Establishing a Web Processing Service for online analysis of Earth observation time series data.

R. Gerlach (1), C. Schmullius (1) and S. Nativi (2)

(1) Friedrich-Schiller-University Jena (Germany), Institute for Geography, Earth Observation
Dept. (roman.gerlach@uni-jena.de), (2) Laboratory of Earth and Space Science Informatics of
the Istituto di Metodologie per l'Analisi Ambientale (IMAA) of the Italian National Research
Council (CNR), Prato (Italy)

Over the past decade visualization and analysis of geospatial data followed the general trend in information technology from monolithic desktop applications towards loosely coupled Web Services. In order to achieve interoperability among these services standard interfaces are required. The standards and specifications published by the Open Geospatial Consortium (OGC) and the International Organization for Standardization (ISO) form the basic set on which such service-oriented architectures (SOA) can be build. With respect to online data visualization a map like representation of spatial content has found widespread use, especially as part of Spatial Data Infrastructures (SDI). In combination with metadata catalogues the primary aim of these map services is data publication and distribution, hence the capabilities are limited to viewing or browsing (e.g. zoom, pan, identify). Only a few examples exist enabling users to analyse data (e.g. calculating statistics or merging different data layers) through a web interface or Web Service. In this paper first results are presented from research conducted on the implementation of a OGC Web Processing Service (WPS) for online analysis of Earth observation time series data. Earth observation data at regional to global scale has been collected with various sensors and satellite systems for more than three decades. The amounts of data acquired seem to have outpaced our ability to exploit and analysis it. With aid of consistent data products (e.g. MODIS suite of land surface products) and the advancements in information technology and in particular the OGC/ISO standards for Web services the basis to overcome this shortfall is avail-

able. In this context the objective of this study is to develop a generic Web Processing Service for spatio-temporal exploration of coverage data. The WPS should be independent from the spatial and temporal scales as well as the type of data being processed. The advantage of implementing it as an open Web service is that it can be accessed by anybody through the Internet and it delivers reproducible results. Combining the WPS with a Catalogue Service (CSW) allows users defined input data selection and access to distributed data sources provided through Web Coverage Services. This study is part of the development of the Siberian Earth System Science Cluster, a Spatial Data Infrastructure for remote sensing product generation, dissemination and analysis.