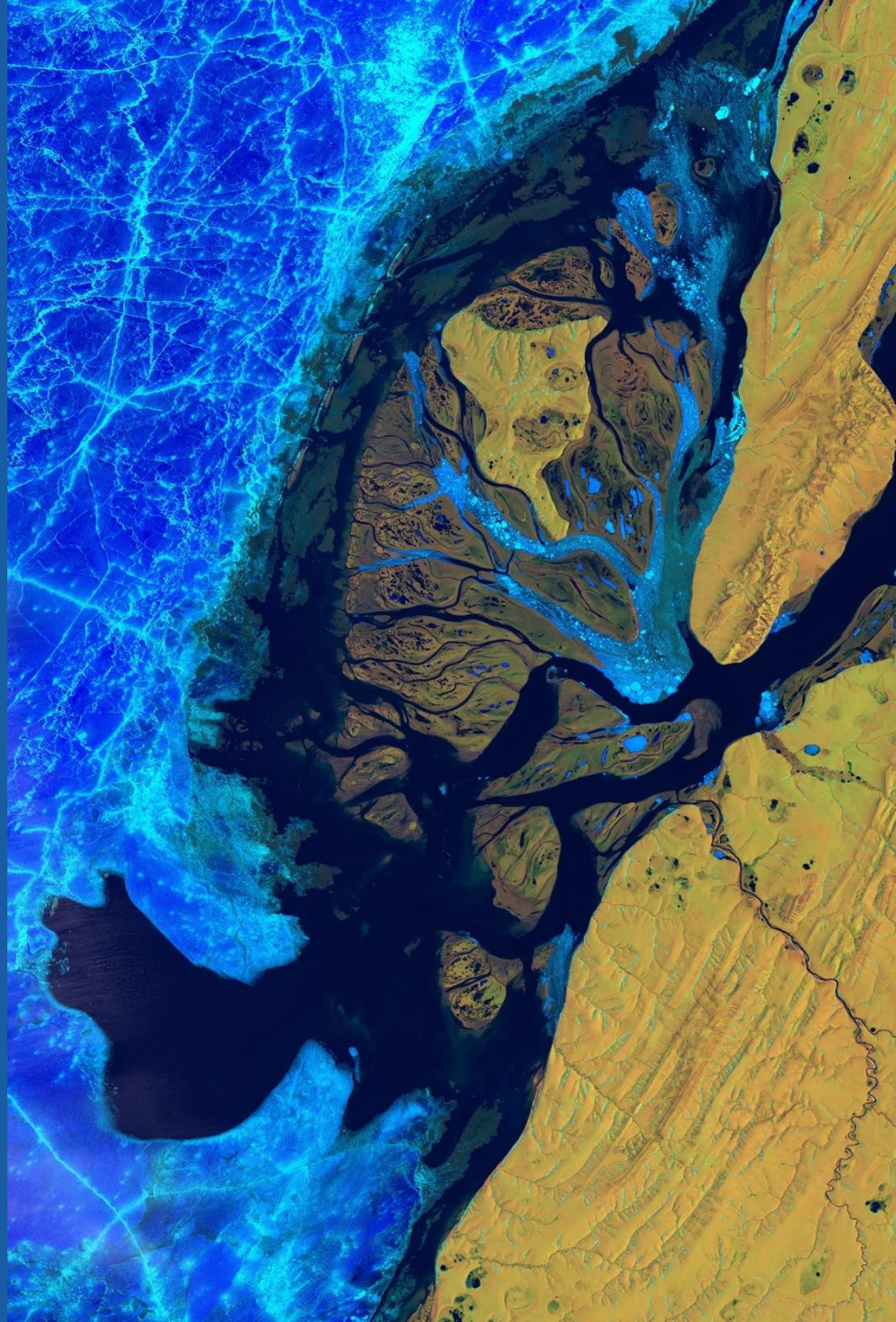
EOReader

an remote-sensing open source python library



Sertit

ICUBE

Context

Motivation behind **EOReader**

- Satellite data: every sensor product is **different** (bands, storage, …)
- Crucial to **harmonize** and **increase the reliability** of the production tools used in a **industrialized** framework
  (*i.e. make them as **sensor-agnostic** as possible*):
  - The developer can focus on **core** tasks *(such as extraction)* without taking into account the sensor characteristics
  - New sensors are added **effortlessly** (if existing in EOReader) and **without any modification** of any tool
  - Maintenance and testing are **simplified** and the code is **more readable**

Available constellations

Optical constellations	SAR constellations
Sentinel-2 and **Sentinel**-2 Theia **Sentinel**-3 OLCI and SLSTR	**Sentinel**-1
Landsat 1 to 9 (MSS, TM, ETM and OLI)	**COSMO-Skymed** 1st and 2nd Generation
PlanetScope and **SkySat**	**TerraSAR-X**, **TanDEM-X** and **PAZ SAR**
Pleiades-Neo and **Pleiades** **SPOT** 6-7	**RADARSAT**-2 **RADARSAT**-Constellation
Vision-1	**ICEYE**
WorldView-1 to 4, **GeoEye**-1, **QuickBird**	**SAOCOM**-1

Main Features

- EOReader opens the satellite products **agnostically**
  - Recognizes the constellation thanks to the product **name** and/or **structure**

- **Load** and **stack** bands the same way for every sensors:
  - **Spectral** and **SAR** bands: `RED, NIR, SWIR, PAN, VV, VH…`
  - **Spectral Indices**, **DEM** bands, **CLOUD** bands
  - Always in reflectance (optical data), nodata removed
  - Always orthorectified and projected in UTM

Spectral Band Mapping

Band mapping between optical constellations

About the project

- EOReader:
  - **Repository**: https://github.com/sertit/eoreader
  - **Documentation**: https://eoreader.readthedocs.io/en/latest/
- EOReader's future
  - Get rid of **big non python external** tools (such as ESA SNAP)
  - Make sure the code is **optimized** (speed, memory consumption)
  - Implement all of used **CEMS sensors**

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