

Disaster Management using Digital Elevation Model and Weather Independent Earth Observation data (SAR)



Ciro Farinelli, Future Earth Observation SAR Programs
Connected Intelligence
Airbus Defence and Space
Germany

EO SAR: Airbus Missions

TerraSAR-X (2007)
TanDEM-X (2010)



PAZ (2018)

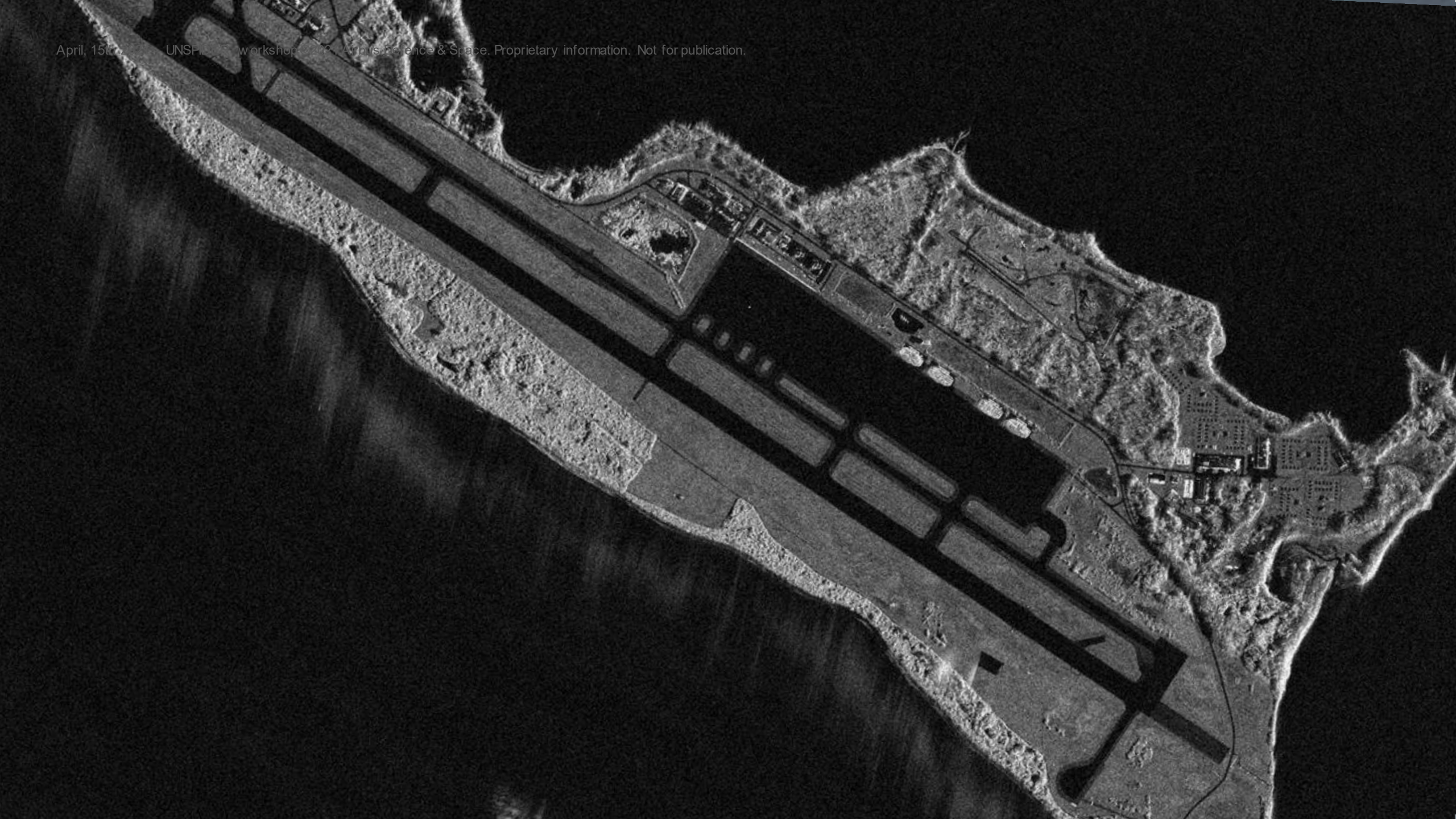


Future mission



Next Generation Service Scenarios

WorldSAR Constellation Cooperation
with Hisdesat (ES)



Digital Elevation Model

Southerland, South Africa

Use Case #1

Ghana: Inundation Hazard Modelling

Applications:

- Storm Surges
- Coastal Floods



Coastal flooding simulation, Accra West, Ghana



Analysis from WorldDEM™, Background Image from Sentinel 2

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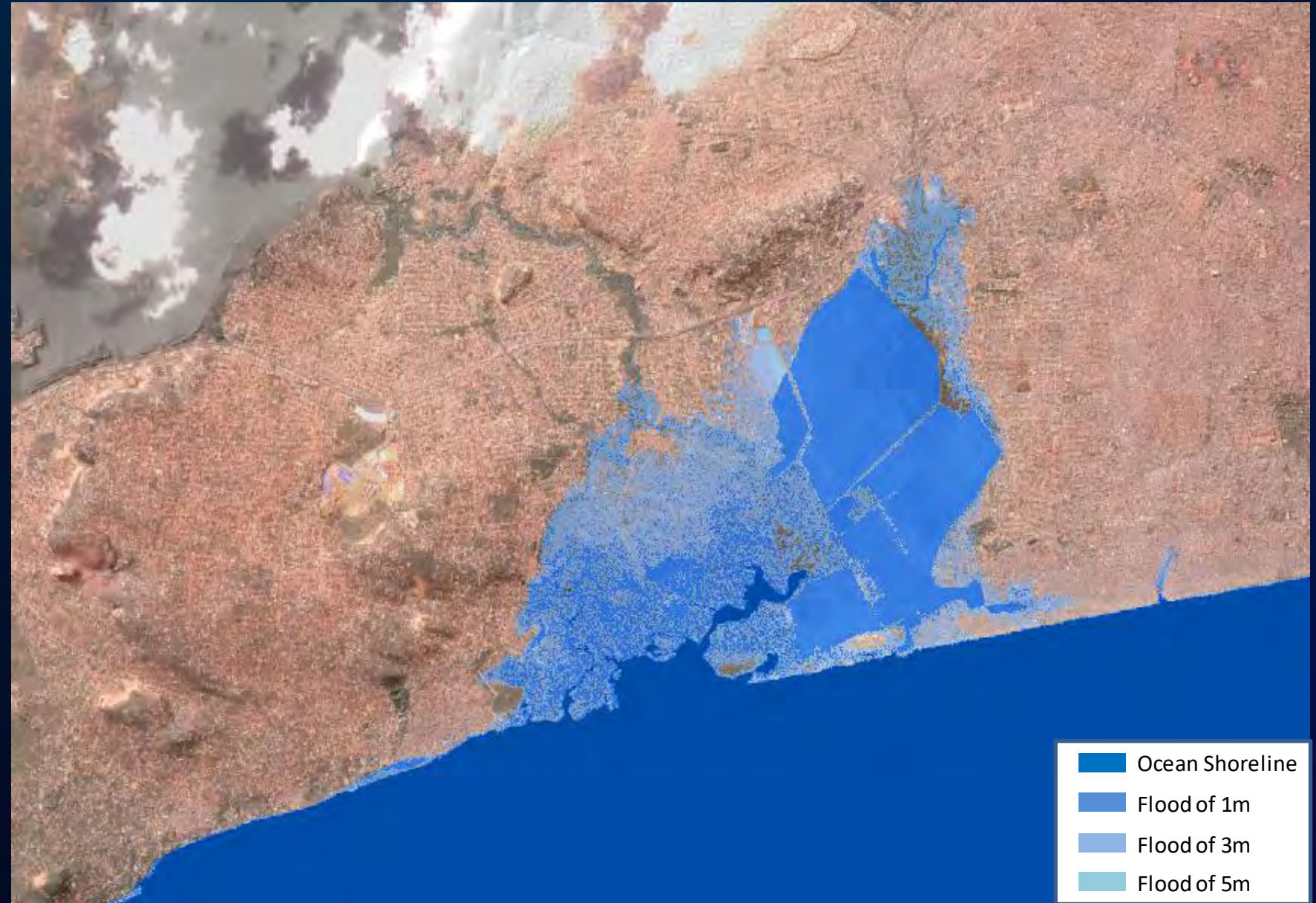
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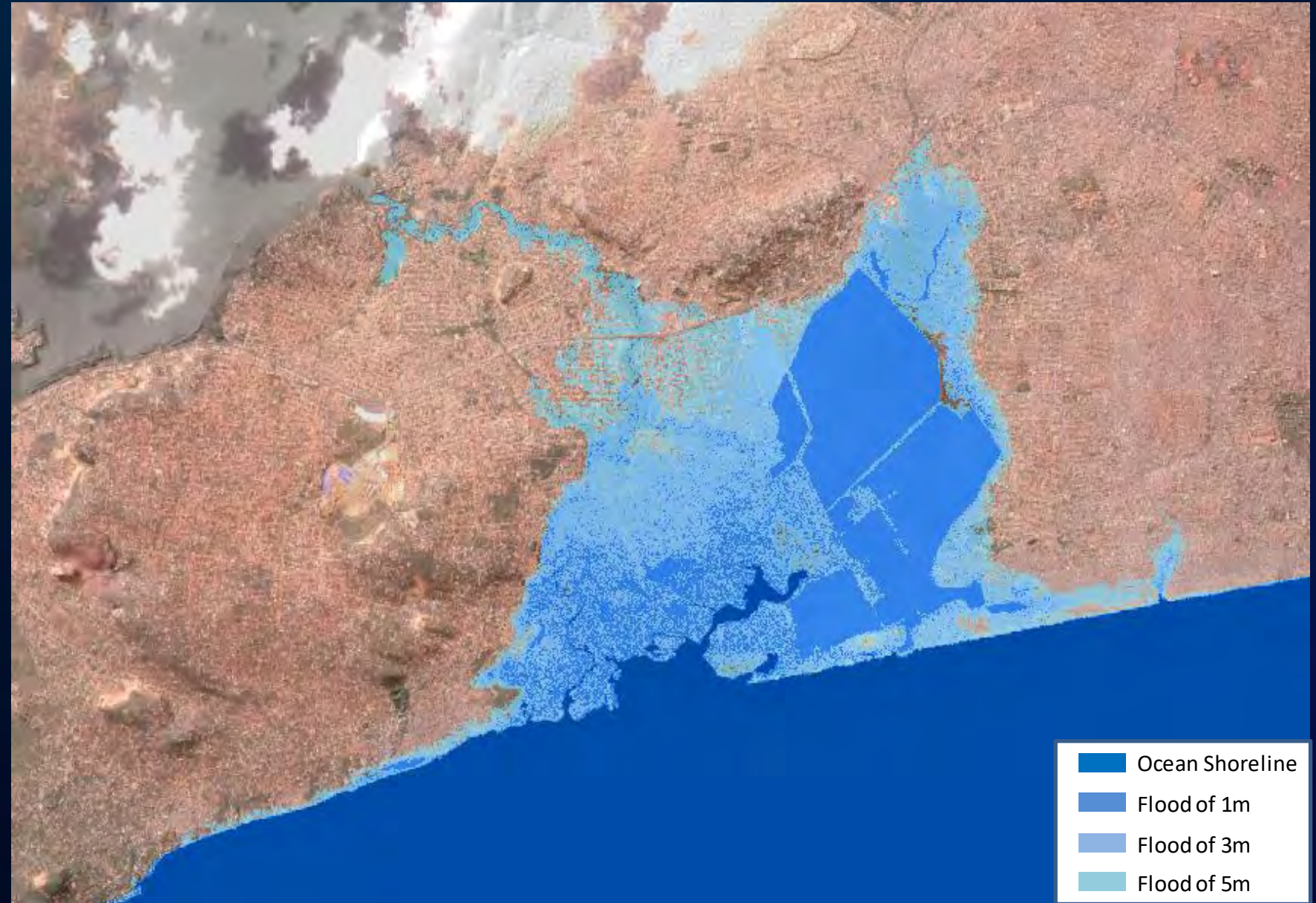
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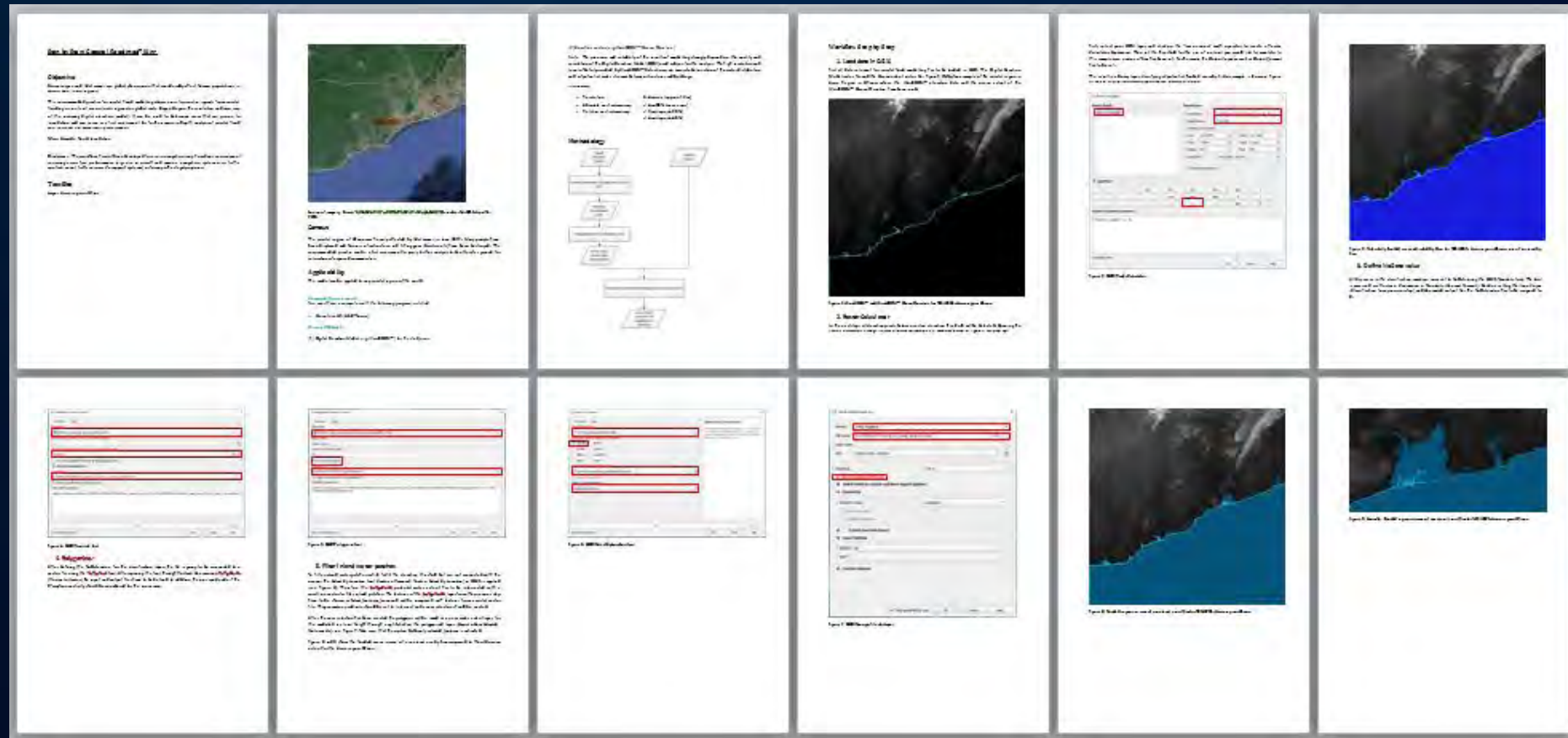


Coastal flooding simulation, Accra West, Ghana



Analysis from WorldDEM™, Background Image from Sentinel 2

→ Published soon at the UN-SPIDER Knowledge Portal



- Open source GIS software
- Easy handling
- Applicable for all DEM data

Use Case #2

Guatemala: River Inundation Modelling

*Comparison with free
and open data*

Flood Simulation, Coyolate River, Guatemala

COYOLATE RIVER
HYDRAULIC MODELLING

FLOOD SITE:
SANTA ODILIA VILLAGE,
NUEVA CONCEPCION, ESCUINTLA,
GUATEMALA

DISCHARGE DATA FROM THE
CERRO COLORADO STATION
T = 50 YEARS



¡Ciencia en acción para enfrentar el cambio climático!



AIRBUS

Courtesy of Private Institute for Climate Change Research

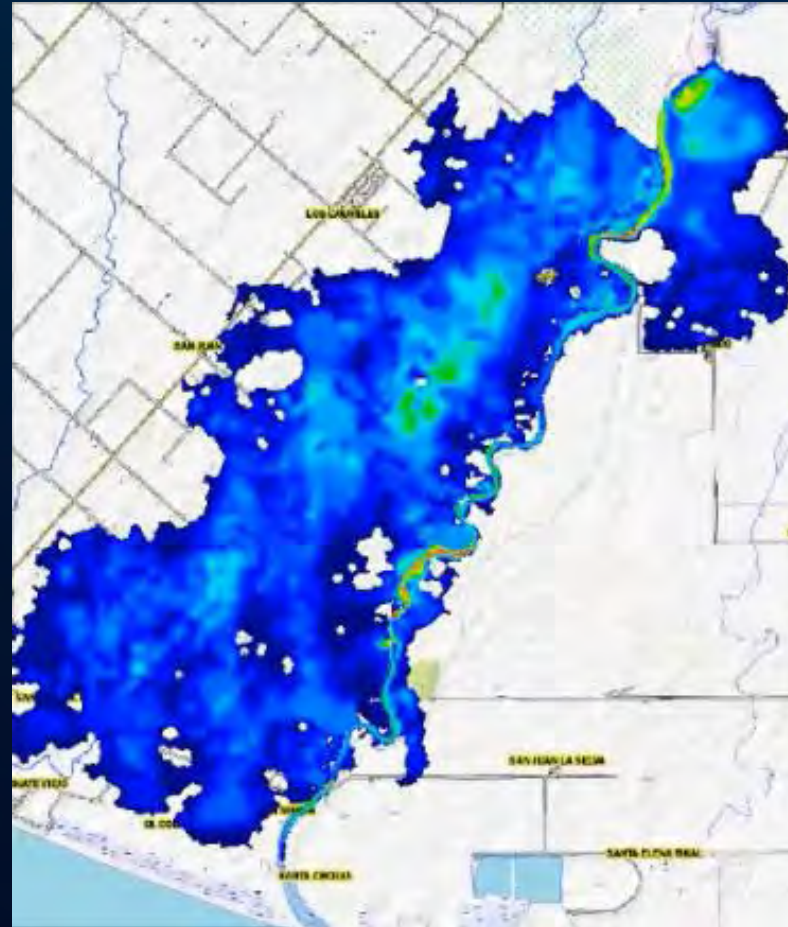
AIRBUS

Use Case #2

Guatemala: River Inundation Modelling

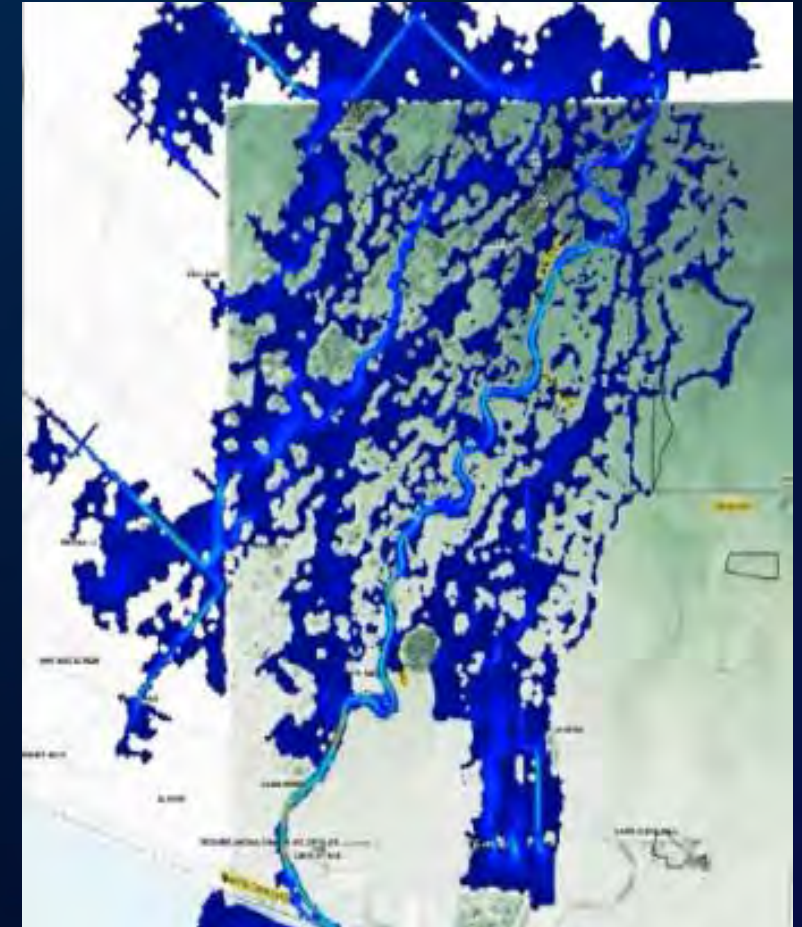
*Comparison with free
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Flood Simulation, Coyolate River, Guatemala



Specific discharge
SRTM, 30M

VS



Specific discharge
WorldDEM, 12M



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AIRBUS

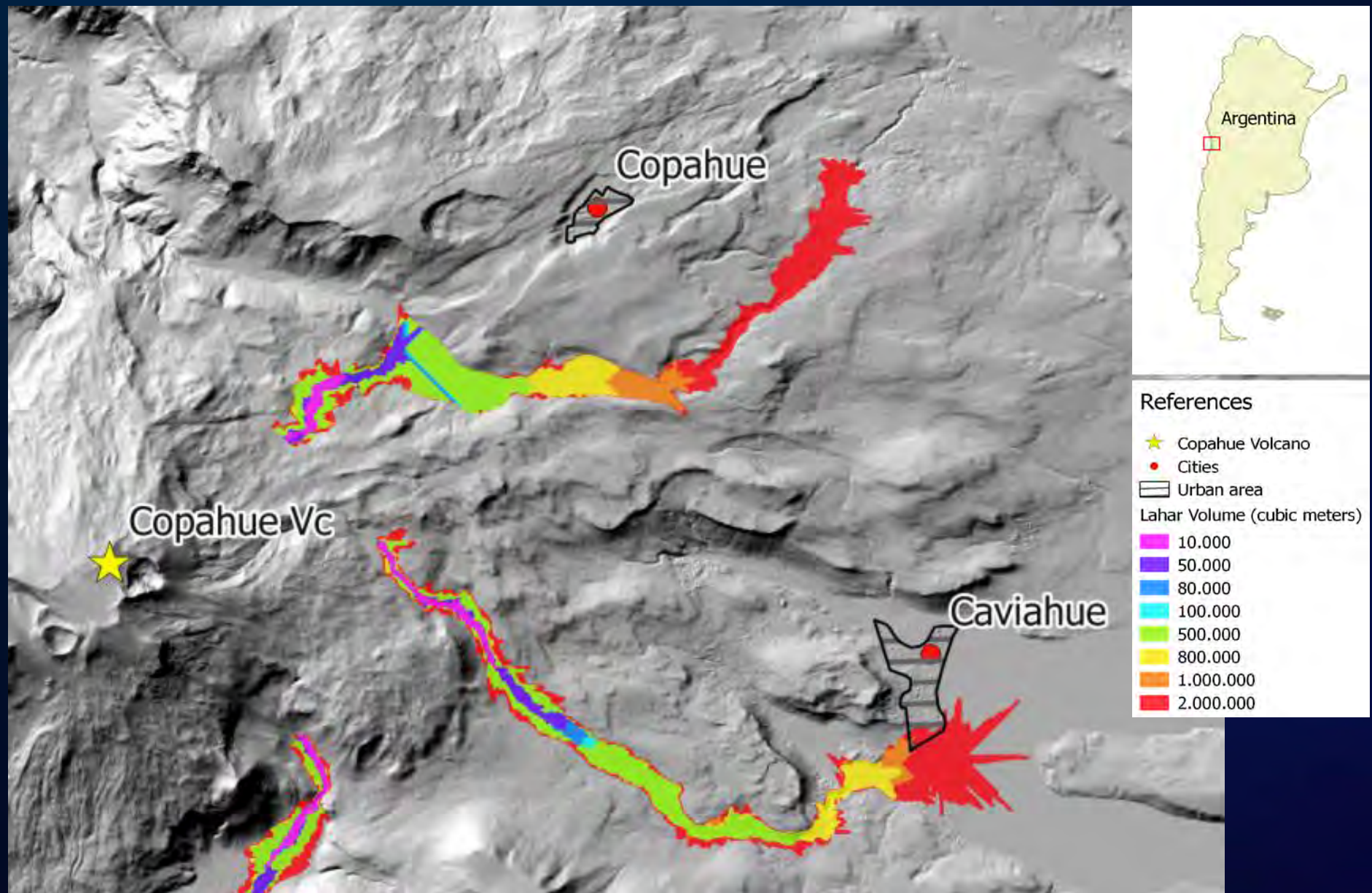
Use Case #3

Lahar Modelling Using WorldDEM™

Applications:

- Lahar modelling
- Settlement areas hazard risk assessment

Lahar Modelling, Copahue Vulcano, Argentina

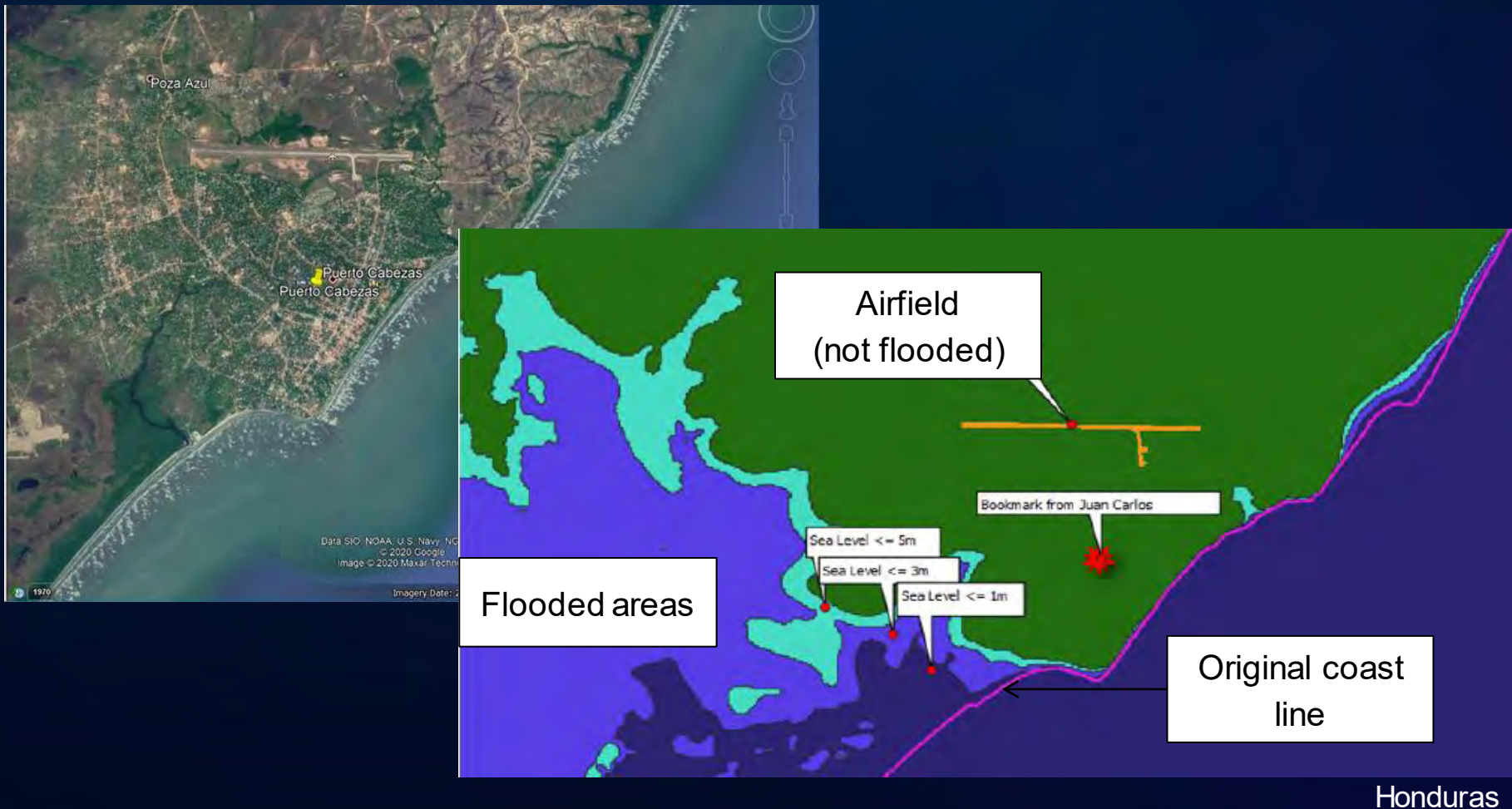


Use Case #4

Flood maps to enable first aid to land in safe airfield

- Applications:
- Emergency response
 - Storm surges
 - Hurricanes

Nicaragua – Hurricane November 2020
Request of UNSPIDER to help them to confirm if airfield would have been flooded



Fluvial Flood Modelling

WorldDEM DTM_{lite} based example of a 100 Year Return Flood modelling. Neckarau (Germany)



Slide with animation

Thank you

Contact

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