SeaDataCloud temperature and salinity data collections

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Two versions of temperature and salinity historical data collections for each European marginal sea (Arctic Sea, Baltic Sea, Black Sea, North Sea, North Atlantic Ocean, and Mediterranean Sea) have been published within the framework of SeaDataNet2 Project. They represent a snapshot of the SeaDataNet database content at two different times: V1.1 (Jan 2014, Simoncelli *et al.*, 2014) and V2 (Mar 2015, Simoncelli *et al.*, 2015 and 2016). A Quality Control Strategy (QCS) was developed in SeaDataNet2 and continuously refined in order to improve the quality of the data and create the best data products. The QCS iterative approach facilitates the upgrade of the data and it allows a versioning of data products.

A newer version of temperature and salinity historical data collections has been released within SeaDataCloud Project in June 2018. The objective of this presentation is to briefly overview the existing SeaDataNet products and to present the first release of SeaDataCloud temperature and salinity historical data collections (SDC_DATA_TS_V1), spanning the time period 1900-2017, their characteristics in terms of space-time data distribution and their usability. A particular focus will be dedicated to the Mediterranean Sea collection.

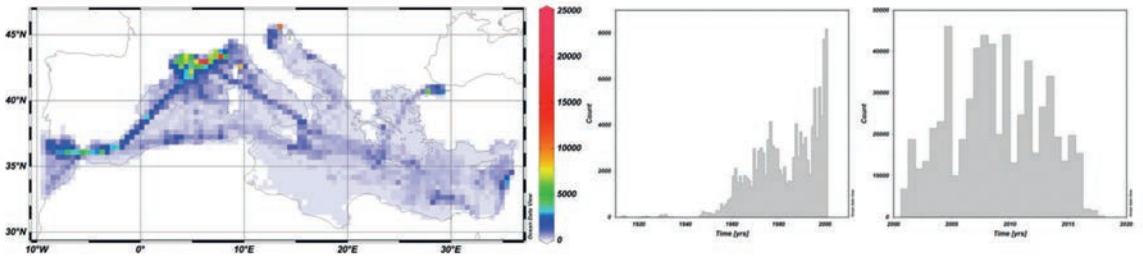

Fig. 1 - Results of the QC analysis for the Mediterranean Sea data set (SDC_MED_DATA_TS_V1): (left) data density map; (middle) temporal data distribution 1900-2000; (right) temporal data distribution 2001-2017.

Temperature and Salinity data sets were analyzed at regional level to assess and report on their quality. A common basic QC analysis was performed using ODV software (5.0.0) and following common QC guidelines. Product Information Documents (PIDocs) contain all specifications about the general products' characteristics (space-time coverage, resolution, format, usability) and quality (validation methodology and results). Fig. 1 shows an example in the Mediterranean Sea of data density map and time distribution histogram produced per each European basin. Fig. 2 is an example of the scatter diagrams produced per each region and contained in the PIDocs.

Statistics about the SeaDataNet infrastructure population in terms of temperature and salinity data per sea basin show a progressive increase of available data. Data quality also improved thanks to the introduction of additional checks by regional experts, exploiting the complete metadata description. The statistics about the quality flags after the quality assessment presents very high percentages of good (QF=1) or probably good data (QF=2): ~99% for the Mediterranean Sea; 98-99% for the Black Sea; ~99% Arctic Sea; ~99% Baltic Sea; 98-99% for the North Sea and 96(S)-99% for the North Atlantic Ocean. In fact, the analysis could be performed by instrument type to verify the data set completeness and consistency, and per data originator to identify systematic data anomalies. The derived metadata statistics per sea basin allow monitoring the European data

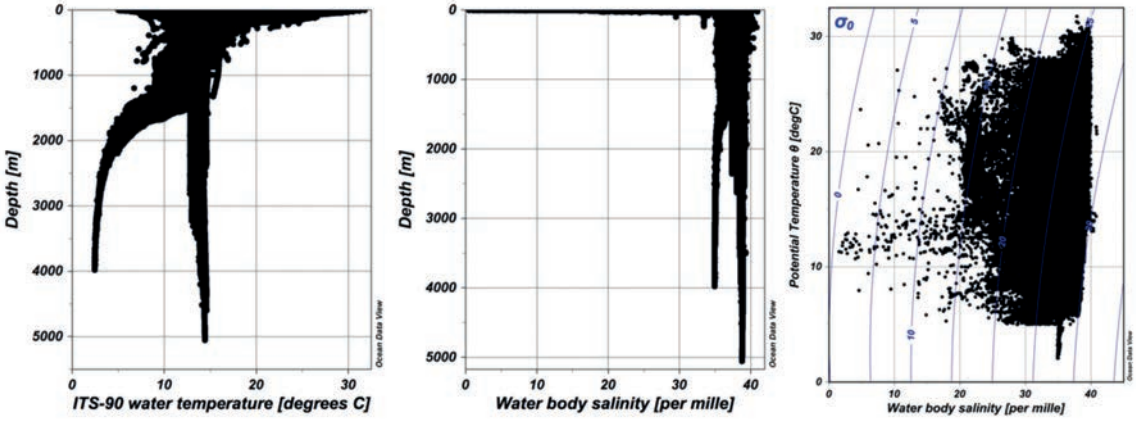

Fig. 2 - Temperature (left), salinity (middle) and TS (right) scatter plots of good (Quality Flag 1) and probably good (Quality Flag 2) data after Quality Check analysis for the Mediterranean Sea data set.

sharing landscape per sea basin and the advent of new sensors, which require particular efforts in data management and quality assessment.

Conclusions and Developments

All SeaDataCloud products are available as ODV collections through a web catalog (https://www.seadatanet.org/Products) together with their associated Digital Object Identifier (DOI) and Product Information Document (PIDoc) containing the specifications about product's generation, quality assessment and technical details to facilitate users' uptake.

The progressive automation of the QCS in the SeaDataCloud Virtual Research Environment will speed up the basic quality check process of the data and further improve the quality of the

SeaDataNet infrastructure content and the derived products, which could be delivered with a regular time schedule.

References

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