Agile Analytics with EarthServer

Project Summary: EarthServer is establishing open access and ad-hoc analytics on extreme-size Earth Science data, based on and extending the rasdaman Array DBMS.

Mission: to enable standards-based ad-hoc analytics on the Web for Earth science data: scalable to Petabyte/Exabyte volumes, with direct manipulation, analysis & remix of any-size geospatial data.

Core idea: integrated query language for all spatio-temporal coverage data

Goal: to establish OGC standards based client & server technology

Started Sep 2011, runtime 3 years, 5.38m EUR budget (7m US$)

Coverages: A coverage is a "space-time varying phenomenon". Cover-age data are gathered in huge, rapidly growing amounts and variations, such as: 1-D sensor time series; 2-D maps; 3-D x/y satellite image timeseries and x/y/z exploration data; 4-D x/y/z climate & ocean data.

WCS & WCPS

Coverages can be served via OGC WCS (Web Coverage Service). The WCS suite of standards establishes a modular set of extensions around a Core facilitating n-D spatio-temporal subsetting (trim & slice). One of these extensions is the OGC WCPS (Web Coverage Processing Service) Language, an n-D Array QL enriched with geo semantics and flavored along XQuery.

The following example [Baumann, Geoinformatica 2009] is "From MODIS scenes M1, M2, and M3, the absolute of the difference between red & nir, in HDF-EOS - but only those where nir exceeds 127 somewhere inside region R":

Rasdaman is WCS and WCPS reference implementation.

OGC

The Open GeoSpatial Consortium (OGC), in collaboration with ISO, develops standards for geo-spatial and location based services. Some coverage standards:

P. Baumann (ed.).: GML 3.2.1 Application Schema – Coverages, OGC 09-146r2
P. Baumann (ed.): WCS 2.0 Core, OGC 09-110r3
P. Baumann (ed.): WCPS Language, OGC 08-068r2

Further partners:

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