Automated platform for the observation of phytoplankton diversity in relation to ecosystem services: A large set of instruments to qualify and expertise:

- Pulse-shape recording flow cytometer (Cytosense)
- Imaging in-flow (imaging in-flow Cytobot)
- FlowCAM
- FastCAM
- Spectral fluorometer (AOA, Fluoroprobe, Multiexciter)
- Absorption meter (PSI-CAM)
- Pulse Amplitude Modulated Fluorometers (PAM)
- Fast Repetition Rate Fluorometer (FRRF)
- Underwater Vision Profiler (UVPS)
- (Semi-)Automated data analysis

Outcomes:
A set of recommendations of the most suitable and relevant combination of methods according to the environment considered, their limits and ways of implementing them as complementary sensors in combined platforms. A JERICO-NEXT deliverable to come by one year.

Phytoplankton groups discriminated by automated pulse-shape recording flow cytometry (Cytobuoy b.v.):

- Chlorophyll a equivalent of the multispectral fluorometry (fluoroprobe bbe Moldaenke): discrimination of 4 pigmenetary groups (Haptophytes, brown algae, phycocyanin and Phycoerythrin) containing micro-algae during a Phaeocystis globosa bloom.

EEC-SNS JERICO-NEXT 2017 cruises

Semi-continuous samples

Distribution of the number of particles.ml⁻¹ according to the phytoplankton functional types

- More than 90 % of the particles = phytoplankton, ~93% of the total fluorescence.
- No relationship between salinity, temperature and the number of particles per functional types: Synechococcus, picophytoplankton, nanoplankton and microphytoplankton.
- Difference in the distribution of the phytoplankton functional types with a higher density of nanoplankton in the north of the area.

Intercomparison exercise: 3 pulse shape recording automated low cytometers (fcm) (VLIZ, RWS and CNRS-LOC) during the JERICO-NEXT – LifeWatch spring cruise 2017 (8–12 May 2017) led by VLIZ

- Similar trends in measured total cell/colony abundance per ml.
- Automatedfcm: high potential for large scale data collection at high temporal and spatial resolution.
- Harmonizing the sampling protocol will increase data comparison and greatly improve the insights into phytoplankton community dynamics.

FerryBox: Fluorescence (Fluores), Quantum yield (QY), Salinity (SAL), Temperature (SST)

Same trend between the total fluorescence from the ferrybox and the total red fluorescence from the flow cytometer (FLR-cytosense) during the survey.

JERICO-NEXT spring Channel-North Sea cruises (April-May 2017)

Waters under brackish influence: Dominated by nanophytoplankton and microphytoplankton.

Offshore and other coastal waters: Dominated by pico-eukaryotes, Synechococcus-like (and NanoSWS coccolithophores-like)

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