

Transforming Science Data for GIS: How to Find and Use NASA Earth Observation Data Without Being a Rocket Scientist



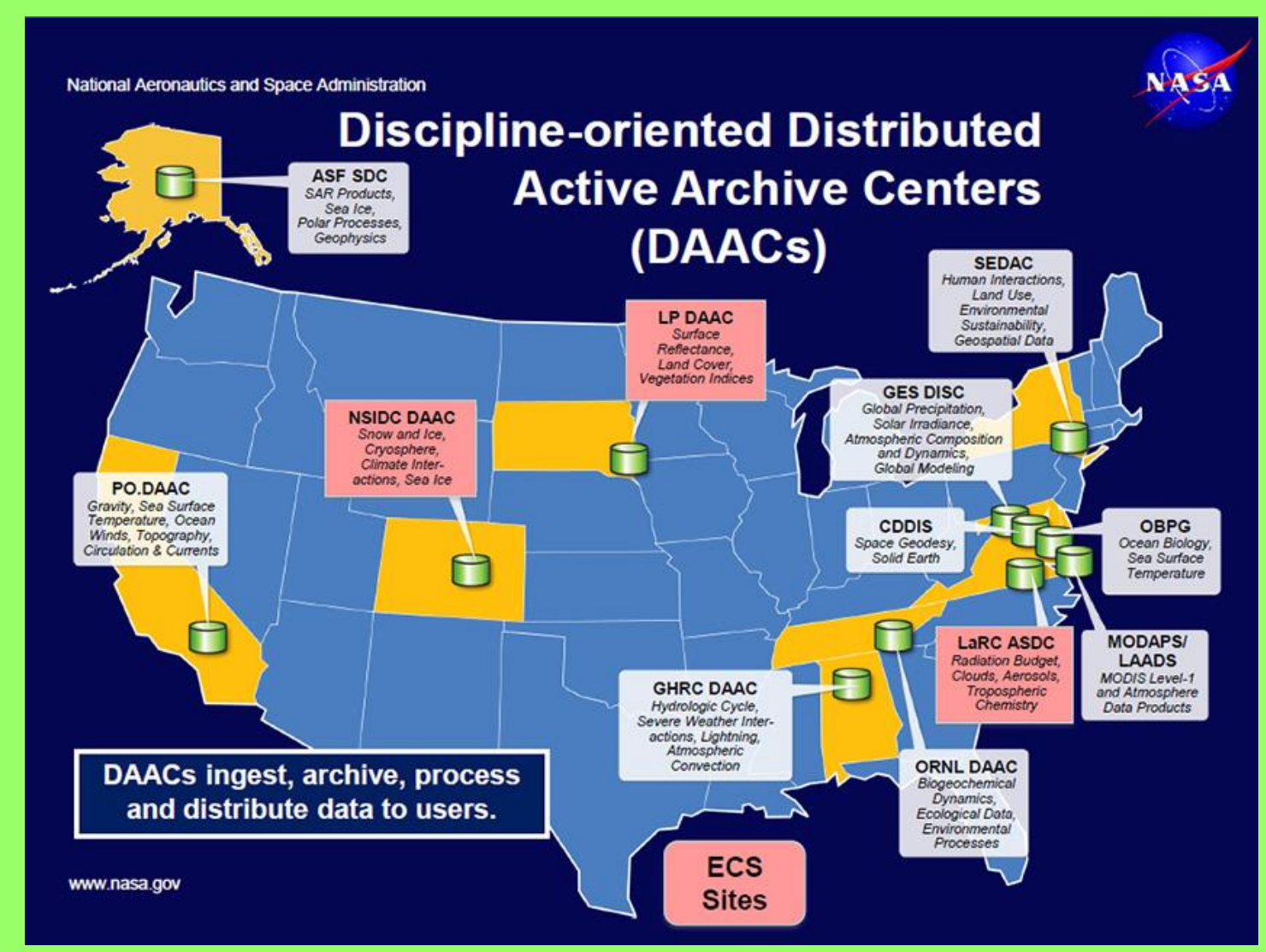
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NASA's Earth Observing System Data Information System (EOSDIS) manages Earth Observation satellites and the Distributed Active Archive Centers (DAACs), where the data is stored and processed.

The Challenge:
Earth Observation data is complicated. There is plenty of data available, however, the science teams have had a "top-down" approach: define what it is you are trying to study - select a set of satellite(s) and sensor(s), and drill down for the data.

Click on the QR code next to the image for the data recipe

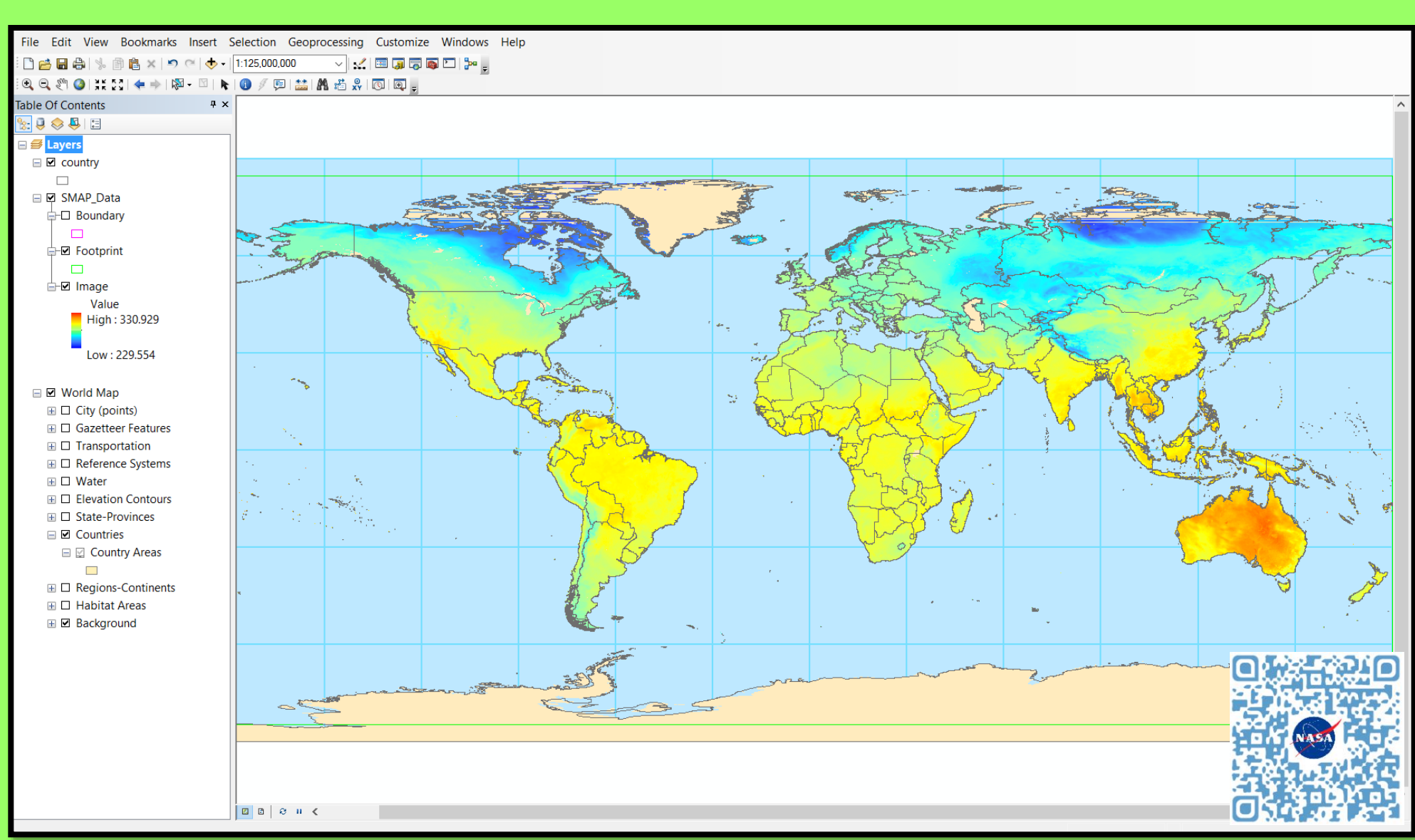
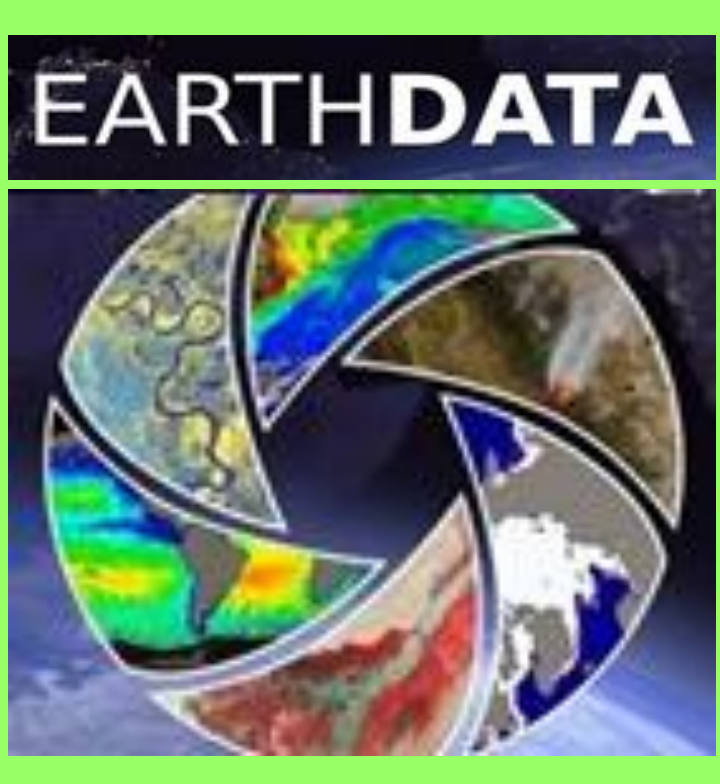


OGC Sources:

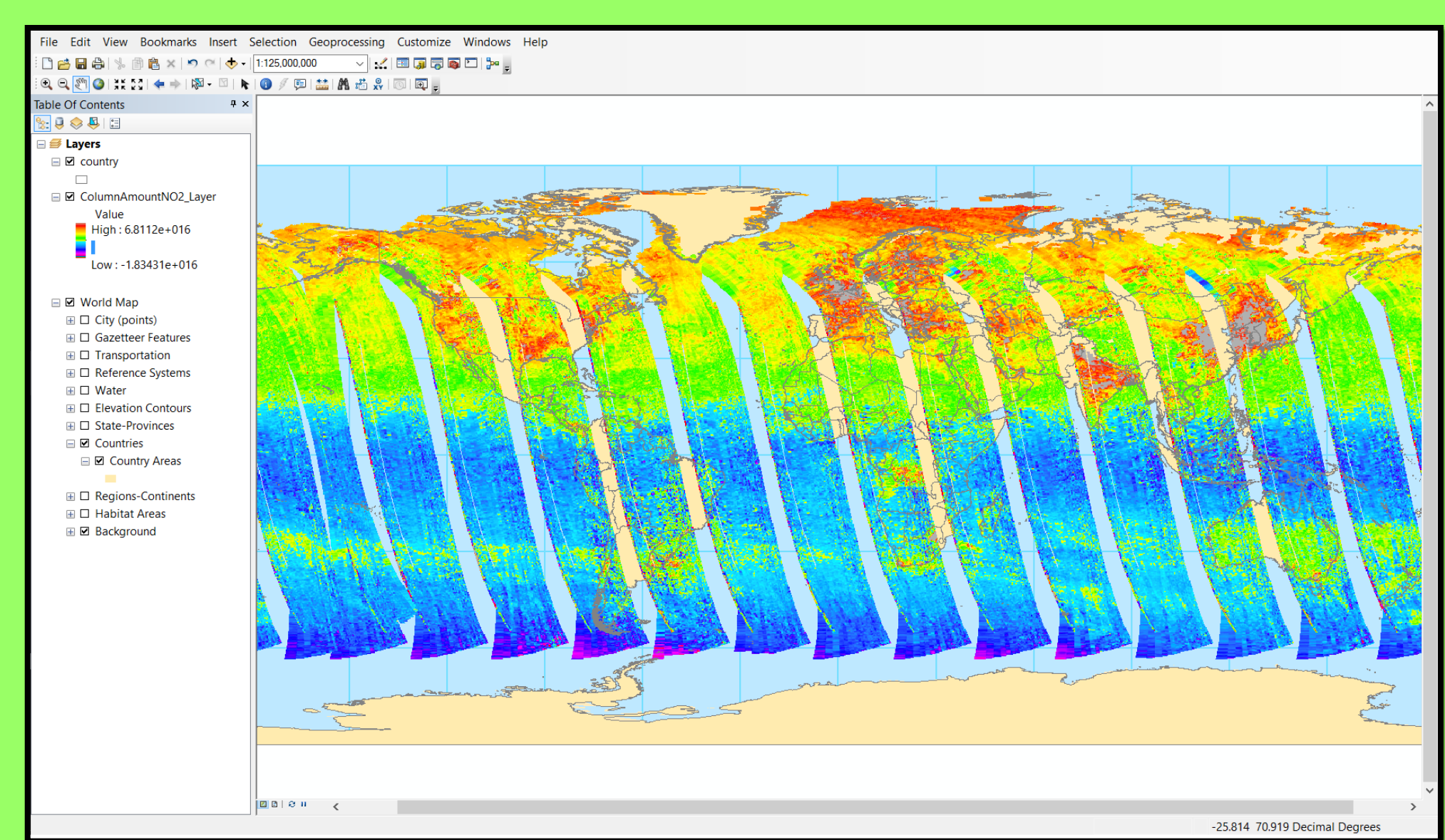
ASF DAAC: (WMS)	ASDC: (Portal)	GES DISC: (WMS)
NSIDC DAAC: (WMS)	ORNL DAAC: (WMS, WCS)	PO.DAAC: (WMS, WCS)
SEDAC: (WMS, WFS, WMTS, WCS)	ArcGIS REST:	NASA Earth Observations: (WMS)

Our alternative is to take a "bottom-up" approach using eight environmental fields of interest as defined by the Group on Earth Observations (GEO) called Societal Benefit Areas (SBAs):

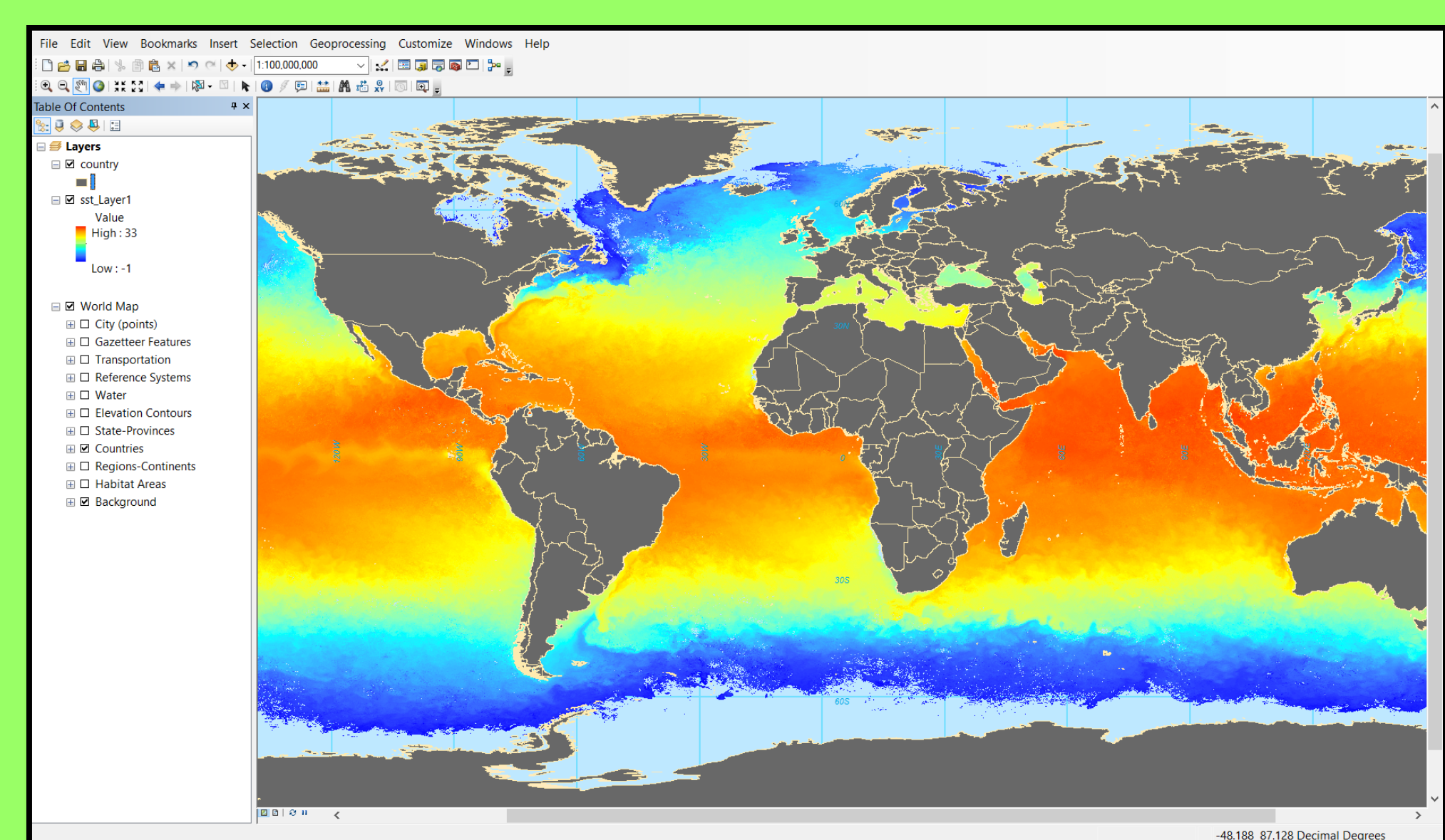
- Disaster Resilience (DR)
- Public Health Surveillance (PHS)
- Energy and Mineral Resource Management (EMRM)
- Water Resources Management (WRM)
- Infrastructure and Transport Management (ITM)
- Sustainable Urban Development (SUD)
- Food Security and Sustainable Agriculture (FSSA)
- Biodiversity and Ecosystems Sustainability (BES)



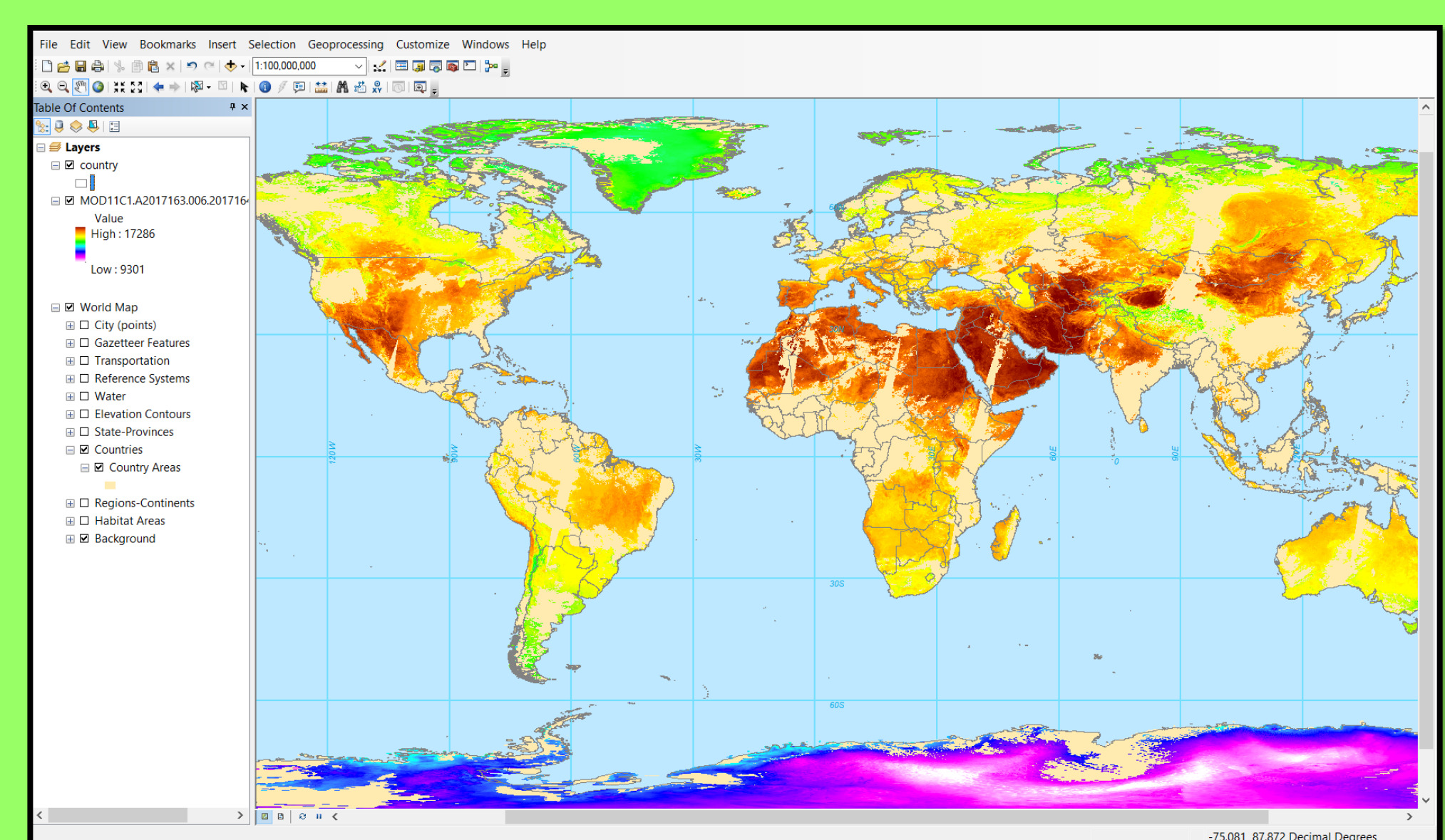
SMAP L4 9km EASE-Grid Surface and Root Zone Soil Moisture Geophysical Data, v2 (Geophysical_Data_surface_temp); HDF5 (.h5) format, from NSIDC DAAC; SBAs: WRM, FSSA, DR



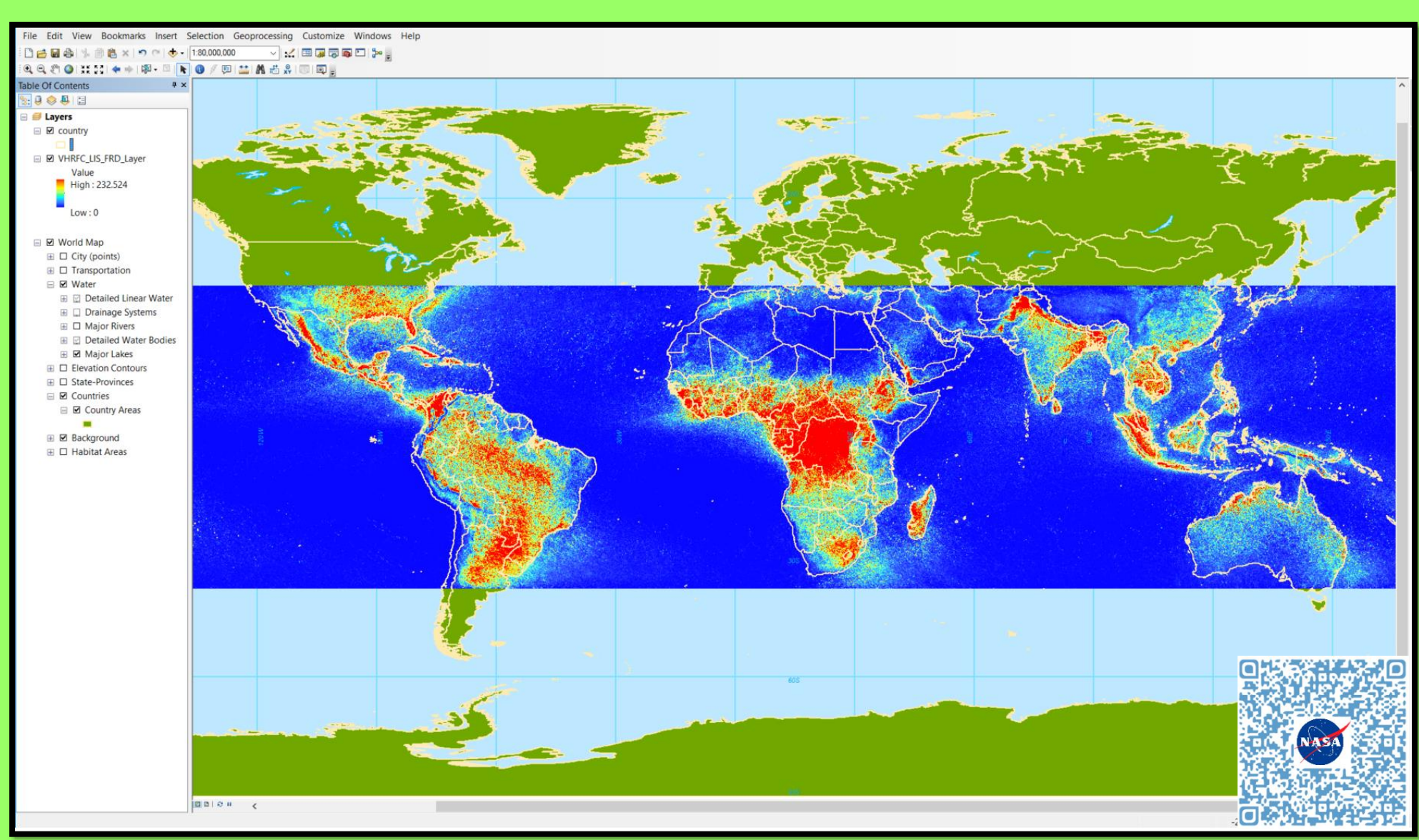
OMI Aura Level 3 Nitrogen Dioxide (NO2) Cloud-Screened Total and Tropospheric Column Gridded, 0.25 deg x 0.25 deg (ColumnAmountNO2_Layer); NetCDF format, from GES DISC; SBAs: FSSA, DR, PHS



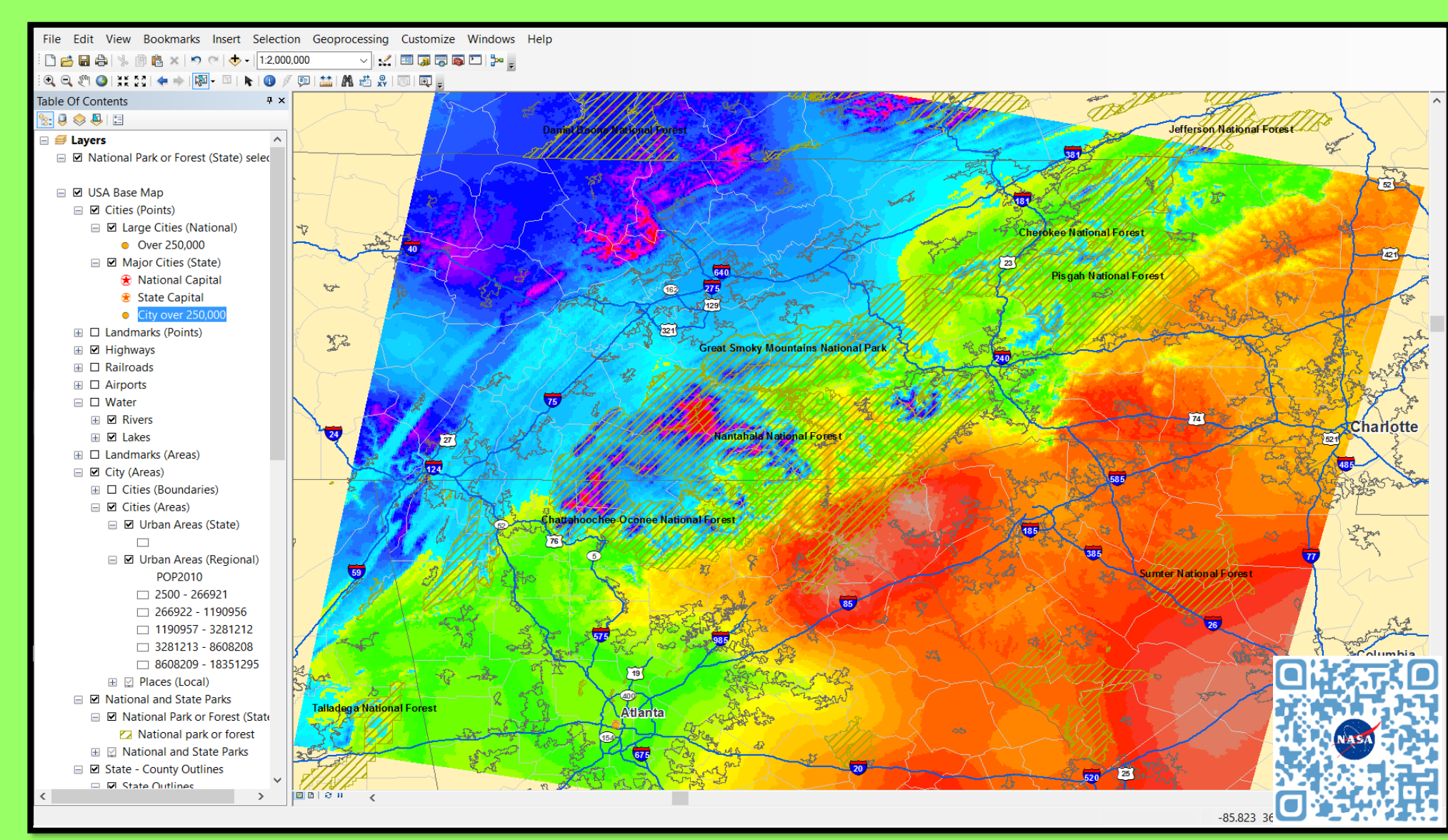
MODIS Terra Level 3 Sea Surface Temperature (SST) Thermal Infrared (IR) Monthly 4km Daytime version 2014; NetCDF format, from PO.DAAC; SBAs: BES, WRM



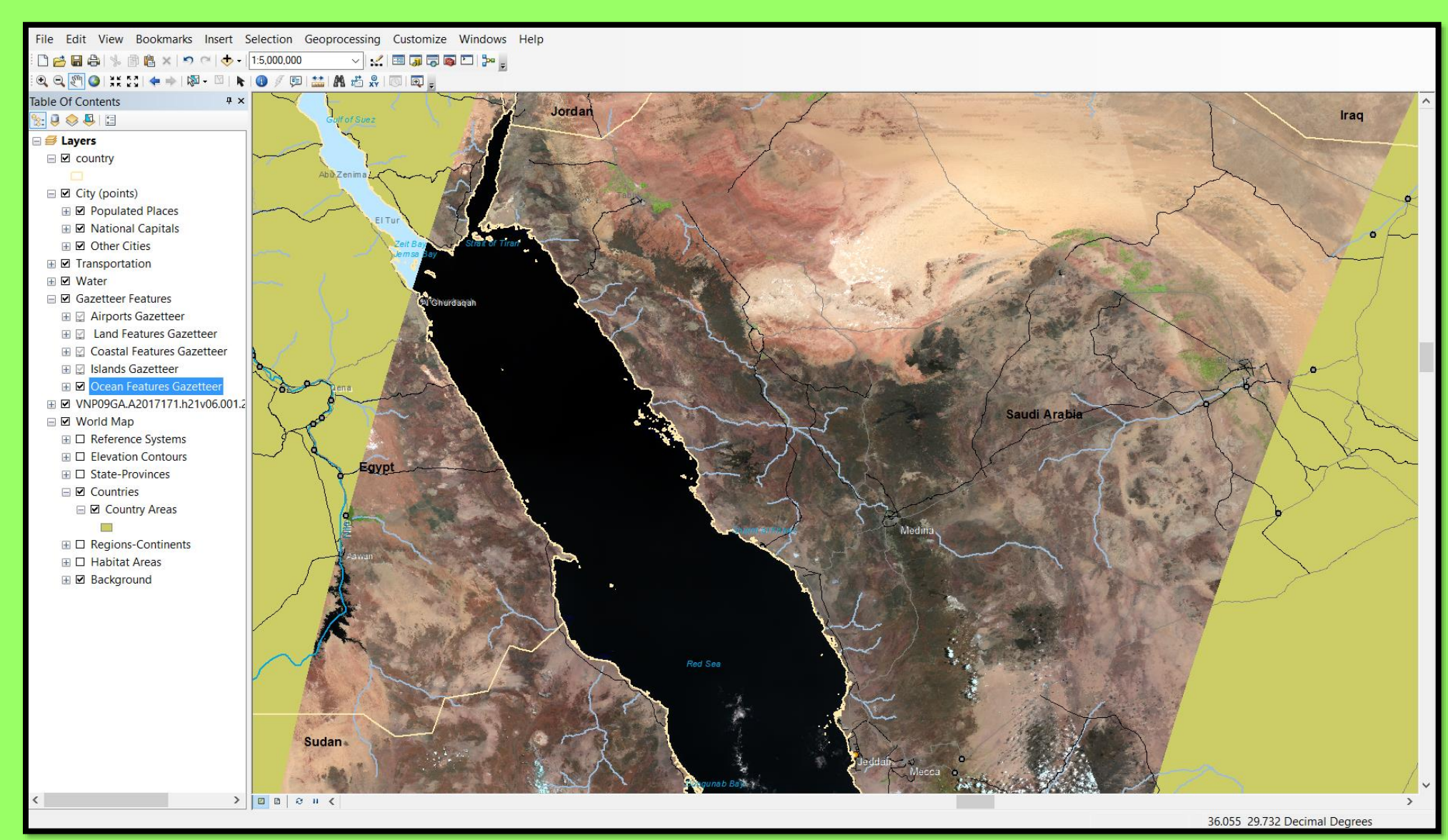
MODIS Terra version 6 Land Surface Temperature and Emissivity Daily Level 3 Global 0.05-degree CMG V006 (LST_Day_CMG); HDF-EOS4 (.hdf) format, from LP DAAC; SBAs: FSSA, BES, DR, PHS



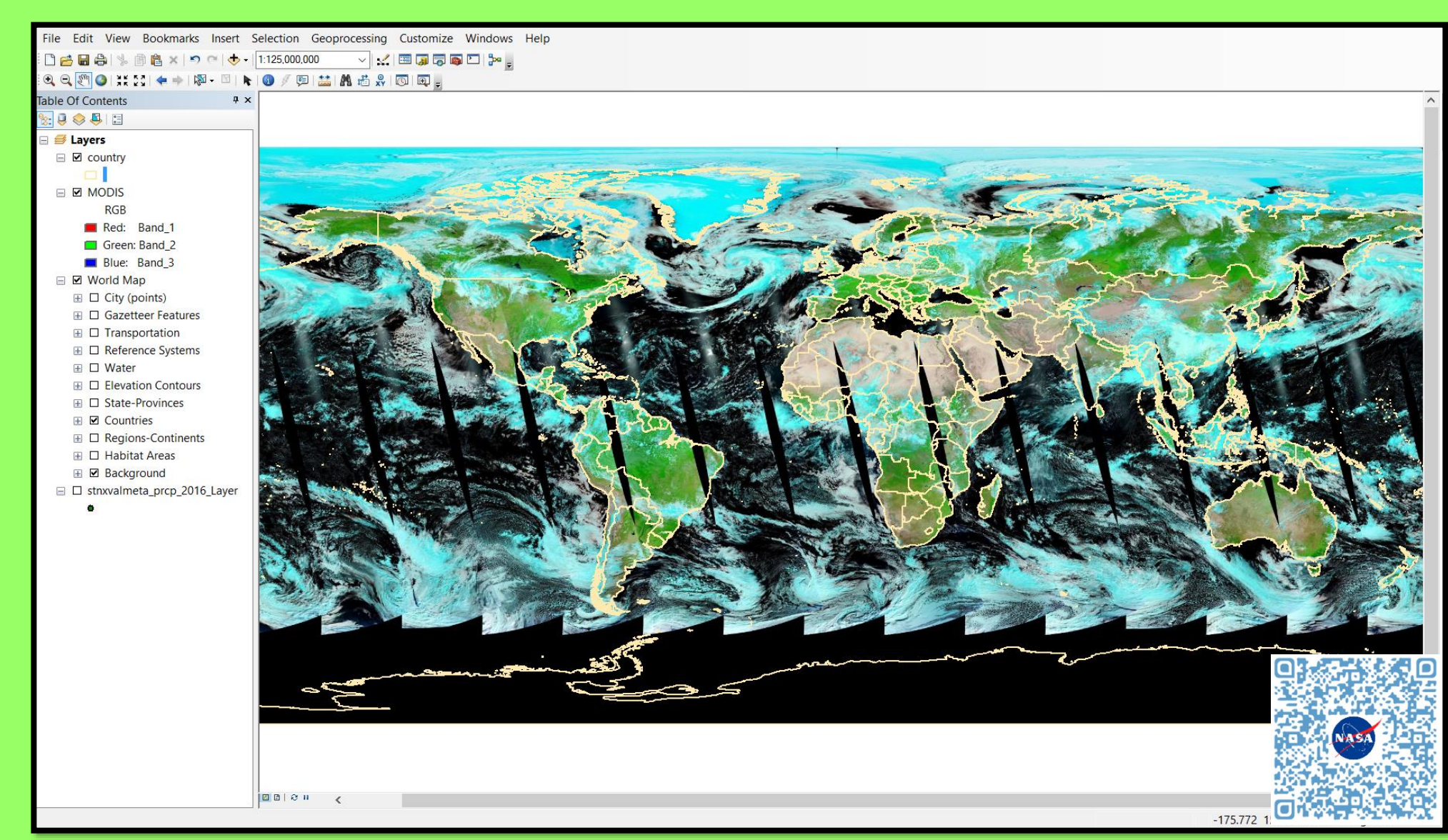
Very High Resolution Lightning Climatology dataset, compiled from Lightning Imaging Sensor (LIS) 0.1 degree data from TRMM collected over 17 years; NetCDF (.nc) format, from GHRC DAAC; SBAs: BES, FSSA, DR



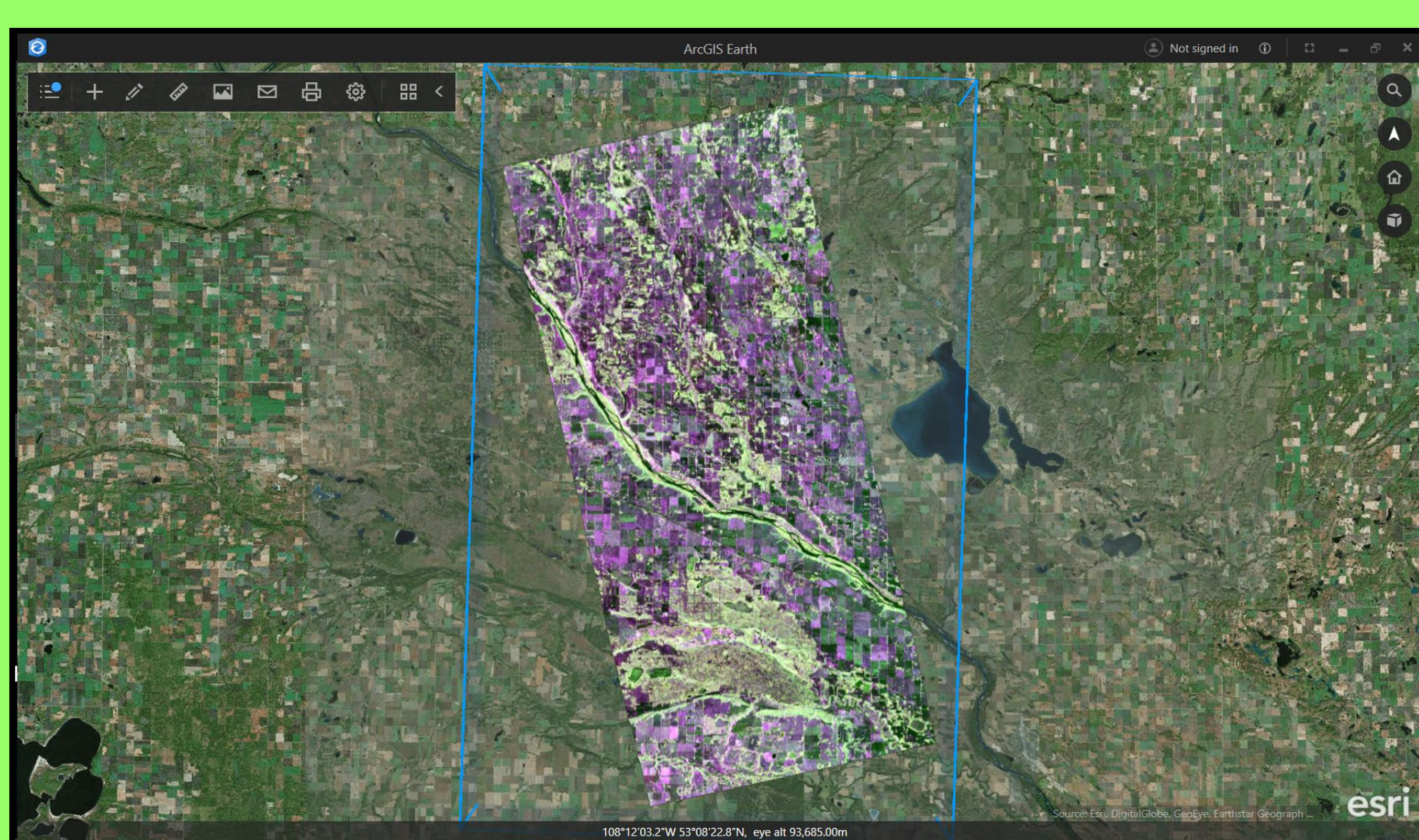
Daymet version 3 Daily Gridded Surface Data 1km, Daily Maximum Temperature (tmax) 2016, area near Great Smoky Mountains National Park; NetCDF format, from ORNL DAAC; SBAs: FSSA, ITM



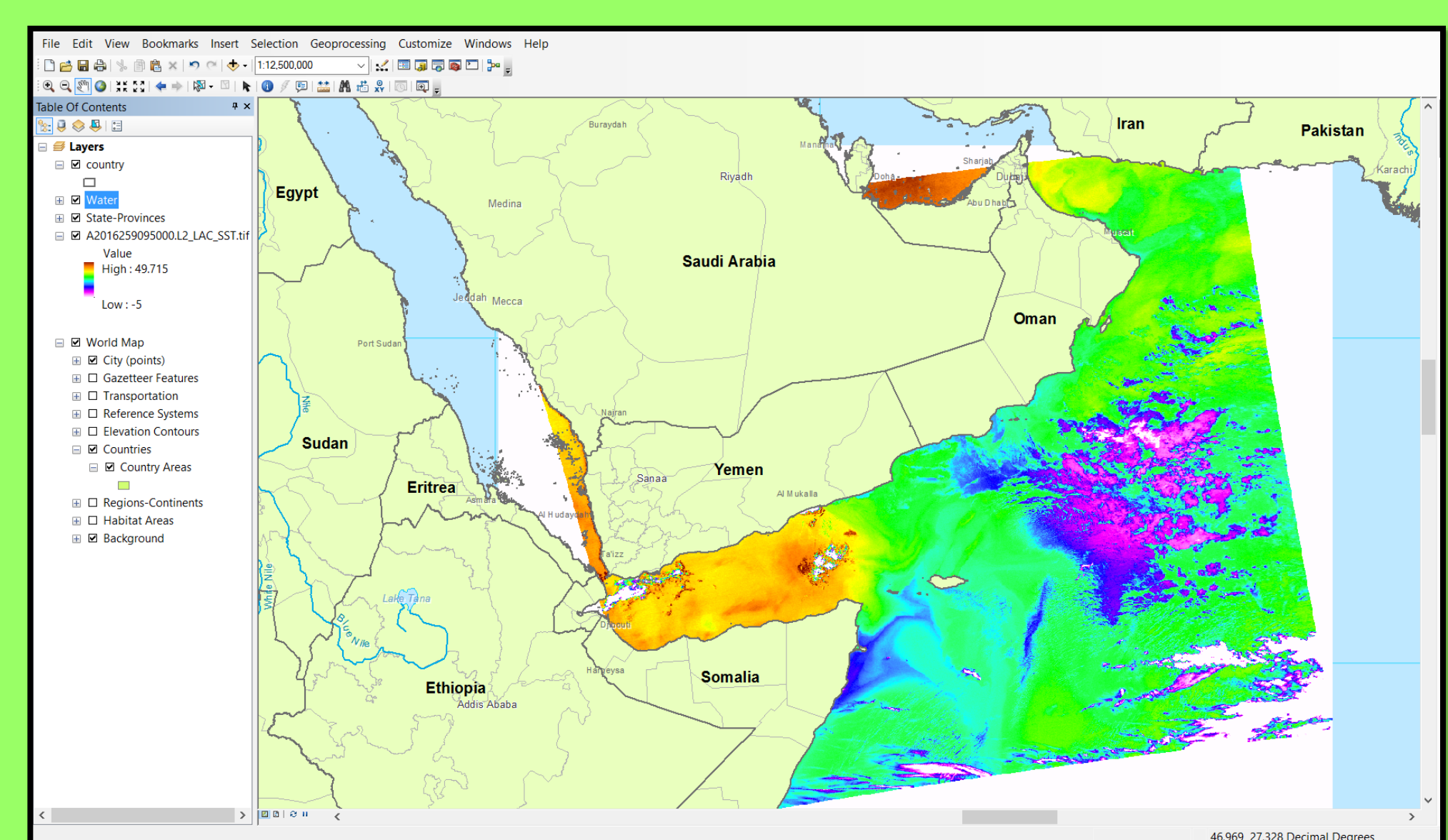
VIIRS/Suomi-NPP Surface Reflectance Daily Level 2G, Global 1km and 500m SIN Grid Version 006, bands M5, M4, M3; Red Sea area; HDF5 format, from LP DAAC; SBA: FSSA



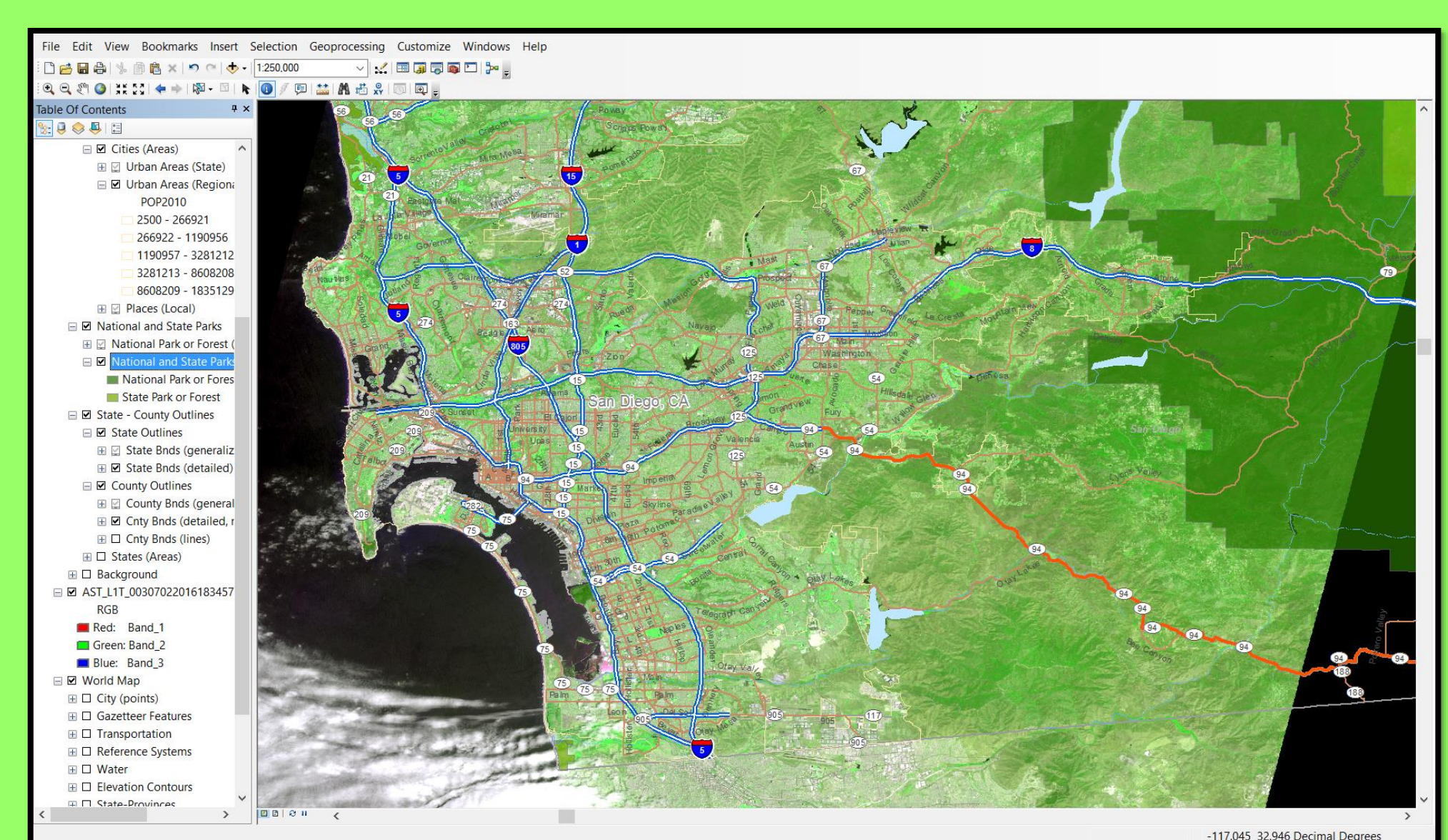
MODIS Aqua Corrected Reflectance Bands 721; June 13, 2017, imported from Global Imagery Browse Services (GIBS) WMS through the ArcGIS Catalog; SBAs: EMRM, RSSA



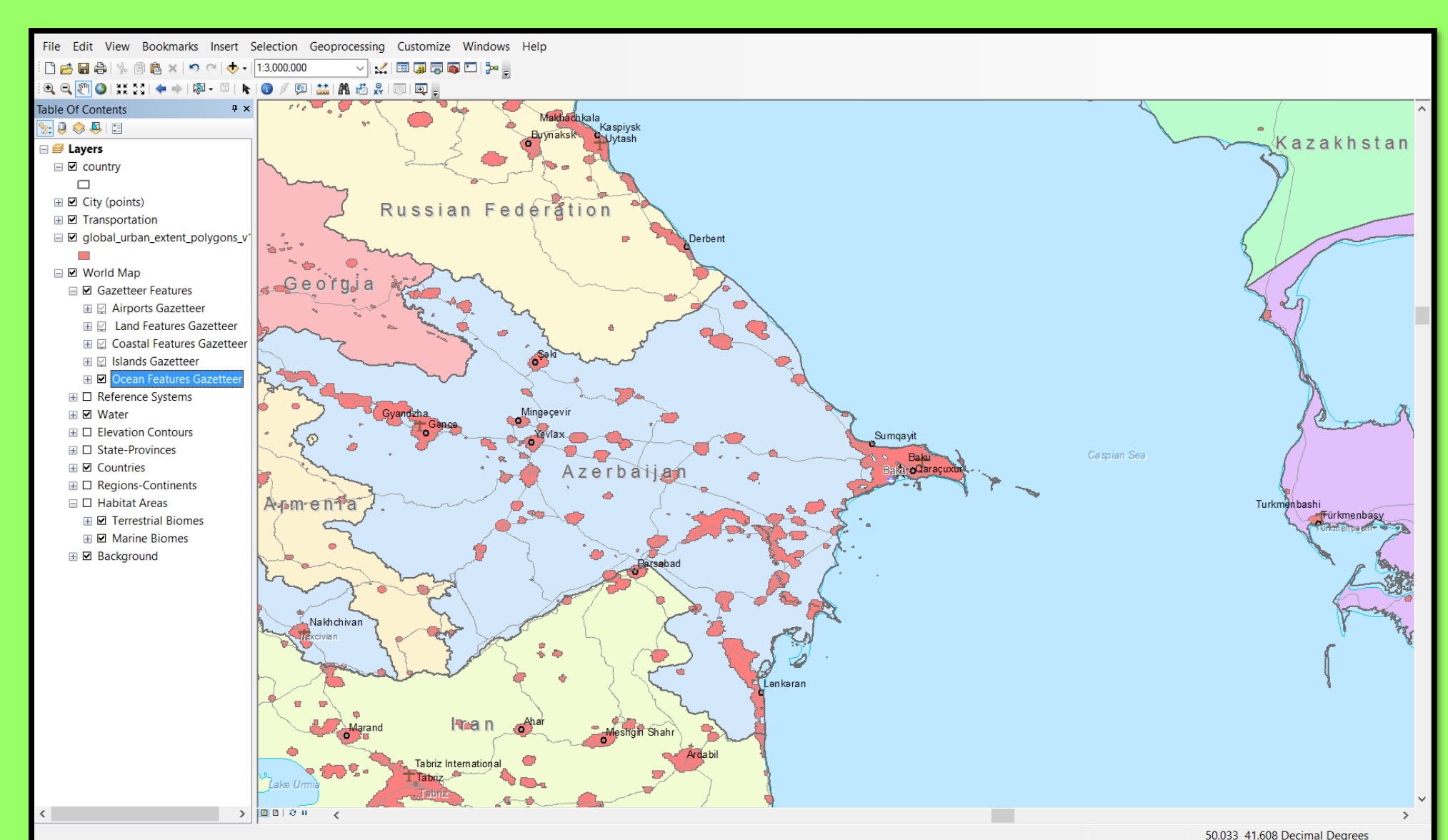
ALOS PALSAR Granule (ALPSRP279071060), area near North Battleford, Saskatchewan (Canada); Google KMZ format imported into ArcGIS Earth, from ASF DAAC; SBAs: DR



MODIS Aqua Level 2 Ocean Color 1km; Gulf of Aden area; NetCDF format, opened into SeaDAS (https://seadas.gsfc.nasa.gov/), reprojected, and exported into GeoTIFF, from OB.DAAC; SBA: BES



ASTER Level 1 Precision Terrain (L1T) near true color of the San Diego area; captured on July 2, 2016; GeoTIFF format, from LP DAAC; SBAs: FSSA, DR, EMRM



Global Rural-Urban Mapping Project (GRUMP) version 1, Urban Extent Polygons v1.01 (in red); Caspian Sea area; Shapefile (.shp) format, from SEDAC; SBAs: BES, DR