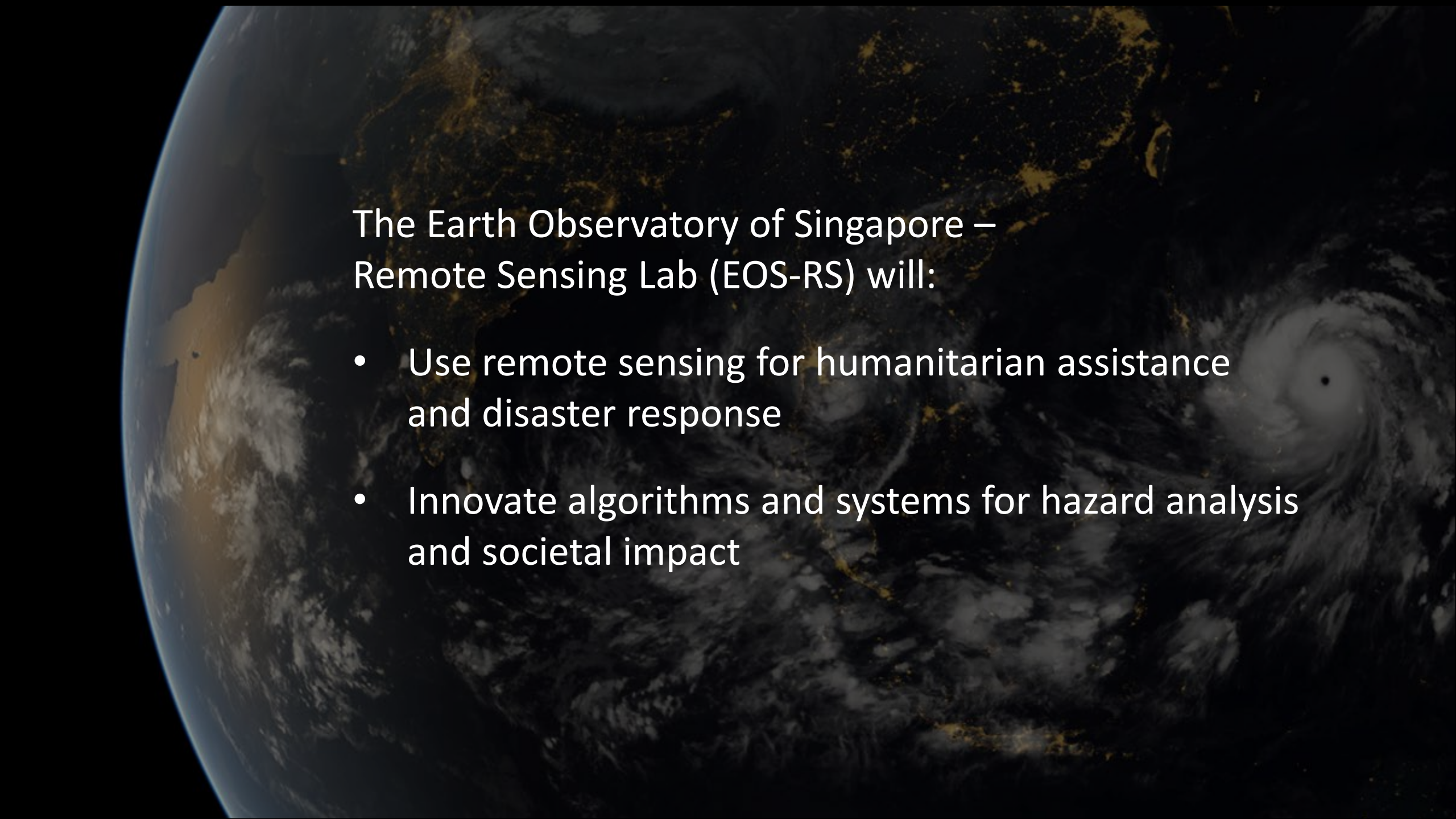
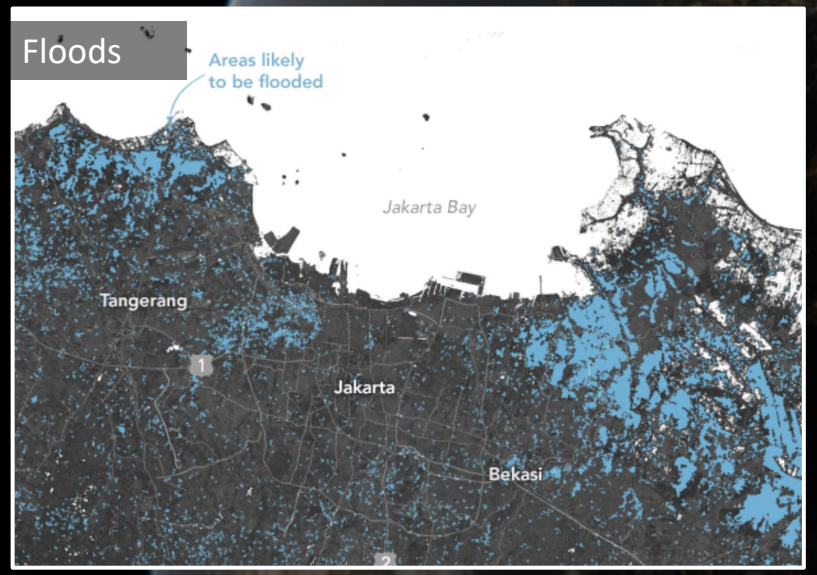

The Earth Observatory of Singapore
is building a new Remote Sensing Lab (EOS-RS)

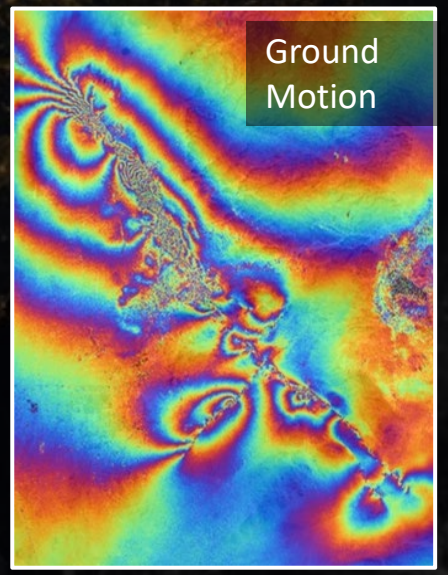


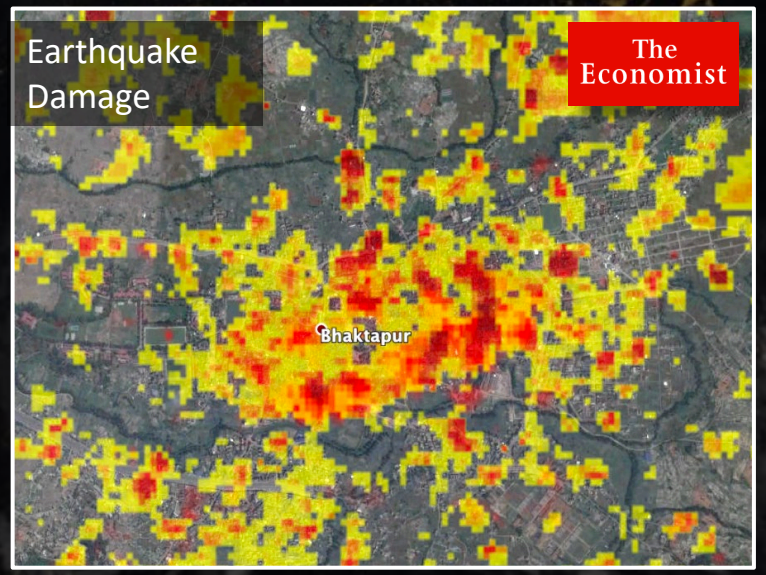
The Earth Observatory of Singapore – Remote Sensing Lab (EOS-RS) will:

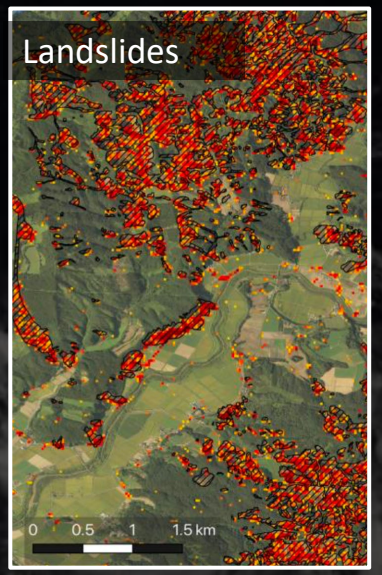
- Use remote sensing for humanitarian assistance and disaster response
- Innovate algorithms and systems for hazard analysis and societal impact

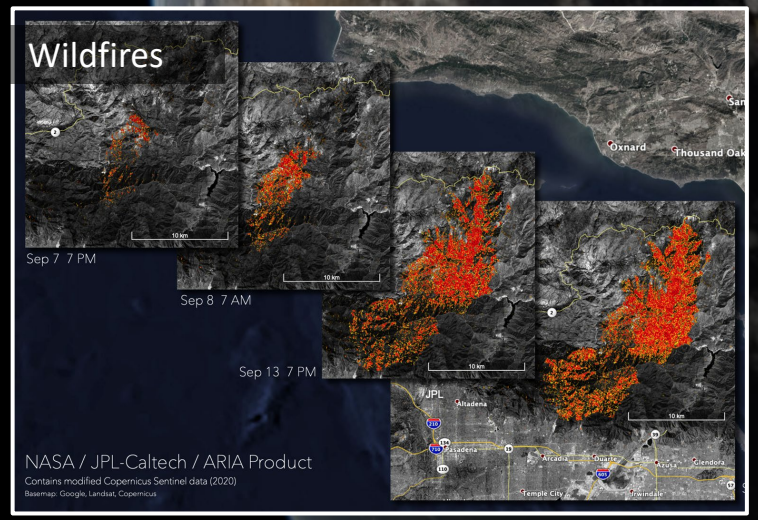
Types of disasters we map

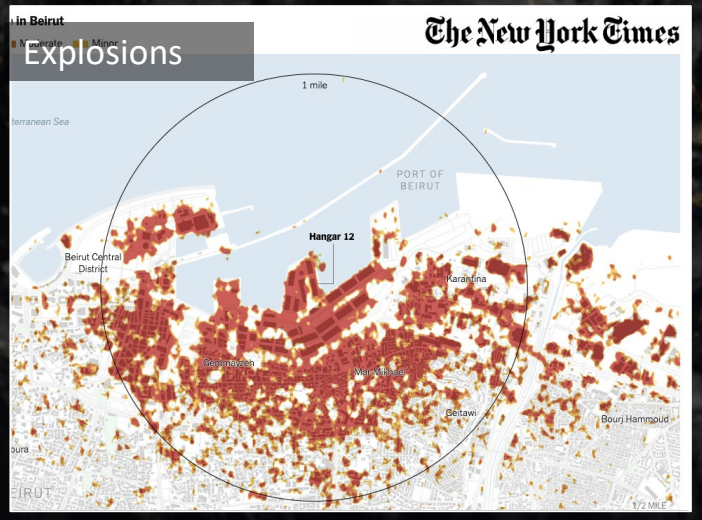


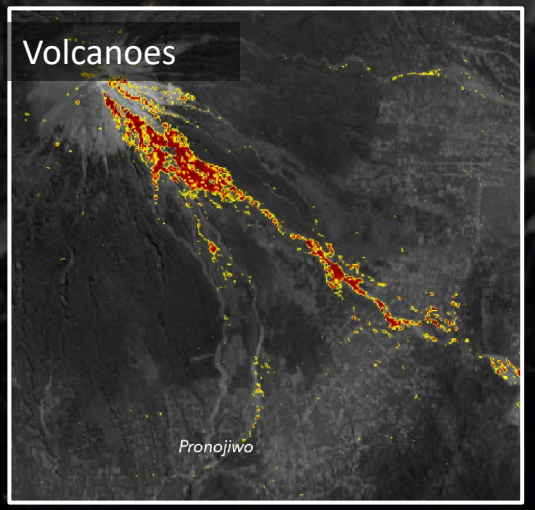






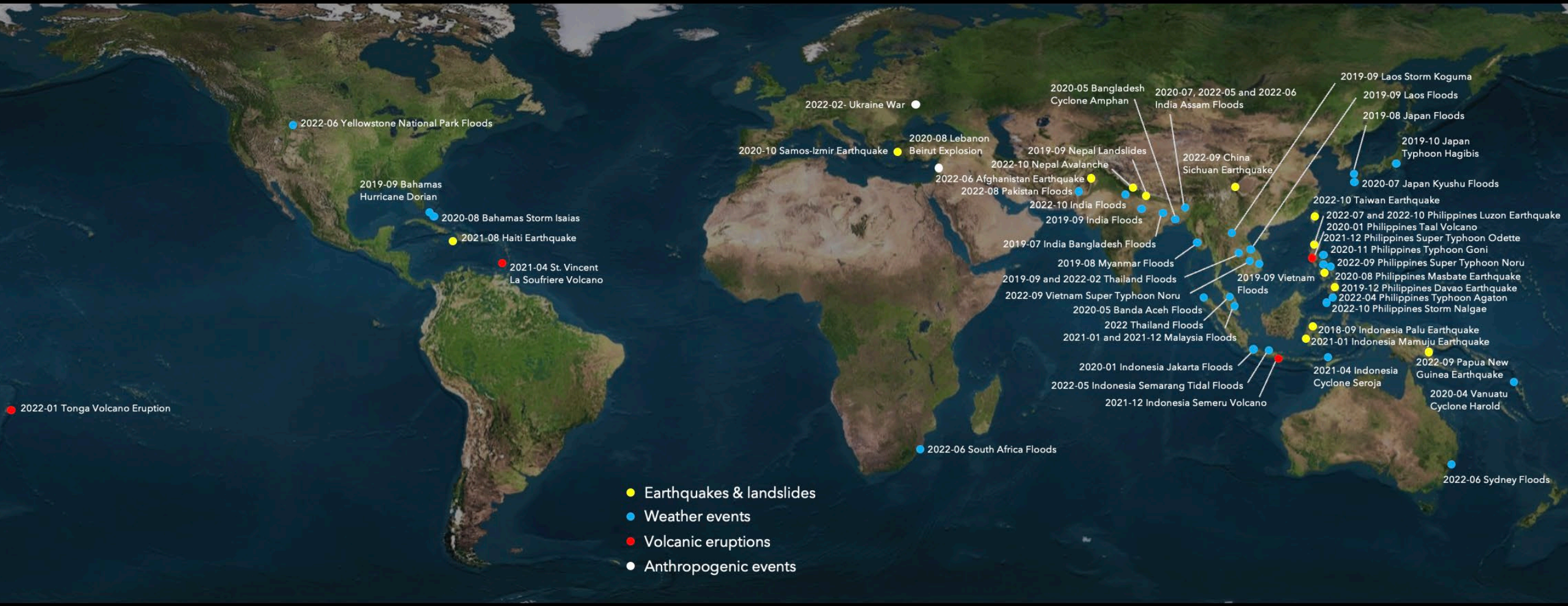






Rapid Disaster Response

Responded to a total of 57 events in 2018-2022
[48 events in Asia Pacific]



Data Analysis Node (DAN) in Sentinel Asia

3 Main Products

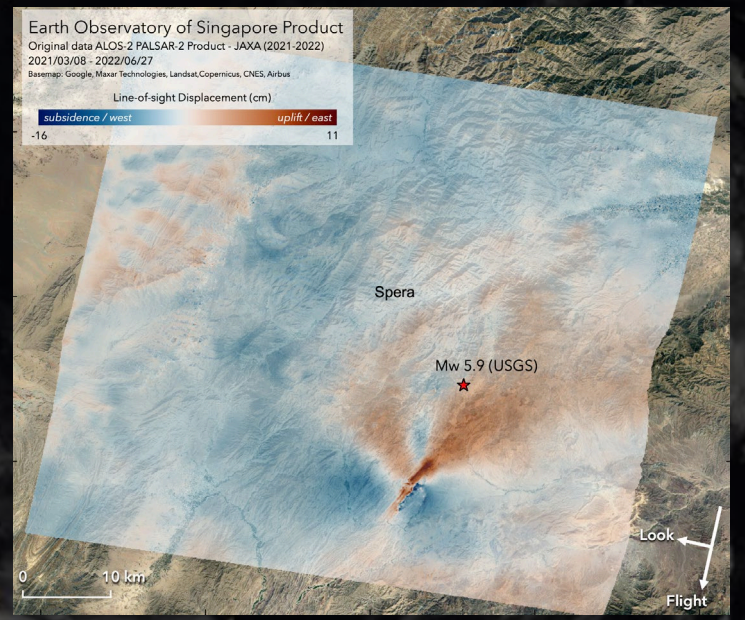
Flood Proxy Maps

Flood extent

Damage Proxy Maps

Building damage

Surface displacement maps

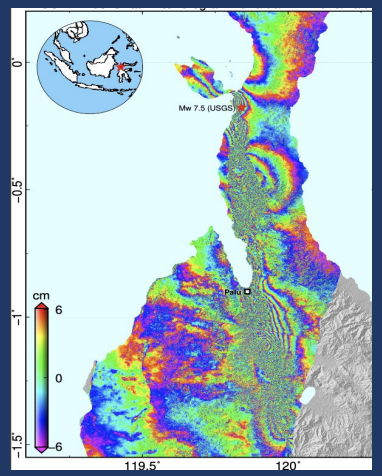


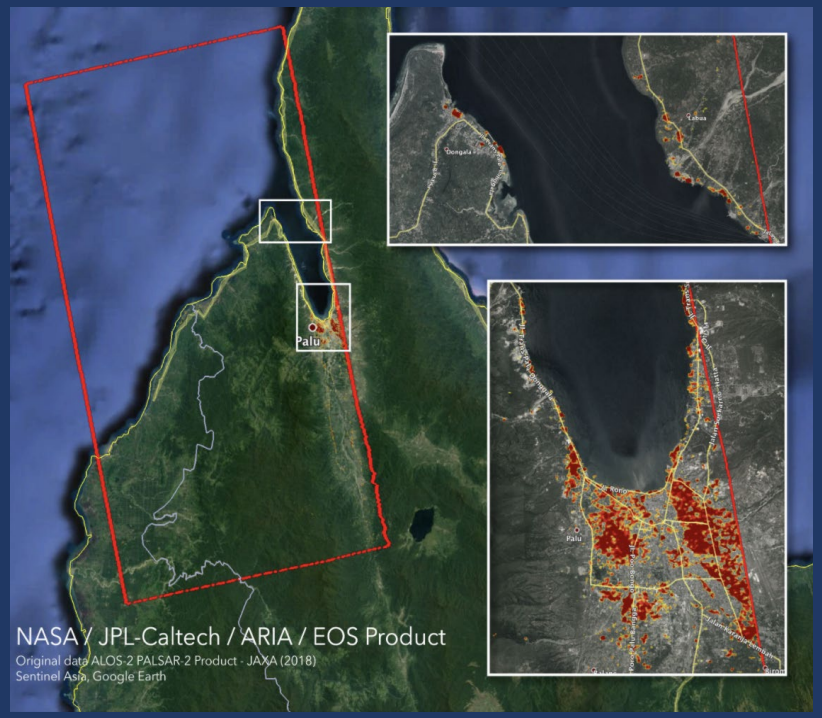
Deformation

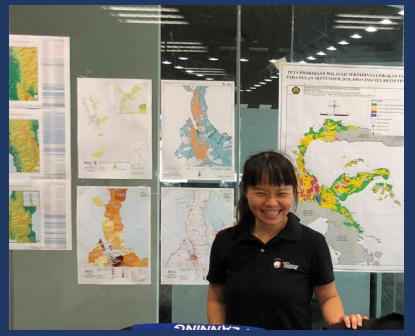
Using cloud-based Advanced Rapid Imaging and Analysis (ARIA) - SG system for rapid response

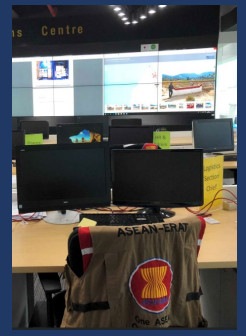
Positive Responses from Responders in Southeast Asia

Palu Earthquake (2018 Sep)

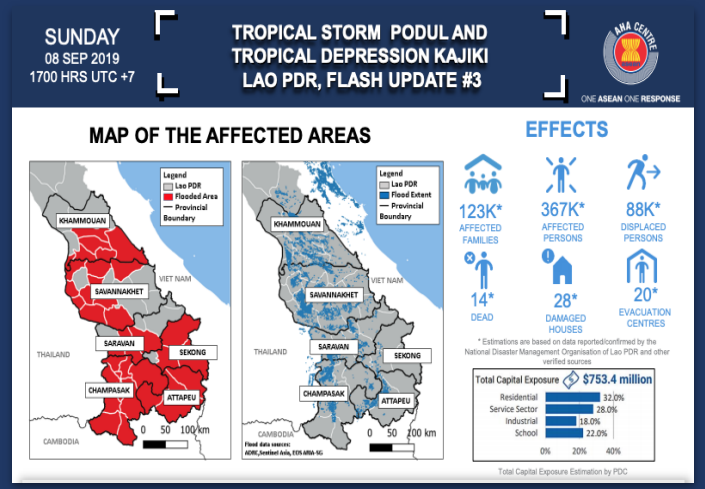


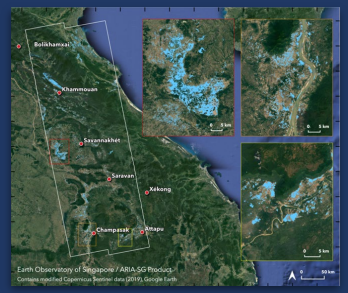




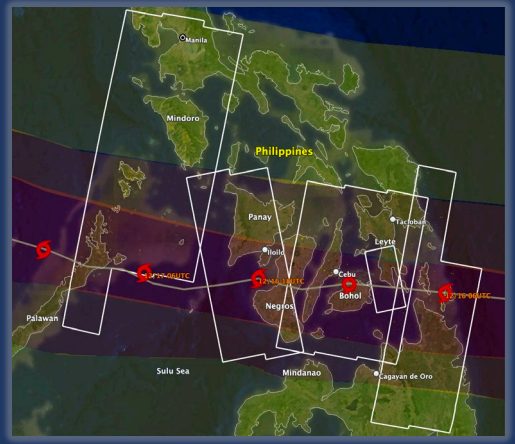


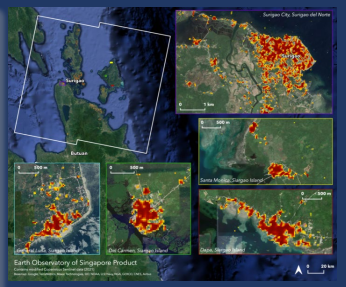
Laos Flood (2019 Sep)





Typhoon Odette (2021 Dec)



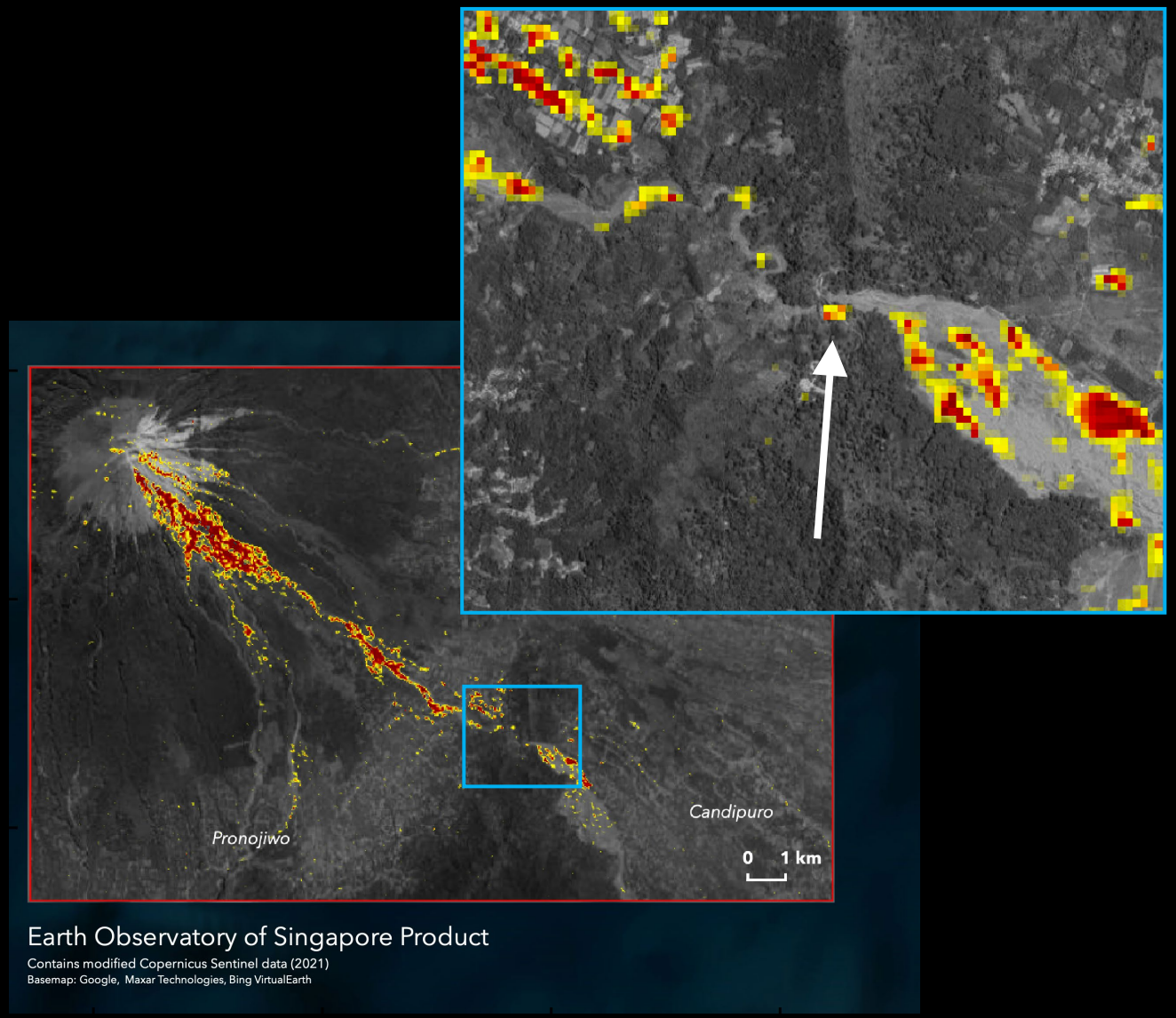


KEY FIGURES

- 3.05M AFFECTED PERSONS
- 631K DISPLACED PERSONS
- 258 DEAD
- 568 INJURED
- 47 MISSING
- 200K HOUSES

Semeru Volcano Eruption (Dec 2021)

Satellite Radar-based Pyroclastic Flows and Lahars Extent Map

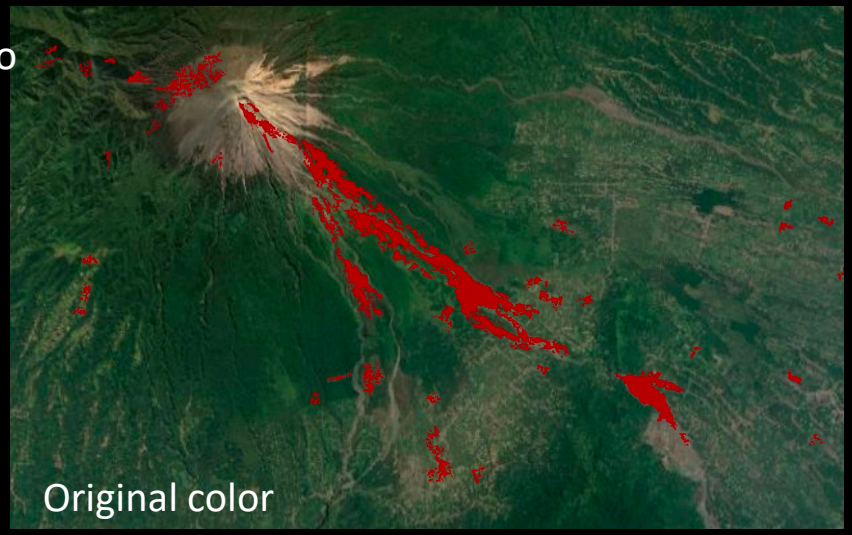


https://www.youtube.com/watch?v=BSuwWSlumCA

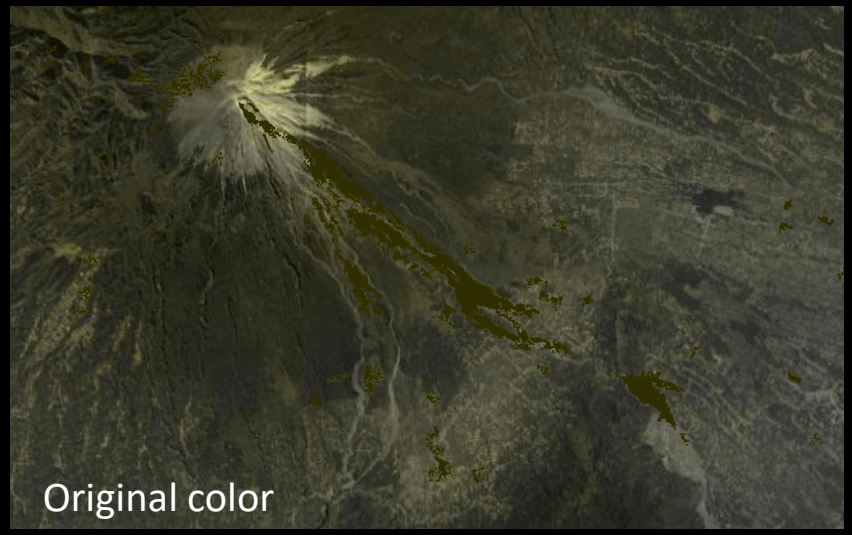
Choice of Colors for Color Vision Deficiency (CVD)

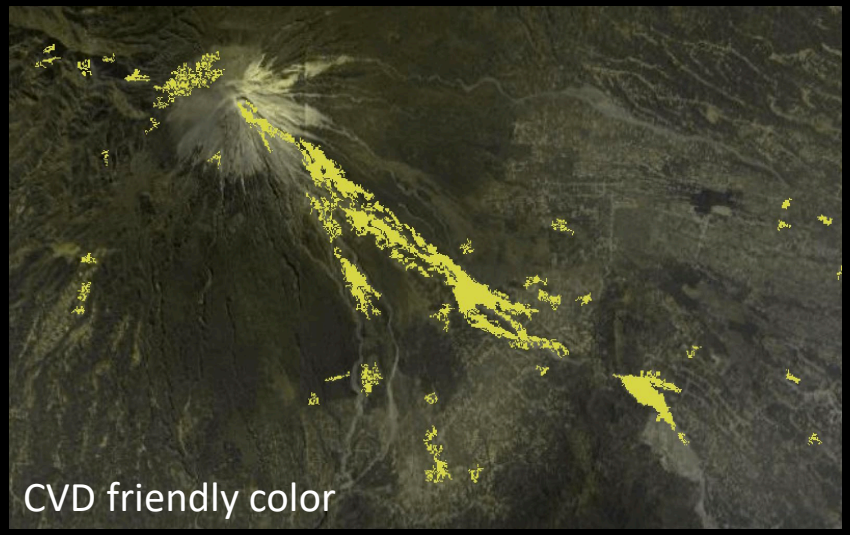
2021 Semeru Volcano Eruption

Data: ALOS-2



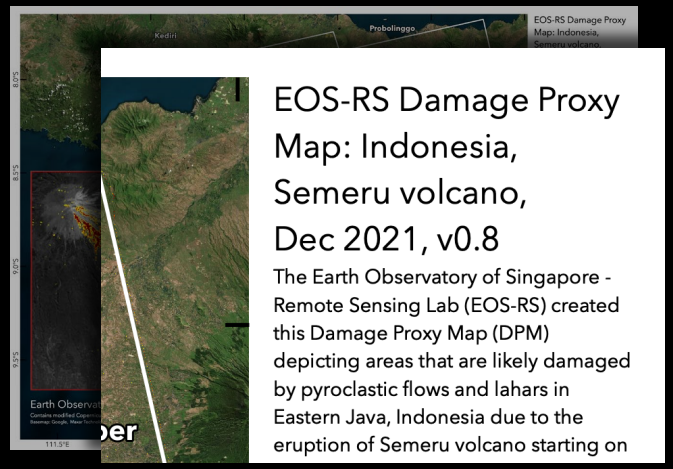
CVD Filter



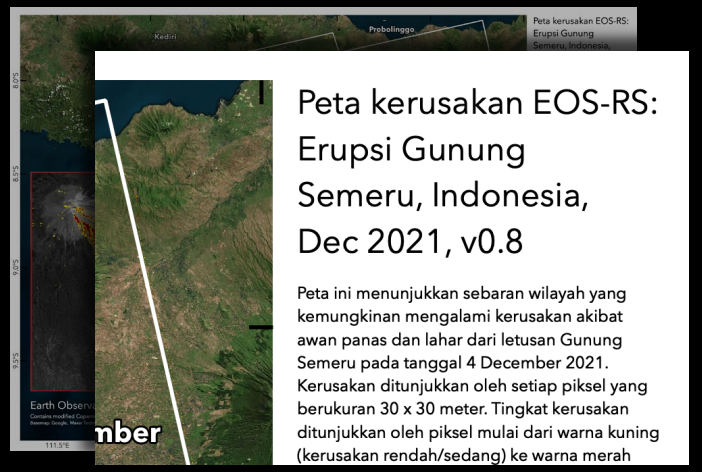


Local Language Versions

Semeru Volcano Eruption
East Java, Indonesia

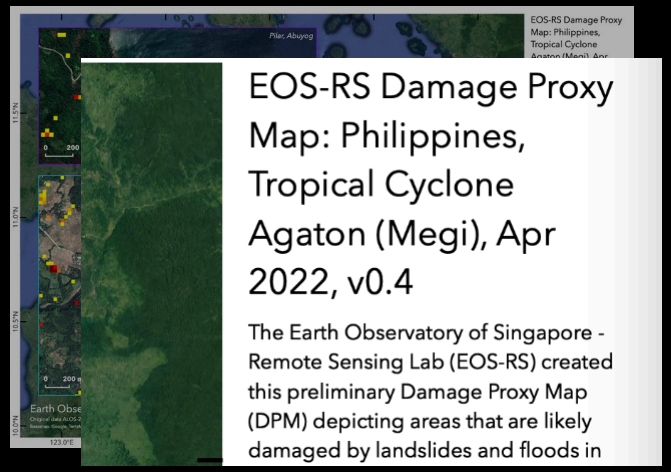


English

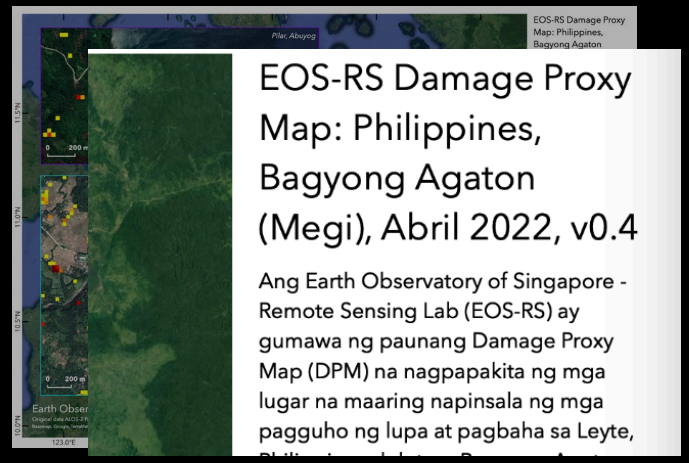


Bahasa

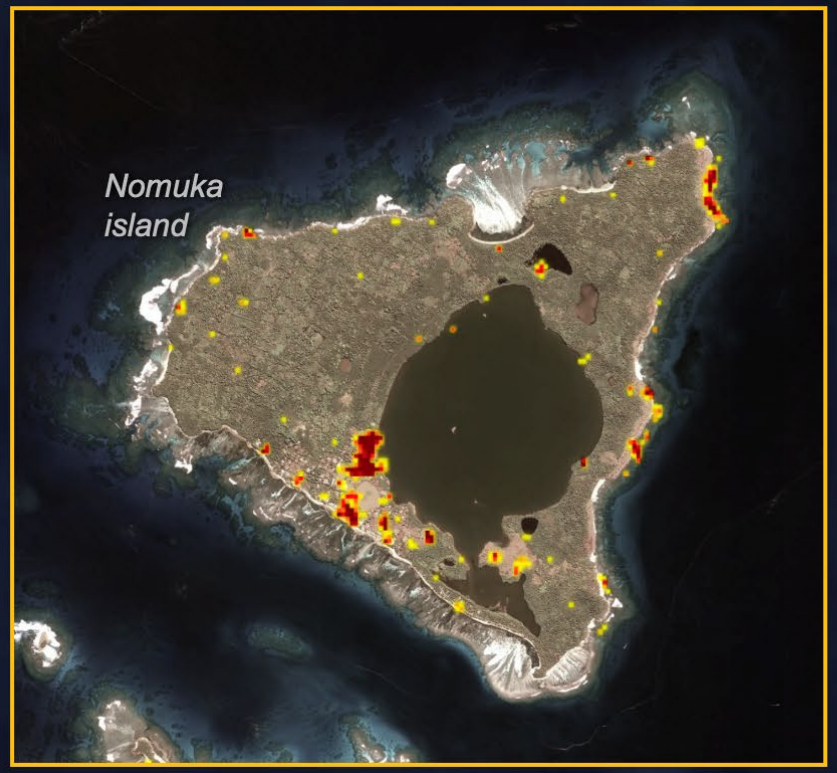
Tropical Cyclone Agaton
Leyte, Philippines

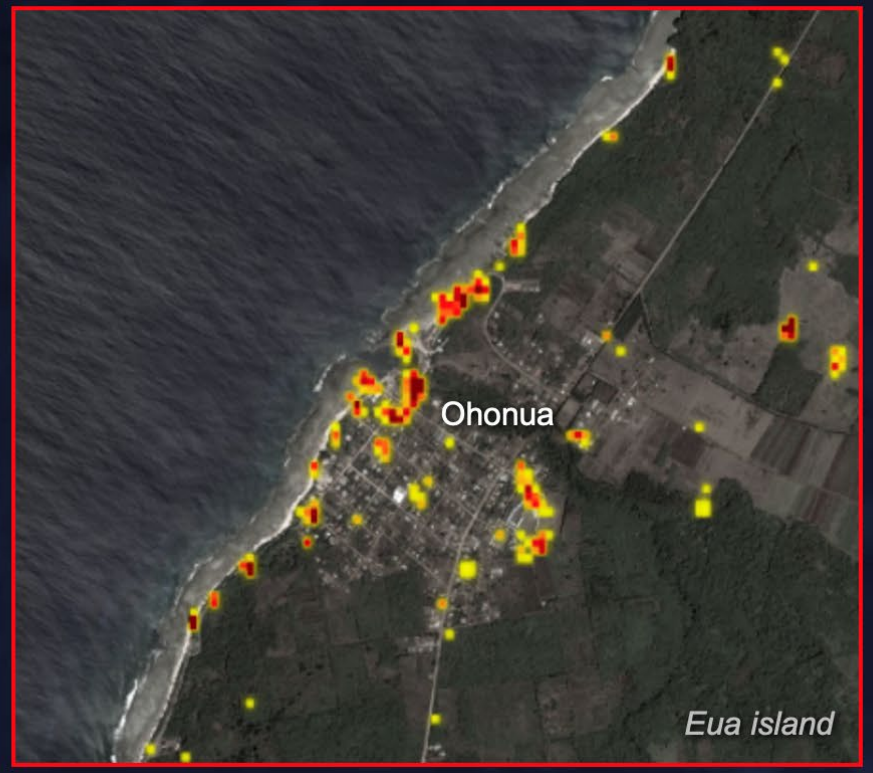


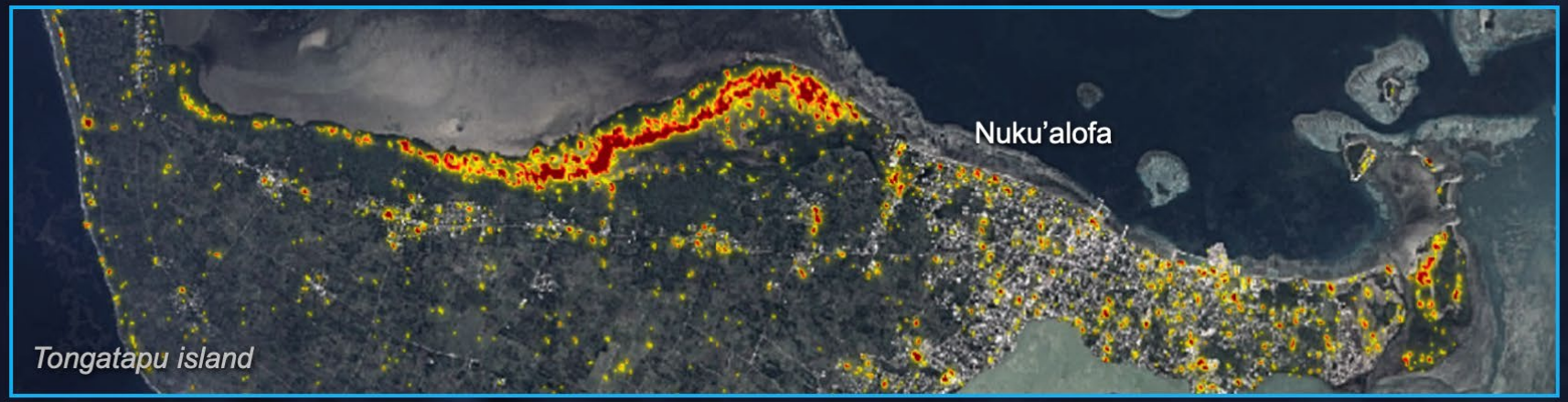
English



Tagalog





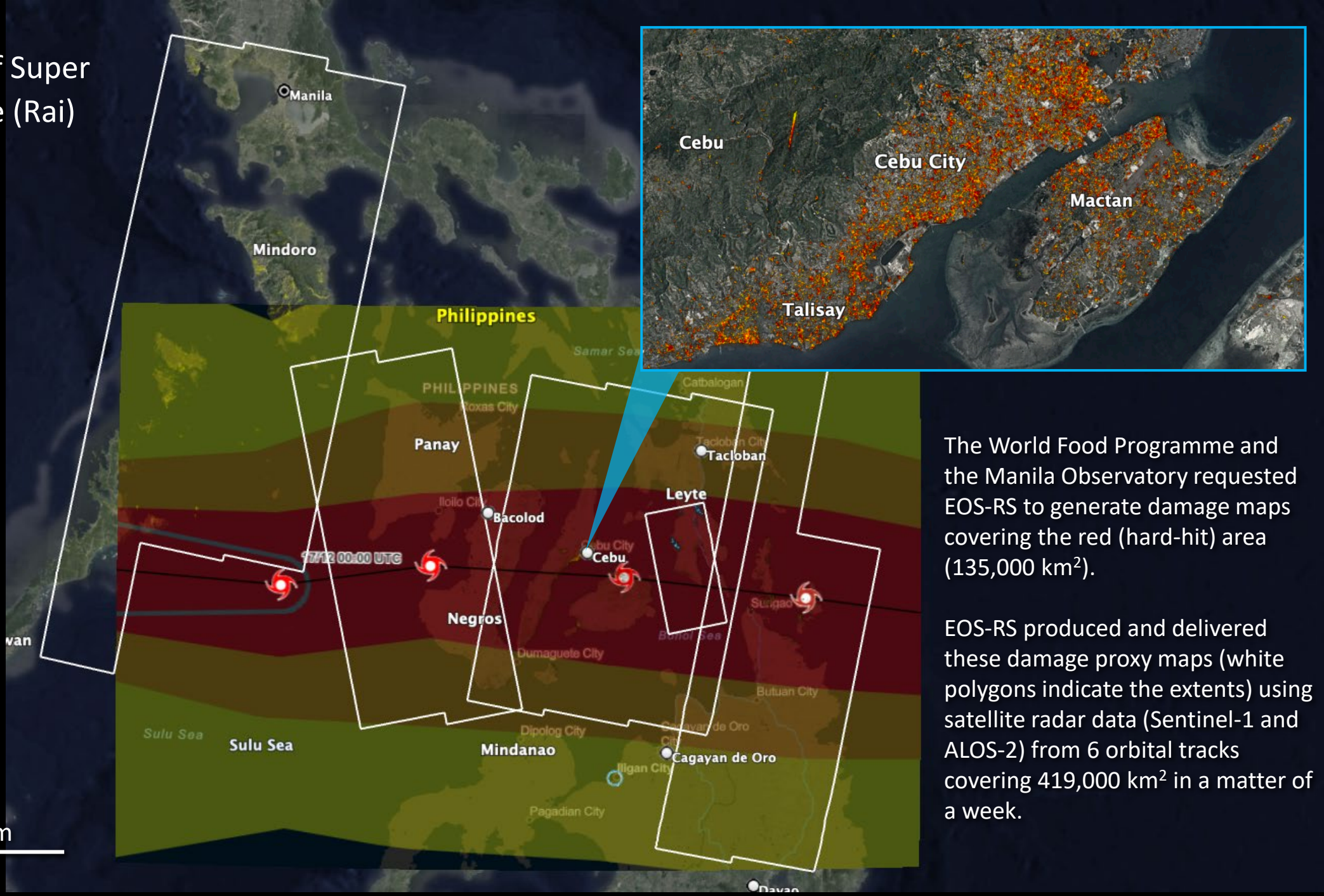


Earth Observatory of Singapore Product

Original data ALOS-2 PALSAR-2 Product – JAXA (2019–2022)

Basemap: Google, Landsat, Copernicus, CNES, Airbus

Damage Maps of Super Typhoon Odette (Rai)



The World Food Programme and the Manila Observatory requested EOS-RS to generate damage maps covering the red (hard-hit) area (135,000 km^2).

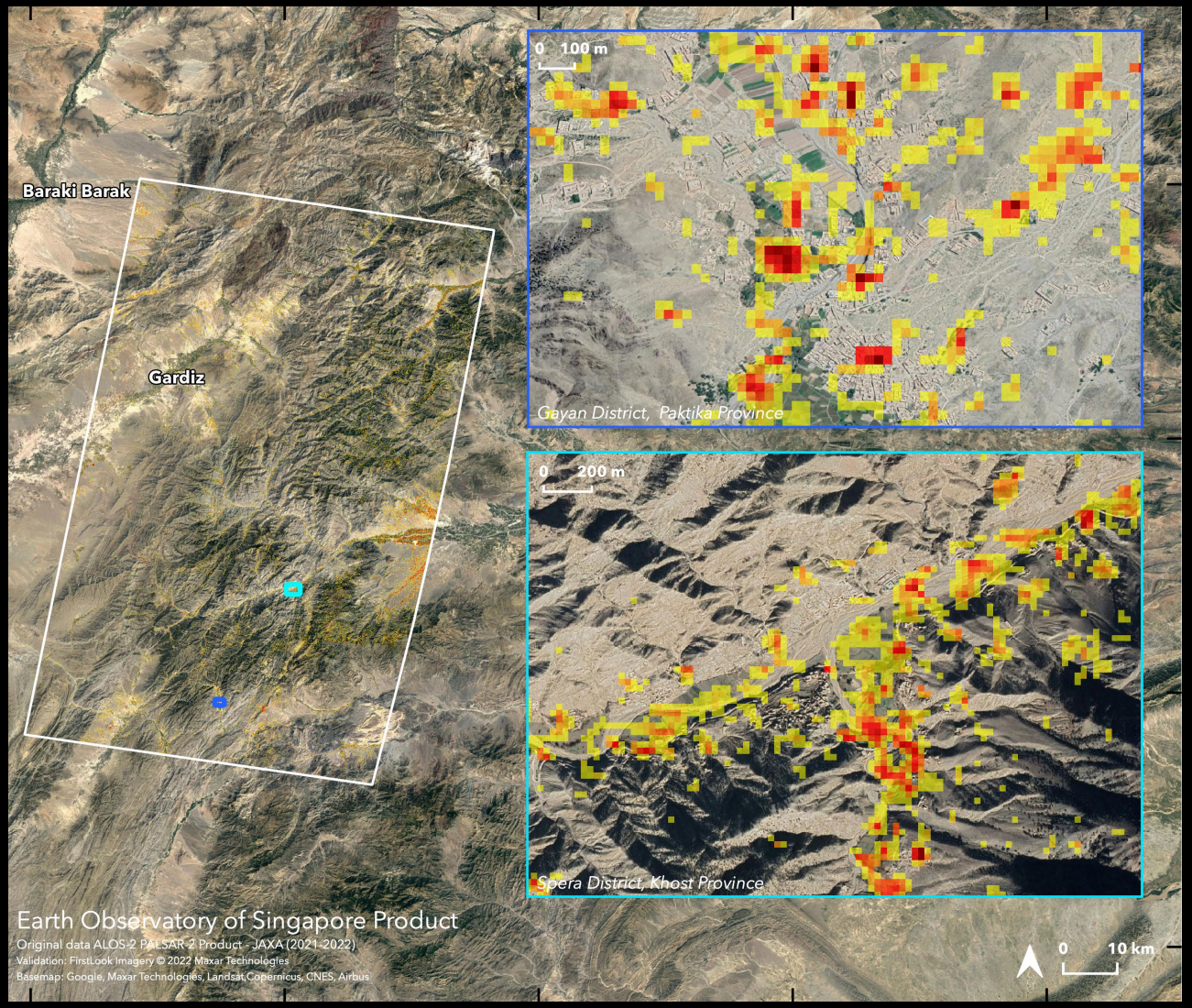
EOS-RS produced and delivered these damage proxy maps (white polygons indicate the extents) using satellite radar data (Sentinel-1 and ALOS-2) from 6 orbital tracks covering 419,000 km^2 in a matter of a week.

Afghanistan M5.9 Earthquake (June 2022)

Satellite radar-based damage maps

Source: ADN America (https://adnamerica.com/en/asia/least-1000-dead-following-earthquake-Afghanistan)

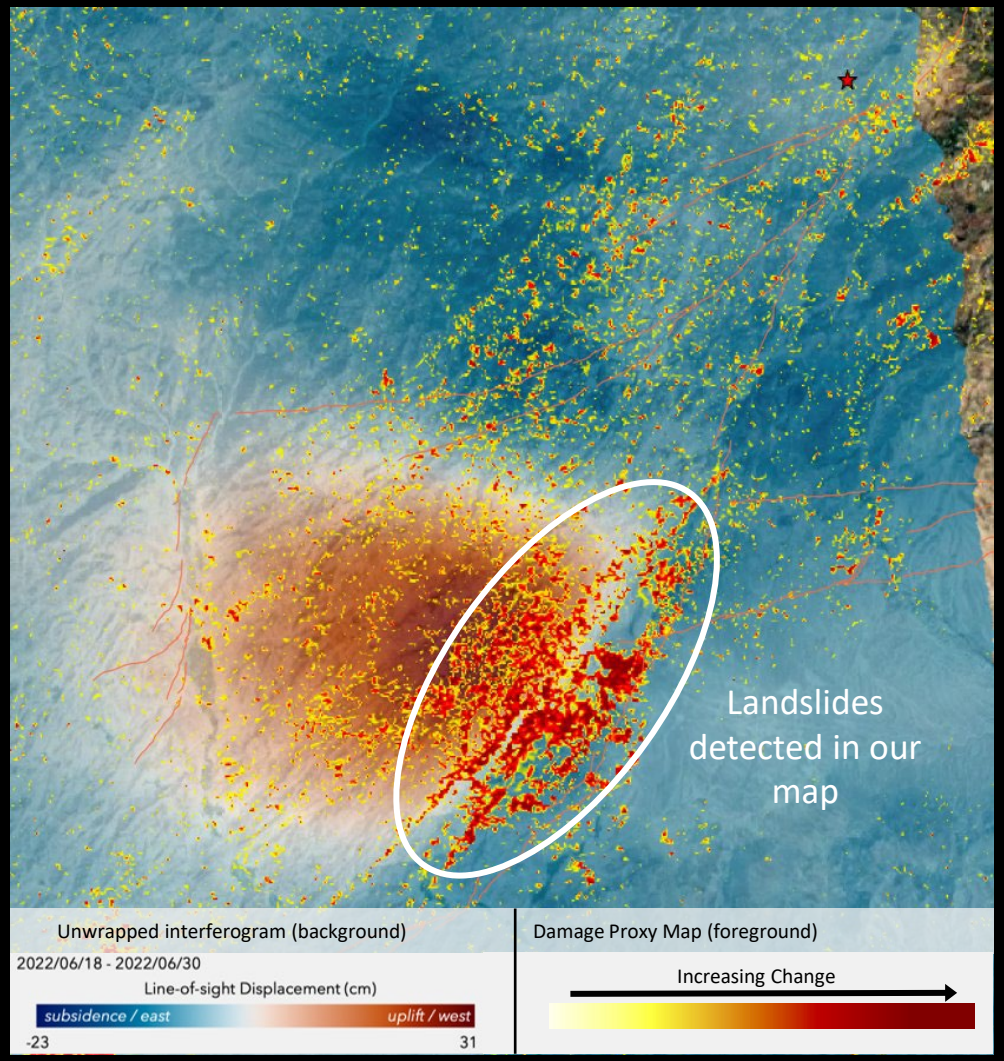
Devastation In Gyan, Patpika, Afghanaistan
Source: IFRC (https://twitter.com/ifrc/status/1540033833487273985)



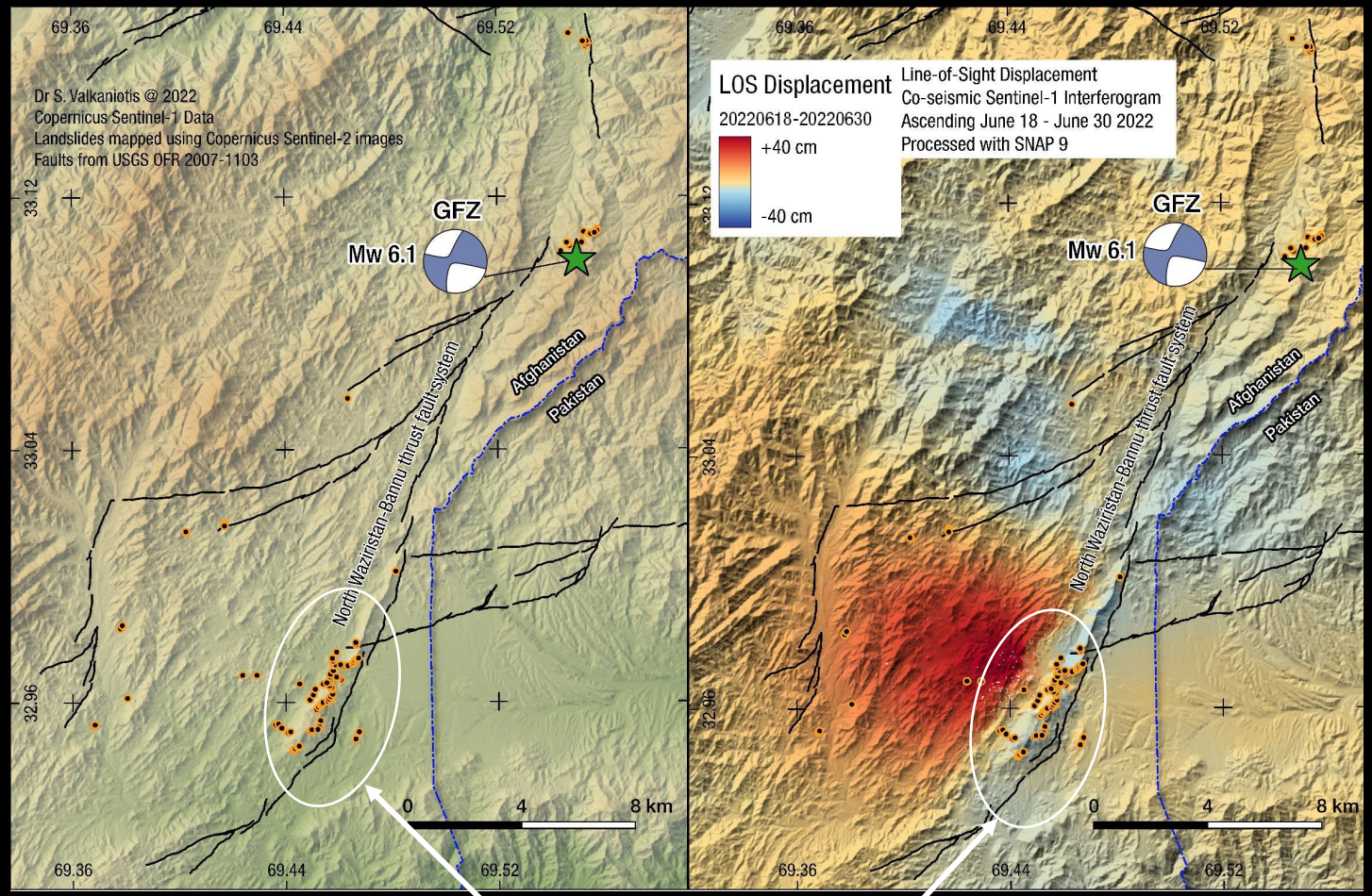
Derived from ALOS-2 data

Afghanistan M5.9 Earthquake (June 2022)

Satellite radar-based damage maps



Derived from Sentinel-1 data

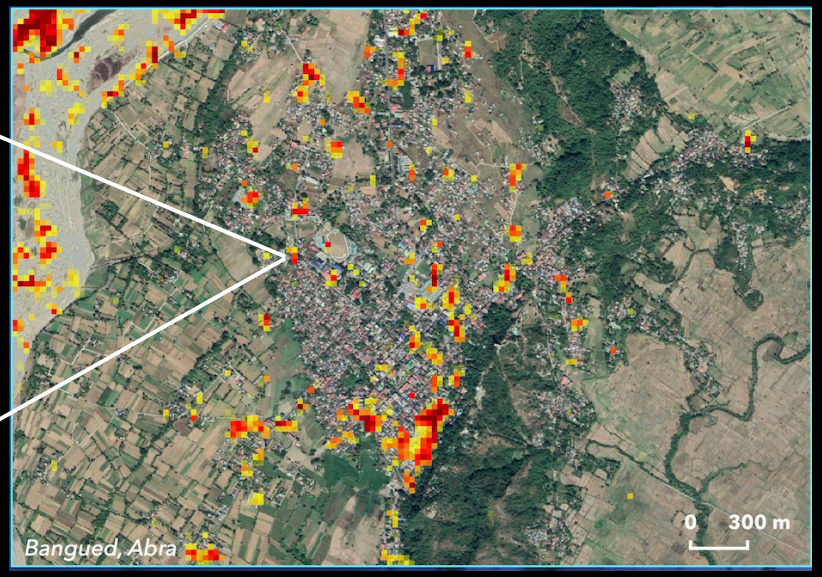


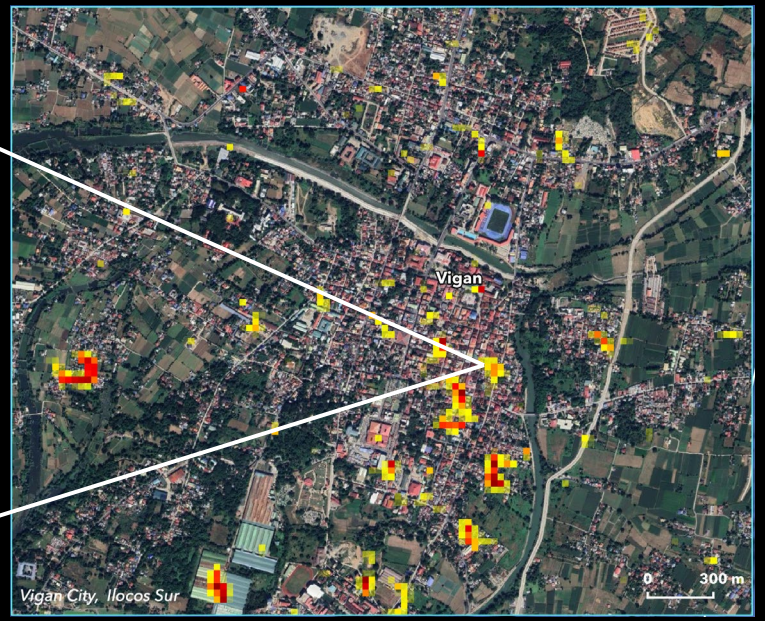
Landslides marked

(Credits: @SotisValkan on Twitter)

M 7.0 Abra Philippines Earthquake (July 2022)

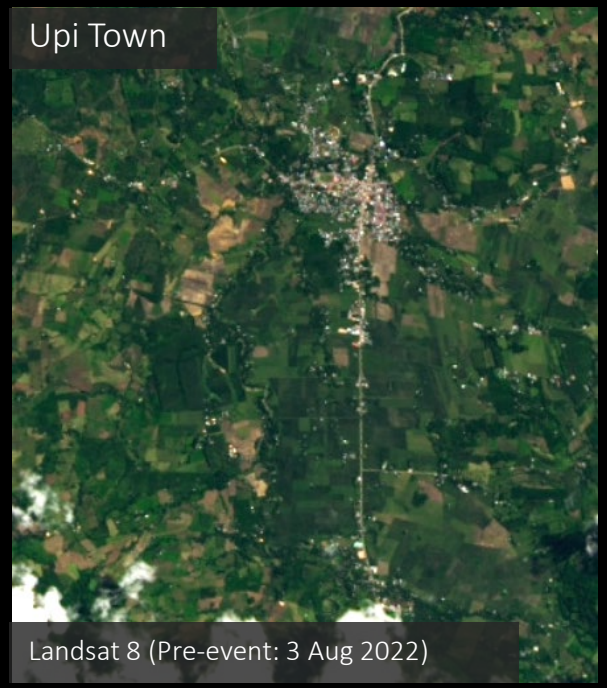
Satellite radar-based damage maps

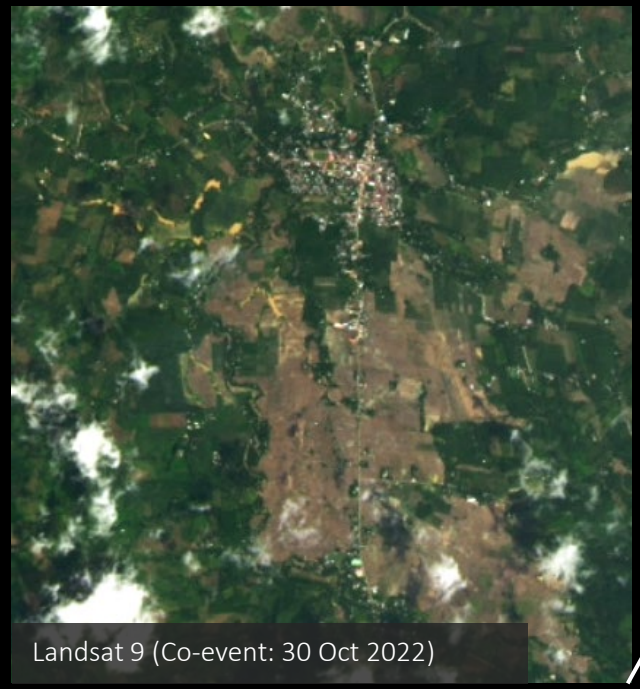


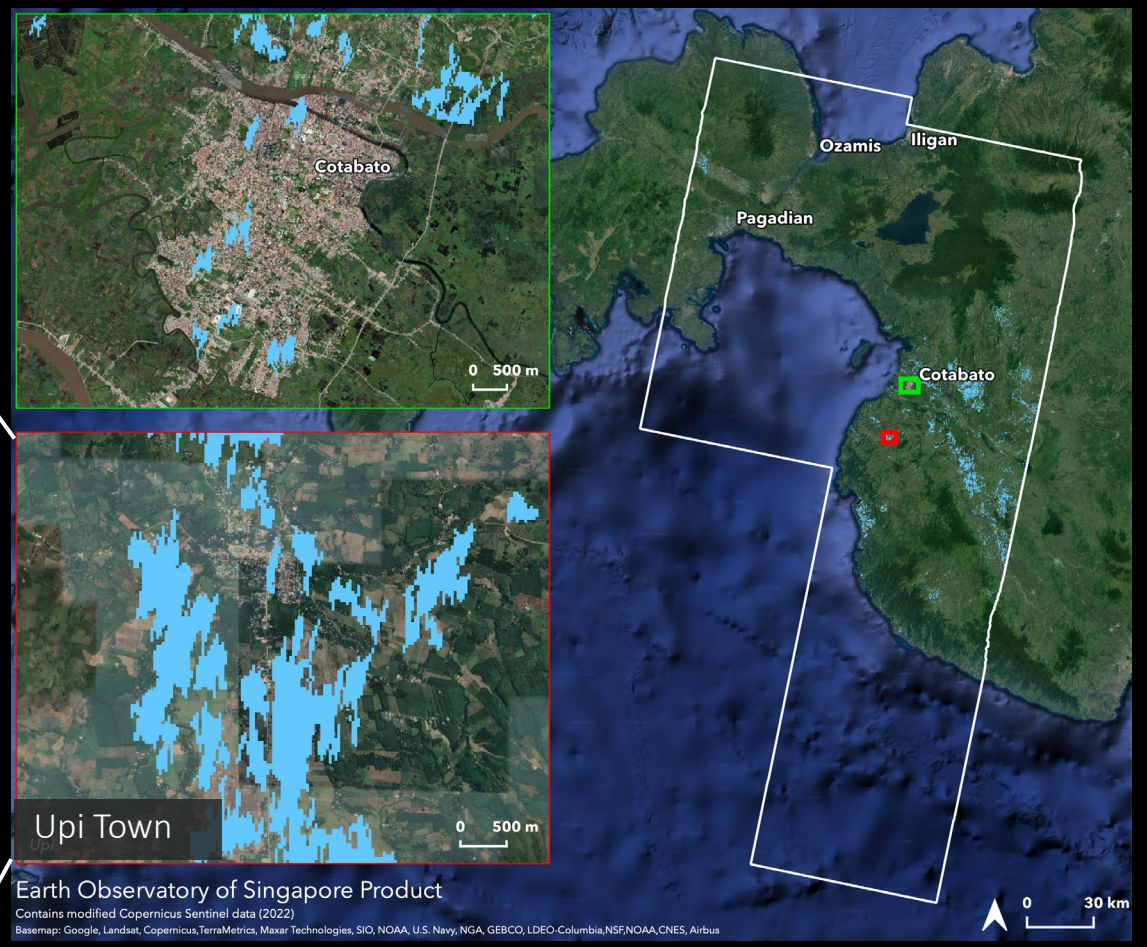


Cyclone Nalgae Philippines (Oct 2022)

Satellite radar-based flood maps







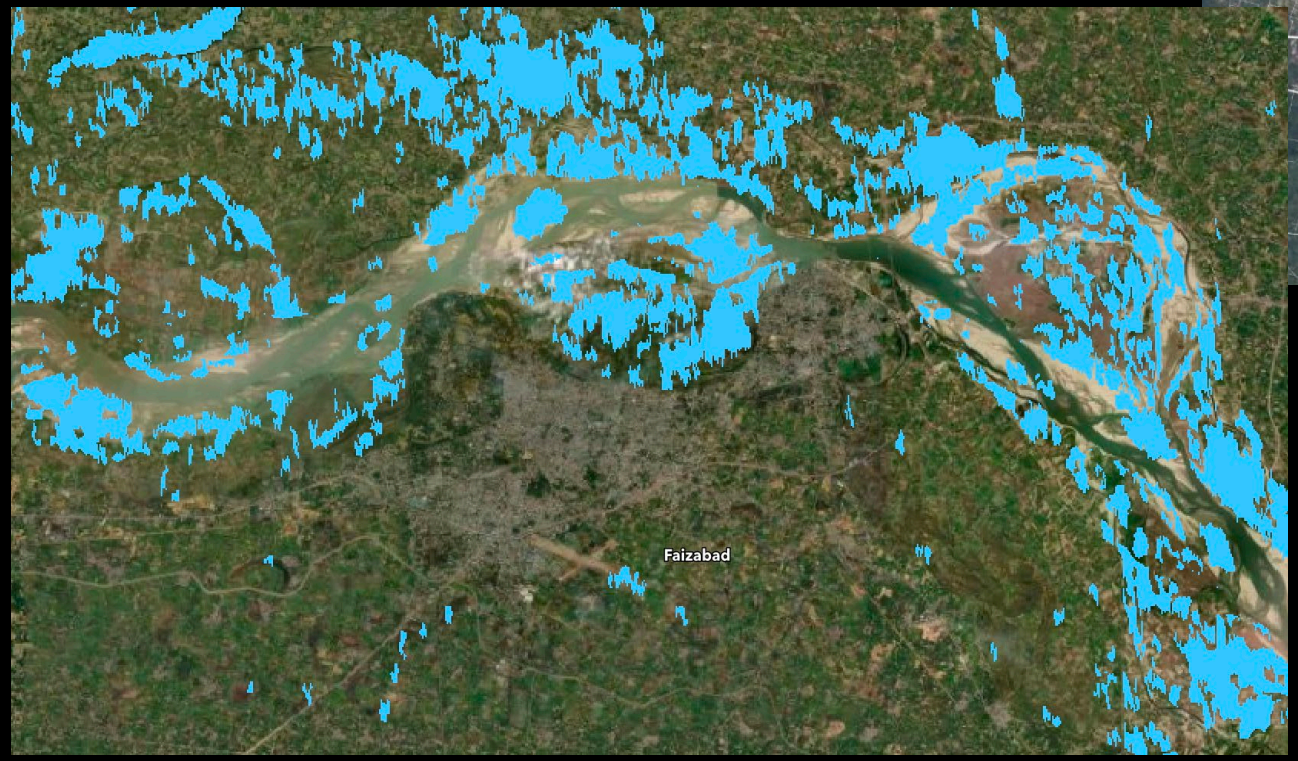
Credits: NASA Earth Observatory

Uttar Pradesh, India Floods (Oct 2022)

Satellite radar-based flood maps

Flood Proxy Map

(co-event image on 15 Oct 2022)



PlanetScope optical image

(15 Oct 2022)

Partners

Earth Observatory of Singapore
Remote Sensing Lab

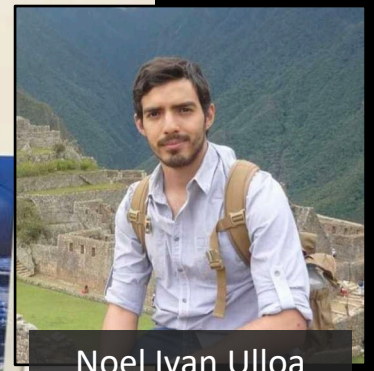
Innovation for Societal Impact

Twitter: @eos_rs

Products website

Global Flood Monitoring System

EOS-RS Members



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