

A Flexible yet Sustainable Spatial Data Infrastructure for the Integration of Distributed Research Data

The need for discoverability and accessibility of research data and metadata is huge, driven both by the FAIR principles and user requirements regarding research data portals, repositories and search engines. Interactive, visual and especially map-based exploration of research data is becoming increasingly popular. Bringing together technical reality and custom user vision in the design and provision of services for interactive map viewers without sacrificing sustainability can be challenging.

Thanks to our O2A Spatial framework, the classic Spatial Data Infrastructure (SDI) components —storage, database, geo web server, catalogue —can be (re)deployed and configured quickly and with low effort. This includes the creation and curation of data products which can be compiled from differently-sourced data. The list of currently supported data sources contains the PANGAEA repository, the Observations to Archives and Analysis (O2A) pipeline, Sensor Observation Services (SOS) and data provided by scientists directly. Simple metadata harmonisation is possible. Public available Standard Operating Procedures (SOPs) and data exchange specifications document the ways in which scientists and institutes can have their desired products hosted.

The modular, scalable, flexible and highly automated SDI has been developed and operated at Alfred Wegener Institute (AWI) for more than a decade, continuously improving and providing map services for GIS clients and portals including the Marine Data and Earth Data Portals.

Long-term maintainability is ensured through the use of common open-source technologies, established geo-data standards, containerisation and the high degree of automation. The modularity of O2A Spatial and SDI components ensures flexibility and future expandability. Being embedded into O2A, SDI development and operation is financially and staff-wise secured in the long run.

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