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martin.raspaud@smhi.se

PyTROLL

Pytroll for MTG-I1

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martin.raspaud@smhi.se

About me

- Software engineer
- Research leader in SMHI's Meteorological R&D
- Works with open source software

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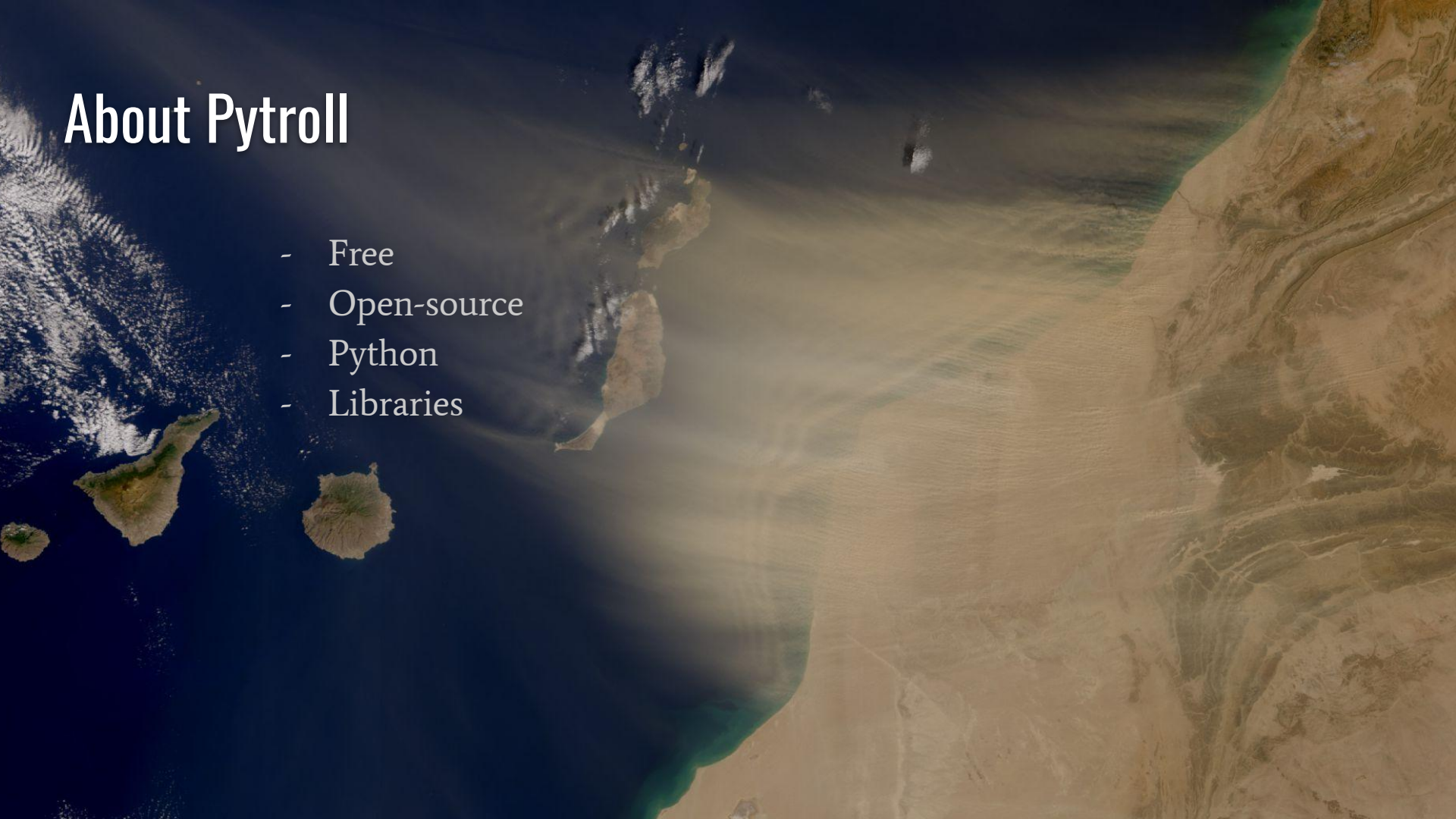
About Pytroll

- Free
- Open-source
- Python
- Libraries



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Do you know Pytroll?

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Reading, Processing, Saving

- Support more than 90 satellite data formats
- Support of remote files
- Many built in composites, corrections, and resampling algorithms
- Saving to popular images, gis and data formats

PyTROLL

Community?

- Pytroll is used operationally in many institutes across Europe, North and South America
- Active community (without funding!)
- Many contributions
- Memorandum of understanding

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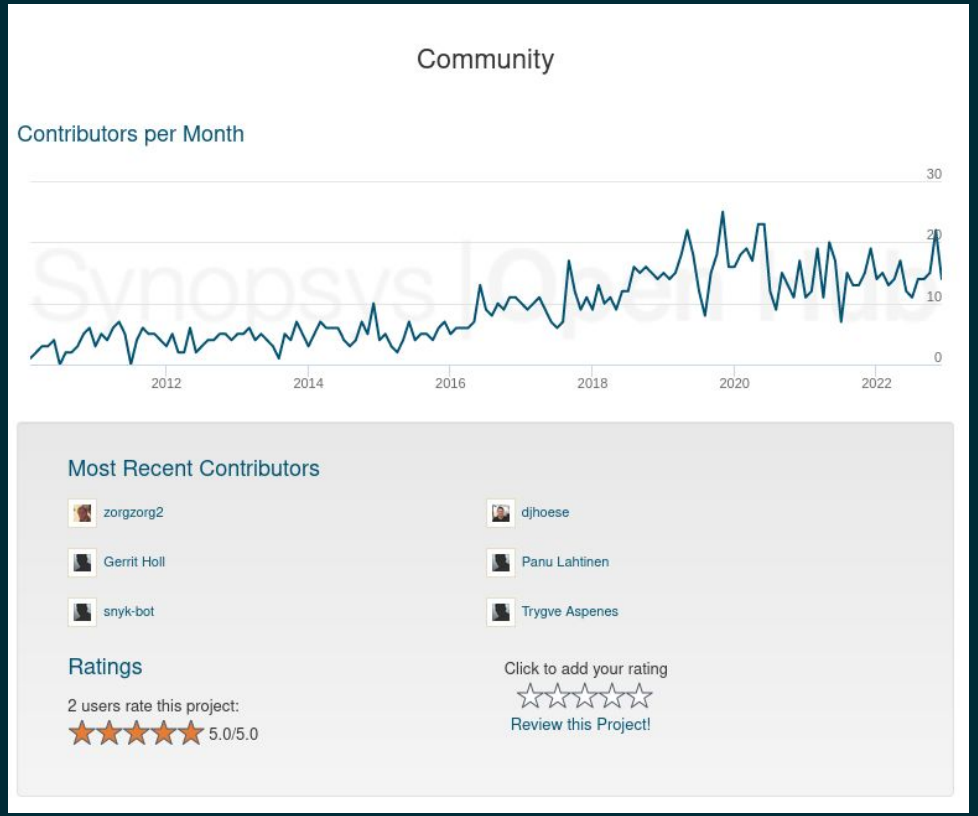
Our users

- NMSs
- Researchers
- Commercial companies
- Enthusiasts



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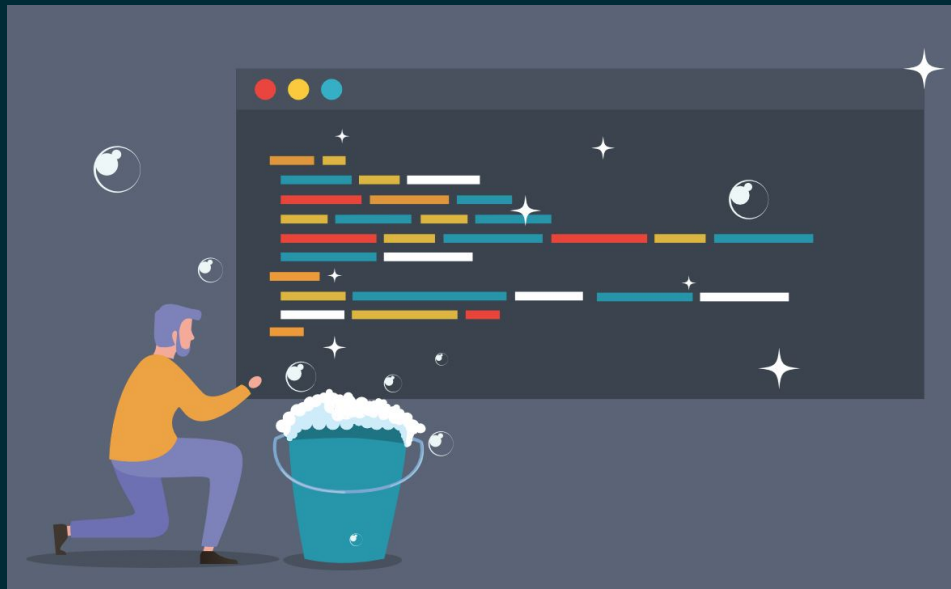
How do we thrive

- Community mail/chat
- Bi-yearly hackathons
- Keeping high coding standards
  - Clean code
  - Testing
  - Documentation



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What can Pytroll do for me?

- Reading
- Resampling
- Creating composite

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Satpy example

```
from glob import glob
from satpy.scene import Scene

# Load data by filenames
files = glob(“/data/my_fci_rc/*.nc”)
scn = Scene(reader="fci_l1c_nc", filenames=files)
```

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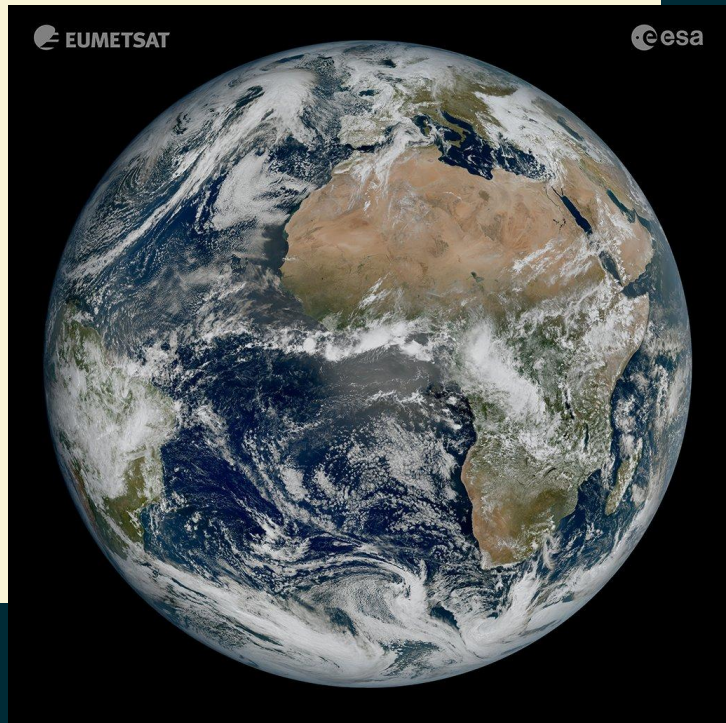
Satpy example

```
# Automatically load composites and their dependencies
scn.load(["true_color"])

# Resample multi-band data to a uniform grid
rs_scn = scn.resample("eurol")

# Save RGB geotiff
rs_scn.save_dataset(“true_color”)
```



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Needs to run operationally

- 24/7
- Moving files around
- Processing many GB
- To generate images and scientific products
- In near real time

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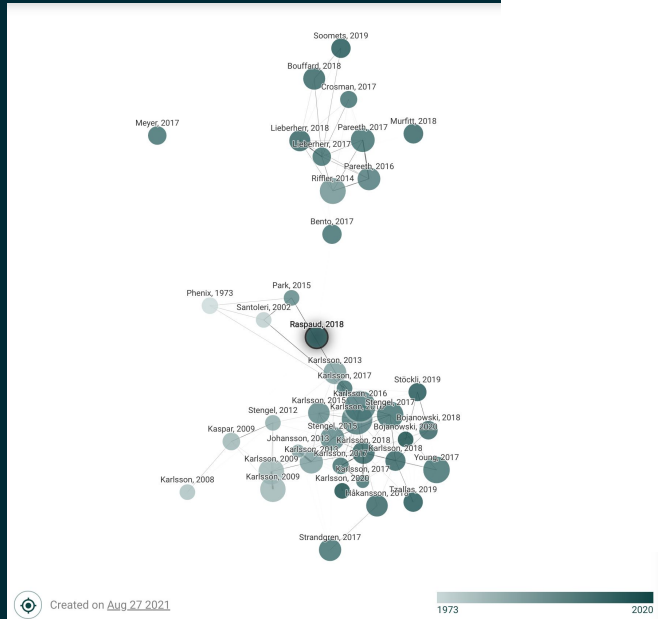
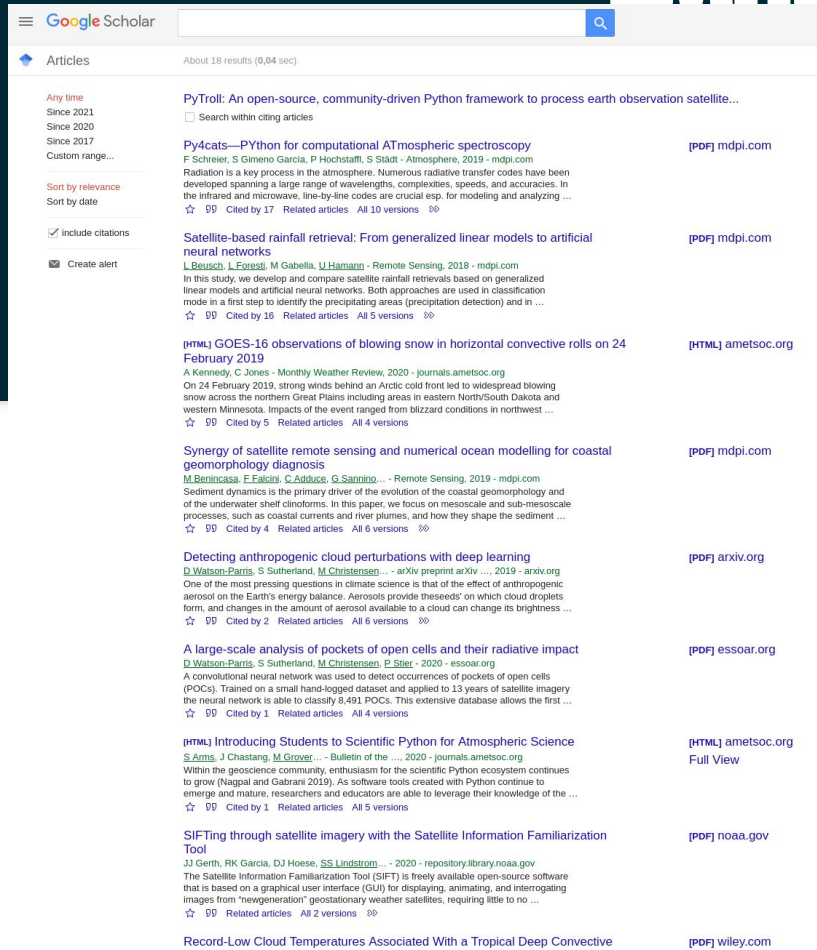
Pytroll used in research

- High quality data processing
- Uses python scientific stack
- Reproducible
- Reliable
- Traceable
- Open Science!





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Pytroll quality for MTG I1

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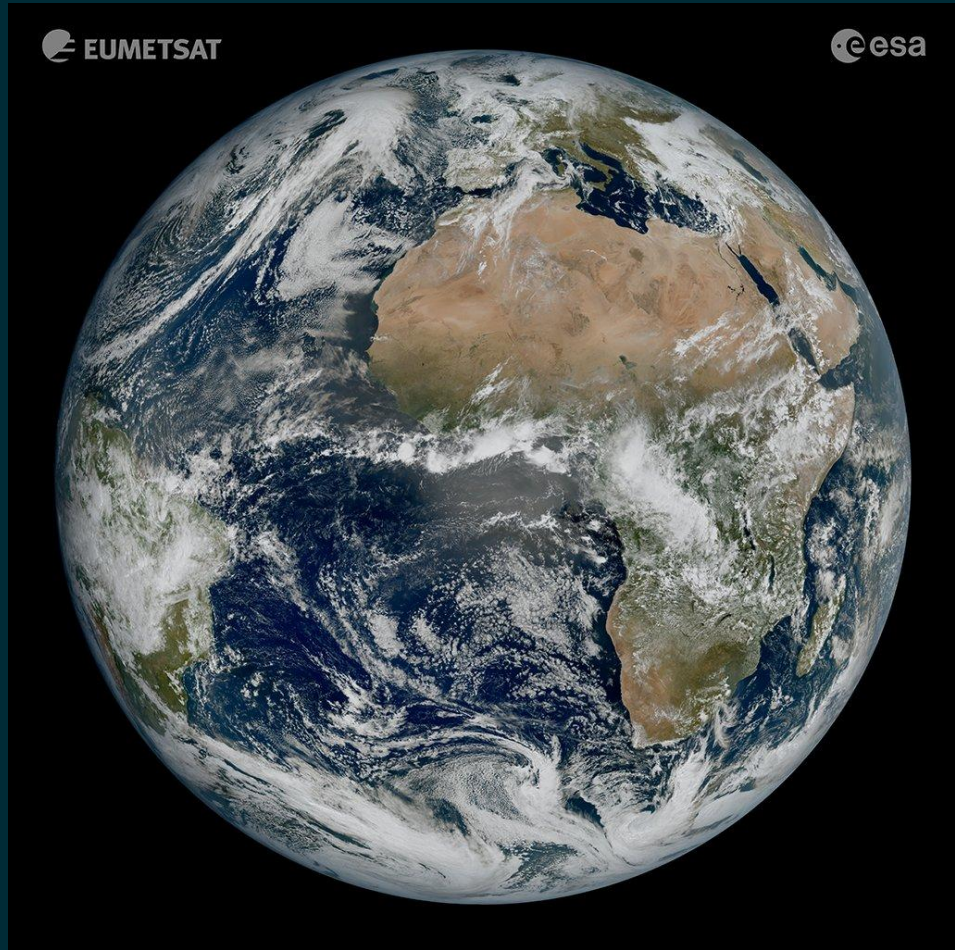
For MTG-I1

- Reader for FCI data
- Reader for LI data
- Thanks to contributions from devs at EUMETSAT



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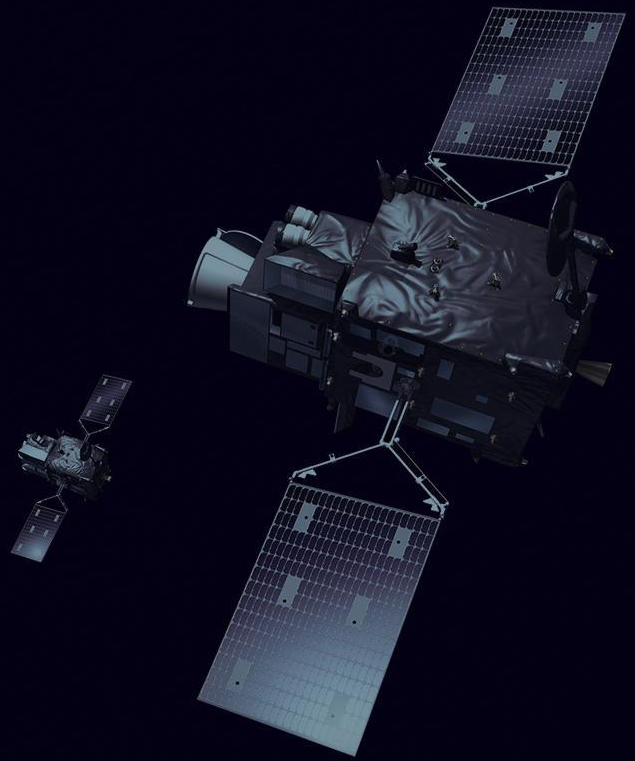
For MTG-I1

- Support remote files
- Distributed processing
- Same composites...
- And new ones!



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RGBs with Satpy

```python
from satpy.scene import Scene
from glob import glob

filenames = sorted(glob("/path/to/my/FCI/data/*"))

global_data = Scene(
    filenames=filenames,
    reader="fci_l1c_nc",
)
composites = ["airmass", "dust",
              "true_color", "cloud_phase",
              "cimss_cloud_type"]

global_data.load(composites)
global_data.save_datasets()
```

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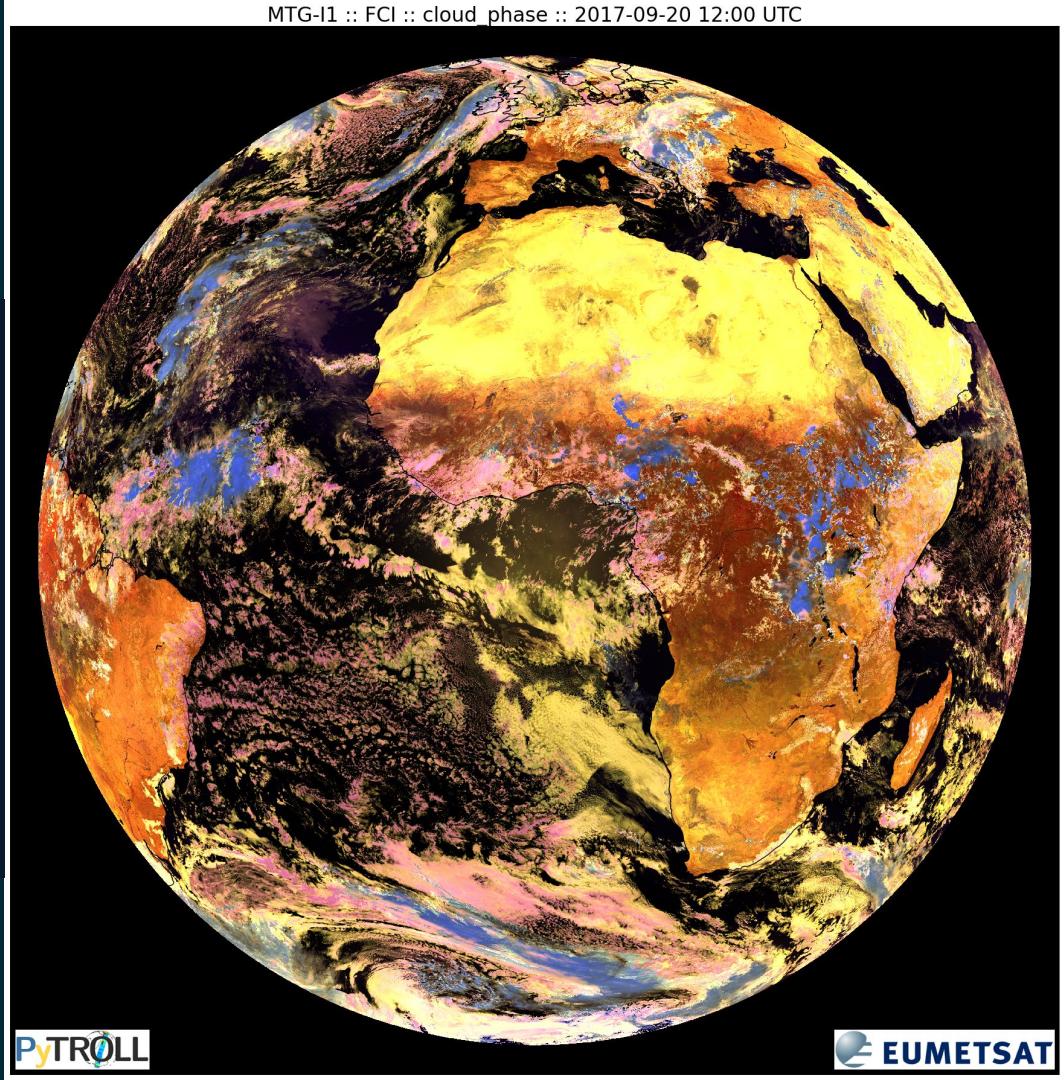

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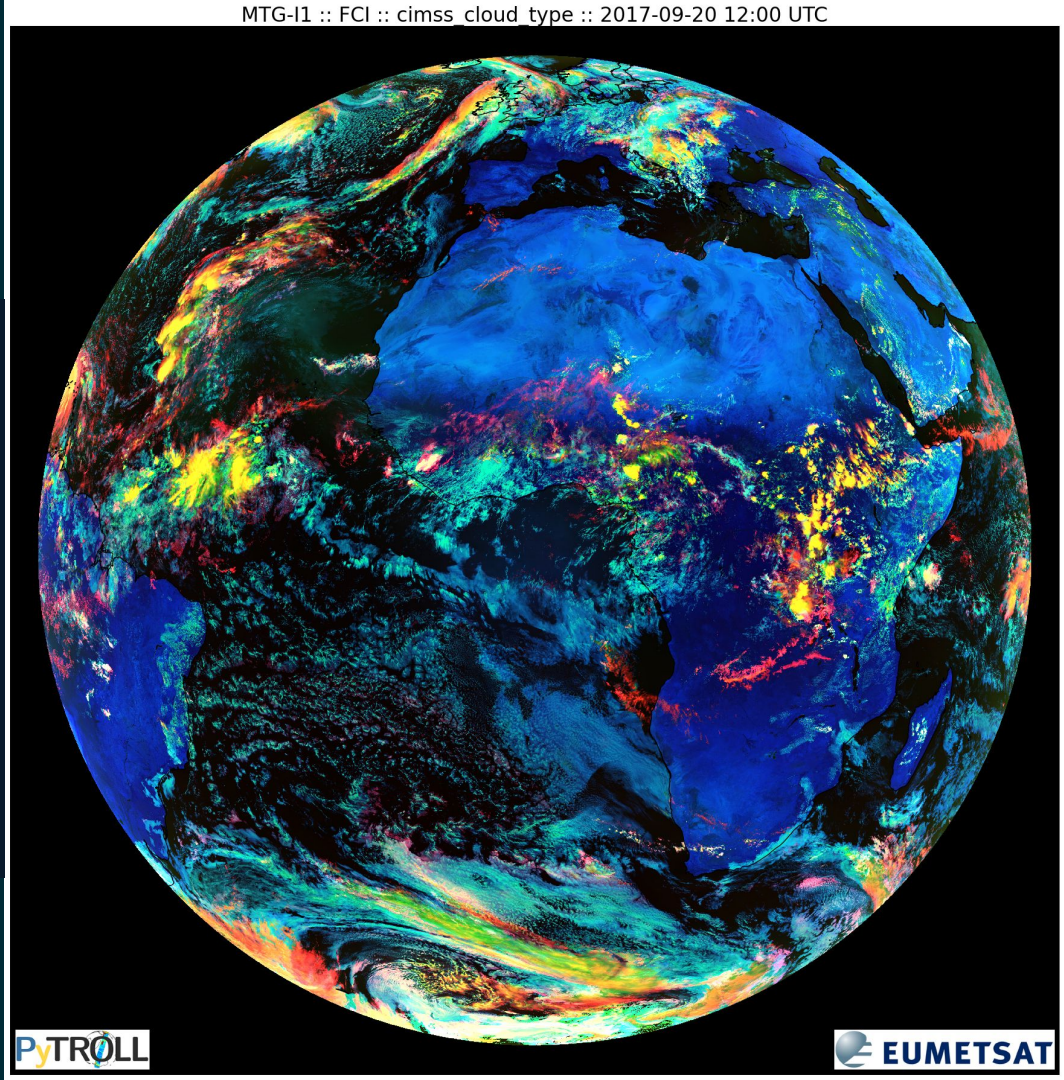

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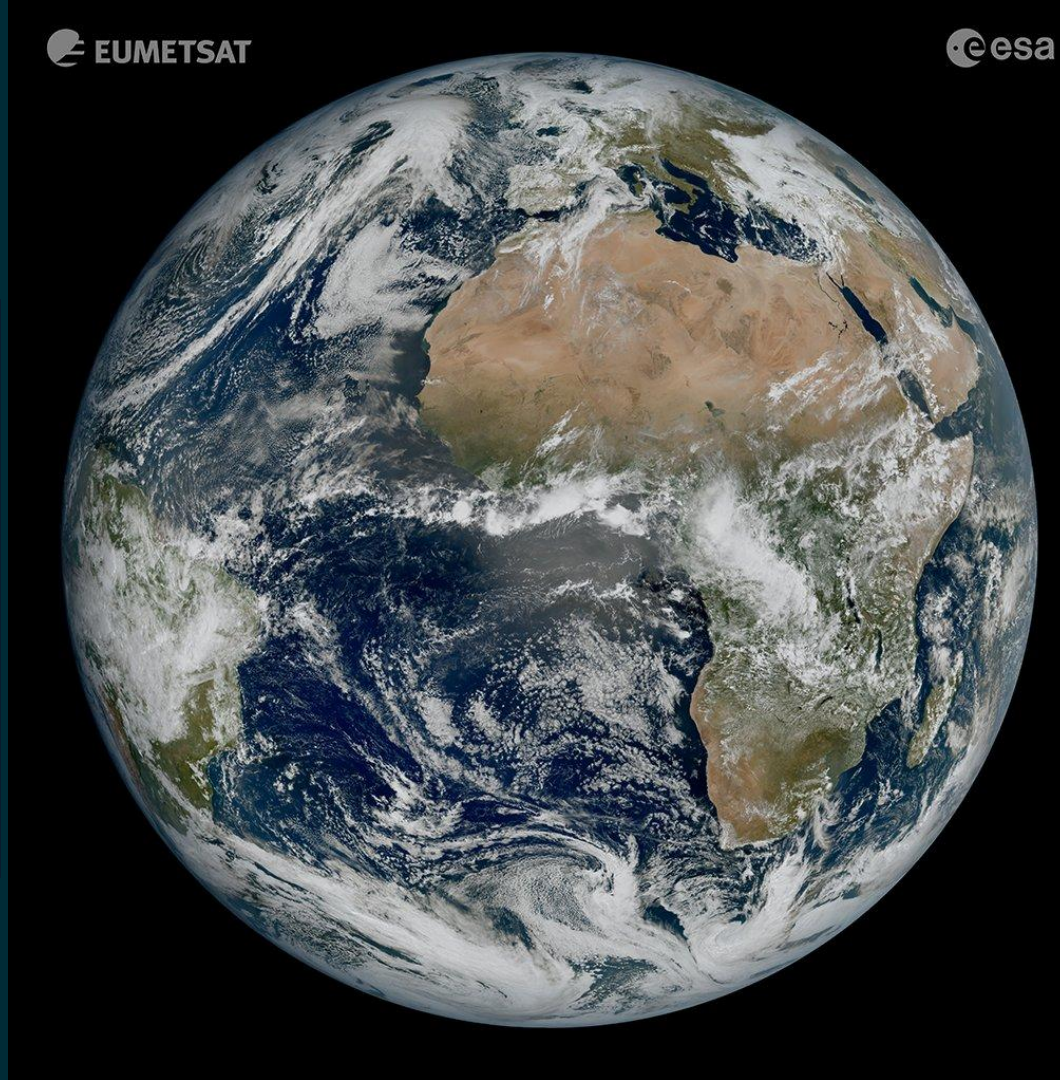

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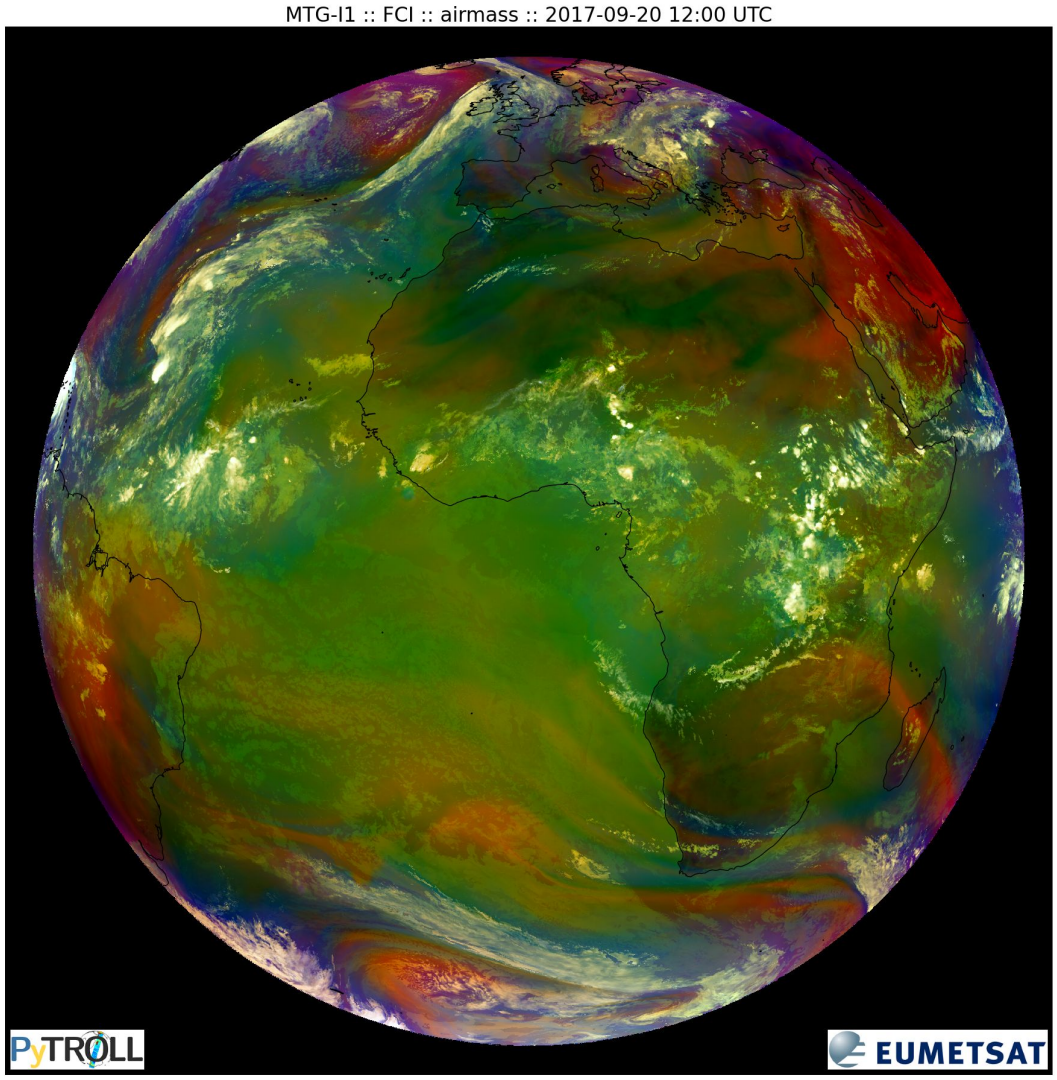

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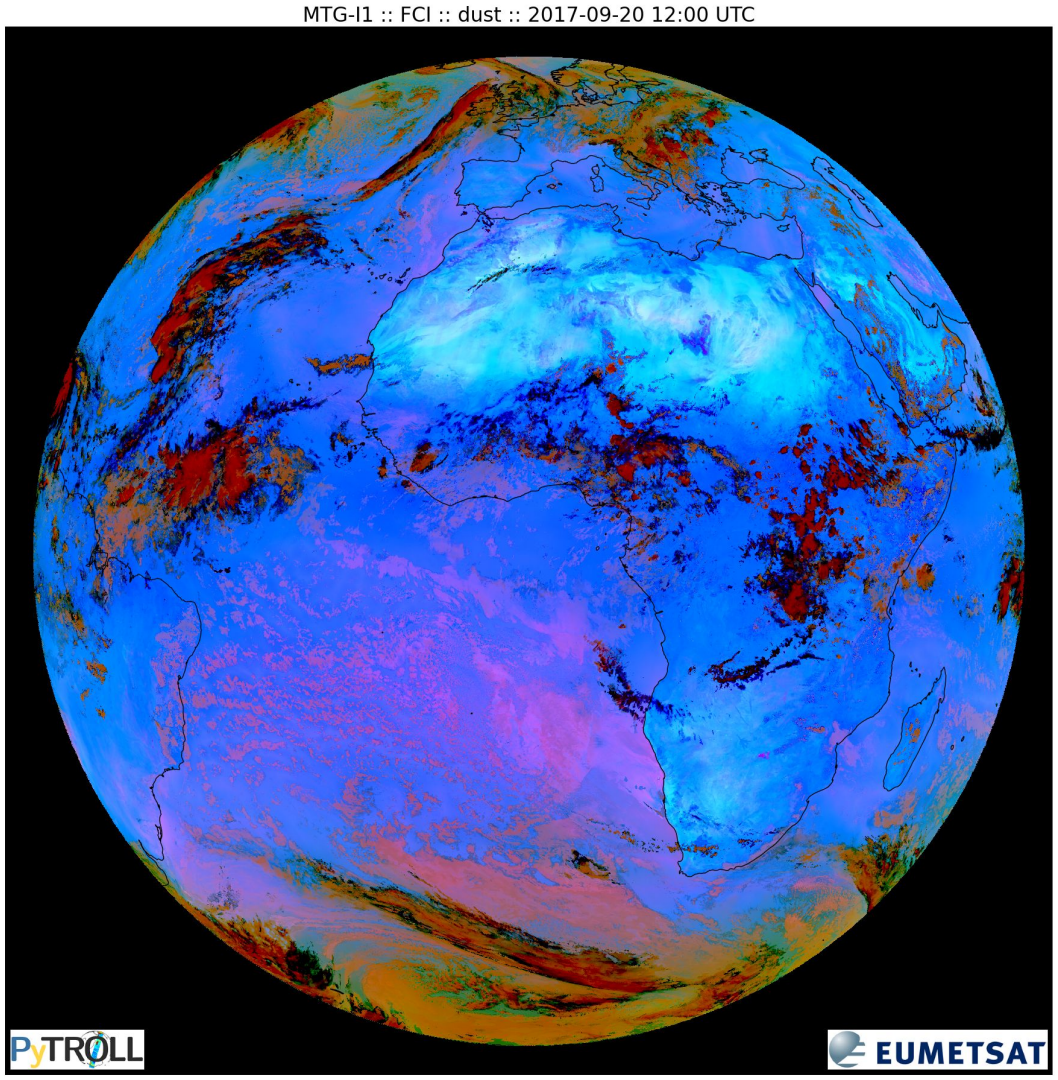

Plans for the future

- Live test on the EWC
- Tweaks

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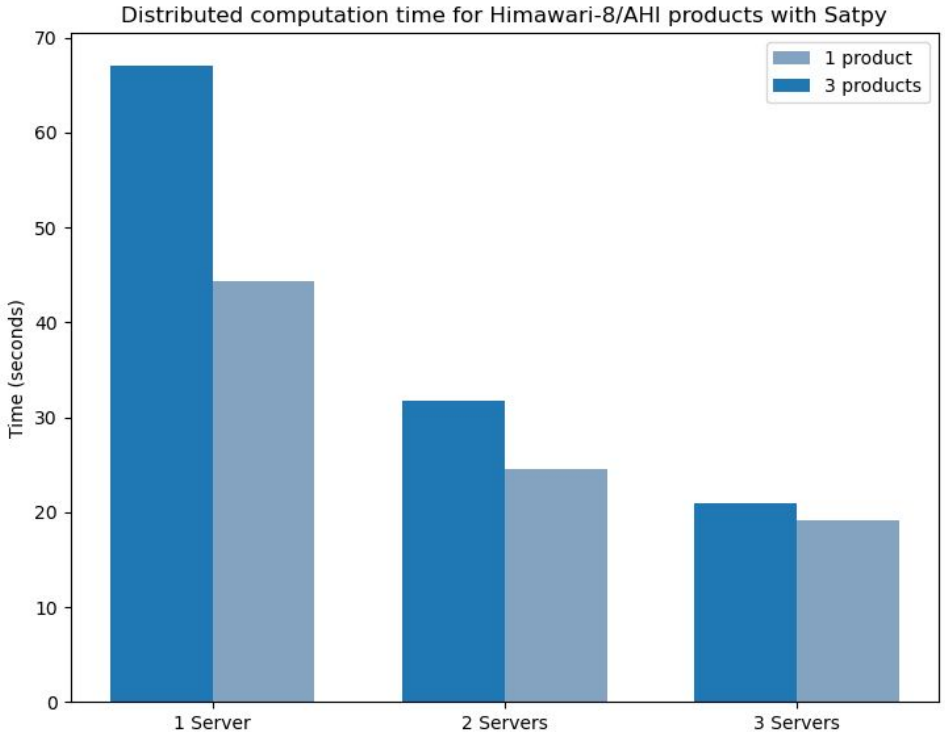
Dask distributed

DASK

- Client/Server architecture
- Works automatically on regular dask code
- Works on clusters



Sentinel 2A, MSI

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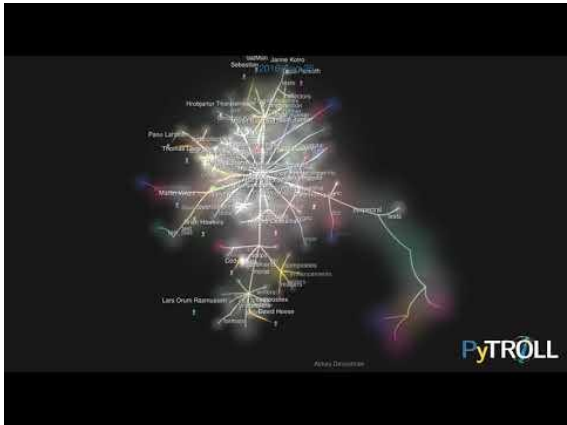
What can you do for Pytroll?

- Spread the word
- Use it
- Contribute



martin.raspaud@smhi.se

www.pytroll.org

Pytroll@Slack

Pytroll@Github

pytroll@googlegroups.com

Pytroll@Fosstodon.org PytrollOrg@Twitter

Thanks !

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Audience Q&A Session

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