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Using Data Brokering to Leverage Oceanography Data to Help Generate Auxiliary Information to Combat Piracy off the Coast of Africa

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Maritime Situational Awareness is the understanding of anything associated with the maritime domain that could impact the security, safety, economy, or environment. The maritime unit of the JRC (Ispra) has developed the Blue Hub as an in-house R&D platform for integrated maritime surveillance and maritime situational awareness. It is currently engaged in monitoring ship traffic off the coast of Africa in an attempt to help secure against piracy risk. In order to maximize awareness generation the unit has started to integrate data from the marine science community. In particular the unit is interested in using forecasts from operational ocean models and weather forecasts. For the Blue Hub, data brokering and mediation has become an essential tool for the accessing of ocean forecast data as quickly as possible in easy to use formats.
NOAA (National Oceanic and Atmospheric Administration) is making global oceanography data available through the Environmental Research Division's Data Access Program (ERDDAP) data broker. Data published via ERDDAP complements the existing data publication's efforts. ERDDAP provides machine to machine communication, data brokering and data mediation. It was developed with the aim of making oceanographic data available to the larger software development community. The broker provides a consistent web service interface to distributed heterogeneous data archives. An ERDDAP server publishes data in a number of standard and developer friendly ways, including some Open Geospatial Consortium formats. Machine communication to ERDDAP is via a Uniform Resource Identifier (Linked Data).
The global marine sector generates and consumes vast quantities of operational and forecast data on a daily basis. The ERDDAP broker can make this data available that fits into the internet architecture paradigms of Representational State Transfer (REST), Resource Orientated Architecture (ROA), Service Orientated Architecture (SOA) and Linked Data.
In this paper we demonstrate how data brokering and mediation is making complex scientific data accessible. We show how such data is being integrated into the Blue Hub to generate auxiliary information to combat piracy off the coast of Africa.