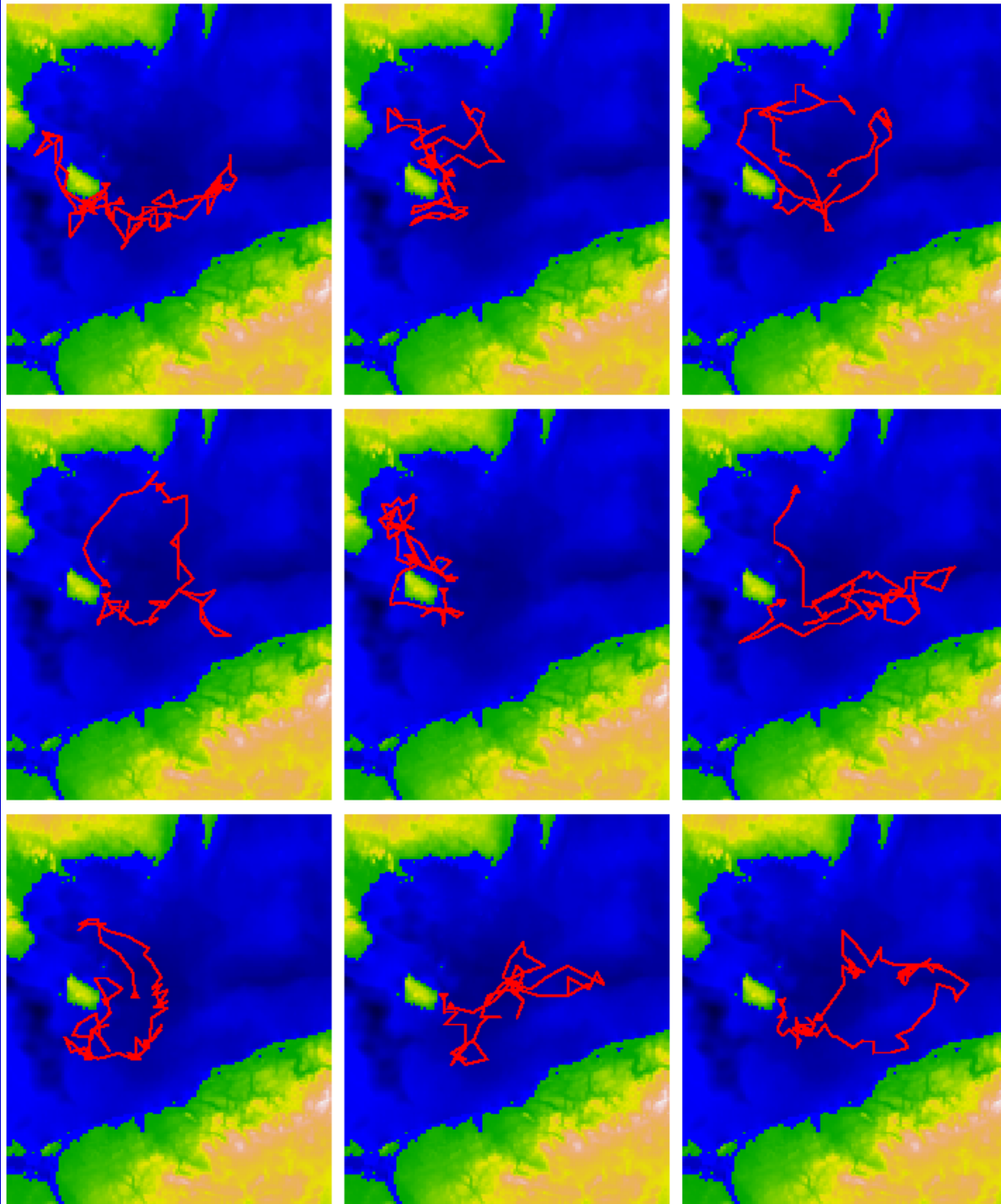


A method to geolocate eastern Baltic cod by using Data Storage Tags (DSTs)

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Email: stn@dfu.min.dk

TRACKS

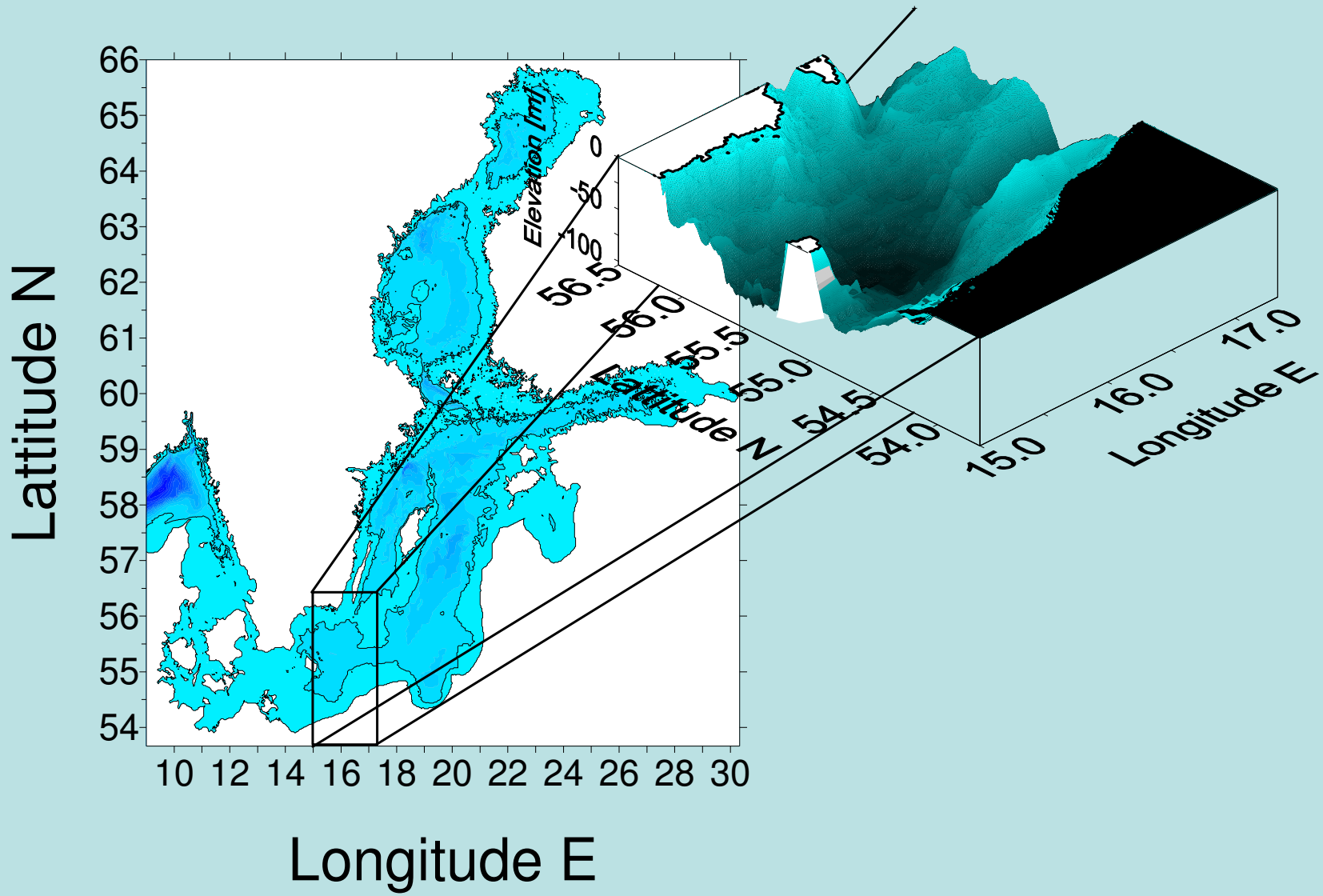


WHY ESTIMATE INDIVIDUAL MIGRATION TRACKS?

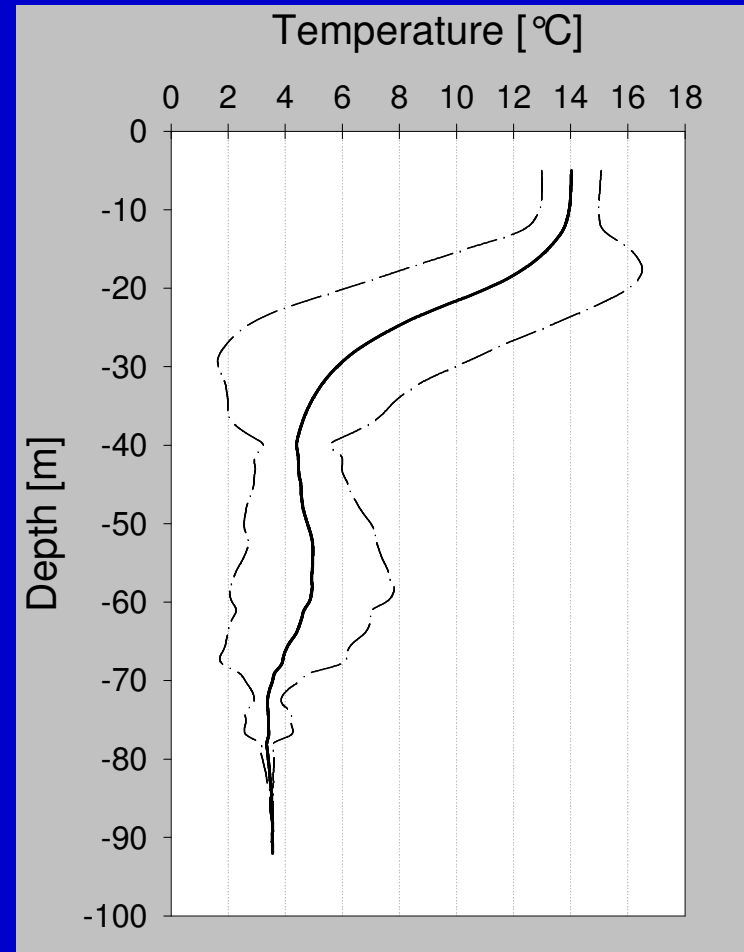
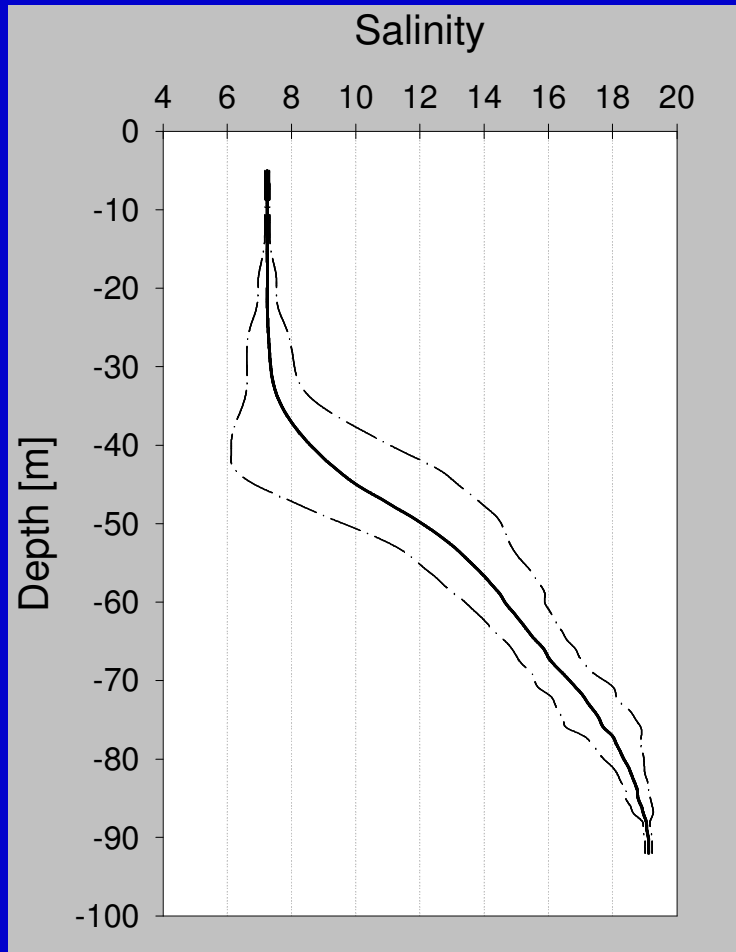
- Timing of migrations
- Identify *in situ* behaviours
- Identify environmental control mechanisms
- Understand changes in population distribution on different temporal and spatial scales

TAGGING

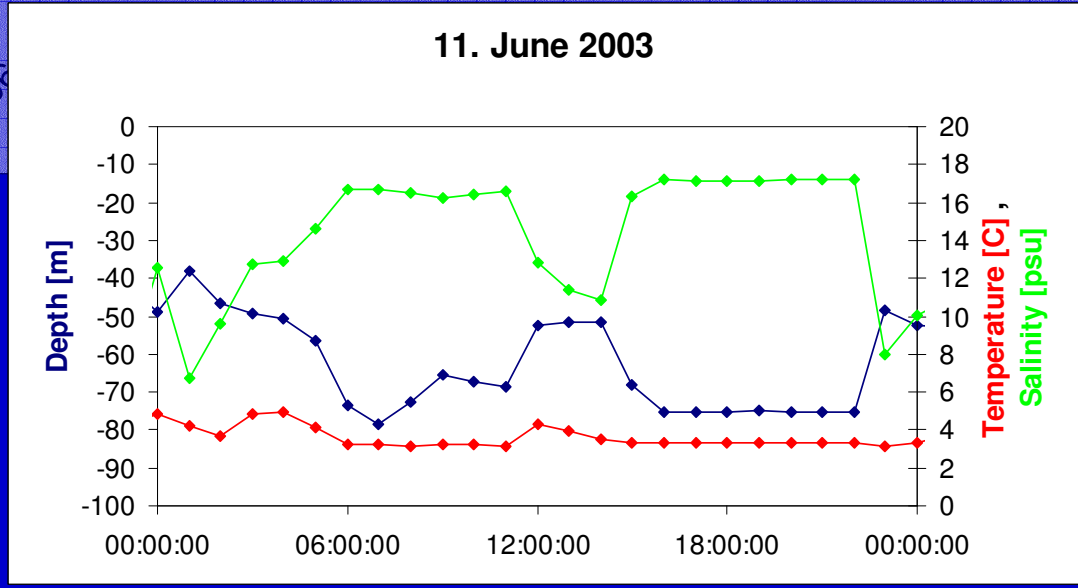
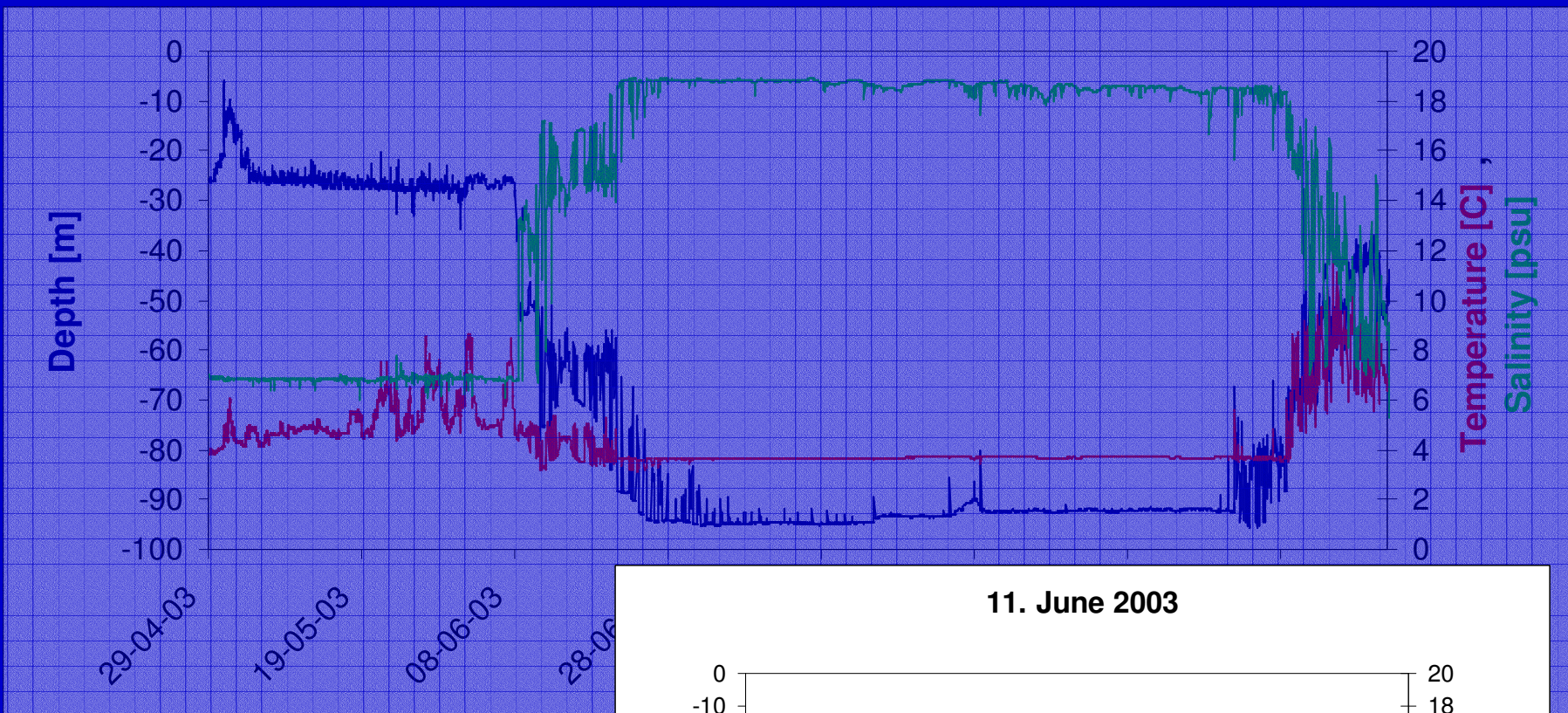




Hydrography July 2003



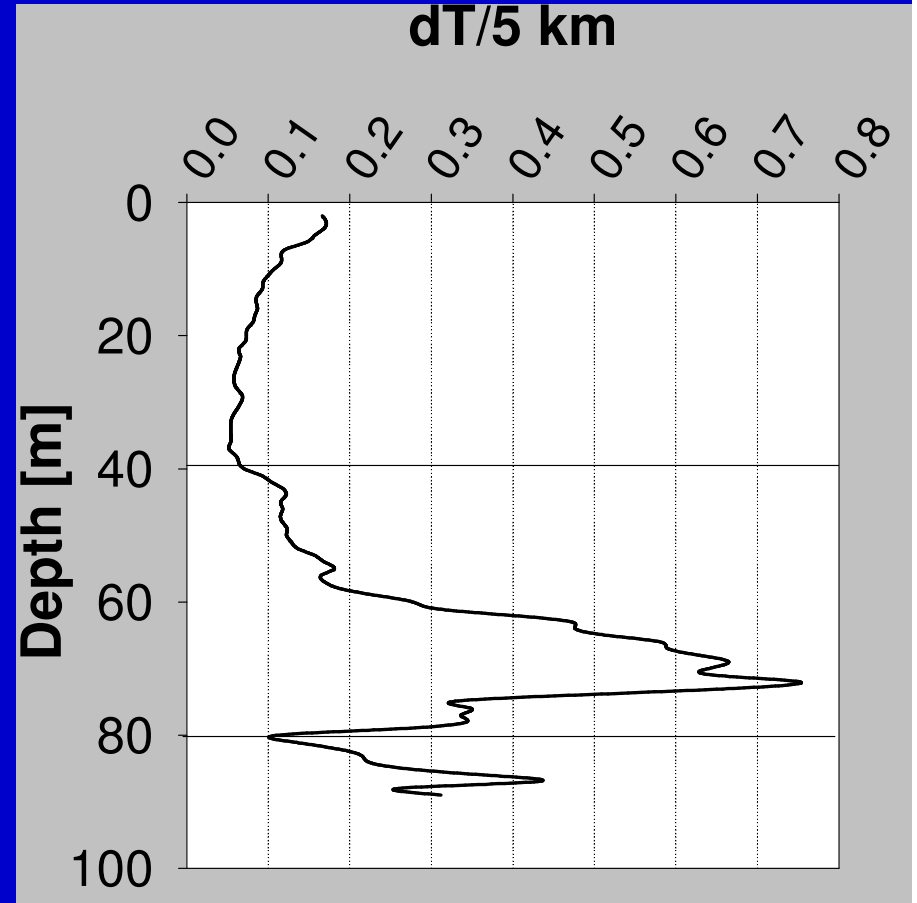
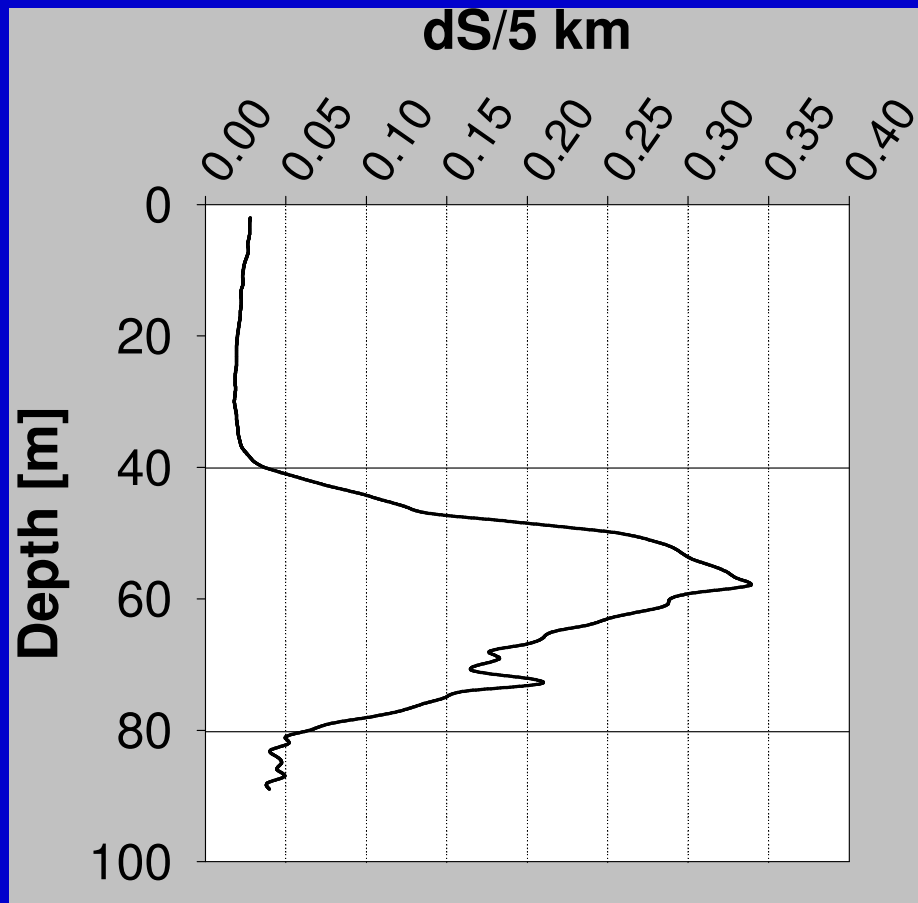
Measurements



Hydrodynamic model

- Output: 3 D-distribution of T, S, O₂, sea level height and current velocities every 6 hours with a horizontal resolution of 5 km and 60 vertical levels (3 m intervals)
- Input: Meteorological forcing data (wind stress, air temperature, humidity, cloudiness etc.), river runoff, initialization by realistic hydrographic data (based on project related cruises)

Average horizontal gradients July 2003



Least squares technique

$$\sum (a(p_{cod} - p_{hyd}))^2 + (b(T_{cod} - T_{hyd}))^2 + (c(S_{cod} - S_{hyd}))^2 = \min$$

a, b, c – measurement error and parameter range dependent weighting factors

For $u_{travel} < \frac{1}{2}$ bodylength of fish per second

Remaining distance to the known re-capture location $< u_{travel} * t_{remain}$

TIMING

BEHAVIOUR

ENVIRONMENTAL
CONTROL

