# Metals in Clams

Exercise for the PhD course.

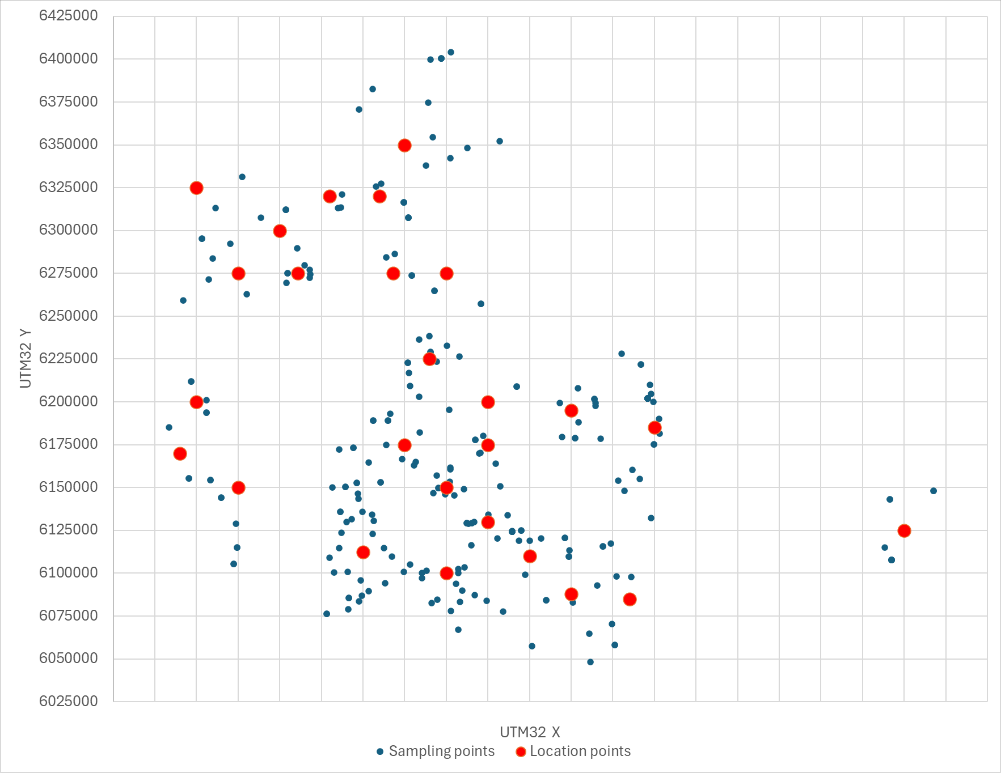
## Sampling

Marine samplings for metal analysis of clams (Danish: muslinger) around Denmark:

Et billede, der indeholder tekst, kort

Indhold genereret af kunstig intelligens kan være forkert.

The sampling points are aggregated using 26 location points, that are defined to aggregate samples belonging to the same marine water body. The sample points and location points is shown as:



Each sampling point is associated to the closest location point. Data, where mercury is measured, is listed in “MercuryIndputFile.xlsl”.

## Model

The expected concentration in each location point is assumed to be proportional in relation to a general concentration (

Where *i* is index for location point.

Each measurement is estimated using the model:

Where

Where Length and width I respectively the length and withs of the specific measured clam.

So in log form:

where

Each measured concentration (each sample) (is assumed log normal distributed at each location point as:

*)*

where *j* is the index for each sample at location index *i*.

## Tasks

* Consult the file MercuryIndputFile.xlsl
* Set up a model in RTMB to estimate , , , *, , delta, .*
* Make scatterplot: predicted log-concentration at location points on the x-axis og single measure log-concentration on the y-axes. Evaluate the model based on the scatterplot.
* Where in the marine areas are the concentration level of mercury highest?