

## Monitoring Disasters Impacts on Land Cover in Coastal Zones of Egypt with Geospatial Analysis Tools and Official Statistics

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## Objective and Scope

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- Monitor disasters impacts on agricultural areas and other types of land cover
- Estimate damage based on remote sensing data and official statistics
- Scope: Northern coastal zone of Egypt



This map was created from open data and is for demonstration purposes only. It was not validated against UN approved boundaries and maps nor does it represent the final output used in the project.

## Importance

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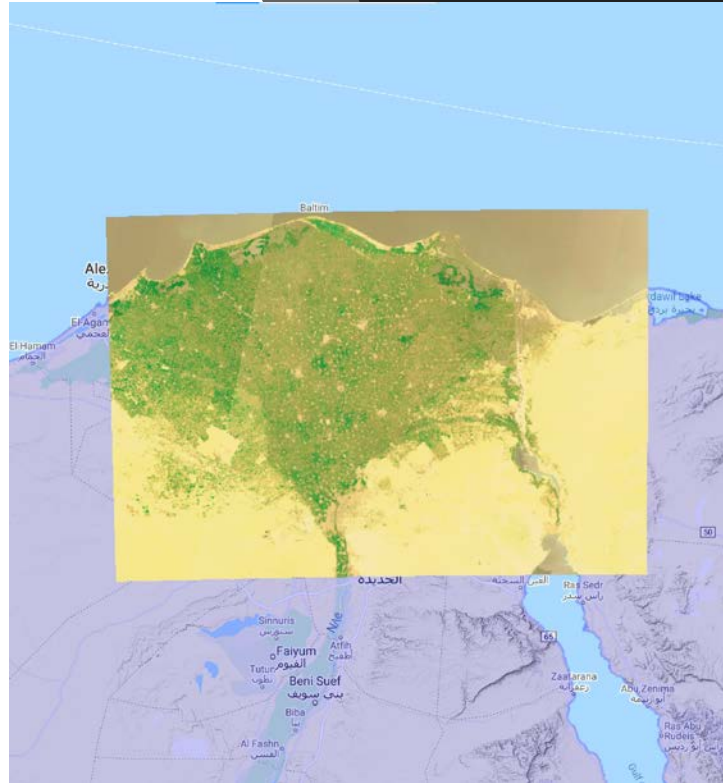
- Tremendous challenges face the Arab region due to high population growth, reliance on natural resources, inequality in income distribution, low intra-regional integration, climate change, and conflicts
- Remote-sensing based damage assessment will provide additional data on the extent of damage by different extreme events
- A geospatial analysis was highlighted as a key area that needs development in ESCWA member countries

# Data

- Data from Multispectral sensors onboard Landsat and Sentinel will be used
- Official data from CAPMAS and other Egyptian authorities
- Data from other UN agencies
- Data from international databases on extreme events



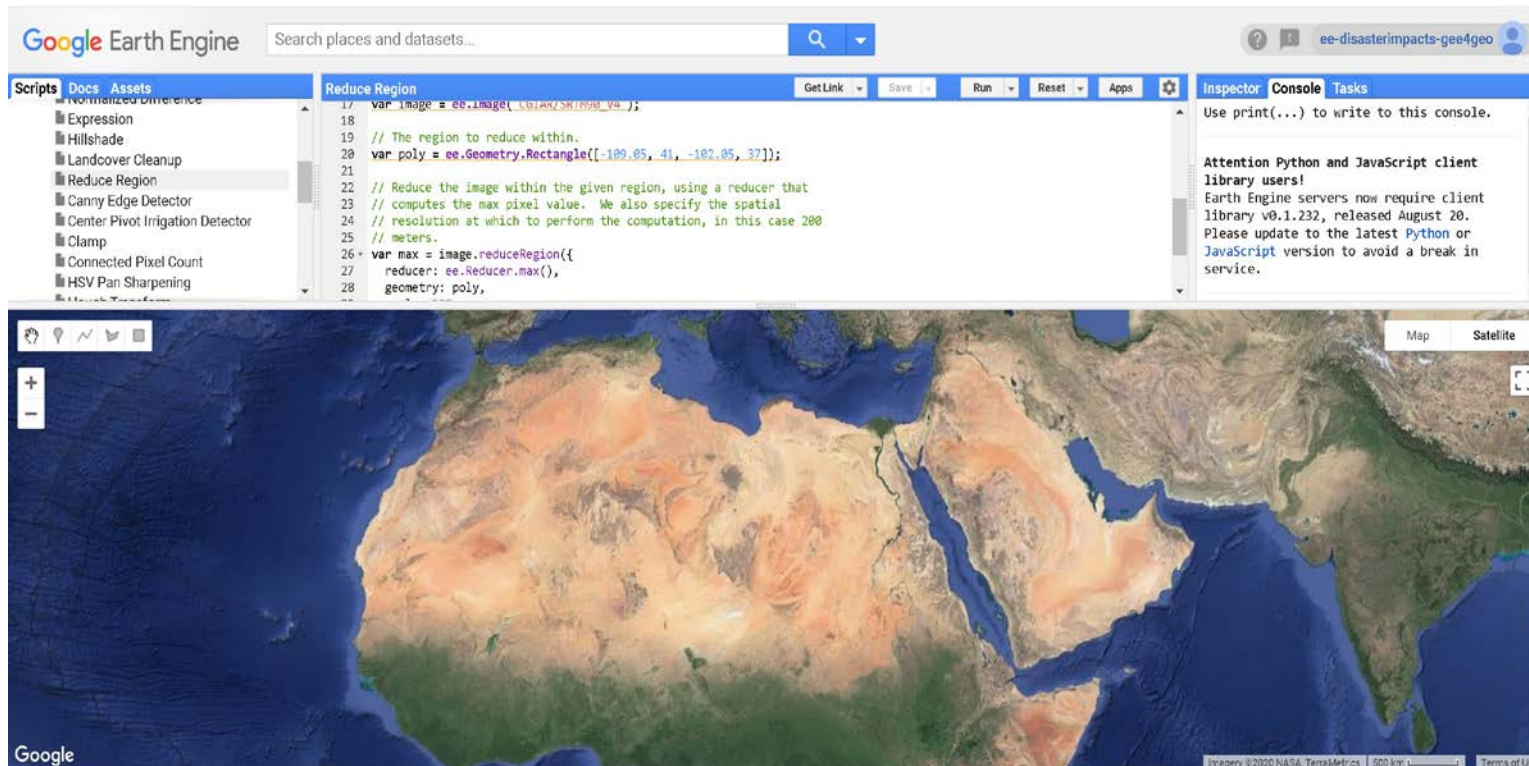
# Methodology



- Coastal area will be delimited based on elevation and distance from bodies of water
- Land cover areas will be classified based on pixel values using supervised learning algorithms
- Extreme events will be mapped out based on their location and date
- Images before, during, and after will be analyzed (based on availability) using different indices.
- Damage will be estimated based on the calculated indices and official data
- Results will be compared to official records (if available) to validate findings

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# Google Earth Engine



- A platform that provides petabytes of open geospatial data
- High performance cloud computing
- Support for multiple programming languages through earth engine APIs

# Partners

- Central Agency for Public Mobilization and Statistics (CAPMAS)
- National Authority for Remote Sensing and Space Sciences (NARSS)
- FAO
- UNSD
- UN-OICT
- UNDRR
- UNOCHA
- UNEP



ScriptsDocsAssets

day 1 training script  
day 2 training p1  
day 2 training p2  
day 2 training p3  
day 2 training p4  
day 2 training p5  
day 3 training p1  
day 3 training p2  
day 3 training p3  
day 3 training p4

day 2 training p4

Get LinkSaveRunResetApps

114 Map.addLayer( ndvi\_early, { min:0.0, max:1.0}, 'NDVI (Early)', true);  
115 Map.addLayer( ndvi\_late, { min:0.0, max:1.0}, 'NDVI (Late)', true);  
116  
117 var ndvi\_difference = ndvi\_late.subtract( ndvi\_early );  
118 Map.addLayer( ndvi\_difference, {palette:['red','white','green'], min:-0.4, max:0.4}, 'NDVI (Change)', true);  
119  
120  
121 var landsat8\_early = ic\_landsat8.filterDate( earlyStartDate, earlyEndDate ).mosaic();  
122 var landsat8\_late = ic\_landsat8.filterDate( lateStartDate, lateEndDate ).mosaic();  
123 Map.addLayer( landsat8\_early, {bands:['B4','B3','B2'], min:0, max:3000}, 'Landsat (Early)');  
124 Map.addLayer( landsat8\_late, {bands:['B4','B3','B2'], min:0, max:3000}, 'Landsat (Late)');  
125

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Geometry Imports

# Outcomes

- Algorithms and code used in the project
- Data products that help visualize the damage from different extreme events
- Methodology for countries interested in replicating the project

Google



# Outlook

- Future workshops on geospatial analysis using remote sensing data and official data
- Publications to help disseminate the methodology and results
- Future partnerships on other remote sensing projects

# Team

ESCWA

EO  
Data Science

CAPMAS

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- Sam Atkinson
- [Nahla sedek mohamed](#)
- [Eman Orieby](#)
- [Eman Safwat](#)
- Others Waiting to join



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