



SemantiX

opening EO data to the public

Project partners

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UNIVERSITÄT
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 spatial services

SPOTTERON



SemantiX is funded by the Swiss Space Office (SSO) and FFG under the Austrian Space Applications Programme (ASAP).
Slides created April 2021 for EGU 2021 online.

Aims

- 1) retrieve **Essential Climate Variables** (ECVs) from **AVHRR** and **Sentinel-3** data
- 2) curate them as a long time series in a **semantic Earth observation (EO) data cube**
- 3) facilitate public access from a **citizen science smartphone application**



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WP 1

Project Management



Standard rulesets with
feedback loops, adapted for
different sensors



WP 2

Automatic pre-processing of
AVHRR and Sentinel-3 images
(different methodologies)



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WP 3

Semantic EO data cube
integrated data cube
management



Generic fact base



WP 4

Semantic EO data cube
web-based inference
engine & validation



WP 5

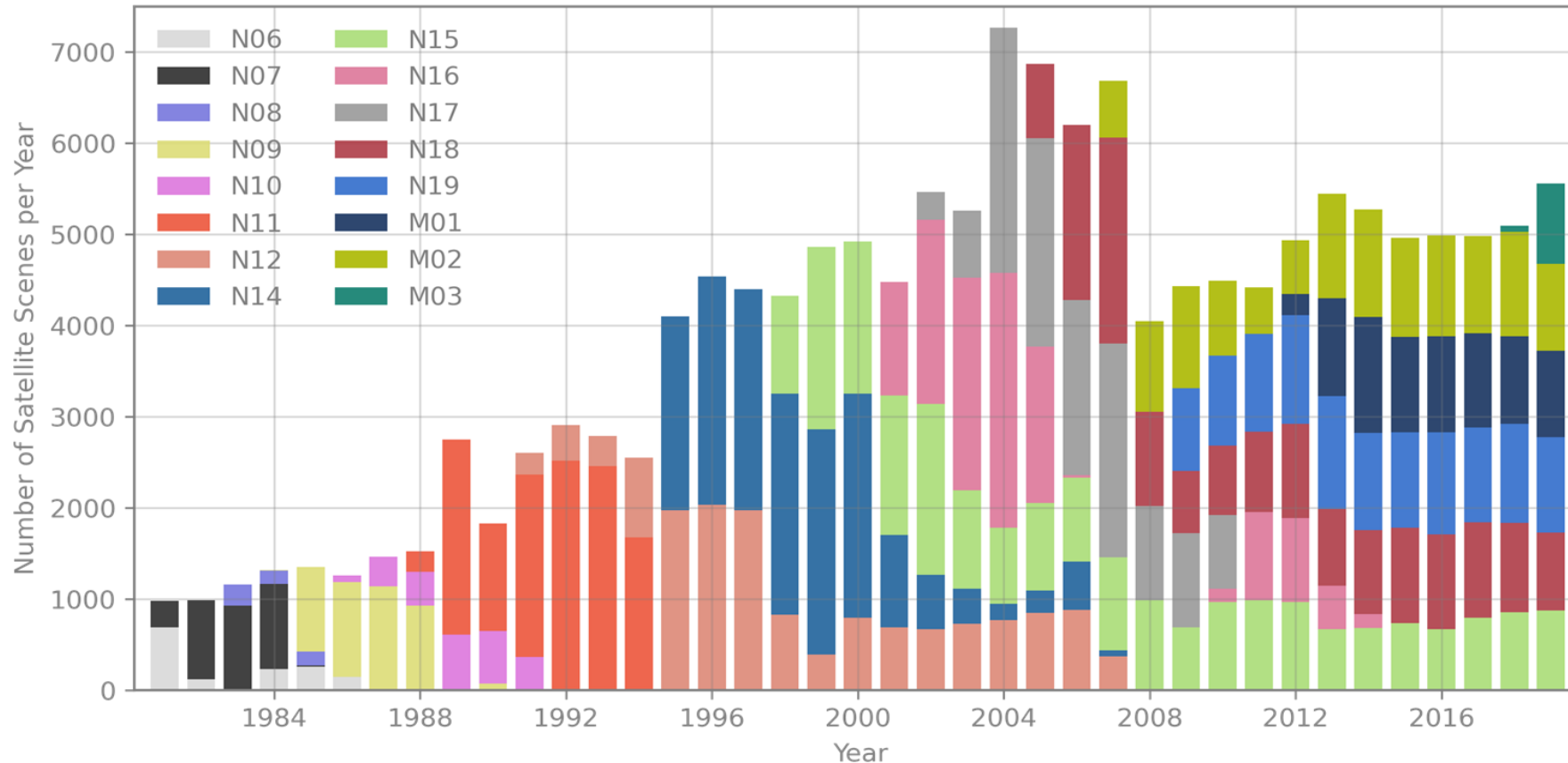
Citizen Science App
interactive EO data visualisations
and public participation



Shared knowledge base

Midstream technology
opens big data for improved analysis and
visualisation to scientists and the public

AVHRR Archive: Remote Sensing Research Group University of Bern



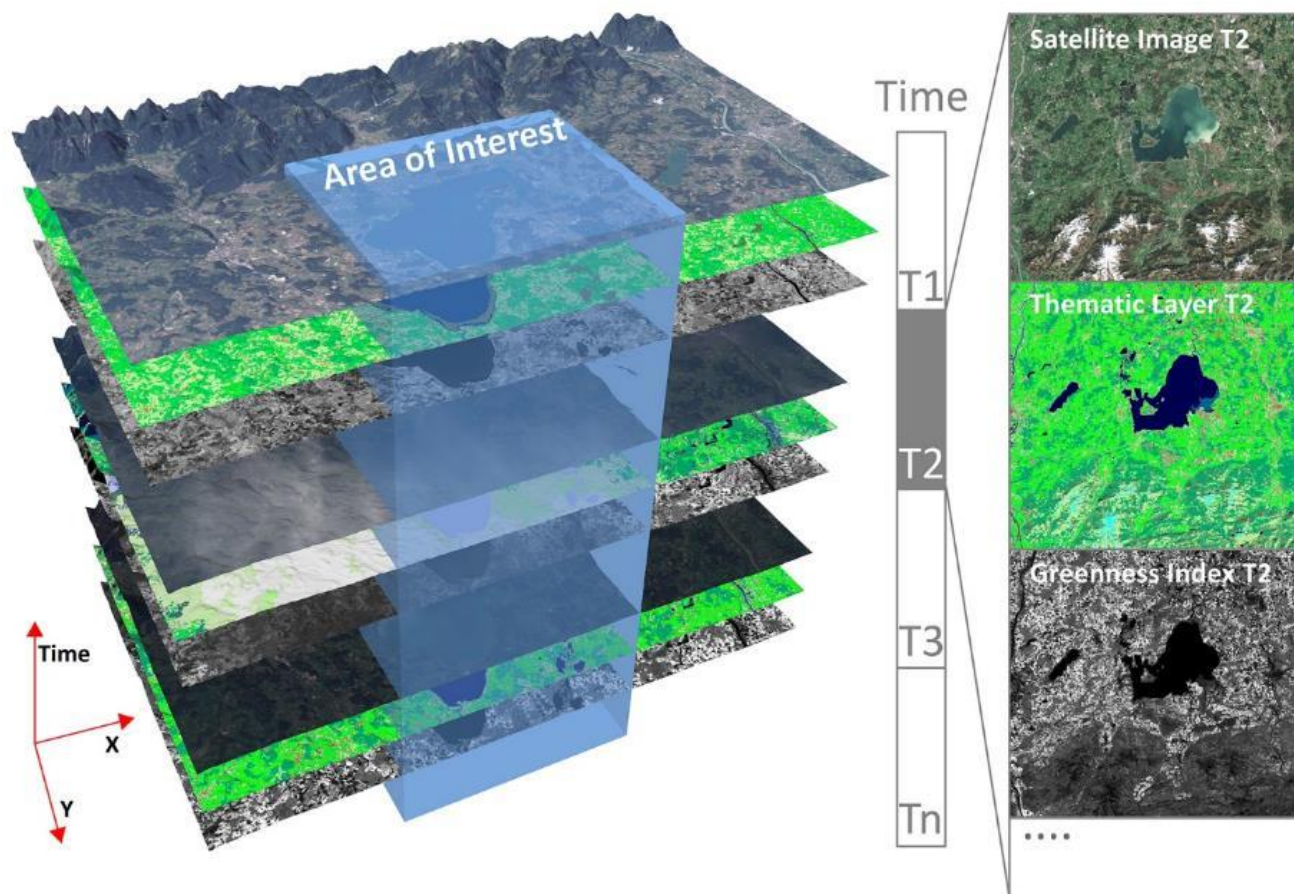
- COSMO-1 extent
- 40+ years: curated 35,000+ obs. per ECV
- 4 years: calibrated imagery & other semantic enrichment
- ... Sentinel-3



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Semantic EO data cube

Data cube
technologies



Images

Semantic
enrichment

ECVS



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from Tiede, D., Baraldi, A., Sudmanns, M., Belgiu, M., Lang, S., 2017. Architecture and Prototypical Implementation of a Semantic Querying System for Big Earth Observation Image Bases. Eur. J. Remote Sens. 50, 452–463. doi:10.1080/22797254.2017.1357432

Eventually users will run inferences via a citizen science mobile app...

...but for now, we are testing inferences of **reflectances**, **ECVs** and other **information** using an existing Web-frontend*

*see Sudmanns et al. 15:48–15:50 on Thurs. 29 April, ERE3.10.



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► Details for inference #6208

2004

▼ Results

👁 Average fractional snow cover over time

Legend

0

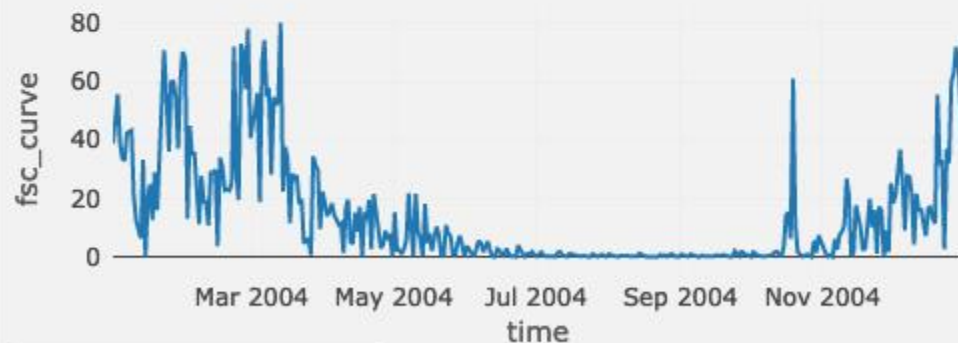


98

Download GeoTIFF (2.6 MB)

Copy OGC WMS Link

▼ Average fractional snow cover over AOI



Download data (CSV) (13.4 KB)

Custom AOI

satellite

+

-

50 km

50 mi

Details for inference #6248

2010-2019

Results

Average fractional snow cover over time

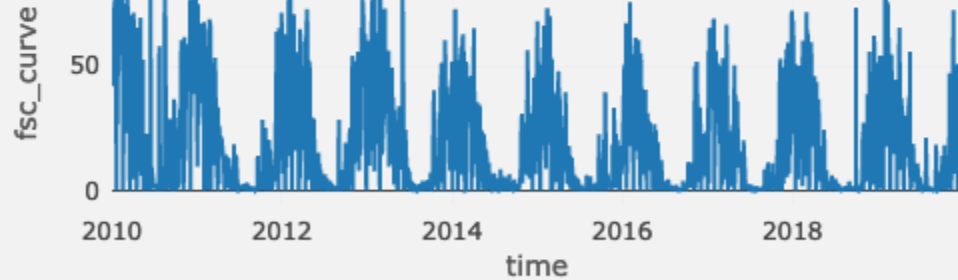
Legend



Download GeoTIFF (610.9 KB)

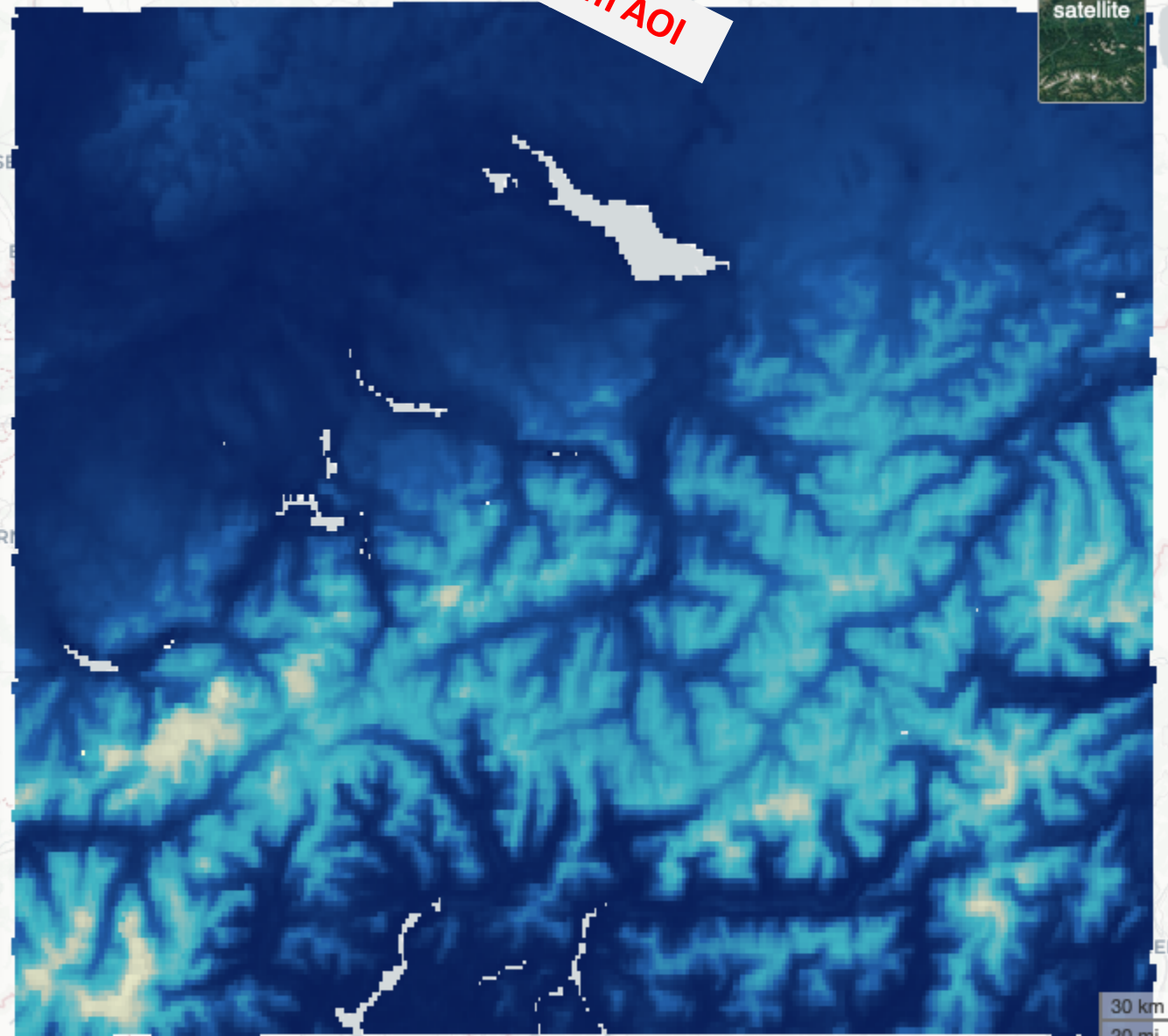
Copy OGC WMS Link

Average fractional snow cover over AOI



Download data (CSV) (107.1 KB)

Custom AOI



30 km
20 mi

Details for inference #5875

Results

Strong vegetation count over time

Legend

0



78

Download GeoTIFF (690.3 KB)

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QGIS Project

Download as QGIS Project

1.4 -30.9.2018

Custom AOI

satellite

+

-

50 km

50 mi

2018-2019

Custom AOI

► Details for inference #6256

▼ Results

👁️ Strong vegetation count over time

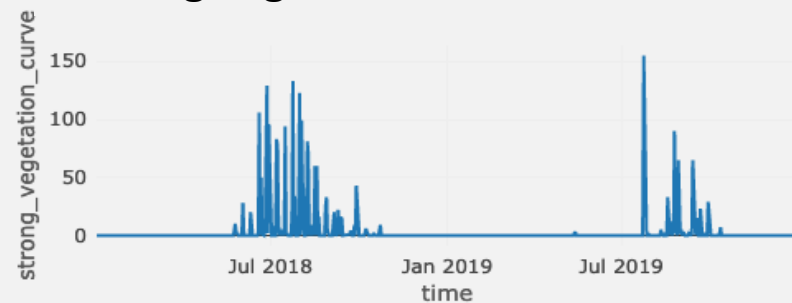
Legend

0  42

Download GeoTIFF (1.9 KB)

Copy OGC WMS Link

▼ Strong vegetation count over AOI



Download data (CSV) (17.2 KB)

▼ QGIS Project

Download as QGIS Project



5 km

3 mi



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