Short Tutorial: Sigmoid model on small dataset

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Ecology example

Assume we have studied the presence and absence of a target species along a precipitation gradient based on a random stratified sampling starting from a coast with high precipitation towards rather dry conditions in the interior. We denote the presence of our species as ($pres = 1$) and the absence as ($pres = 0$) and we note precipitation values each time. The 38 records are available trough the file `species.RData`

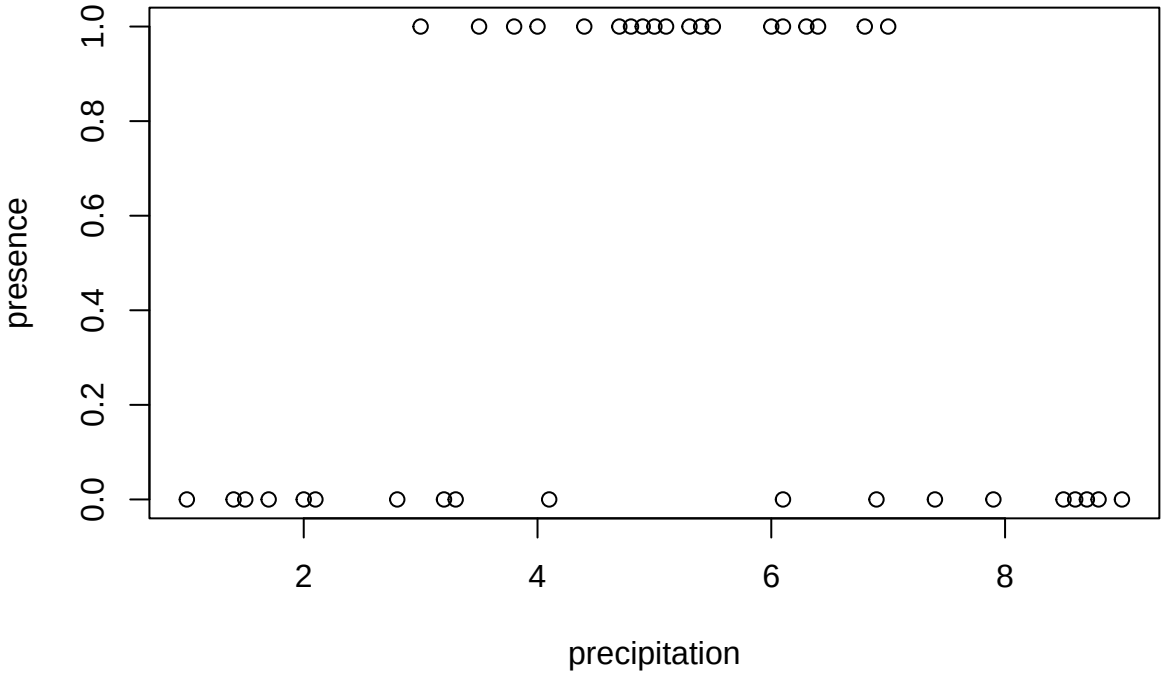
```
load("species.Rdata")
head(model.data)
```

```
  pres prcp
1    0  1.0
2    0  1.4
3    0  1.5
4    0  1.7
5    0  2.0
6    0  2.1
```

```
dim(model.data)
```

```
[1] 38  2
```

```
plot(pres~prcp,xlab="precipitation",ylab="presence",data=model.data)
```



1 Fit a simple sigmoid model/Logistic model to fit the data. Present your result and the fit of your model

2 Use feature engenering to capture the pattern of your data. Present the fit of your improved model.

3 Compare both models using AIC criterion

Hint: your result might be similar to the following plot