



## **Development of ITSASGIS-5D: seeking interoperability between Marine GIS layers and scientific multidimensional data using open source tools and OGC services for multidisciplinary research.**

Y. Sagarminaga (1), I. Galparsoro (1), R. Reig (), and J.A. Sánchez ()

(1) AZTI - Tecnalia / Marine Research Division, Herrera kaia portualdea z/g, 20110 Pasaia (Gipuzkoa) SPAIN , (2) Estudios Gis. Parque Tecnológico de Álava. Edificio E7. C/Albert Einstein, 46, 01510 Miñano (Álava). SPAIN

Since 2000, an intense effort was conducted in AZTI's Marine Research Division to set up a data management system which could gather all the marine datasets that were being produced by different in-house research projects. For that, a corporative GIS was designed that included a data and metadata repository, a database, a layer catalog & search application and an internet map viewer. Several layers, mostly dealing with physical, chemical and biological in-situ sampling, and basic and thematic cartography including bathymetry, geomorphology, different species habitat maps, and human pressure and activities maps, were successfully gathered in this system.

Very soon, it was realised that new marine technologies yielding continuous multidimensional data, sometimes called FES (Fluid Earth System) data, were difficult to handle in this structure. The data affected, mainly included numerical oceanographic and meteorological models, remote sensing data, coastal RADAR data, and some in-situ observational systems such as CTD's casts, moored or lagrangian buoys, etc.

A management system for gridded multidimensional data was developed using standardized formats (netcdf using CF conventions) and tools such as THREDDS catalog (UNIDATA/UCAR) providing web services such as OPENDAP, NCSS, and WCS, as well as ncWMS service developed by the Reading e-science Center.

At present, a system (ITSASGIS-5D) is being developed, based on OGC standards and open-source tools to allow interoperability between all the data types mentioned before. This system includes, in the server side, postgresql/postgis databases and geoserver for GIS layers, and THREDDS/Opendap and ncWMS services for FES gridded data. Moreover, an on-line client is being developed to allow joint access, user configuration, data visualisation & query and data distribution. This client is using mapfish, ExtJS – GeoEXT, and openlayers libraries. Through this presentation the elements of the first released version of this system will be described and showed, together with the new topics to be developed in new versions that include among others, the integration of geoNetwork libraries and tools for both FES and GIS metadata management, and the use of new OGC Sensor Observation Services (SOS) to integrate non gridded multidimensional data such as time series, depth profiles or trajectories provided by different observational systems.

The final aim of this approach is to contribute to the multidisciplinary access and use of marine data for management and research activities, and facilitate the implementation of integrated ecosystem based approaches in the fields of fisheries advice and management, marine spatial planning, or the implementation of the European policies such as the Water Framework Directive, the Marine Strategy Framework Directive or the Habitat Framework Directive.