

# Global Bathymetry Exploration and Creation of a Resolution Portfolio

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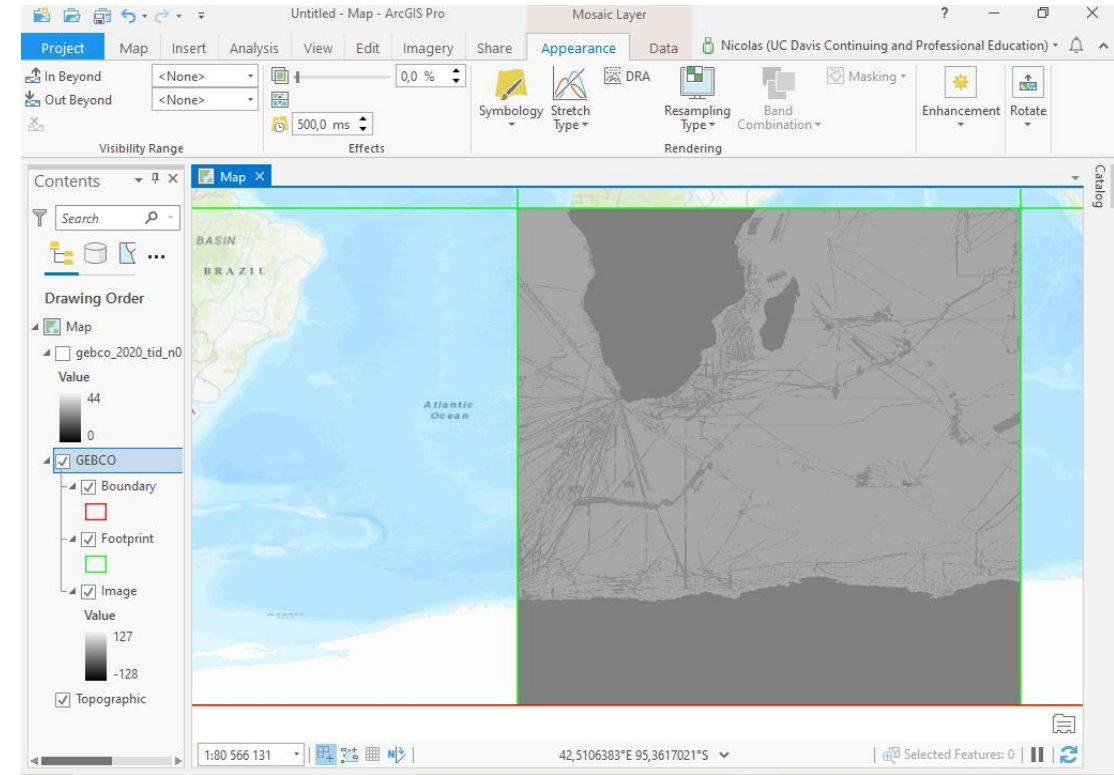
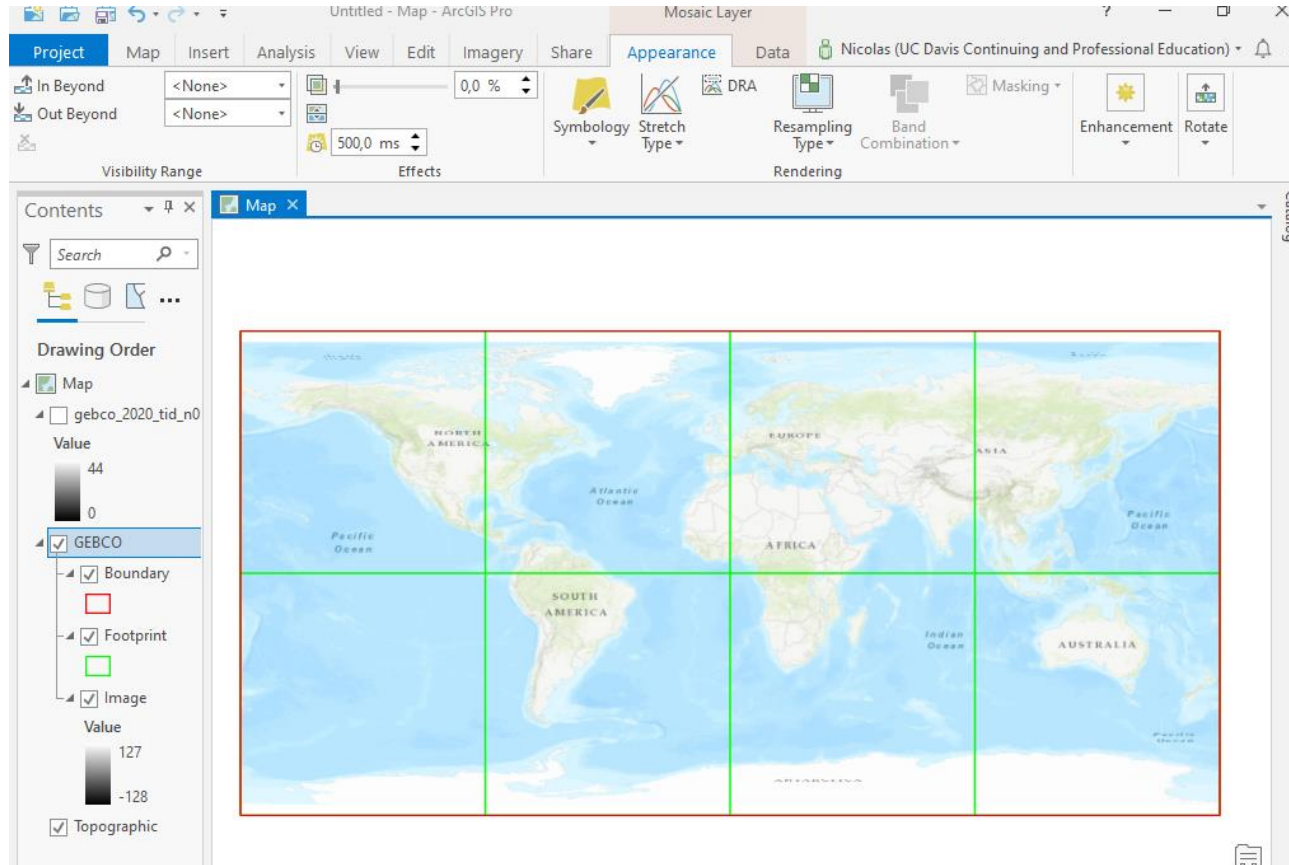
Reference:

[https://www.gebco.net/data\\_and\\_products/gridded\\_bathymetry\\_data/#global](https://www.gebco.net/data_and_products/gridded_bathymetry_data/#global)

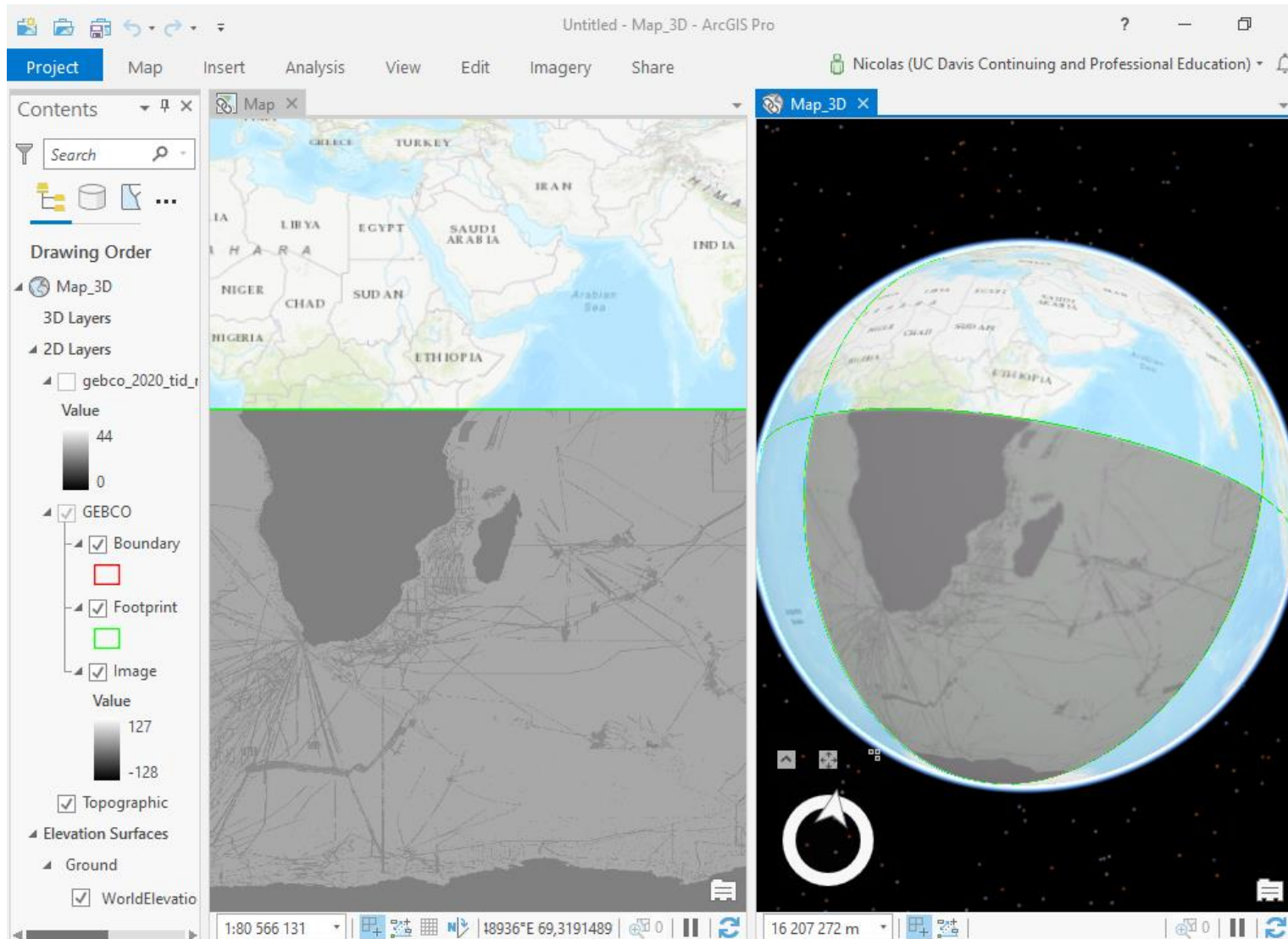
# Outlining Process

- The aim of this project will be first to create mosaic dataset from Global Bathymetry data (General Bathymetric Chart of the Oceans (GEBCO) 2020)
- Then, the exploration of this data will be performed by converting into Global 3D Scene
- Actual data with measurements of depth will also be explored in this context
- Finally, a resolution portfolio will be presented for 3 different remote sensing sensors

# Global mosaic dataset from the Tile Index for the planet – 8 tiles, in 90° by 90°.



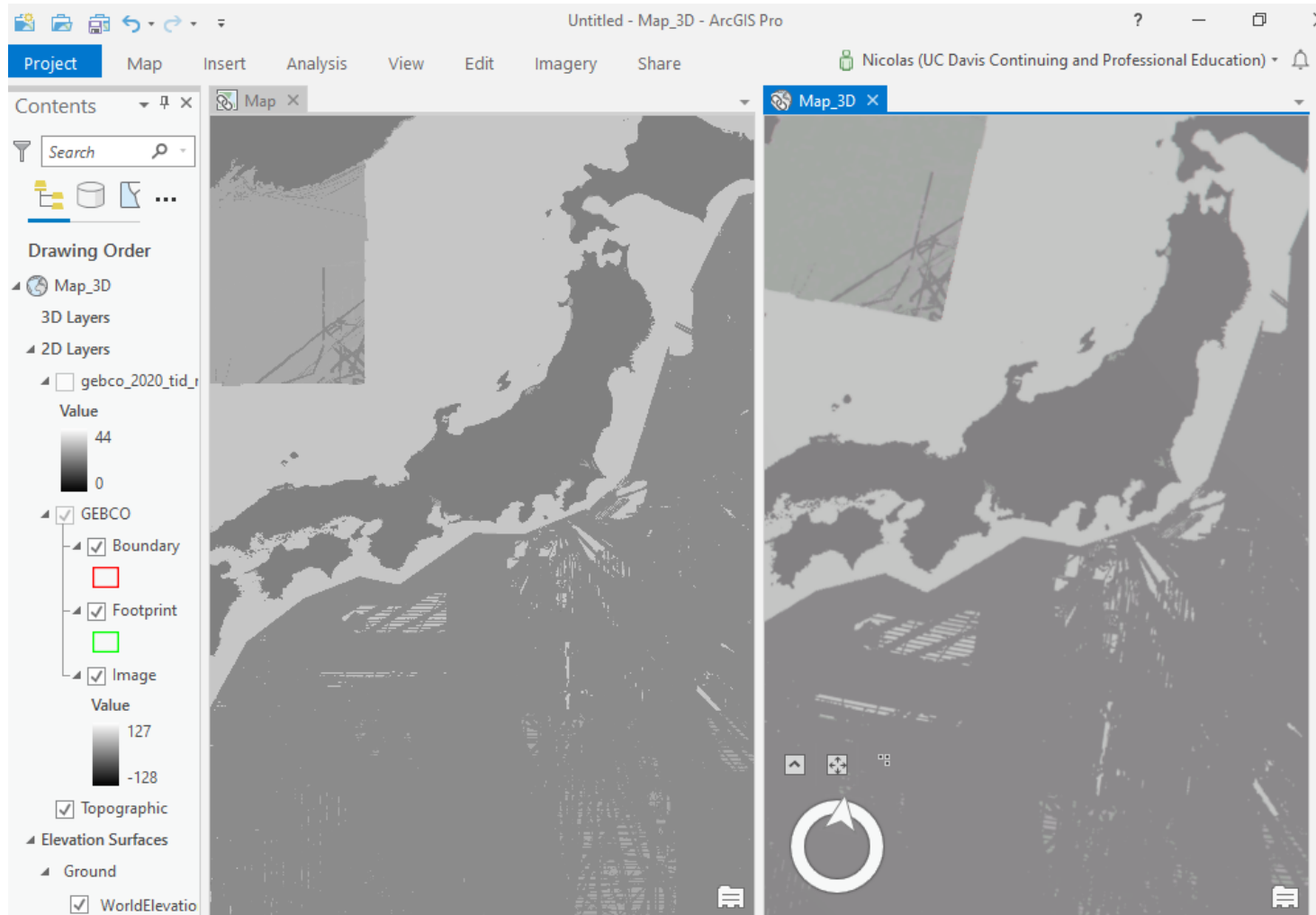
# Conversion to a Global 3D Scene 1



Localisation: focus on  
South Africa and Indian  
Ocean

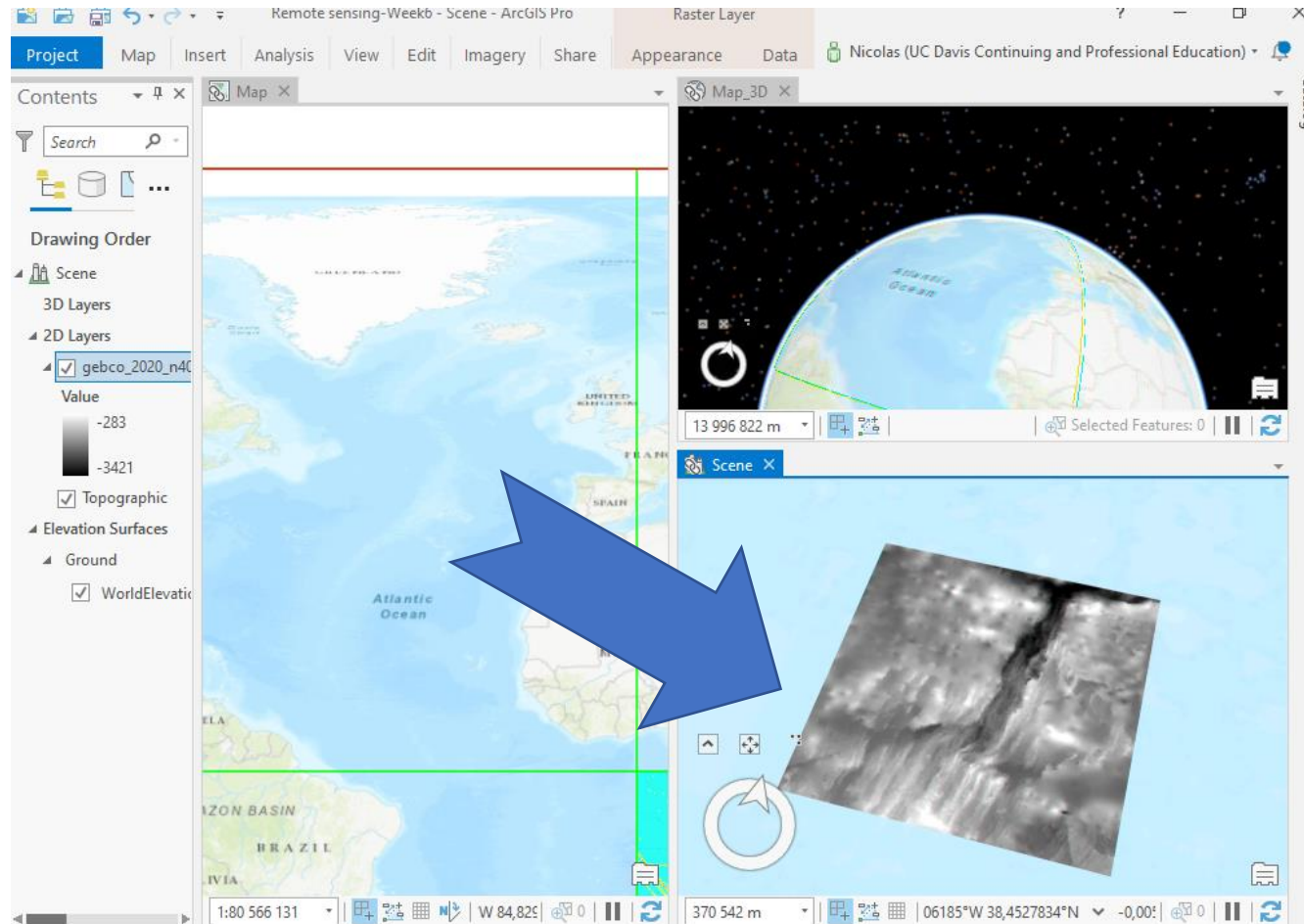
- The scatter of zig-zagged lines represents ship tracks

# Conversion to a Global 3D Scene 2



- Localisation: focus on Japan and Pacific Ocean
- The scatter of zig-zagged lines represents ship tracks

# Explore and acquire the actual data with measurements of depth



Reference

<https://download.gebco.net/>



# Resolution Portfolio: Sensor presentation

- Landsat 8  
Instruments.  
Operational Land  
Imager (OLI)
  - Multispectral
  - Satellite sensor
  - Application example:  
assesing bush fire  
spreading over time
- Airborne Visible /  
Infrared Imaging  
(AVIRIS)
  - Hyperspectral
  - Airborne sensor
  - Application example:  
assessing CO2  
measurements on a  
specific area
- Advanced Very High  
Resolution Radiometer  
(AVHRR)
  - Multispectral
  - Satellite sensor
  - Assessing plant  
phenology over season

# Resolution Portfolio: Sensor data reference

- Landsat OLI 8

[https://www.usgs.gov/land-resources/nli/landsat/landsat-8?qt-science\\_support\\_page\\_related\\_con=0#qt-science\\_support\\_page\\_related\\_con](https://www.usgs.gov/land-resources/nli/landsat/landsat-8?qt-science_support_page_related_con=0#qt-science_support_page_related_con)

- AVIRIS

<https://aviris.jpl.nasa.gov/dataportal/>

- AVHRR

<https://earthexplorer.usgs.gov/>



# Resolution Portfolio: spatial resolution

- Landsat OLI 8

- Cell size X: 30

- Cell size Y: 30

- AVIRIS

- Cell size X: 36.04 m

- Cell size Y: 4.98 m

- AVHRR

- Cell size X: 1000 m

- Cell size Y: 1000 m

# Resolution Portfolio: spectral resolution

- Landsat OLI 8
  - 8 bands (multispectral data)
- AVIRIS
  - 224 bands (Hyperspectral data)
- AVHRR
  - 1 band (multispectral data)

## ▼ Band Metadata

- CoastalAerosol
- Blue
- Green
- Red
- NearInfrared
- ShortWaveInfrared\_1
- ShortWaveInfrared\_2
- Cirrus

# Resolution Portfolio: temporal resolution

- Landsat OLI 8

- 16 Day Repeat Cycle

- AVIRIS

- Since 1989 over 4000 scenes

- AVHRR

- Twice a day

# Resolution Portfolio: Radiometric resolution

- Landsat OLI 8

- Pixel depth: 16 Bit

- AVIRIS

- Pixel depth: 32 Bit

- AVHRR

- Pixel depth: 8 Bit