STAT0017 ICA 1 2018-19

Student number: xxxxxxx

2019-03-22

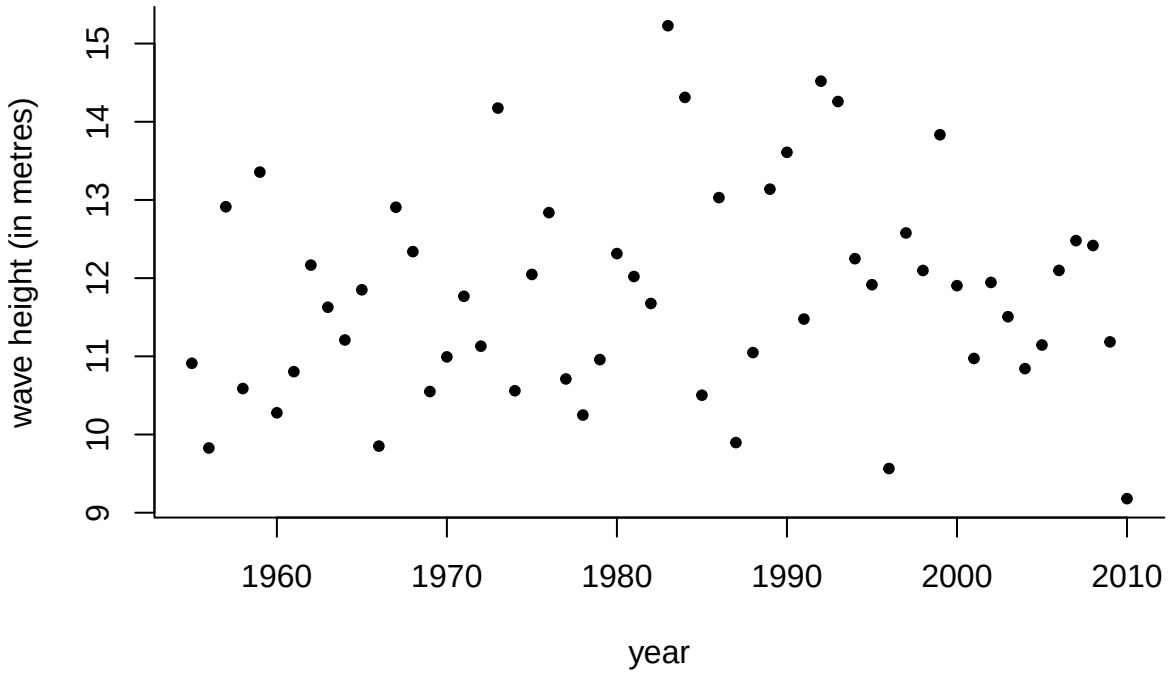
Extremal Types Example

[25]

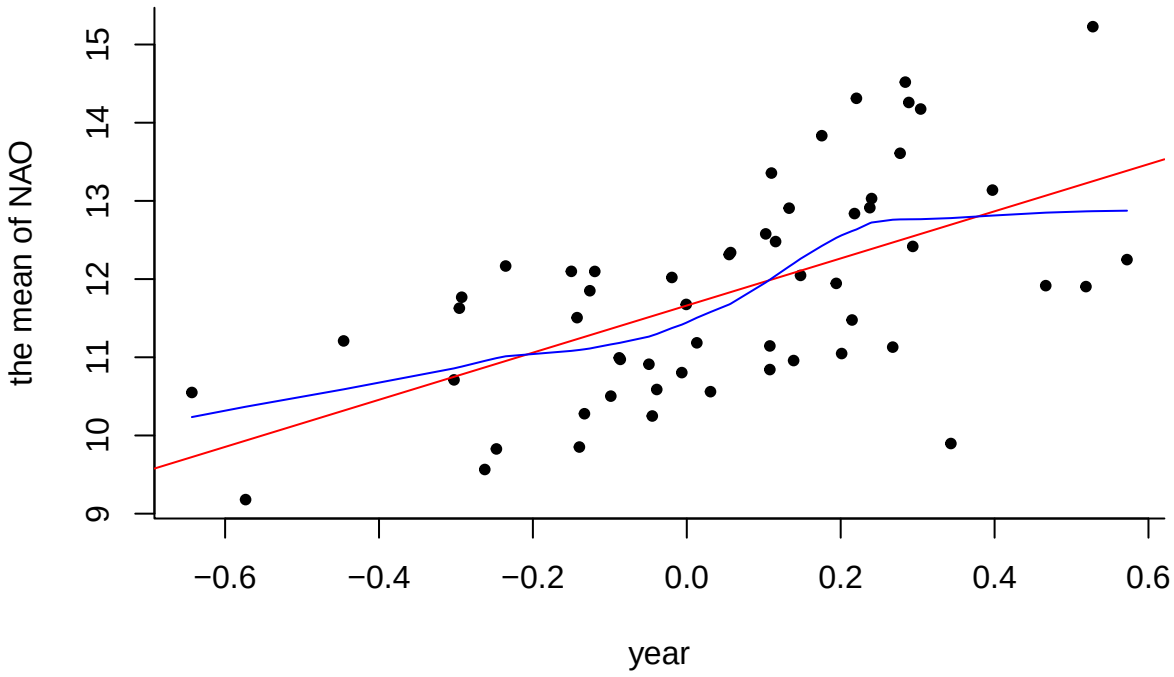
Exploratory analysis

Winter maxima (wm)

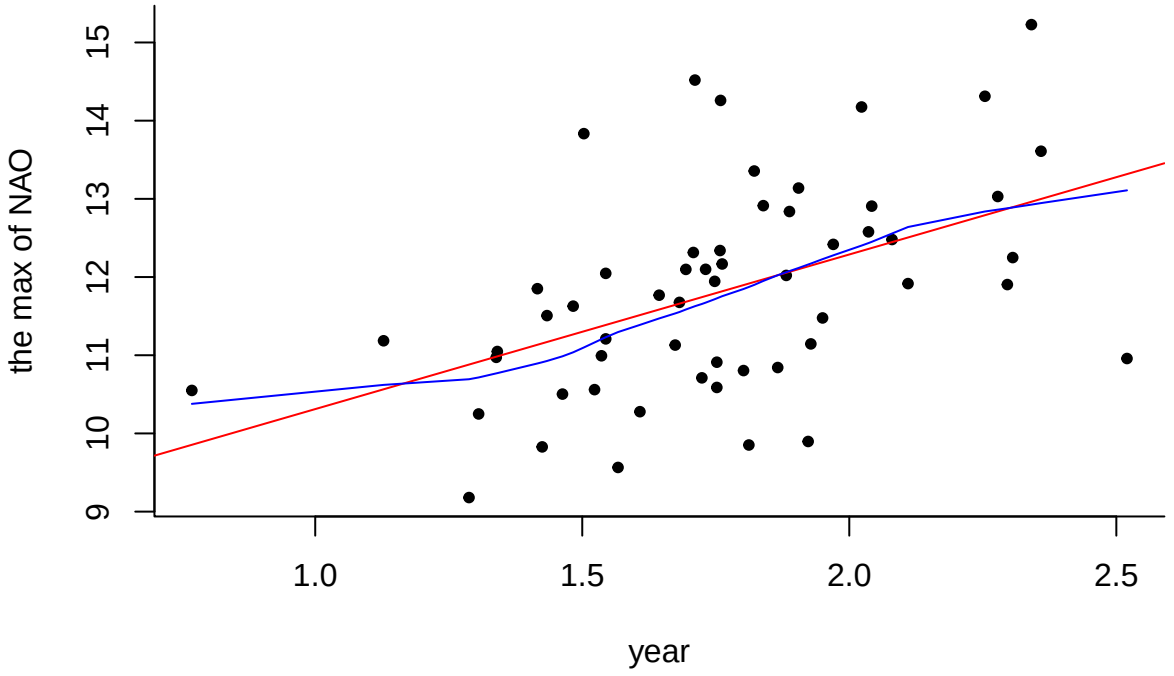
```
# Add R code here (and similarly elsewhere)
plot(wm$waterYear,wm$Hs,bty="l",pch=20,xlab="year",ylab="wave height (in metres)")
```



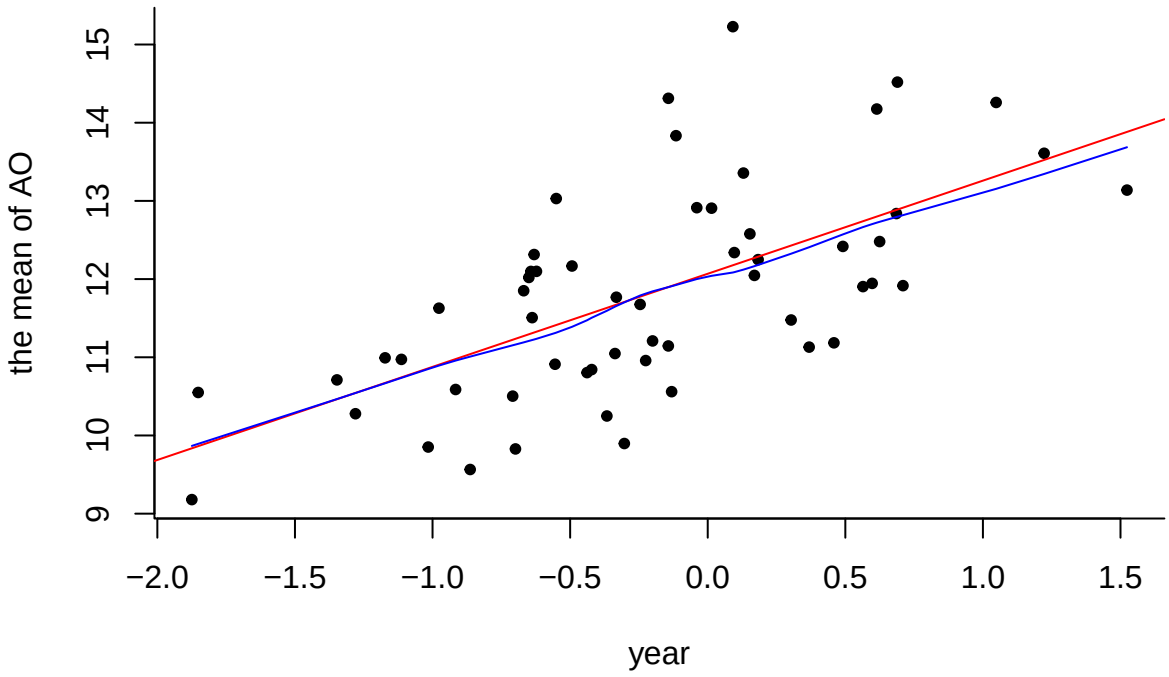

```
#(wm$Hs~wm$meanNAO)
plot(wm$meanNAO,wm$Hs,bty="l",pch=20,xlab="year",ylab="the mean of NAO")
abline(lm(wm$Hs~wm$meanNAO), col="red") # regression line (wm$Hs~wm$meanNAO)
lines(lowess(wm$Hs~wm$meanNAO), col="blue") # lowess line (wm$Hs~wm$meanNAO)
```



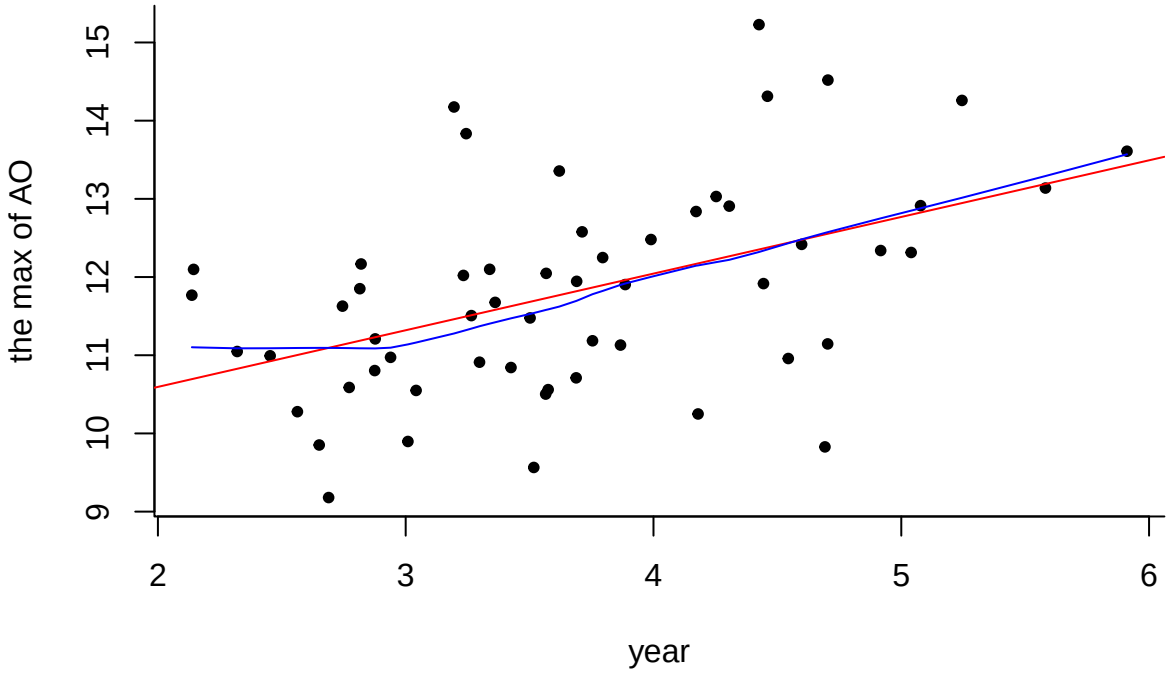

```
#(wm$Hs~wm$maxNAO)
plot(wm$maxNAO,wm$Hs,bty="l",pch=20,xlab="year",ylab="the max of NAO")
abline(lm(wm$Hs~wm$maxNAO), col="red") # regression line (wm$Hs~wm$maxNAO)
lines(lowess(wm$Hs~wm$maxNAO), col="blue") # lowess line (wm$Hs~wm$maxNAO)
```




```
#(wm$Hs~wm$meanAO)
plot(wm$meanAO,wm$Hs,bty="l",pch=20,xlab="year",ylab="the mean of AO")
abline(lm(wm$Hs~wm$meanAO), col="red") # regression line (wm$Hs~wm$meanAO)
lines(lowess(wm$Hs~wm$meanAO), col="blue") # lowess line (wm$Hs~wm$meanAO)
```




```
#(wm$Hs~wm$maxAO)
plot(wm$maxAO,wm$Hs,bty="l",pch=20,xlab="year",ylab="the max of AO")
abline(lm(wm$Hs~wm$maxAO), col="red") # regression line (wm$Hs~wm$maxAO)
lines(lowess(wm$Hs~wm$maxAO), col="blue") # lowess line (wm$Hs~wm$maxAO)
```



Storm peaks (pot)

Comments

[10]

Extreme value (EV) modelling of H_s

GEV modelling of winter maxima

Maximum Likelihood-Based Inference

Comments

Bayesian Inference

Comments

Binomial-GP modelling of storm peaks

Threshold selection

Maximum Likelihood-Based Inference

Comments

Bayesian Inference

Comments

[25]

Reporting to your client

[15]

EV regression modelling of winter maximum H_s on NAO

Build a GEV regression model

[15]

Inference for H_s^{100}

[10]