**WMO’s capability to coordinate the provision of Marine Meteorological and Oceanographic Data Management**

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| **Strengths** | **Weaknesses** |
| * Robust GTS and WIS used for the exchange of metocean observations in real-time with good reporting practices recommended (e.g. BUFR templates for specific types of marine observing platforms)
* Good level of data sharing and exchange among the metocean community
* Technical assistance concerning data encoding and distribution provided by JCOMMOPS
* Robust and long term historical Marine Climate Summaries Scheme (MCSS) for delayed mode Voluntary Observing Ship (VOS) data
* Modernization of MCDS well underway with the Marine Climate Data System (MCDS) to take into account additional sources of data
* Effective International Comprehensive Ocean-Atmosphere Data-Set (ICOADS) as a trusted and comprehensive source of historical marine meteorological data
* Effective World Ocean Database (WOD) as a trusted and comprehensive source of historical oceanographic data
* Efficient Global Data Assembly/Acquisition Centres (GDACs) for Argo, OceanSITEs, GOSUD, GTSPP etc. making data and metadata available in real-time and delayed mode
* Ocean Teacher Global Academy offers an effective mechanism for providing training on ocean data management at the global level
 | * Diversity of Ocean Data management governance within WMO and IOC: IOC=IODE, WMO=CBS, and joint=JCOMM/DMPA
* Unbalanced funding within WMO, IOC and the joint JCOMM with no substantial resources for data management activities. In addition IODE is depending on voluntary contributions.
* Lack of visibility of JCOMM Data Management activities and issues (e.g. Ocean Data Standards project, Ocean Data Portal)
* JCOMM Data Management Plan too detailed, including too many recommendations, and not effectively used
* Ocean Data Portal (ODP) not widely used, is undertaken by one country (Russian Federation), lacking to a great extent of interoperability with other data systems and regions.
* Large variety of ocean data practices and systems and data management initiatives often developing almost independently from each other (US IOOS, EMODNet, SeaDataNet, MyOCean, Copernicus, IMOS …). Regional and national often activities disconnected from JCOMM
* Different systems existing for data discovery (WIS, ODP, IOOS, SeaDataNet …) with poor or inexistent interoperability between each other
* Collection and recording of observing platform metadata not uniform nor integrated across the different data sources
* Slow migration to table driven codes. JCOMM Task Team on Table driven Codes currently lacking Chair
* BUFR not widely accepted in the oceanographic community (prefer NetCDF)
* Difficulty for oceanographic institutes to access GTS data (GTS being closed to NMHSs)
* Some historical data-sets only existing in paper or other media and formats, which are not readily usable electronically
* Poor link with marine services and forecasting systems of JCOMM and weak consideration of their requirements for ocean data products
* Unclear funding of ICOADS for the longer term
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| **Opportunities** | **Threats** |
| * Need to propose new JCOMM Data Management Strategy that is more simple and better accepted as the current Data Management Plan
* Centres for Marine Meteorological and Oceanographic Climate Data (CMOC) and CMOC/China offer opportunities for data rescue, added value data-sets, and for assisting with regard capacity development
* Establish ICOADS as a CMOC
* Consolidate and formalize existing GDACs as JCOMM/MCDS GDACs; establish new GDACs (e.g. for moored buoys)
* Introduce better consistency between various ocean data systems as well as standardization of ocean data standards; some existing practices to be proposed as WMO-IOC Standards. Ocean Data Standards project provides opportunities for improvement in this regard
* Technical Regulations to be updated to better reflect modern data management;
* Exploring new opportunities for data rescue
* Engage stronger links with SFSPA to better take requirements for marine services into account
* Engage high level experts from relevant data management projects and infrastructures
* TT-MOWIS to provide better integration of metocean products into WIS
* ERDAP offers opportunities to better integrate metocean data management (ERDAP to be implemented at GDACs servers)
* Exploring new opportunities for integrated data management offered by cloud computing.
* Make better use of existing international standards such as CF, OGC, ISO
* Make GTS more open outside of NMHSs
* Enhancing the use of the Ocean Teacher Global Academy and synergies with WMO Capacity Development activities
 | * ICOADS not being funded for the longer term
* Risk of some historical data-sets to be lost forever if not rescued rapidly
* Limited use of ocean data due to variety for data sources and formats, and lack of interoperability between data systems, including with WIS
* Oceanographic institutes stopping to share data due to their difficulties to access GTS (perceived as unfair)
* Poor consideration of marine services requirements concerning data management
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