

# A FerryBox for Lower Saxony

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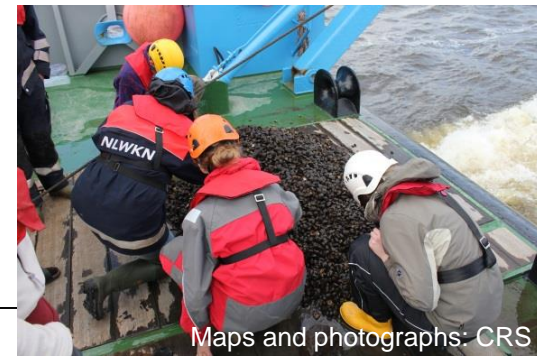
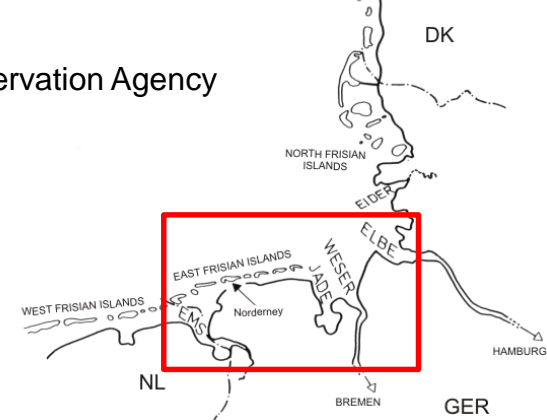




# Area of interest & purpose



- biological monitoring: MZB, fish, nutrients, sediment, water
- habitat mapping
- waverider buoys and wave gauges



## Main aims

- improve and increase the database of traditional point measurements by means of continuous data
- satisfy reporting duties required by the European strategies
- gain further knowledge on seasonal water quality and nutrient dynamics
- input for the calibration and validation of ecosystem models



# FerryBox specifications



FerryBox at 4H lab

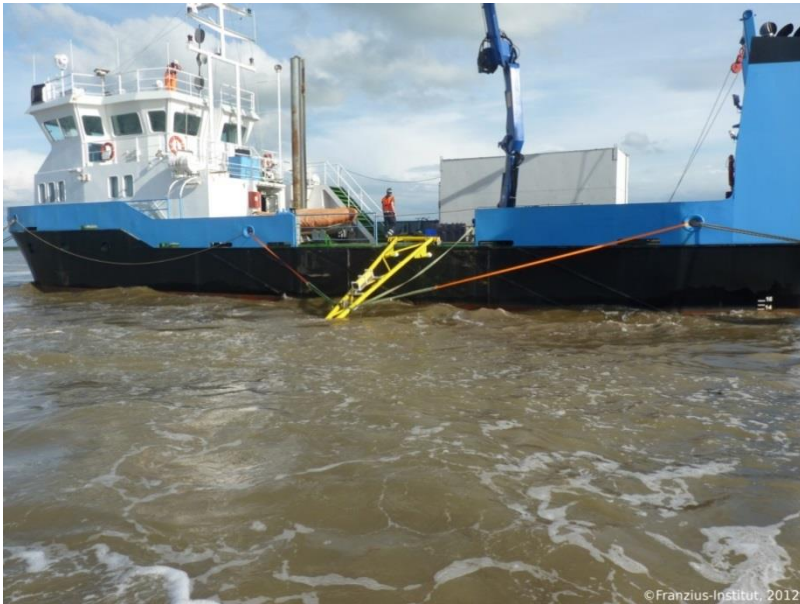


Stainless steel tray on vessel

## Parameters

- Physico-chemical: temperature, salinity, pH, dissolved oxygen, turbidity
- Chl *a* fluorescence and pigments for algae groups
- Nutrients:  $\text{NH}_4$ ,  $\text{NO}_2/\text{NO}_3$ ,  $\text{SiO}_2$ ,  $\text{o-PO}_4$
- Automatic water sampler
- Anti-fouling concept
- Coarse and cross-flow filter
- GPS, communication via LTE

## Nutrient analysis

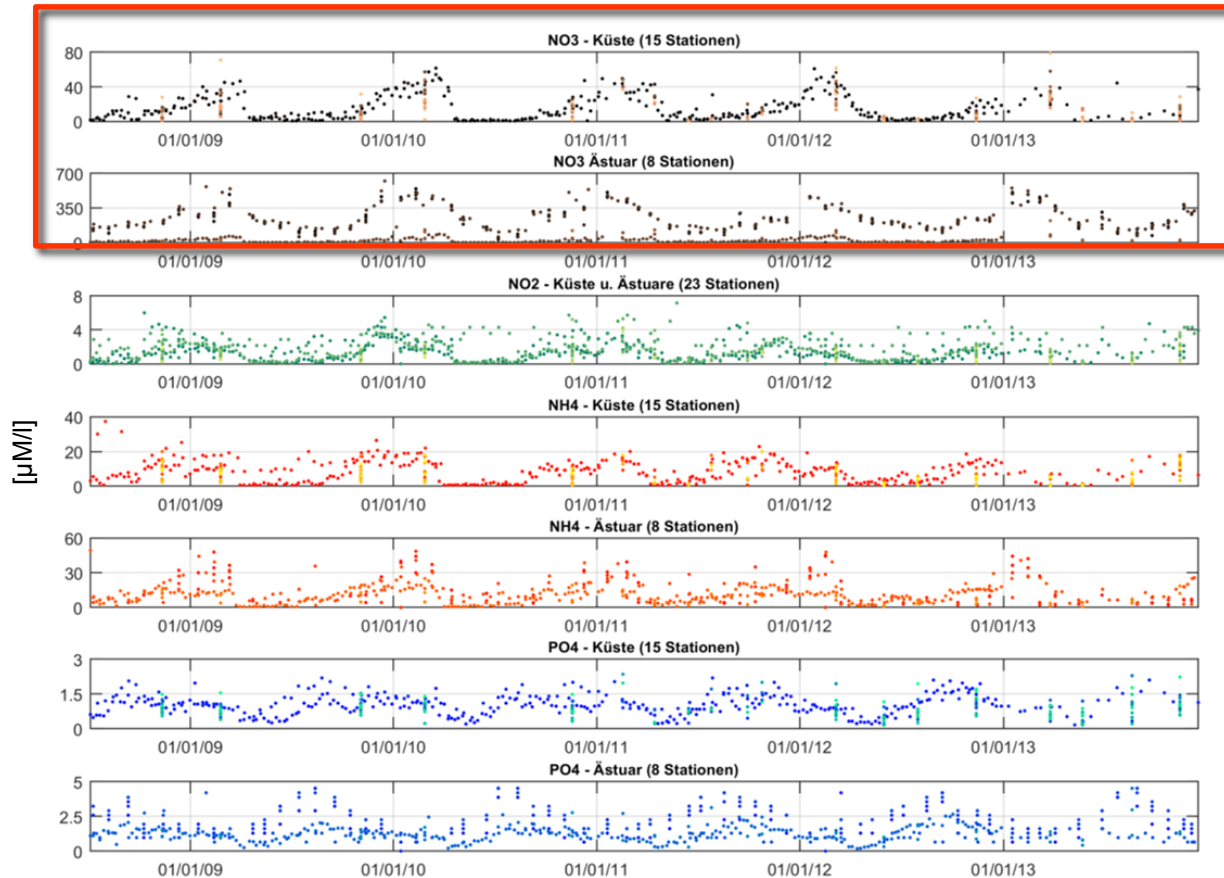


Burchana measurements at storm surge barrier in the Ems river



- wet-chemistry analysers applying patented Loop Flow Analysis
- OPA method for ammonium and UV photoreduction for the other nutrients

# Nutrient analysis



- $\text{NO}_3$ : applying longer tubes in the hydraulic loop
- Low (0-20  $\mu\text{M/l}$ ): coastal zone
- High (0-700  $\mu\text{M/l}$ ): estuaries

## Quality management

- Common laboratory standards, e.g. for
  - duration of sample storage (fresh, next wekk, 6 months...)
  - conservation (filter, acid,...)
  - offset between FB and laboratory instruments
- Interlaboratory comparison



An aerial photograph of a coastal area. On the left, there is a large, sandy beach. In the center, a wide body of water, possibly a bay or inlet, is visible. On the right, a small town with red-roofed buildings is situated on a peninsula. The water is a mix of blue and green, indicating varying depths and sediment. A small boat is visible in the water, leaving a white wake.

# Thank you for listening.

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## MicromacC calibration ranges

MicC 1 (UV-photored., NH<sub>3</sub> OPA)

NH<sub>4</sub>: 0-30 µmol/l , off scale samples up to 90 µmol/l

PO<sub>4</sub>: 0-6.5 µmol/l, off scale samples up to 20 µmol/l

MicC 2 (UV-photored.)

NO<sub>2</sub>: 0-7 µmol/l, off scale samples up to 35 µmol/l

SiO<sub>2</sub>: 0-18 µmol/l L, off scale samples up to 90 µmol/l

NO<sub>3</sub>-Low: 0-20 µmol/l L, off scale sample up to 100 µmol/l

NO<sub>3</sub>-High: 0-700 µmol/l