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GEO HEALTH
COMMUNITY OF PRACTICE

GEO Health Community of Practice Special Edition: The Americas

John Haynes, Juli Trtanj, Helena Chapman

GEO Health Community of Practice and
Earth Observations for Health (EO4Health) Initiative

Agenda

8:30AM – 8:40AM EDT/GMT-4)

- Welcome & Opening Words

8:40AM – 9:30AM EDT/GMT-4)

- Flash Talks: Categories I, II, and III

9:40AM – 10:00AM EDT/GMT-4)

- Flash Talks: Categories IV and V

10:00AM – 10:30AM EDT/GMT-4)

- Moderated Q&A discussion

Credit: Clipart Library

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GEO Health Community of Practice Special Edition: The Americas

Category 1 – Environmental Health and Emergencies

AmeriGEO WEEK 2023

Soluciones basadas en datos para un planeta sostenible

Data-Driven Solutions for a Sustainable Planet

Flash Talks:
Environmental Health and Emergencies

- **Building a Community of Practice in the Americas to Address Challenges associated with Artisanal and Small-Scale Gold Mining (ASGM)**
  - Camilo de los Rios Rueda (Duke University)
- **Addressing Natural Disasters-induced Health Concerns through GeoAI**
  - Paul Churchyard (HSR.health)
- **Environmental Emergencies for the Health Facilities situated at the island of Crete**
  - Andreas Skouloudis (iSteep.org)
- **NASA Satellite Data for Population Health Protection**
  - Shay Sharma (NASA HQ / Stanford University)

A Community of Practice on Artisanal and Small Scale Gold Mining in the Americas

Camilo De Los Rios

IAI STeP Fellow, PhD student Duke University

Objectives and rationale

We need to learn from past experiences and research outcomes on the artisanal and small gold mining sector (ASGM).

Main objective: create and maintain a community of practice of ASGM in the Americas.

Key outcomes

1. Create an open-access repository of information (data sources, datasets, papers, documents) on the status of current projects and results of previous ones
2. Produce a series of workshops on different topics related to ASGM
3. Facilitate dialogue that can contribute to the development and/or testing of interventions, policies, technologies, or new approaches related to ASGM or mercury (chemical) exposures.

All this should help in building a more sustainable ASGM sector.

Join an Artisanal and Small Scale Gold Mining (ASGM) network in the Americas!

We aim at increasing the connectivity of researchers and professionals, sharing information and evidence, and build towards a sustainable sector.

Respond to our survey using the QR below.
Follow us on asgm.substack.com

Environmental Emergencies for the Health Facilities situated at the island of Crete

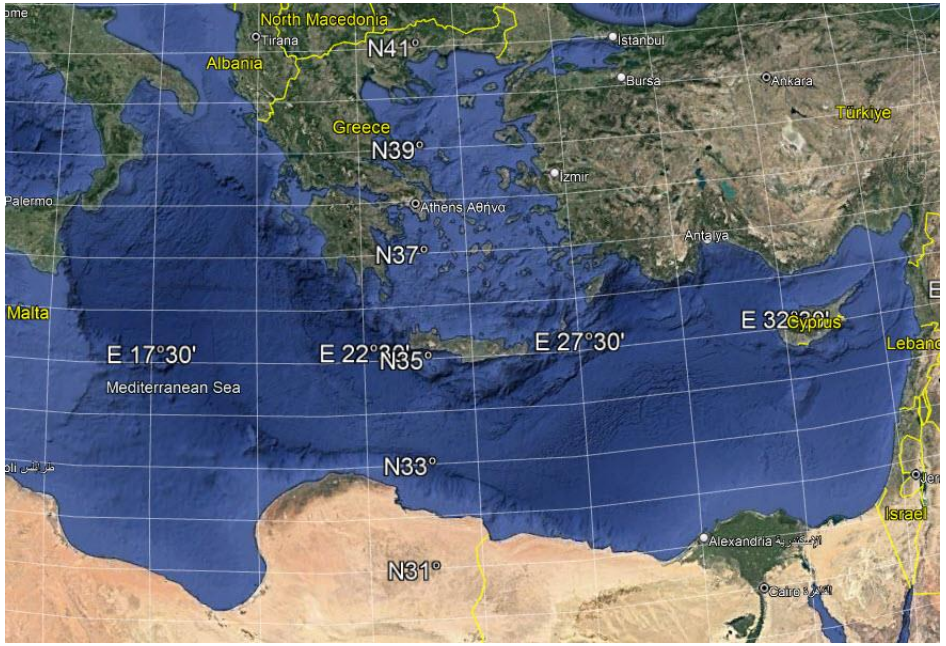
Andreas Skouloudis (iSteep.org)

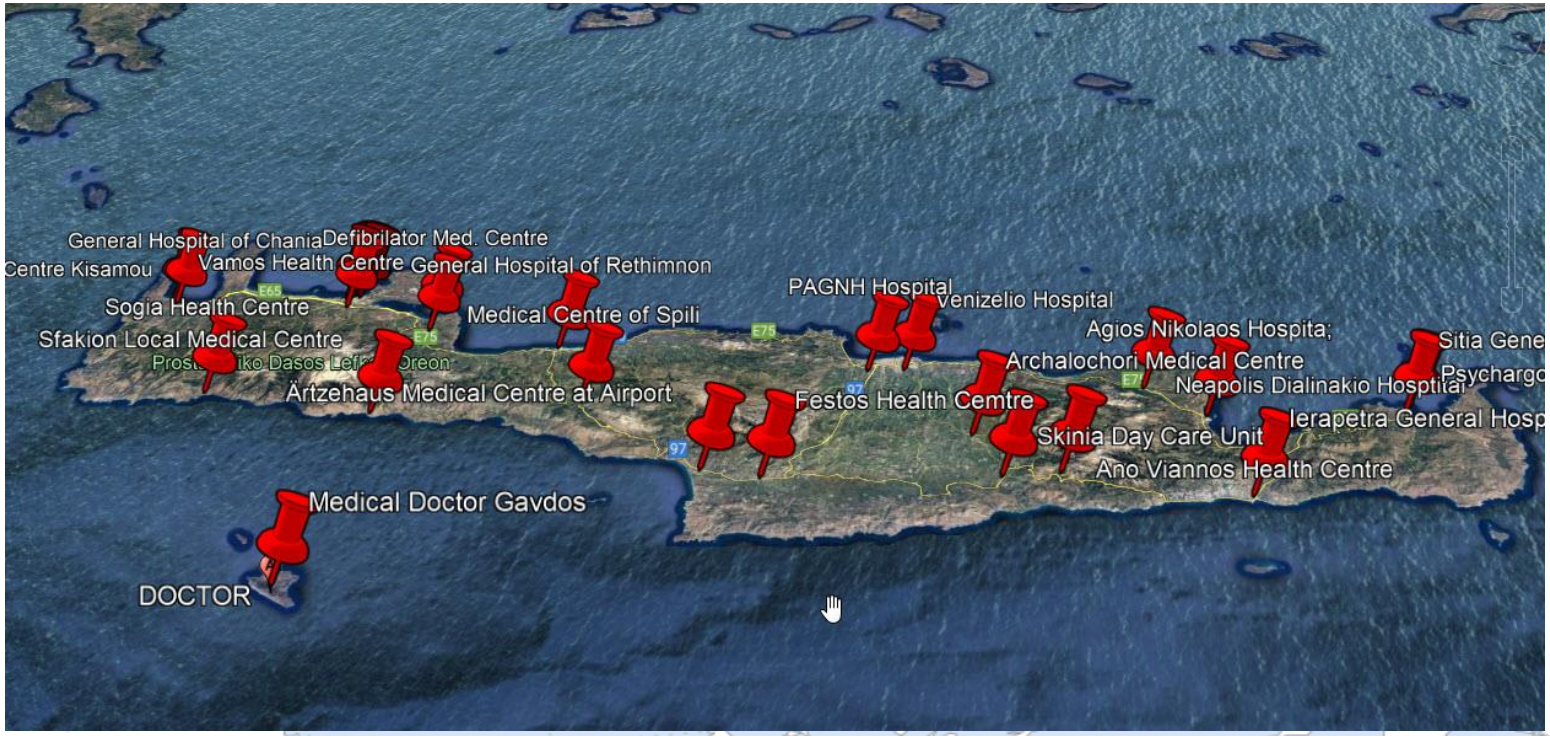
Project objective and rationale (for EO4HEALTH 2023):

Environmental Emergencies for the Health Facilities situated at the island of Crete current Status

1. Manually examine the capabilities of HCF during recent events and their prospective risks.
2. Positioning all HCF as per the regional Authority
3. Response to **risks from earthquakes** (loads and local population needs).
4. Prepare the adequacy of these facilities to cope with forest fires.
5. Implications of their functionality during heat waves both real-time operations and for additional energy adaptation and planning.

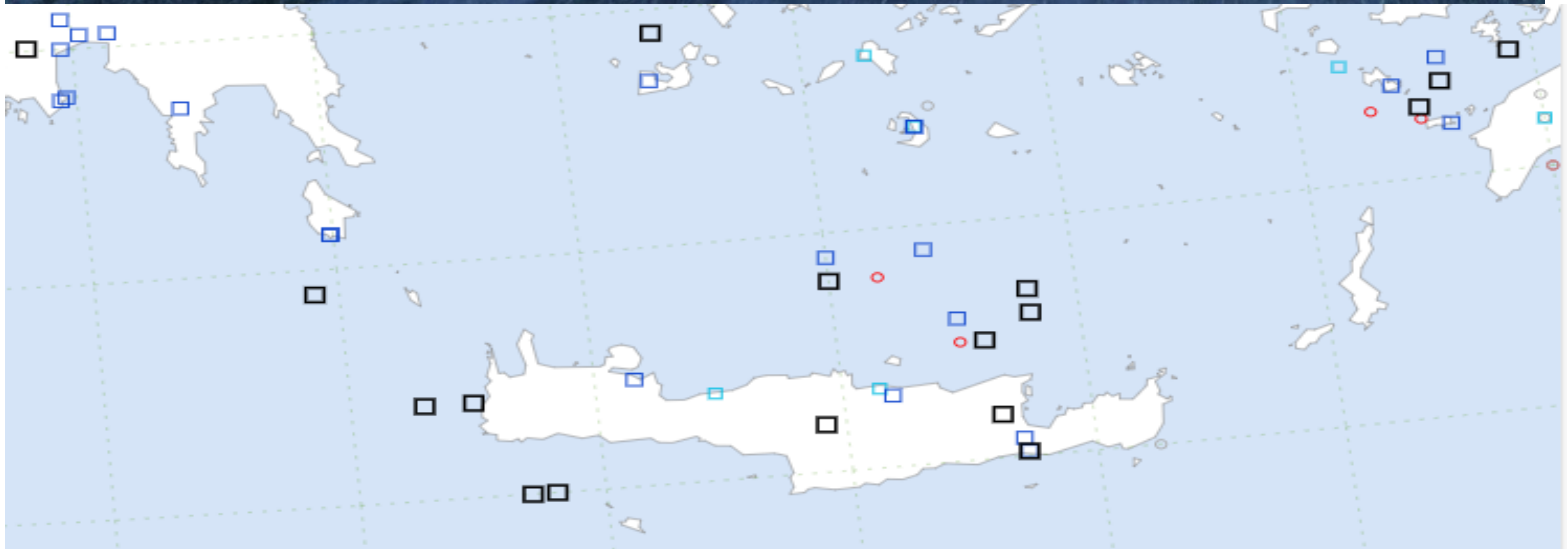
The What were the key outcomes …



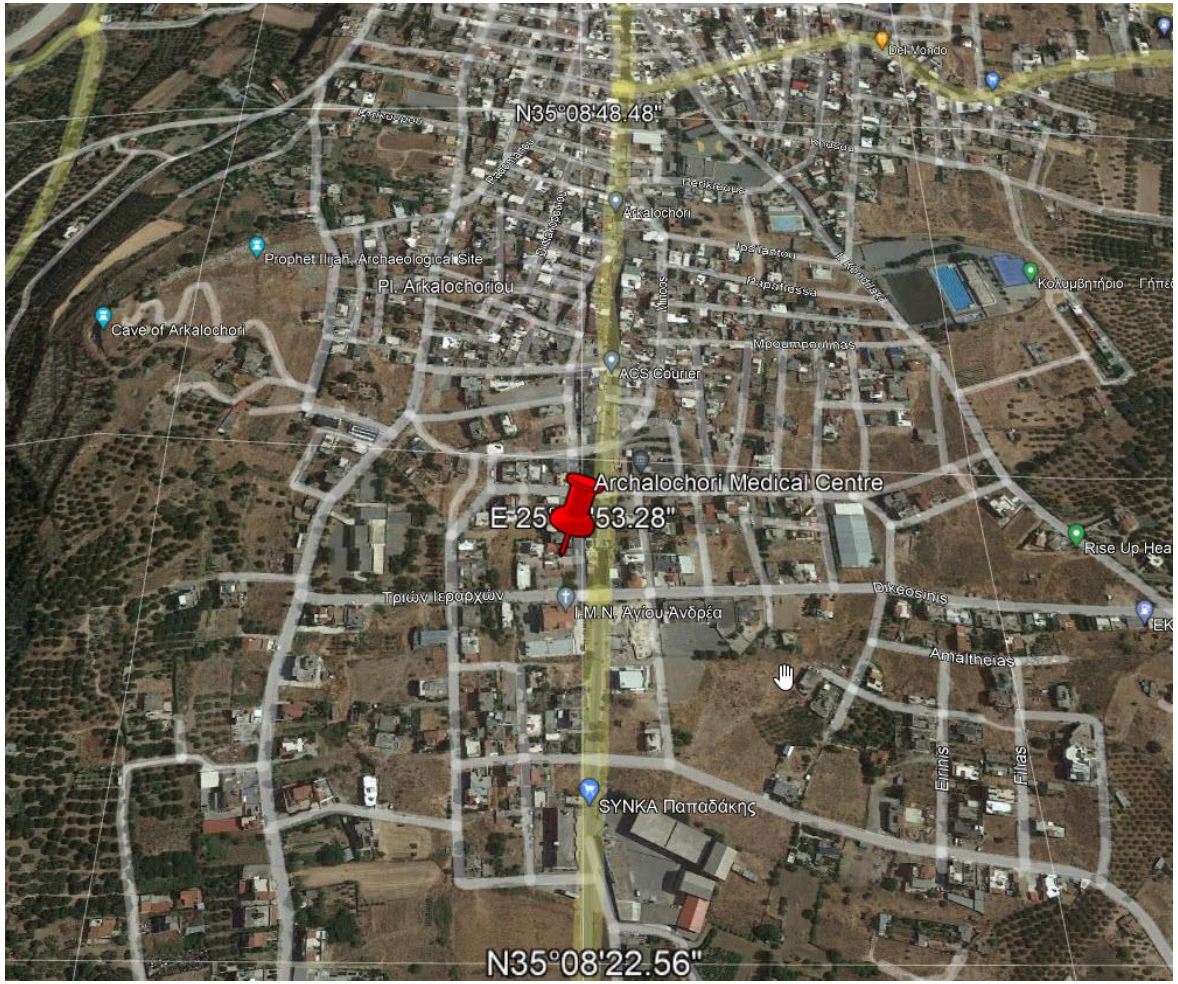


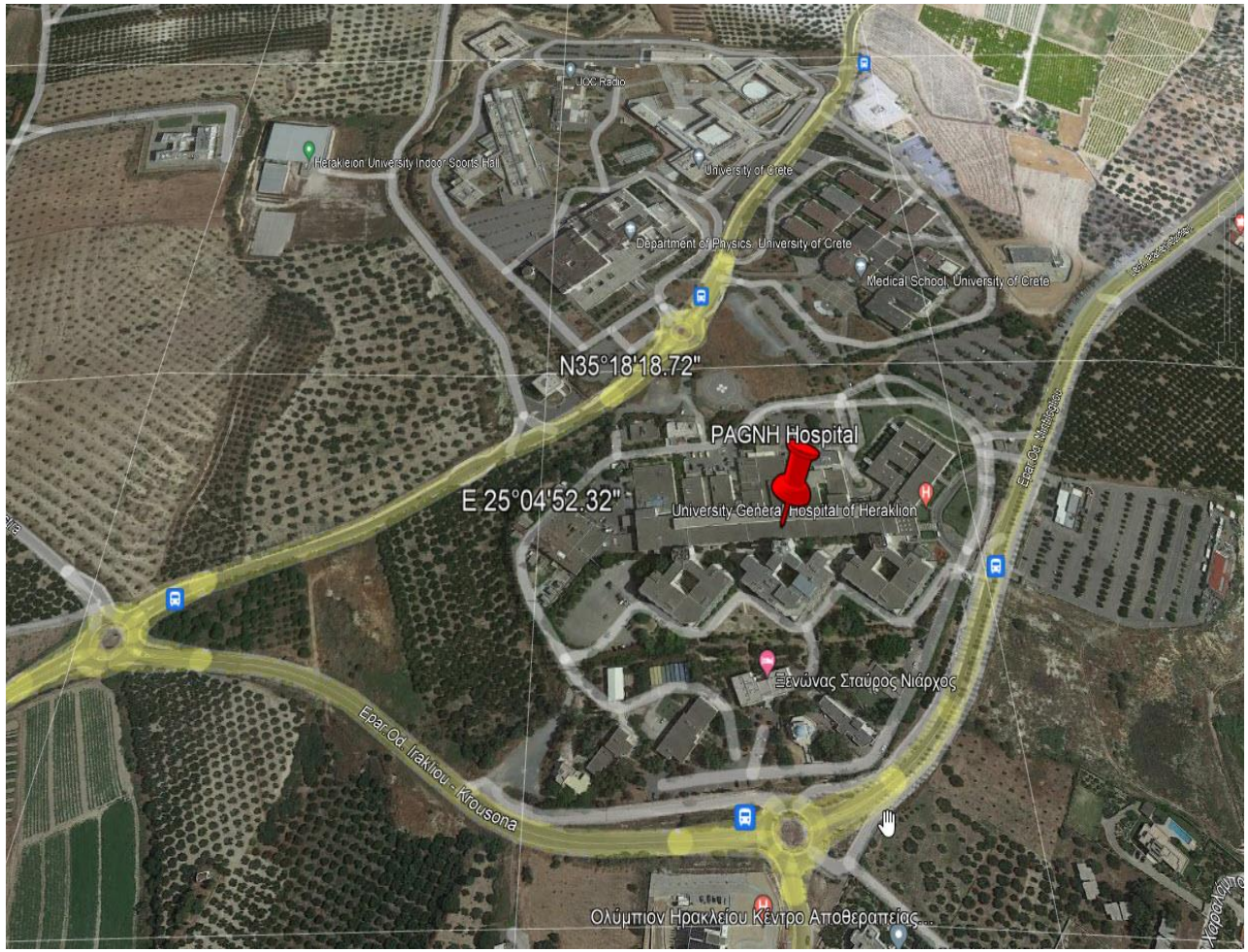
Greek island of Crete rocked by second earthquake in two weeks

Underwater 6.3-magnitude quake released 'small tsunami' with warning to avoid coastal areas



Current findings, and what potential future uses …





The complexity of the HCF areas,

and their associated risks (quakes, fires and heat waves).

NASA Satellite Data for Population Health Protection

Shay Nair Sharma[1, 2], Helena Chapman, MD PhD[2,3], Laura Judd, PhD[4], John Haynes, MS[2], Christopher Barker, PhD[5], Tabassum Insaf, PhD[6], Jeffrey Pierce, PhD[7]

[1]Stanford University, Stanford, CA [2]NASA HQ, Applied Sciences Program, Washington, DC [3]Booz Allen Hamilton, McLean, VA [4]NASA Langley Research Center, Hampton, VA [5]University of California, Davis, CA [6]New York State Department of Health, Albany, NY [7]Colorado State University, Fort Collins, CO

National Aeronautics and Space Administration

INTRODUCTION

- The World Health Organization underscored the need to support such technologies – such as smartphone apps, digital platforms, **big data**, and artificial intelligence – in a cautious and ethical manner to address urgent health challenges and protect the global community.
- Incorporating innovative data and technological sources – like **NASA Earth-observing satellite data** – will enhance our understanding of One Health challenges and provide a multi-dimensional and holistic evaluation of emerging environmental health risks.

PURPOSE:

- ❑ **Share information about NASA's Health and Air Quality Applications Program**
- ❑ **Illustrate through three supported projects the societal benefit of Earth observation data to strengthen ecosystem risk analytics, policy decision-making, and public health surveillance through the One Health paradigm**

NASA HEALTH AND AIR QUALITY APPLICATIONS

This program promotes using Earth observation data in air quality management and public health communities, including:

- Examining toxic and pathogenic exposures and health-related hazards such as strategies for risk characterization and mitigation.
- Integrating Earth observations and models into the implementation of air quality standards, policy, and regulations for economic and human welfare.
- Addressing effects of climate change on public health and air quality to support managers and policy makers in their planning and preparations.

HAQ Website

ONE HEALTH APPLICATIONS

Through multidisciplinary collaborations, scientists and community practitioners can identify environmental risk factors and develop novel approaches and interventions, linking human, animal, and environmental health.

EARTH SCIENCE APPLICATIONS FOR EMERGING ENVIRONMENTAL HEALTH RISKS

Enhancing Decision Support for Highly Invasive Vectors

Example of dengue and zika risk estimator tool. Credits: C. Barker

Forecast Product

NASA Web Feature

- *Aedes albopictus and Aedes aegypti are invasive mosquito vectors that can transmit globally important pathogens like dengue and chikungunya viruses.*
- In California, scientists partnered with the Mosquito and Vector Control Association of California and the California Department of Public Health, to investigate new tools to address these emerging mosquito threats.
- They integrated data from **NASA's Terrestrial Observation and Prediction System (TOPS)**, **MODIS**, **VIIRS**, and **mosquito surveillance**, to develop suitability maps of Aedes invasion risk maps and linked models to real-time surveillance through the California Vectorborne Disease Surveillance System (CalSurv).
- As CalSurv has expanded its application to over 14 states, mosquito control agencies have accurate information to identify high-risk communities and inform their decision-making activities.
- **PI: Christopher Barker, University of California, Davis**

Strengthening Heat Mitigation Efforts

Maximum air temperature across NY State estimated using NLDAS. Credits: T. Insaf

County Heat and Health Profile Reports

NASA Web Feature

- *Heat-related illnesses and deaths result from the body's inability to cool itself during extreme temperatures.*
- In New York State, scientists partnered with the New York Department of Health and the National Weather Service, to examine correlations between the Heat Advisory threshold and incidence of adverse health effects.
- They integrated **NASA's North American Land Data Assimilation System** (NLDAS) temperature data (downscaled to 1km with **MODIS land surface temperature**) and **health outcomes** from hospital records, to determine when high temperatures started to negatively affect human health.
- These results led to the development of the New York Department of Health's *County Heat and Health Profile Reports* and state policy that lowered the heat advisory threshold from 100°F to 95°F.
- **PI: Tabassum Insaf, New York State Department of Health**

Assessing and Predicting Wildfire Smoke-Related Morbidity

Example of Smoke Health Impact Assessment Forecaster Tool. Credits: J. Pierce

Forecast Product

Recent Publication

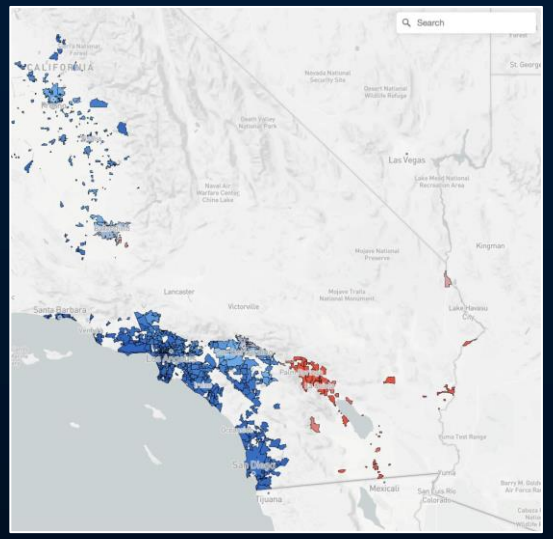
- *The recent rise of wildfires in the western United States has resulted in exposure to particulate matter (PM) in wildfire smoke plumes as a growing public health threat.*
- Scientists partnered with Washington State Department of Health Comprehensive Hospital Abstract Reporting System (CHARS) and Colorado Department of Public Health and the Environment (CDPHE), and used Oregon All Payers All Claims data to examine correlations between PM exposure and hospitalizations.
- They investigated the link between **MODIS aerosol optical depth** PM exposure data and **health surveillance data** from 2010-2015 fire seasons in Washington, Colorado, and Oregon
- The team developed the Smoke Health Impact Assessment Forecaster Tool, which can predict PM concentrations, population exposure, and increased morbidity risk due to wildfire smoke exposure.
- **PI: Jeffrey Pierce, Colorado State University**

CONCLUSIONS

- NASA Earth-observing satellite data are innovative sources that provide real-time information about our global ecosystems.
- This One Health concept marks an integral step toward scientific discovery, highlighting the essential roles of community partnerships and public engagement in achieving optimal environmental and community health.

www.nasa.gov

Enhancing Decision Support for Highly Invasive Vectors



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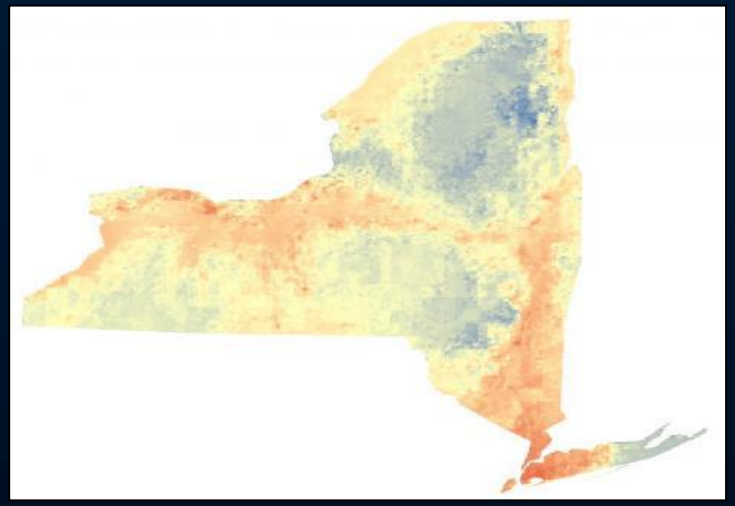
Strengthening Heat Mitigation Efforts



Maximum air temperature across NY State estimated using NLDAS. Credits: T. Insaf

County Heat and Health Profile Reports

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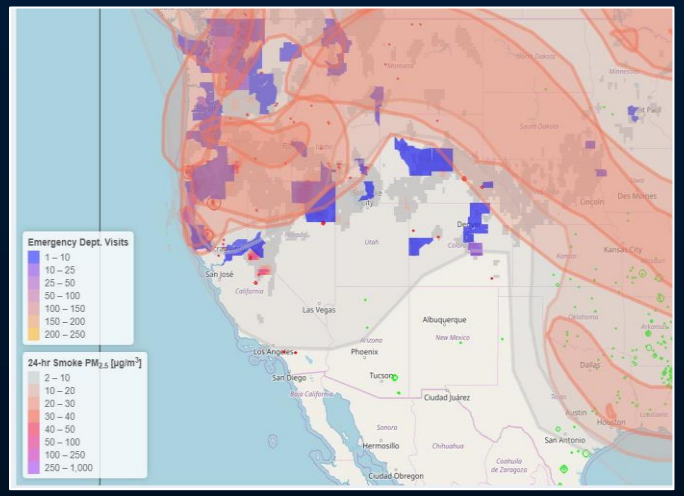

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Category 2 – Water Resources

AmeriGEO WEEK 2023

Soluciones basadas en datos para un planeta sostenible

Data-Driven Solutions for a Sustainable Planet

Flash Talks: Water Resources

- **Introducing AlgaeMAp - Algae Bloom Monitoring Application for Inland Waters in Latin America**
  - Felipe Lobo (Universidade Federal de Pelotas, Brazil)
- **Enabling User-driven Environmental Management and Improving Health Outcomes using Future NASA PACE Mission Data**
  - Natasha Sadoff (NASA Goddard Space Flight Center)
- **PACE Water Resources: Demonstrating the Use of NASA's PACE Hyperspectral Ocean Color Instrument Data for Enhanced Coastal Management**
  - Matthew Romm (NASA Goddard Space Flight Center / North Carolina State University)

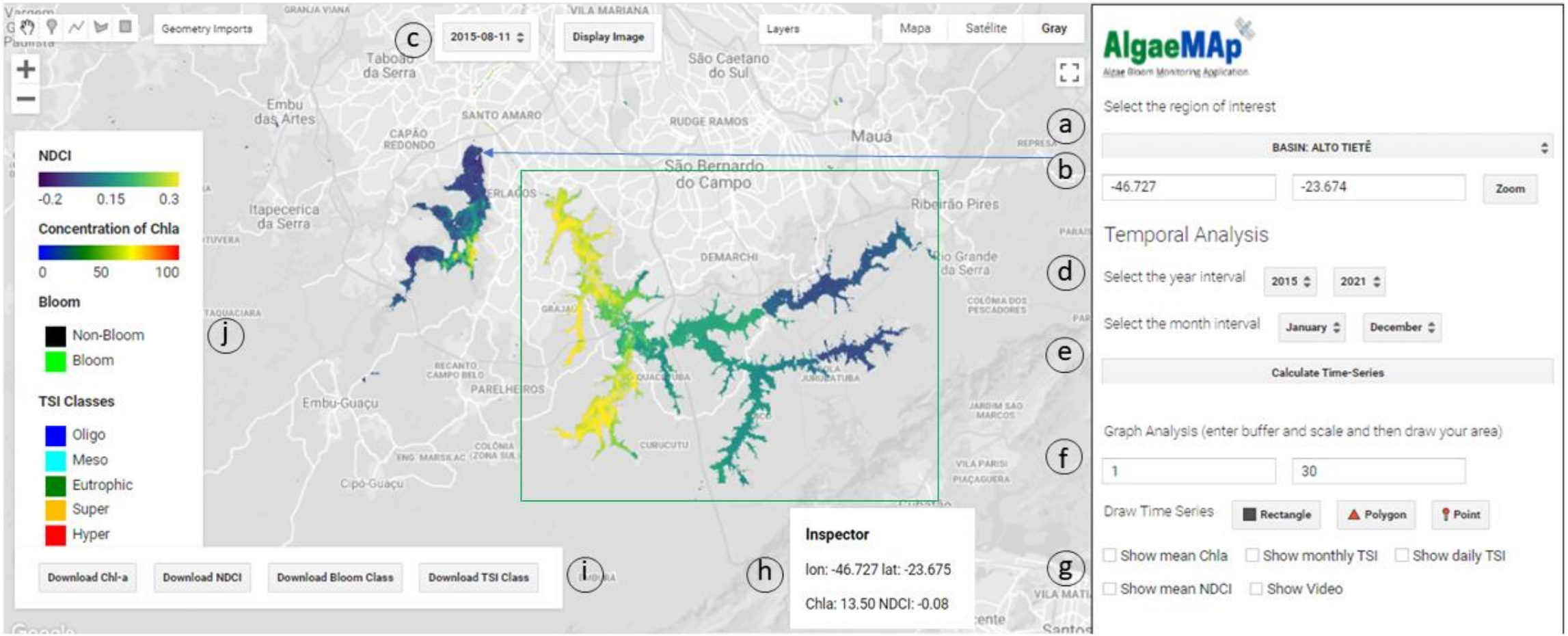
AlgaeMAp

Algae Bloom Monitoring Application

for inland waters in Latin America

Felipe de Lucia Lobo, Gustavo Willy Nagel, Daniel Andrade Maciel, Lino Sander de Carvalho, Vitor Souza Martins, Claudio Clemente Faria Barbosa , and Evlyn Márcia Leão de Moraes Novo

Results: GEE App



https://felipellobo.users.earthengine.app/view/algaemapv10

GEE App - Next steps

- Extend AlgaeMAp to other regions
- Gather data for cal/val
- Human resources
- Collaborations

https://wp.ufpel.edu.br/geotechidrica/algaemap-4/

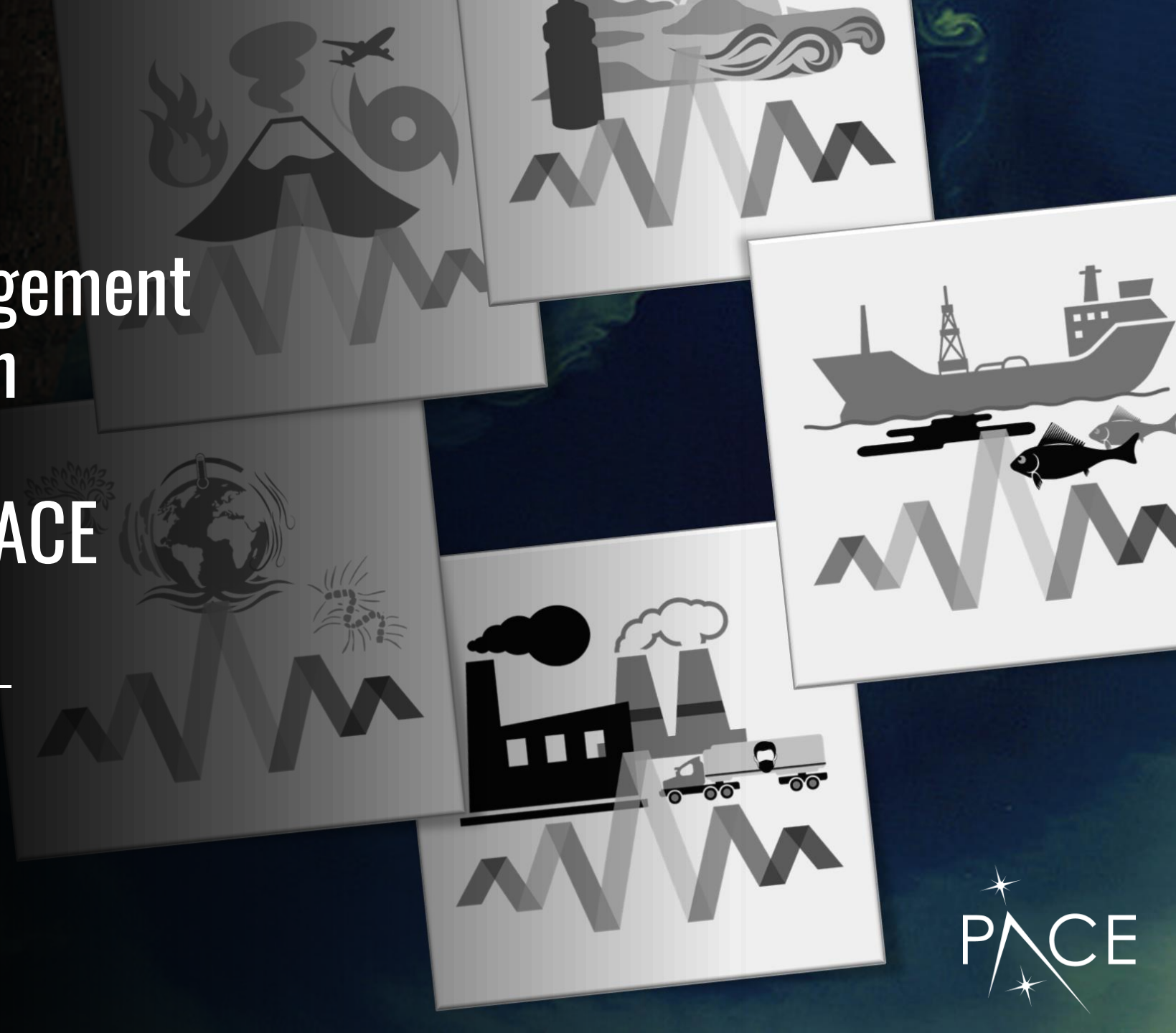
Contact

email: felipe.lobo@ufpel.edu.br

Enabling User-driven Environmental Management and Improving Health Outcomes using Future NASA PACE Mission Data

Natasha Sadoff, Erin Urquhart

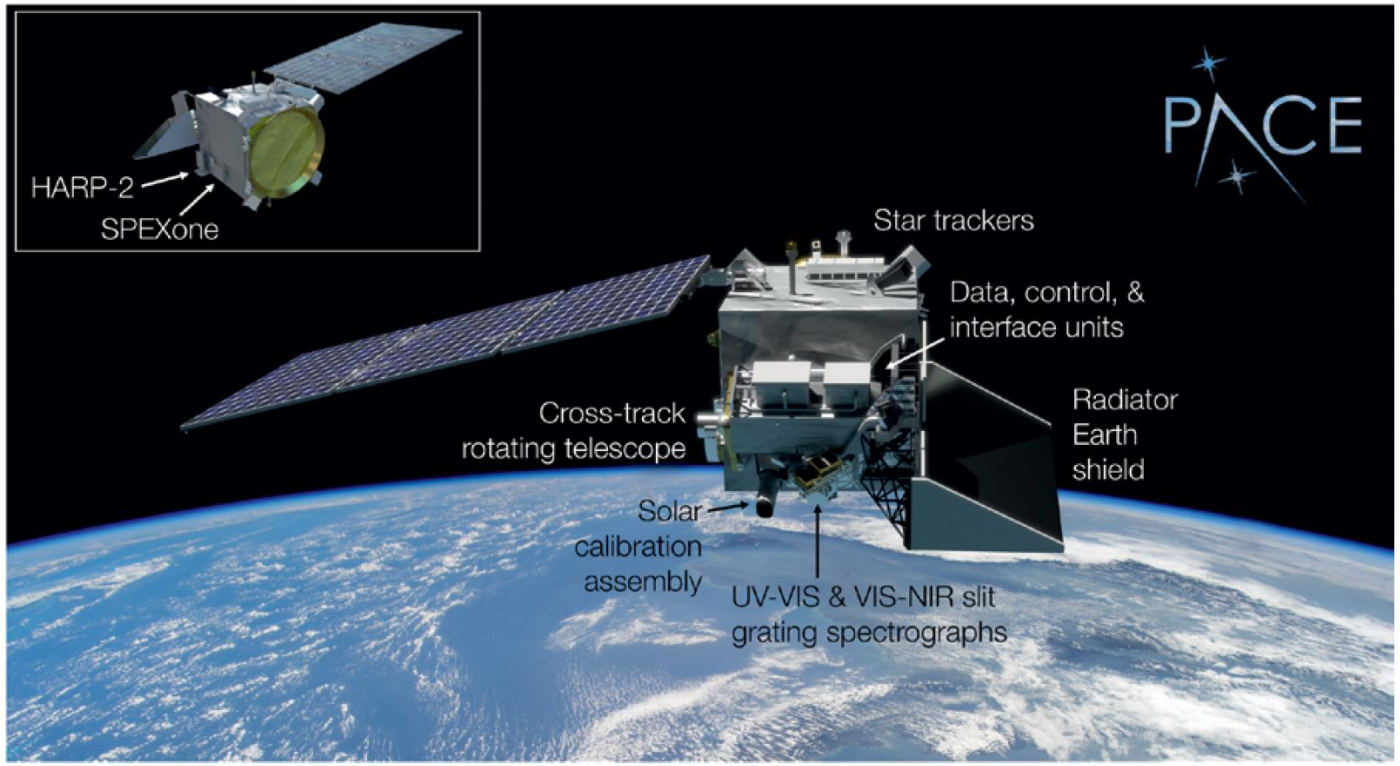
Ocean Ecology Laboratory, NASA Goddard Space Flight Center, SSAI



Plankton, Aerosol, Cloud, ocean Ecosystem

- Anticipated Launch: **January 9, 2024**
- 13:00 local Equatorial crossing; Global
- 3yr mission, BUT at least 10yrs of propellant
- **Instruments:**
  - Hyperspectral imager: **Ocean Color Instrument (OCI)-**
    - 2-day global coverage
    - 1 km^2 at nadir
    - UV to SWIR: 5 nm for 340-890 nm at 2.5 nm steps, plus discrete bands at 940, 1038, 1250, 1378, 1615, 2130, & 2250 nm
  - Two multi-angle polarimeters:
    - **HARP-2** (wide-swath, hyper-angular, 4 bands; 3km^2 nadir)
    - **SPEXone (**Narrow swath, 5 viewing angles, hyperspectral (UV-NIR), 2.5km^2 nadir)
- **Data will be free & open to all**
  - All products will be hosted at the GSFC Ocean Biology Distributed Active Archive Center (OB.DAAC) and be available via other portals such as NASA Worldview

PACE is NASA's next great investment to extend ocean biological, ecological, & biogeochemical data records, as well as cloud & aerosol data records – with a direct benefit to environmental health work!



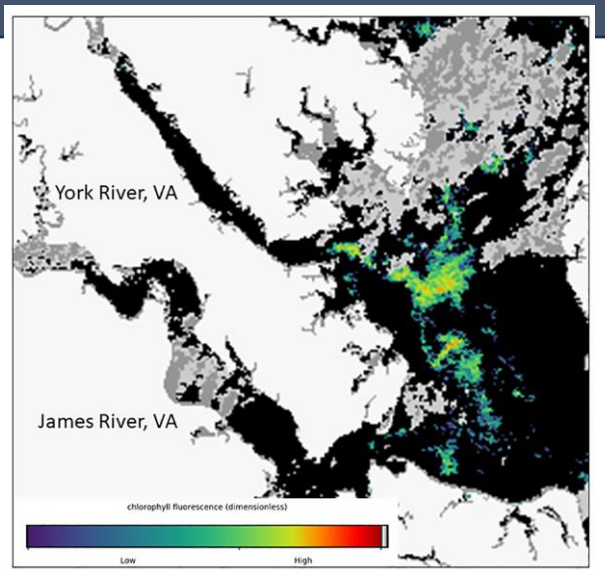
PACE will inform health-related applications in water and air quality.

PACE will provide ***phytoplankton community composition*** and ***pigment data***, contributing to the understanding aquatic/ocean ecosystems, which can benefit and/or inform:

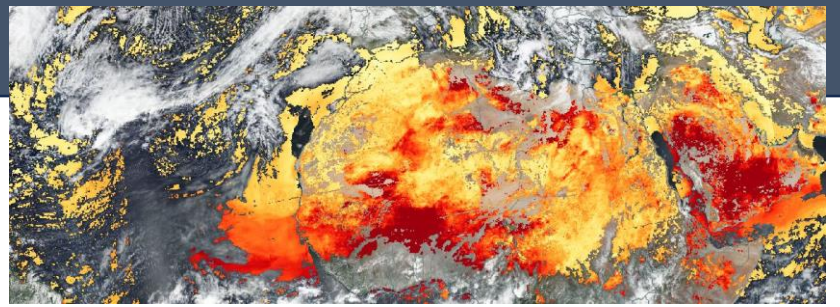
- Identification & tracking of **HABs**
- Assessing the health of **fisheries and aquaculture**
- Monitoring **marine food webs/dynamics**
- Studying **aquatic biodiversity**
- Evaluating & maintaining **ecosystem health**

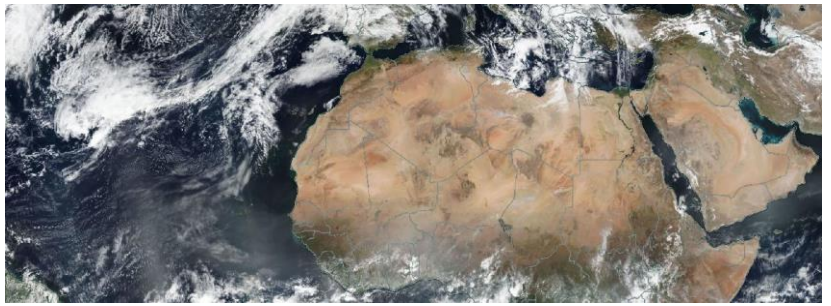
PACE will provide ***atmospheric measurements*** (such as total column aerosol amount, aerosol layer height, & aerosol optical depth) and ***cloud products*** (such as cloud cover, height, phase, brightness, and droplet size), which can benefit and/or inform:

- The location, altitude, and magnitude of particulate matter such as **wildfire smoke** or **volcanic ash** (pre- or post-eruption)
- **Hurricane/weather** monitoring



PACE will extend and improve upon MODIS and VIIRS heritage aerosol optical depth retrievals for assessing and managing air pollution exposure (right) and chlorophyll retrievals for water quality and HAB monitoring (left).





- PACE OCI will extend and improve on heritage (e.g., MODIS/VIIRS) **aerosol data sets, and multi-angle polarimetry offers more capable, detailed aerosol characterization.**
- PACE will also improve upon available water quality metrics, including phytoplankton community composition and pigments, offering **significant contributions to our understanding of aquatic ecosystems and possible marine-based health risks.**
- The PACE Applications Program has various means of end user engagement and wants you to **get involved** as an Early Adopter, Community of Practice member, or general data end user.
- We're launching in 5 months! We have simulated data available! We're looking for feedback; **more work is needed to develop and expand on PACE's applicability to health research and application for decision-making.**

Join the PACE CoP and/or Early Adopters Program!

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Category 3 – Air Quality

Flash Talks: Air Quality

- **Overview of the NASA Health and Air Quality Applied Sciences Team (HAQAST)**
  - Jenny Bratburd (University of Wisconsin-Madison)
- **Enhancing the Accuracy of Air Quality Forecasts in Delhi via Assimilation of NASA Earth Observations and their Impact on Decision-making Activity**
  - Rajesh Kumar (University Corporation for Atmospheric Research)
- **Sub-Urban Air Pollution Exposures and Associations with Clinical Health Outcomes for Asthma in Jefferson County, Alabama**
  - Susan Alexander (University of Alabama in Huntsville)
- **The NASA TEMPO Mission: Hourly Daytime Air Pollution Observations for Enhanced Health and Air Quality Studies**
  - Aaron Naeger (University of Alabama in Huntsville)

Overview of NASA HAQAST

The NASA Health and Air Quality Applied Sciences Team (HAQAST)

Jenny Bratburd, HAQAST Outreach Program Manager, University of Wisconsin—Madison

What is “hay-kast”?

- Health and Air Quality Applied Sciences Team
- 4 year initiative through 2025
- 14 Members and 60+ co-investigators
- Mission: Connect NASA science with air quality and health applications
- Three types of work:
  - Member projects
  - Tiger team projects (collaborative)
  - Outreach, engagement, rapid response

NASA WORLDVIEW VIDEO TUTORIAL NOW AVAILABLE

Watch HAQAST's NASA Worldview video tutorial, produced by the NASA HAQAST Communications Team

ZONDLO SHOWS HOW AGRICULTURE BREATHES

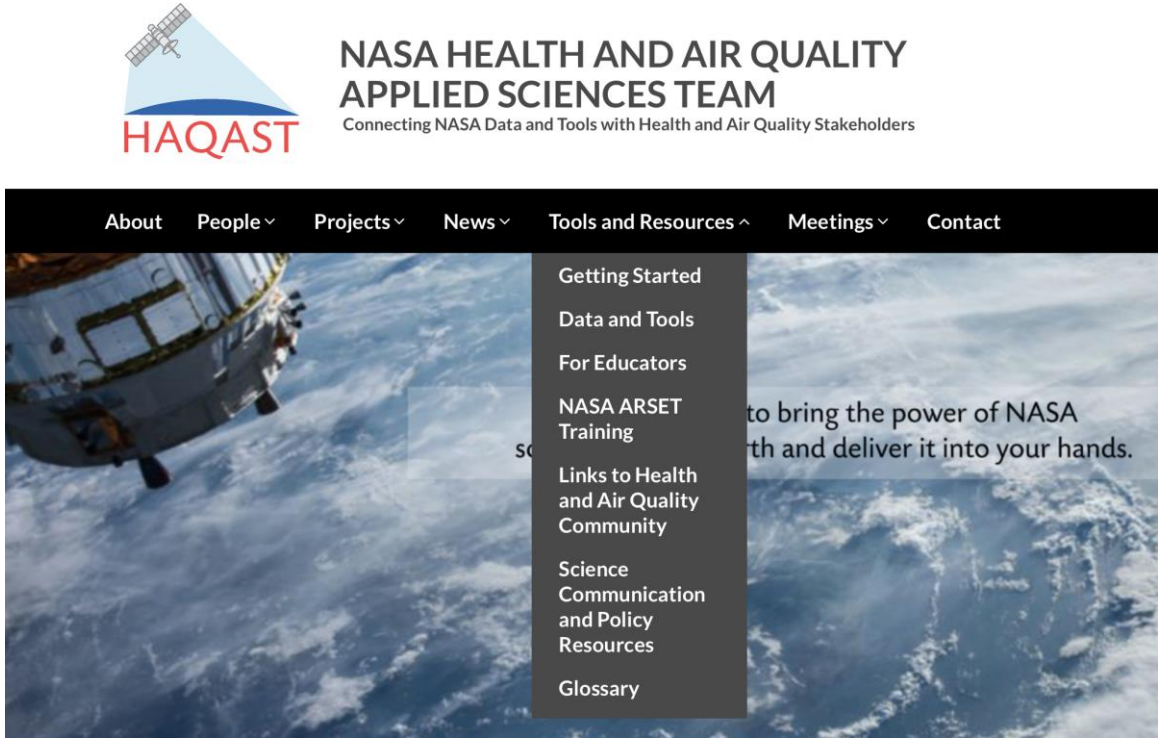
Mark Zondlo's work on the seasonal rhythm of NH3 profiled by NASA's Image of the Day.

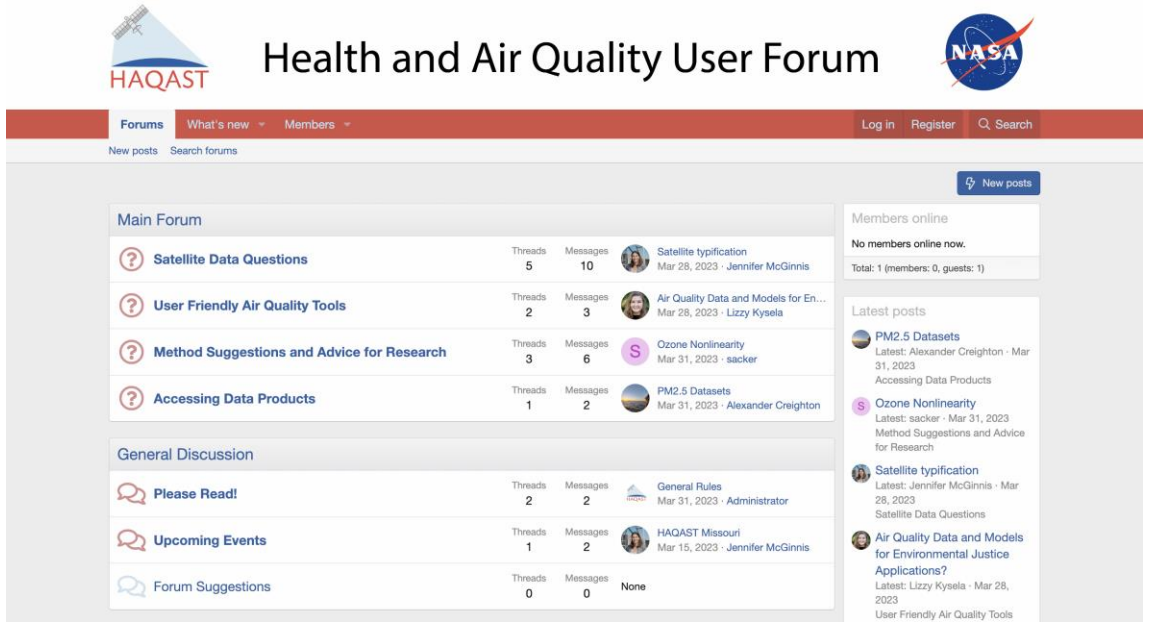
New HAQAST Tiger Teams

- Analysis to support air quality and health TEMPO applications for surface ozone, led by Arlene Fiore
- Mitigating Uncertainties in Lateral Boundary Conditions used for Regional Air Quality Assessment Modeling, led by Brad Pierce
- Satellite Observations Supporting Assessment of Unconventional Oil and Gas Emissions and Exposures, led by Ted Russell
- Satellite Data for Environmental Justice, led by Qian Xiao
- Applications of GOES-R aerosol data in operational air quality management and public health decision support systems, led by Yang Liu

Get Involved!

- **Find resources, tutorials, and sign up for our mailing list**
  - https://haqast.org/
- **Free, public, hybrid meetings**
  - October 19 - 20, 2023: HAQAST Utah
  - June 4 - 5, 2024: HAQAST Massachusetts
- **Health and Air Quality Community Forum**
  - https://haq.community.forum/





Development of high-resolution air quality early warning systems to strengthen air quality decision-making activity in Indian Megacities

Rajesh Kumar, Ashish Sharma, Sachin Ghude, Gaurav Govardhan, Chinmay Jena, Vijay K. Soni, Prafull Yadav, Sreyashi Debnath, Maryam Golbazi, and Priyanka Sharma

GEO Health Community of Practice
Special Edition: The Americas

August 29, 2023 from 8:30-10:30AM EDT (GMT-4)

Rationale and Project objective

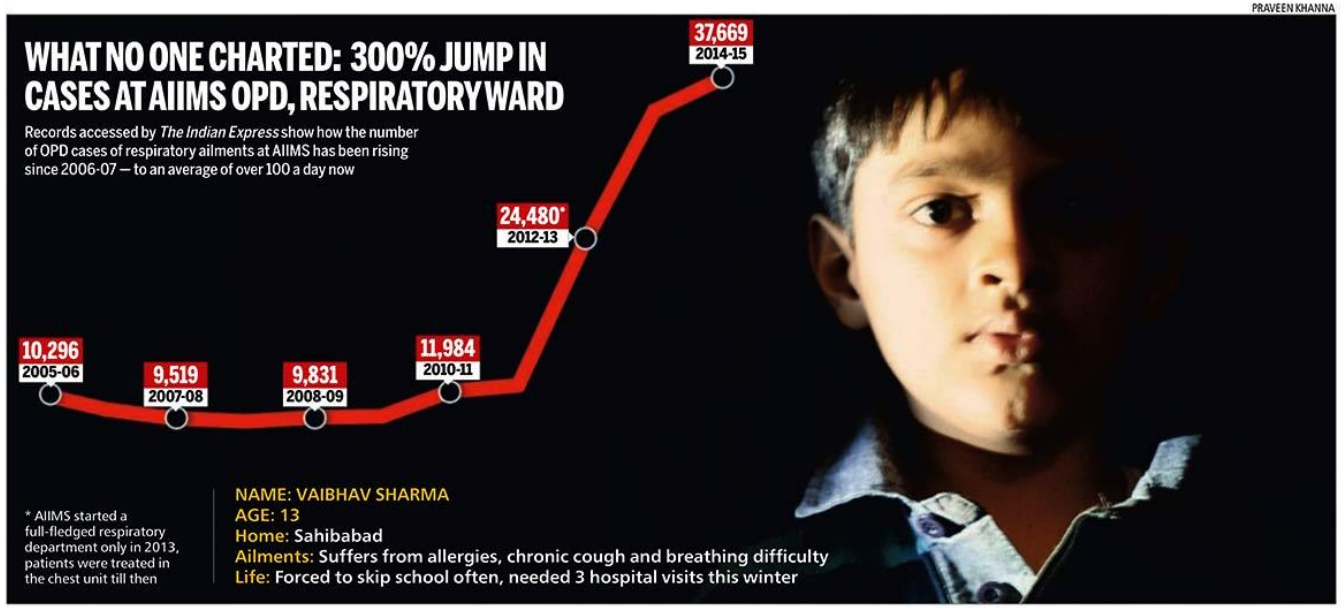
Indian Express 01.04.2015

DEATH BY BREATH AN EXPRESS INVESTIGATION- PART TWO

Leave Delhi

That's what doctors are prescribing to a record surge of patients with serious respiratory ailments triggered by the city's toxic air

PRAVEEN KHANNA

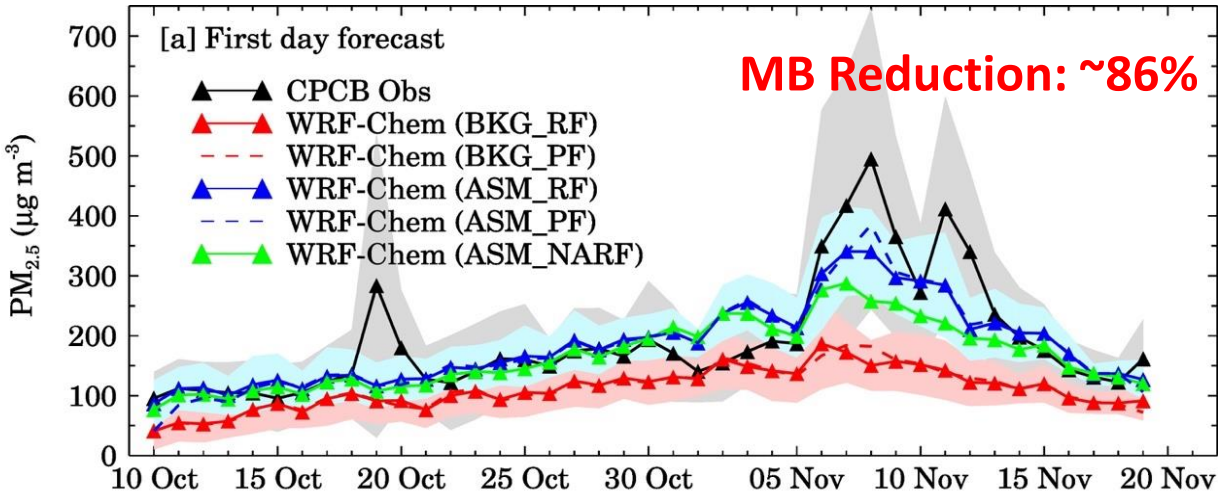


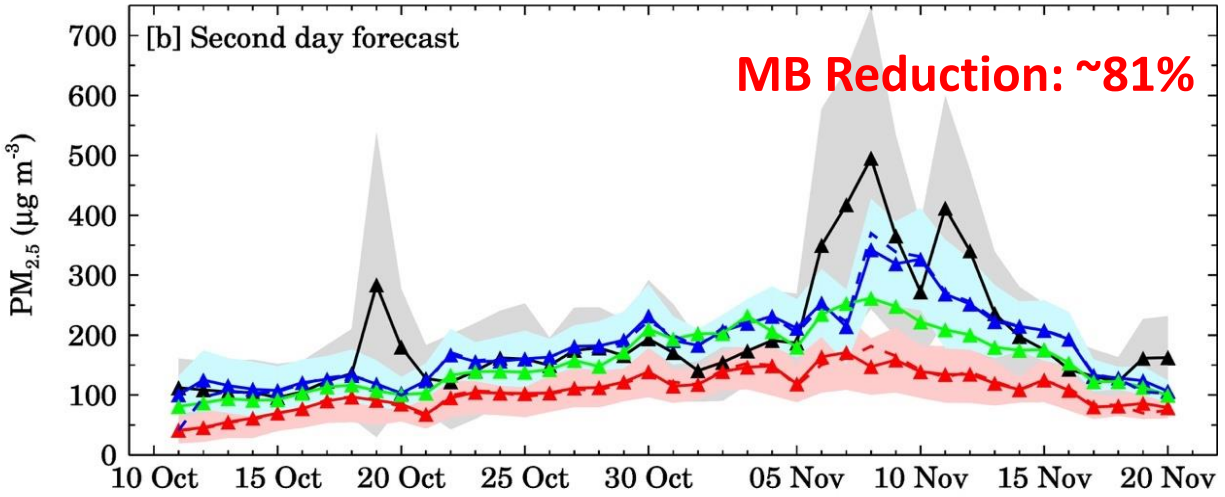
Objective

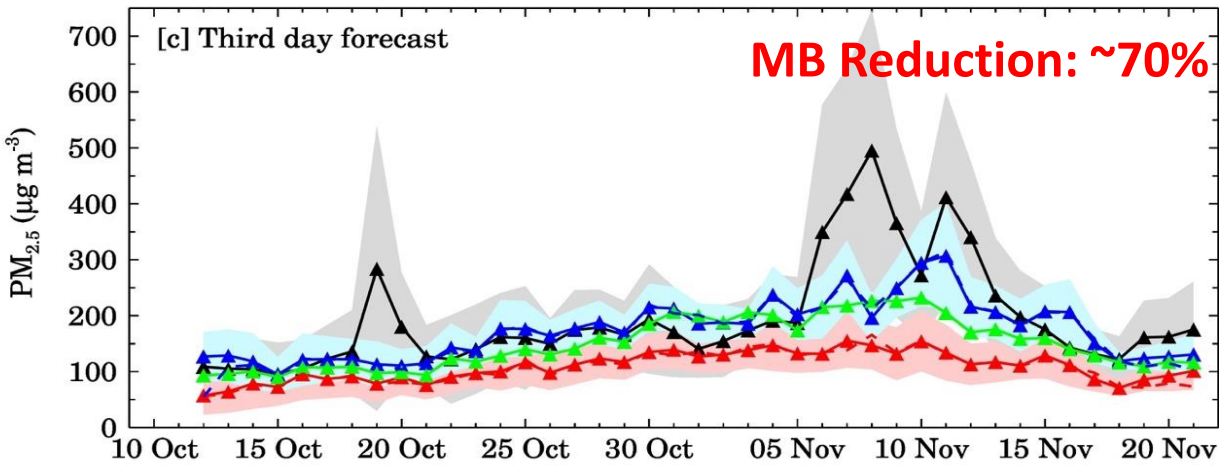
Develop an Air Quality Early Warning System to provide 72-h air quality forecasts to the residents of Delhi and National Capital Region and help Commission of Air Quality Management make informed decisions.

E-mail: rkumar@ucar.edu

Key Outcome: Improvements in $PM_{2.5}$ Forecasts







- About 75% improvement in the forecast result from assimilation of MODIS AOD.
- About 25% improvement is due to interaction of aerosols with radiation.
- Persistent fire emission assumption works fairly well in northern India.

E-mail: rkumar@ucar.edu

The Indian EXPRESS

Delhi air pollution: NCR schools, colleges shut, construction at a halt till November 21

Delhi Air Quality Information → Commission for Air Quality Management

Polluted air → Restricted Activities

Cleaner air → Normal Operation

EMPOWERING DECISION-MAKERS!!

[Ghude, Kumar et al., Nature, 2022]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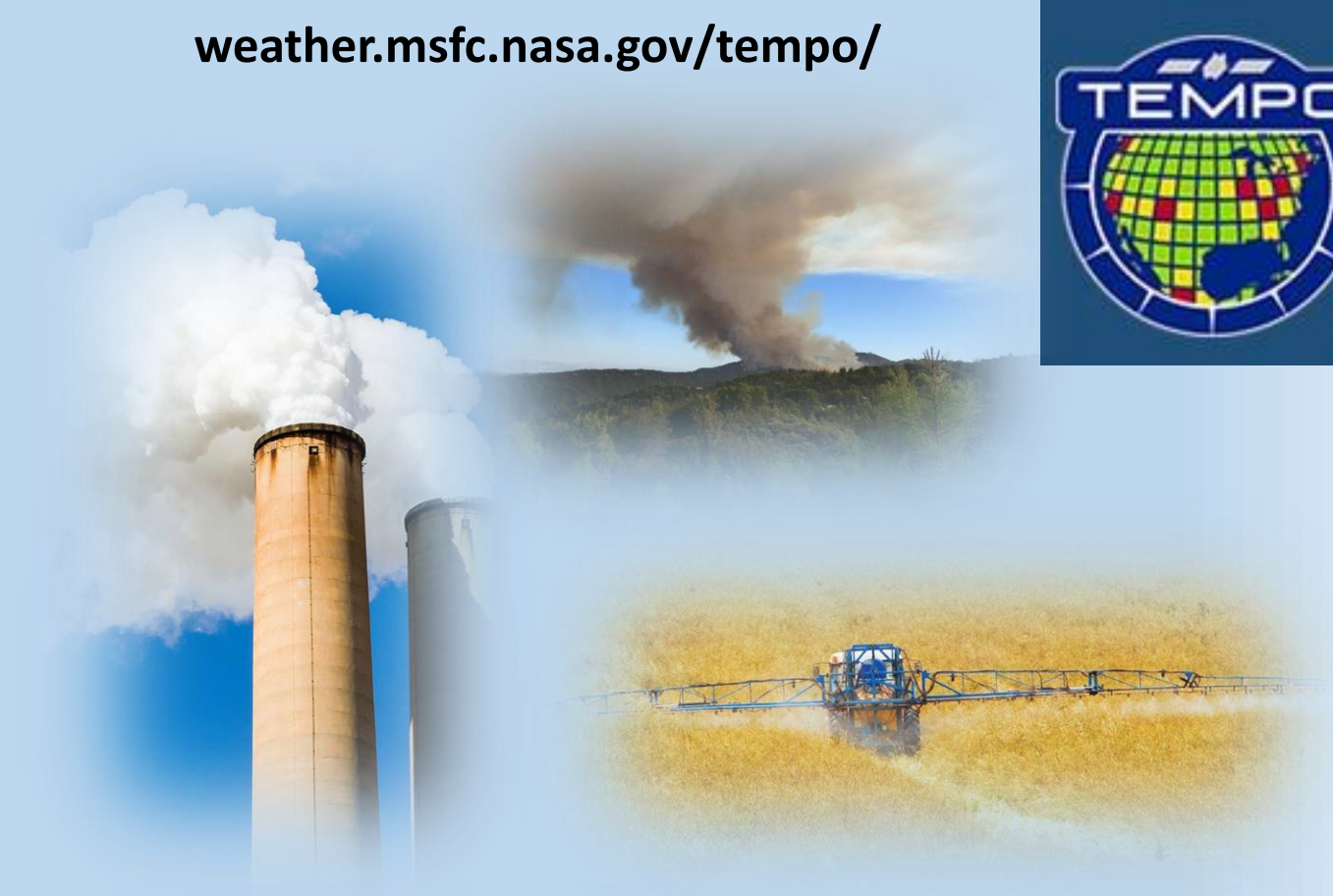
Schools reopen after pollution break, construction ban still on

The Supreme Court order issued last week had re-imposed the ban on construction activities in the NCR until further orders.

E-mail: rkumar@ucar.edu

weather.msfc.nasa.gov/tempo/



Tropospheric Emissions: Monitoring of Pollution

Hourly Measurement of Pollution

Smithsonian Astrophysical Observatory

http://tempo.si.edu/

The NASA TEMPO Mission: Hourly Daytime Air Pollution Observations for Enhanced Health & Air Quality Studies

GEO Health Community of Practice

Special Edition: The Americas

August 29, 2023

Aaron Naeger

& TEMPO Team

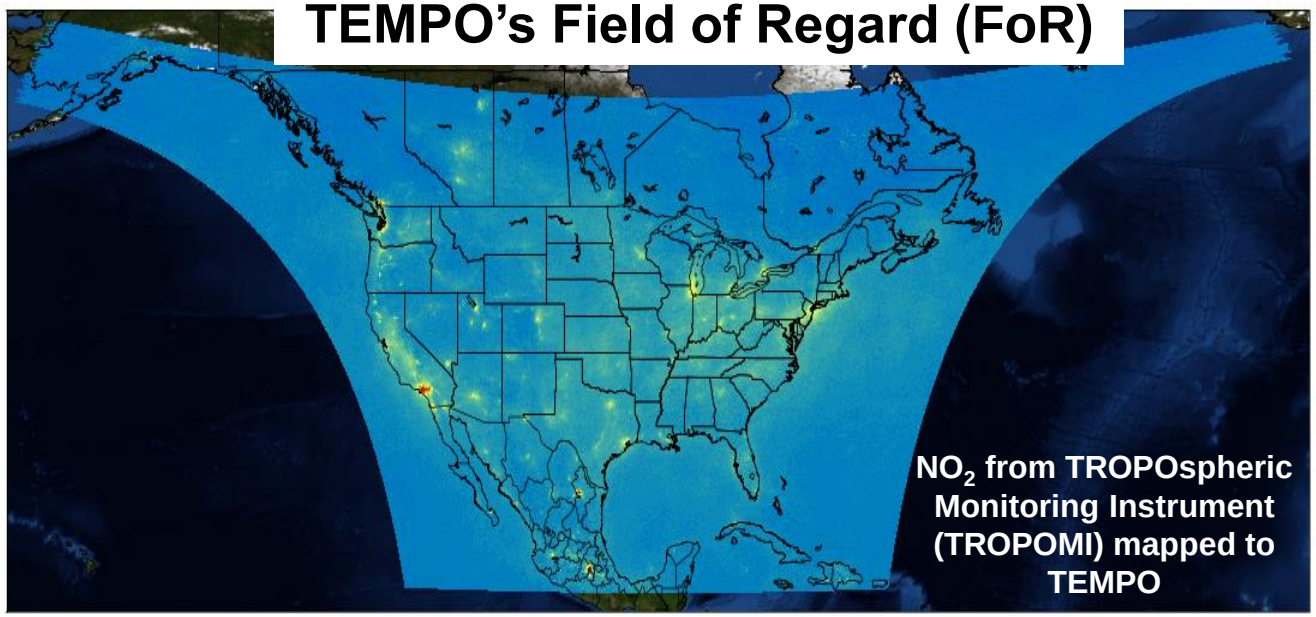
TEMPO Deputy Program Applications Lead

NASA / University of Alabama in Huntsville

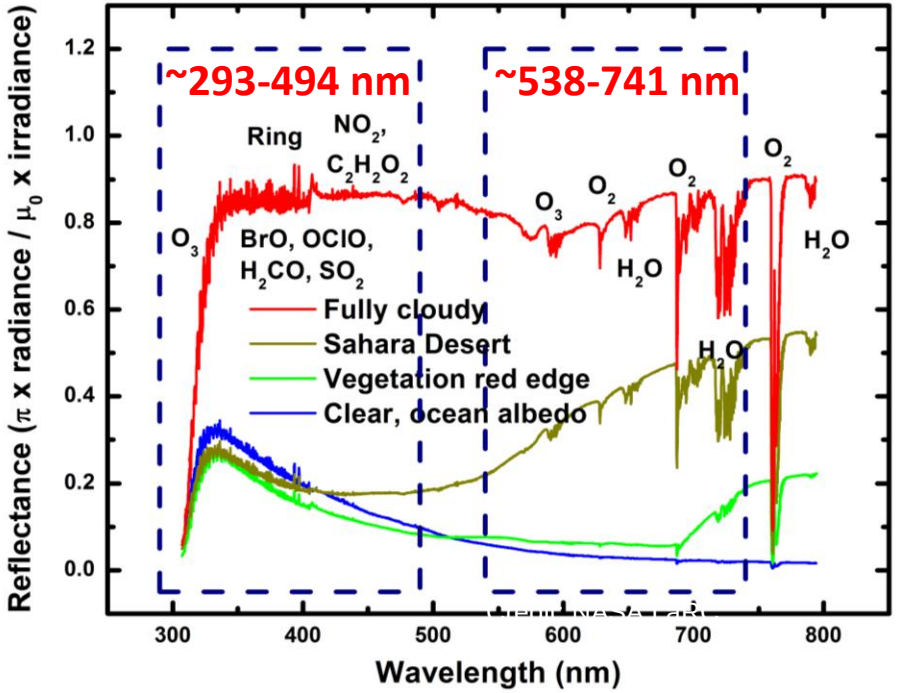
U.S. Government sponsorship acknowledged.

TEMPO Quick Facts

TEMPO's Field of Regard (FoR)

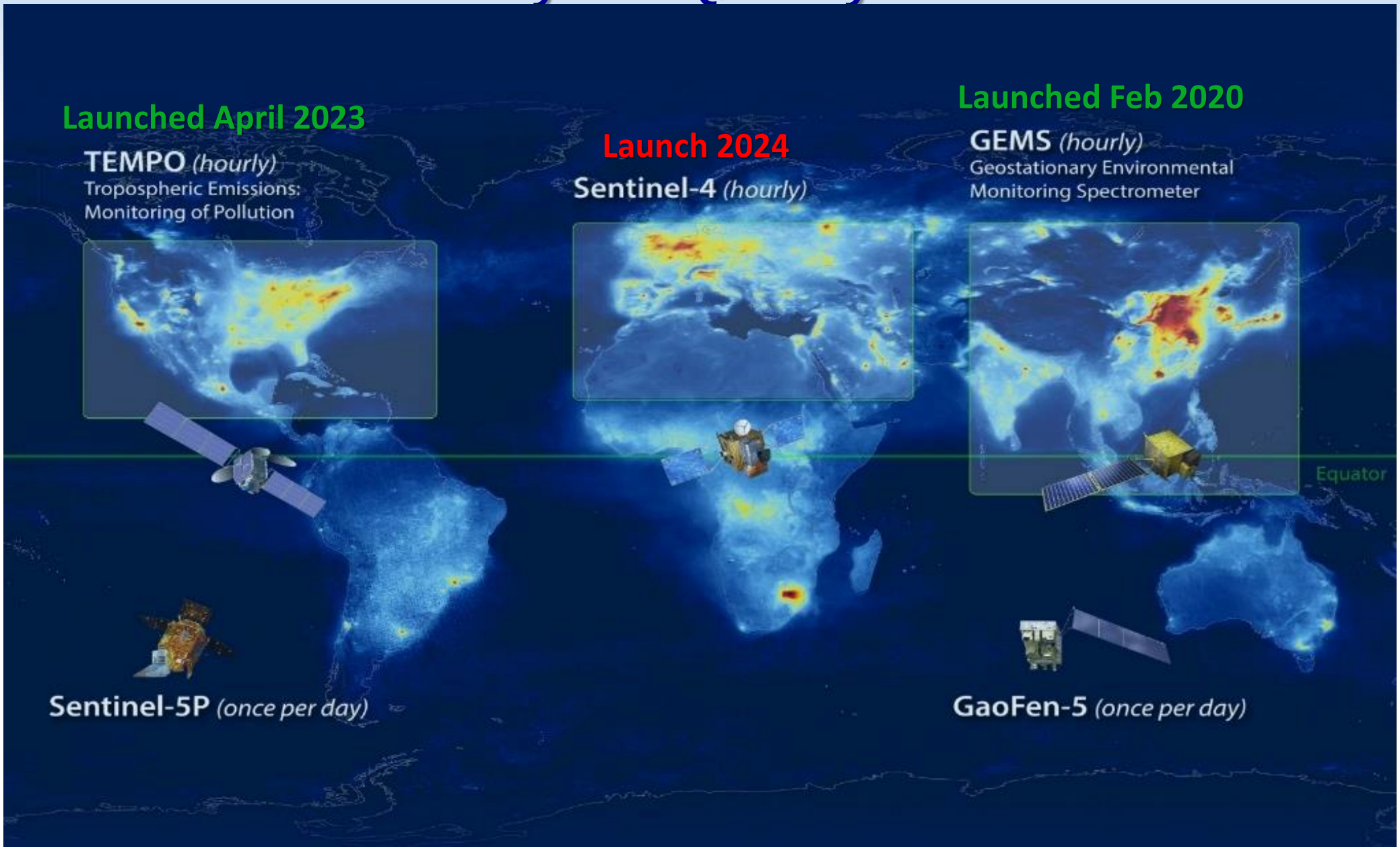


- NASA's first Earth Venture Instrument (EVI) selected in 2012 & first host payload
- Joint NASA & Smithsonian Astrophysical Observatory (PI Kelly Chance) project with domestic and international partners
- Observations of atmospheric pollution every daylight hour at high spatial resolution from Geostationary Earth Orbit



- UV/Visible grating spectrometer is sensitive to **policy-relevant pollutants (NO_2, SO_2, O_3)** and aerosols.
- Capability to distinguish between boundary layer from free tropospheric and stratospheric O_3
- **Launched April 7, 2023** on SpaceX rocket to satellite host Intelsat (IS40e) @ 91°W (Baseline mission: 20 months).
- Part of a geostationary air quality constellation, providing hourly daylight observations over the Northern Hemisphere

Geostationary Air Quality Constellation



TEMPO L2+ Products: Baseline + SNWG TEMPO NRT

Level	Product	Key Variables	Resolution (km^2) **	Frequency/ Size
L2	Cloud	Cloud Fraction, Cloud Pressure	2.0 x 4.75	Hourly, granule
	O_3 (Ozone) profile	**O_3 profile, Tropospheric O_3 column, Total O_3 column, Stratosphere O_3 column**, Cloud Fraction, O_3 a priori, O_3 Averaging Kernel	>= 8.0 x 4.75	Hourly, granule
	Total O_3	**Total column O_3**, Cloud Fraction, Aerosol Index	2.0 x 4.75	Hourly, granule
	NO_2 (Nitrogen Dioxide)	**Tropospheric Vertical Column Density (VCD), Total VCD**, Slant Column Density (SCD), Cloud Fraction, Air Mass Factor (AMF), Data Quality Flag	2.0 x 4.75	Hourly, granule
	HCHO (Formaldehyde)	**Total VCD**, SCD, Cloud Fraction, AMF, Data Quality Flag	2.0 x 4.75	Hourly, granule
	Aerosol	Ultraviolet & Visible Aerosol Optical Depth (AOD), Aerosol Optical Centroid Height (AOCH), Aerosol Absorption Index (AAI)	8.0 x 4.75 (TBD)	Hourly, granule
L3	Same as L2 (Gridded)	Same as L2	~2 x 2 (TBD)	Hourly, scan

** **Center of Field of Regard**

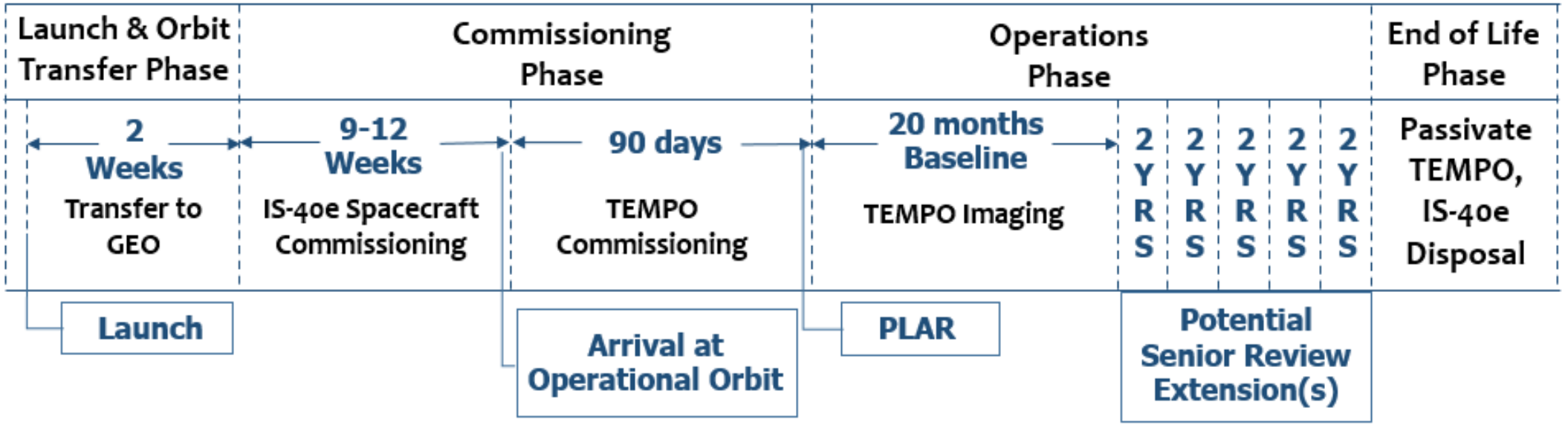
Near real-time (NRT) products: Latency 2 - 3 hours

Baseline (Offline) products: Latency 3 - 6 hours (except O_3 profile ~24 hours)

SNWG: Satellite Needs Working Group

Mission Phases & Operational Timeline

Launched: April 7, 2023 | **Powered On:** June 7 | **Commissioning:** June – Sept. 2023 | **Operations:** Oct. 2023 – May 2025



ASDC: Atmospheric Science Data Center

- Currently in commissioning phase of mission June – Sept. 2023
- ***First light***: July 31 – August 2 with first Earth imaging on August 2
- Nominal operation: ~6 months after launch (Oct 2023)
- Baseline mission length: 20 months (Oct 2023 – May 2025) **w/ potential 10+ year lifetime**
- Public release of Baseline products at ASDC: Level 1b data ~Feb 2024, **Level 2 & 3 data ~April 2024**
- Archive of baseline "offline" products will start from commissioning phase ~Aug 2023
- **Initial public release of NRT products at ASDC ~Jan 2025**

Thank You!

Join EA Program here!

Contribute to the Green Paper!

First Light Imagery!

@NaegerAaron

aaron.naeger@nasa.gov

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GEO Health Community of Practice Special Edition: The Americas

Category 4 – Data Management and Capacity Building

Flash Talks: Data Management and Capacity Building

- **EOTEC DevNet: Fostering Collaboration among the Leading Global Providers of EO Training and Tools**
  - Yasha Moz (NASA HQ)

- **The Earth Observations Toolkit: Creating Pathways to Healthy Cities and Human Settlements**
  - Corena Pincham (NASA HQ)

- **Establishing a COVID-19 Observatory and a Pilot Earth Observation Center to Promote Sustainability in Honduras**
  - Reyna Durón (UNITEC, Honduras)

Fostering Collaboration Among the Leading Global Providers of EO Training and Tools

Earth Observation Training, Education, and Capacity Development Network

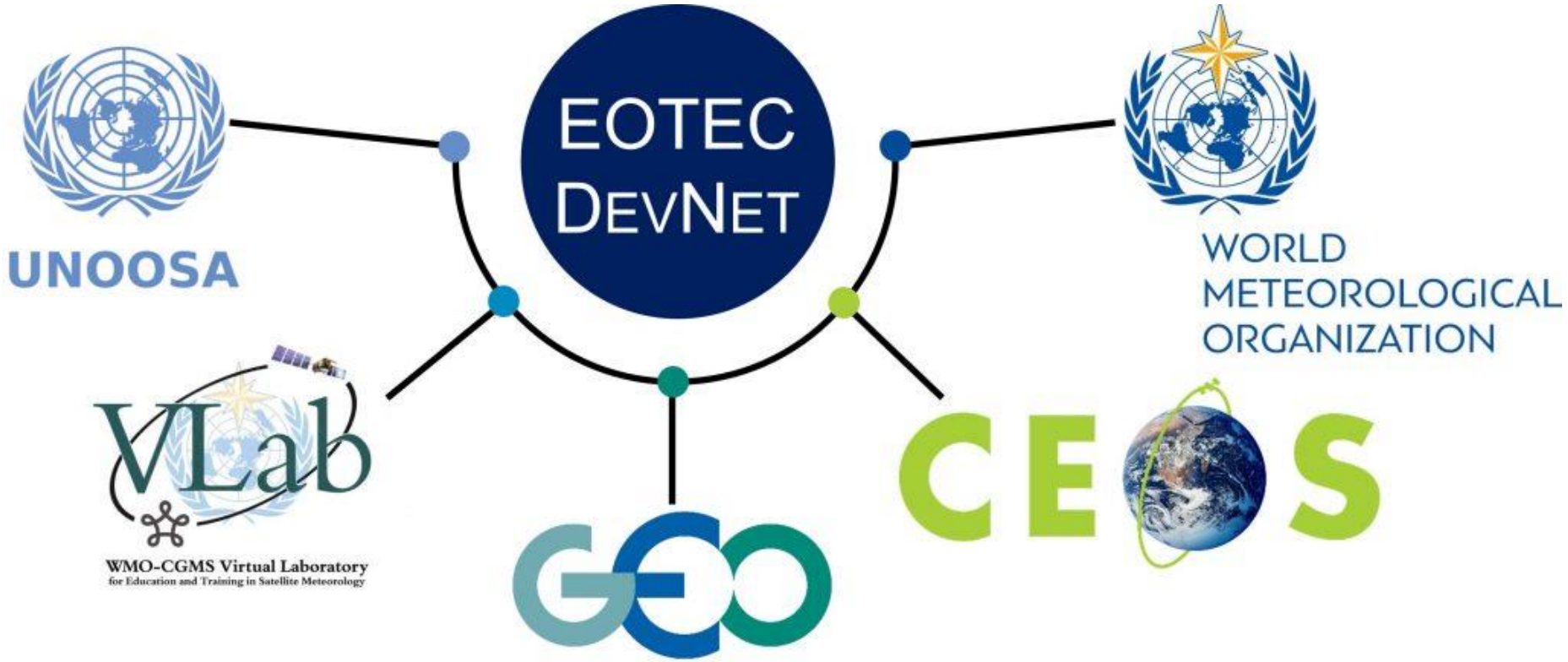
GEO Health Community of Practice: The Americas

Yasha Moz

EOTEC DevNet Secretariat: Erin Martin, Yasha Moz, Martyna Stelmaszczuk-Górska, Sydney Neugebauer

29 August 2023

The Earth Observation Training, Education, and Capacity Development Network



AIMS

- **Improve collaboration among EO-capacity building providers**
- **Foster exchange of capacity building resources**
- **Reduce duplication of effort**

THEMATIC FOCUS

- Disaster risk reduction
- Climate adaptation and mitigation

www.eotecdev.net

Twitter: @EOTECDevNet

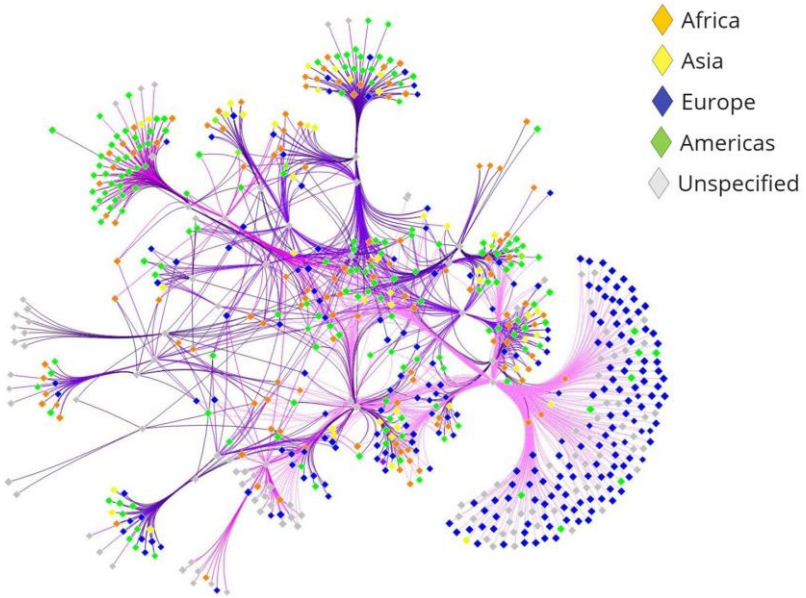
Key Outcomes

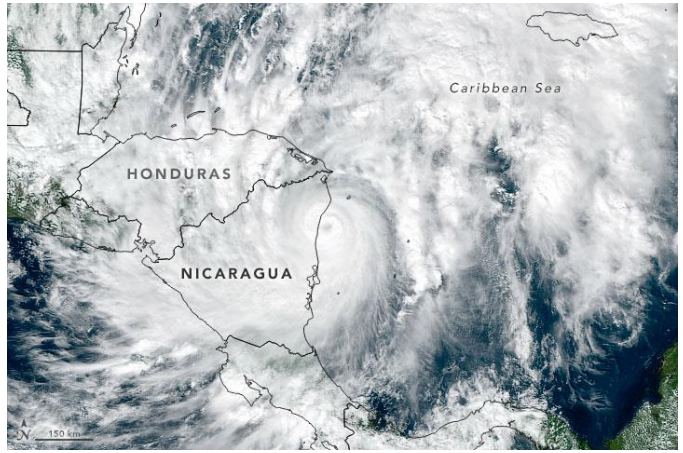
- Greater awareness of capacity building efforts at both Global and Regional levels

- Vibrant Regional Communities of Practice and Thematic Working Groups - over 600 capacity builders and subject matter experts from 87 countries are involved

- First collaboration around the Flooding
  - Tracker for Flood Tools and Capacity Building Resources - https://eotec-dev.ceos.org
  - Global Use Case on Use of Flood Extent Tools with 5 Regional Analyses - https://eotecdev.net/use-cases

- New website featuring products, webinar recordings, training calendar and member communication platform at www.eotecdev.net

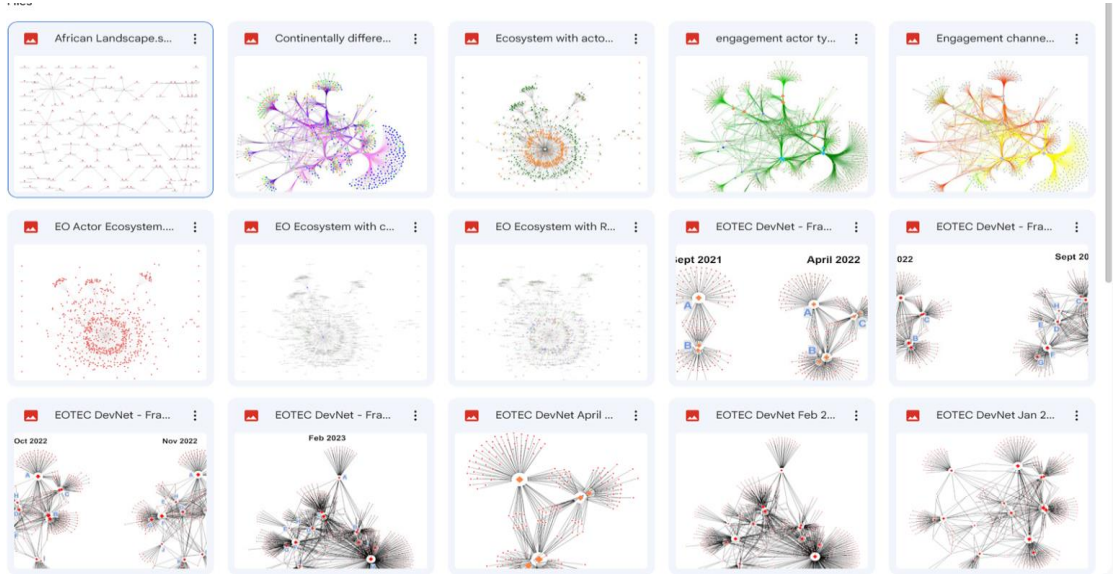




A Central America use case analyzed the response to flooding from hurricanes Eta and Iota in 2020.

What's Next for EOTEC DevNet?

- Thematic Working Group on **Drought** on September 27
- **Network Intelligence** analysis to define the global landscape of EO training and education efforts to clarify gaps and overlaps between data providers, training networks, and academia.
- Gathering best practices and resources related to **Needs Assessment**
- Utilizing **communication platform** between the quarterly meetings
- From awareness to greater coordination to **reducing duplication**



Get Involved!

- Help us spread the word about **EOTEC DevNet**
- **Join** a Regional Community of Practice or Thematic Working Group
- Visit our new website at EOTECDev.Net
- Follow us on Twitter **@EOTECDevNet** and **LinkedIn**

The Earth Observations Toolkit: Creating Pathways to Healthy Cities and Human Settlements

Corena Pincham, NASA, EO4SDG, Presenter
Julie Chamberlain, NASA, EO4SDG, Executive Director

GEO GROUP ON EARTH OBSERVATIONS

UN HABITAT FOR A BETTER URBAN FUTURE

EARTH OBSERVATIONS FOR THE SUSTAINABLE DEVELOPMENT GOALS

Earth Observations Toolkit for SUSTAINABLE CITIES AND HUMAN SETTLEMENTS

Objective

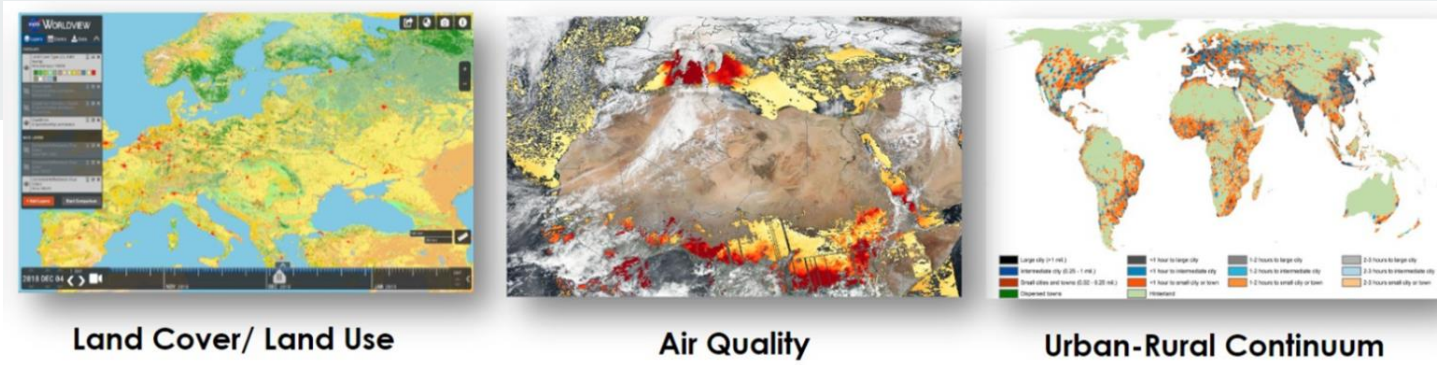
Online knowledge resource and portal aimed to share Earth observation data with stakeholders seeking to make cities and human settlements more inclusive, safe, resilient, and sustainable.

Started in 2021 - aligned with UN SDG 11 and the New Urban Agenda.

Interdisciplinary collaboration to promote knowledge sharing and engagement on EO applications for for sustainable urban development.

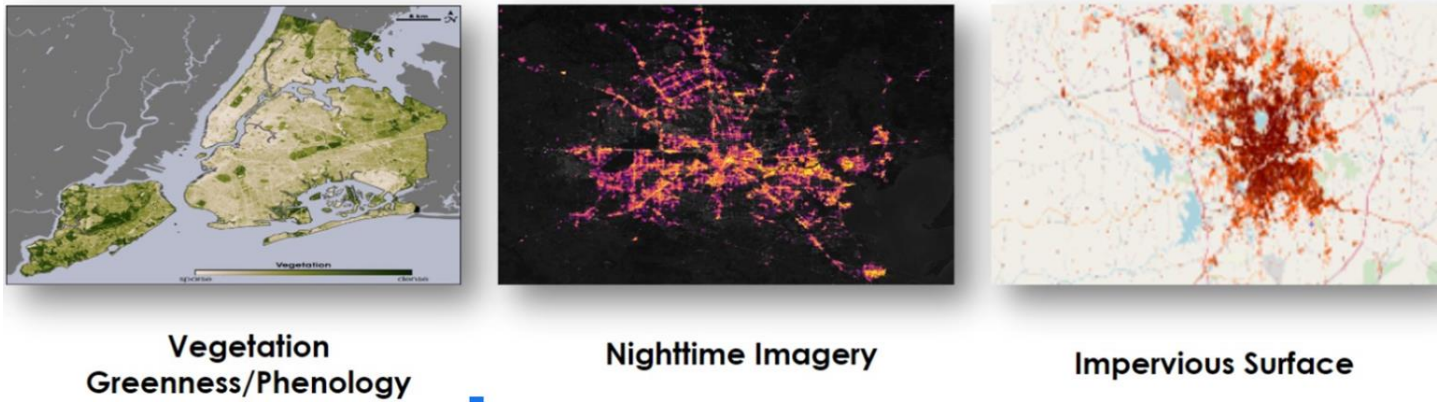
- Housing (SDG 11.1.1)
  - Water & sanitation access, overcrowding, infectious disease spread
- Urbanization (SDG 11.3.1)
  - Healthcare service needs & access, food security, environmental interaction
- Open Spaces (SDG 11.7.1)
  - Space for outdoor exercise, socialization and relaxation
- Transportation (SDG 11.2.1)
  - Public transit access, pollution monitoring, physical activity

Join our Working Groups, or contribute open source datasets and tools: eotoolkit.unhabitat.org



Key Outcomes

- Free and open, ready-to-use EO data sets
- Tools to produce indicators, enable visualization, and access available data
- Documented use cases from cities and countries



14 tools and 32 datasets available

Over 50 active participants internationally

1-pagers demonstrating the measured impact of EO Toolkit resources with SDG 11 indicators

NASA ARSET trainings available on navigating the EO Toolkit portal

Contact us: chamberlain.n.julie@nasa.gov

pincham_corena@bah.com

In development: City Cohorts

Air Quality Cohort Objectives

- Enable a small group of cities from the Global North and Global South to share views, experiences and perspectives on poor urban air quality, its causes, effective interventions
- Identify key issues and priorities for these cities in relation to air quality
- Promote use of Earth Observation tools and data to assist cities to improve air quality and to understand its impacts

AQ application areas for EO

- Atmospheric pollutants
- Weather/atmospheric conditions
- Urban infrastructure, conditions, and activity

Public health practitioners would be resourceful in building project consortia of relevant expert partners to accelerate EO data use, for Air Quality and other future cohort topics

Establishing a COVID-19 Observatory and a pilot earth observation center to promote sustainability in Honduras

Reyna M. Durón, Gracia M. Pineda, Oswaldo Rodríguez, José Bardales, Héctor Villatoro, Gabriela Munguía, Rafael Delgado Elvir, Alex Padilla
Universidad Tecnológica Centroamericana, Honduras

Javier Hernández, Francisco Torres
Municipalidad, San Pedro Sula, Honduras

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Costa Rica

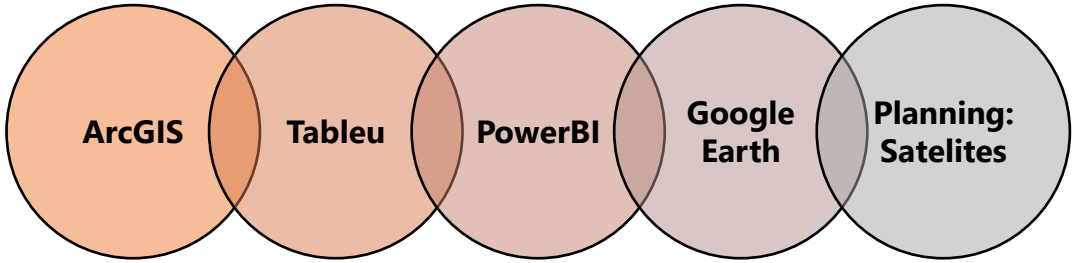
Establishing a COVID-19 Observatory and a pilot earth observation center to promote sustainability in Honduras

Thematic area: Health

Objective and rationale

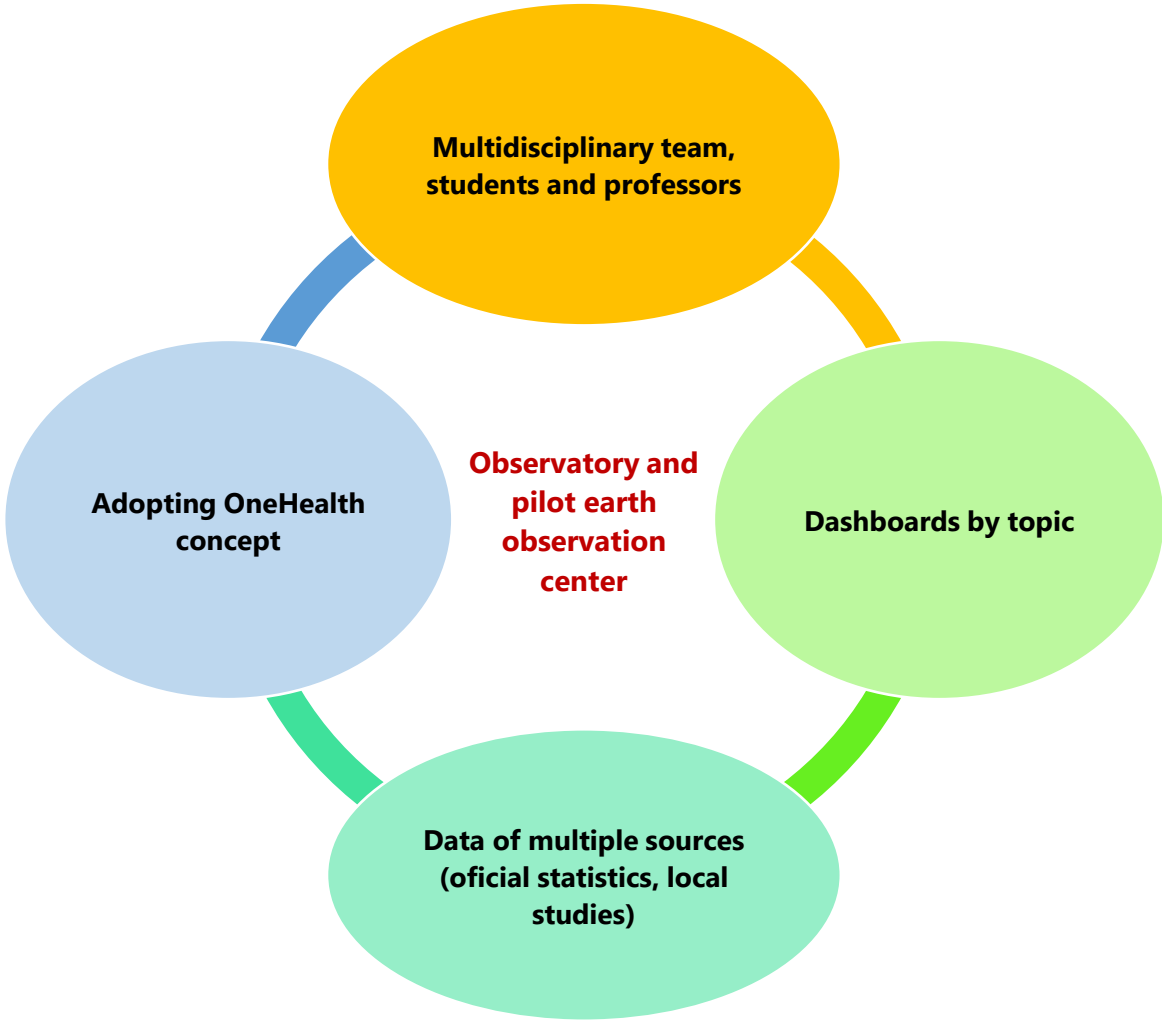
- Honduras pursues the Sustainable Development Goals (SDGs),
- Aware that proper territorial data management is critical for territorial planning projects, research, innovation, and the appropriate strategies for the well-being of populations.
- Data integration is an approach to combining data from varied sources to create unified sets of information that can be used for analysis and decision-making.

To establish a website an interactive environment available to navigate into the different sections, dashboards, statistics and maps.



Establishing a COVID-19 Observatory and a pilot earth observation center to promote sustainability in Honduras

Key outcomes



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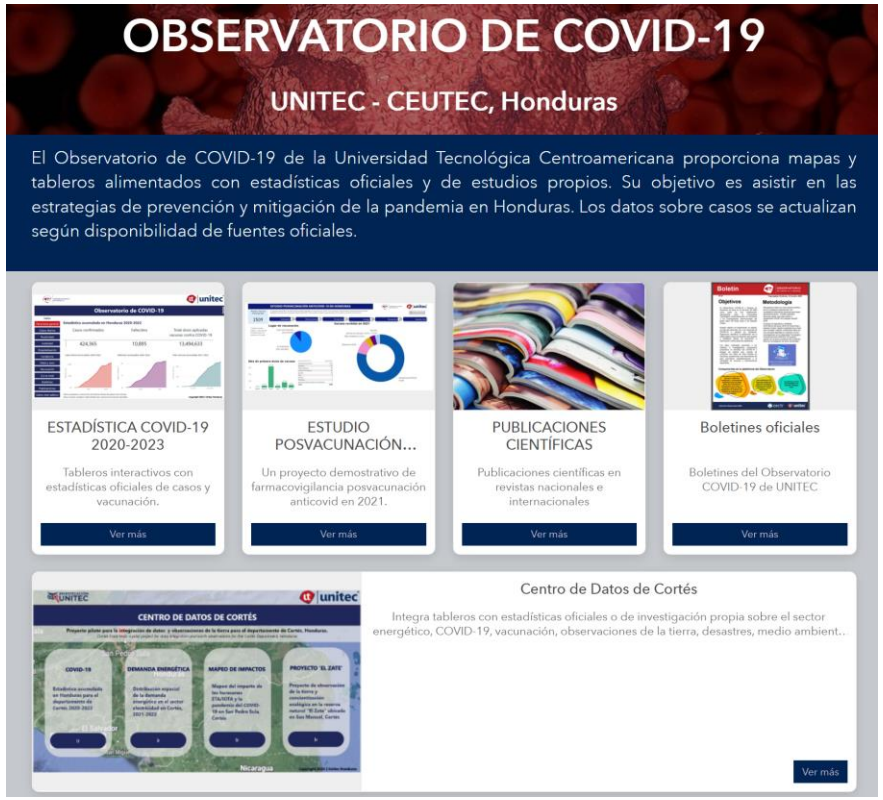
Establishing a COVID-19 Observatory and a pilot earth observation center to promote sustainability in Honduras

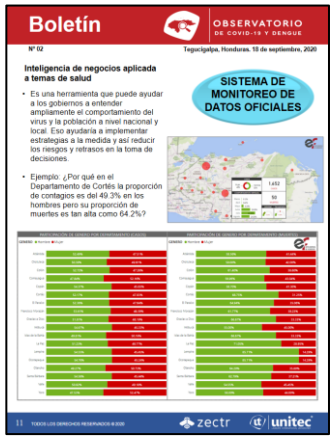
Thematic area: Health

Findings, use, potential future use



https://www.unitec.edu/observatorios-cientificos

https://observatorio-covid19-unitec-arcgis.hub.arcgis.com/



Communication to the **public** and **decision markers** using bulletins and other **media**.

FUTURE

- **More data available**
- **Literacy and training about this type of data, for the public**
- **New tools**
- **Better quality and timing of data**

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Category 5 – Infectious Diseases

Flash Talks: Infectious Diseases

- **Spatial Stratification of Dengue based on the Identification of Risk Factors: A Pilot Trial in the Department of Cauca, Colombia**
  - Catalina Marceló-Diaz (Colombia Ministry of Health)

- **EO 4 Advancing Zoonotic Spillover Mitigation**
  - Jean Felipe Teotonio (HSR.health)

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Q&A Discussion

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AmeriGEO WEEK 2023

Thank you to our CoP presenters!

Credits: NASA (Earth Day 2021)

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