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United Nations Institute for Training and Research

UNOSAT

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THE SCIENCE OF WHERE™

GIS for a Sustainable World:
Building a Resilient Future

May 10 - 11, 2022 | InterContinental, Geneva, Switzerland



BIENVENUE

SELAMAT DATANG

Добро пожаловать

TERVETULOA

WELCOME

2022

VELKOMMEN

BIENVENIDO

WELKOM

VÄLKOMMEN

ようこそ







PURPOSE

GIS – BUILDING A RESILIENT FUTURE

RELATIONSHIPS

APPLICATIONS

VISION & TRENDS

SHARING

TECHNOLOGY UPDATE

LEARNING







HELPING YOU MAKE YOUR MISSION SUCCESSFUL

INTERESTS

DISCIPLINES

ORGANIZATIONS

YOU

BACKGROUNDS

NATIONALITIES

A GLOBAL COMMUNITY
OF GEOSPATIAL HUMANITARIAN
PROFESSIONALS



YOUR WORK

Addressing Our World's Greatest Challenges

Sustainable Development
Peace
Conservation
Health
Refugees
Capacity Building
Natural Resources
Climate Change
Risk Reduction
Science & Technology
Environment
Water Resources
Food & Agriculture
Conflict
Migration
Infrastructure
Disaster Relief



GIS – BUILDING A RESILIENT FUTURE

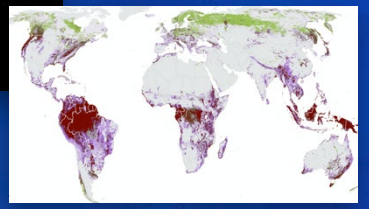
Monitoring Climate Change & Assessing Impacts

Global Biodiversity Mapping



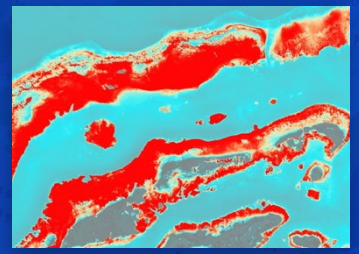
E.O. Wilson Biodiversity Foundation
Ethiopia

Carbon and Biodiversity Modeling



Conservation International
Global

Coral Bleaching



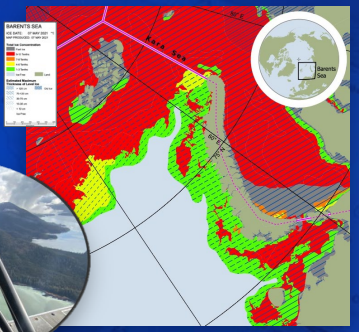
Eötvös Loránd University
Calituban Reef, Philippines

Tracking Fish Spawning



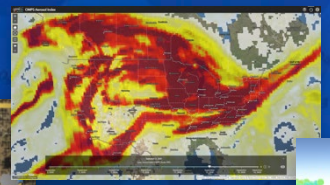
Alaska Department of Fish and Game
Alaska

Sea Ice Monitoring



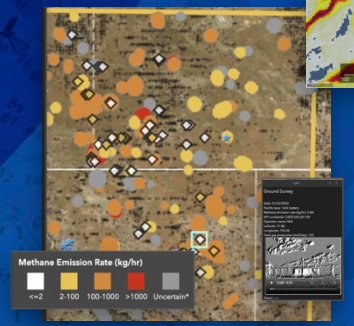
US National Ice Center
Barents Sea

Observing Ozone from Wildfires



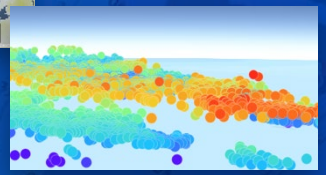
NASA
North America

Methane Gas Monitoring



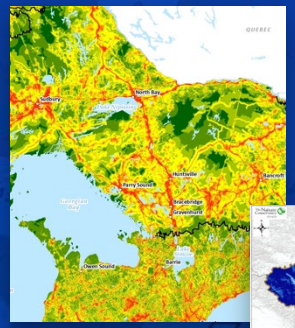
Stone Environmental
Permian Basin, Texas | Arizona

Visualizing Volcanic Eruption Plume



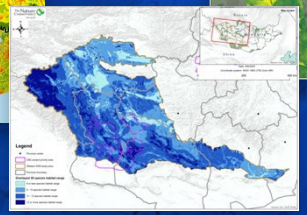
NASA
St. Vincent | Grenadines

Modeling the Human Footprint



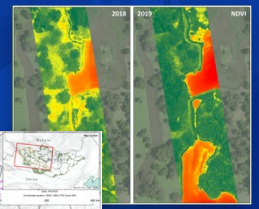
Environment and Climate Change
Ontario, Canada

Habitat Richness



The Nature Conservancy
Western Mongolia

Measuring Plant Health



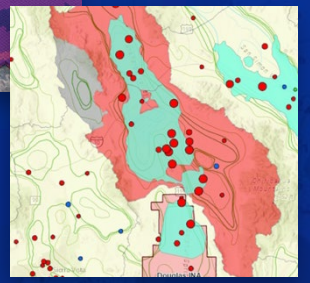
HANA Resources
California

Water Quality Modeling



TCarta Marine
San Diego

Monitoring Ground Water



Kyl Center for Water Policy
Arizona

Conserving Nature & Promoting Sustainable Practices

Regional Conservation Planning



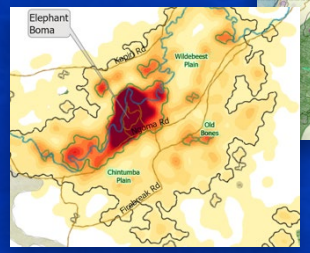
Alessandra Gattei
Po River Hydrographic Basin, Italy

Assessing Conservation Activities

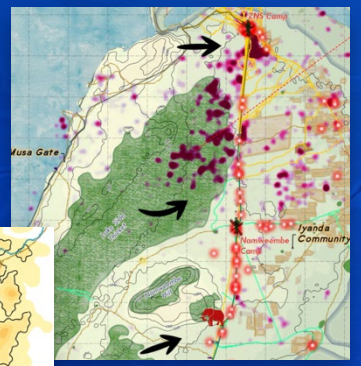


Blue Raster
Amazon

Elephant Home Range



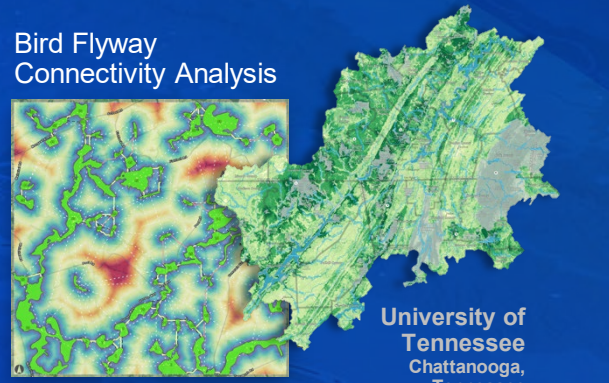
Human-Elephant Conflict



Game Rangers International
Kafue National Park, Zambia

Green Infrastructure Planning

Bird Flyway Connectivity Analysis



Boffa Miskell
Auckland, New Zealand

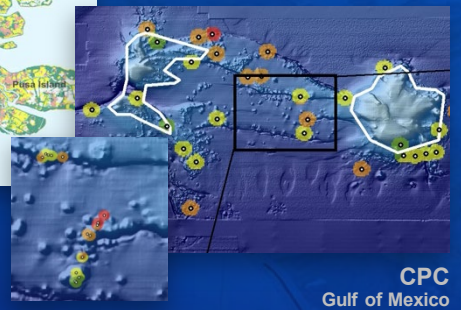
University of Tennessee
Chattanooga, Tennessee

Monitoring Mangrove Loss



The Nature Conservancy
Indonesia

Marine Sanctuary Planning



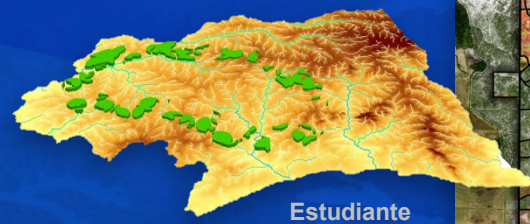
CPC
Gulf of Mexico

Environmental Restoration



Caesb
Brasilia, Brazil

Modeling Ecosystems Services



Estudiante
Uruguay

Managing Ecosystems with Fire

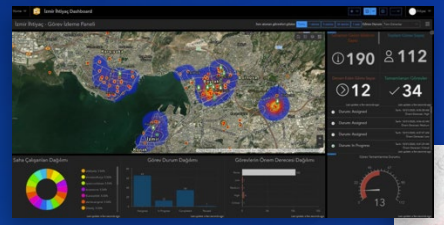


Archbold Biological Station
Florida

Responding to Crises & Disasters

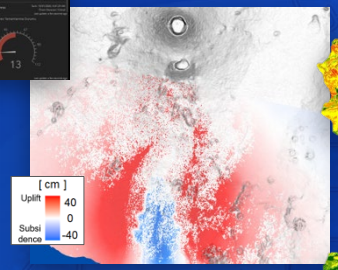
Seismic

Managing Earthquake Response



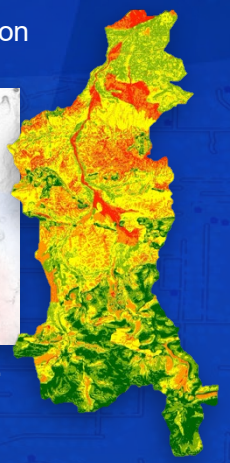
IDEMA
Izmir Province of Turkey

Ground Deformation Near Volcano



Kokusai Kogyo Co., Ltd.
Mt. Nyiragongo, DR Congo

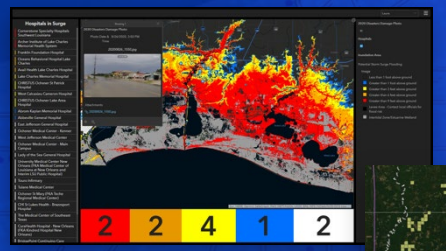
Liquefaction Susceptibility



University of Athens
Corinth, Greece

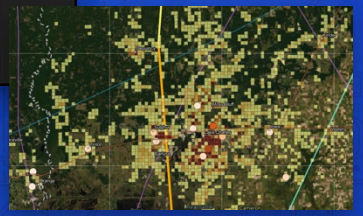
Severe Weather

Storm Surge & Hospital Impacts



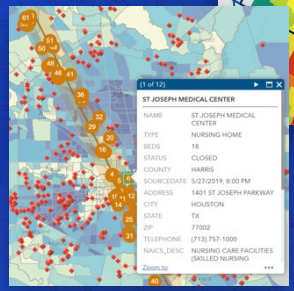
Bent Ear Solutions
Gulf Coast

Targeting Hurricane Financial Aid



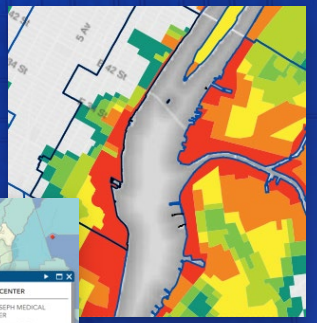
American Red Cross
Louisiana

Hurricane Impacts on Nursing Homes



US DHS
Houston, Texas

Mapping Community Risk Zones



City of New York
New York

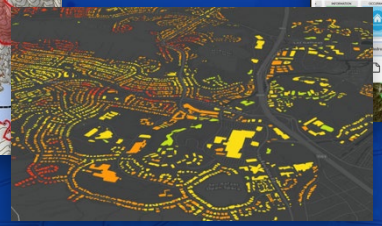
Fire

Wildfire Mapping



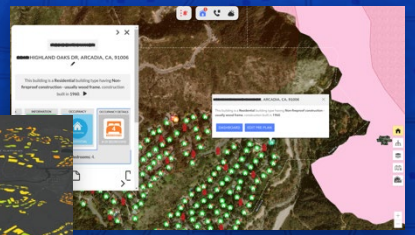
County of Pickens
North & South Carolina

Fire Risk Assessment



FlameMapper
Marin County, California

Damage Assessment



First Due
Arcadia, California

Flooding

Flood Pre-Planning



First Due
Fairfax, Virginia

Real-Time Response



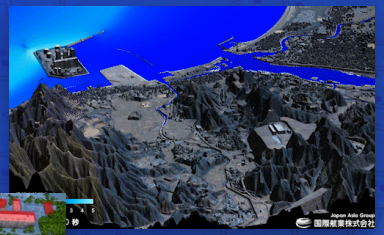
Kajima Corporation
Tokyo, Japan

Flood Simulation



SymGEO
Laurel, Maryland

Tsunami Visualization

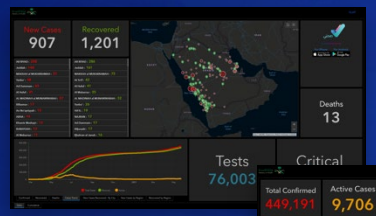


Kokusai Kogyo Co., Ltd.
Fukushima, Japan

Monitoring and Responding to Health Emergencies

Monitoring

Case Monitoring



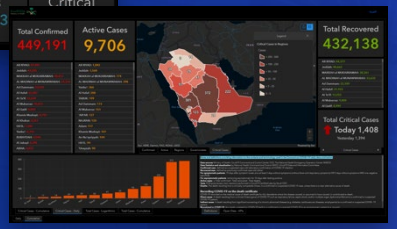
Kingdom of Saudi Arabia

Global Dashboard

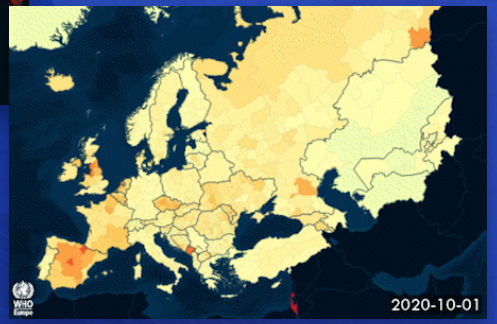


Johns Hopkins University

Public Dashboard



Visualizing Pandemic Dynamics



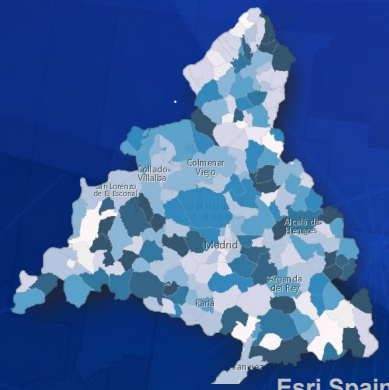
WHO European Region
Europe | Central Asia

Infection Near Me



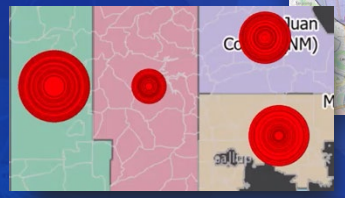
Pertamina Geothermal Energy
Jakarta Metropolitan

Early Detection
(Wastewater Monitoring)



Esri Spain
Madrid

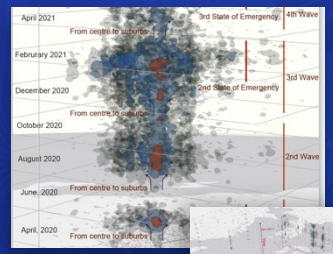
Navajo Nation Cases



Elijah Allan
US

Analyzing

Spatiotemporal Case Density Map

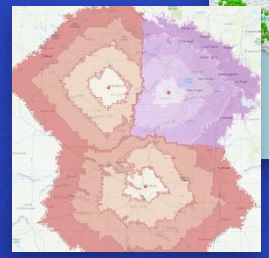




Tohoku University
Tokyo, Japan

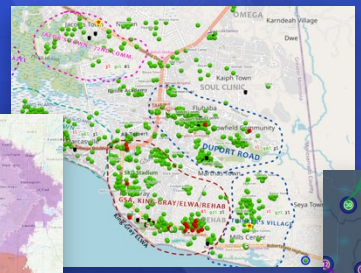
Responding

Vaccine Site Selection



County of Carver
Minnesota

Case Surveillance & Quarantine Management



Godwin Akpan
Liberia

Aid Package Distribution



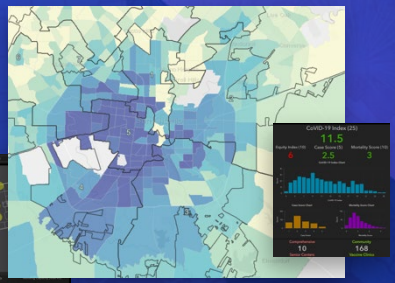
Universitas Gadjah Mada
Indonesia

Return to Office Management



Government of British Columbia
Canada

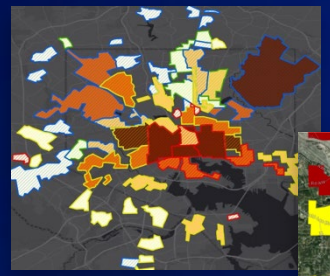
Community Outreach Based on COVID-19 Index



City of San Antonio
Bexar County, Texas

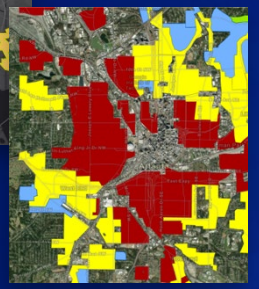
Promoting Social Equity Around the World

Lingering Effects of Redlining



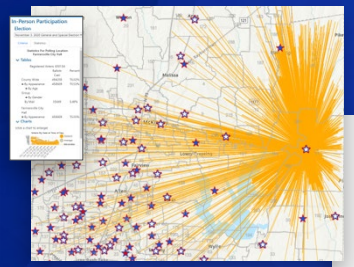
Morgan State University
Baltimore, Maryland

Redlining



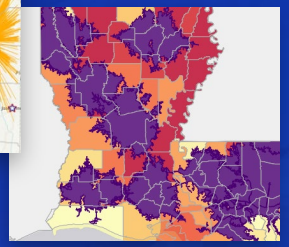
Critical Think
Detroit

Voting Patterns & Access



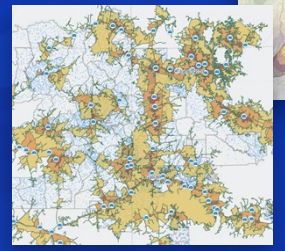
County of Collin
Texas

Poverty & Access to Legal Resources



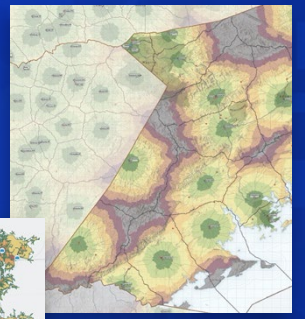
Lagniappe Law Lab
Louisiana

Post Office Accessibility



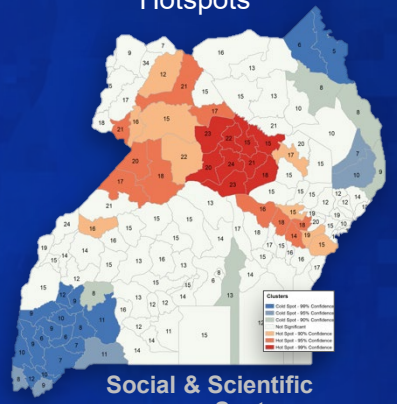
Navajo Nation

Access to Health Facilities



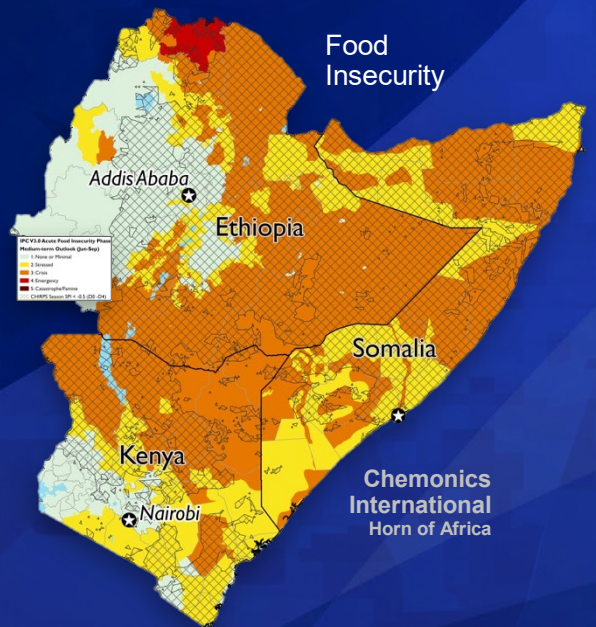
Columbia University
Gombe District, Zambia

Teenage Pregnancy Hotspots



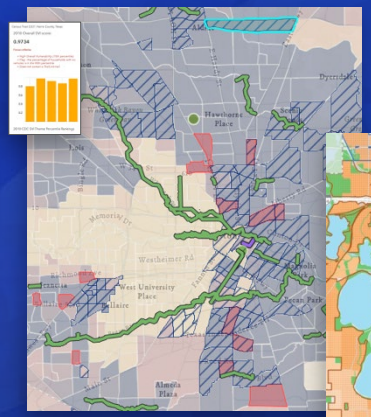
Social & Scientific Systems
Uganda

Food Insecurity



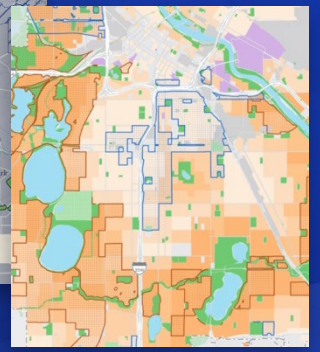
Chemonics International
Horn of Africa

Trails and Equity Planning



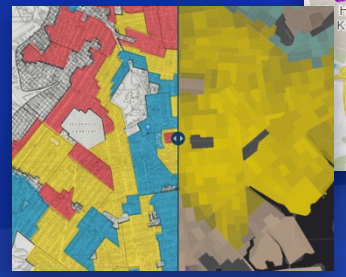
Rails-to-Trails Conservancy
Houston, Texas

Park Accessibility and Equity



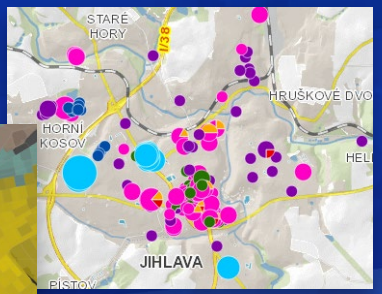
The Trust for Public Land
Minnesota

Mapping Racism



The FaithX Project
Brooklyn, New York

Underprivileged Population & Public Housing



Statutarni Mesto Jihlava
Jihlava, Czech Republic

VISION

GIS – BUILDING A RESILIENT FUTURE



Our World Has Never Been More Challenged. . .

. . . By Our Own Actions & Choices

. . . By Climate Change & Natural Hazards

…By the Systemic Nature of Risk

Our Future

Depends Upon Creating and

Applying a Collective Understanding

VISION

GIS – BUILDING A RESILIENT FUTURE

In this age of data, information and connectivity,

. . . even though we can quantify more of what was previously uncertain,

…it makes apparent how much more we don't know.

What is evident, is that change is happening more quickly and surprisingly…

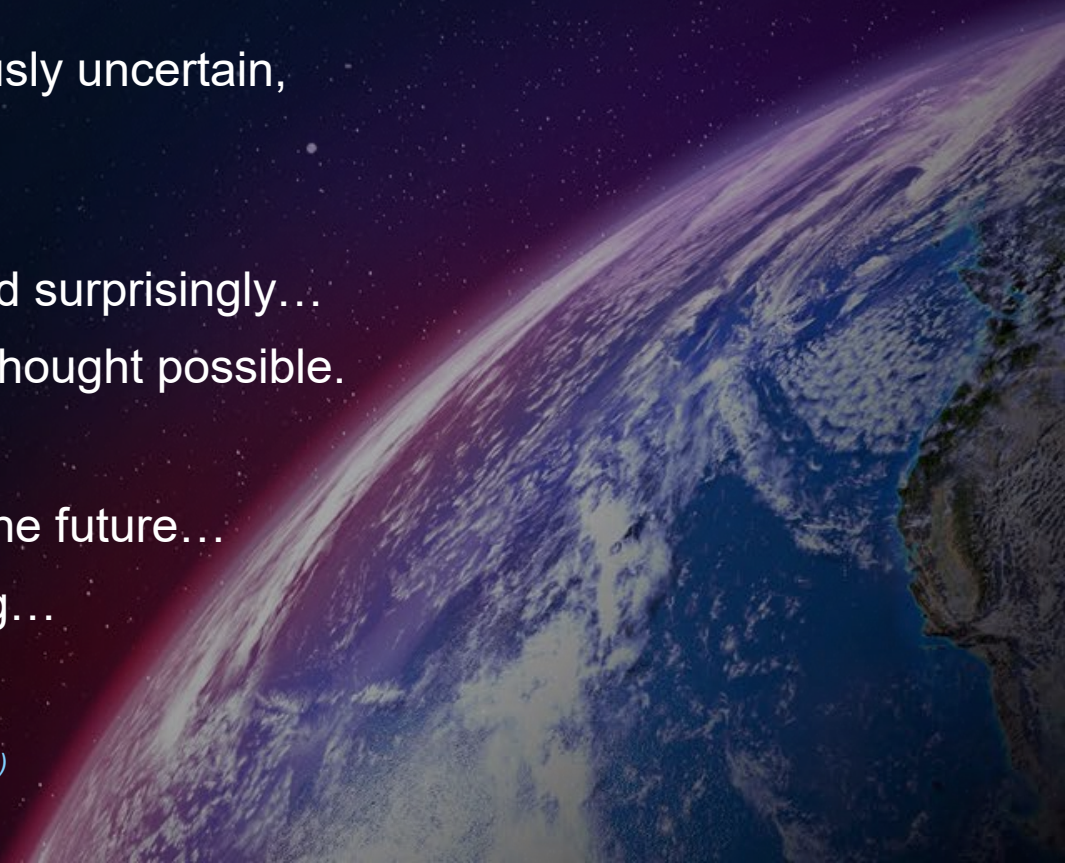
…across multiple dimensions and scales than we ever thought possible.

We can no longer use the past as a reliable indicator of the future…

. . . and new risks and correlations are emerging…

…in a way that we have not anticipated.

2019 Global Assessment Report on Disaster Risk Reduction (UNDRR)



Resilience is “the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.”

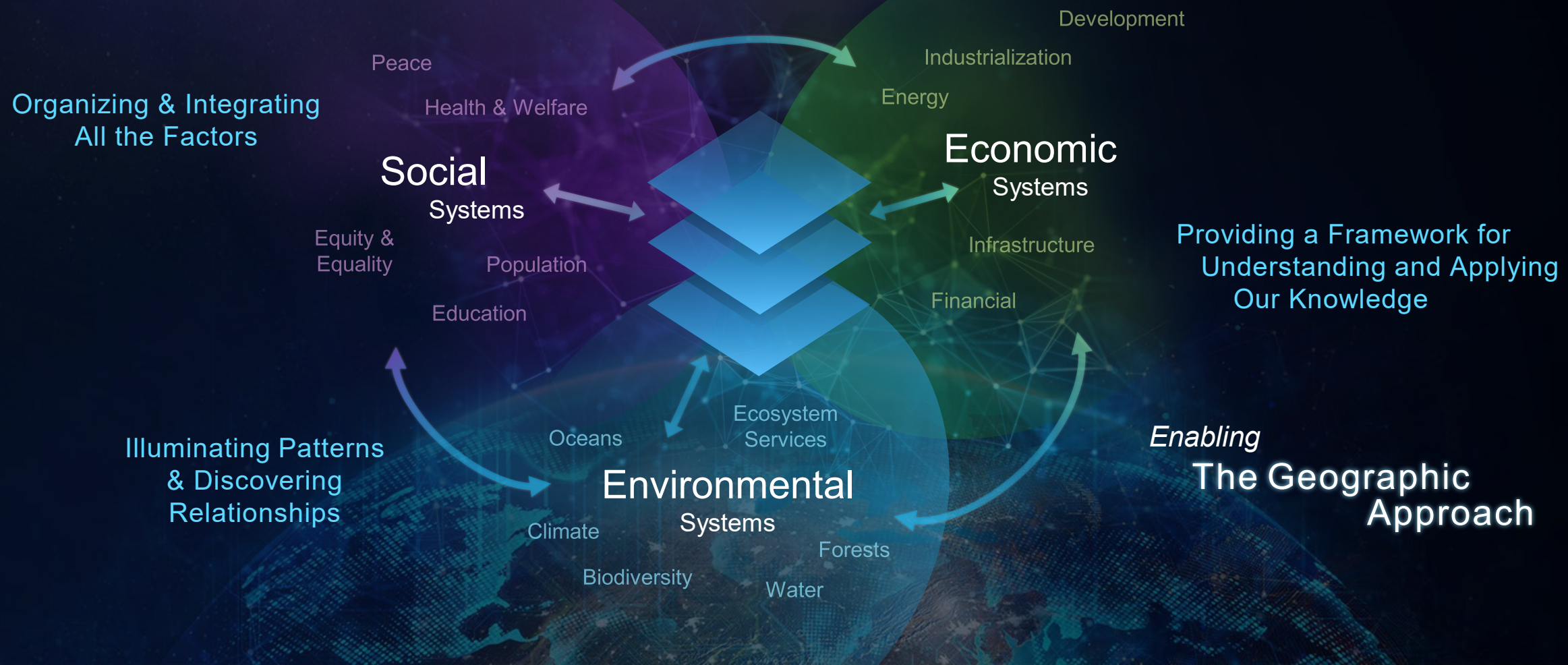
Rockefeller Foundation
100 Resilient Cities



Resiliency Requires . . .

We See the World as One Single Ecosystem

Geography Provides the Science & Language to Do This



Building a Resilient Future Is Possible . . .

It Will Require Our Collective Effort. . .

Working Across Organizations to Maximize Our Impact

. . . and We Must Act Now



Applying Our Best Science, Technology & Creativity

Geographic Thinking Will Be Essential

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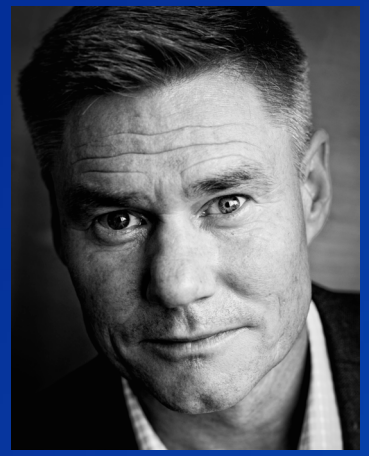
esri
THE SCIENCE OF WHERE™

GIS for a Sustainable World

Building a Resilient Future



Keynote Speakers



Dr. Einar Bjorgo
Director of the United Nations Satellite Centre (UNOSAT)



Dr. Erica Nelson
Co-Director, Humanitarian Geoanalytics Research and Education Programs
Harvard Humanitarian Initiative (HHI)



Dr. Gregg Greenough
Co-Director, Humanitarian Geoanalytics Research and Education Programs
Harvard Humanitarian Initiative (HHI)





Dr. Einar Bjorgo

Director, United Nations Satellite Centre (UNOSAT)



Building a Resilient Future

GIS for a Sustainable World Conference

Einar Bjørgo, Director, United Nations Satellite Centre (UNOSAT)

Geneva, May 10 2022



United Nations Satellite Centre

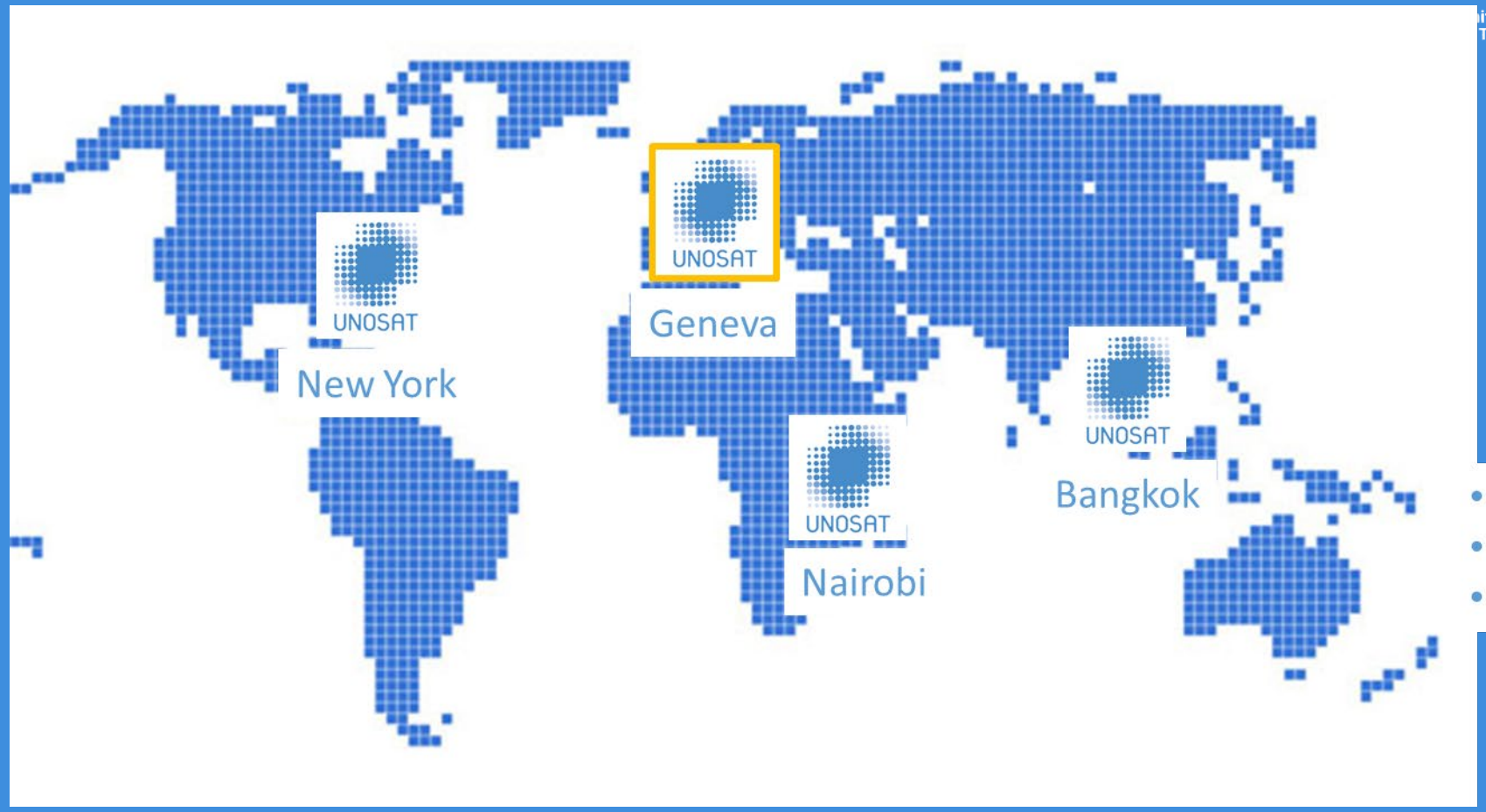
Introduction

- Operational since 2001, recognized as the United Nations Satellite Centre in June 2021
- Mandate: To provide the United Nations funds, programmes and specialized agencies with satellite analysis, training and capacity development, at their request, as well as to continue supporting Member States with satellite imagery analysis over their respective territories and to provide training and capacity development in the use of geospatial information technologies



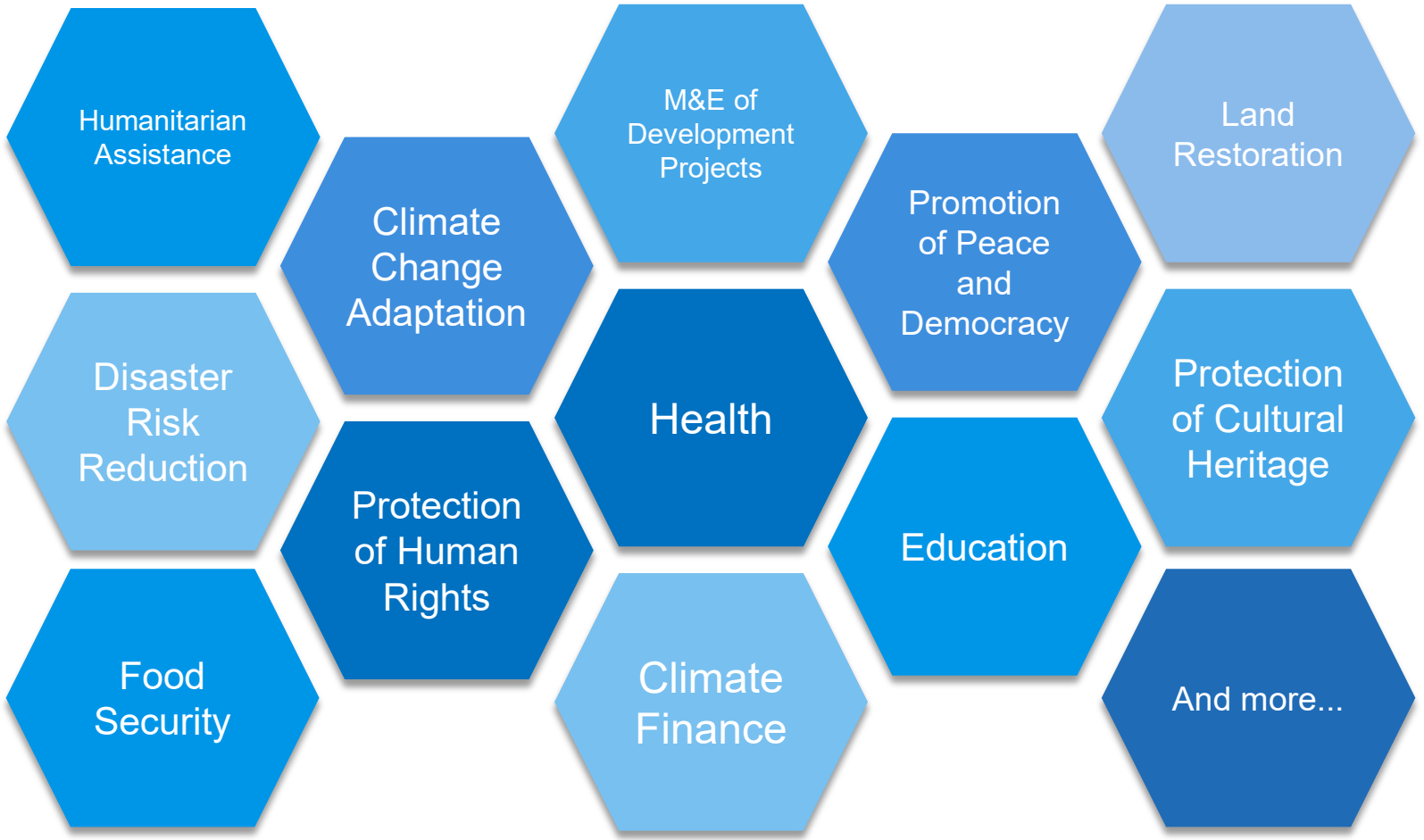
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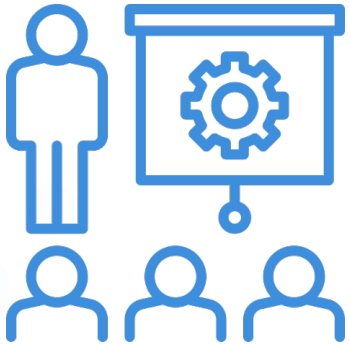
- Fiji
- Vanuatu
- Solomon Islands

UNOSAT
Thematic Areas



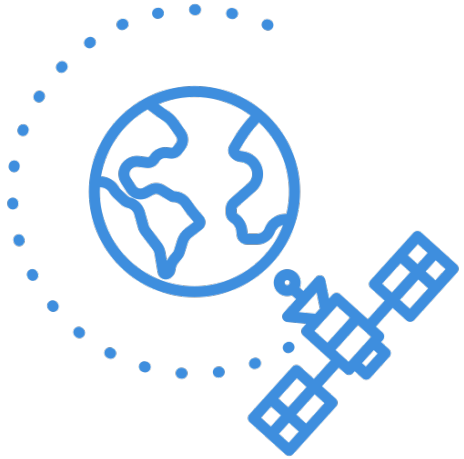
Operational Pillars

UNOSAT



Training and Capacity Development

Hands-on technical training, awareness raising and technical backstopping



Satellite Analysis

Satellite imagery derived geospatial products



Applied Research and Innovation

EO, AI, Machine Learning, Big Data Analytics, crowdsourcing

Capacities

Training & Capacity Development



Face to Face Training (If situation permits)



Knowledge hub for continuous learning



Community of practice

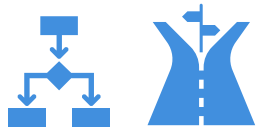
Technical backstopping and Solutions



Continuous in-country and remote tech support



Custom tailored and focused thematic solutions



Develop decision making products

HUMANITARIAN RAPID MAPPING

SATELLITE IMAGE ANALYSIS DURING HUMANITARIAN EMERGENCIES

UNOSAT

UNOSAT

SERVICE OVERVIEW

Operational since 2003, the UNOSAT Rapid Mapping service offers a 24/7 year round availability to process requests from humanitarian actors and to deliver satellite imagery derived analysis, maps, reports and data ready to use data following major sudden onset disaster events and conflict situations. Typical situations for which UNOSAT Rapid Mapping is activated include floods, earthquakes, storms, landslides, volcanoes, oil spills, chemical waste, refugee and internally displaced person camp mapping, conflict damage assessment and situation analysis. UNOSAT benefits from a variety of sources for its satellite imagery: free and open source, commercial vendors, International Charter Space and Major Disasters (natural and technological disasters only) and in-kind donations.

UN-ASIGN
Download and use the UN-ASIGN app to capture images of humanitarian disasters



HOW WE SUPPORT DURING HUMANITARIAN EMERGENCIES

Wide and timely distribution of rapid mapping products to support evidence based operational planning and decision making of humanitarian actors in the field and at headquarter level.

Broad and rapid coverage of areas of interest using satellite images collected through different acquisition mechanisms including the activation of the International Charter Space and Major Disasters.

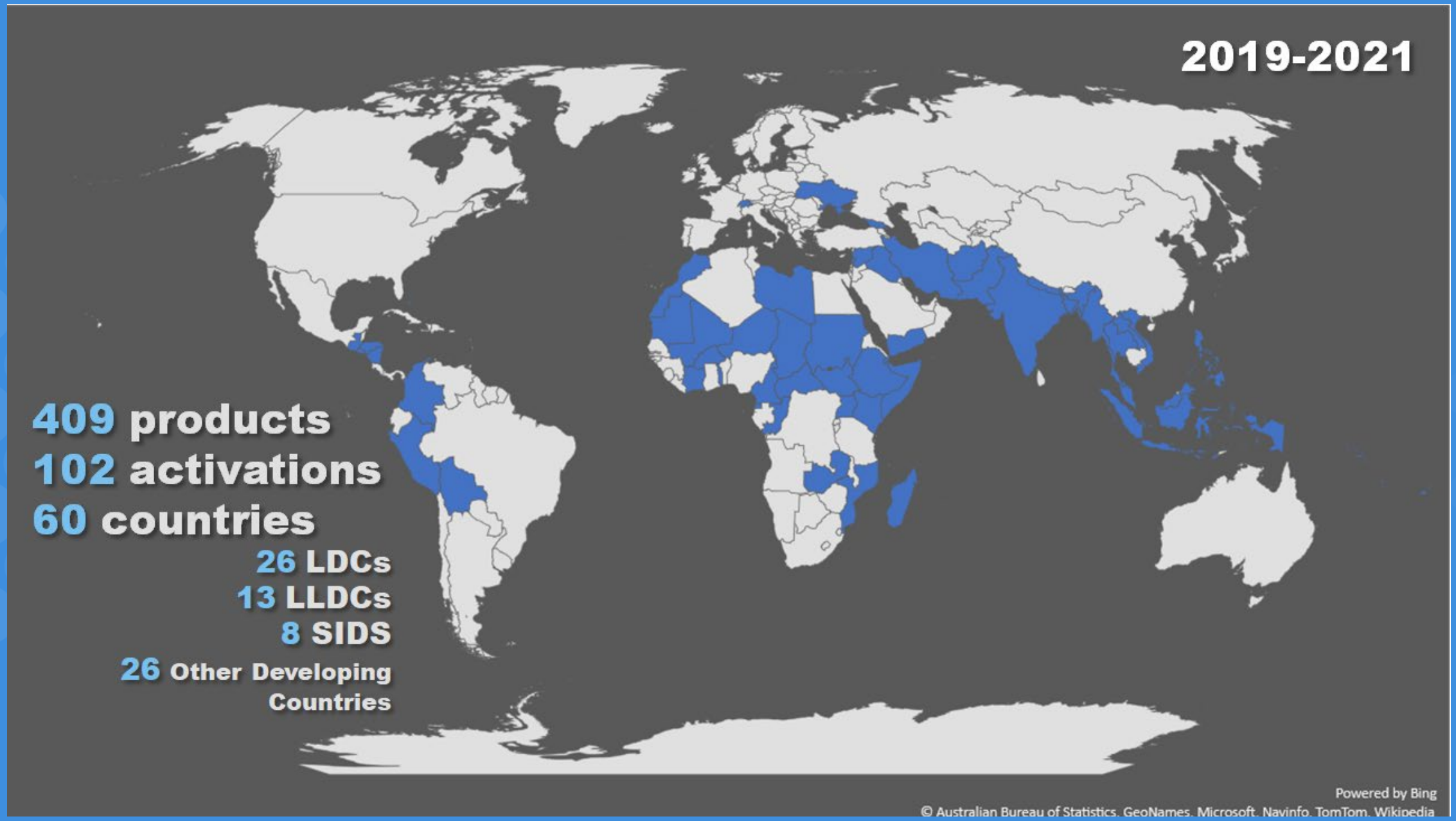
24/7 on-call service for UN member states, UN agencies, Red Cross and Red Crescent Movement (ICRC and IFRC), international and regional organizations and humanitarian non-governmental organizations.

Rapid satellite derived analysis and assessments in support of emergency response operations.



PRODUCTS

- SATELLITE ANALYSIS
- REPORTS & DATA
- WEB MAP


2019-2021
409 products
102 activations
60 countries
26 LDCs
13 LLDCs
8 SIDS
26 Other Developing Countries
Powered by Bing
© Australian Bureau of Statistics, GeoNames, Microsoft, Navinfo, TomTom, Wikipedia

UNOSAT

SOUTH AFRICA

ETHEKWINI METROPOLITAN MUNICIPALITY, KWAZULU-NATAL PROVINCE

IMAGERY ANALYSIS: 21/04/2022 PUBLISHED 06/05/2022 V1.

ANALYZED AREA	LANDSLIDES SCAR	POPULATION IN ANALYZED AREA
9,400 ha	270 ha	283,000

POTENTIALLY DAMAGED STRUCTURES	DAMAGED STRUCTURES
197	506



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UNOSAT

LANDSLIDES
FL20220418ZAF





See in set for close view

eThekwini

KwaZulu-Natal
eThekwini

See in set for close view



Landslide impact analysis in eThekwini, Metropolitan Municipality, KwaZulu-Natal Province, South Africa as of 21 April 2022

This map illustrates satellite-detected landslides/mudflow in eThekwini, Metropolitan Municipality, eThekwini District, KwaZulu-Natal Province, South Africa as observed from a Kompsat-3 image acquired on 21 April 2022. Within the analyzed area, 270 ha of landslide scars were observed. Based on Worldpop population data, about 283,000 people live inside the analyzed area. Within the analysis extent, UNITAR-UNOSAT identified 506 damaged structures and 197 potentially damaged structures.

This is a preliminary analysis and has not yet been validated in the field. Please send ground feedback to the United Nations Satellite Centre (UNOSAT).

Legend

place
Town
Damaged Bridge
Road Damage
Damaged structure
Potentially damaged structure
River
Contour Line (10 m)
Motorway
Secondary road
Tertiary road
Other roads
Analysis extent
Landslide / Mudslide Extent

Map Scale for A3: 1:30,000
0 0.25 0.5 1 km

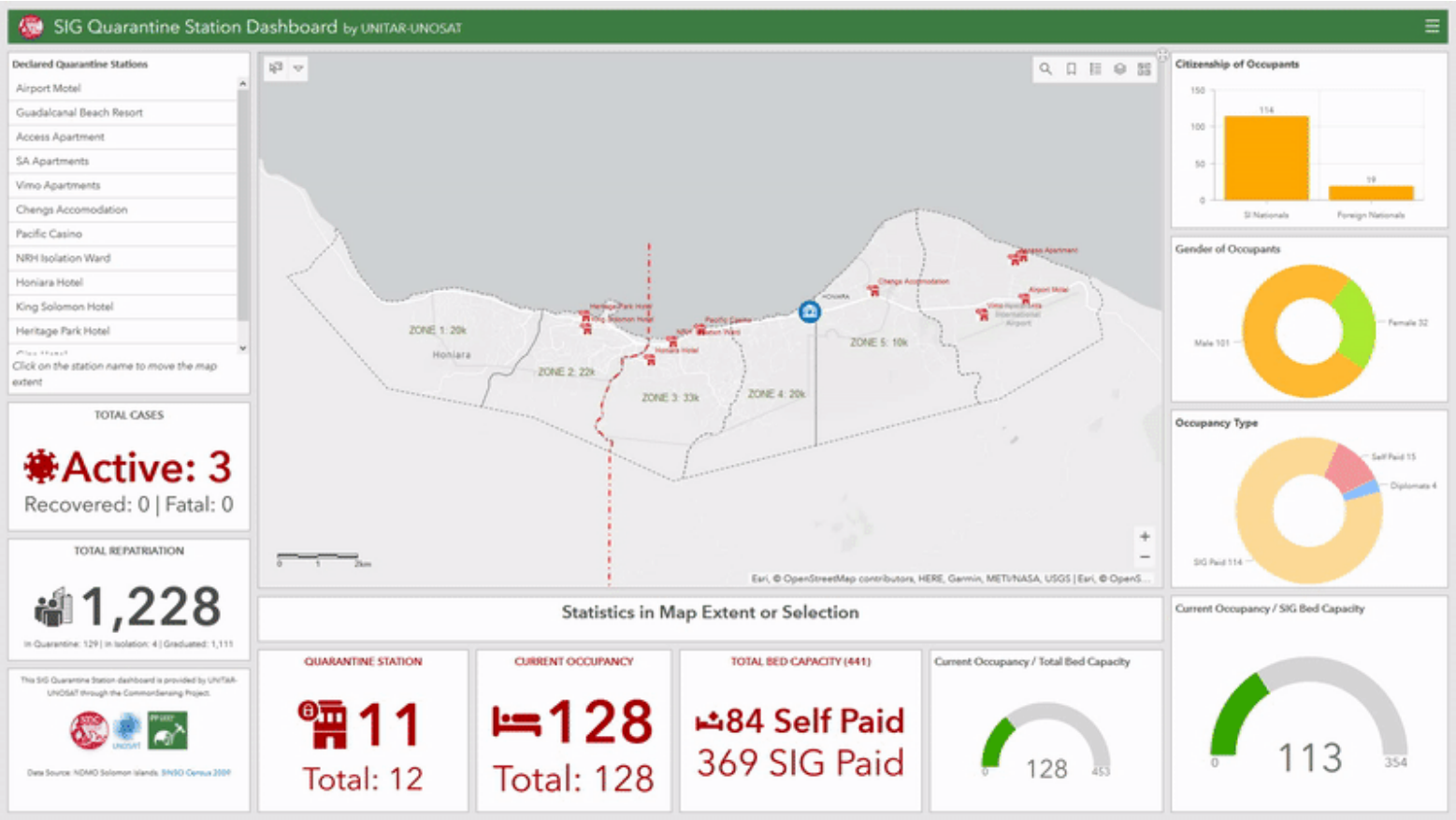
United Nations Satellite Centre (UNOSAT) -7 bis Avenue de la Paix, CH-1202 Geneva 2, Switzerland - T: +41 22 917 4720 (UNOSAT Operations) - Hotline 24/7 : +41 75 411 4998 - unosat@unitar.org - www.unitar.org/unosat

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Solomon Islands

Quarantine Stations Planning and Monitoring for Covid-19 Preparedness

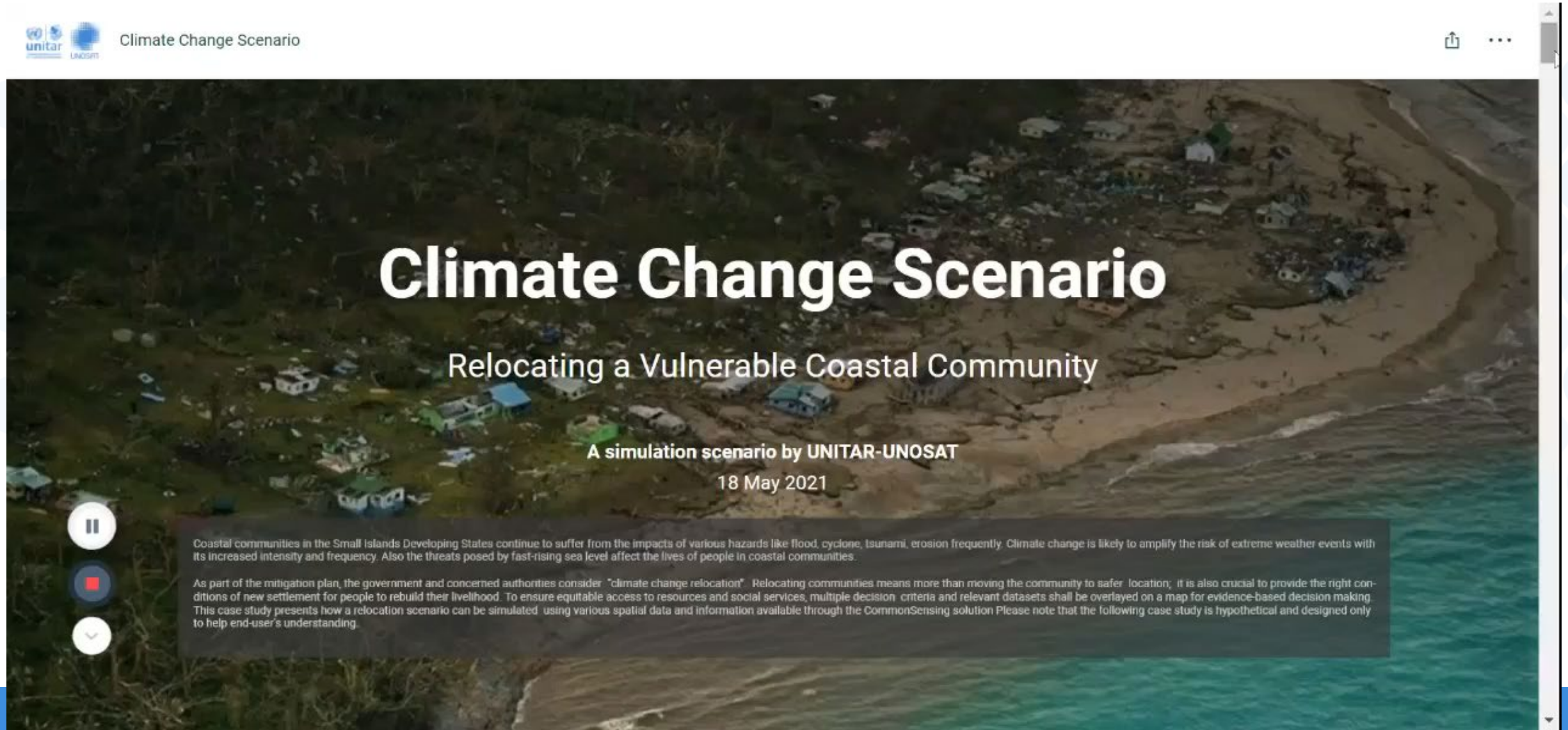


"Provided live dashboard had helped the different government agencies involved in Covid-19 response efforts to obtain centralized information, allowing for quick decision-making and planning for operations. This data was especially key for local police and health workers who would have to react quickly to ill returnees. It also assisted local operation centres, so the government could see the full picture and plan how to disperse services."

Mr. Jonathan Tafiariki
Deputy Director at SLB NDMO

Fiji

Climate Relocation Planning – Scenario Simulation using Decision Support System
https://bit.ly/3Aiv04D



HUMAN SECURITY MAPPING

SATELLITE IMAGERY ANALYSIS IN SUPPORT OF UN HUMAN SECURITY ACTIVITIES

UNOSAT

UNOSAT

SERVICE OVERVIEW

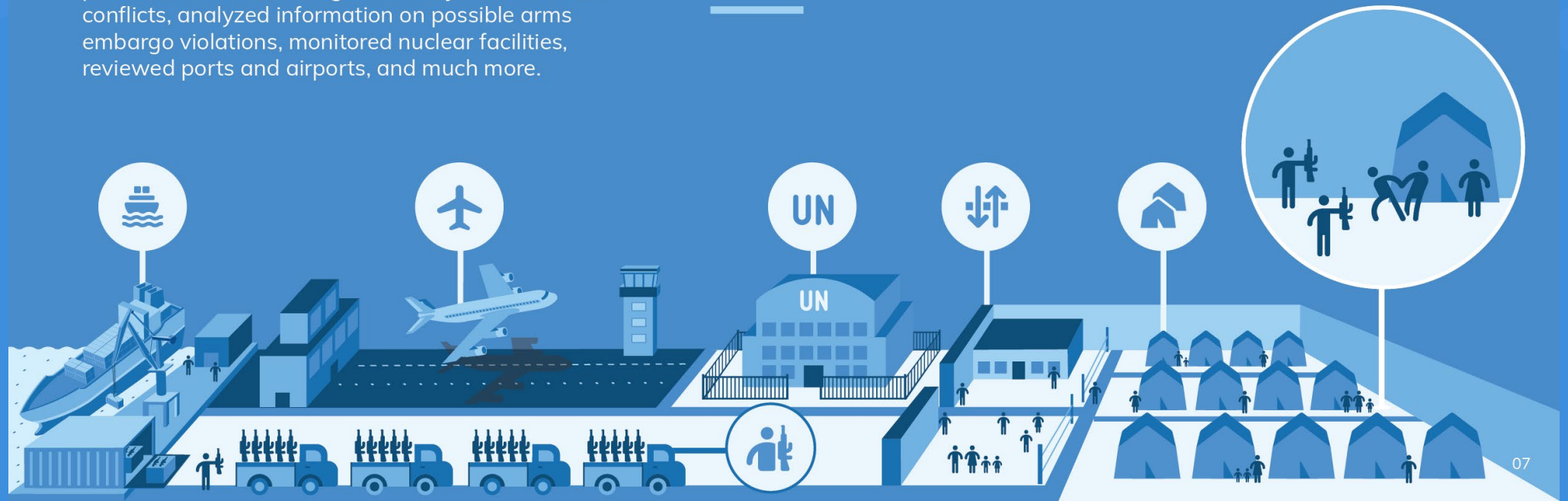
UNOSAT has long supported critical UN entities involved in promoting human security, including special envoys, the UN Operations and Crisis Center, and various UN missions and country offices around the world. UNOSAT has engaged in longer term monitoring efforts that seek to provide satellite-based updates for critical areas and events on a regular basis. UNOSAT has for example monitored critical border areas and incursion areas where significant military hardware is present, assessed damage from major international conflicts, analyzed information on possible arms embargo violations, monitored nuclear facilities, reviewed ports and airports, and much more.

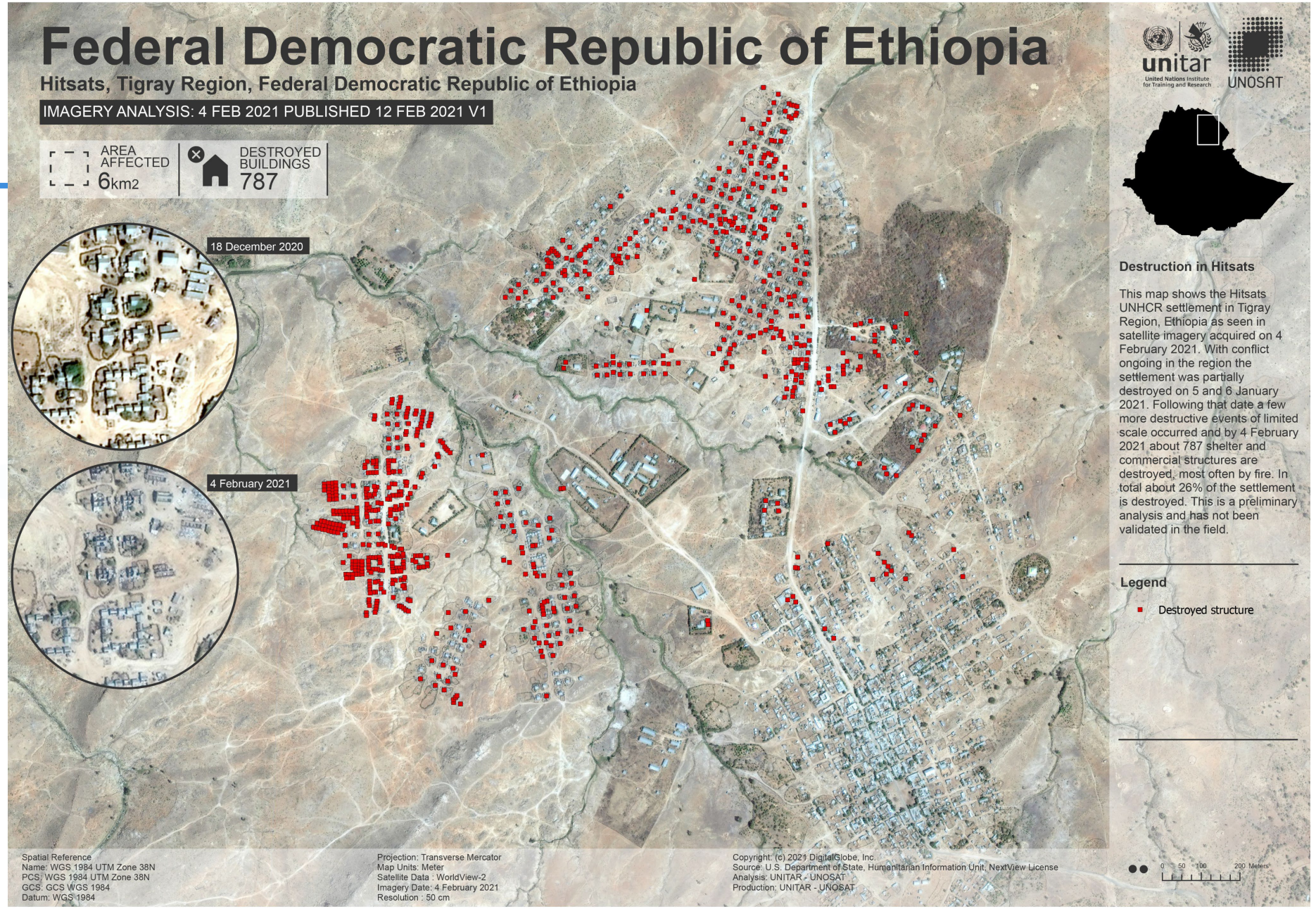
HOW WE SUPPORT HUMAN SECURITY ACTIVITIES

Advanced geospatial support to human security activities.

Provision of high quality analyses utilizing satellite imagery for use by UN partners.

Adaptable to partner organization needs.





UNITAR - UNOSAT -7 bis Avenue de la Paix, CH-1202 Geneva 2, Switzerland - T: +41 75 411 4998 (UNOSAT Operations) - Hotline 24/7 : +41 75 411 4998 - unosat@unitar.org - www.unitar.org/unosat

UKRAINE

HORENKA, KYIVSKA OBLAST

IMAGERY ANALYSIS: 31 March 2022 PUBLISHED: 11 April 2022 V1

% TOTAL VISIBLY DAMAGED CELL	AREA OF INTEREST
77%	10.5km2





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UNOSAT

COMPLEX EMERGENCY CE20220223UKR



UNOSAT Damage Assessment Overview Map

This map illustrates a satellite imagery-based Rapid Damage Building Assessment (RDBA) in the Horenka, Kyiv region, Ukraine. The RDBA divides the city into 500m x 500m cells, each of which is analyzed to determine whether or not there are damaged buildings inside the cell.

Based on imagery collected on 31 March 2022, analysts found that 51 cells out of 66 cells in Horenka sustained visible damage. This represents approximately 77% of the cells over the area.

This analysis is based on structures visibly damaged as of 31 March 2022 as seen in marginally degraded satellite imagery affected by light clouds and other limiting factors. This is a preliminary analysis and has not yet been validated in the field. Please send ground feedback to United Nations Satellite Centre (UNOSAT).

Legend

Horenka Boundaries

Damage

Damage

No visible damage

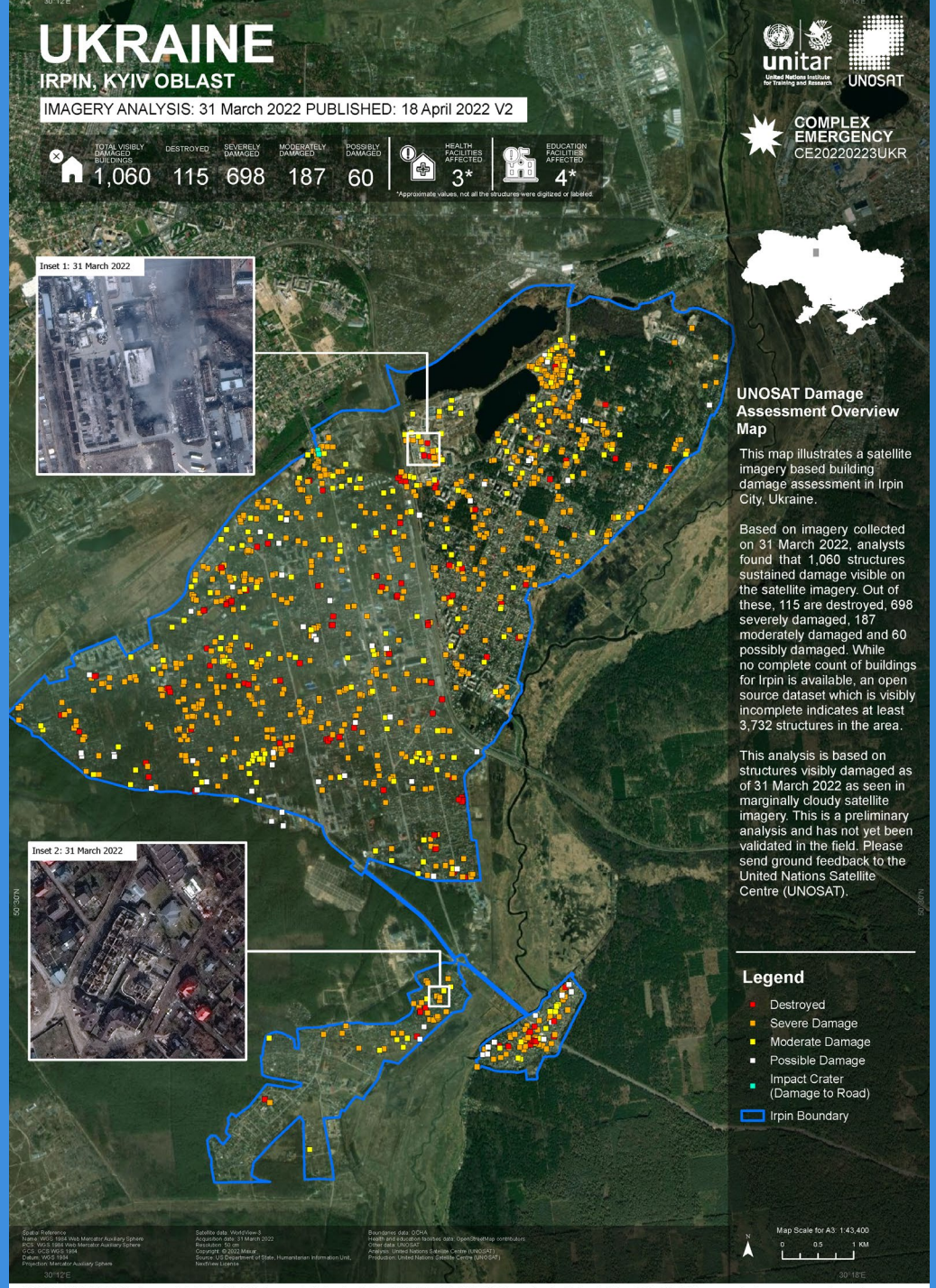
Spatial Reference
Name: WGS 1984 Web Mercator Auxiliary Sphere
PCS: WGS 1984 Web Mercator Auxiliary Sphere
GCS: GCS WGS 1984
Datum: WGS 1984
Projection: Mercator Auxiliary Sphere

Satellite data: WorldView-3
Acquisition date: 31 March 2022
Resolution: 30 cm
Copyright: © 2022 Maxar
Source: US Department of State, Humanitarian Information Unit, NextView License

Boundaries data: OCHA
Other data: UNOSAT
Analysis: United Nations Satellite Centre (UNOSAT)
Production: United Nations Satellite Centre (UNOSAT)

Map Scale for A3: 1:24'200

N 0 0.25 0.5 1 KM



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FLOOD A.I. MAPPING

AUTOMATIC FLOOD MAPPING DONE USING ARTIFICIAL INTELLIGENCE

UNOSAT

UNOSAT



SERVICE OVERVIEW

UNOSAT has years of experience mapping floods in support of the UN and member states all over the world. Advances in Artificial Intelligence and improved radar data availability allows UNOSAT flood mapping to address a larger portion of global flood events than in the past. UNOSAT analysts will be able to process more imagery over wider scales than ever before, which together with targeted radar tasking can greatly expand the amount of flood events UNOSAT can address.

HOW WE SUPPORT FLOOD MAPPING

Floods can be addressed ‘at scale’ instead of ‘as possible’

More frequent updates of flood mapping can be done

Automatic ingestion of results into live dashboard for decision making



UNOSAT S-1 Flood AI Monitoring Dashboard

Activation GLIDE: AI20210829NPL

Start Date 2021-08-29 End Date 2021-09-05

UN ASIGN Latest Photos (1 Month) - Points

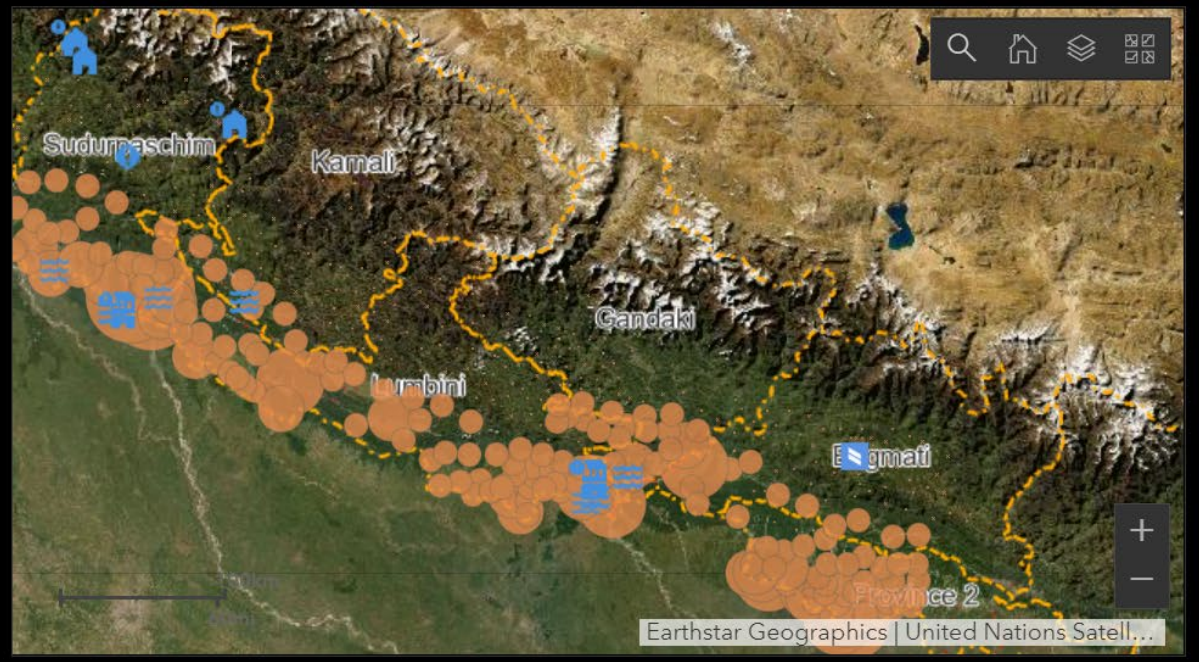
Report Point

- Flood Area
- Building-affected
- School-affected
- House-affected
- Health-facility-affected
- Bridge-affected

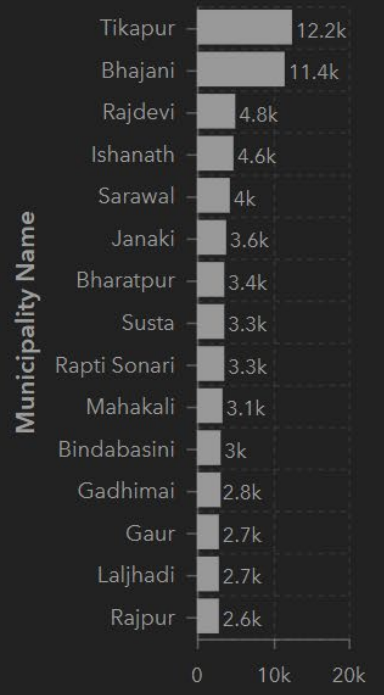
155.9k
Population Exposed

430
Inundated Area (SqKM)

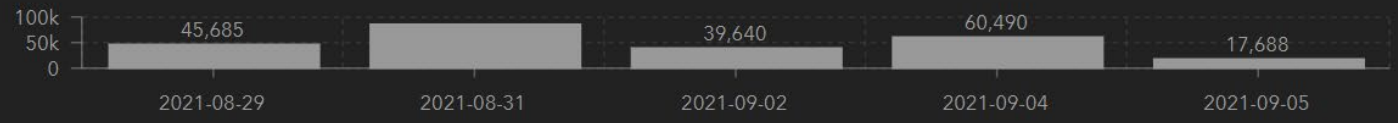
122.9k
Monitored Area (SqKM)



Exposed Population by Municipality



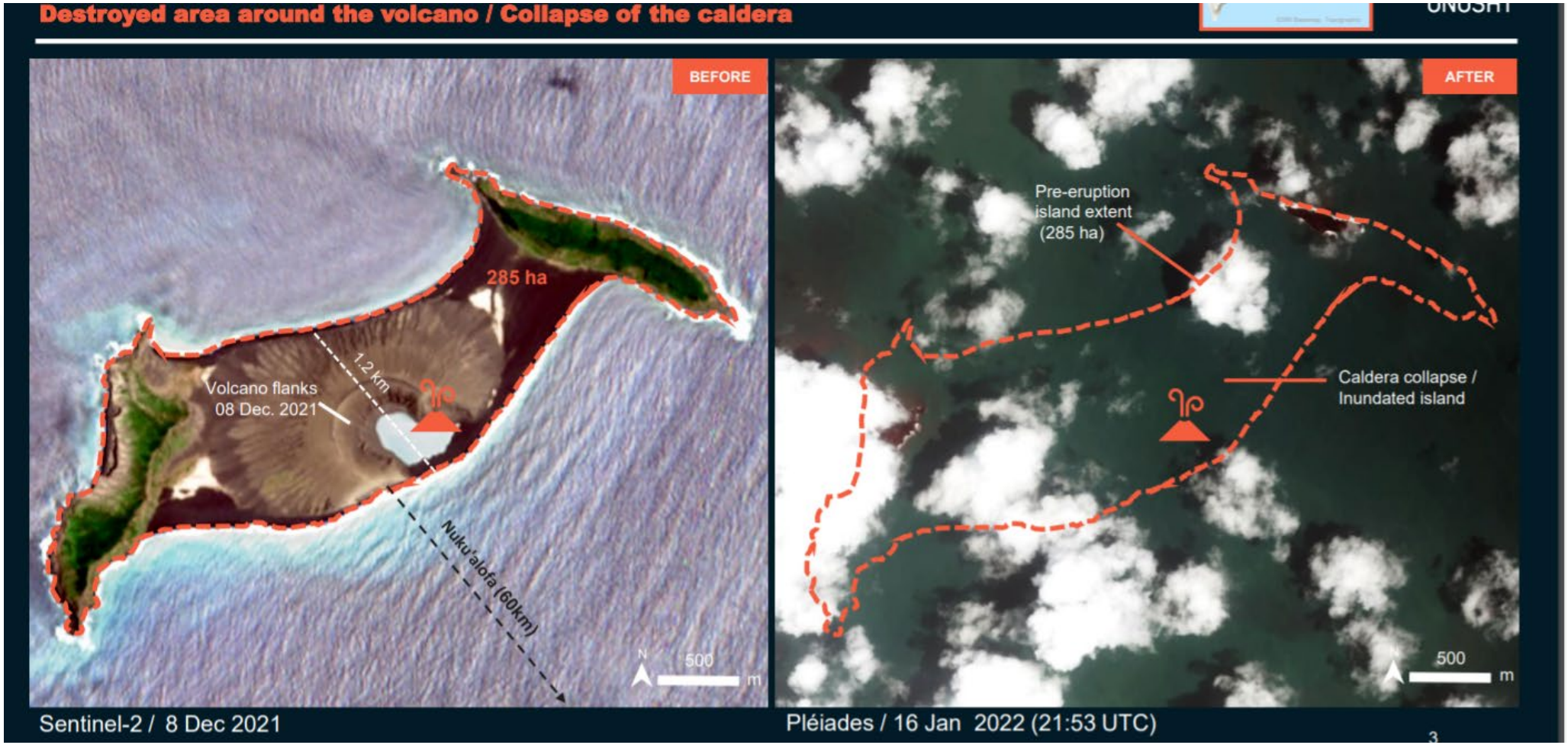
Exposed Population Over Time

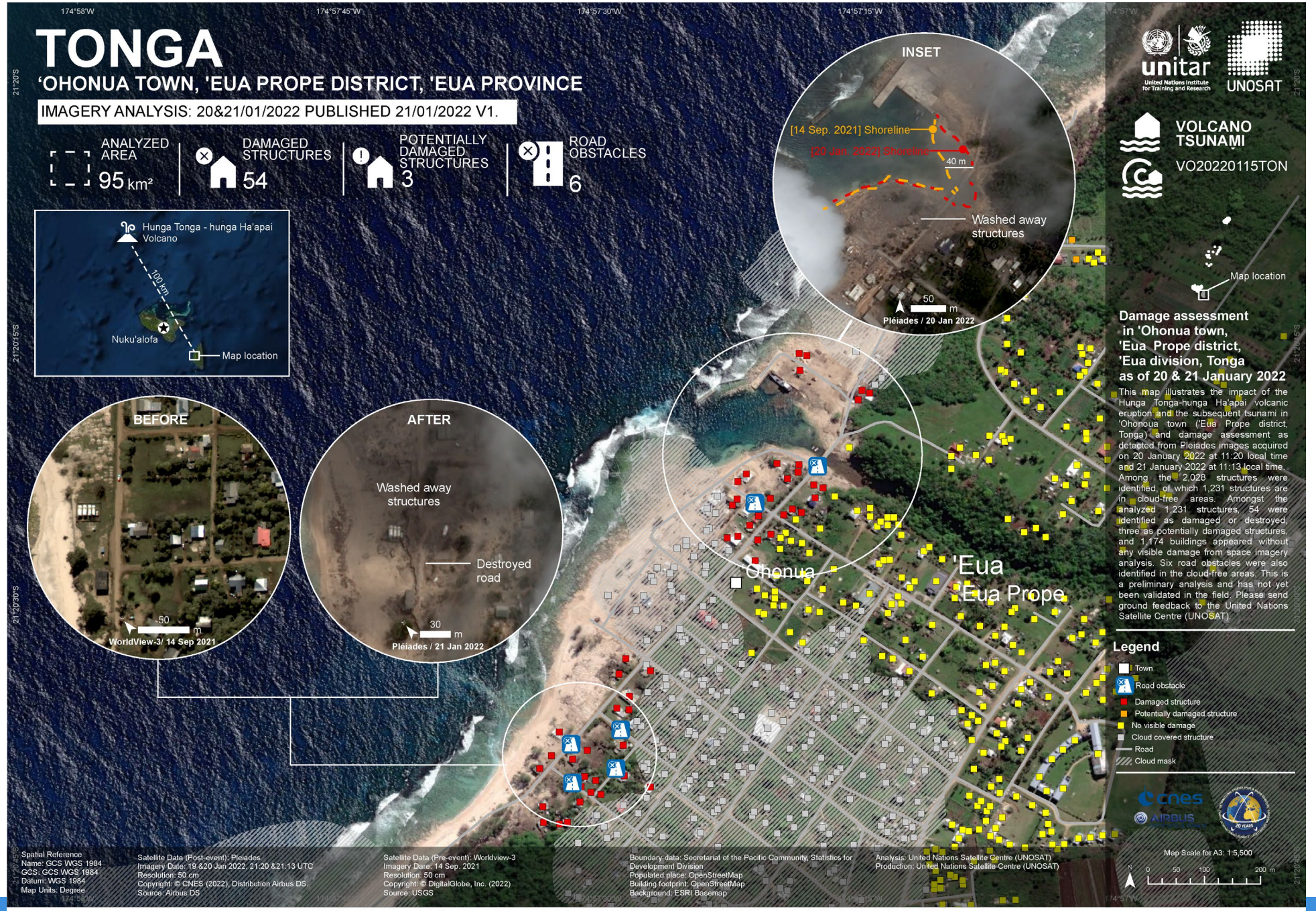


Download shapefile >> Here
Download csv >> Here

Disclaimer:
- Flood analysis from SAR

TONGA VOLCANO




TONGA
'OHONUA TOWN, 'EUA PROPE DISTRICT, 'EUA PROVINCE
IMAGERY ANALYSIS: 20&21/01/2022 PUBLISHED 21/01/2022 V1.
ANALYZED AREA
95 km²
DAMAGED STRUCTURES
54
POTENTIALLY DAMAGED STRUCTURES
3
ROAD OBSTACLES
6
Hunga Tonga - hunga Ha'apai Volcano
100 km
Nuku'alofa
Map location
BEFORE
50 m
WorldView-3/ 14 Sep 2021
AFTER
Washed away structures
Destroyed road
30 m
Pléiades / 21 Jan 2022
INSET
[14 Sep. 2021] Shoreline
[20 Jan. 2022] Shoreline
40 m
Washed away structures
50 m
Pléiades / 20 Jan 2022
Ohonua
'Eua
'Eua Prope
unitar
United Nations Institute for Training and Research
UNOSAT
VOLCANO TSUNAMI
VO20220115TON
Map location
Damage assessment in 'Ohonua town, 'Eua Prope district, 'Eua division, Tonga as of 20 & 21 January 2022
This map illustrates the impact of the Hunga Tonga-hunga Ha'apai volcanic eruption and the subsequent tsunami in 'Ohonua town ('Eua Prope district, Tonga) and damage assessment as detected from Pleiades images acquired on 20 January 2022 at 11:20 local time and 21 January 2022 at 11:13 local time. Among the 2,028 structures were identified, of which 1,231 structures are in cloud-free areas. Amongst the analyzed 1,231 structures, 54 were identified as damaged or destroyed, three as potentially damaged structures, and 1,174 buildings appeared without any visible damage from space imagery analysis. Six road obstacles were also identified in the cloud-free areas. This is a preliminary analysis and has not yet been validated in the field. Please send ground feedback to the United Nations Satellite Centre (UNOSAT).
Legend
Town
Road obstacle
Damaged structure
Potentially damaged structure
No visible damage
Cloud covered structure
Road
Cloud mask
cnes
AIRBUS
Map Scale for A3: 1:5,500
0 50 100 200 m
Spatial Reference
Name: GCS WGS 1984
GCS: GCS WGS 1984
Datum: WGS 1984
Map Units: Degree
Satellite Data (Post-event): Pleiades
Imagery Date: 19 &20 Jan 2022, 21:20 &21:13 UTC
Resolution: 50 cm
Copyright: © CNES (2022), Distribution Airbus DS.
Source: Airbus DS
Satellite Data (Pre-event): Worldview-3
Imagery Date: 14 Sep. 2021
Resolution: 50 cm
Copyright: © DigitalGlobe, Inc. (2022)
Source: USGS
Boundary data: Secretariat of the Pacific Community, Statistics for Development Division
Populated place: OpenStreetMap
Building footprint: OpenStreetMap
Background: ESRI Basemap
Analysis: United Nations Satellite Centre (UNOSAT)
Production: United Nations Satellite Centre (UNOSAT)

Dear UNOSAT Team,

I’m so grateful beyond what words could express!!! Thank you for these images! It’s truly amazing you were able to get us these. And a great gift for us to receive some good news and hope!!!

…

We are so grateful for the work you are doing and that you took the time to look into this for us. And especially to share the images that give us hope.

@UNOSAT

@UNITAR.unosat

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United Nations Institute for Training and Research

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T +41 022 917 4720
E unosat@unitar.org
www.unosat.org

Dr. Einar Bjorgo

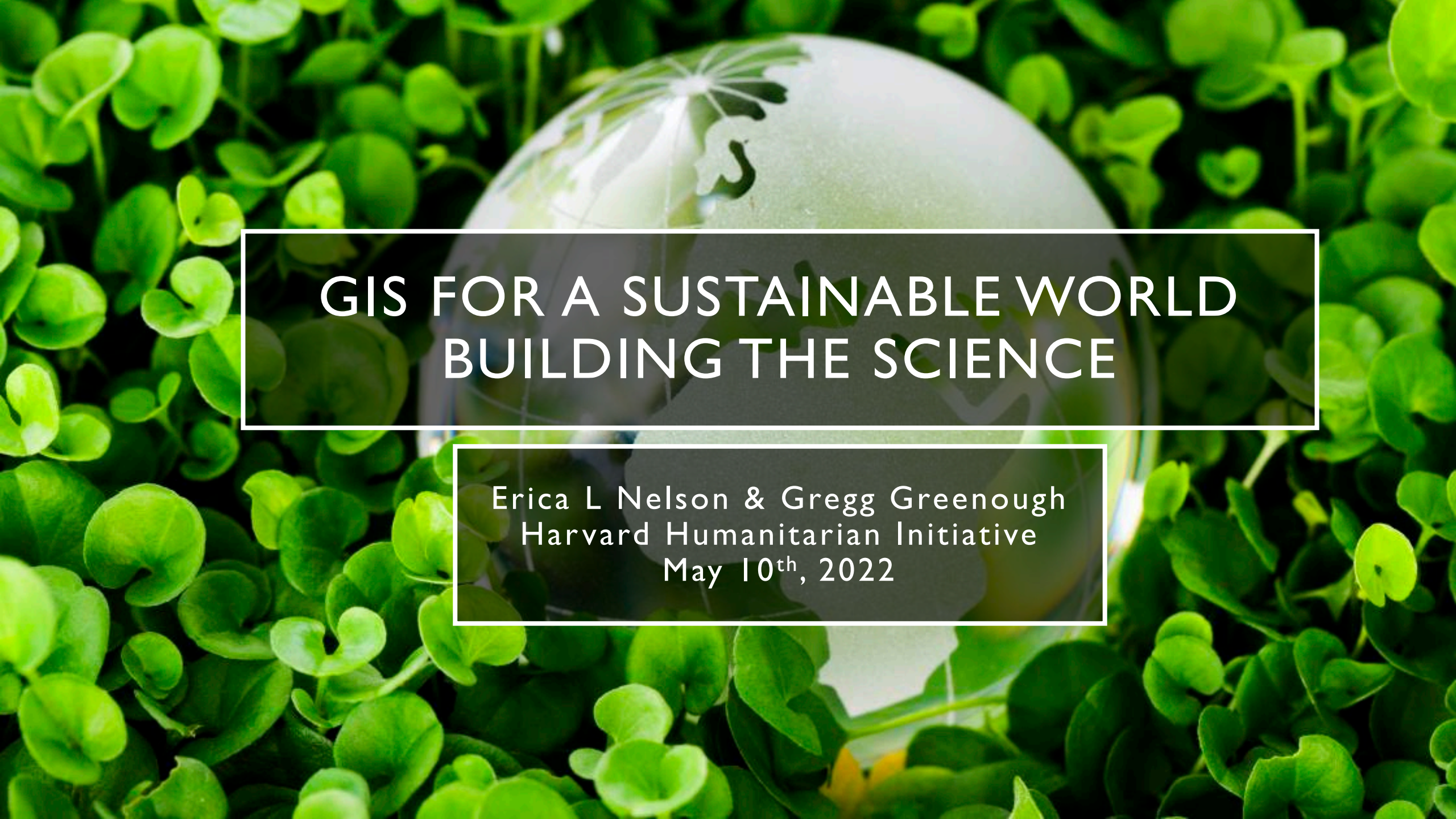
Director, United Nations Satellite Centre (UNOSAT)



Dr. Erica Nelson & Dr. Gregg Greenough

Co-Directors, Humanitarian Geoanalytics Research and Education Programs
Harvard Humanitarian Initiative (HHI)

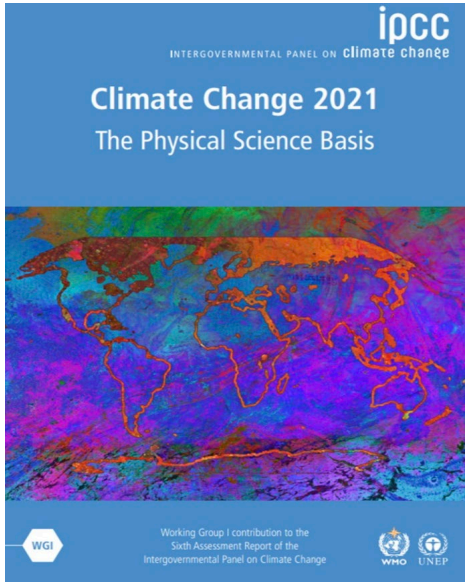


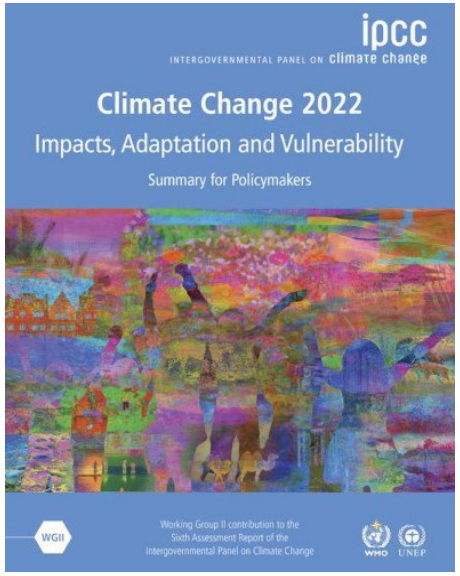


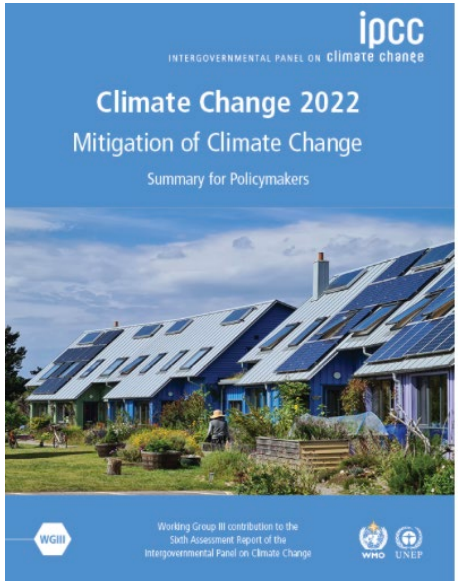
GIS FOR A SUSTAINABLE WORLD BUILDING THE SCIENCE

Erica L Nelson & Gregg Greenough
Harvard Humanitarian Initiative
May 10th, 2022

EXIGENCY







- SDG 2030 & IPCC Climate Goal deadlines
- ‘Climate Resilient Development’
- Geographically granular

WHAT IS A RESILIENT WORLD?

Why spatial

- Thinking
- Data
- Tools
- Analysis
- Modeling

are critical



HUMANITARIAN GEOANALYTICS PROGRAM (HUMGEO)

HARVARD HUMANITARIAN INITIATIVE



- Create new insights through spatial thinking
- Create a new evidence base for humanitarian research & programming
- Optimize impact of humanitarian programming through a spatially explicit understanding of need & resources

HUMANITARIAN GEOANALYTICS PROGRAM (HUMGEO)



Embrace the humanitarian, development, and peace-building **triple nexus**



Acknowledge the **interconnectedness** of human & environmental ecosystems



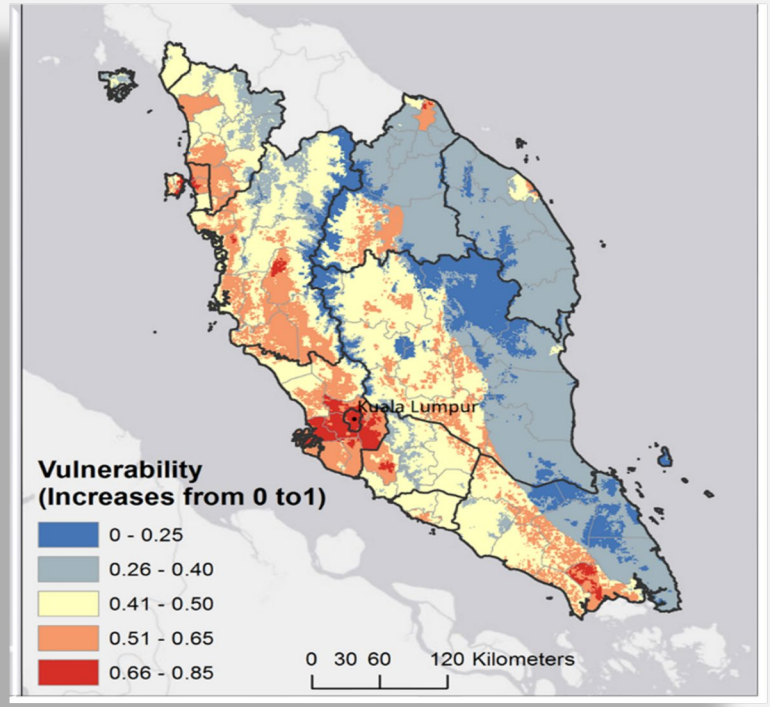
Prioritize human-**impact** when designing spatial methods

EMBRACE THE HUMANITARIAN, DEVELOPMENT, AND PEACE-BUILDING **TRIPLE NEXUS**

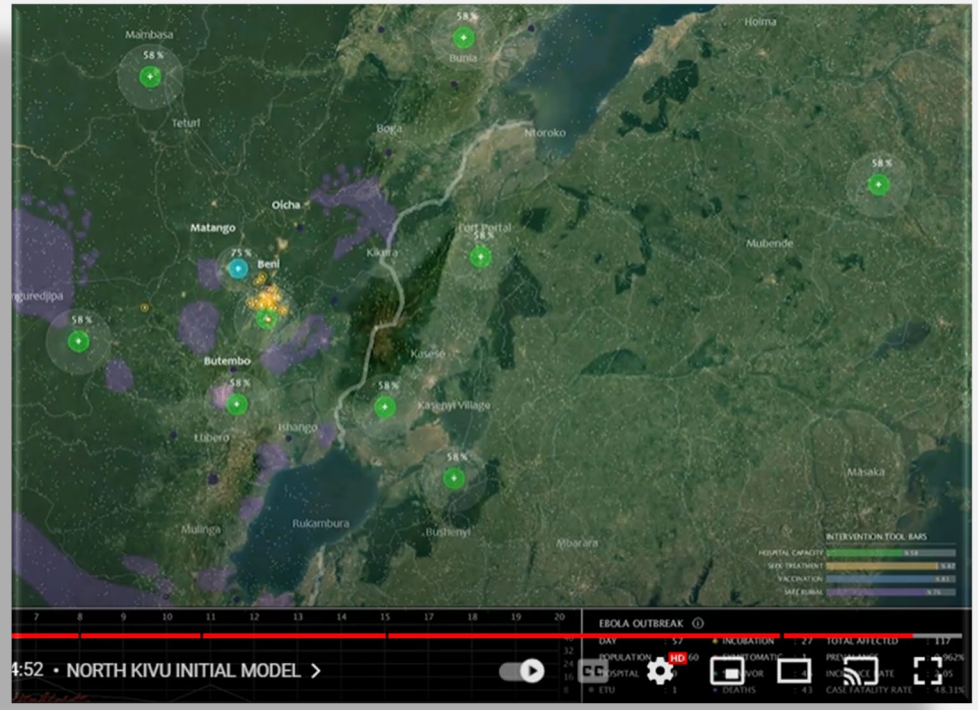


Peter Biro, 2018

SDG 3



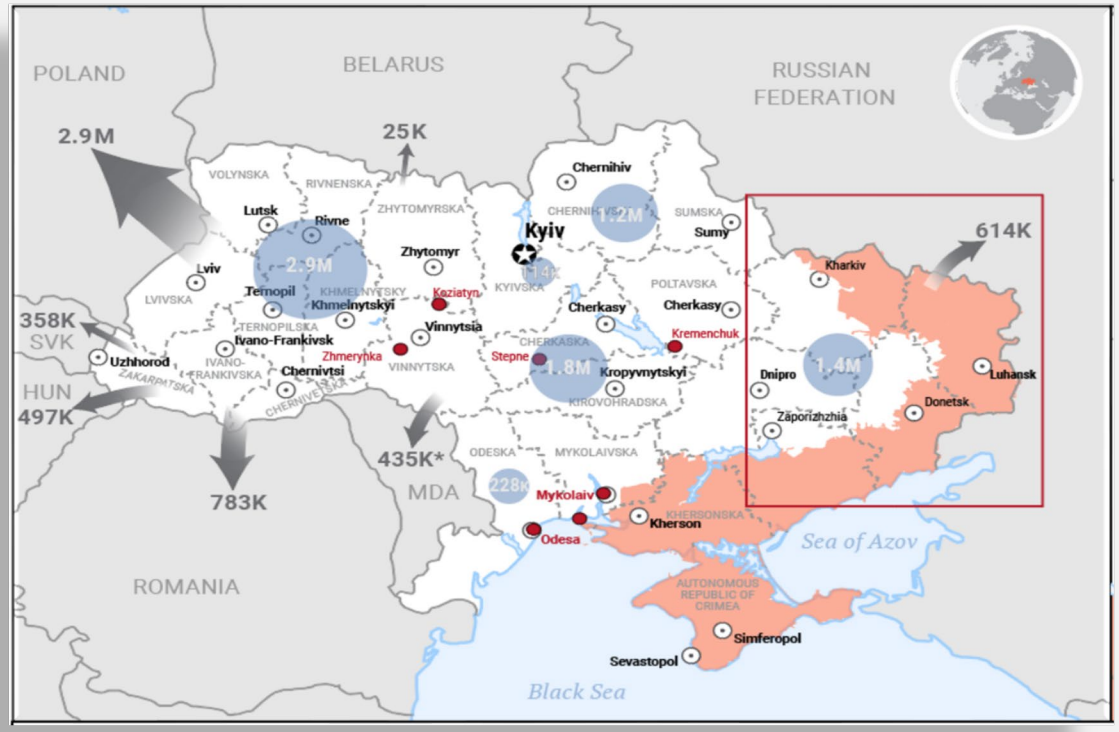
Dicken et al, 2013



De St Aubin, Unpub

Health & wellbeing for all

THE CRISIS IN UKRAINE



5.3M Displaced people who have crossed international borders*

7.7M Internally displaced people

How do we support resilient systems?





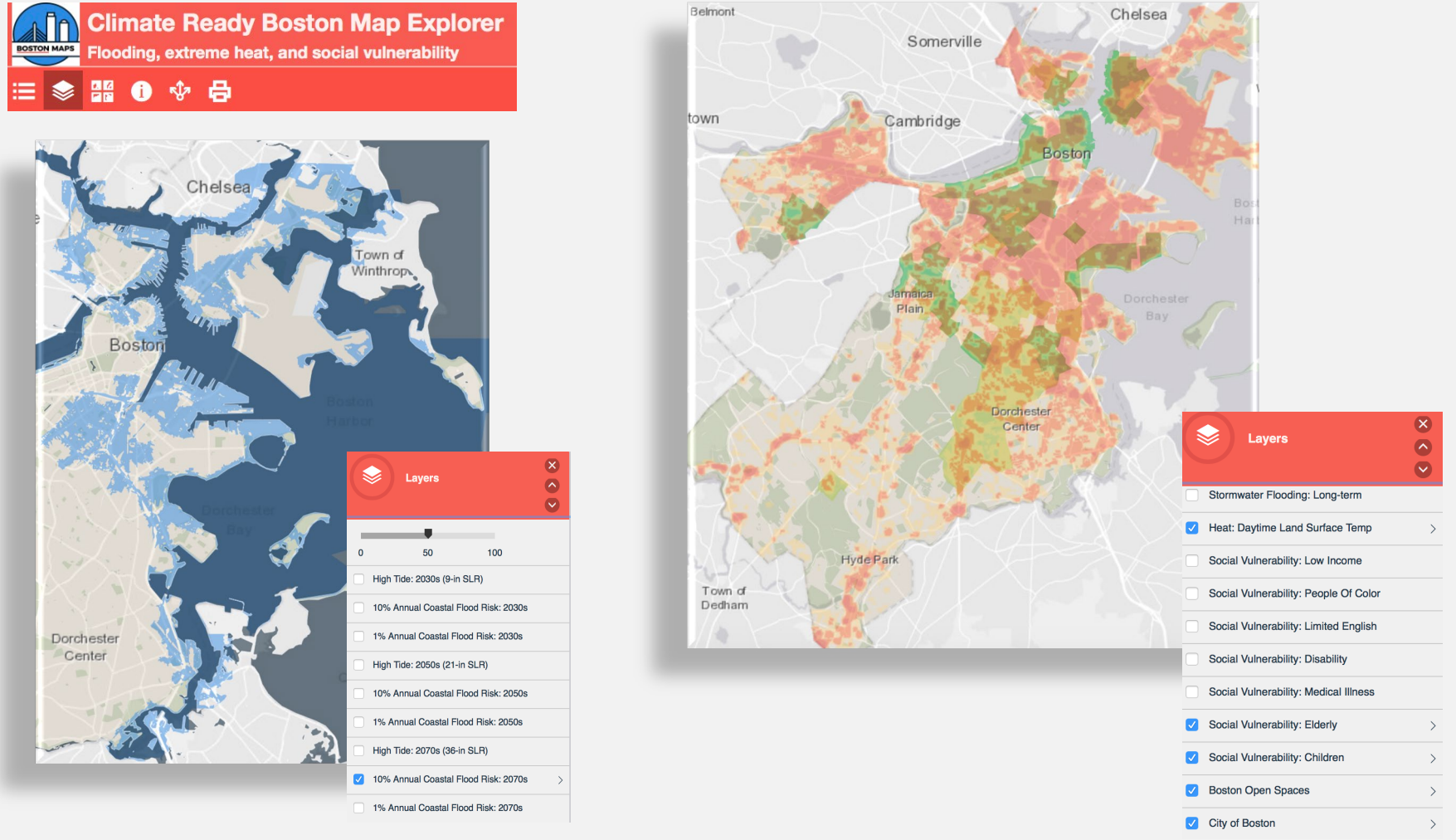
Health & wellbeing for all

ACKNOWLEDGE THE **INTERCONNECTEDNESS** OF HUMAN & ENVIRONMENTAL ECOSYSTEMS

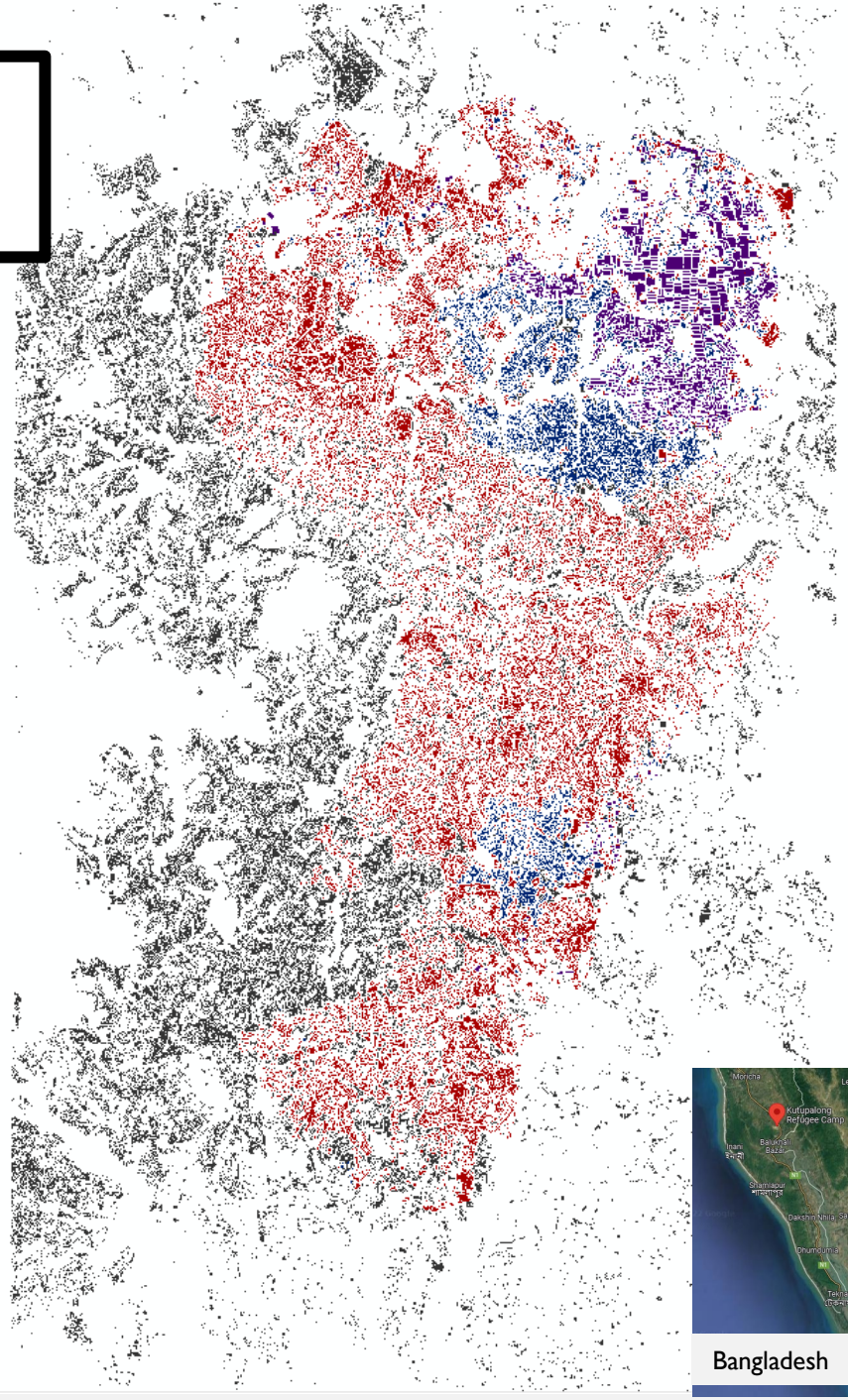


SDG 11

Safe, inclusive, resilient & sustainable settlements



KUTUPALONG REFUGEE CAMP 2016-2018



Jan 2016

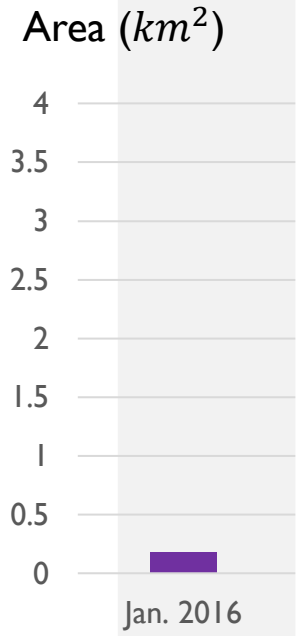
Jan 2016 - May 2017

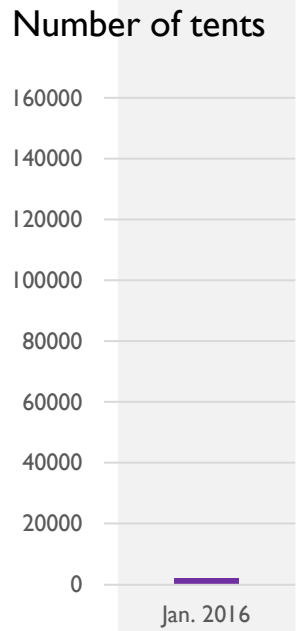
May 2017- Sep 2017

Sep 2017- Feb 2018

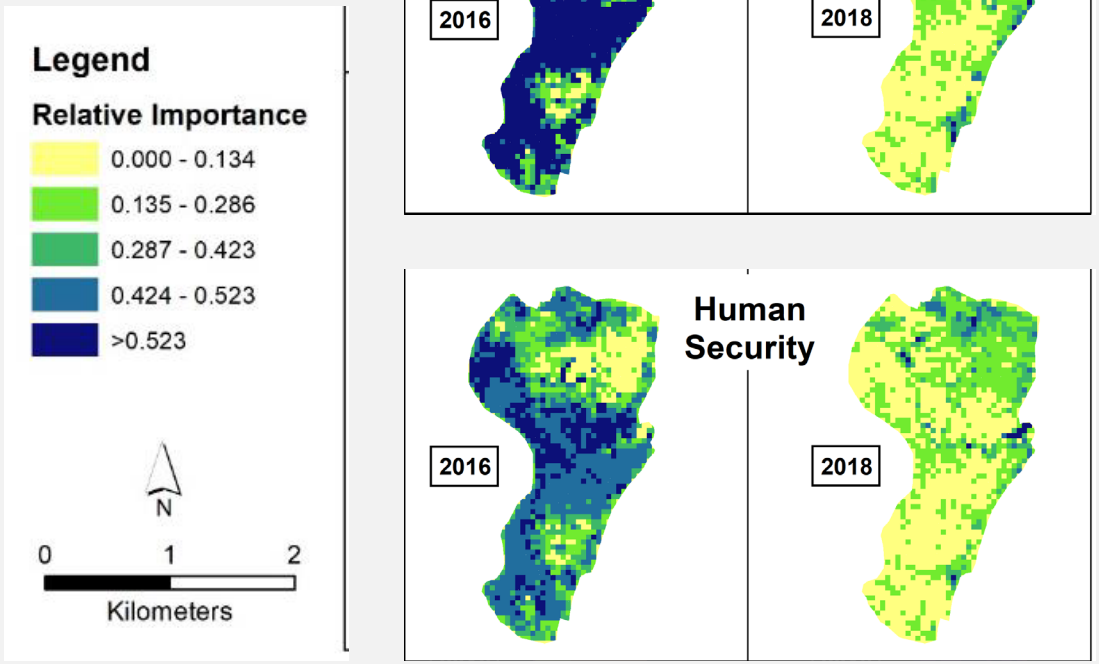
Nelson et al, Unpub

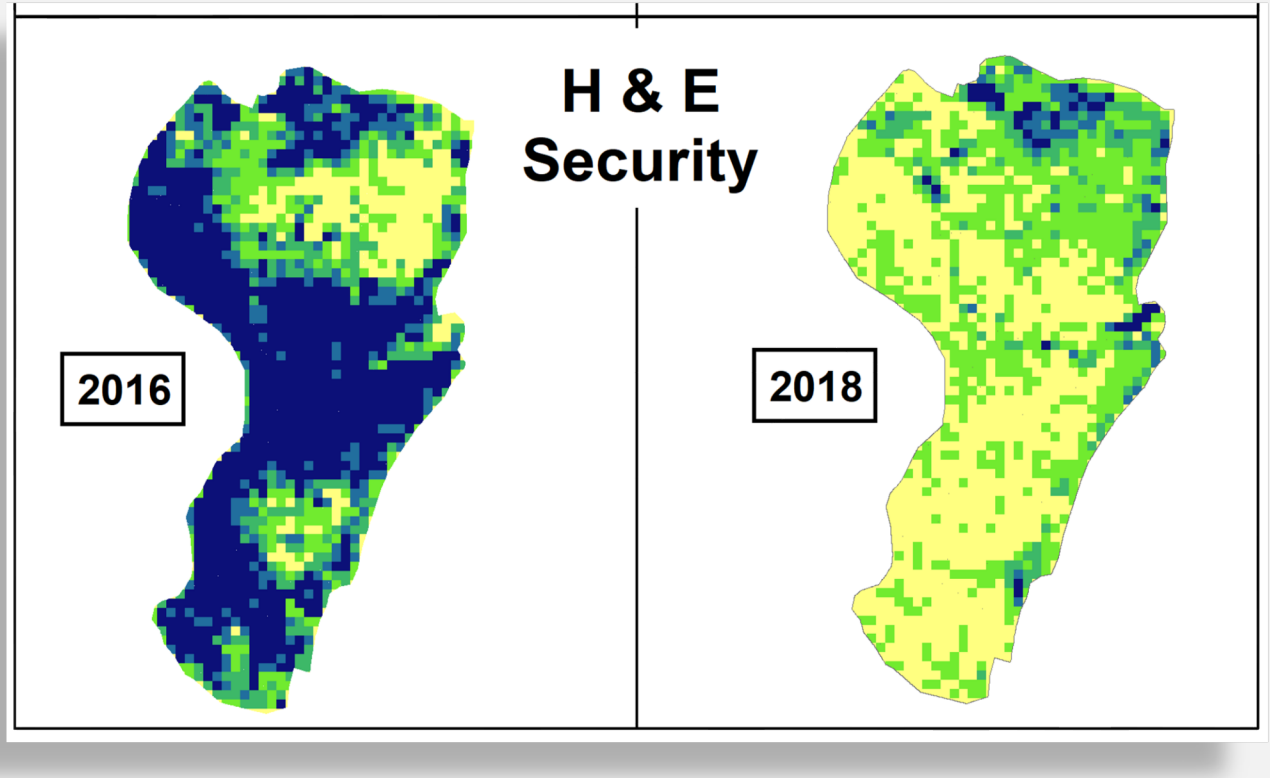






ENVIRONMENTAL IMPACT of REFUGEE INFLUX





Relative importance of each 60x60 grid to Ecological Security

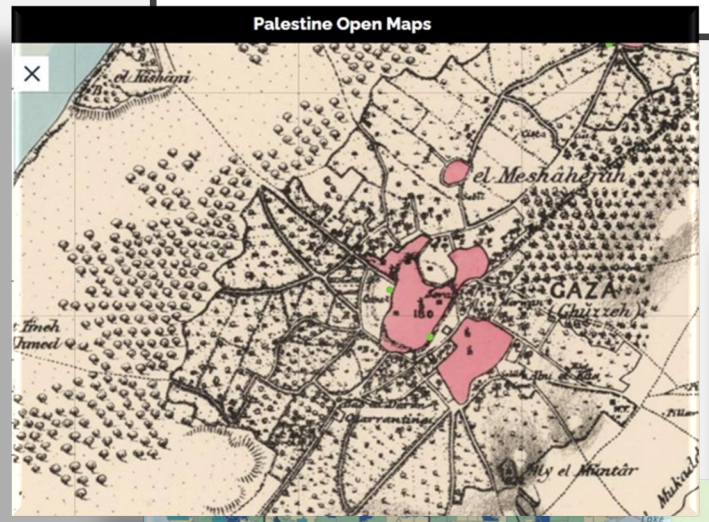
PRIORITIZE HUMAN-**IMPACT** WHEN DESIGNING SPATIAL METHODS



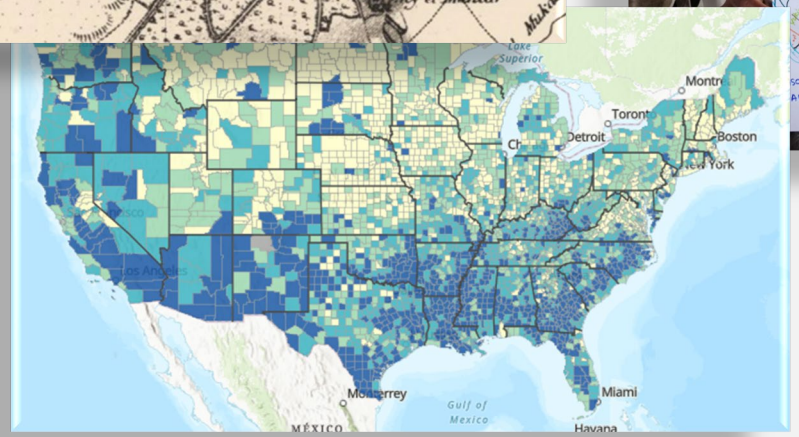
Louiza Ammi, 2018

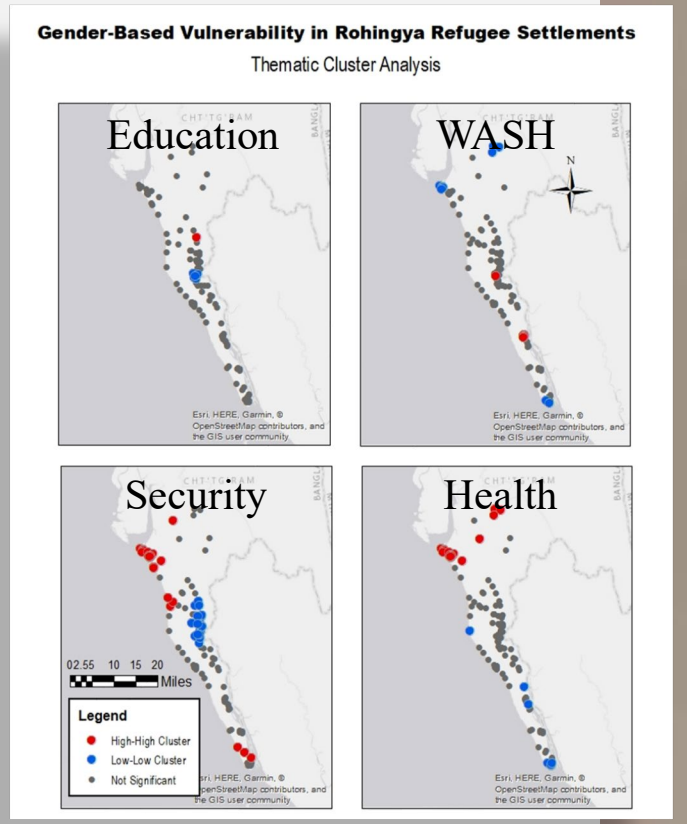
SDG 10

Reduce inequality





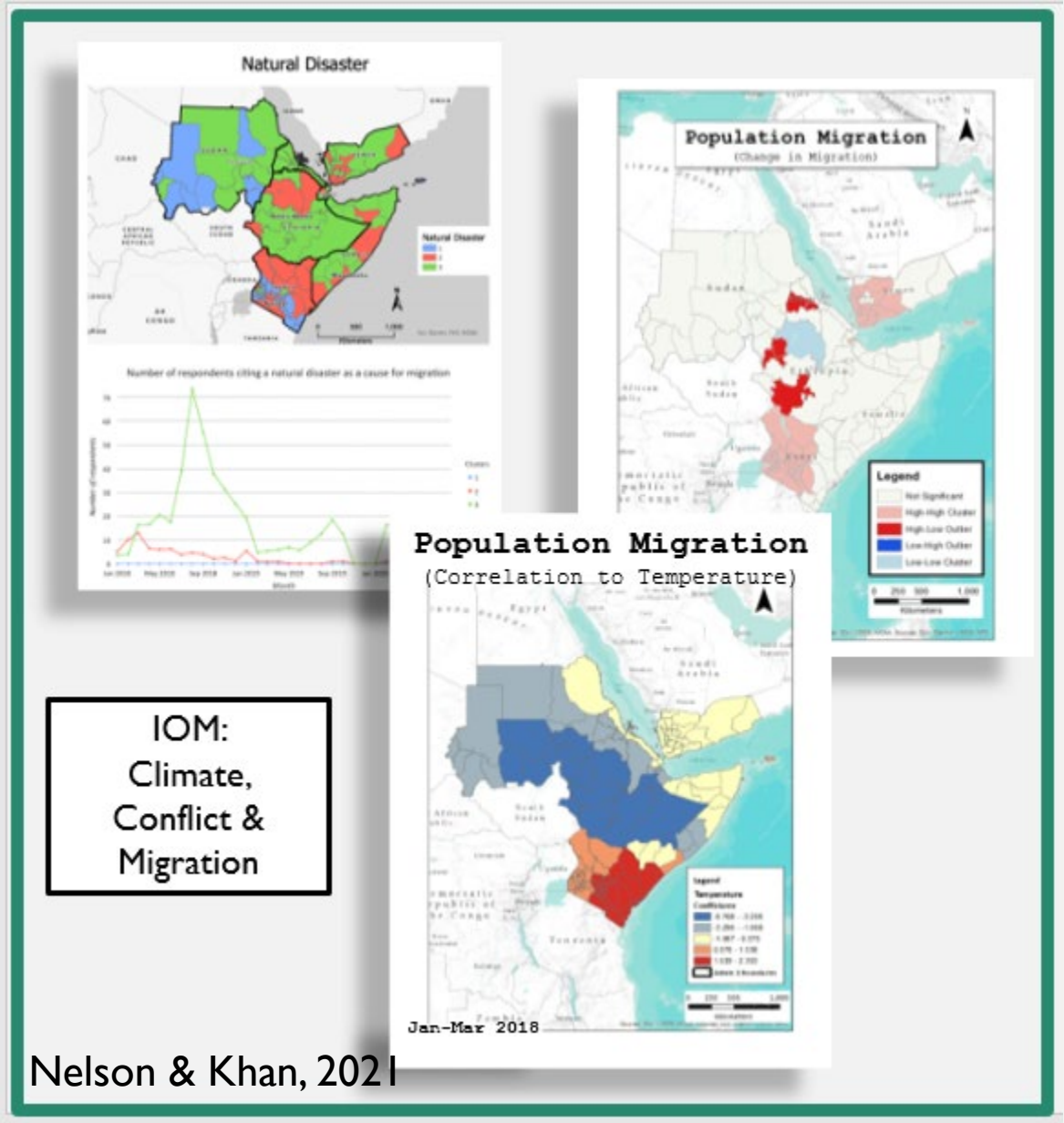


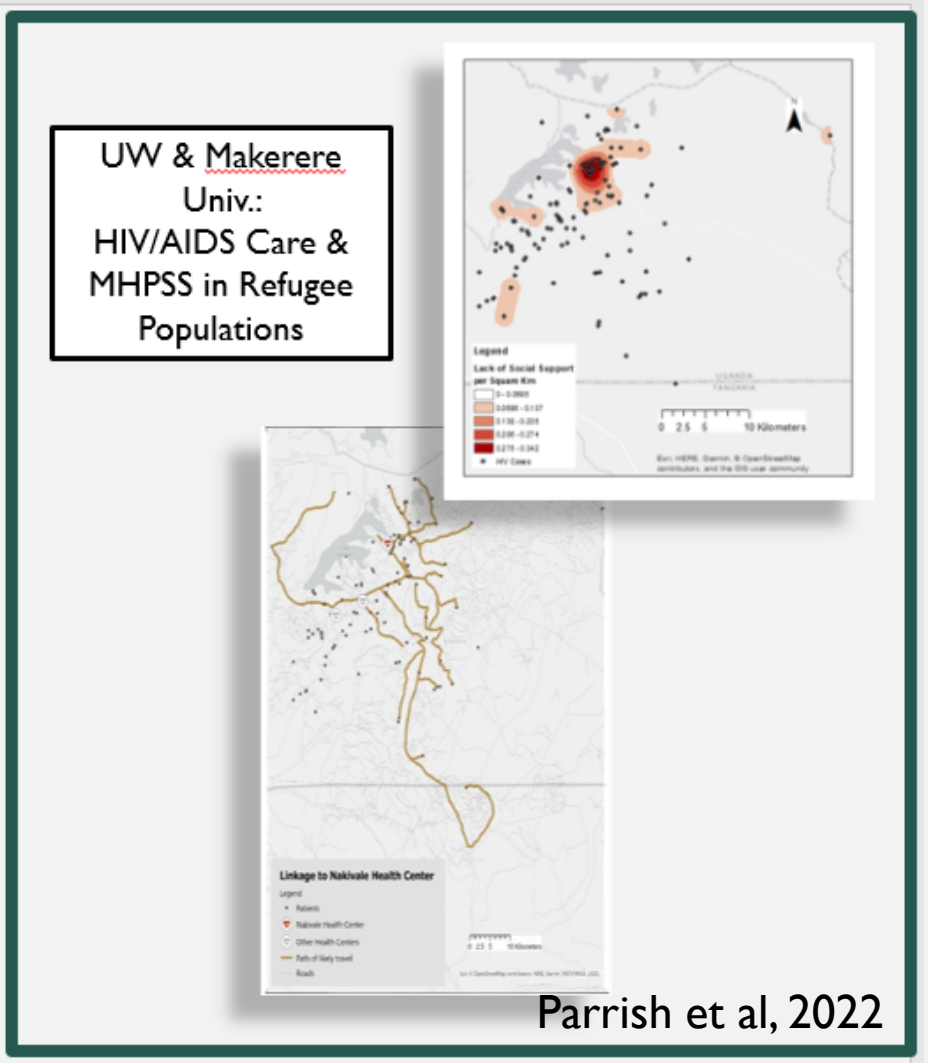


Nelson et al, 2020

A USER-CENTRIC PROCESS

- Collaborate
- Define the problem/objective
  - Define the question
- Examine what's been done
- Explore data
- Develop methods
- Pilot, evaluate, re-design, re-pilot, re-evaluate
- Disseminate





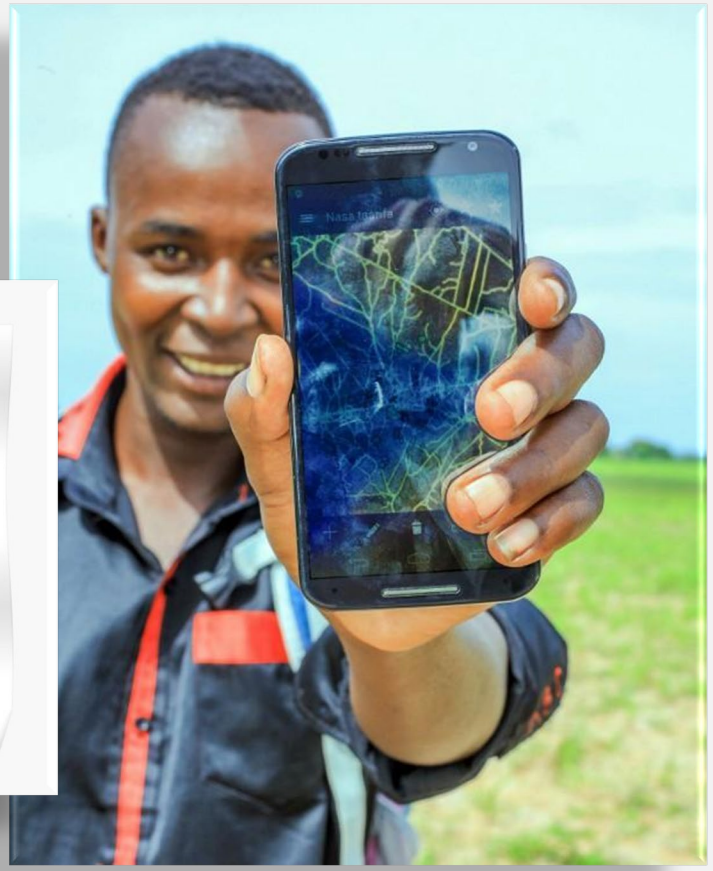
What spatial information can inform decision-making?

How can it improve impact?

SDG 17



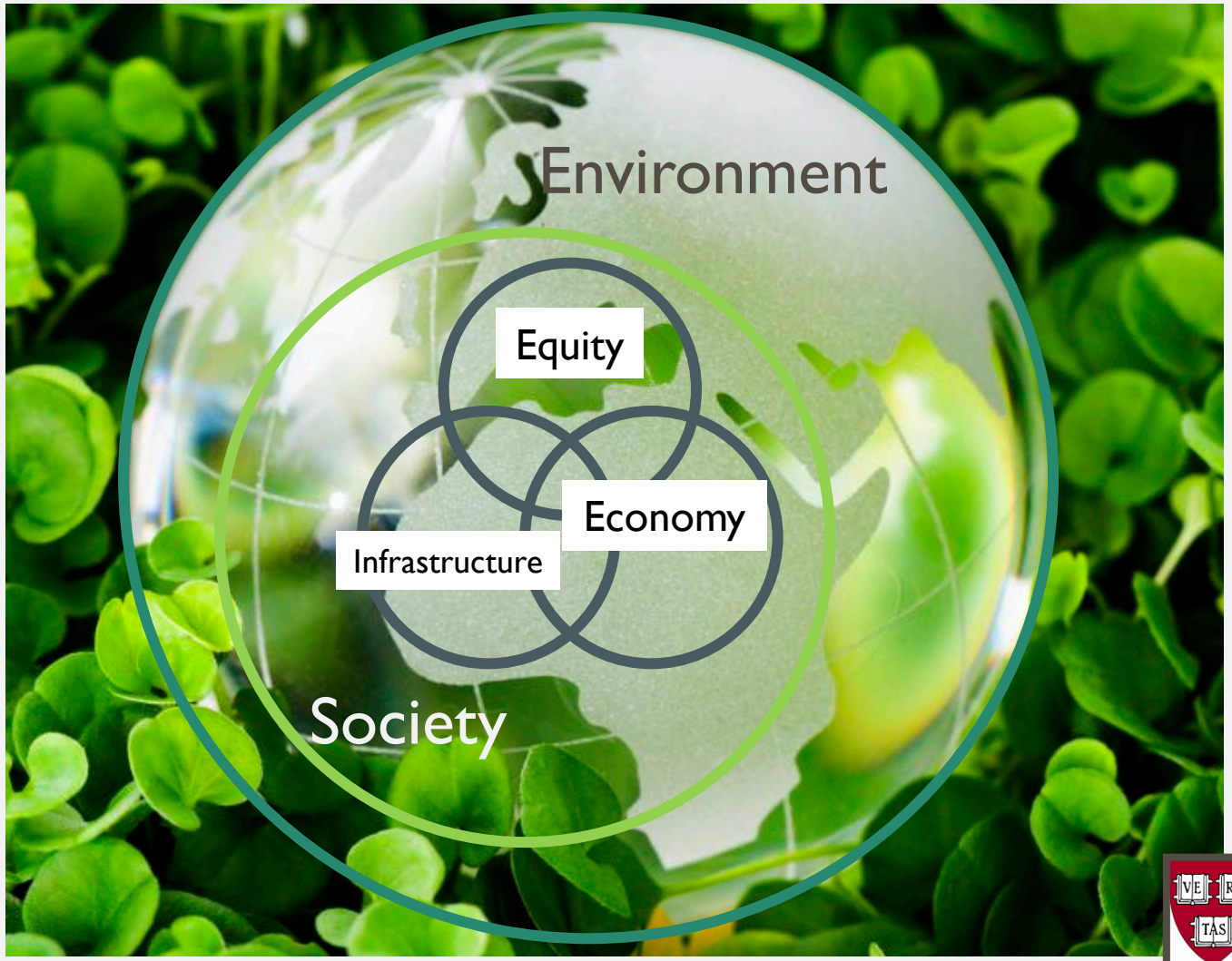






Strengthen implementation & global partnership

GIS FOR A SUSTAINABLE WORLD



HARVARD HUMANITARIAN INITIATIVE

Hum Geo

Dr. Erica Nelson & Dr. Gregg Greenough

Co-Directors, Humanitarian Geoanalytics Research and Education Programs
Harvard Humanitarian Initiative (HHI)




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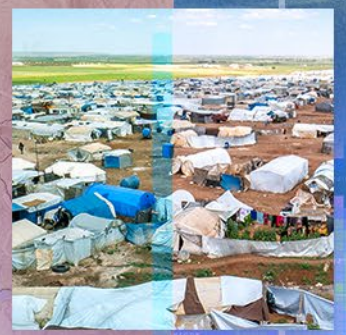
SPECIAL RELATIONSHIPS

Partnering & Collaborating on Shared Missions

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DIRECT RELIEF
WILSON CENTER FEEDING AMERICA
TERRITORIAL EMPATHY UNOSAT **NATIONAL GEOGRAPHIC SOCIETY** LINCOLN INSTITUTE
AFRICAN WILDLIFE FOUNDATION WINROCK INTERNATIONAL CGIAR **W.K. KELLOGG FOUNDATION**
WORLD VISION **SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK** NAACP
USAID CHESAPEAKE CONSERVANCY CONSERVATION INTENATIONAL IIASA **FAO** HALO TRUST
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NATURESERVE GOVERNMENT ALLIANCE ON RACE AND EQUITY (GARE) TEAM RUBICON
WORLD WILDLIFE FUND CATHOLIC RELIEF SERVICES **WORLD BANK** UN-HABITAT
UNHCR **AFRICAN PARKS** BILL & MELINDA GATES FOUNDATION **GICHD**
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NATIONAL AUDUBON SOCIETY FIELD MUSEUM TRUST FOR PUBLIC LAND
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UNEP **WORLD HEALTH ORGANIZATION**
INTER-AMERICAN DEVELOPMENT BANK UNICEF
THE HALF EARTH PROJECT MACARTHUR FOUNDATION
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UN PEACE OPERATIONS UNITED WAY
AMERICAN CANCER SOCIETY









Thank You for Being Here Today. . .

. . . And for **Everything** You Accomplish





Our Agenda Today

Tuesday, May 10th

- 2:30pm – 3:00pm: Networking Break in Expo
- 3:00pm – 4:00pm: Plenary Continued - The Geographic Approach to Resilience
- 4:00pm – 5:00pm: Welcome Social in Expo

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Our Agenda Tomorrow

Wednesday, May 11th

- 8:00am – 10:00am: Breakfast and Networking in Expo
- 10:00am – 11:00am: Plenary – Applying GIS for Resilience
- 11:00am – 11:15am: Networking Break in Expo
- 11:15am – 12:30pm: Training Sessions
- 12:30pm – 1:30pm: Hosted Lunch in Expo
- 1:30pm – 2:30pm: Anticipatory Action Lightning Talks & Panel
- 2:30pm – 3:00pm: Networking Break in Expo
- 3:00pm – 4:15pm: Localization Lightning Talks & Panel
- 4:15pm – 5:15pm: Closing Social in Expo



Headline

Subhead

- Bullets

Headline

Subhead

- Bullets

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Presentation Title

Presenter Names



GIS for a Sustainable World Conference