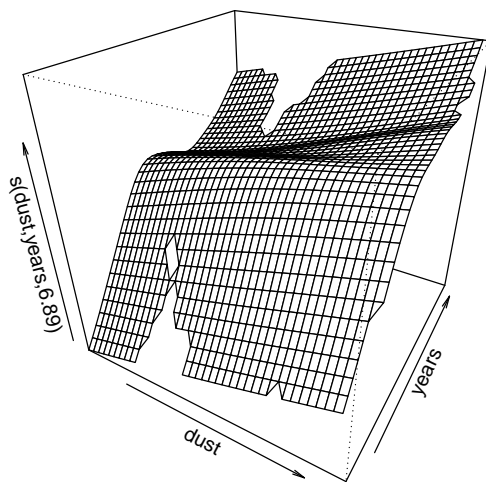# Exposure to Dust - Generalized Additive Models

February 5, 2020

For GAMs the package "mgcv" is used.

```
> library(mgcv)
> library(catdata)
> data(dust)
```

The first model uses bivariate smoothing for the covariates "dust" and "years" from the "dust"–data. By the option "pers=TRUE" the bivariate effect can be plotted three–dimensional.
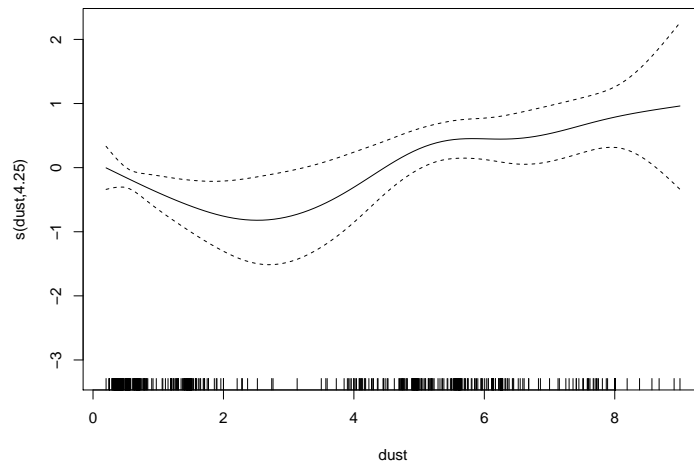
```
> gamdust1 <- gam(bronch ~ s(dust,years), family=binomial,
+                  data=dust[(dust$dust<10) & (dust$smoke==1),])
> plot(gamdust1, pers=TRUE)
```


Now each covariate is fitted separately, afterwards both effects are plotted.

```
> gamdust2<- gam(bronch ~ s(dust) + s(years), family=binomial,
+                  data=dust[(dust$dust<10) & (dust$smoke==1),])
```

```
> plot(gamdust2, select=1)
```



```
> plot(gamdust2, select=2)
```