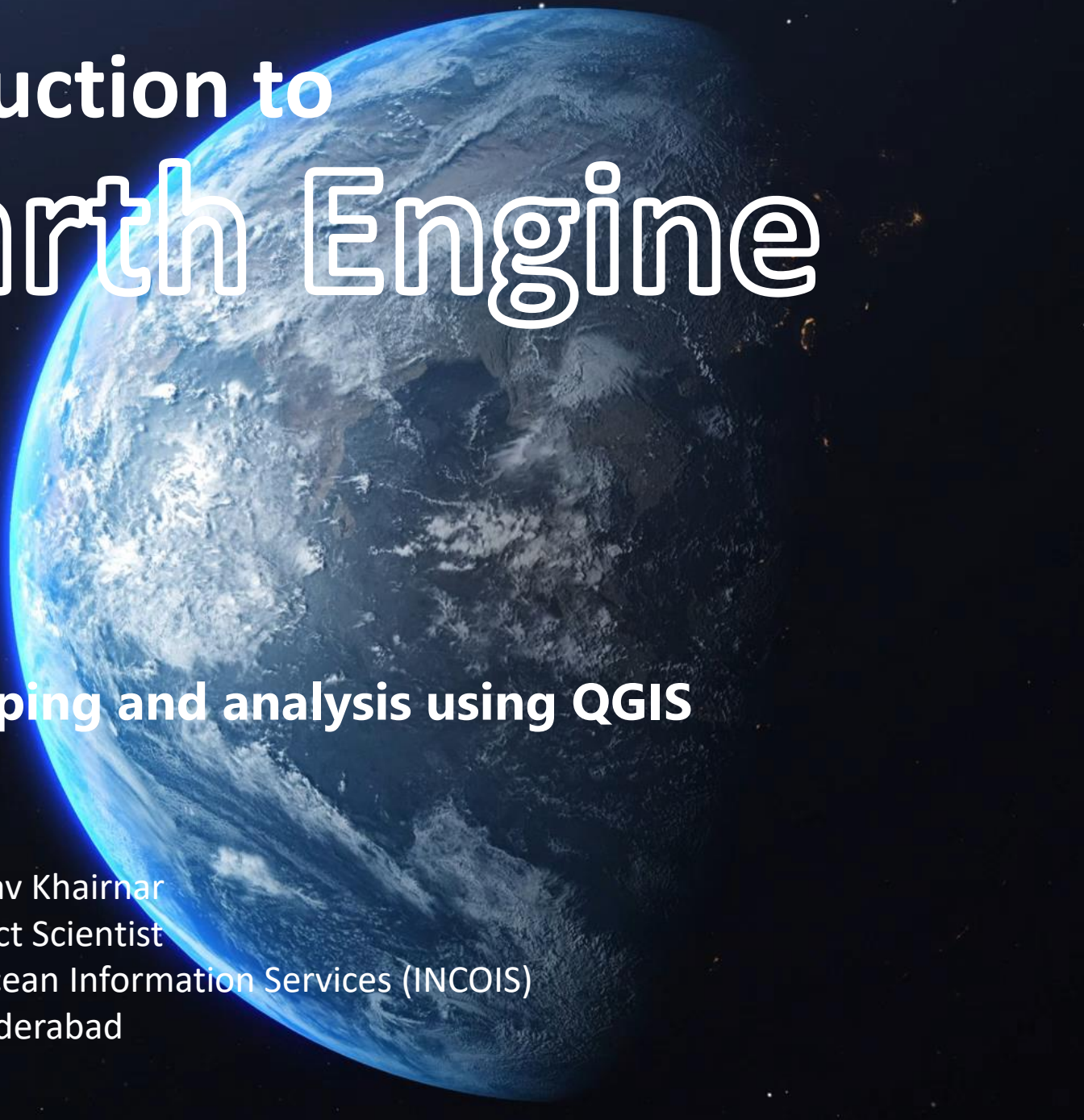
Introduction to
Google Earth Engine



Coastal Vulnerability Mapping and analysis using QGIS

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Project Scientist
Indian National Center for Ocean Information Services (INCOIS)
Hyderabad

Outline

- Introduction
- Datasets and ImageCollections
- Working with Google Earth Engine
- Data management and analysis
- Importing and exporting data
- Python api
- QGIS

Introduction

- Google Earth Engine Cloud-based platform combines multi-petabyte catalog of satellite imagery and geospatial datasets with large-scale geospatial analysis
- Access over 40 plus years of data
- The Earth Engine API is available in Python and JavaScript, making it easy to harness the power of Google’s cloud for your own geospatial analysis.
- No need of satellite data downloading, processing, storage…

Datasets on Google Earth Engine

Climate and Weather

- Surface Temperature
- Climate
- Atmospheric
- Weather

Imagery

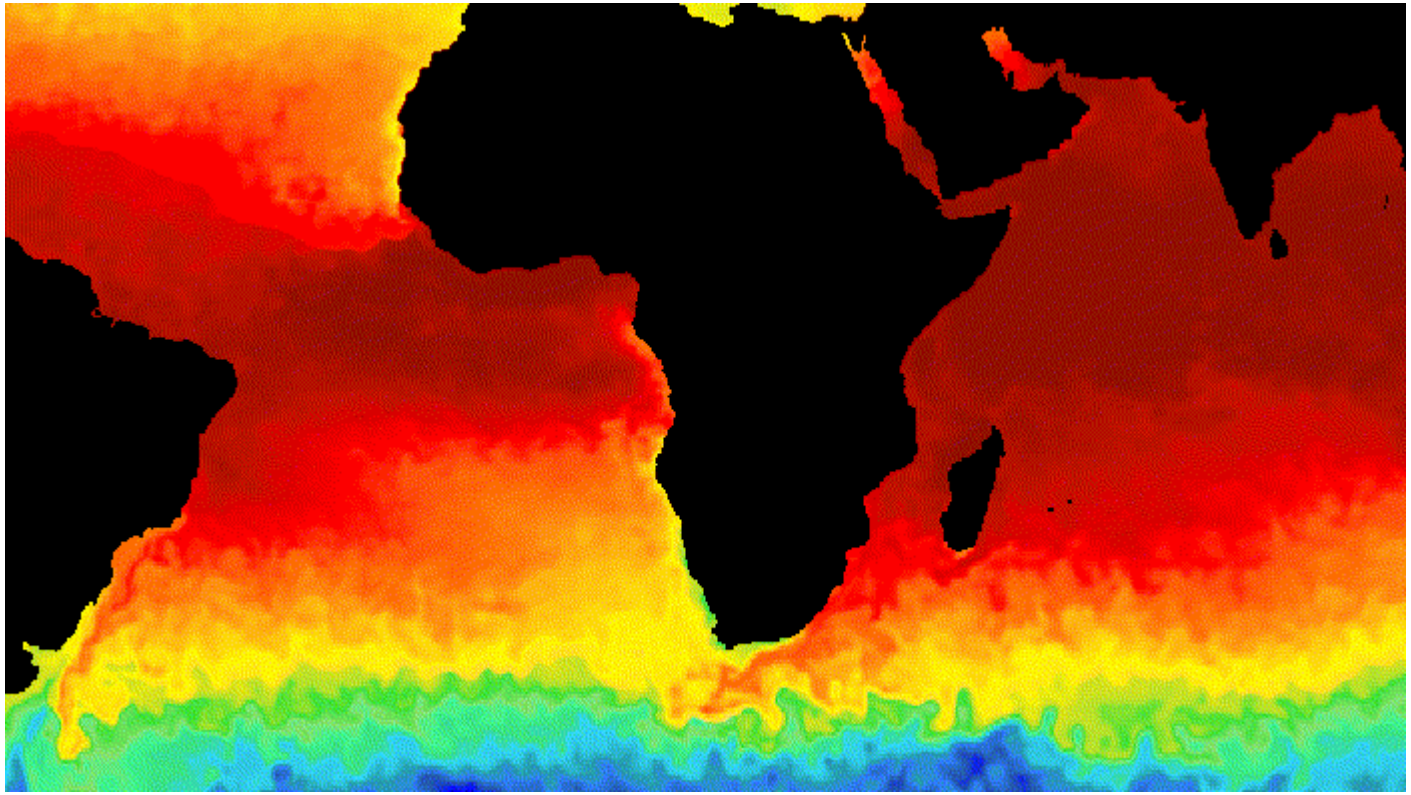
- Landsat
- Sentinel
- MODIS
- High Resolution Imagery

Geophysical

- Terrain
- Land Cover
- Cropland

Climate and Weather

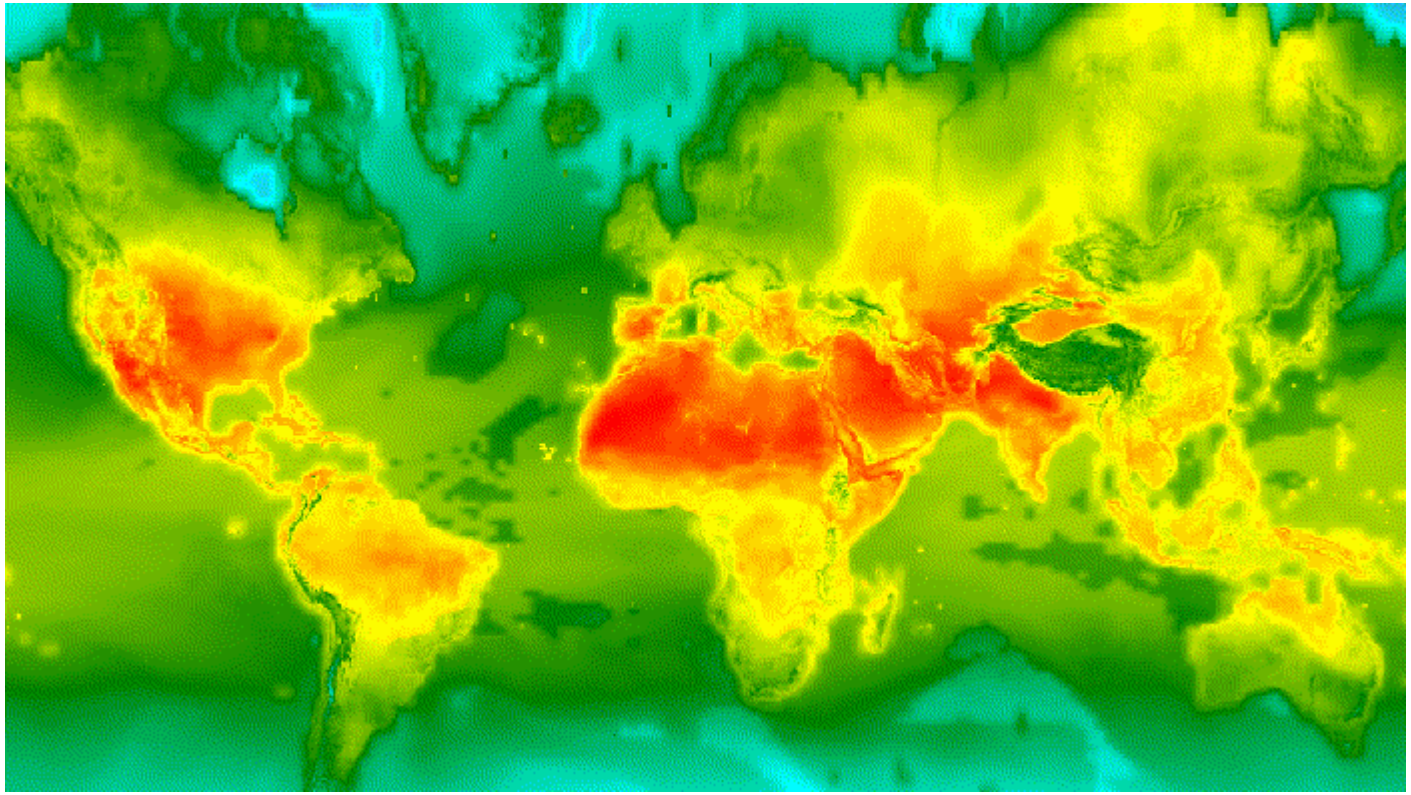
- **Surface Temperature**



- Standardised Precipitation-Evapotranspiration Index database
- Ocean Color SMI: Standard Mapped Image MODIS Aqua Data
- NOAA AVHRR Pathfinder Version 5.3 Collated Global 4km Sea Surface Temperature
- Day/Night Land Surface Temperature and Emissivity Daily 1km

Climate and Weather

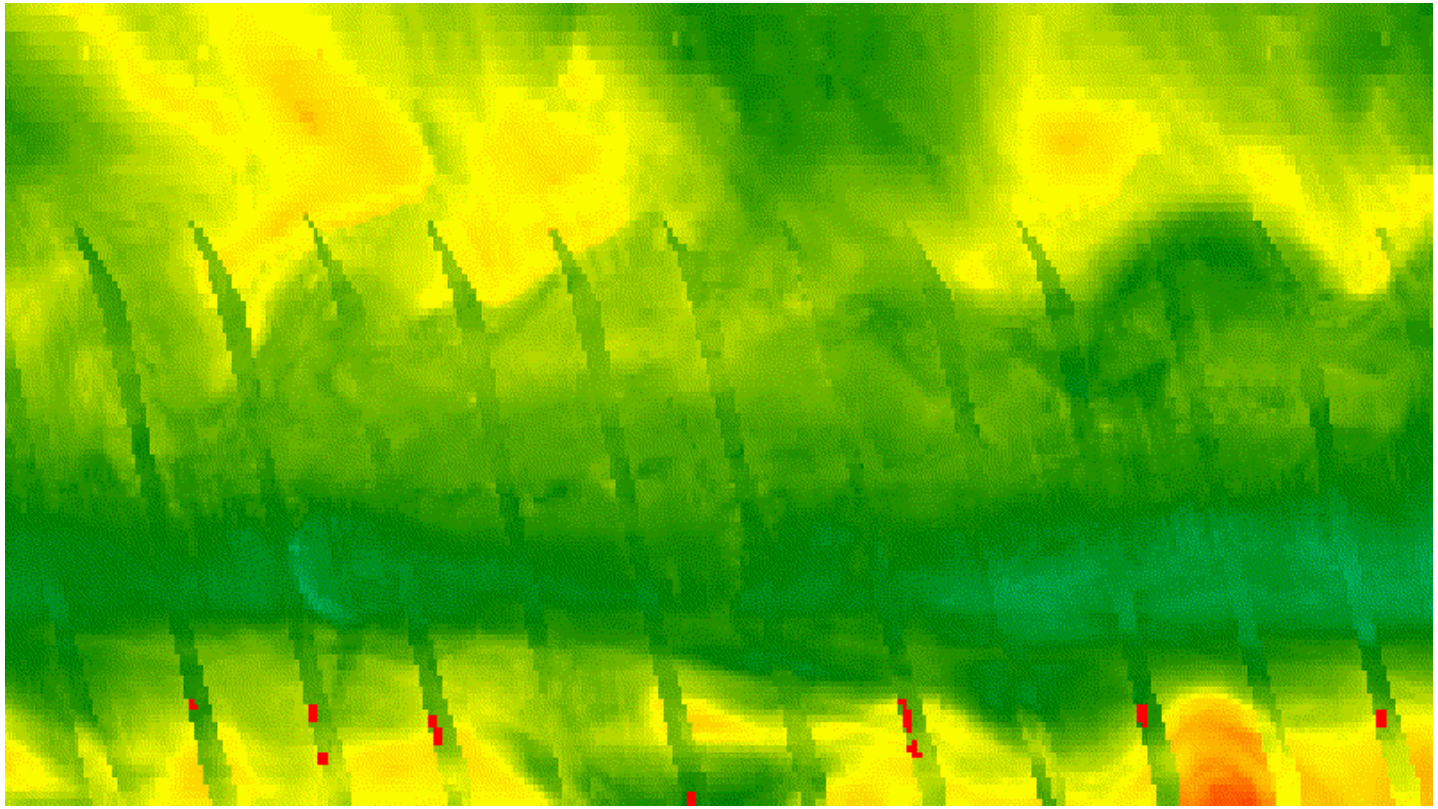
- **Climate**



- Sentinel5P : CH4, NO2, Cloud,
- SPEIbase: Standardised Precipitation-Evapotranspiration Index database
- Global Change Observation Mission’s L3 Leaf Area Index (V1)

Climate and Weather

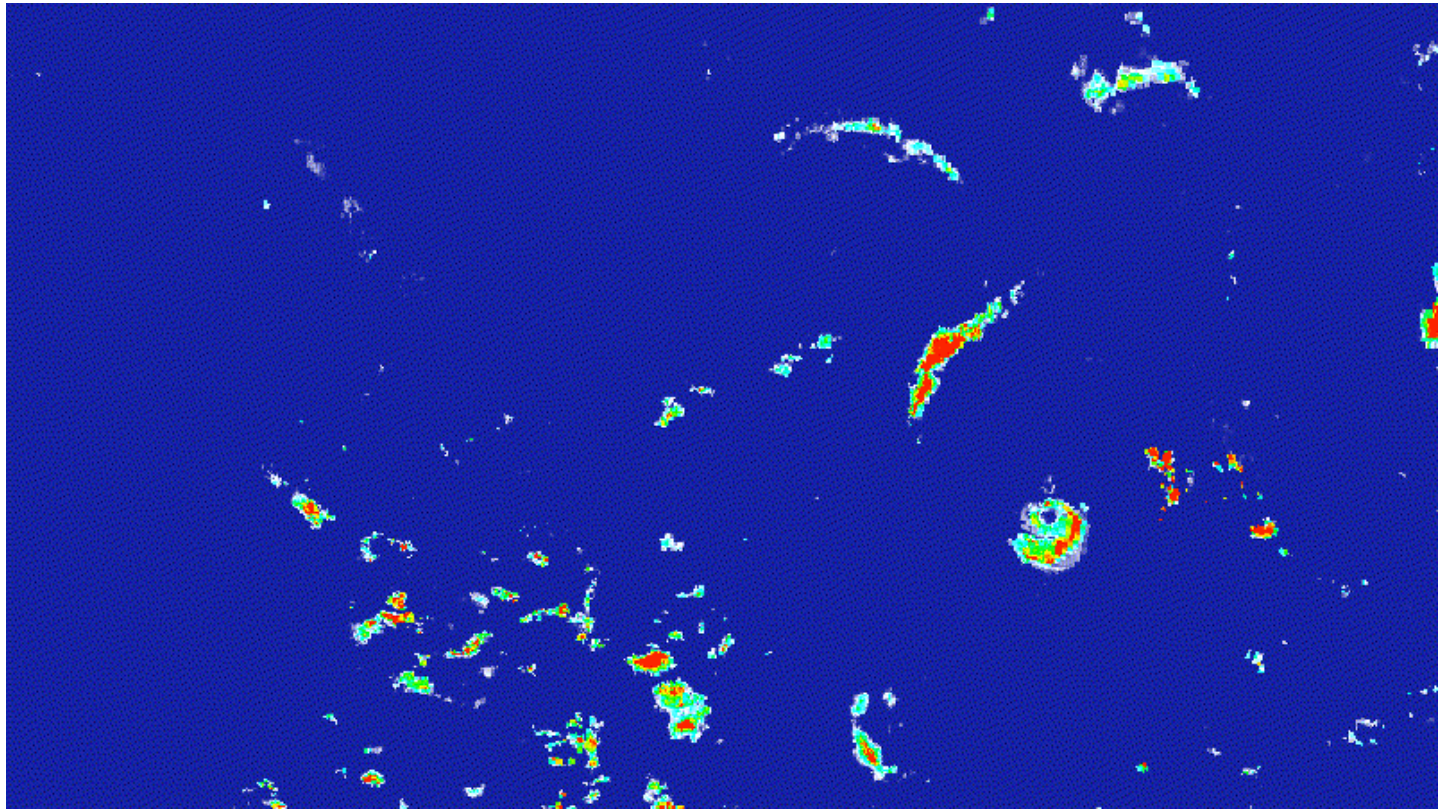
- **Atmospheric**



- Copernicus Atmosphere Monitoring Service (CAMS) Global Near-Real-Time
- TOMS and OMI Merged Ozone Data
- National Center for Atmospheric Research’s Reanalysis Data, Water Vapor

Climate and Weather

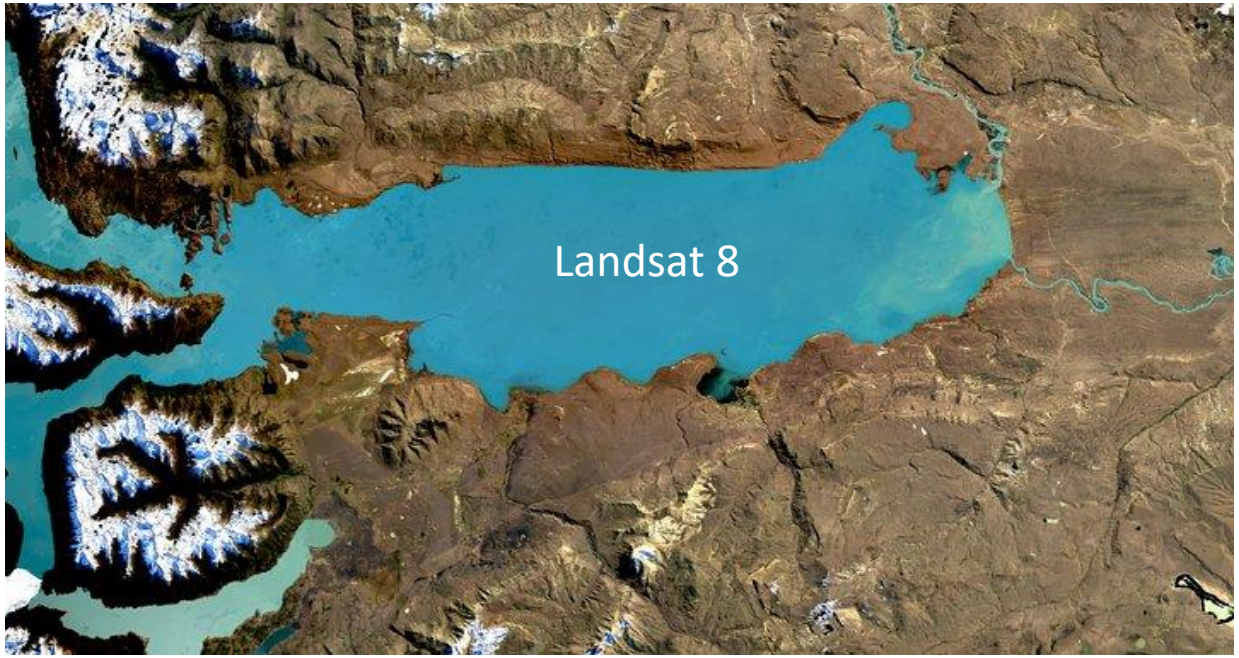
- **Weather**



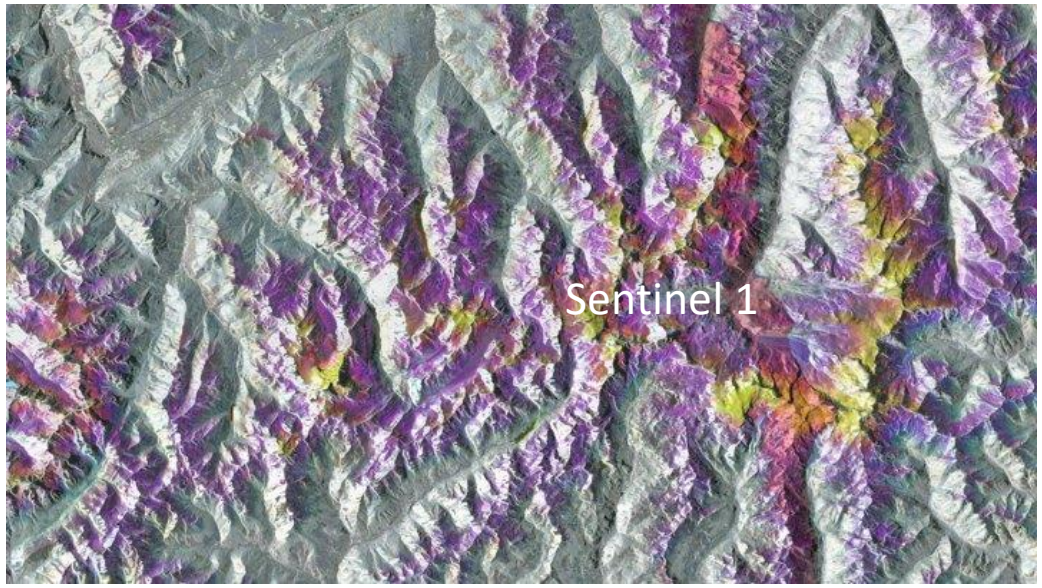
- SPL4SMGP.007 SMAP L4 Global 3-hourly 9-km Surface and Root Zone Soil Moisture

Imagery

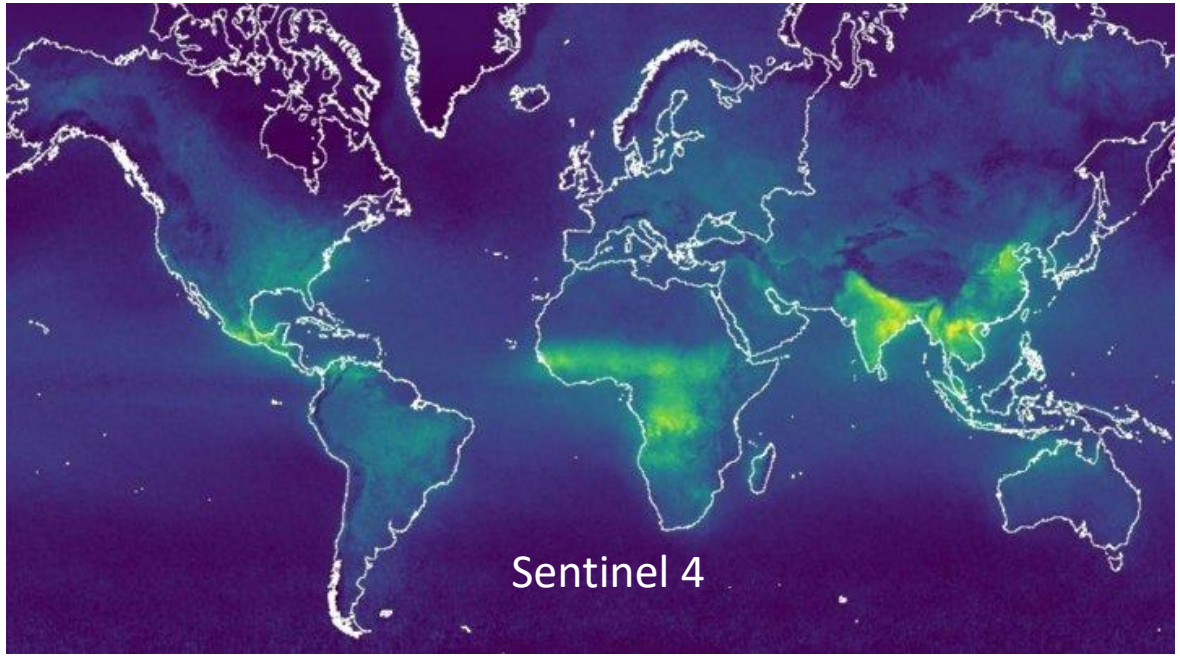
- **Landsat**



Imagery

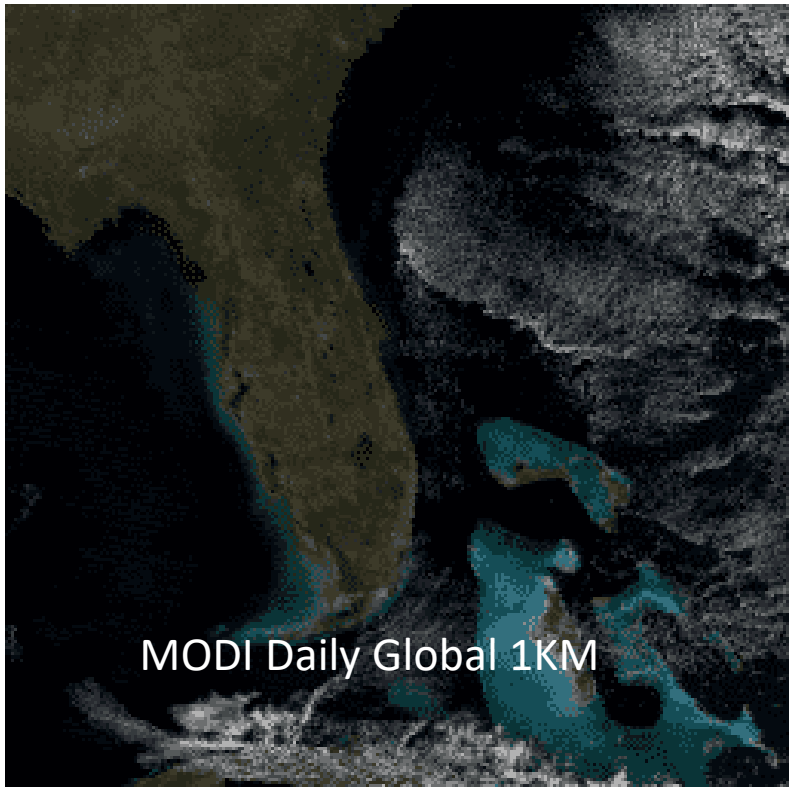


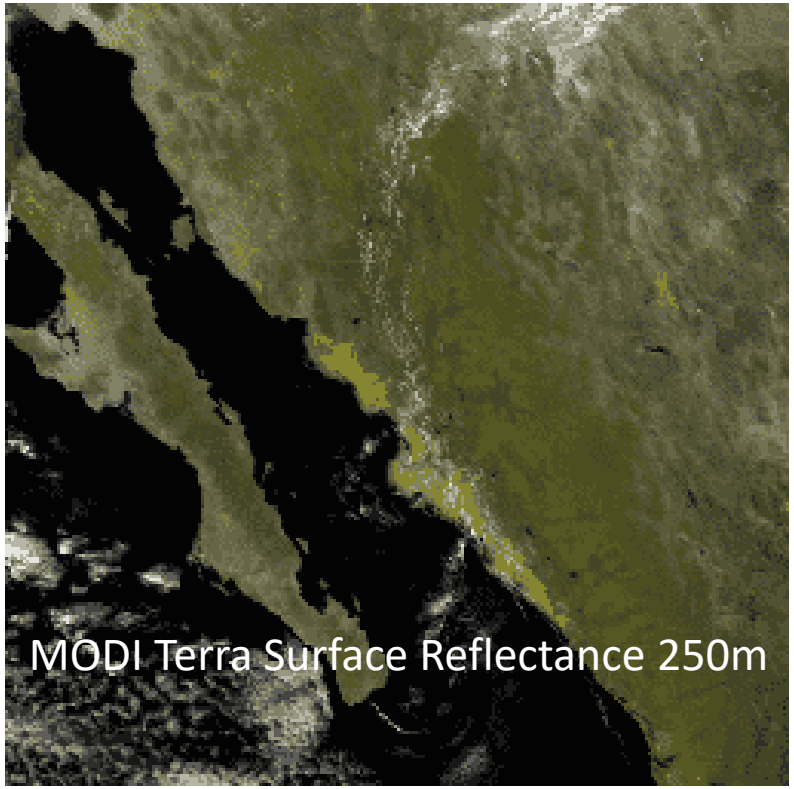
- **Sentinel**

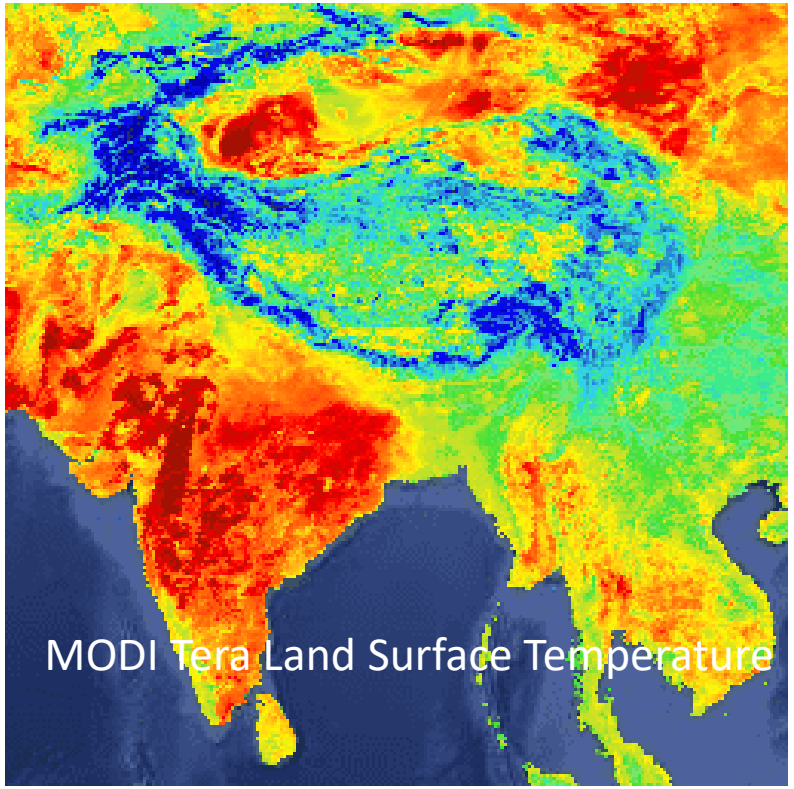


Imagery

- **MODIS**

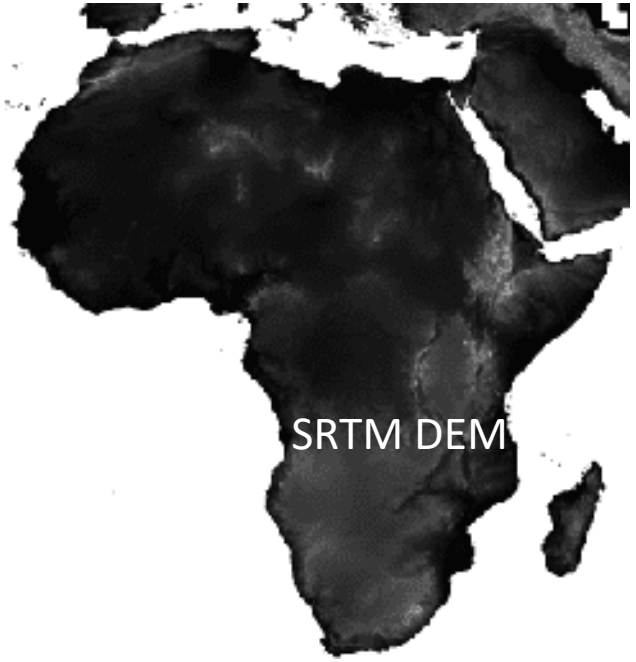

MODI Daily Global 1KM

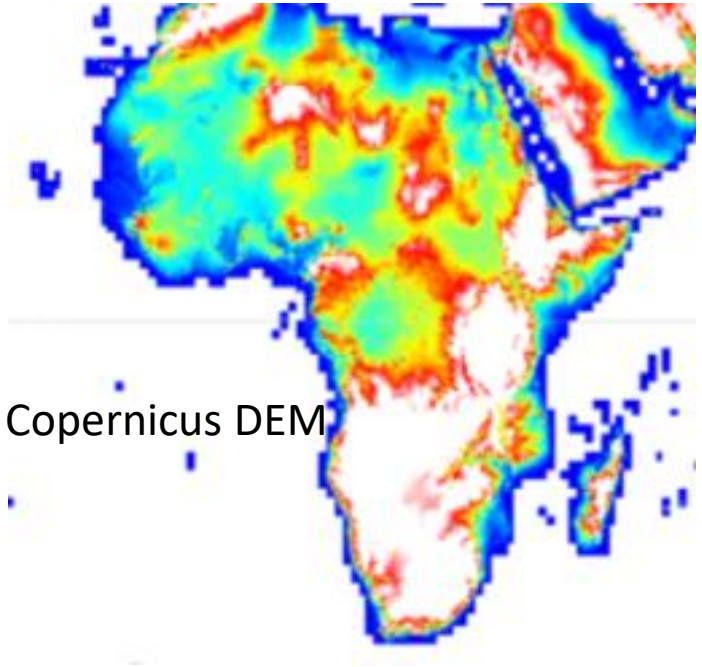

MODI Terra Surface Reflectance 250m

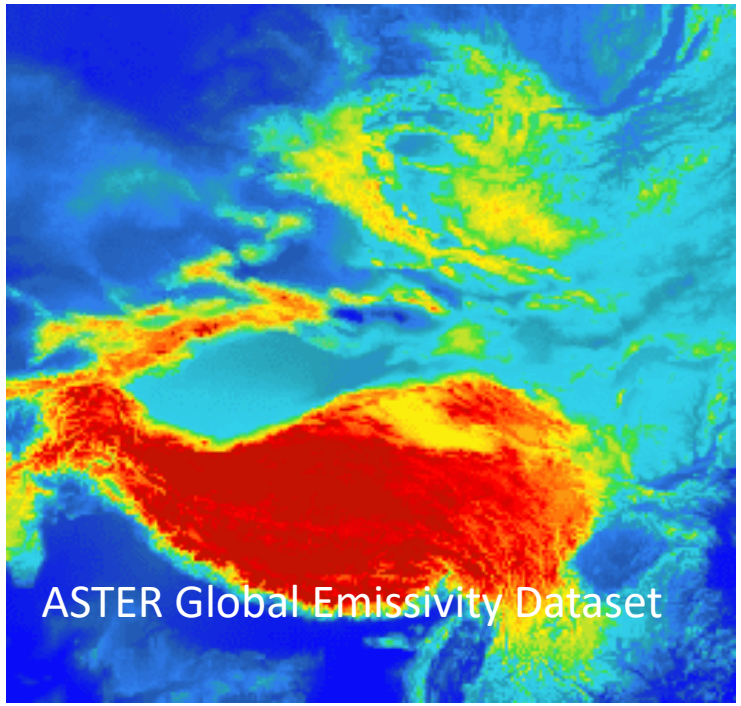

MODI Tera Land Surface Temperature

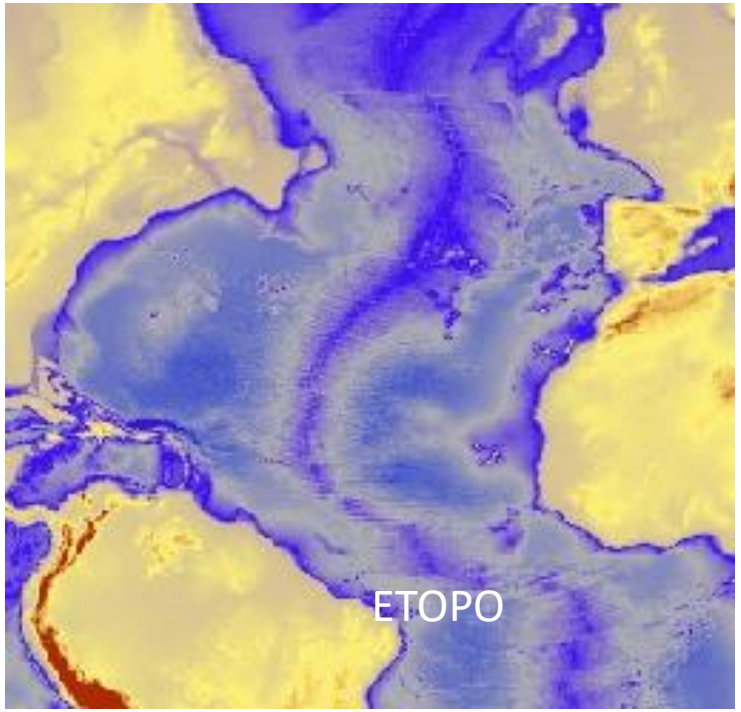
Geophysical

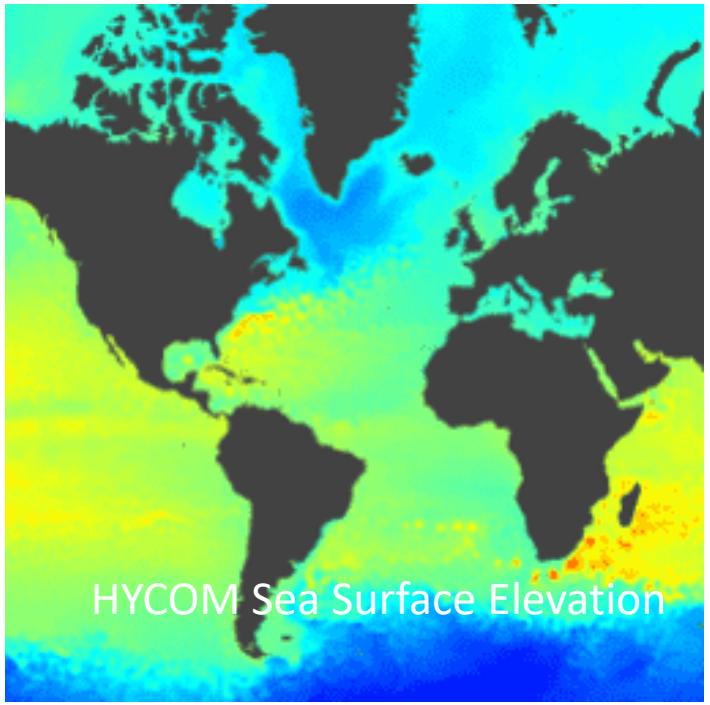
- **Terrain**





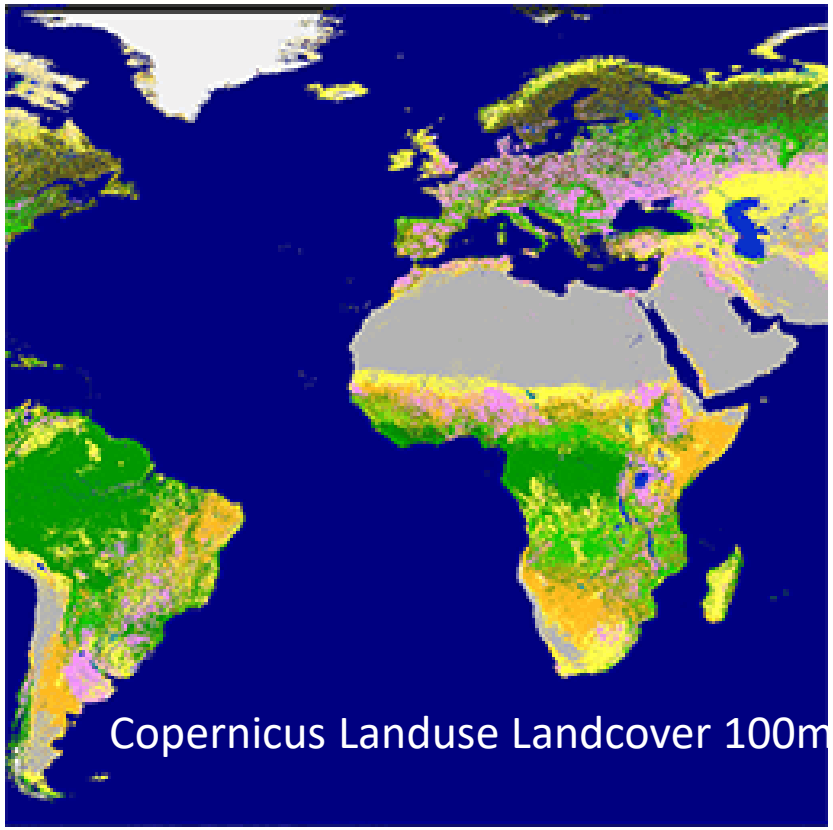


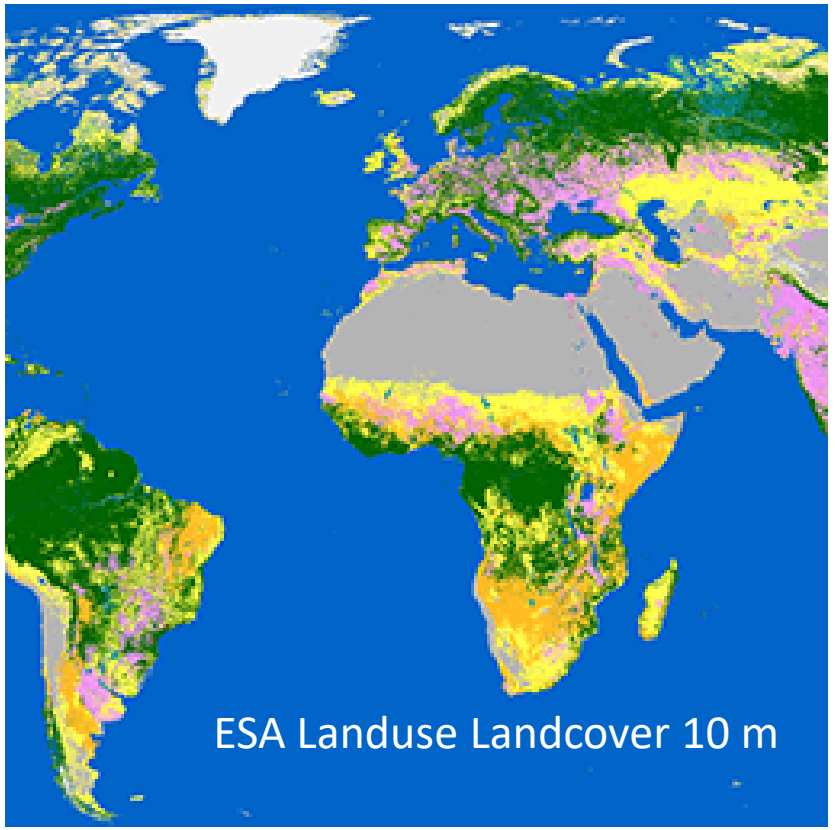


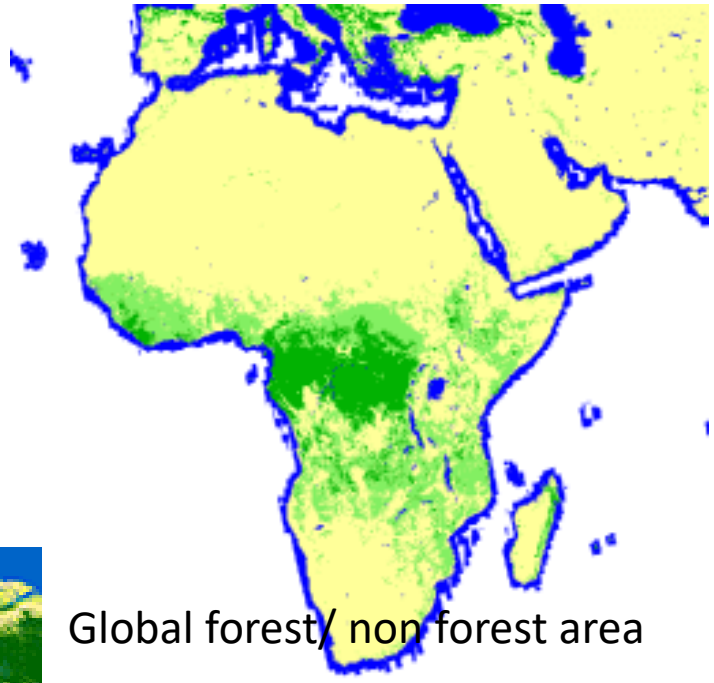


Geophysical

- **Land Cover**



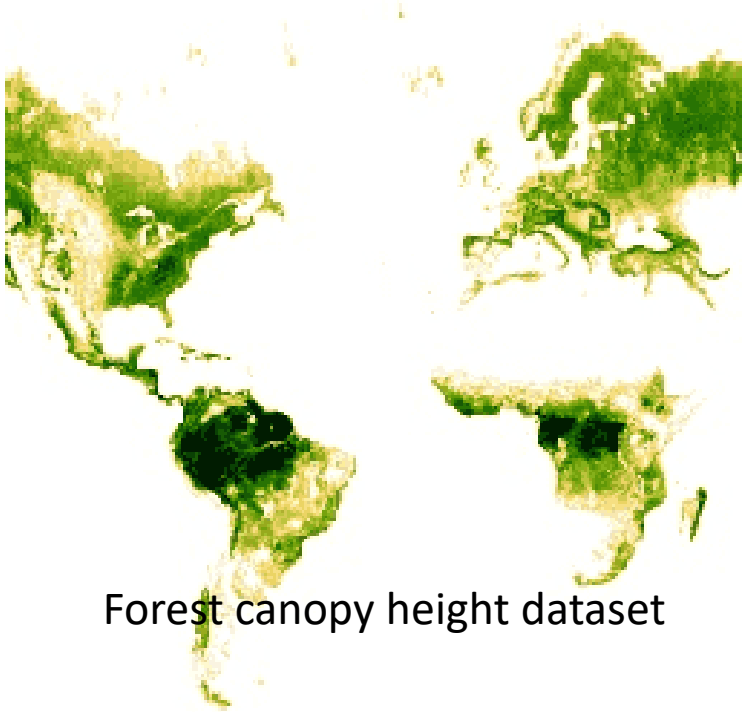




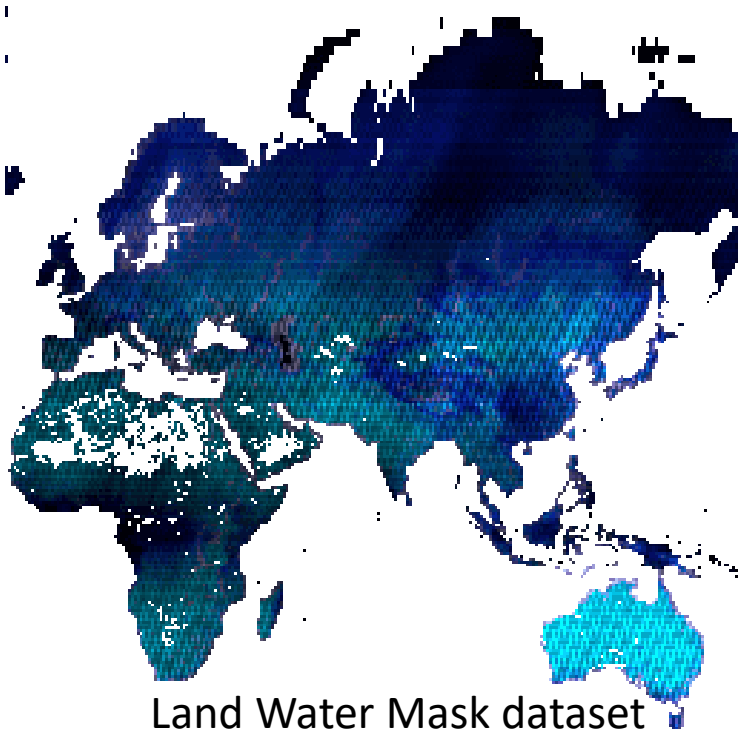
Global forest/ non forest area

Geophysical

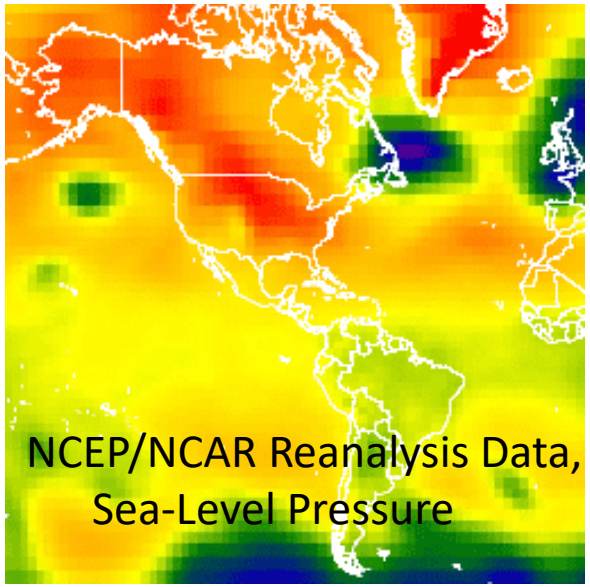
- Other



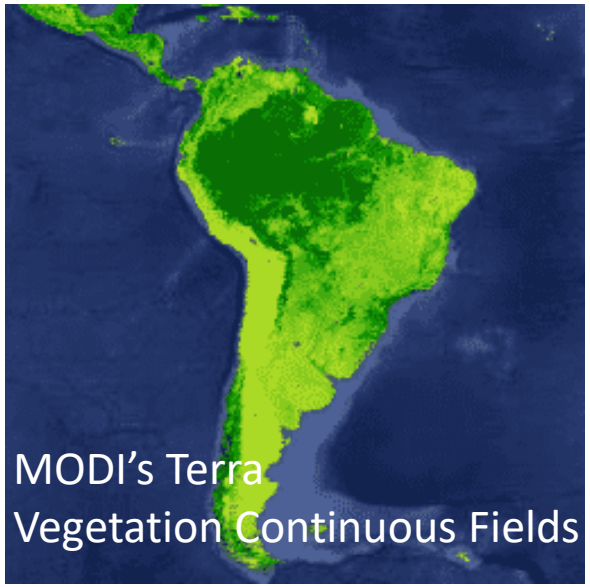
Forest canopy height dataset



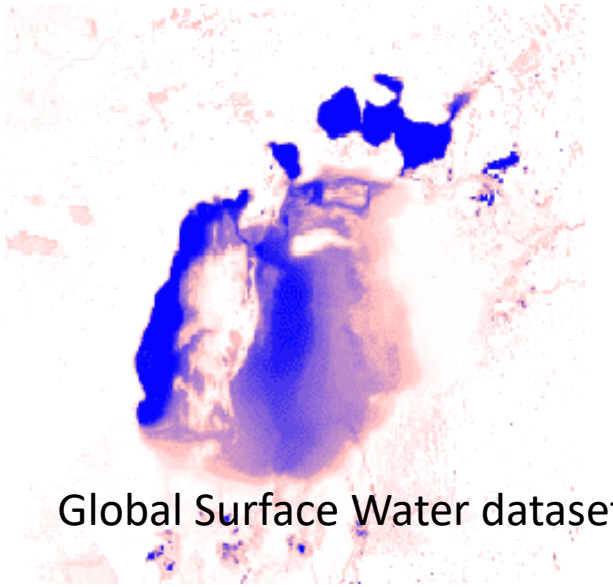
Land Water Mask dataset



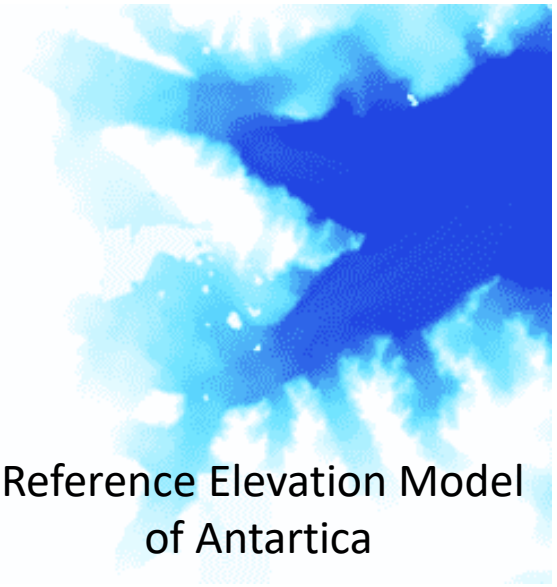
NCEP/NCAR Reanalysis Data, Sea-Level Pressure



MODI's Terra Vegetation Continuous Fields



Global Surface Water dataset



Reference Elevation Model of Antartica

Working with Google Earth Engine