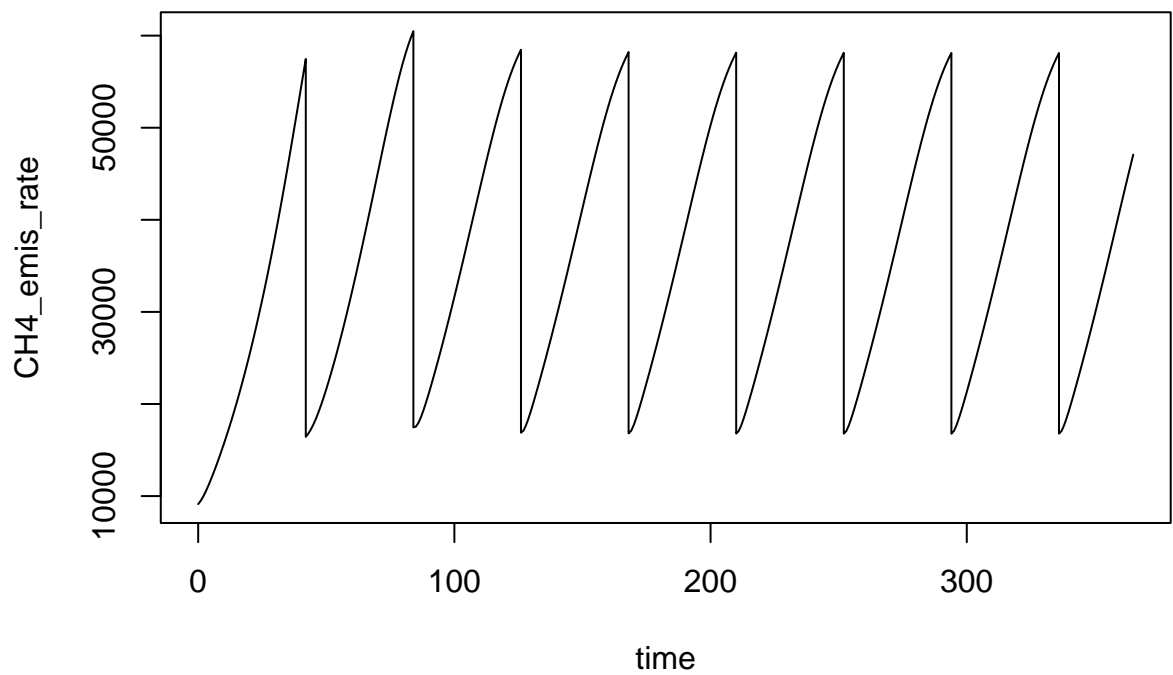
2. Regular with startup

```
out1 <- abm(365, startup = 2)

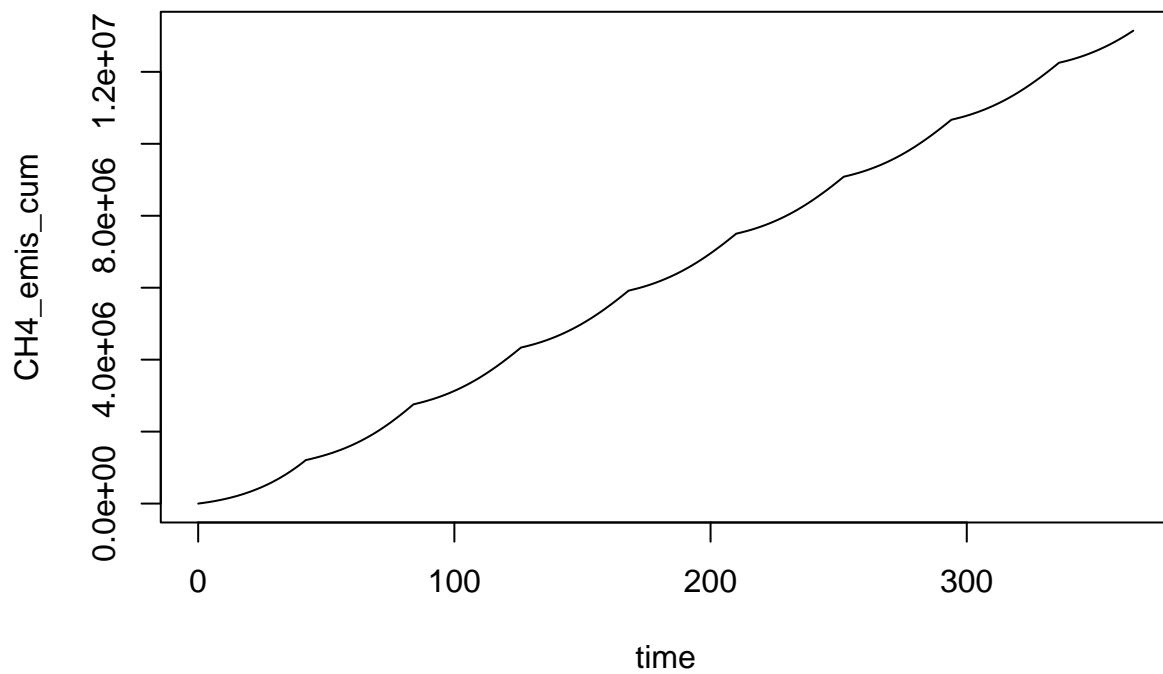
##
## Startup run 1x -> 2x ->
## Using starting conditions from `starting` argument
## and final run
## Using starting conditions from `starting` argument
line_colors <- c('red', 'blue', 'green', 'orange')
matplot(out1$time, out1[, nn <- c('m0', 'm1', 'm2', 'sr1')]/1000,
        type = 'l', lty = c(1:length(nn)), 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)
```



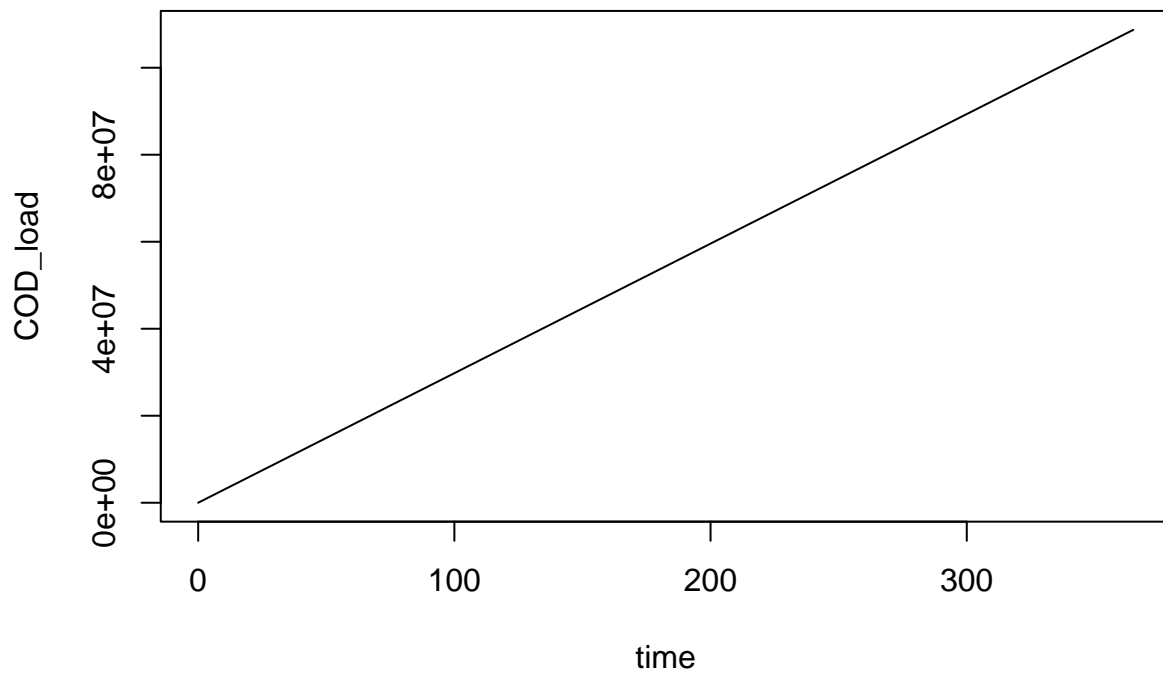
```
plot(CH4_emis_rate ~ time, data = out1, type = 'l')
```



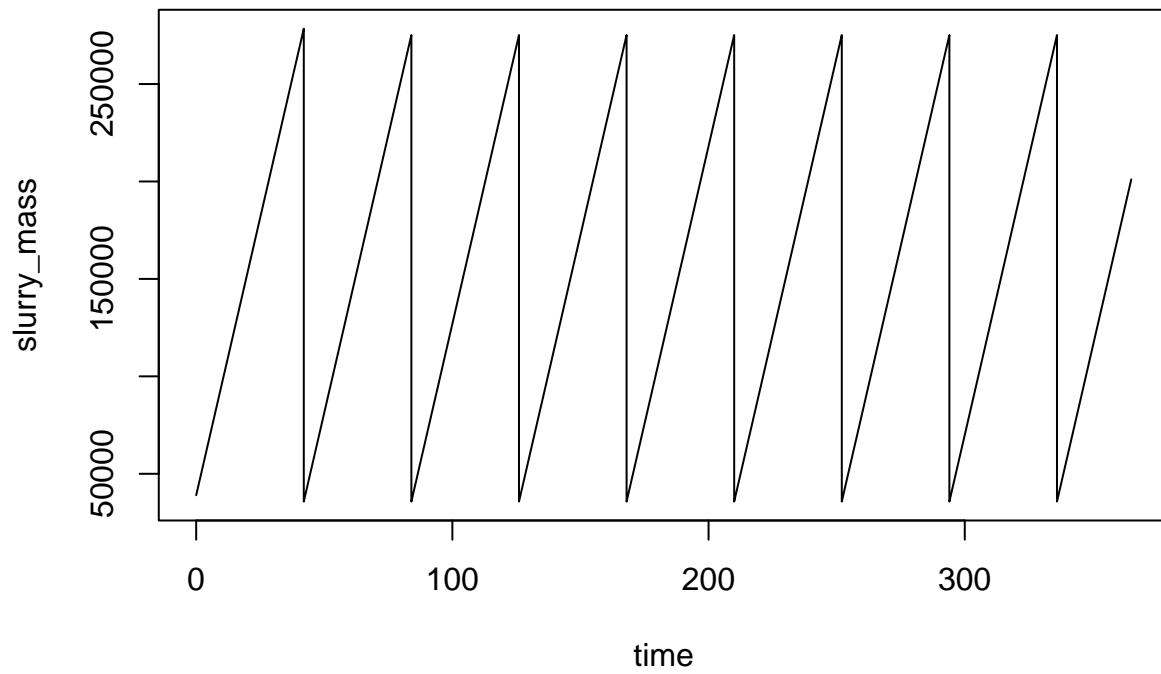
```
plot(CH4_emis_cum ~ time, data = out1, type = 'l')
```



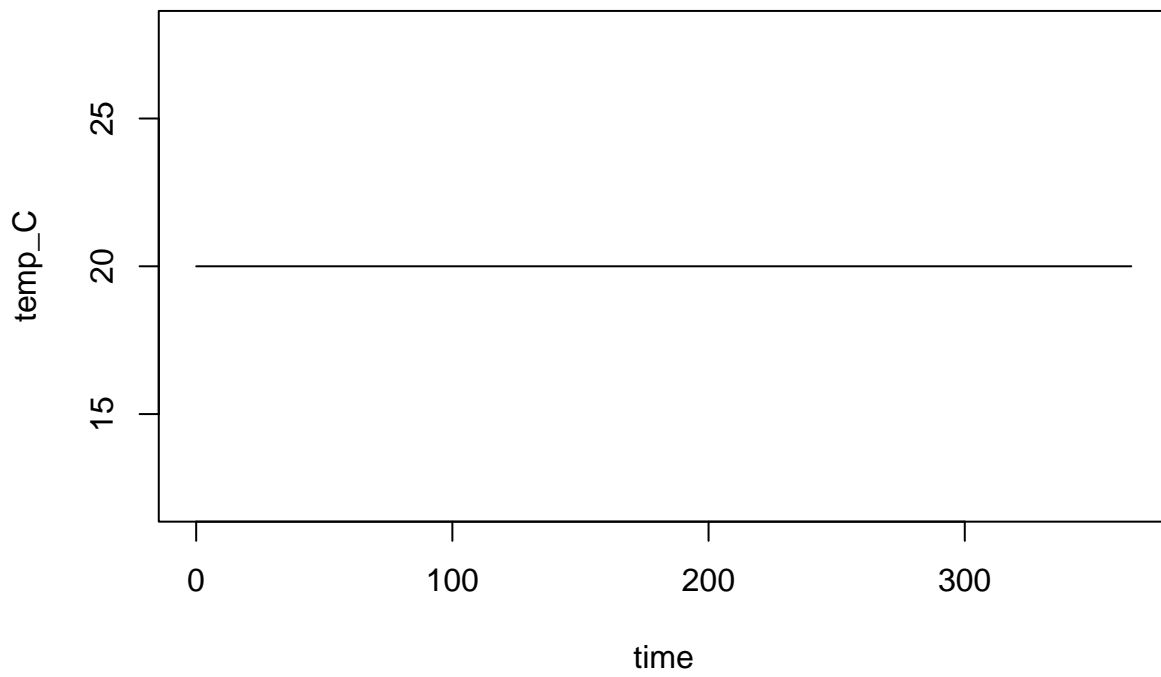
```
plot(COD_load ~ time, data = out1, type = 'l')
```



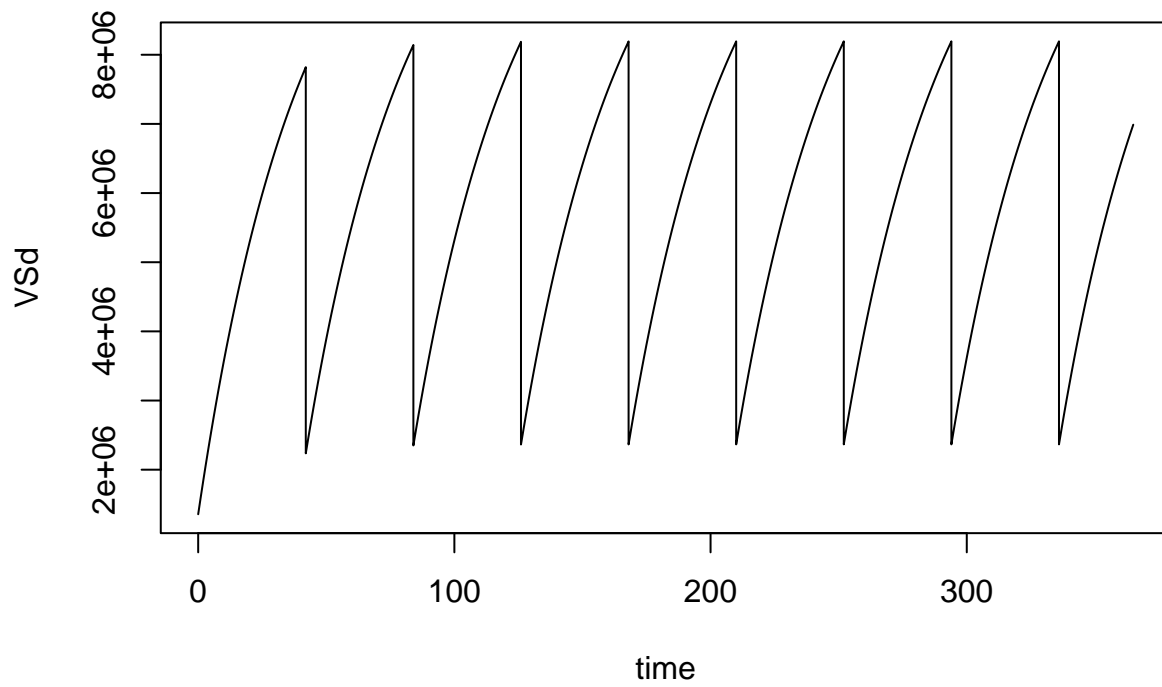
```
plot(slurry_mass ~ time, data = out1, type = 'l')
```

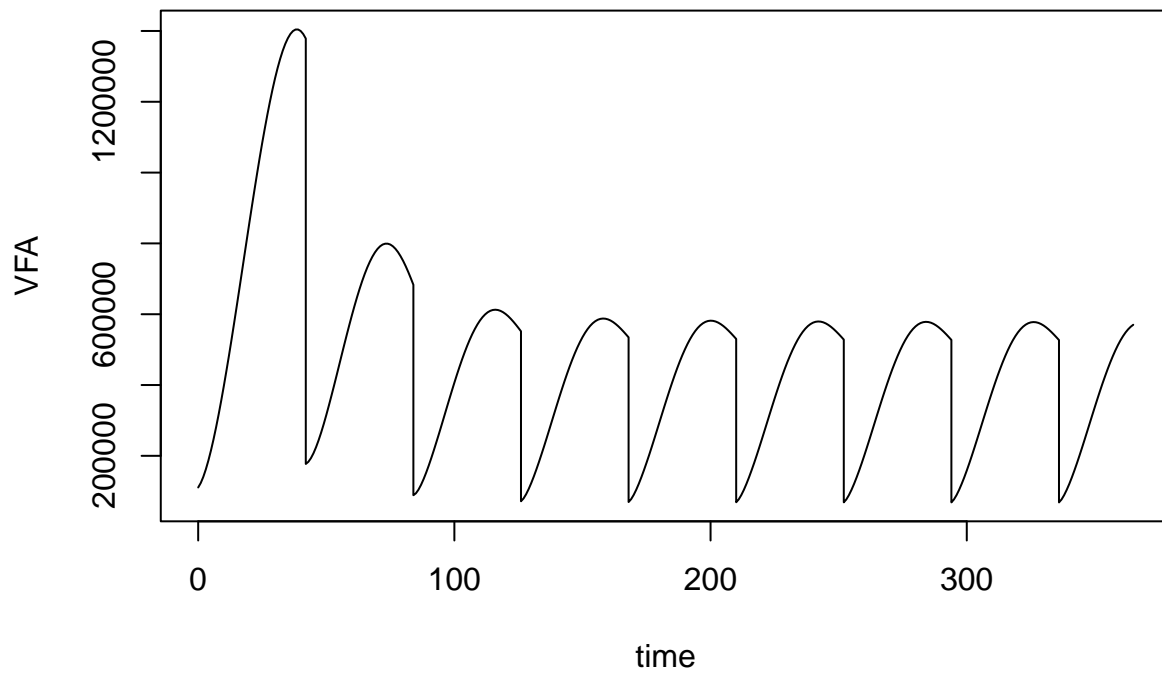
```
plot(temp_C ~ time, data = out1, type = 'l')
```



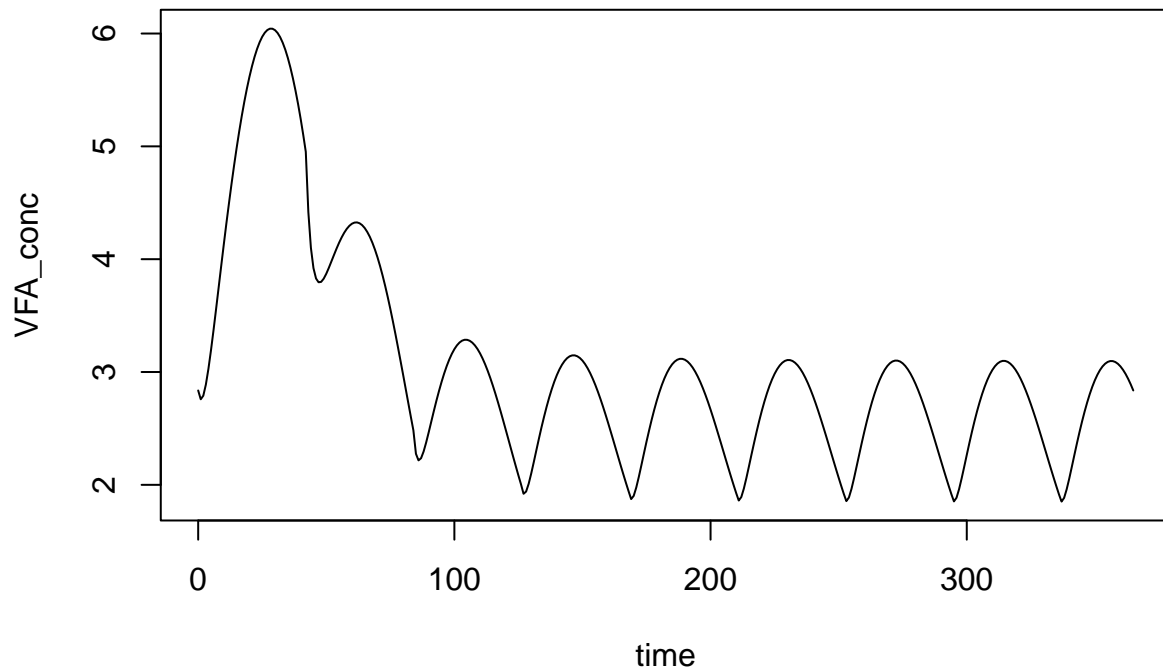
```
plot(VSd ~ time, data = out1, type = 'l')
```



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

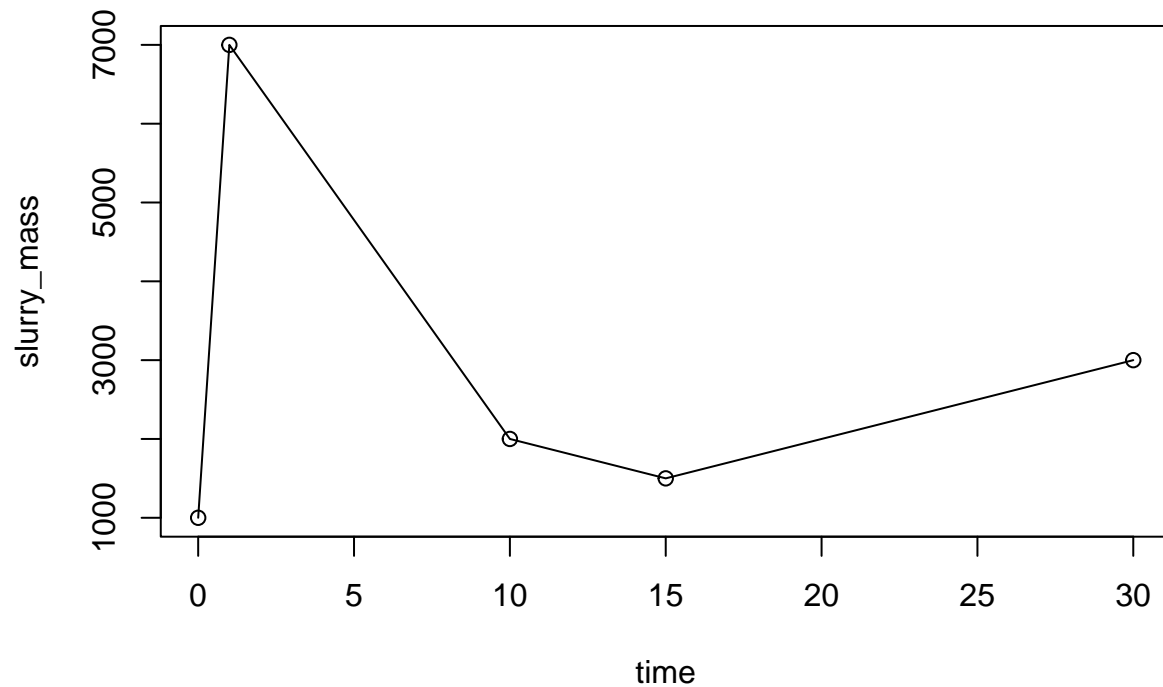


```
plot(VFA_conc ~ time, data = out1, type = 'l')
```



3. Variable

```
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
```

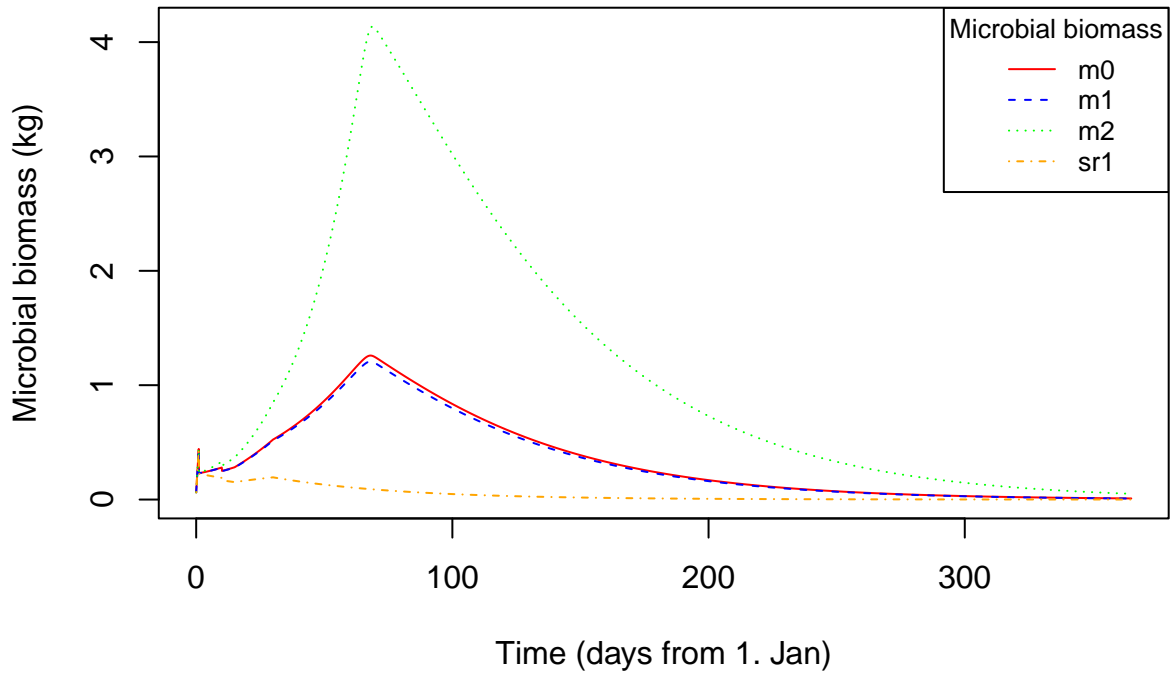
```
out2 <- abm(365, delta_t = 0.1,
  add_pars = list(storage_depth = 4, area = 1000,
```

```

slurry_mass = slurry_mass_dat))

line_colors <- c('red', 'blue', 'green','orange')
matplot(out2$time, out2[, 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)

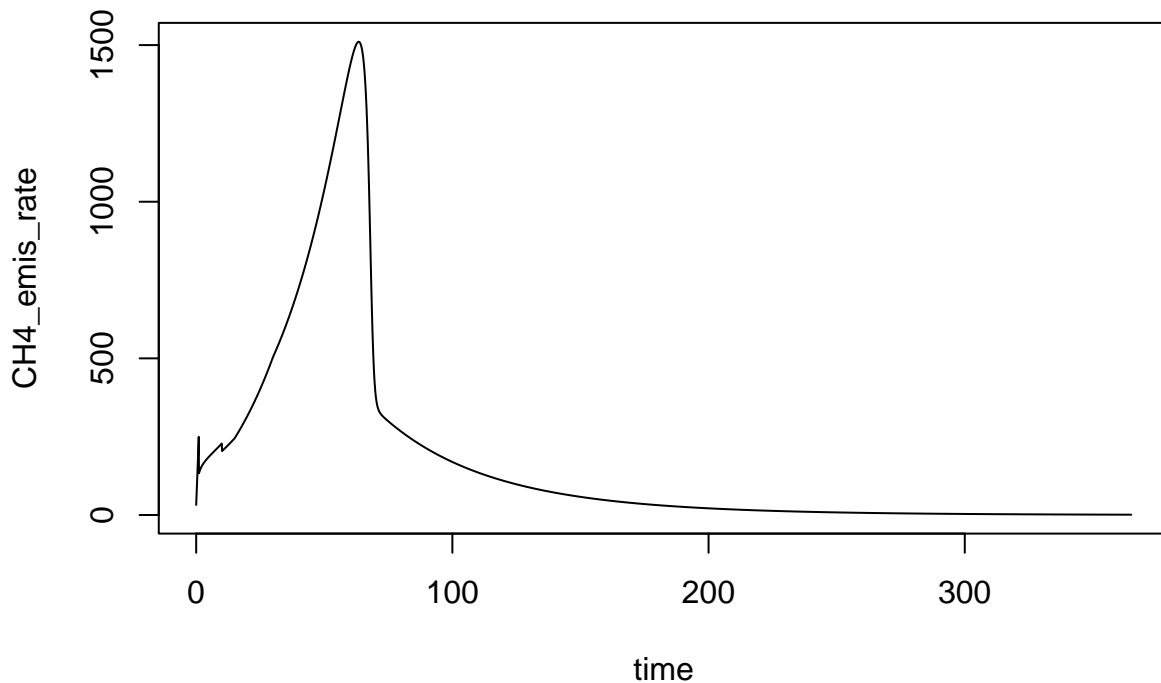
```



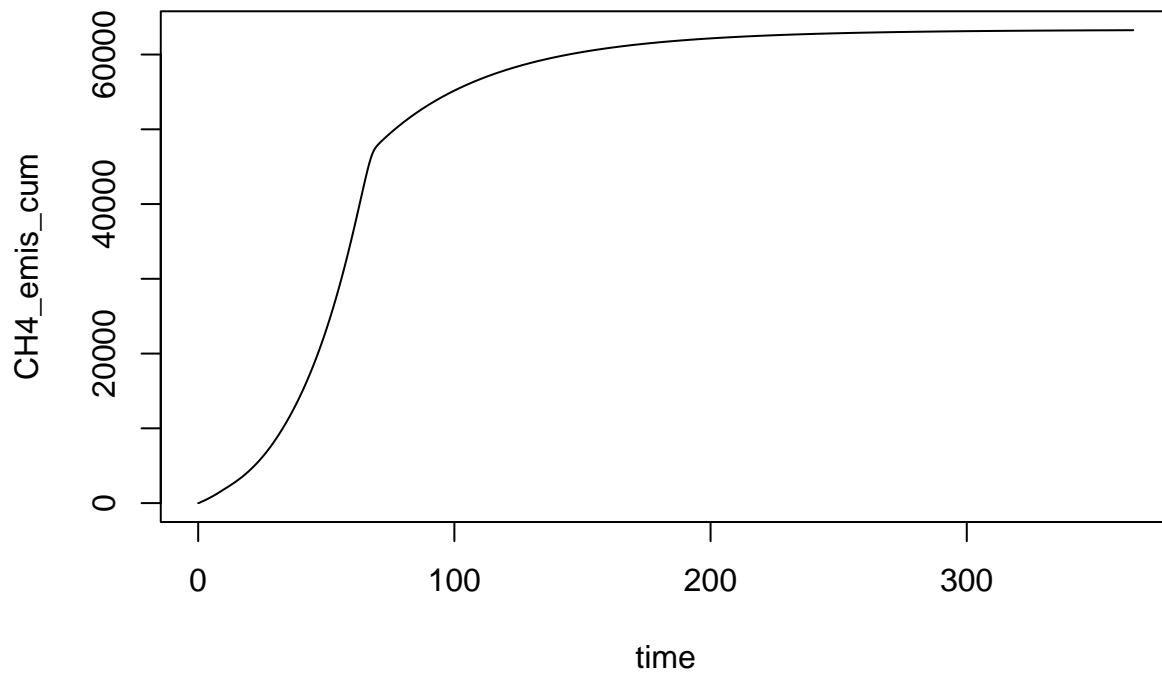
```

plot(CH4_emis_rate ~ time, data = out2, type = 'l')

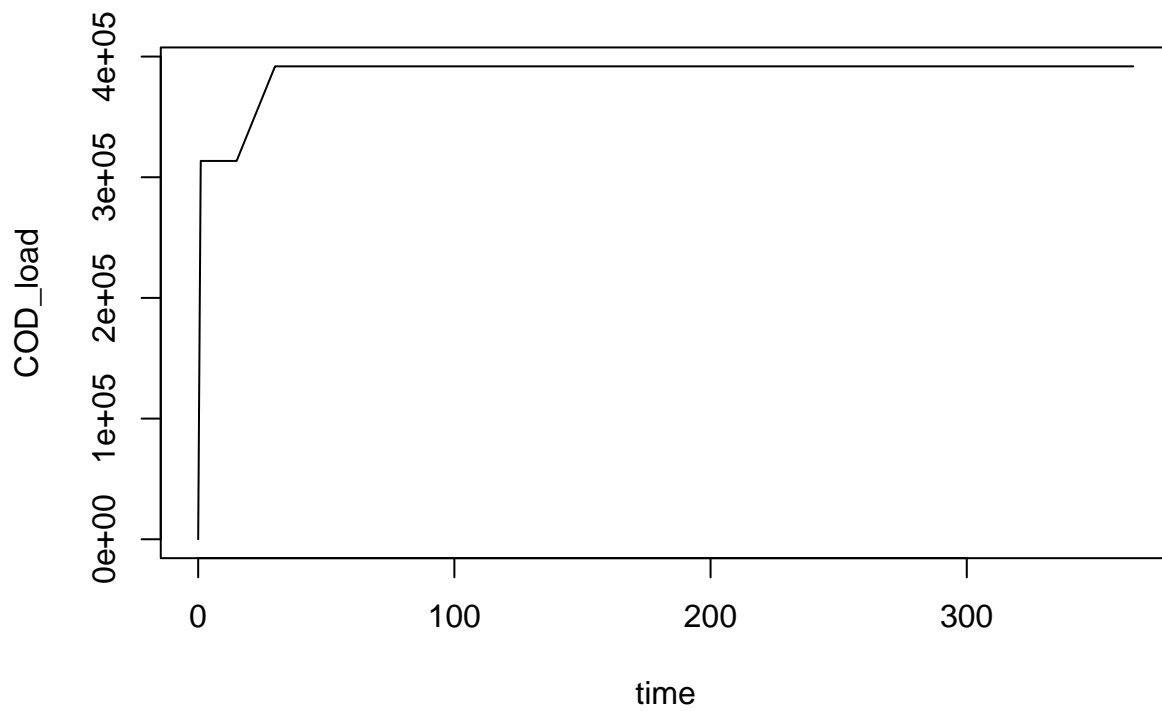
```



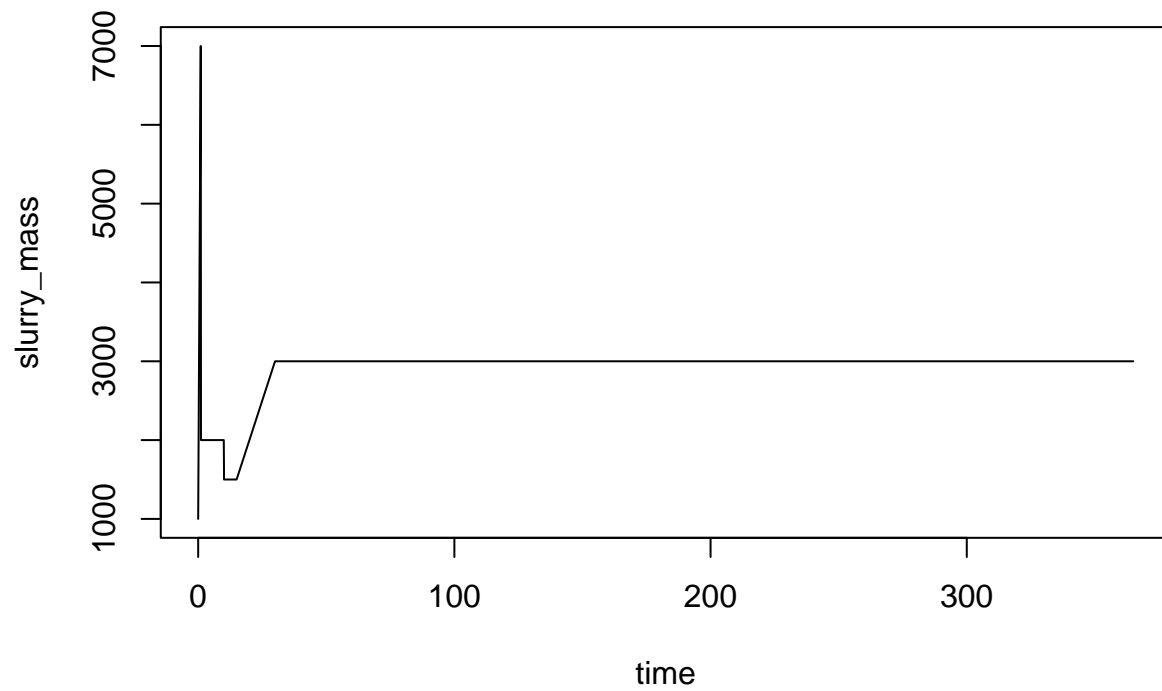
```
plot(CH4_emis_cum ~ time, data = out2, type = 'l')
```



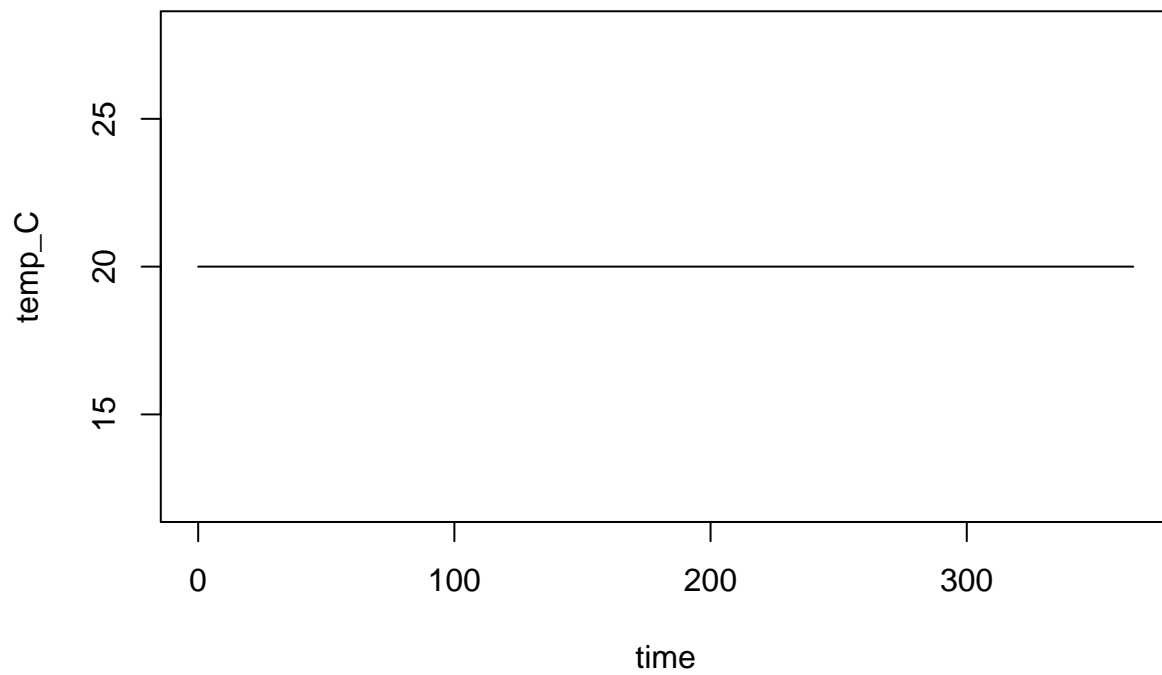
```
plot(COD_load ~ time, data = out2, type = 'l')
```



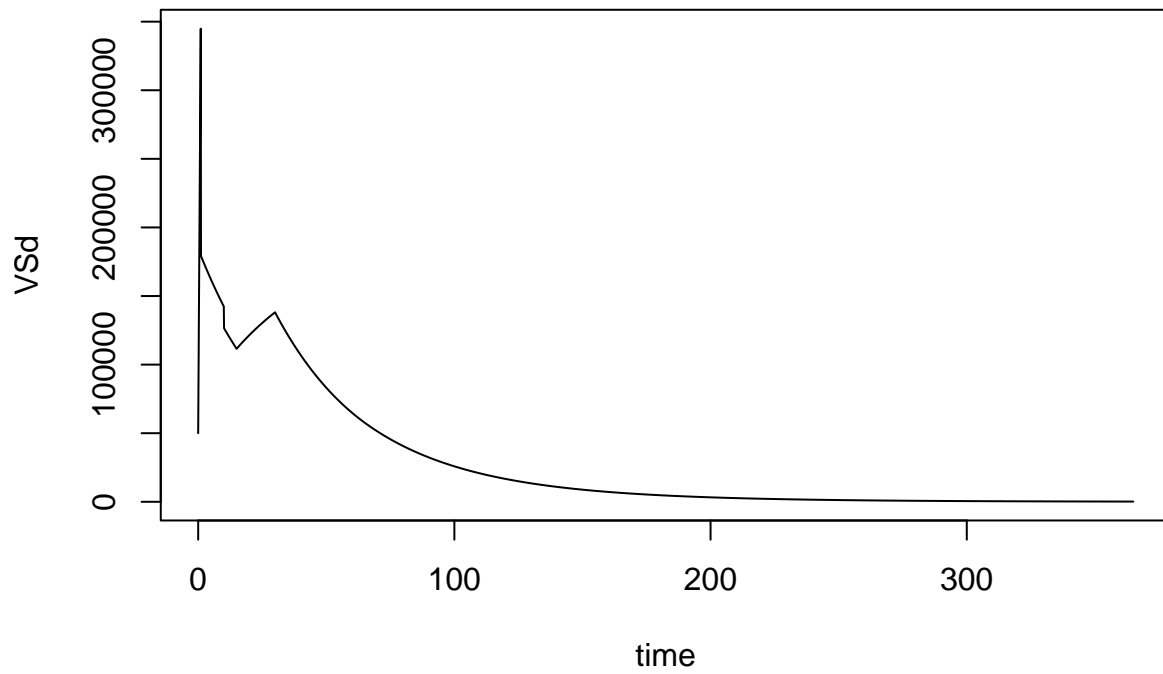
```
plot(slurry_mass ~ time, data = out2, type = 'l')
```



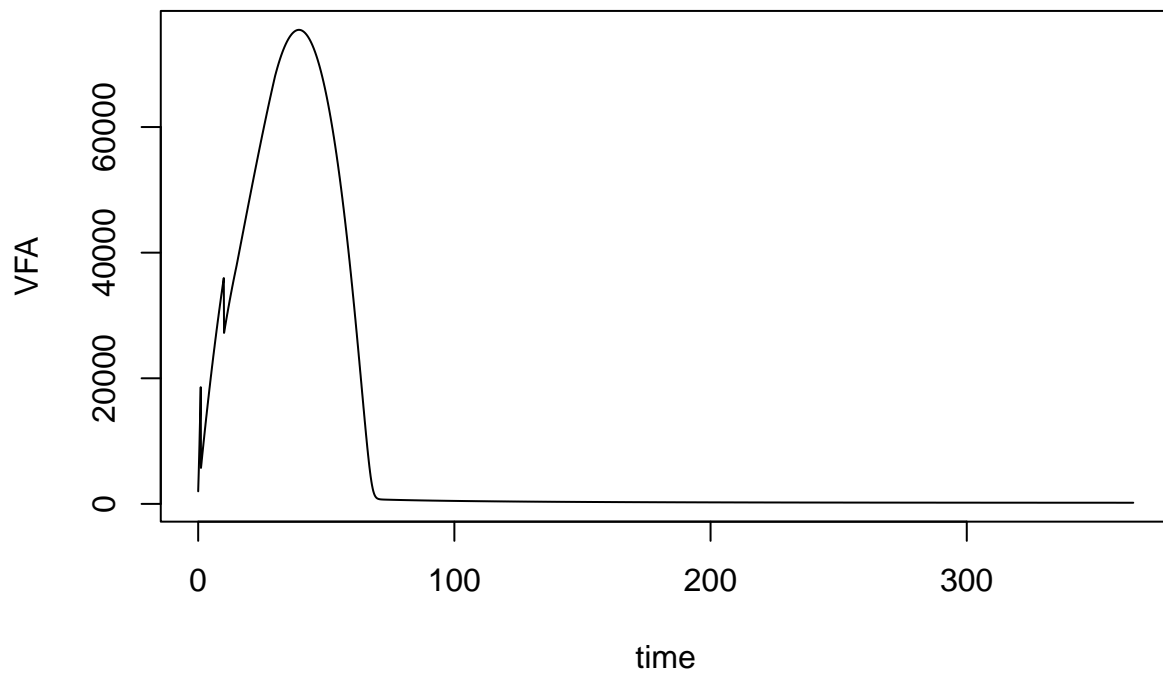
```
plot(temp_C ~ time, data = out2, type = 'l')
```



```
plot(VSd ~ time, data = out2, type = 'l')
```



```
plot(VFA ~ time, data = out2, type = 'l')
```



```
plot(VFA_conc ~ time, data = out2, type = 'l')
```

