

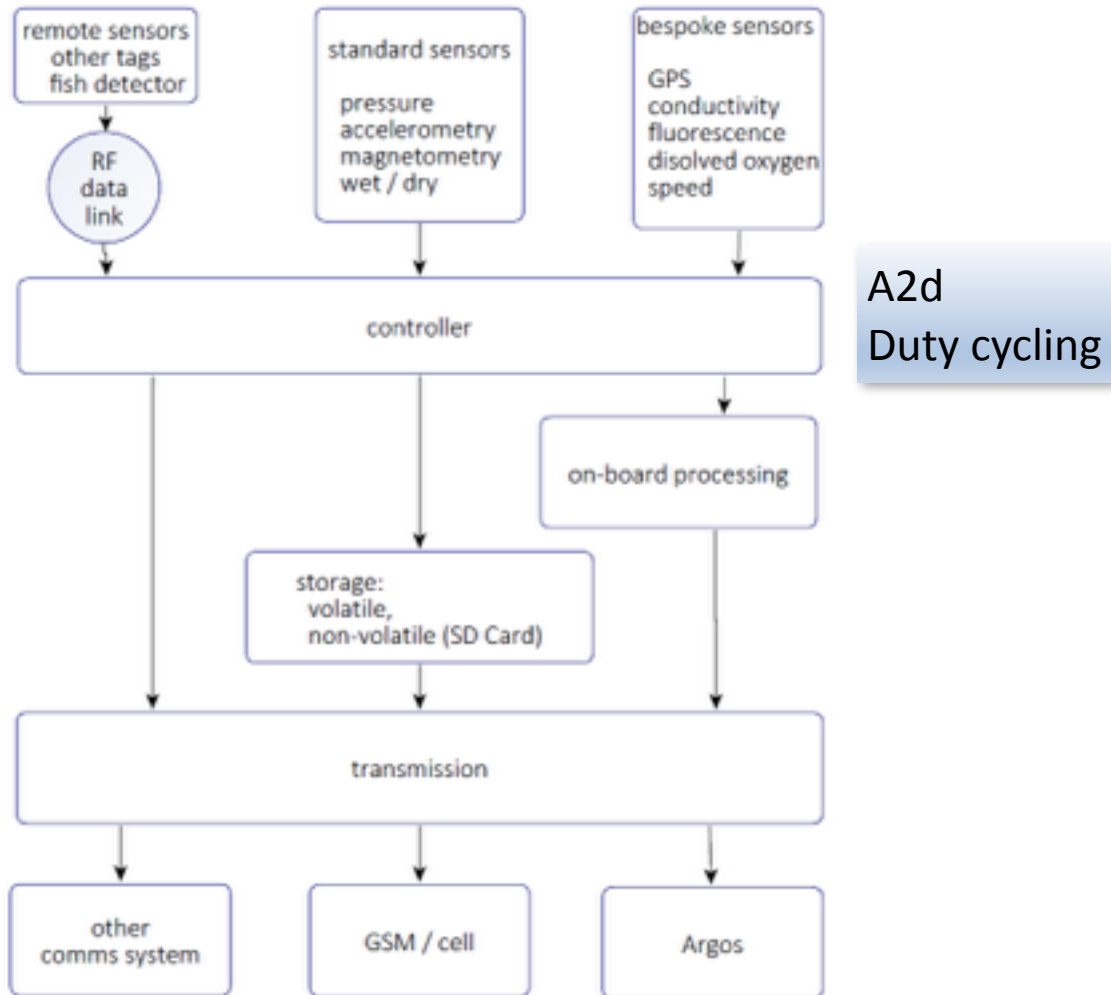
# data flow

Energy, information and bandwidth

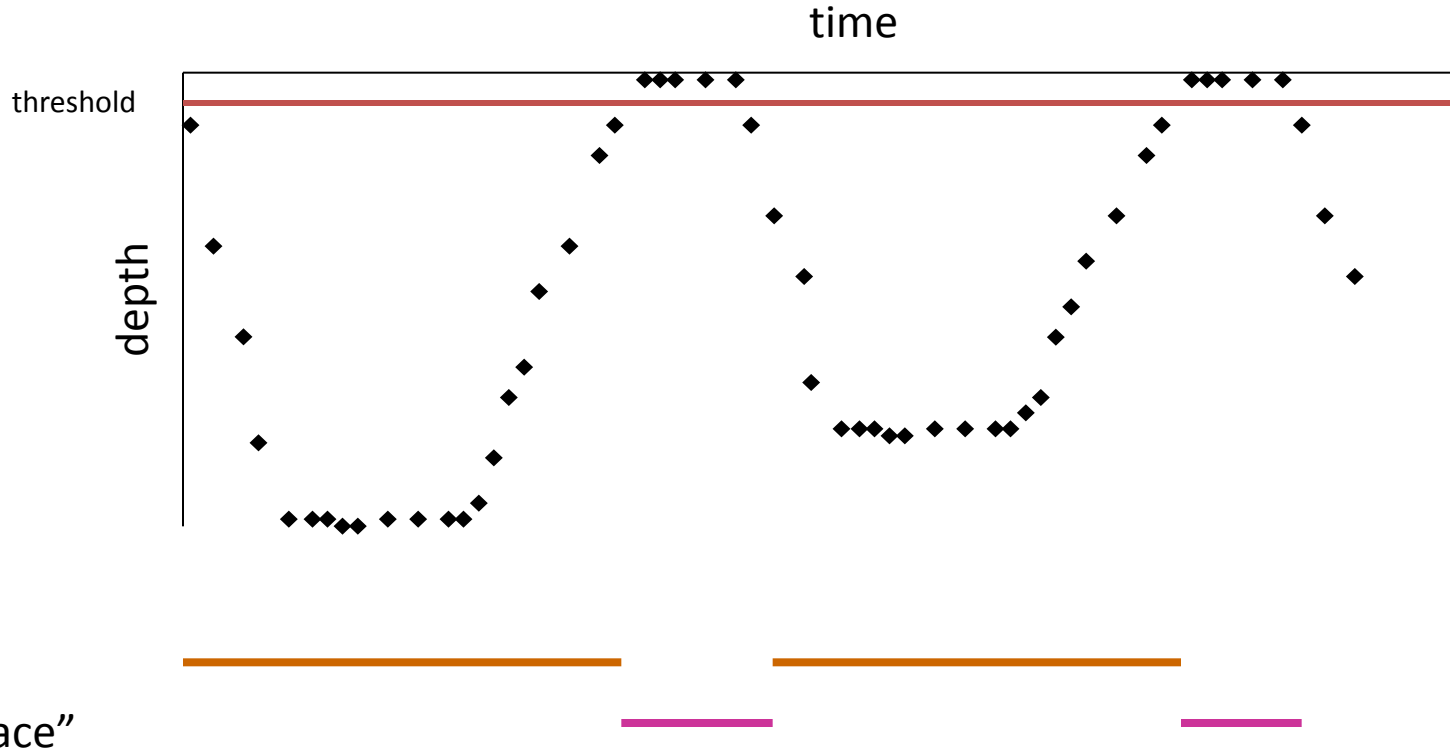
Bernie McConnell



# data flow



# modeling dive duration



100 data points → 4 data points + timestamp

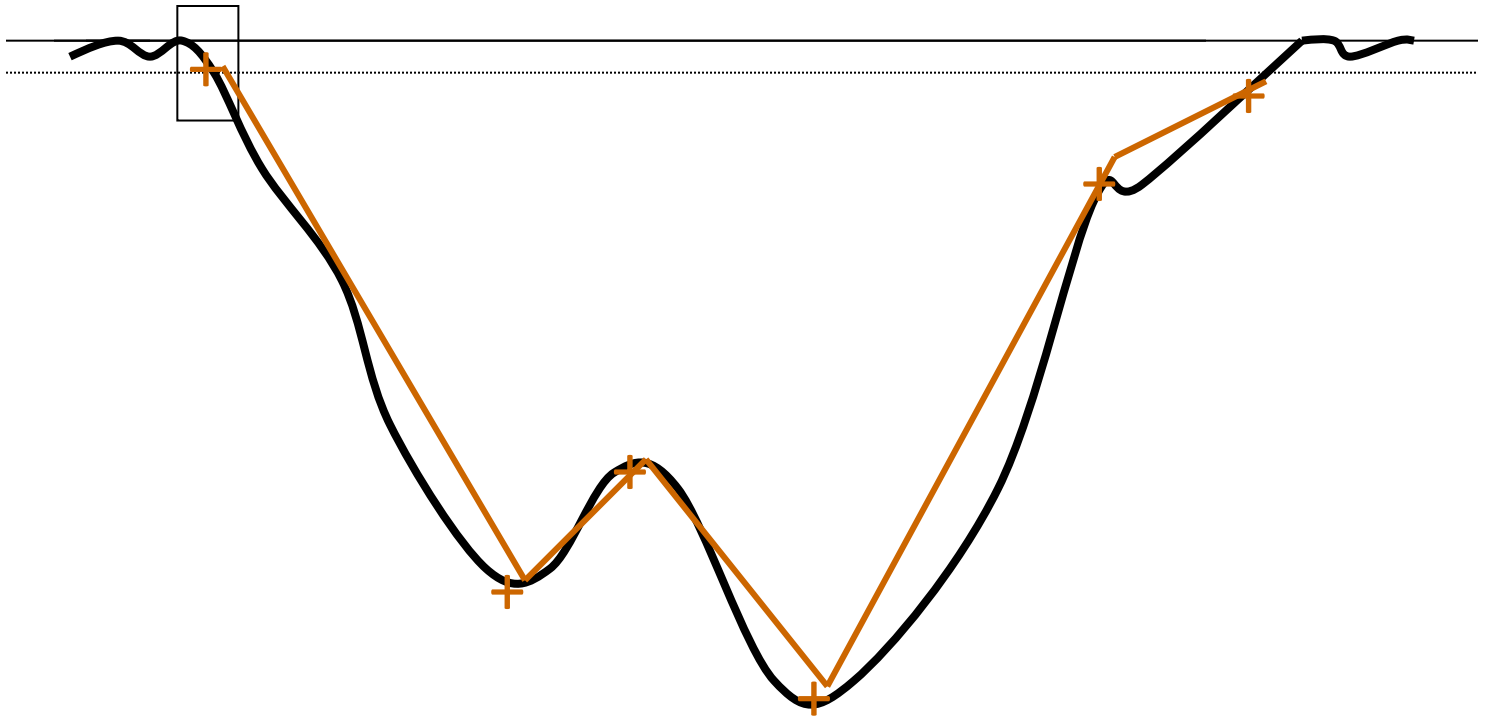


# modeling dive shape

5 min dive sampled every 4s = 75 data points

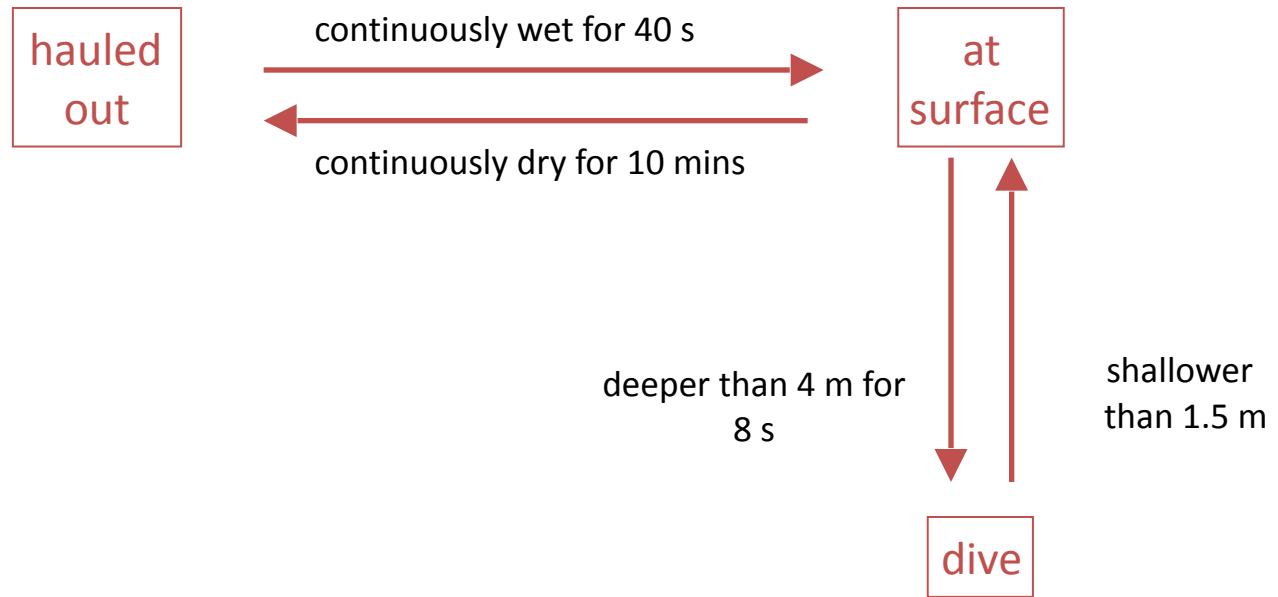
= 4 inflection points

= 95% lossy compression



# three state activity model

Compress data by relaying model parameters, rather than raw data



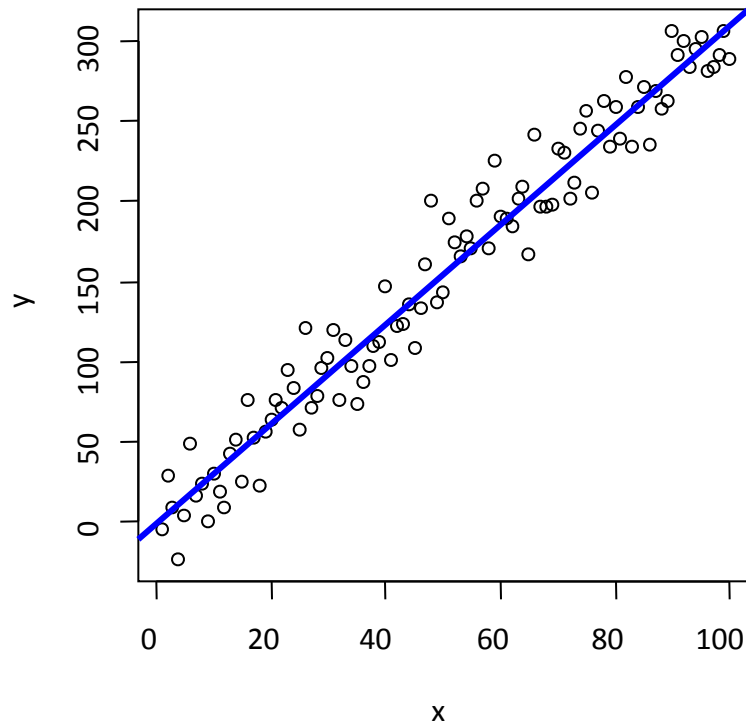
# data compression

*data collected = 100 times Argos data bottleneck*

100 data pairs  
(200 bytes)

slope = 3.1  
intercept = -1.6

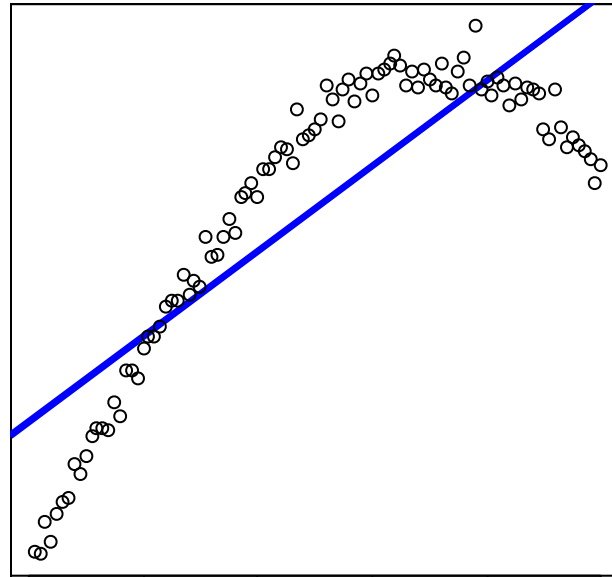
2 bytes



# modeling data 2

slope = 0.8  
intercept = 30

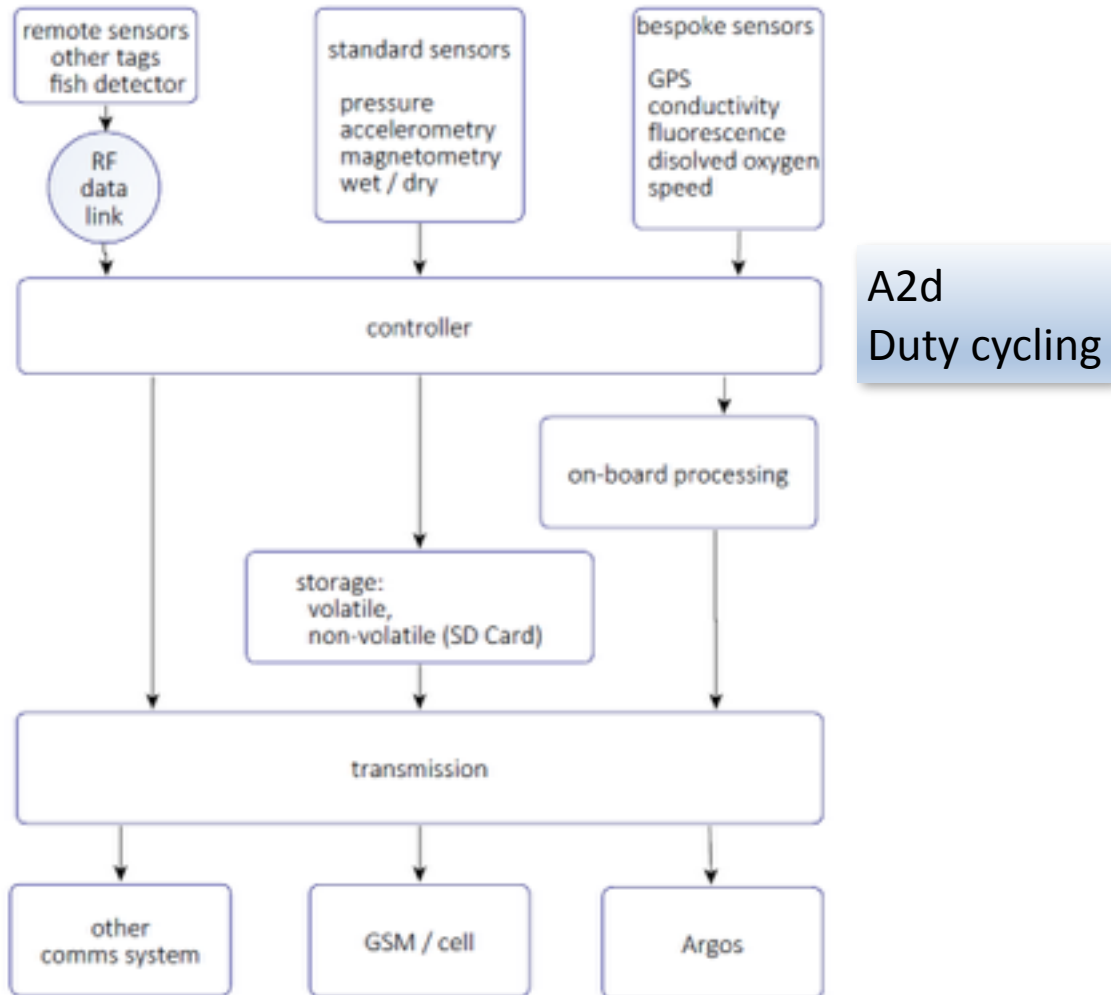
2 bytes



in order to use on-board modelling we must be confident, **a priori**, that the model is **appropriate**



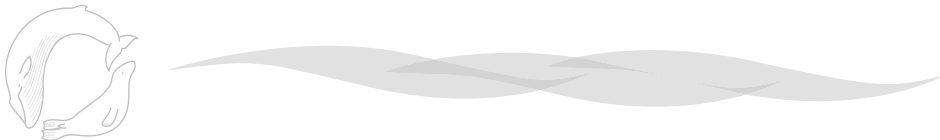
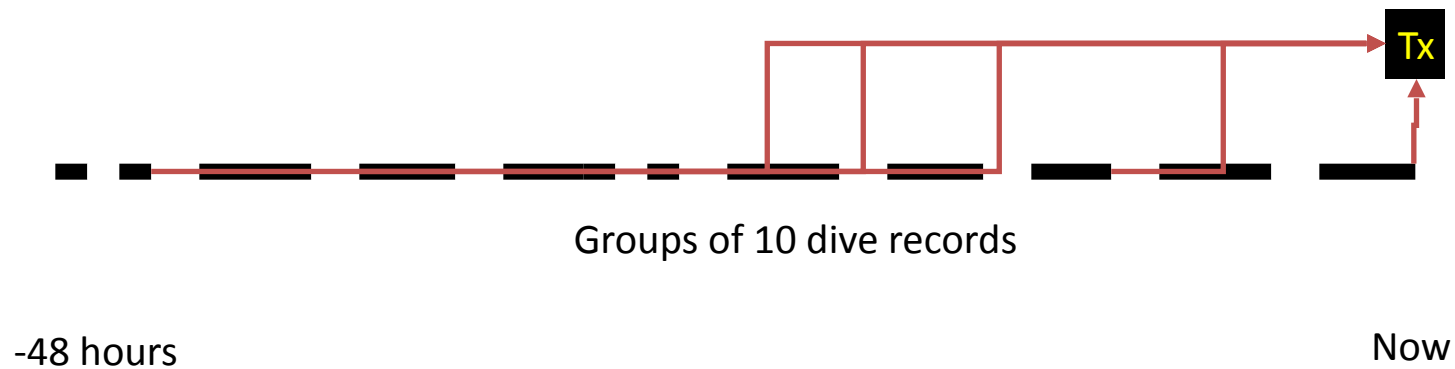
# data flow





# sampling bias

- Satellite availability is intermittent and can be a function of behaviour. Therefore danger of relaying a **biased sample** of behaviour.
- Solution: pseudo random sampling from stored data.



# data flow

rx, decoding & dissemination

