Web Services as Building Blocks for an Open Coastal Observing System

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In coastal observing systems it is needed to integrate different observing methods like remote sensing, in-situ measurements, and models into a synoptic view of the state of the observed region. This integration can be based solely on web services combining data and metadata.

Such an approach is pursued for COSYNA (Coastal Observing System for Northern and Artic seas). Data from satellite and radar remote sensing, measurements of buoys, stations and Ferryboxes are the observation part of COSYNA. These data are assimilated into models to create pre-operational forecasts.

For discovering data an OGC Web Feature Service (WFS) is used by the COSYNA data portal. This Web Feature Service knows the necessary metadata not only for finding data, but in addition the URLs of web services to view and download the data.

To make the data from different resources comparable a common vocabulary is needed. For COSYNA the standard names from CF-conventions are stored within the metadata whenever possible. For the metadata an INSPIRE and ISO19115 compatible data format is used. The WFS is fed from the metadata-system using database-views.

Actual data are stored in two different formats, in NetCDF-files for gridded data and in an RDBMS for time-series-like data.

The web service URLs are mostly standard based the standards are mainly OGC standards. Maps were created from netcdf files with the help of the ncWMS tool whereas a self-developed java servlet is used for maps of moving measurement platforms. In this case download of data is offered via OGC SOS. For NetCDF-files OPeNDAP is used for the data download. The OGC CSW is used for accessing extended metadata.

The concept of data management in COSYNA will be presented which is independent of the special services used in COSYNA. This concept is parameter and data centric and might be useful for other observing systems.