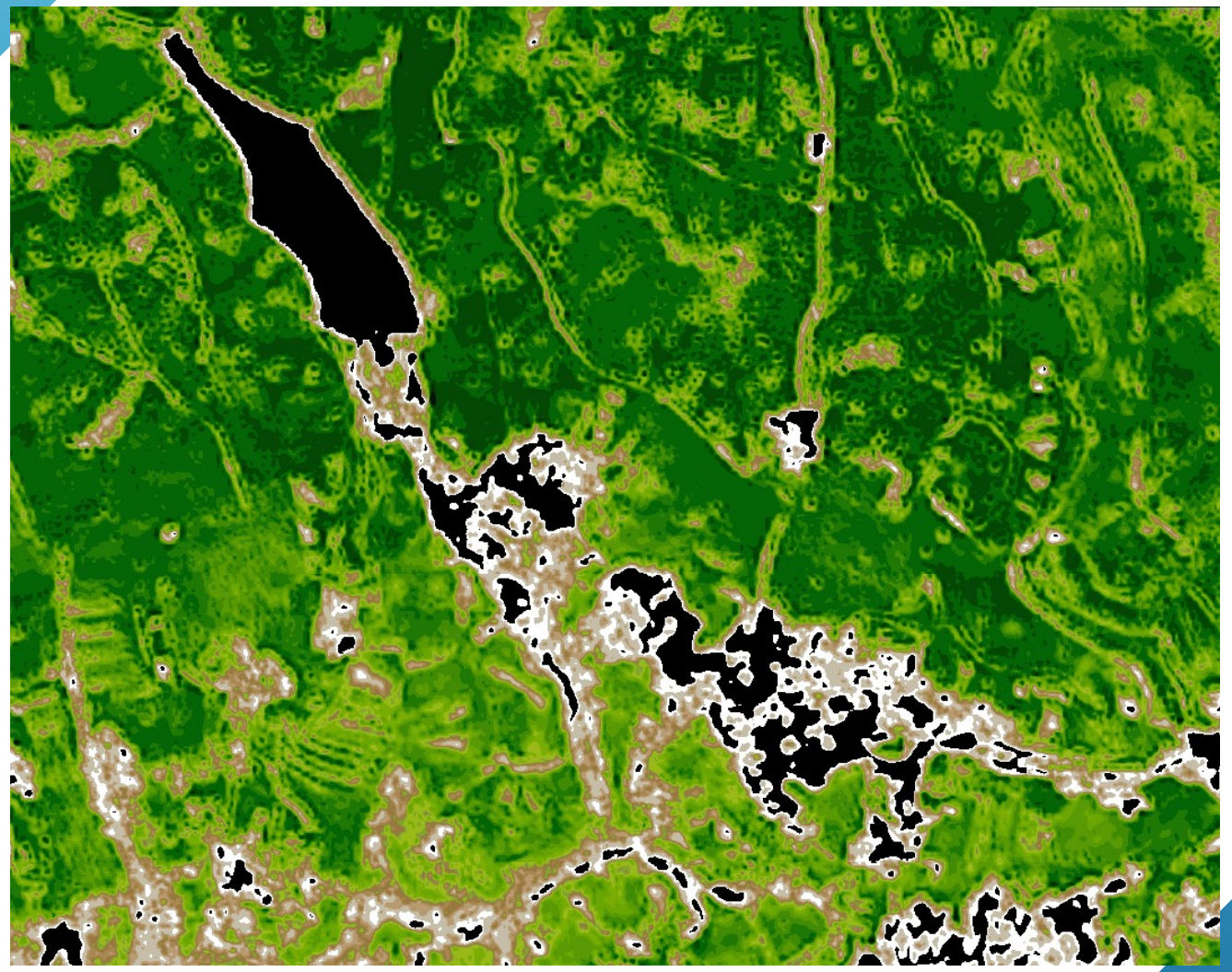
POSSIBILITIES OF REMOTE SENSING FOR SPATIAL DISTRIBUTED MODELS

Ing. Adam Tejkl

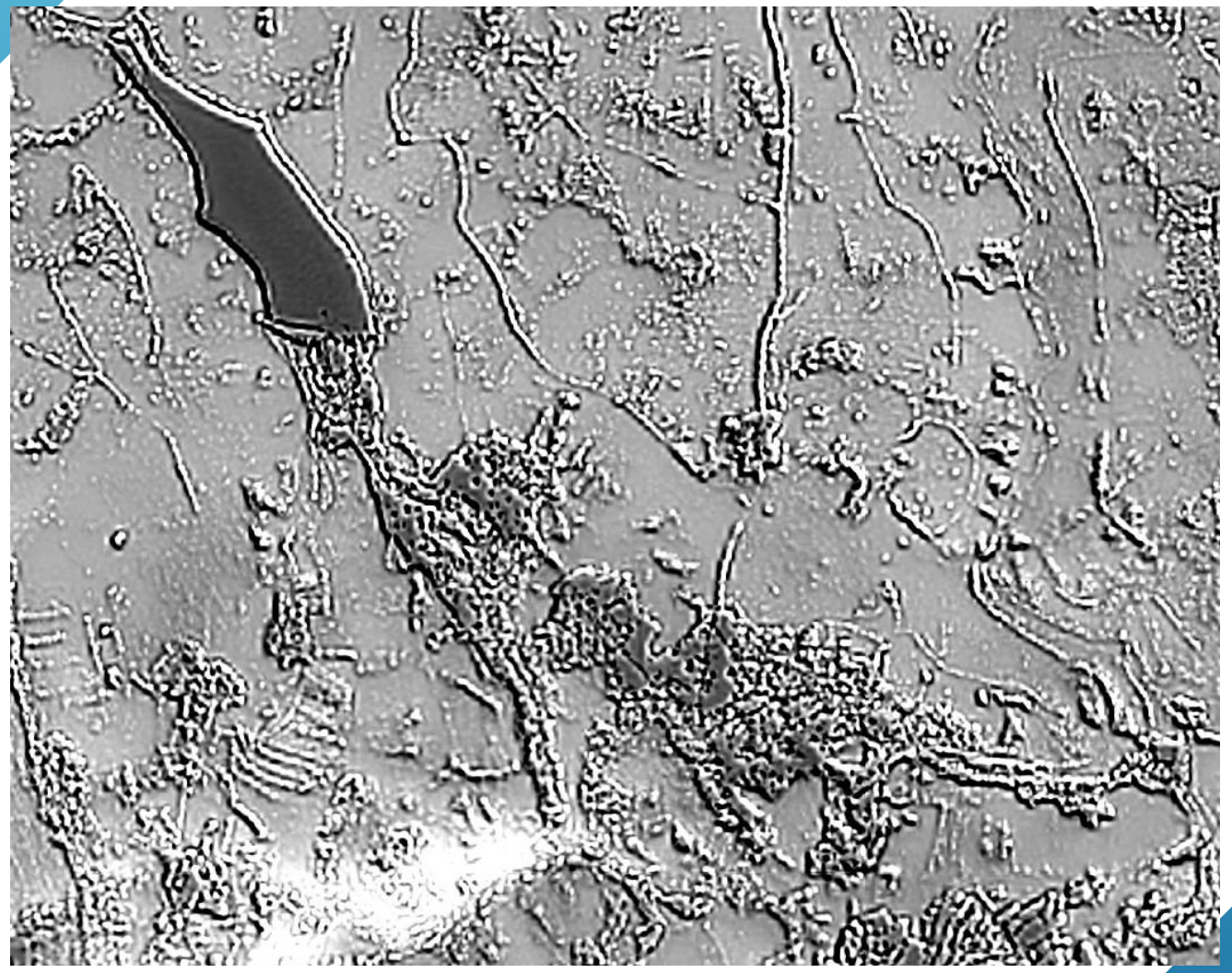
AVAILABLE SATELLITES

- Sentinel 2 L1C + L3A
- Landsat 8
- Landsat 7


22. MARCH 2019 –
LANDSAT 8

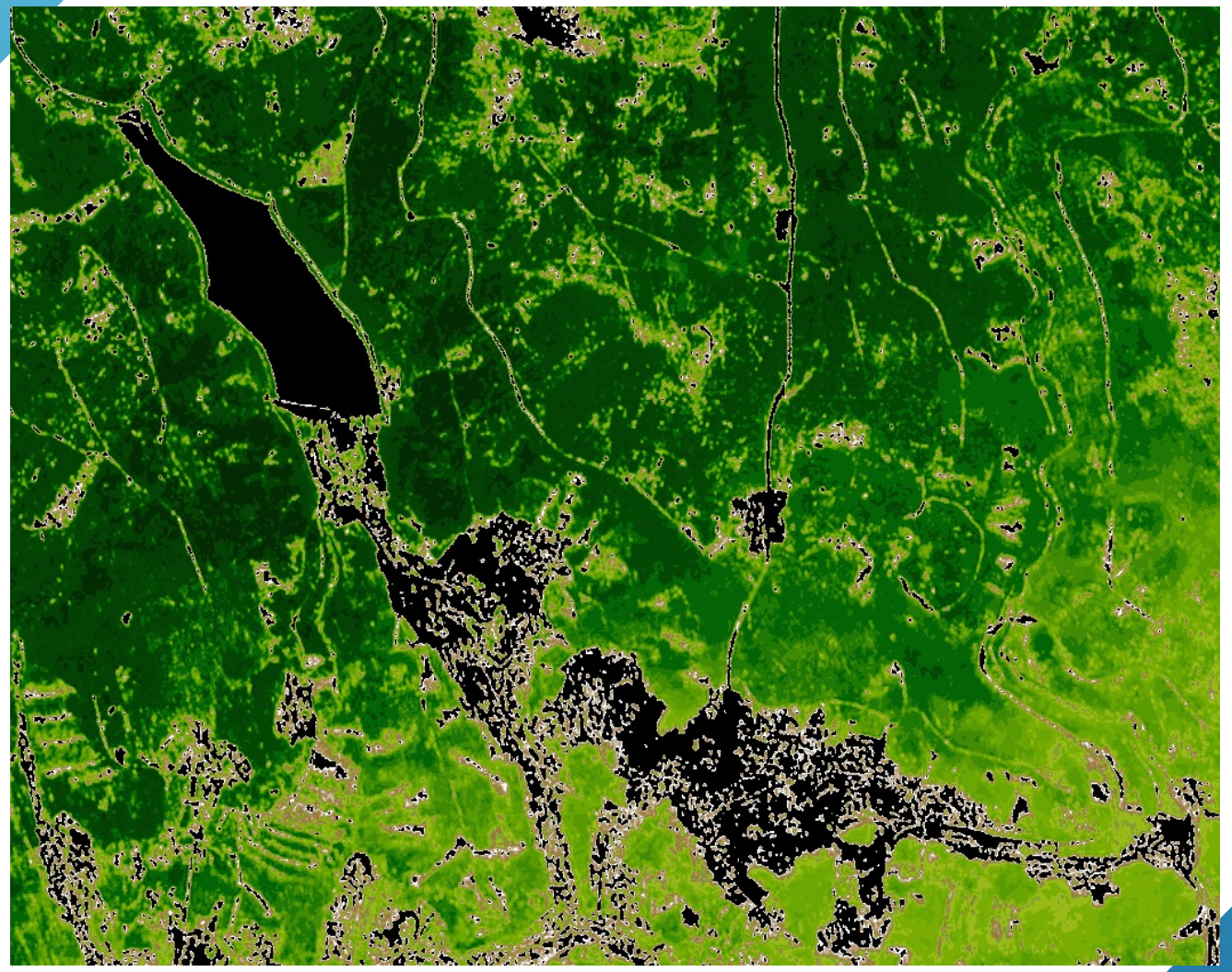


NDVI
(B5 - B4)/(B5 + B4)

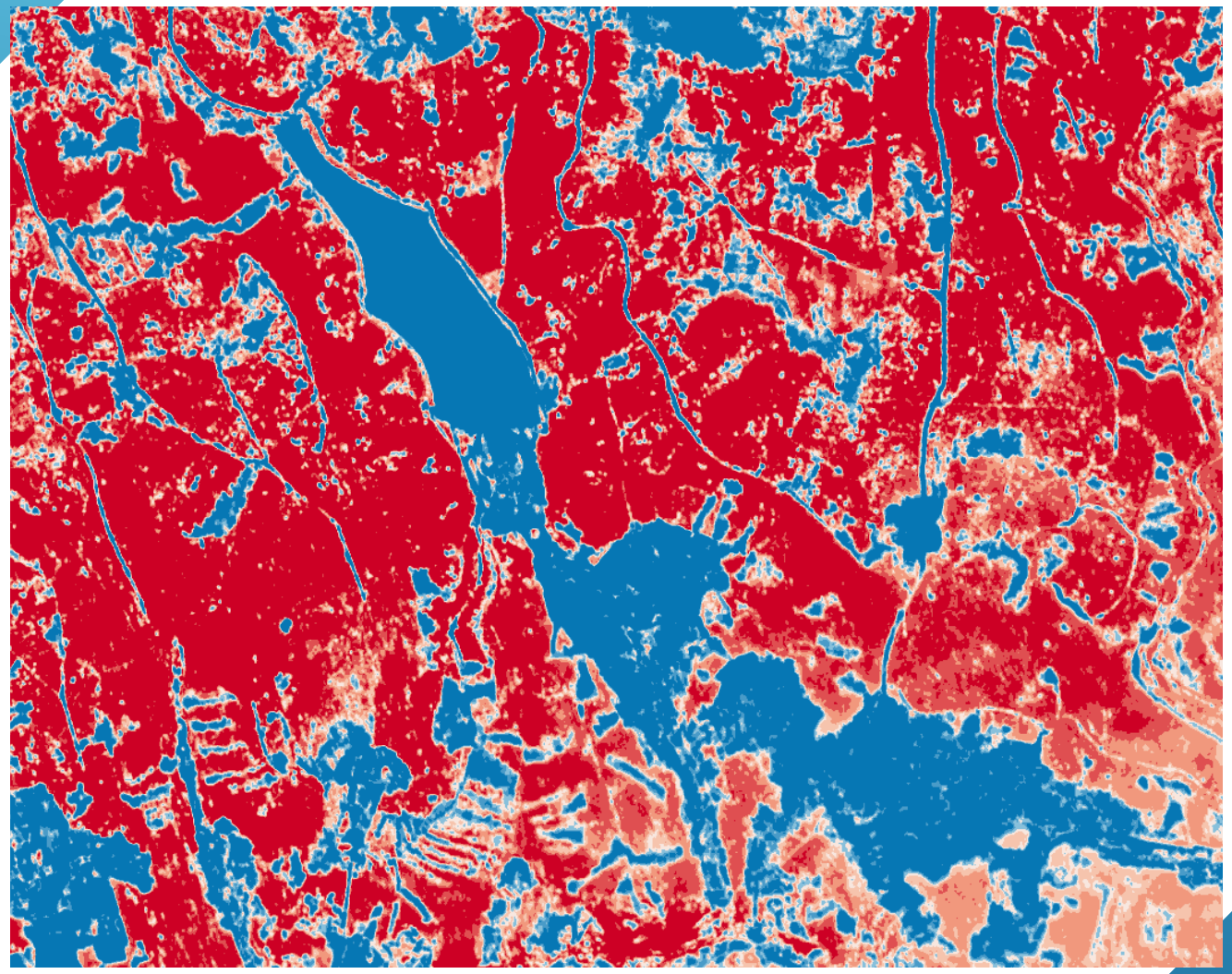


THERMAL INFRARED B10


17. MARCH 2019 –
SENTINEL 2



NDVI
(B8A – B04) /(B8A + B04)



NDSI
(B03-B11) / (B03+B11)

NEAR INFRARED B08

SPATIAL RESOLUTION

- Landsat 8
  - RGB, NIR, IR 30 m
  - Panchromatic 15 m
- Sentinel 2
  - RGB, NIR 10 m
  - SWIR, red edge 20 m
  - Aerosols 60 m

REVISIT FREQUENCY

- Landsat 8
  - 16 days
  - 8 days after Landsat 7
- Sentinel 2
  - 5 (10) days

ARCHIVES

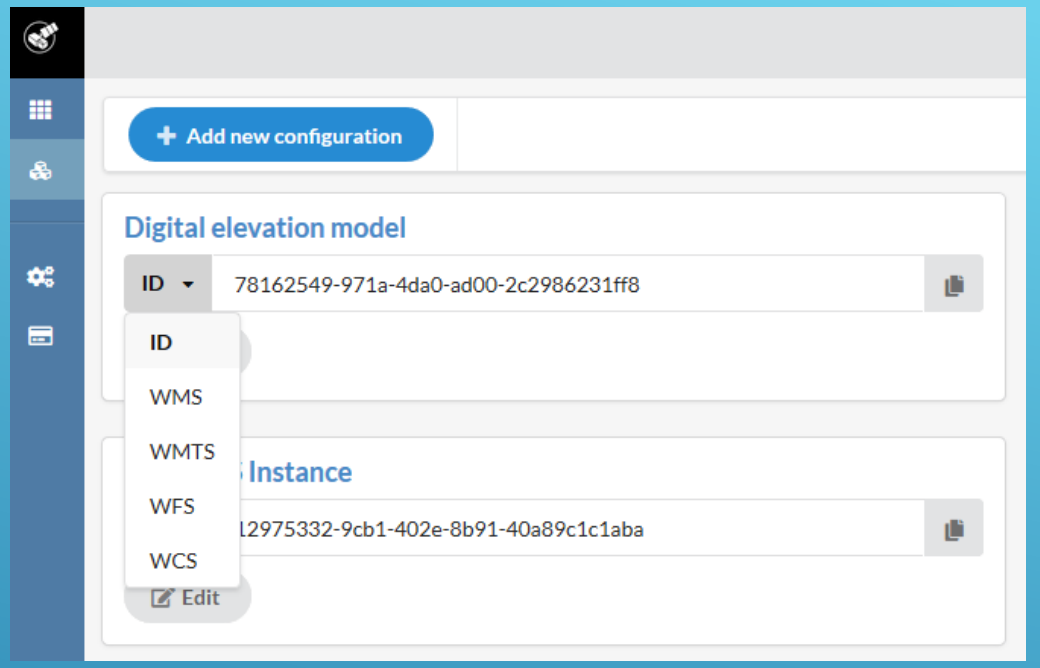
- EOS – LandViewer
- Planet
- Sinergise - Sentinel Hub, EO Browser

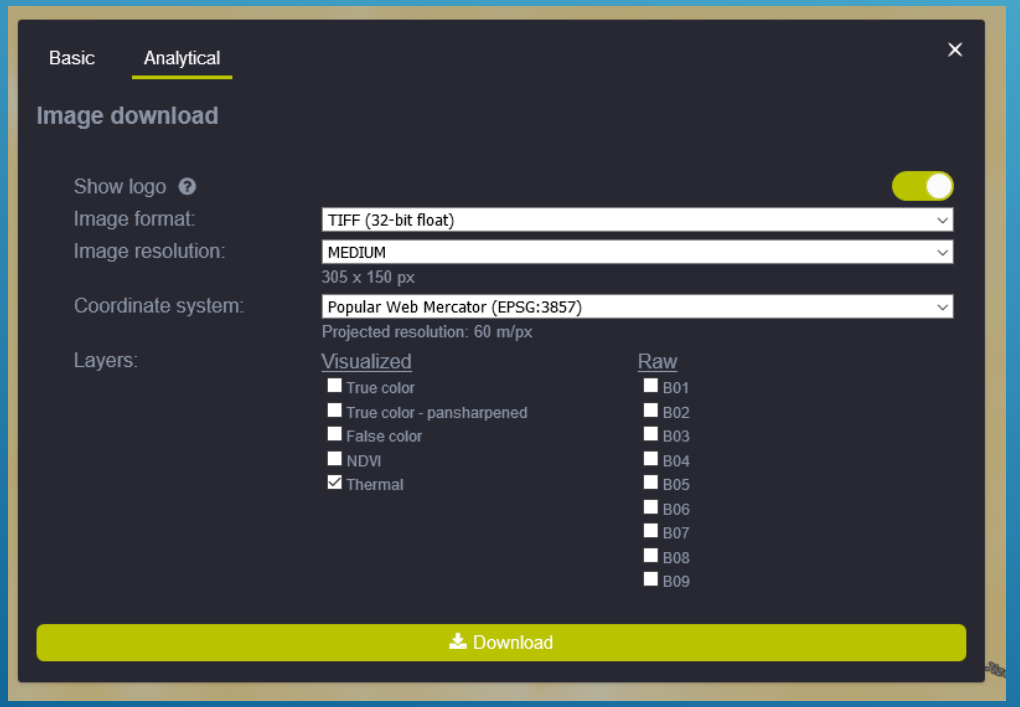
- USGS – EarthExplorer
- Copernicus Open Acces Hub

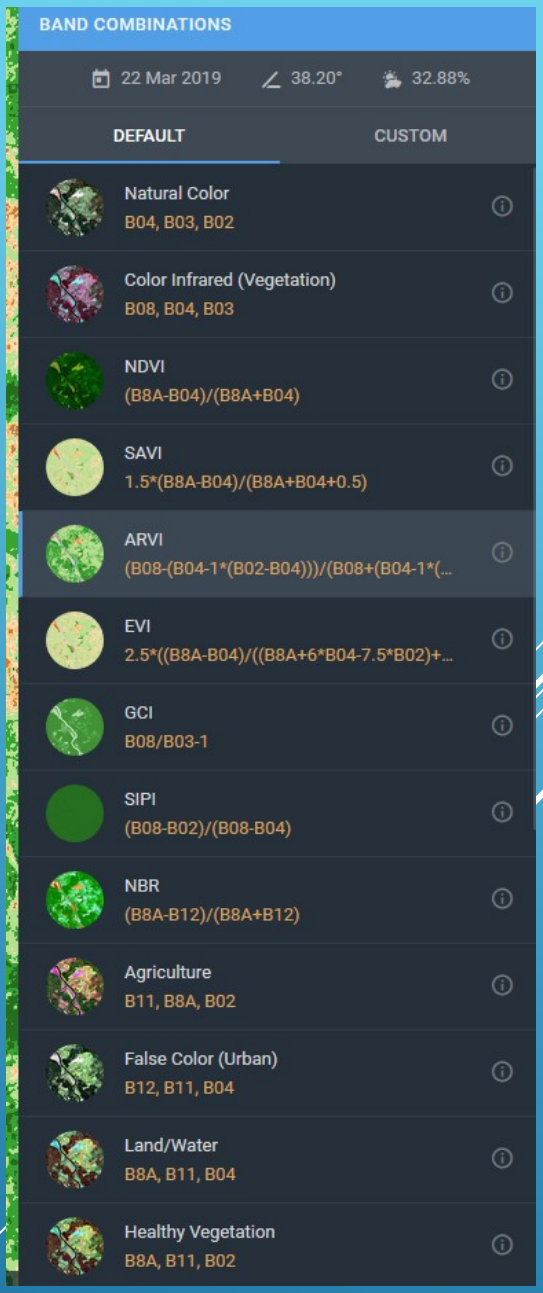
- Georeferenced tiff
- WMS
- WFS
- JPEG
- KMZ

- Raw data package

AVAILABILITY







POSSIBILITIES

- Snow
  - Coverage
    - Crawford et al., 2013; Dozier, 1989
  - Melting rate
    - Hall et al., 2015
- Aquatic environment
  - Reservoir water quality
    - Kloiber et al., 2002
  - Chlorophyll, suspended organic matter, colored dissolved organic matter
    - Pahlevan et al., 2014

POSSIBILITIES

- Agriculture
  - Crop growth
    - Sakamoto et al., 2011; Zeng et al., 2016; Gao et al., 2017; Crawford et al., 2013; Dozier, 1989
    - Unsatisfactory, data fusion - Gao et al., 2015
    - Harmonical modelling – Roy et al., 2018
  - Stability of forest environment, species distribution
    - Frantz et al., 2017; Griffiths et al., 2013; White et al., 2014
  - LAI
    - Sellers, 1989; Clevers et al., 1996

POSSIBILITIES

- Albedo and surface temperature
  - MODIS and VIIRS data - Shuai et al., 2011
  - Landsat-8 band 10 (10.60–11.19 µm)
  - radiance and emisivity - Cook et al., 2014; Hulley and Hook, 2009
  - Surface resistance- Boegh et al., 2002
- Evapotranspiration
  - Mauser et al., 1998
  - Willardson, 2014; Anderson et al., 2011; Kalma et al., 2008; Allen et al., 2007
- LULC
  - Field block identification - Graesser et al., 2017

USED MODELS

- Vegetation SVAT Model
- MIKE SHE
- MIKE SHE/Daisy

IN SUMMARY

- Raw data are readily available
- Large archives available

- Need of data treatment

THANK YOU

Questions