Vu Gia Thu Bon RBIS

An information system for environmental data in central Vietnam

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Abstract - Sustainable land and resource management is gaining more and more attention. Therefore strategies should be developed to deal with related problems such as climate change or land use changes. A lot of research in this field is going on and often many different disciplines are involved. In order to store, describe, analyze and disseminate their data, integrated data management systems are needed. One of these kinds of systems has been set up as the Vu Gia Thu Bon RBIS within the research project LUCCi (Land Use and Climate Change interactions in central Vietnam; founded by BMBF 2011-2015; http://www.lucci-vietnam.info/) as a project database and information system to support scientists and scientific workflows within the project. It also serves as an information and dissemination platform containing project results and collected base data for local stakeholders and other scientists. The Vu Gia Thu Bon RBIS (http://leutra.geogr.uni-jena.de/vgtbRBIS/) is built on the modular structured software platform RBIS (River Basin Information System). RBIS has been applied in several research projects worldwide (e.g. OBIS – Okavango Basin Information System [1] Centro-Norte-Chile RBIS, Jakarta RBIS [2] or Oti RBIS (Togo) [3]. The system is web based, has full read/write access, a fine grained user and permission management, is built on open source software and has a strong focus on the management of metadata together with the data itself and spatial relation. Additional functions are provided such as for handling time series data (e.g. rule based gap filling toolbox, direct access from modeling tools), and searching metadata datasets via CSW from other applications. RBIS also has multilingualism support (currently English, Vietnamese, Spanish, Portuguese and German) to reach a wider range of users [4].

One of the recent developments deals with the provenance of stored datasets. To describe in- and output data (e.g. for complex physically based environmental models) can be quiet challenging, as you have to link and describe different types of data sources (e.g. time series data, geodata, soil samples, simulated data). These data sources are stored in RBIS or not, with a different level of available details and has been passed several processing steps using different tools (e.g. global climate model, hydrological model on basin scale, data extraction, unit conversion and aggregation functions). Elements of the ISO 19115-1/2 [5][6] standard were used and extended to describe lineage information within RBIS. The MetaViz [7] tool for the visualization of metadata and lineage information provided by GLUES (scientific coordination project for all regional projects within the same funding measure as LUCCi) was tested. The information was encoded with the ISO 19115 compliant XML format and transferred using a CSW service. Via CSW only datasets and information are exposed, which are readable for a normal guest account.

We will show the Vu Gia Thu Bon RBIS as example of the underlying software RBIS and the current state of implementation using the lineage component of ISO 19115-1/2 as base to store provenance data within the system for several data types and to provide ISO compliant linage information for other applications e.g. using CSW.

Keywords - Environmental information system, time series data, ISO 19115, lineage information, CSW

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