

The coastal observatory near MOW1: technical aspects

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Since autumn 2009, a permanent measuring station is installed near the MOW1 measuring pile of the Meetnet Vlaamse Banken at a water depth of about 9m MLLWS. The main goal is to understand, through effective continuous measurements, the response of the coastal marine ecosystem to natural and anthropogenic forcing. The observatory is part of the general and permanent duties of monitoring and evaluation of the effects of all human activities on the marine ecosystem to which Belgium is committed following the OSPAR-convention (MOMO project). During a 1-year field experiment (2013-2014) on the optimizing of disposal operations a second tripod will be deployed near Zeebrugge (Fettweis *et al.*, 2010). The coastal observatory at MOW1 will from 2014 on be part of the monitoring system in the framework of the national obligation for the EU Marine Strategy Framework Directive.

The observatory consists of a tripod with a width of ca. 3m and a height of ca. 2.5m on which different sensors and data storage systems are attached. A SonTek 3MHz Acoustic Doppler Profiler (2.25m above bed (mab)), a SonTek 5MHz Acoustic Doppler Velocimeter (0.35 mab), three D&A Optical Backscatter Sensors (2.25, 1.00, 0.25 mab), a LISST 100 X suspended particle sizer, a Sea-Bird SBE37 CT system, a passive Cetacean monitoring device (C- PoD, see Haelters *et al.*, 2012) and a passive sampling device for chemical monitoring (see Monteyne *et al.*, 2013) are mounted on the tripod. All data except those from LISST are stored in two SonTek Hydra data logging systems. The tripod is deployed on the seafloor for periods of 3 to 6 weeks after which it is replaced with a fresh duplicate one. The data are downloaded, processed and quality checked (Francken *et al.*, 2013). Technical maintenance and calibration of instruments are carried out in order to guarantee high quality data. The goal is to have 100% of good data; however, due to collision with vessels that are not respecting a safety distance to the mooring, biofouling during summer and other disturbances, this goal is a real challenge. The technical equipment will be enlarged and will evolve in order to maintain this state-of-the-art coastal observatory and this in correspondence to the available financial resources and technological developments. From the beginning of 2013 four tripod systems will be available for monitoring purposes (OSPAR, MFSD) and scientific research.

References

- Fettweis M., D. Van den Eynde and C. Martens. 2010. Optimalisatie stortbeleid: voorstel voor een terreinproef. BMM rapport MOMO/5/MF/201107/NL/AR/3. 22pp.
- Francken F., M. Baeye, M. Fettweis, D. Van den Eynde, V. Van Lancker, J. Backers, K. Hyndrickx and L. Naudts. 2013. A large synoptic dataset of coastal observations. Book of Abstracts VLIZ Young Marine Scientists' Day, 15 February 2013. Brugge. VLIZ Special Publication 63:48.
- Haelters J., W. Van Roy, L. Vigin, and S. Degraer. 2012. The effect of pile driving on harbour porpoises in Belgian waters. p.127-143. In: Offshore wind farms in the Belgian part of the North Sea. Degraer S., R. Brabant and B. Rumes (Eds). RBINS-MUMM.
- Monteyne E., P. Roose and C. Janssen. Application of a silicone rubber passive sampling technique for monitoring PAHs and PCBs at three Belgian coastal harbours. Chemosphere (in press).