EOX

Spatial Observation Information Technology

EOxServer: A Solution for Large Archives of Earth Observation Data

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What is EOxServer?

- Open Source Software

- Online Data Access

- Earth Observation Data

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Outline

- Online Data Access
- Earth Observation Data
- EOxServer Features
- Ongoing and Future Work
- Summary

Online Data Access - Challenge

👁 Make Large Archives of Earth Observation Data Available Online

Online Data Access - Actions

- 👁 Publish

- 👁 Discover

- 👁 Download

Online Data Access - Approach

- Classical Approach: Catalogues and FTP Download

- EOxServer Approach: EO-WMS Preview and EO-WCS Download

Online Data Access - WCS

- ❏ OGC Web Coverage Service
  - ❏ WCS 1.0 and 1.1
  - ❏ WCS 2.0
  - ❏ Earth Observation Application Profile for WCS 2.0
  - ❏ Transaction Extension for WCS 1.1 (WCS-T)

Online Data Access - WCS

- WCS Features

  - Unmodified Data (Original Bands & Data Type)

  - Download of Geospatial Subsets

  - Band Subsetting

  - Upload of Coverages (WCS-T)

- WCS Operations

  - GetCapabilities

  - DescribeCoverage

  - GetCoverage

Online Data Access – EO-WCS

- Additional EO-WCS Features
  - EO Metadata Included in Coverages
  - Container Types for Collections
    - Dataset Series
    - Stitched Mosaics
  - DescribeEOCoverageSet Operation
    - Search Large Collections
    - Spatiotemporal Subsetting

Online Data Access - EOxServer

- Advantages of the EOxServer Approach
  - Intuitive Combination of WMS and WCS
  - WCS Reduces Bandwidth Requirements
  - WCS Reduces Load on Client Side

- Online Data Access
- **Earth Observation Data**
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Earth Observation Data - Model

- Based on EO-WCS

- Coverages: Model for Raster Data

- EO Coverages
  - Including EO Metadata
  - Metadata Format: EO-O&M

- Datasets
  - Rectified (ortho-rectified imagery)
  - Referenceable (original satellite geometry)

Earth Observation Data - Model

- How To Organize Large Collections of EO Data?

- Dataset Series
  - A Container for EO Datasets

- Stitched Mosaic
  - A Coverage Composed of EO Datasets

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EOxServer Features

- What can I do with EOxServer?

- Publish EO Coverages

- Facilitate Discovery of EO Data

- Provide Download and Viewing Services

EOxServer Features - Publishing

- Register EO Datasets
  - Referenceable or Rectified

- Register Dataset Series
  - Add EO Datasets individually or in bulk

- Register Stitched Mosaics
  - Add EO Datasets individually or in bulk

EOxServer Features - Publishing

- Configure Metadata
  - Coverage Metadata
  - EO Metadata

- Manage Coverages
  - Update
  - Delete

EOxServer Features – Services

❂ Viewing

   ❂ WMS 1.3 and EO-WMS

   ❂ WMS 1.0 and 1.1

❂ Download

   ❂ WCS 2.0 and EO-WCS

   ❂ WCS 1.0 and 1.1

   ❂ WCS-T

EOxServer Features - Tools

- Command Line Tools
  - Create a new EOxServer Instance
  - Registration of Datasets
  - Registration of Dataset Series
  - Bulk Registration
- Administration Web Client
  - Complete Control over Configuration Database
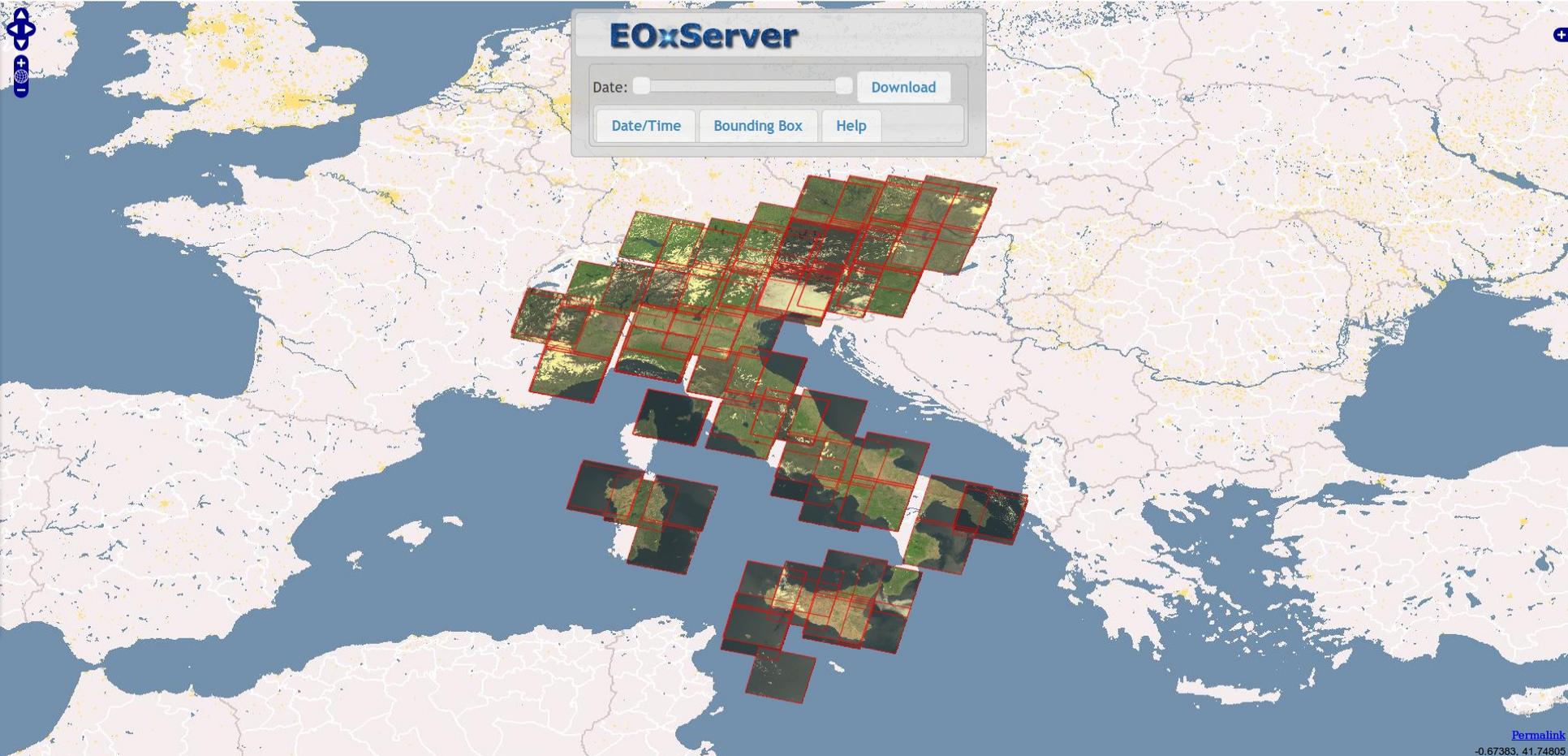 - Fine-tune Configuration

EOxServer Features – Client

- Integrated EO-WMS Web Client

  - Previews of Dataset Series and Stitched Mosaics

  - Outlines of Datasets

  - Download Links for Datasets Using WMS GetFeatureInfo

  - Support for WMTS (Caching)

  - Implementation: OpenLayers and jQuery

Additional EOxServer Features

๏ Identity Management System Integration

๏ SOAP Proxy for WCS

๏ Rasdaman Database as a Storage Backend

EOxServer Architecture

- Scripting Language

  - Python

- Web Framework and Database Abstraction Layer

  - Django / GeoDjango

- WCS and WMS Rendering

  - MapServer through Python MapScript

- Data Processing and Metadata Extraction

  - GDAL

Open Source SW
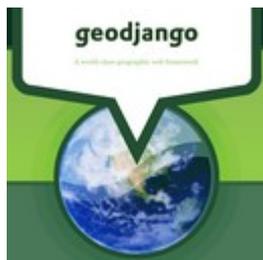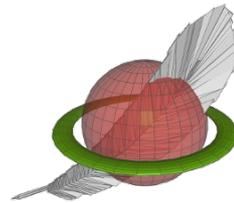
EOxServer Deployment

- Every way you can deploy Django: CGI, FastCGI, …

- Recommended: Python WSGI
  - Apache2: mod_wsgi

EOxServer Installation

- Current Release: 0.2.0

- Install with pip: `pip install eoxserver`

- Download the Source From http://eoxserver.org

- Get the latest trunk from http://eoxserver.org/svn

EOxServer Development

- Project Steering Committee

- RFCs
  - Architectural Design

- SVN Repository and Trac Ticketing System
  - http://eoxserver.org/

EOxServer License

- MIT-Style License

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- Include Copyright Notice

EOxServer Resources

- Project Web Site

  - http://eoxserver.org/

  - Downloads

  - Documentation

  - Bug Reports

  - Mailing Lists: users@eoxserver.org, dev@eoxserver.org

- SVN Repository

  - http://eoxserver.org/svn/

EOxServer Documentation

EOxServer's English Documentation

EOxServer

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EOxServer is a Python application and framework for presenting Earth Observation (EO) data and metadata.

EOxServer implements the OGC Implementation Specifications EO-WCS and EO-WMS on top of MapServer's WCS and WMS implementations.

EOxServer is released under the *EOxServer Open License* a MIT-style license and written in Python and entirely based on Open Source software including MapServer, Django/GeoDjango, GDAL, SpatiaLite, or PostGIS, and PROJ.4.

Here you find the English documentation for users and developers of EOxServer.

- EOxServer Users' Guide
- EOxServer Developers' Guide
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Ongoing and Future Work

- Implementation of New OWS Standards
    - WCS 2.0.1 Corrigendum
    - WCS 2.0 Extensions

- Improved Web Client

- New Administration Web Client

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Ongoing and Future Work

- Integrate Caching for WMS Layers

- Preprocessing of Coverages at Ingestion Time

- Lots more ...

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Summary

- Integrated Approach for Presenting EO Data

- OGC Web Services (EO-WMS & EO-WCS)

- Tools for Administration

- Web Client for Viewing

Credits

❂ Developers:

❂ Partly Funded by:

❂ ESA

❂ EC

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