

Contribution of EMODnet Chemistry to the management and visualization of marine chemical data

VINCI M.¹, GIORGETTI A.¹, LIPIZER M.¹, SCHAAP D.², BARTH A.³

¹ *OGS - Istituto Nazionale di Oceanografia e di Geofisica Sperimentale - Borgo Grotta Gigante, 42/C - 34010 Sgonico (TS) - Italy*

² *MARIS – Koningin Julianalaan 345 A – 2273 JJ Voorburg – The Netherlands*

³ *Université de Liège - Department of Astrophysics, Geophysics and Oceanography - Allée du 6 Août, 17, B-4000 Liège 1 (Sart-Tilman) Belgium*

EMODnet Chemistry is a thematic component of the European Marine Observation and Data Network launched by DG MARE in 2009 to improve the availability of high quality environmental data and support the Marine Strategy Framework Directive (MSFD) requirements. The aim is twofold: the first task is to make available and reusable the big amount of fragmented and inaccessible data, hosted in the European research institutes and environmental agencies, after processing them into interoperable formats, using agreed standards and vocabularies and assessing their accuracy and precision. The second objective is to develop visualization data products useful for the tasks of the MSFD. EMODnet Chemistry involves a European network of 46 institutes from 29 coastal countries, covering most European seas. Data managed by the EMODnet Chemistry distributed infrastructure include chemical properties measured in three matrices: seawater, sediment and biota and address three descriptors of Good Environmental Status (GES) defined by the MSFD: eutrophication, contaminants in the environment and in seafood. The pillars of the project include the assembly of data and metadata according to standardized procedures, the processing into interoperable formats, the definition of common quality control procedures, the assessment of data quality and the generation of suitable data products for all European sea regions, in agreement with the requests of the MSFD. The technical set-up is based on the principle of adopting and adapting the SeaDataNet pan-European infrastructure for ocean and marine data management which is managed by NODCs and relies on a distributed network of data centres. The quality of the data has appeared as a key issue when merging heterogeneous data coming from different sources. The data validation loop includes a first set of controls done by the data collators prior to the inclusion of the data in the infrastructure, a data aggregation and data quality control, performed in a coordinated way on the five Regional Data Buffers which are related to the Baltic Sea, the North Sea, the Atlantic area (including the Atlantic coast and the Macaronesia), the Mediterranean Sea and the Black Sea respectively. Regular reports are sent to the data collators to correct errors or anomalies in the master copy of the data, available from the EMODnet infrastructure, and to guarantee the data quality upgrading. Besides this, the consortium started the collection of quality information “ex-ante”, related to the source laboratories analysis (based on ISO/IEC 17025/2005). In order to test new strategies for data storage and reanalysis and to upgrade the infrastructure performances, EMODnet Chemistry has chosen the Cloud hosting offered by Cineca (the Consortium of Italian Universities and research institutes) to host the Regional Data Buffers and facilitate the analysis and visualization services. Finally,

beside the delivery of data and products, the results of the data harvesting by this Europe wide consortium of institutes for all the European Seas provide a useful starting point for a gap analysis to gain understanding where the future monitoring efforts should be focused.