

Streamlining Remote Sensing Data into Science-Ready Datacubes with rasdaman

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Remote sensing data is generally distributed as individual scenes, often with several variations based on the level of preprocessing applied. While there is generally good support for filtering these scenes by metadata, such as intersecting areas of interest or acquisition time, users are responsible for any additional filtering, processing, and analytics. This requires users to be experienced in provisioning hardware and deploying various tools and programming languages to work with the data. This has led to a trend towards services that consolidate remote sensing data into analysis-ready datacubes (ARD). Users can do analytics on this data through the service directly on the server and receive the precise results they are interested in.

The rasdaman Array Database is one of the most comprehensive solutions for ARD service development. It is a classical DBMS specializing in the management and analysis of multidimensional array data, such as remote sensing data. On top of its domain-agnostic array data model, rasdaman implements support for the OGC/ISO coverage model on regularly gridded data, also known as geo-referenced datacubes. It offers access to the managed datacubes via standardized and open OGC APIs for coverage download (Web Coverage Service or WCS), processing (Web Coverage Processing Service or WCPS), and map portrayal (Web Map Service or WMS, and Web Map Tile Service or WMTS). Developing higher-level spatio-temporal services using these APIs is similar to developing Web applications with an SQL database.

In this talk, we discuss the current status of rasdaman and share our experiences in building ARD services across a wide range of scales, from nanosats in orbit with less computing power than modern smartphones to data centers and global federations.

Hauptautor: Dr. MISHEV, Dimitar (Constructor University)

Co-Autor: Prof. BAUMANN, Peter (Constructor University)

Vortragende(r): Dr. MISHEV, Dimitar (Constructor University)

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