Visualization of vocalization and movements of a small cetacean: Harbour Porpoise.

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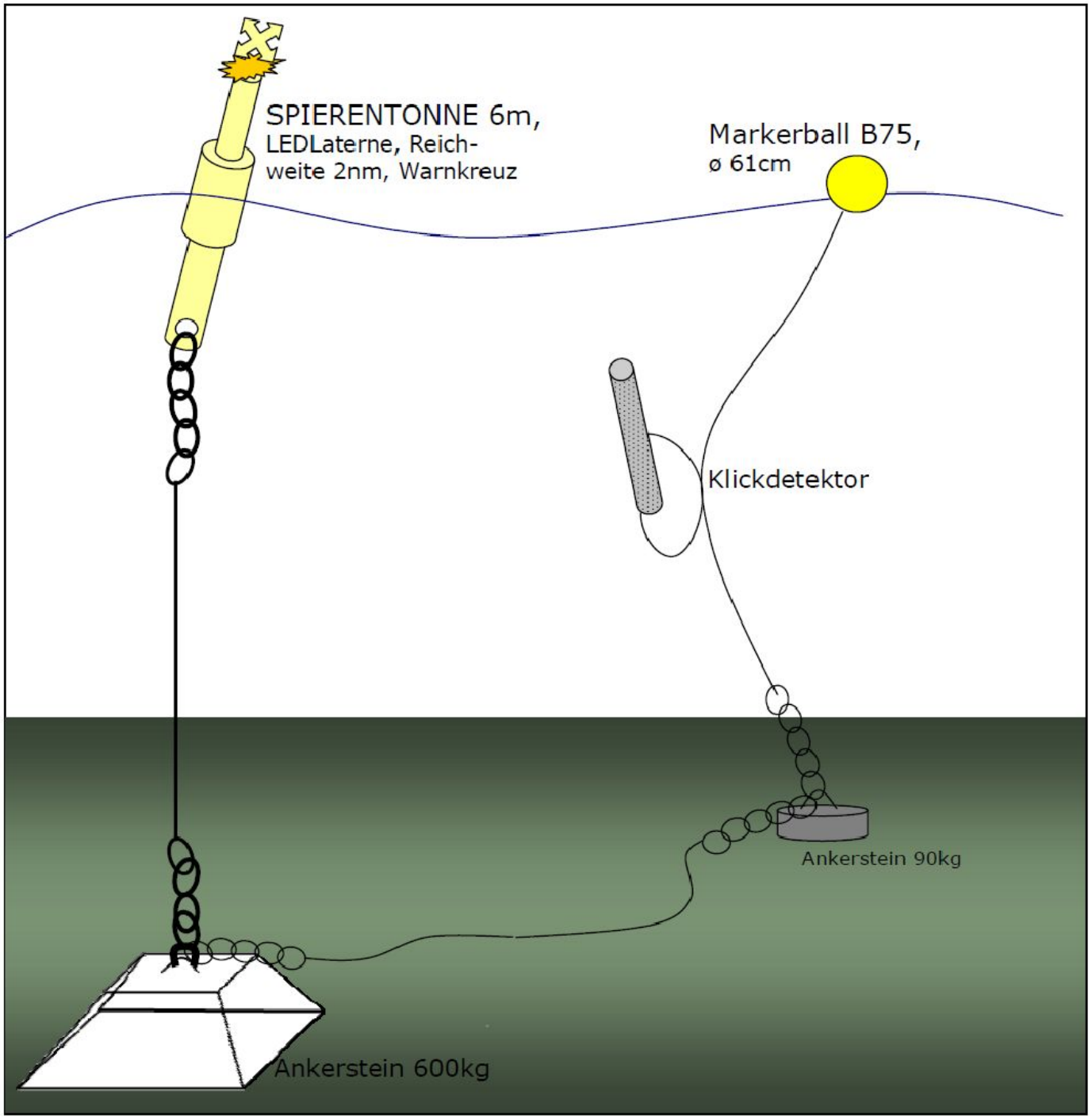
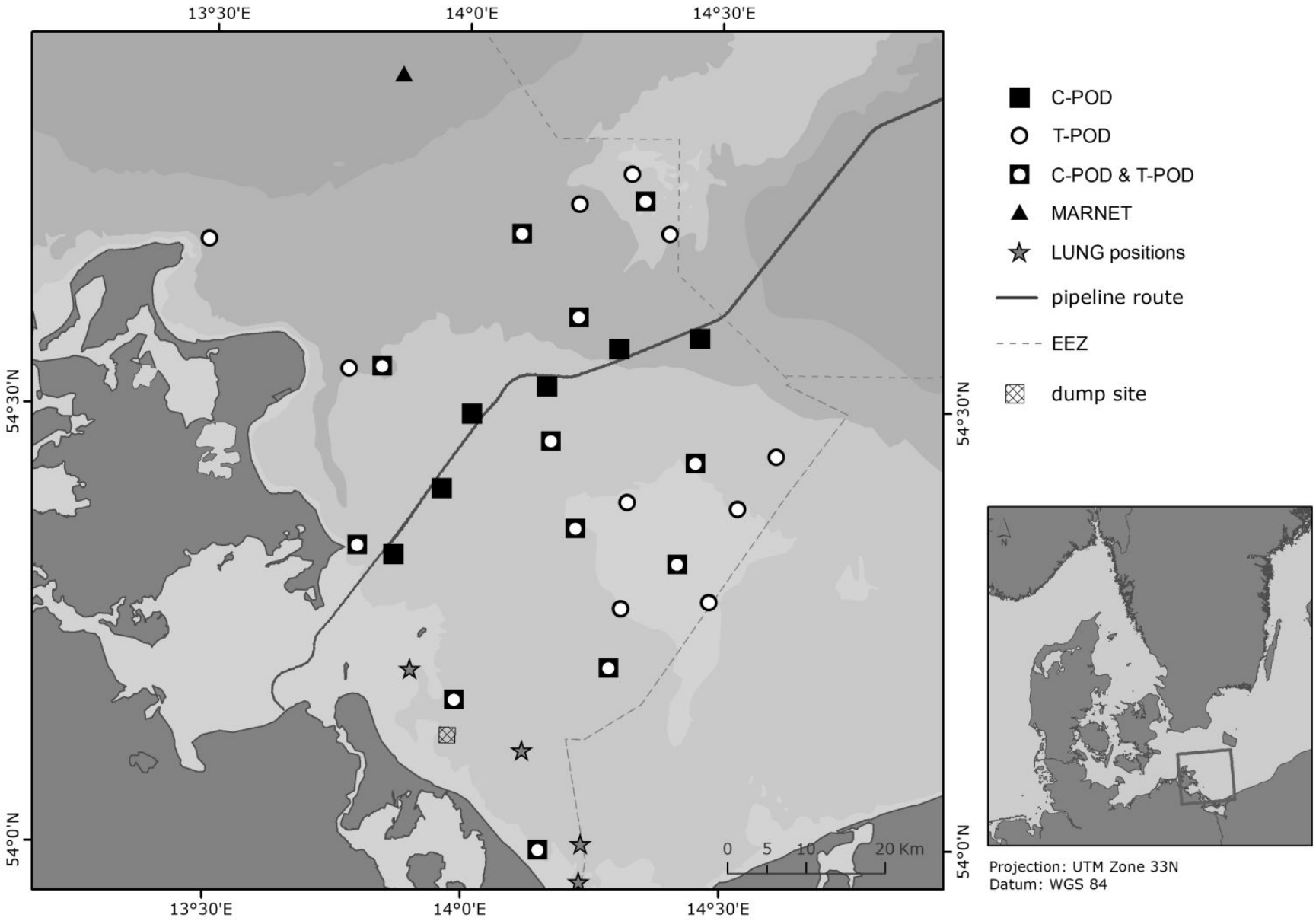
Technical description of visualization process and methods

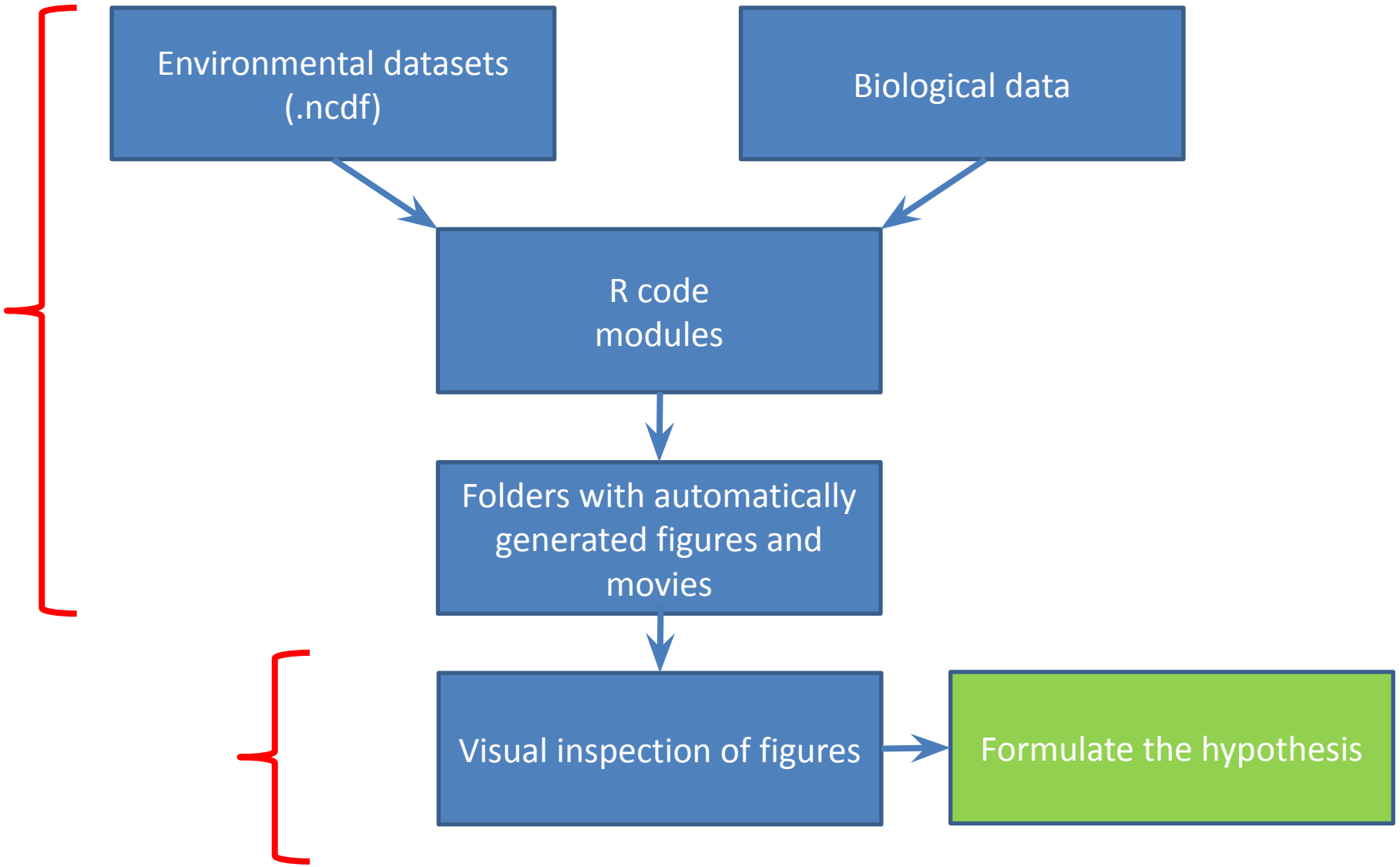
Harbour Porpoise

C-POD


SPIERENTONNE 6m,
LEDLaterne, Reich-
weite 2nm, Warnkreuz
Markerball B75,
ø 61cm
Klickdetektor
Ankerstein 90kg
Ankerstein 600kg


13°30'E
14°0'E
14°30'E
54°30'N
54°0'N
C-POD
T-POD
C-POD & T-POD
MARNET
LUNG positions
pipeline route
EEZ
dump site
0 5 10 20 Km
Projection: UTM Zone 33N
Datum: WGS 84

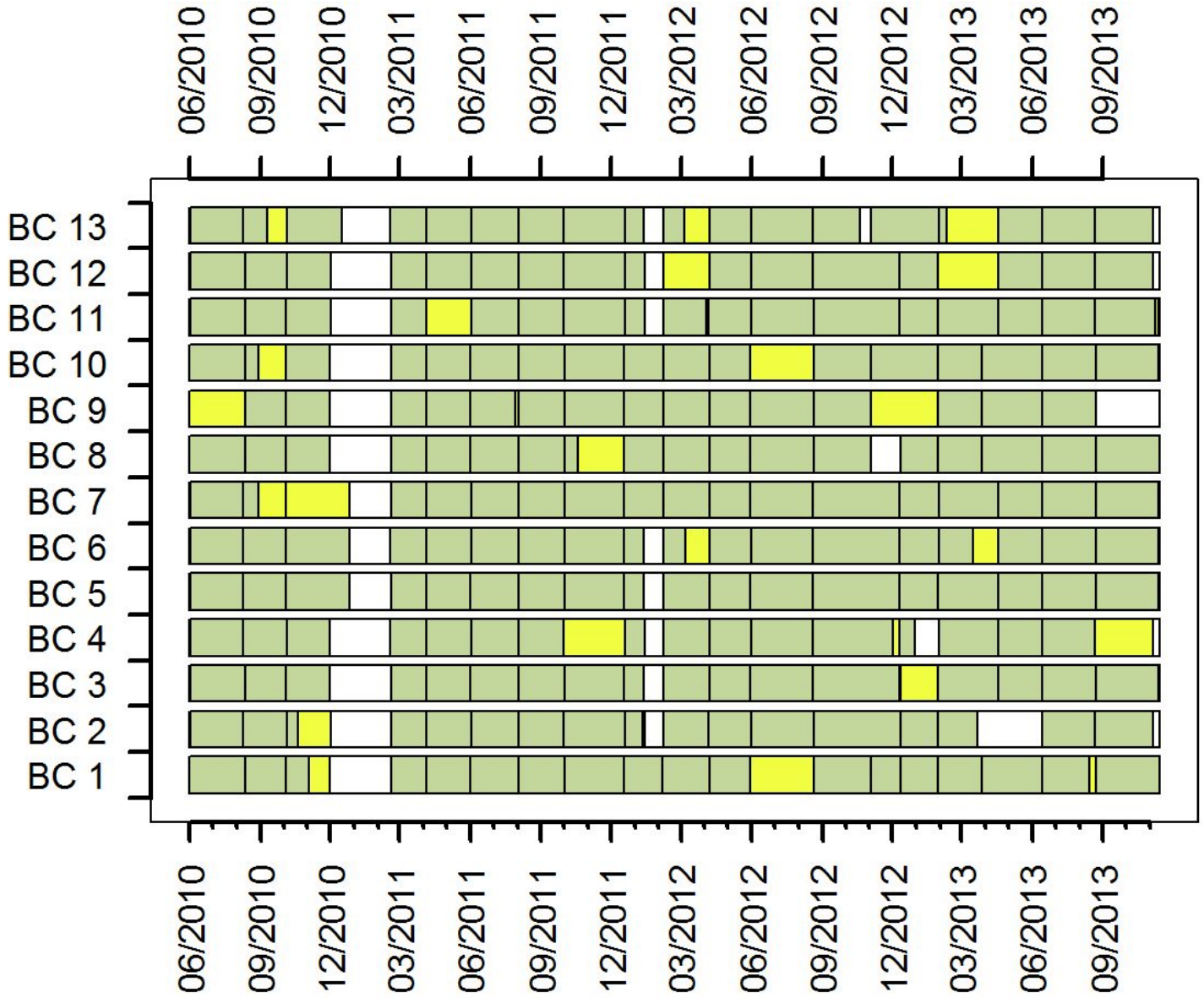
Codes are in R



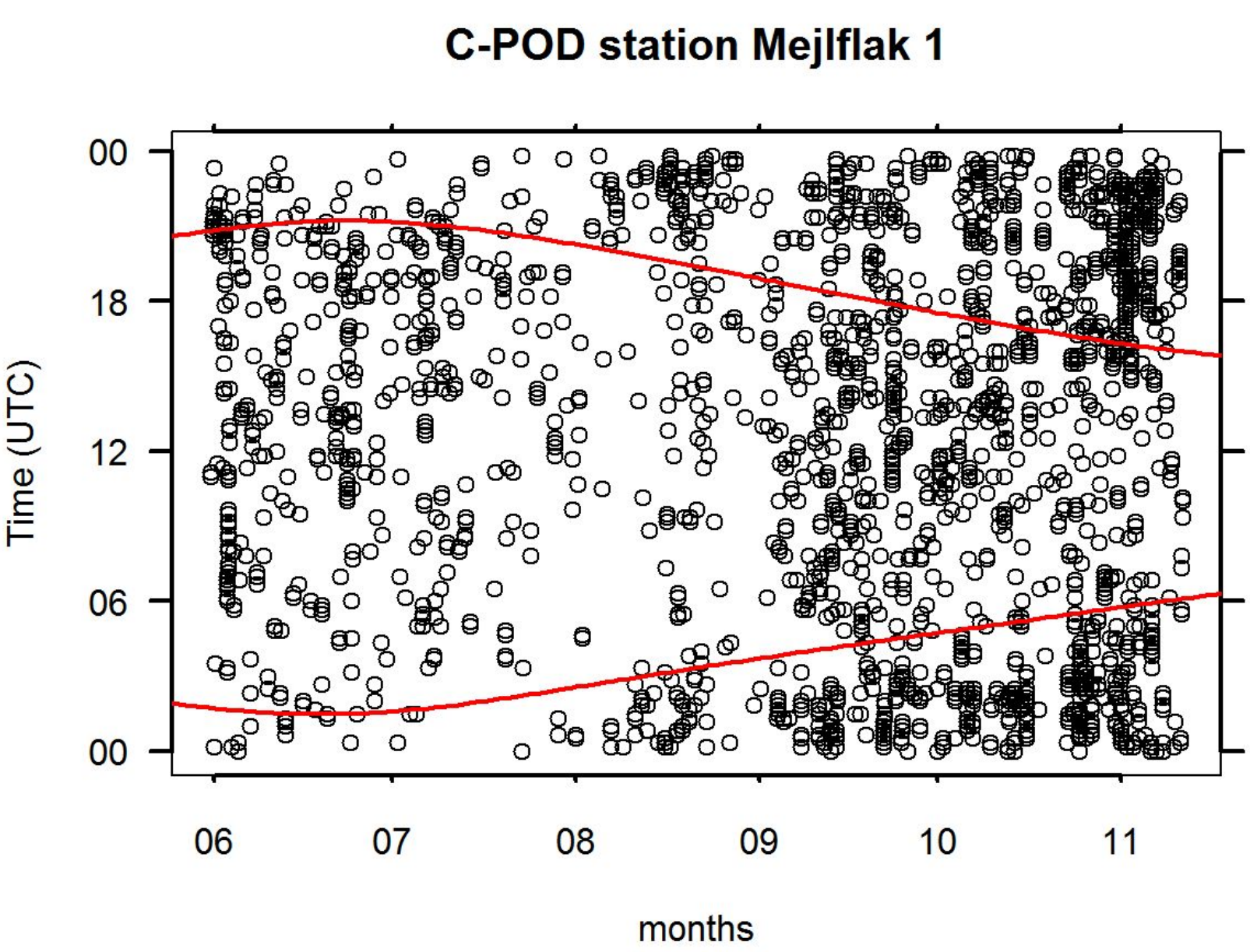
Datasets, at best global and free

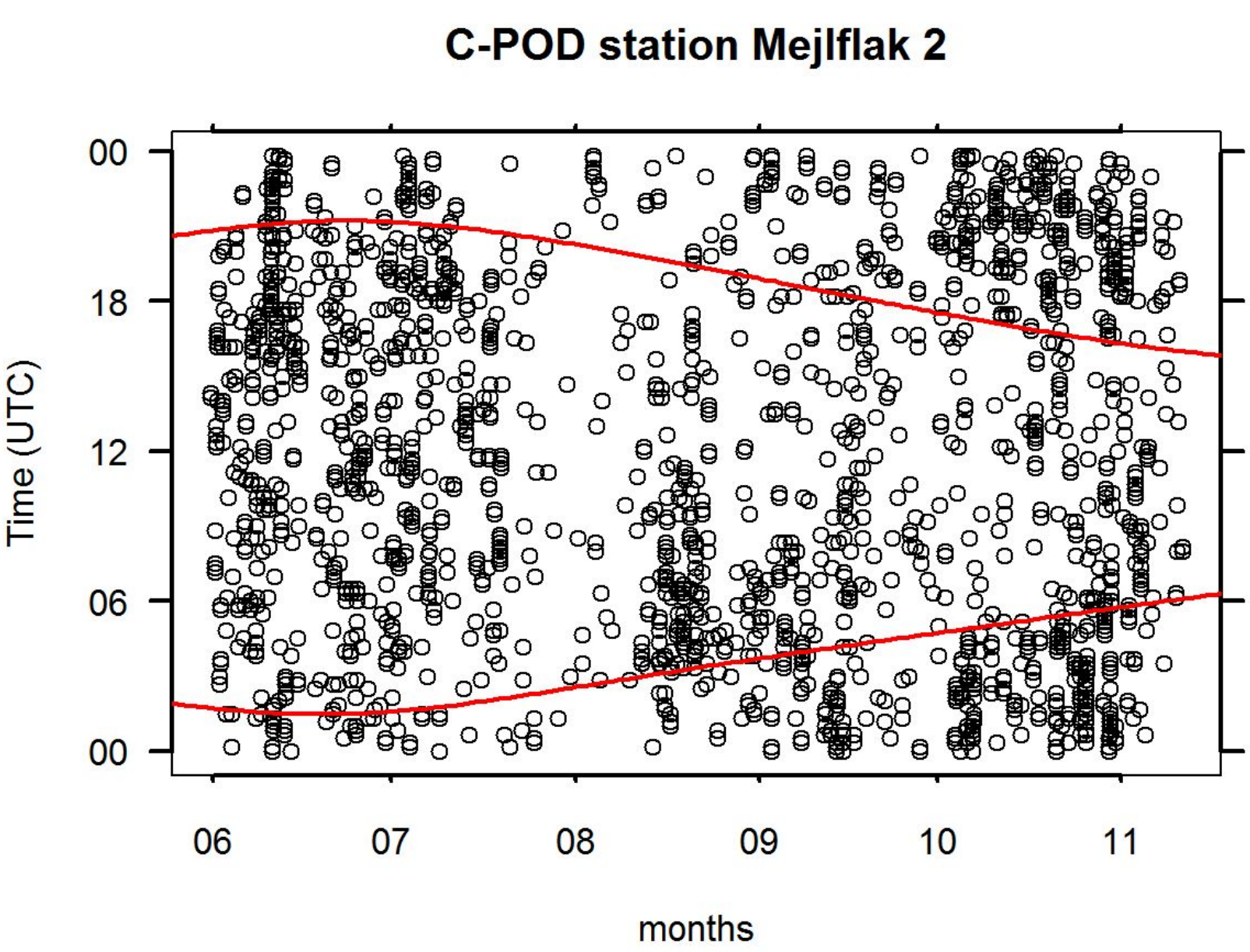
- SST – Sea Surface Temperature, daily mean, global grid (0.25x0.25 degrees) (http://www.esrl.noaa.gov/psd/data/gridded/data.noaa.oisst.v2.highres.html)
- Wind at 10 meters (u- and v- components) proxy for sea state
- Tide phase
- Special datasets (high resolution models of parameters on the range of depths)

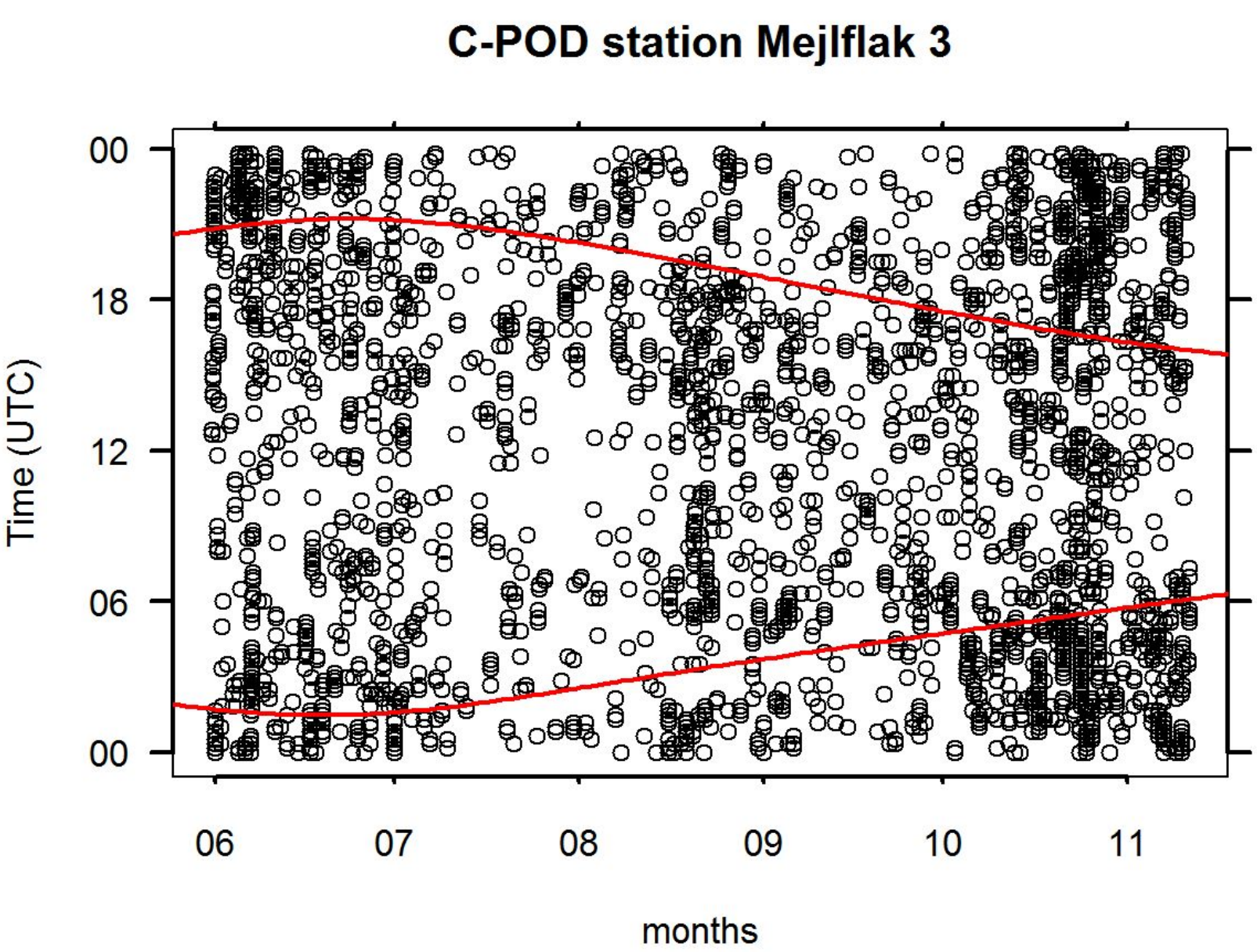
Visualisation of effort

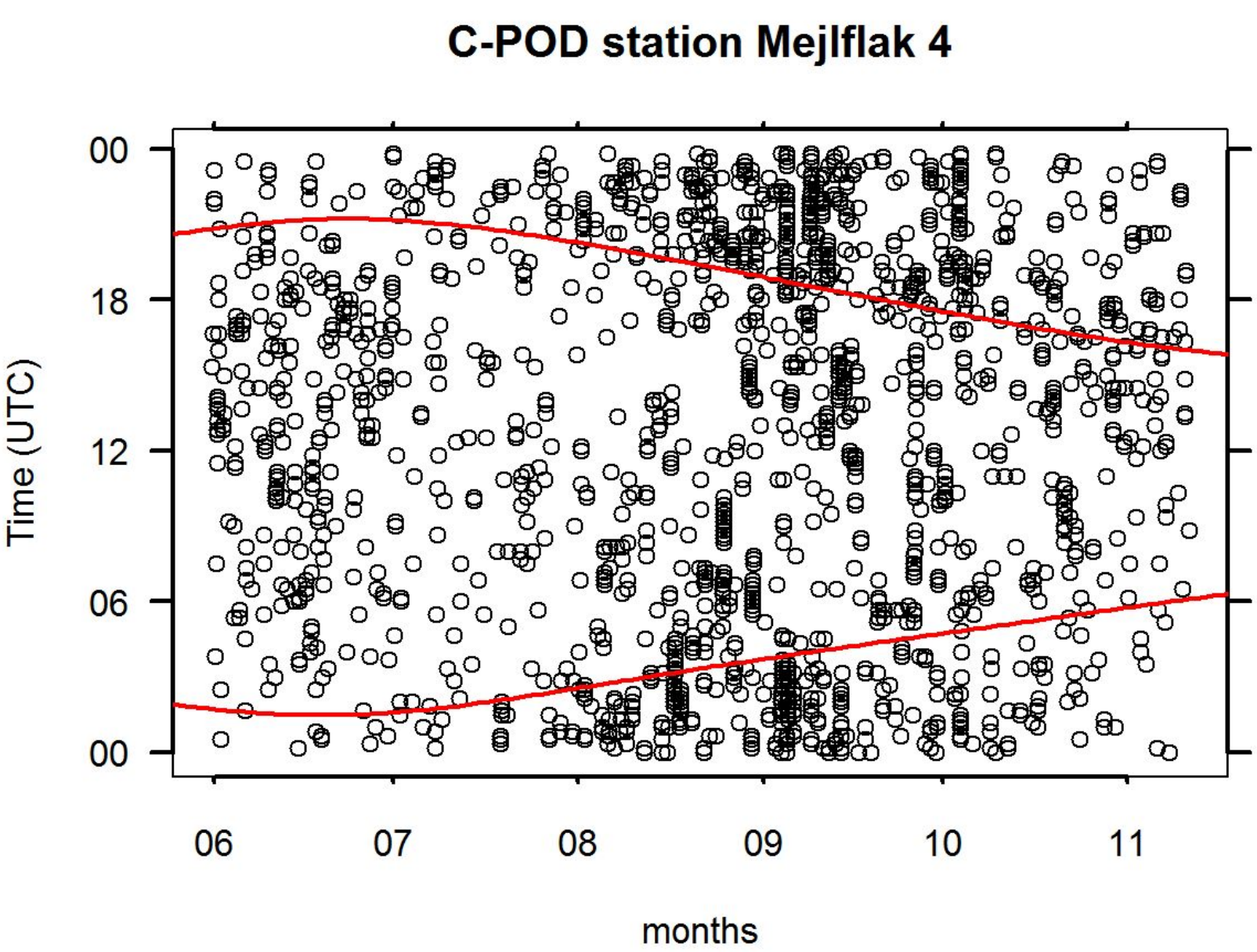


Biological data

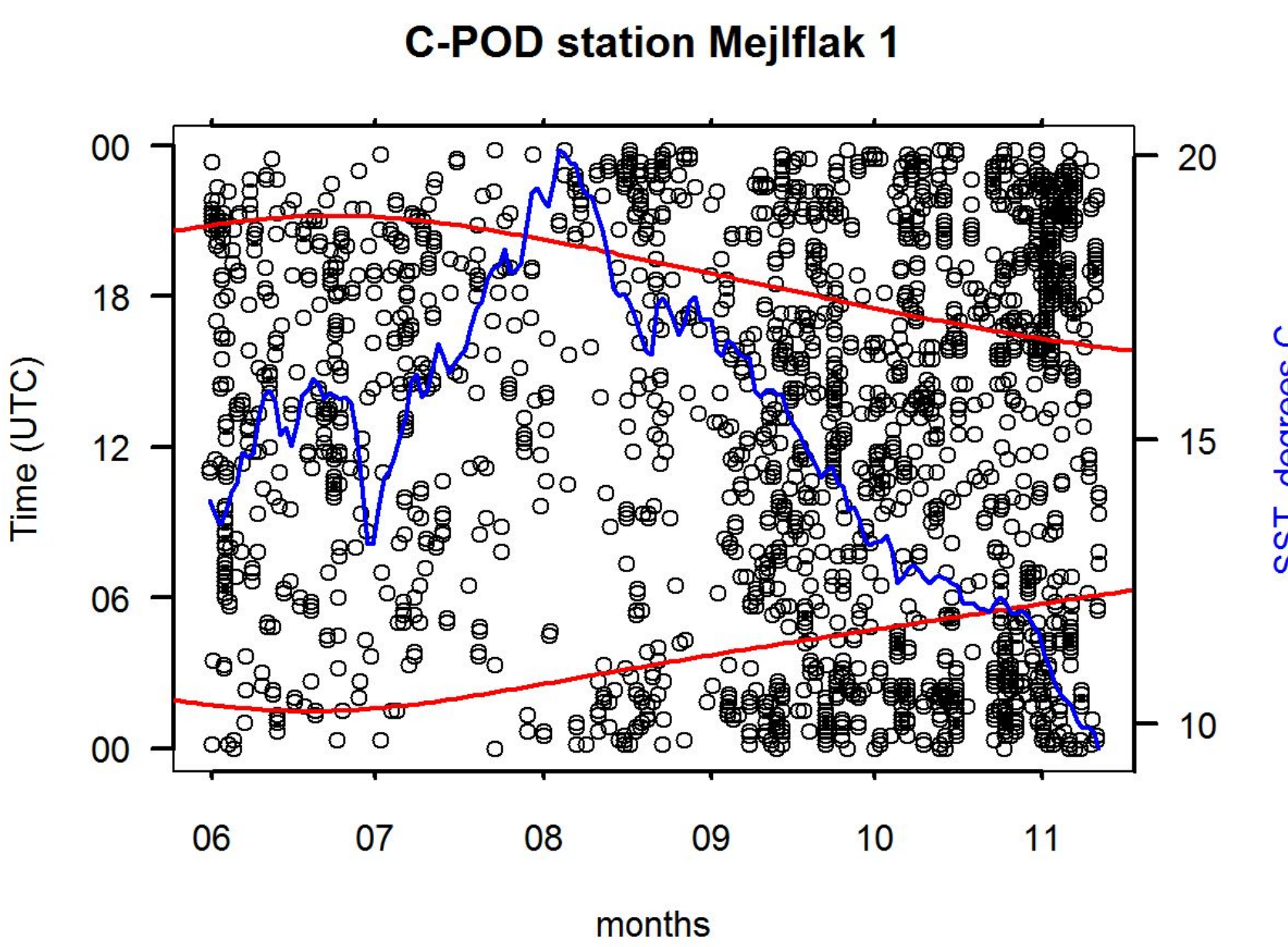

C-POD station Mejlflak 1
Time (UTC)
00
18
12
06
00
06
07
08
09
10
11
months

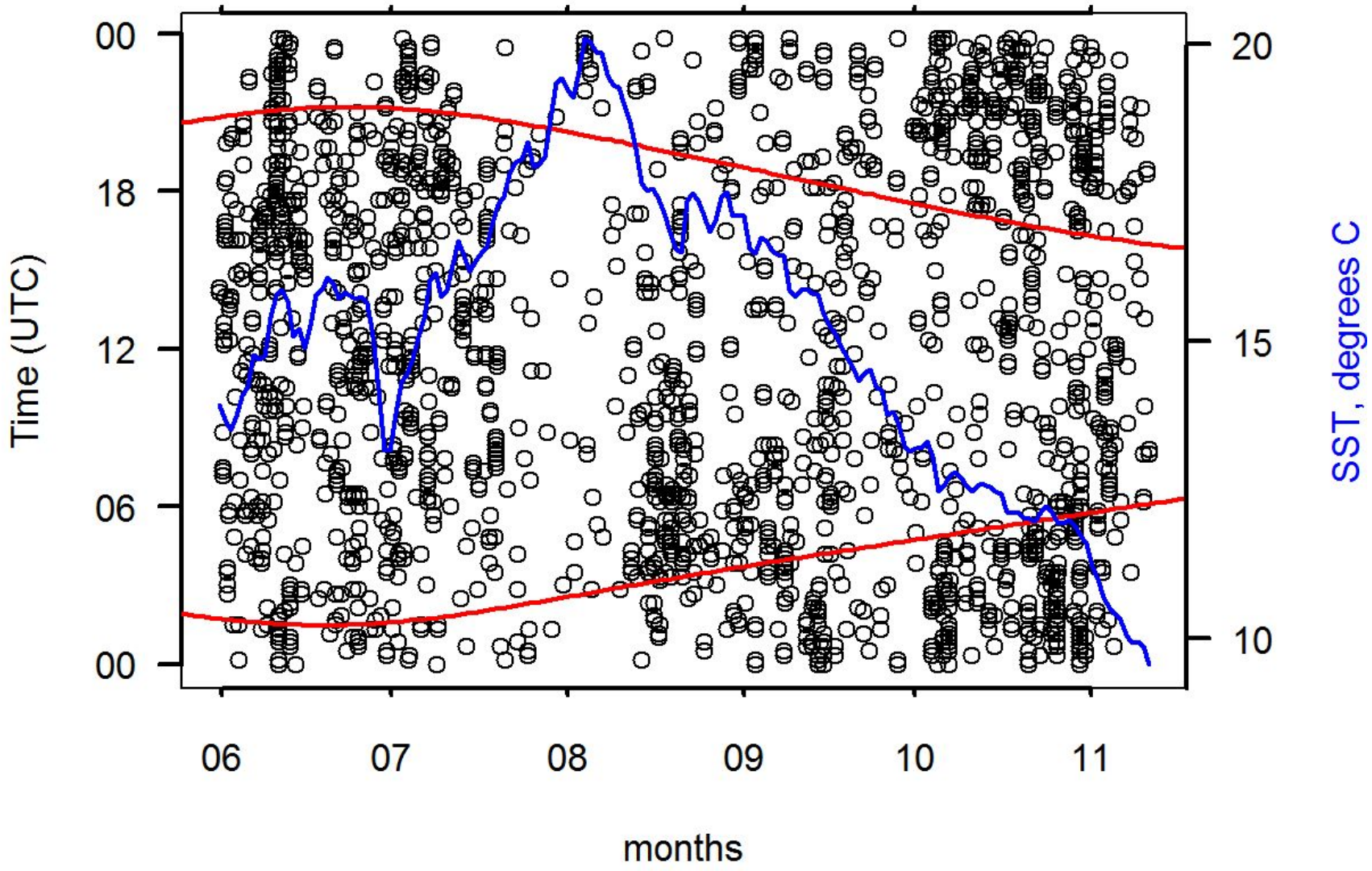

C-POD station Mejlflak 2
Time (UTC)
00
18
12
06
00
06
07
08
09
10
11
months

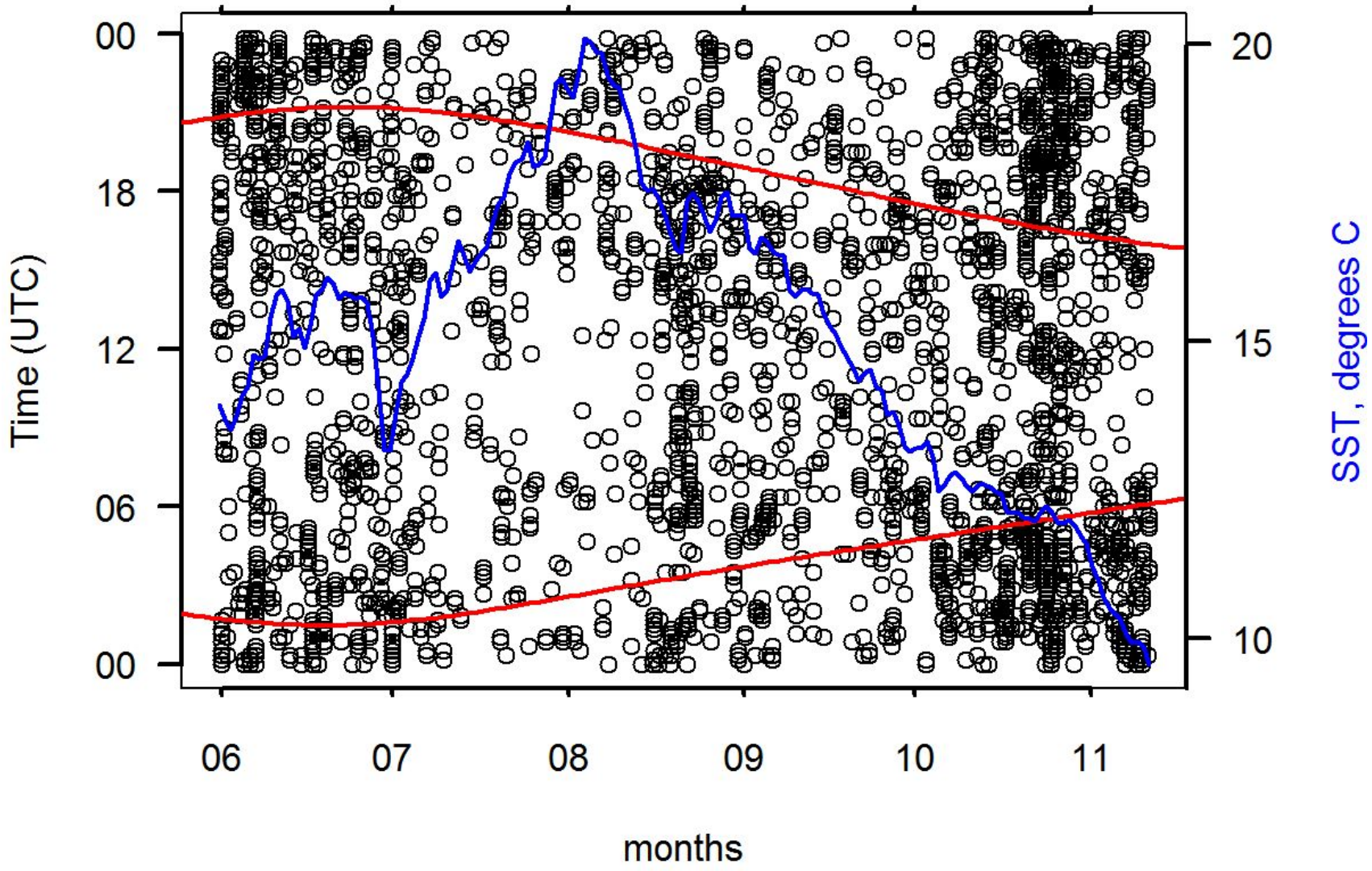

C-POD station Mejlflak 3
Time (UTC)
00
18
12
06
00
06
07
08
09
10
11
months

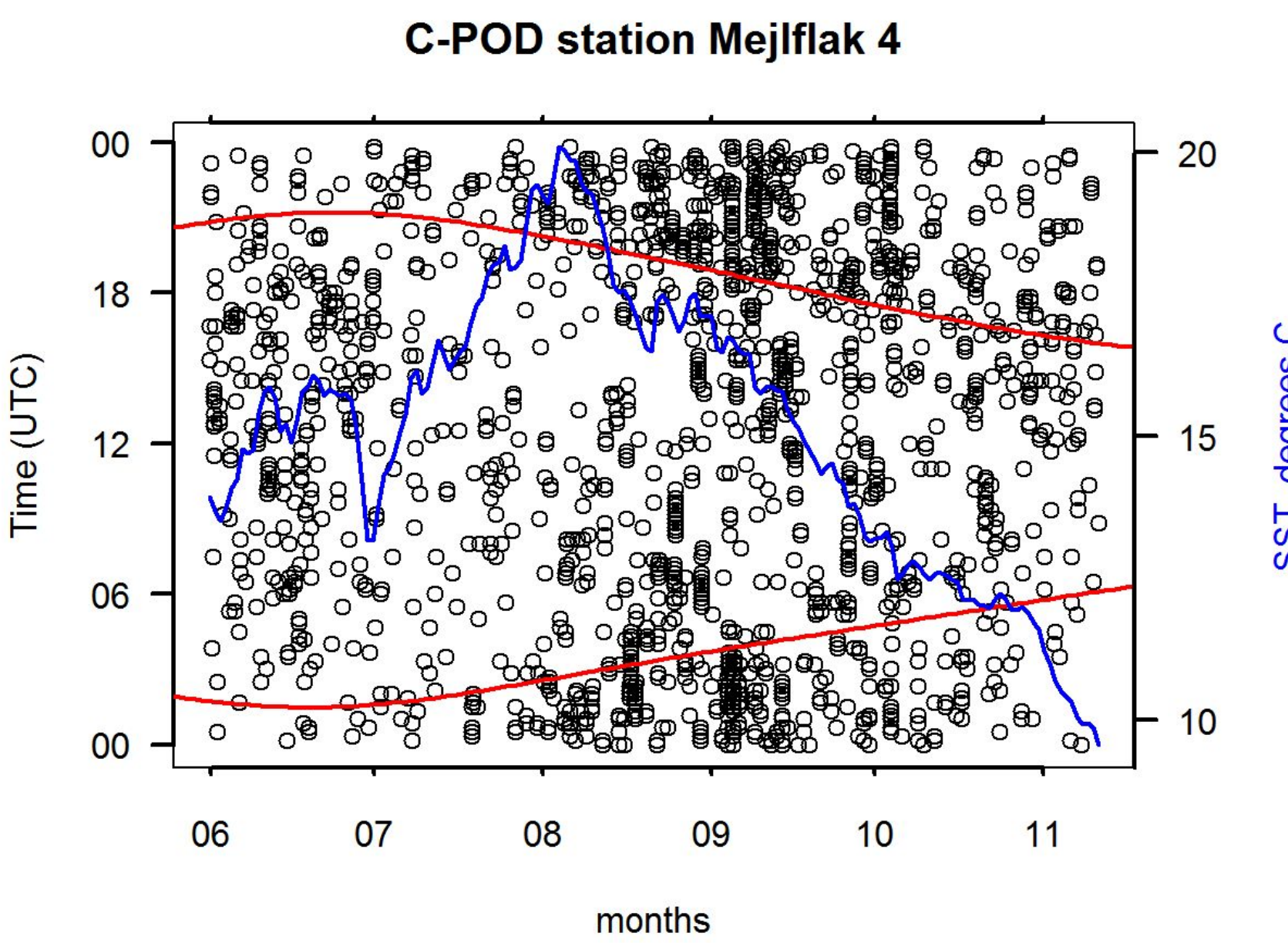

C-POD station Mejlflak 4
Time (UTC)
00
18
12
06
00
06
07
08
09
10
11
months

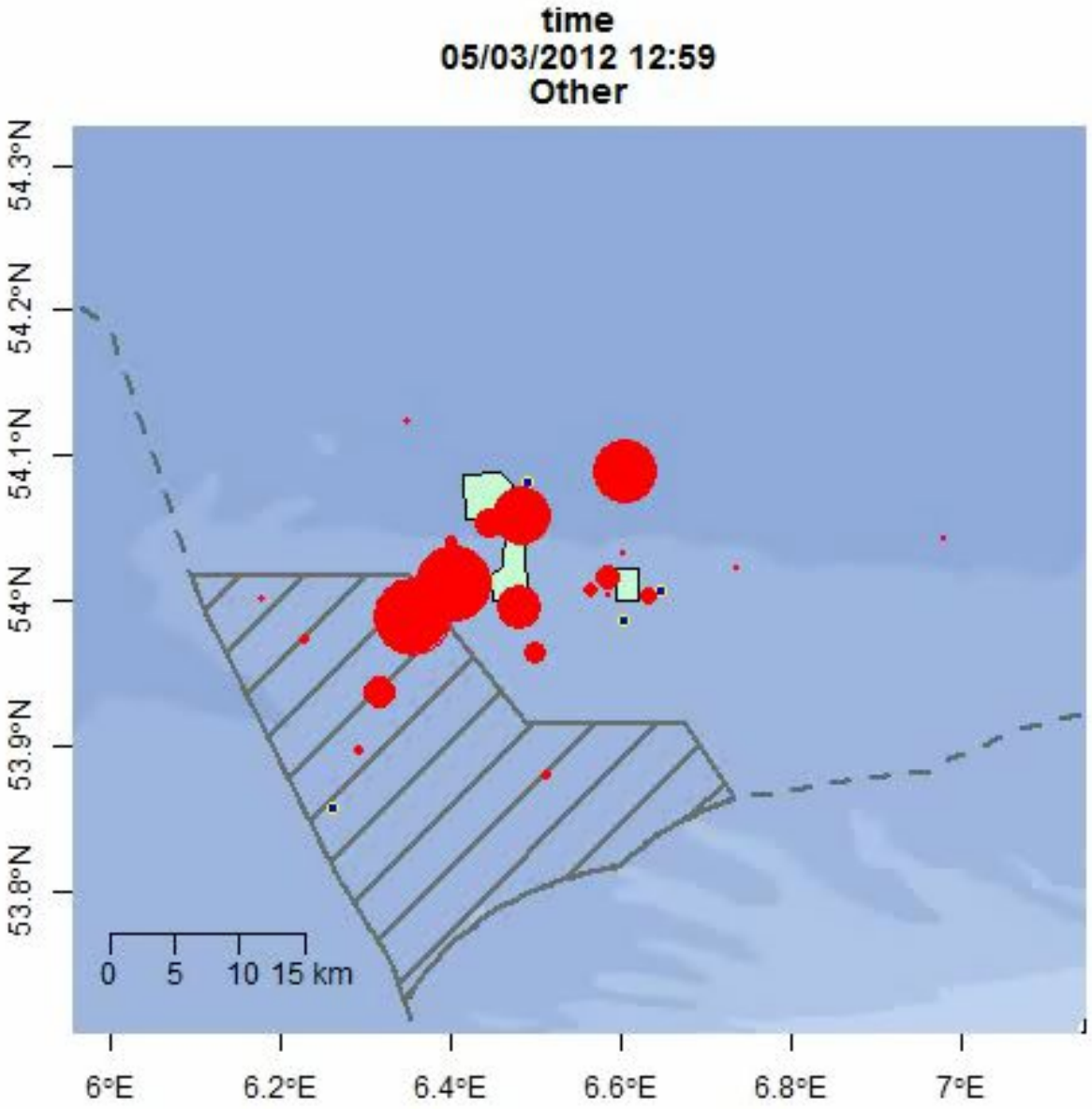
Adding environmental parameters to original biological data


C-POD station Mejlflak 1
Time (UTC)
00
18
12
06
00
SST, degrees C
20
15
10
06
07
08
09
10
11
months

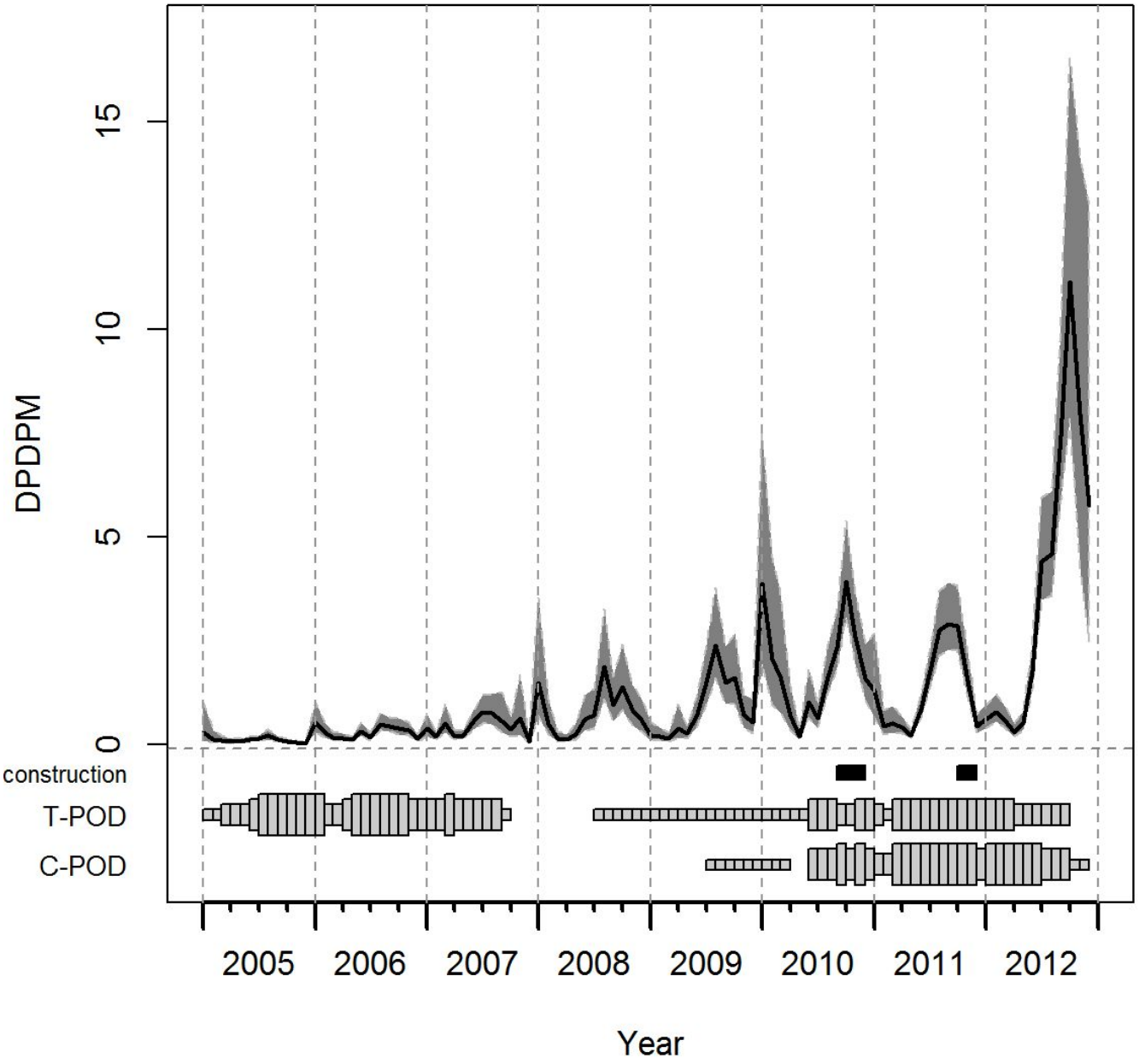

C-POD station Mejlflak 2
Time (UTC)
00
18
12
06
00
SST, degrees C
20
15
10
06
07
08
09
10
11
months


C-POD station Mejlflak 3
Time (UTC)
00
18
12
06
00
SST, degrees C
20
15
10
06
07
08
09
10
11
months


C-POD station Mejlflak 4
Time (UTC)
00
18
12
06
00
SST, degrees C
20
15
10
06
07
08
09
10
11
months


time
05/03/2012 12:59
Other
54.3°N
54.2°N
54.1°N
54°N
53.9°N
53.8°N
0 5 10 15 km
6°E
6.2°E
6.4°E
6.6°E
6.8°E
7°E

GAM


DPDPM
0
5
10
15
construction
T-POD
C-POD
2005
2006
2007
2008
2009
2010
2011
2012
Year

Visualization helps:

- To select the scale of generalization
- Draws special attention for points of rapid change of environmental parameters
- To detect outliers and check them
- To formulate new hypothesis

Asknowledgements:

- NordStream
- RWE
- Several tens of free-lancers for field work assistance
- SMU, St.Andrews (Len Thomas)
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- Ansgar Diederichs