



Exposing Coverage Data to the Semantic Web within the MELODIES project: Challenges and Solutions

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Coverage data, typically big in data volume, assigns values to a given set of spatiotemporal positions, together with metadata on how to interpret those values. Existing storage formats like netCDF, HDF and GeoTIFF all have various restrictions that prevent them from being preferred formats for use over the web, especially the semantic web. Factors that are relevant here are the processing complexity, the semantic richness of the metadata, and the ability to request partial information, such as a subset or just the appropriate metadata. Making coverage data available within web browsers opens the door to new ways for working with such data, including new types of visualization and on-the-fly processing.

As part of the European project MELODIES (<http://melodiesproject.eu>) we look into the challenges of exposing such coverage data in an interoperable and web-friendly way, and propose solutions using a host of emerging technologies like JSON-LD, the DCAT and GeoDCAT-AP ontologies, the CoverageJSON format, and new approaches to REST APIs for coverage data. We developed the CoverageJSON format within the MELODIES project as an additional way to expose coverage data to the web, next to having simple rendered images available using standards like OGC's WMS. CoverageJSON partially incorporates JSON-LD but does not encode individual data values as semantic resources, making use of the technology in a practical manner. The development also focused on it being a potential output format for OGC WCS.

We will demonstrate how existing netCDF data can be exposed as CoverageJSON resources on the web together with a REST API that allows users to explore the data and run operations such as spatiotemporal subsetting. We will show various use cases from the MELODIES project, including reclassification of a Land Cover dataset client-side within the browser with the ability for the user to influence the reclassification result by making use of the above technologies.