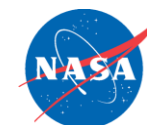




Applied Sciences Week 2020

Applied Sciences Thematic Highlights



EARTH SCIENCE
APPLIED SCIENCES



An Overview of NASA Health and Air Quality Applications

John Haynes



HEALTH &
AIR QUALITY

HEALTH AND AIR QUALITY

Objectives:

- NASA's Health & Air Quality Applications Area supports the use of Earth observations in air quality management and public health, particularly regarding **infectious disease and environmental health** issues.
- The area addresses issues of toxic and pathogenic exposure and health-related hazards and their effects for risk characterization and mitigation.
- The area promotes uses of Earth observing data and models regarding **implementation of air quality standards, policy, and regulations** for economic and human welfare.
- It also addresses **effects of climate change on public health and air quality** to support managers and policy makers in their planning and preparations.

Major Partners include International (e.g., GEO, WHO, UNICEF, PAHO), Federal (e.g., CDC, EPA, NIH, NOAA), State (e.g., South Dakota, California, Texas), and Private sectors (AER, Inc.).

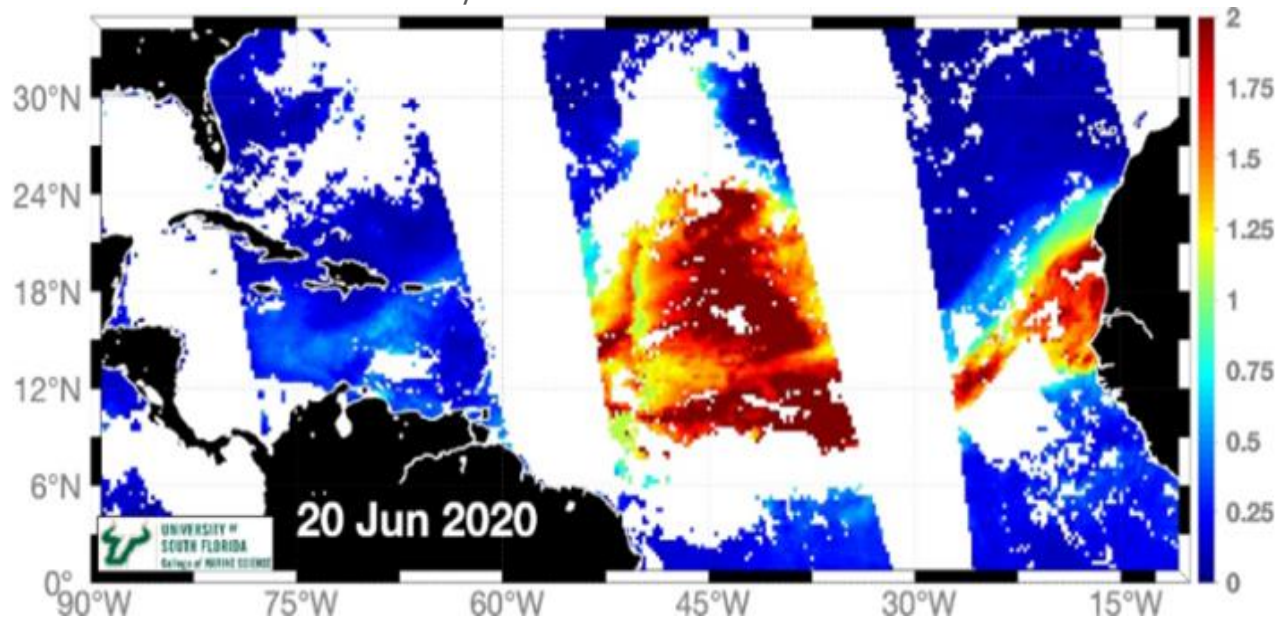


June 20, 2020



June 23, 2020
Saharan Dust plume
San Juan, PR

Credits: NASA/Pablo Méndez-Lázaro



Suomi NPP VIIRS data (AOD/dust concentration)

Forecasting Poor Air Quality Events in the Caribbean

Saharan dust storms crossing the Caribbean adversely impact air quality and human health. Robust applied research and community partnerships were developed in Puerto Rico to build an air quality forecasting tool that will inform policy decisions, educate the public on health risks related to dust storms, and safeguard population health.

NASA Web Feature:

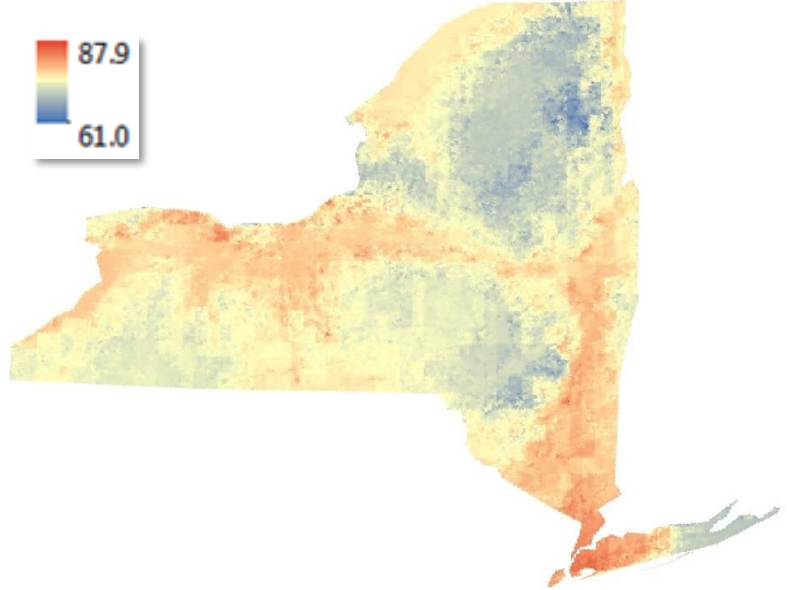
<https://www.nasa.gov/feature/nasa-helps-puerto-rico-prepare-for-saharan-dust-impacts>



Helping New Yorkers Better Cope with Heat

A partnership with the New York State Department of Health, NOAA, and Applied Sciences' Health and Air Quality program found that heat-related illnesses occurred at lower temperatures than previously thought. This prompted several of New York State's National Weather Service Forecast Offices to lower their threshold for issuing Heat Advisories in the summer of 2018, helping keep New Yorkers safe when the temperature rises.

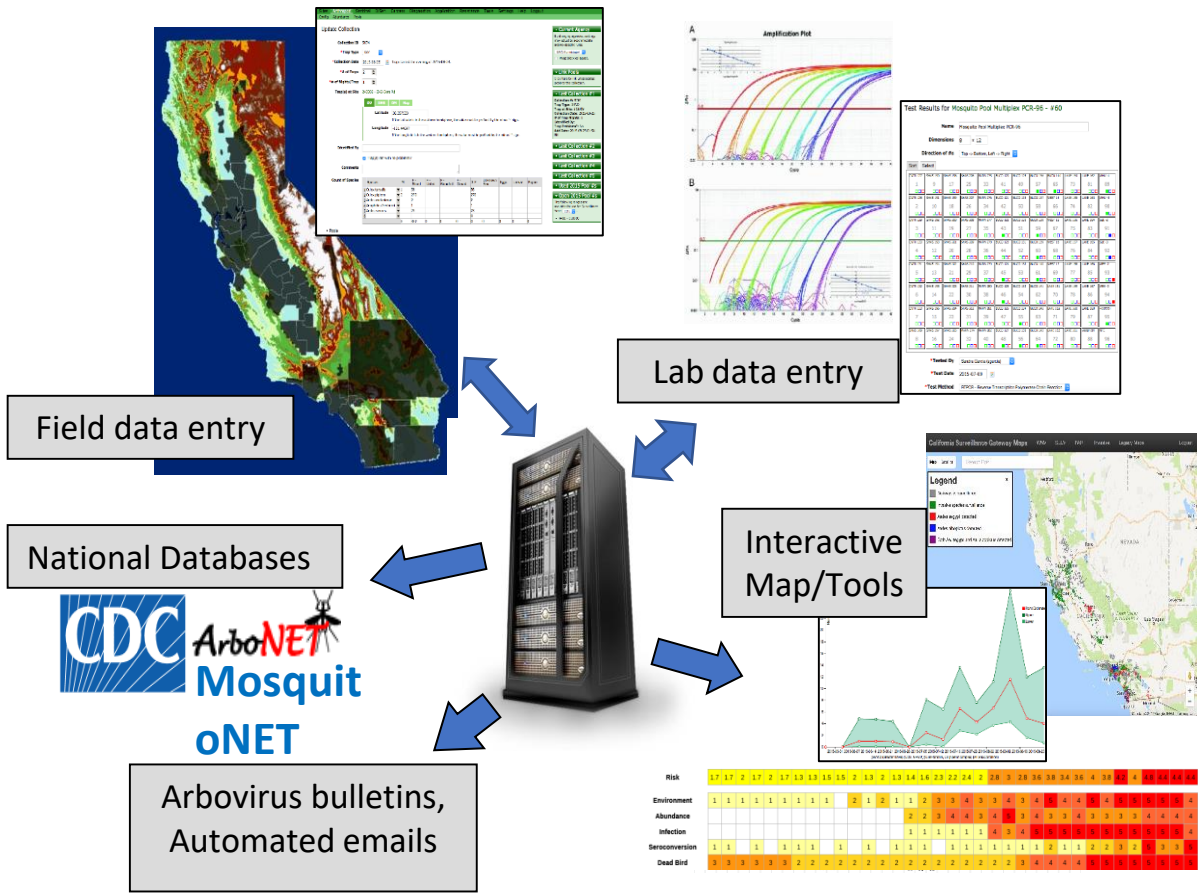
Maximum air temperature across New York State estimated using temperature data products from the NASA-sponsored North American Land Data Assimilation System (7/20/10).



NASA Web Feature:
<https://www.nasa.gov/feature/nasa-helps-new-yorkers-cope-with-summer-swelter>

Enhanced Data Driven Decision Support for Highly Invasive Vectors

Dr. Christopher Barker, U. of California, Davis

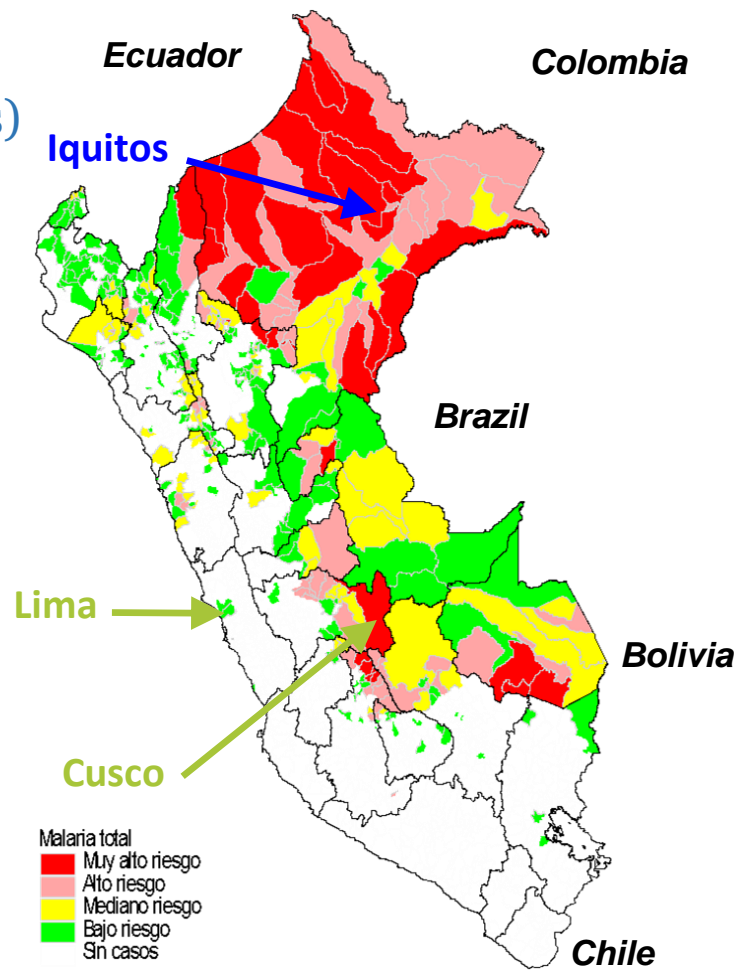


Early Warning System for Vector-Borne Disease Risk in the Amazon

Dr. William Pan, Duke U.

Primary Locations:
Peru, Ecuador (Napo, Orellana, Sucumbios)

Secondary Locations:
Colombia, Western Brazil



NASA Web Features: <https://www.nasa.gov/feature/nasa-helps-fight-the-mosquito-bite-coast-to-coast>
<https://www.nasa.gov/feature/goddard/2017/using-nasa-satellite-data-to-predict-malaria-outbreaks>

+ + + + + + + + +
+ + + + + + + + +
+ + + + + + + + +

Thank You.

For further questions, please contact:
jhaynes@nasa.gov



HEALTH &
AIR QUALITY



Kindling Capacity - ARSET and the Idaho Wildfire Smoke Portal

Selwyn Hudson-Odoi & Jonathan O'Brien



CAPACITY BUILDING



HEALTH & AIR QUALITY

THE APPLIED REMOTE SENSING TRAINING PROGRAM

ARSET teaches users how to incorporate NASA data and resources into a wide variety of topics related to remote sensing and satellite imagery.

The ARSET Program offers satellite remote sensing training that builds the skills to integrate NASA Earth Science data into an agency's decision-making activities. Trainings are offered in Health & Air Quality, Disasters, Eco Forecasting, and Water Resources.

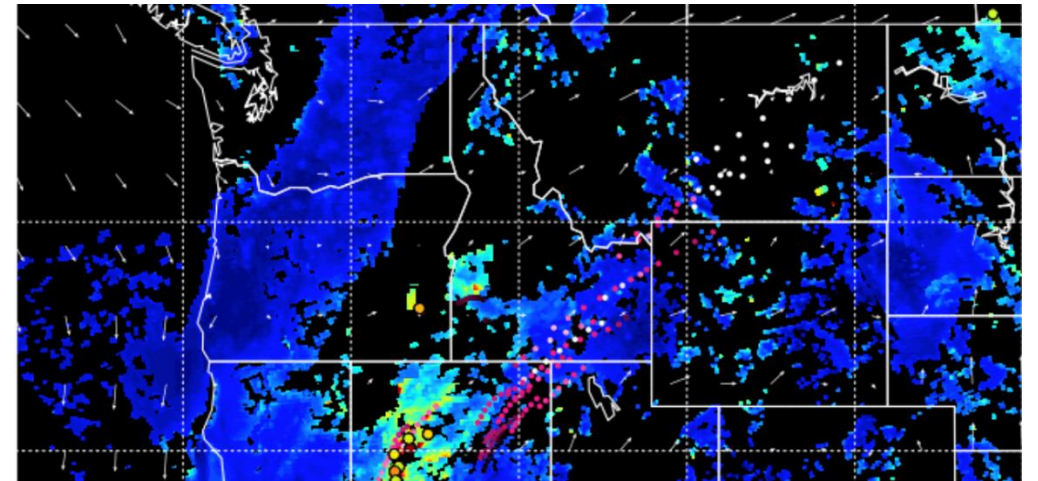
- ARSET offers online and in-person trainings.
- Since 2009, ARSET has reached over **45,000** people.
- ARSET's first trainings were in-person Air Quality workshops. Since then 6,700+ participants have taken Air Quality trainings in ARSET's 11-year history.
- A [recent ARSET training](#) on how NASA measures NO₂ and aerosols brought in over 2,000 participants.



CAPACITY BUILT

“In 2012, I started using what I learned in the ARSET course to put together a daily PowerPoint of fire locations and imagery to share with air quality forecasters. In the years since, that daily PowerPoint has evolved into an interactive website that helps air quality forecasters understand where the fires are, where the smoke is coming from, and where it will go to.”

- Sara Strachan is a senior scientist with the Idaho Department of Environmental Quality.
- Sara used what she learned through attending ARSET trainings in developing the [Idaho Wildfire Smoke Portal](#).
- The portal provides maps, dashboards, and links that deliver *situational awareness* of fire locations, fire thermal output, fire perimeters, and incident information.
- Satellite imagery shows near-real time (NRT) and real-time views of smoke location and movement.



CAPACITY BUILT

- Through ARSET courses, Sara learned to use VIIRS, MODIS, and TROPOMI, all integral parts of the Idaho Wildfire Smoke Portal.
- Trainings demonstrate applications in Health & Air Quality, Disasters, Water Resources, and Ecological Forecasting.
- ARSET continually evolves its trainings based on user needs and advancements in technology.
- To register for a training or browse our catalog, visit: appliedsciences.nasa.gov/arset



“Each year I feel like I have to keep myself updated and keep on learning and so ARSET really helps with that. They introduce new instruments. They teach me how to use it, how to access it in very, very specific technical ways. It's not just overviews, it can be very clear steps that I can go back to. I can take the course, but then I can go back and review the stuff and try and figure it out.”

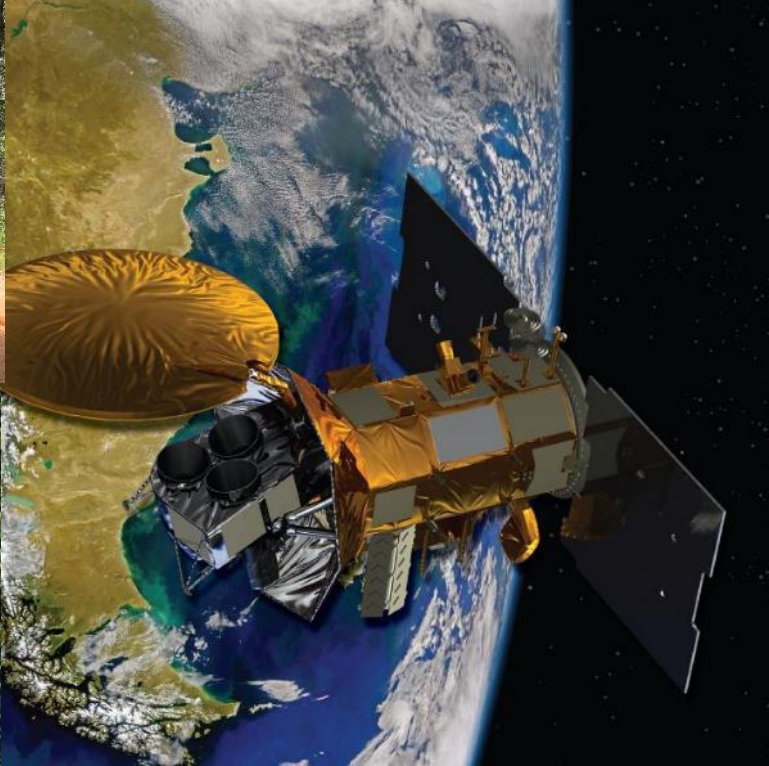
+ + + + + + + + +
+ + + + + + + + +
+ + + + + + + + +

Thank You.

For further questions, visit:
<https://appliedsciences.nasa.gov/arset>



CAPACITY
BUILDING



Ecological Forecasting Program

Predicting Changes to Life on Earth for Conservation and Resource Management

Woody Turner



ECOLOGICAL
FORECASTING

FROM SPACE TO LIFE ON EARTH

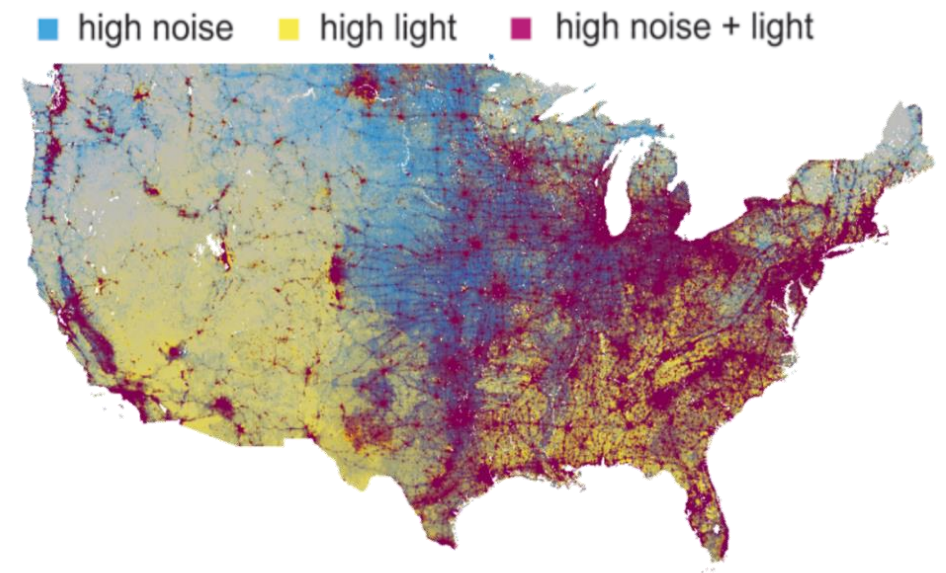
The 6th Mass Extinction is a global crisis on a par with climate change. A global crisis requires a global response. NASA provides global data and models to forecast our impacts on life on Earth—both to save it and manage it better.

- Supports: Decision Makers with remote sensing-based tools to understand and forecast impacts of anthropogenic and environmental change on managed species and ecosystems
- Leverages: NASA Biological Diversity Program
- Goal: Use NASA technology to improve ecosystem management
- Topics: Conservation, Ecosystem Management, and Sustainable Development
- Projects: 34 Active in Terrestrial, Freshwater, and Marine Systems
- Reach: All 50 States and Countries Around the World
- Recent Emphases: Citizen Science, Funding Contributions from Partner/End User Organizations, GEO BON, and Earth Observations for Ecosystem Accounting, Western Conservation Consortium

FROM SPACE TO LIFE ON EARTH

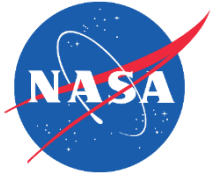
Mapping 'Sensory Danger Zones' to Conserve Wildlife

- Recent satellite imagery of artificial nightlights reveal areas at risk from high levels of sensory pollution.
- Combining these nightlight data with ground-based sound sensors of local noise completes the picture.
- Mapping these 'sensory danger zones' give land planners in the National Park Service critical tools to protect wildlife habitats and biodiversity from novel disturbances.





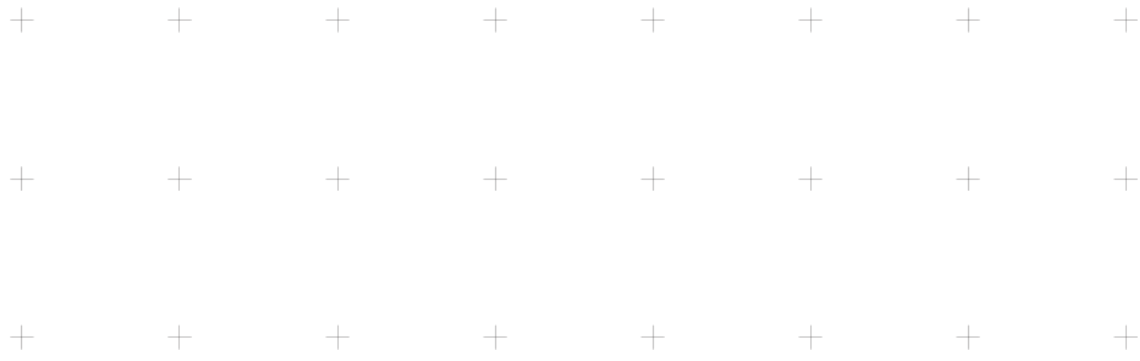
FROM SPACE TO LIFE ON EARTH



NASA-Conservation International Partnership

- Two Initiatives Currently
 - Gabarone Declaration for Sustainability in Africa
 - Freshwater Health Index
- Combines a global conservation NGO and a space agency seeking to bring benefits of satellite technology down to Earth.
- Helps NASA understand needs and provides access to on-the-ground users.
- GDSA uses remote sensing to develop ecosystem accounting in Sub-Saharan Africa.
- FHI provides modeled scenarios for sustainable freshwater use in the Mekong and Okavango Deltas.





Thank You.

For questions, please contact:
woody.turner@nasa.gov



ECOLOGICAL
FORECASTING





Photo Credit: RCMRD

SERVIR LAND COVER ACTIVITIES

Andrea Nicolau

NASA-SERVIR Regional Science Associate, Mekong

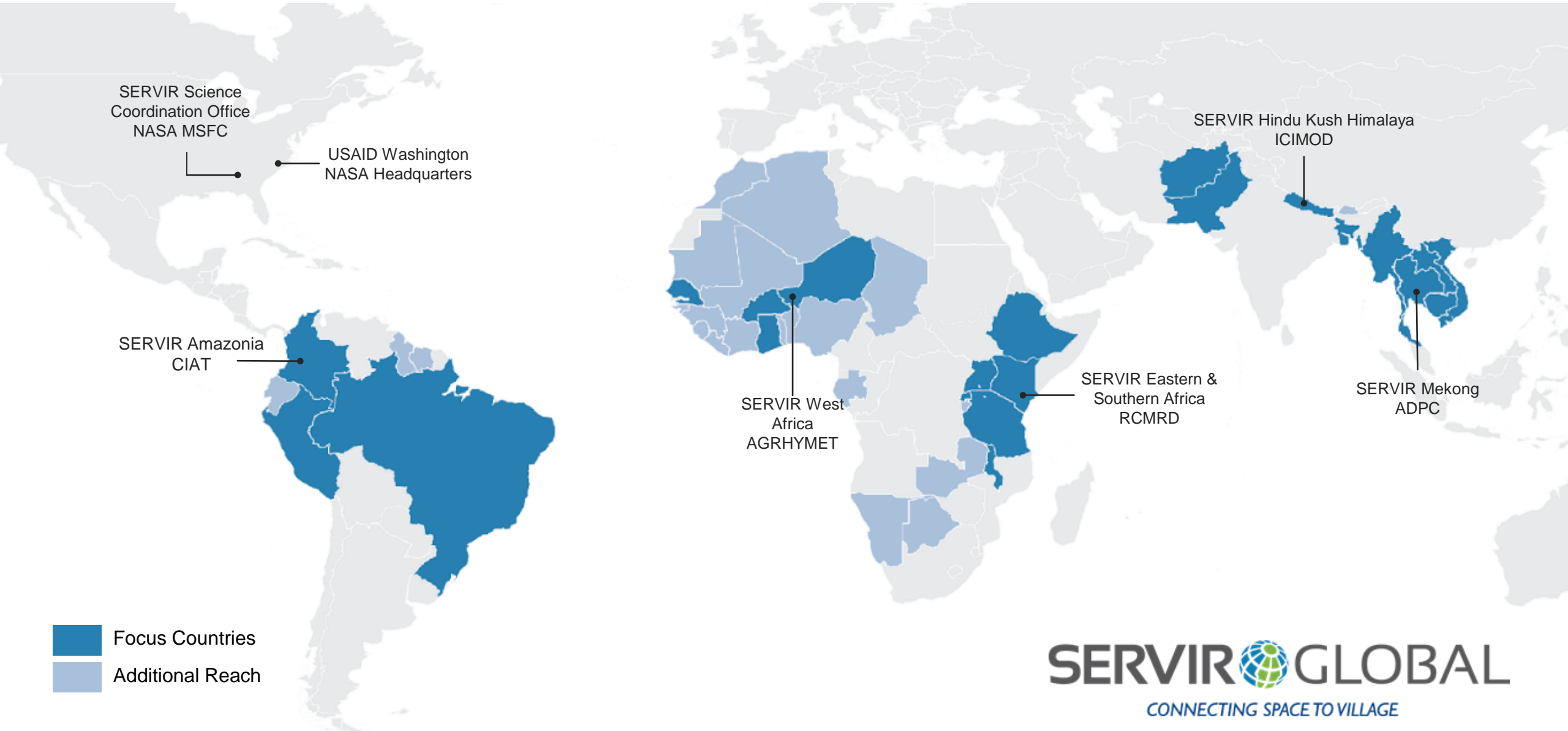


CAPACITY BUILDING



ECOLOGICAL FORECASTING

SERVIR SERVICES MEET NEEDS IN ASIA, AFRICA, AND THE AMERICAS



SERVIR SERVICES MEET NEEDS IN ASIA, AFRICA, AND THE AMERICAS

Hindu-Kush Himalaya & Mekong

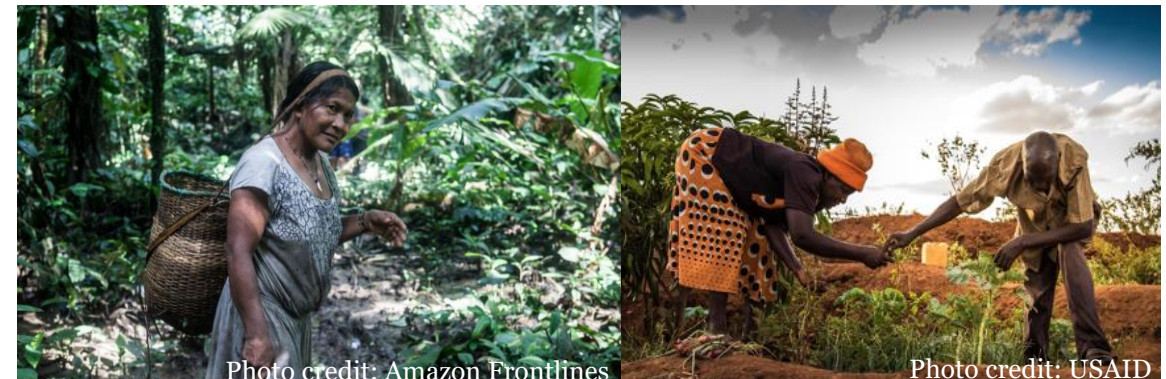
- Crop area estimation and crop yield security
- Regional land cover monitoring system
- Regional drought monitoring and enhancing drought resilience
- Forest monitoring, biomass estimation, development of protected areas alerts system

Eastern and Southern Africa & West Africa

- Drought monitoring and assessment
- Frost monitoring
- Land cover mapping and crop area estimation
- Charcoal production monitoring and artisanal mining monitoring
- Locust infestation monitoring

Amazonia

- Detection of illegal gold mining
- Fire forecasting and mapping
- Monitoring of mangroves
- Monitoring of zero deforestation value chains using active remote sensing
- Monitoring of ecosystem services & biodiversity
- Deforestation monitoring and reporting in Ecuador
- Use of Synthetic Aperture Radar (SAR) to monitor forest degradation

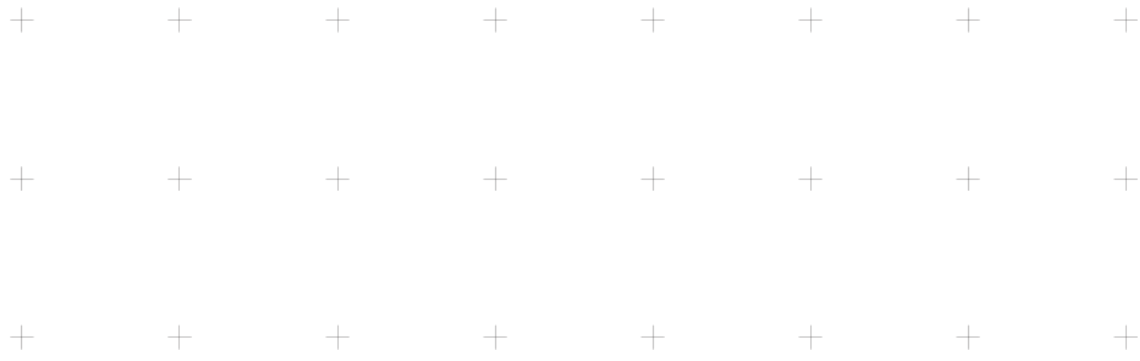


FROM SPACE TO FOREST

When conditions are more favorable to fire spread, it's critical to have information in advance that enhances and informs decision-making. The Amazon Fire Season Forecast does just that.

- The seasonal fire forecast provides an early indication of fire risk to guide prevention planning across the Amazon region—supporting lives and livelihoods
- SERVIR-Azonia is working at various fronts to improve the robustness of seasonal fire forecasting and monitoring, including a research effort by Doug Morton, SERVIR Applied Science Team PI
- The platform shows prediction of fire risk in high biomass burning regions of South America – 6 states in Brazil, 3 departments in Bolivia, and in Peru
- The tool also provides observed and modeled fire season severity from past years for comparison. An upcoming monitoring tool will be released to identify fire typology





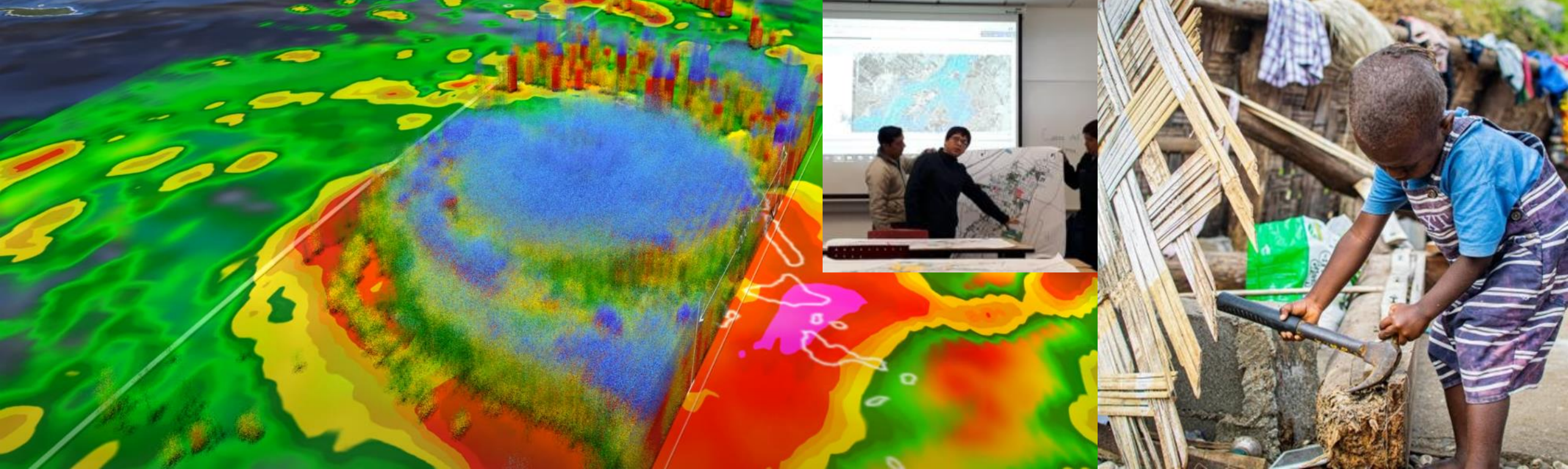
Thank You.

For further questions, please contact:
andrea.puzzinicolau@nasa.gov
africa.flores@nasa.gov – SERVIR Land Cover
and Land Use Change Theme lead



CAPACITY
BUILDING





NASA's Disaster Risk Reduction Program

“A hazard need not be a disaster”

Dr. David Green, Program Manager

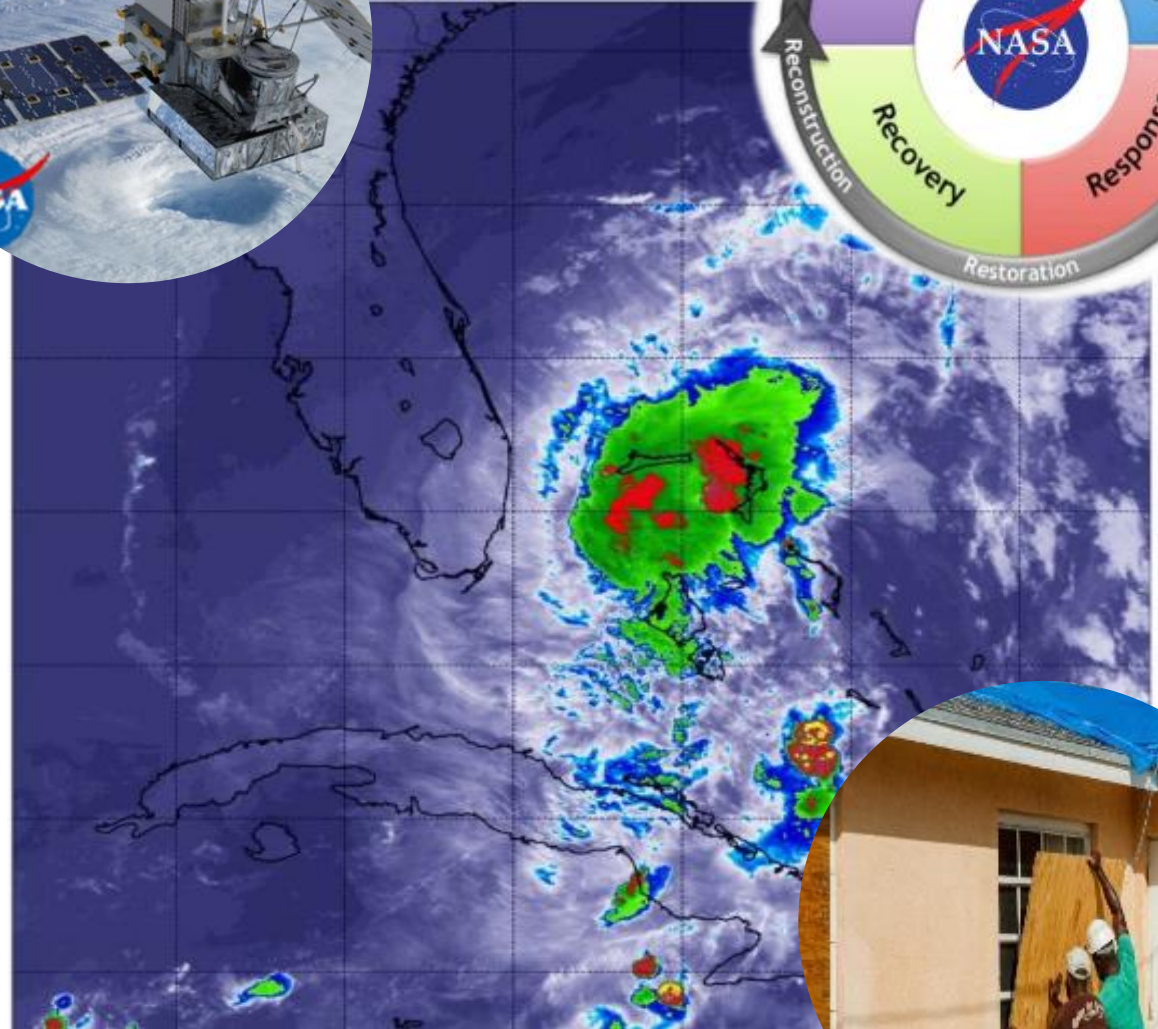
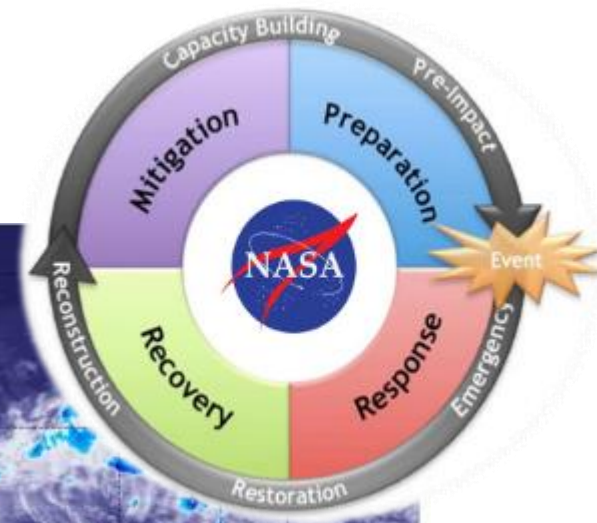


DISASTERS

FROM SPACE TO AWARENESS TO ACTION

NASA's Disaster Program promotes the use of Earth Observation to inform disaster **risk reduction** and **resilience** across the disaster management cycle from global to local scales

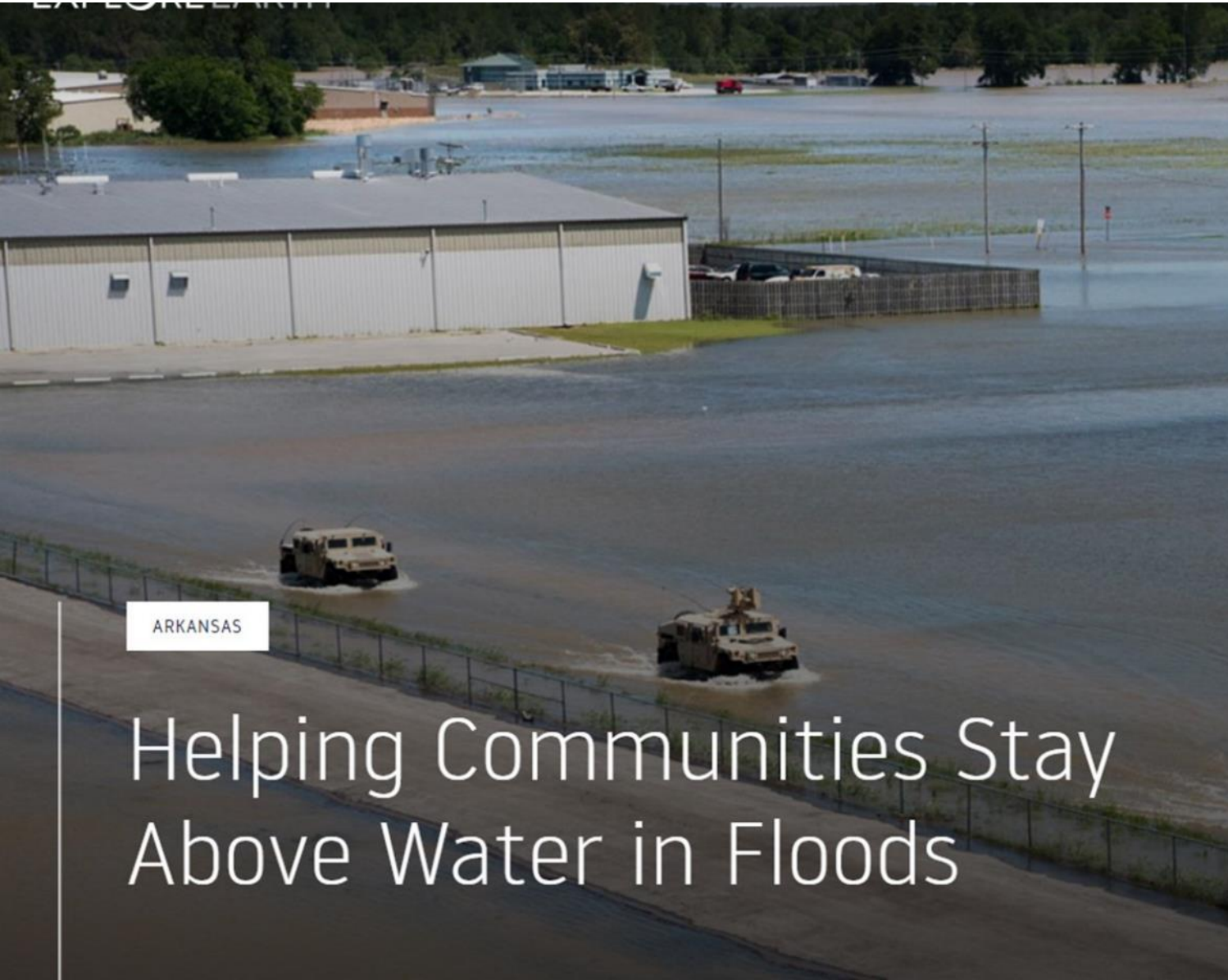
Disasters** are the consequences of societal decisions, where and how we build, how much resources go into mitigation and response, and how we take action regarding **exposure** and **vulnerability



Tropical Storm Isaias:
Preparing for heavy rainfall and flooding

Avoiding lifeline disruptions

EXPLORE EARTH



ARKANSAS

Helping Communities Stay Above Water in Floods

Flood Dashboard

Flood Stage Selection

The Flood Dashboard brings together multiple NASA soil moisture and flood products with products from the National Weather Service and USGS to give a more complete

Soil Moisture

MODIS 1 Day Flood Map

Action Stage	Value
1	130
2	90
3	35
4	16

Action Stage

Last update: a few seconds ago

Esri, HERE | NAS...

Esri, FAO, NOA...

Soil Moisture | NWS Flood Forecast | MODIS 1 Day

Guiding Humanitarian Relief



Super Cyclone Amphan, flood extent and damage maps for ports and power plants
Supporting World Food Program
<https://maps.disasters.nasa.gov/>

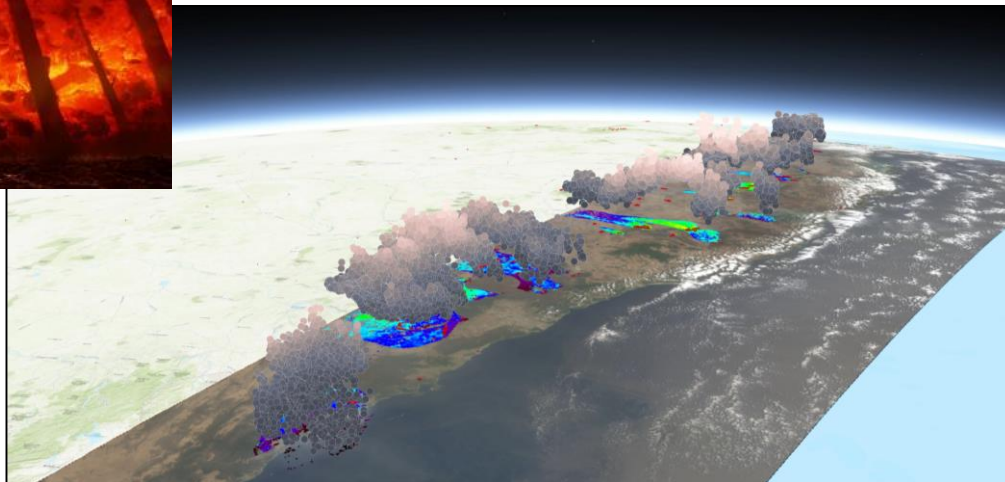


FROM SPACE TO RISK'S GLOBAL REACH

- Collecting data on earth systems and modeling potential risks
- Sharing geospatial knowledge on the social, physical and economic perils.
 - Data Viewers,
 - Data Catalogues, and
 - Applications.



3D
visualization



Providing geospatial tools

NASA Disasters Program



Near Real-Time Dashboard

Recent Products

Flood Dashboard

Tropical Cyclone Dashboard

Global Fire Emissions



Flood Dashboard

Flood Stage Selection



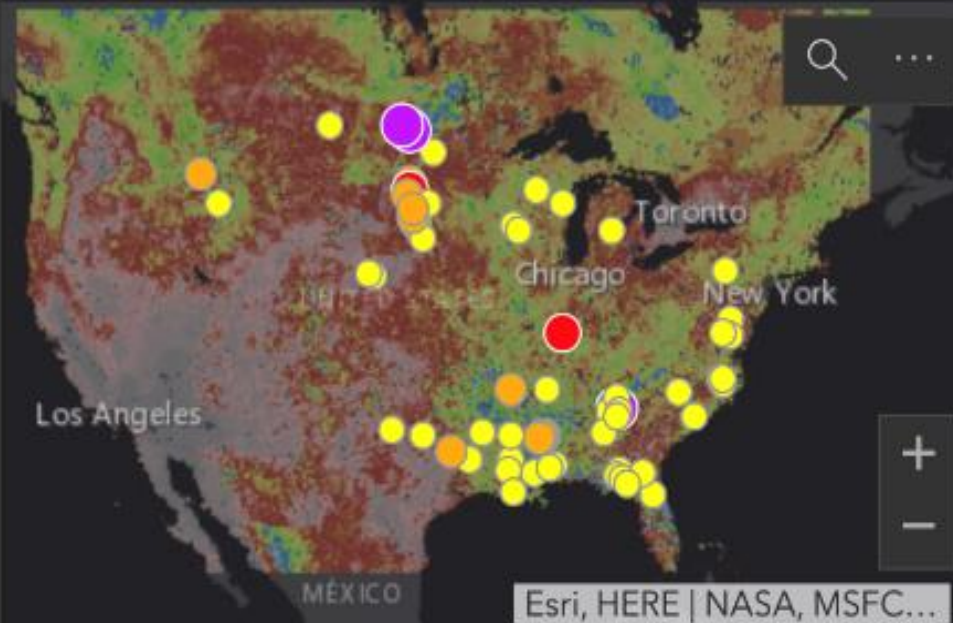
The Flood Dashboard brings together multiple NASA soil



Action Stage Minor Flood

Last update: a minute ago

Soil Moisture



Soil Moisture

NWS Flood Forecast

MODIS 1 Day Flood Map



MODIS 1 Day

MODIS 2 Day

MODIS 3 Day

FROM SPACE TO TRUSTED PARTNERSHIPS

Helping communities stay connected

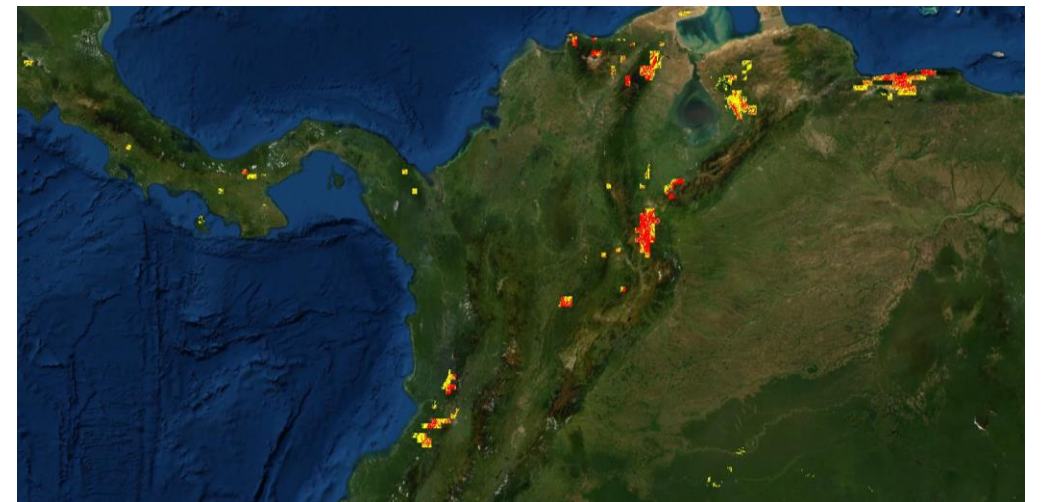
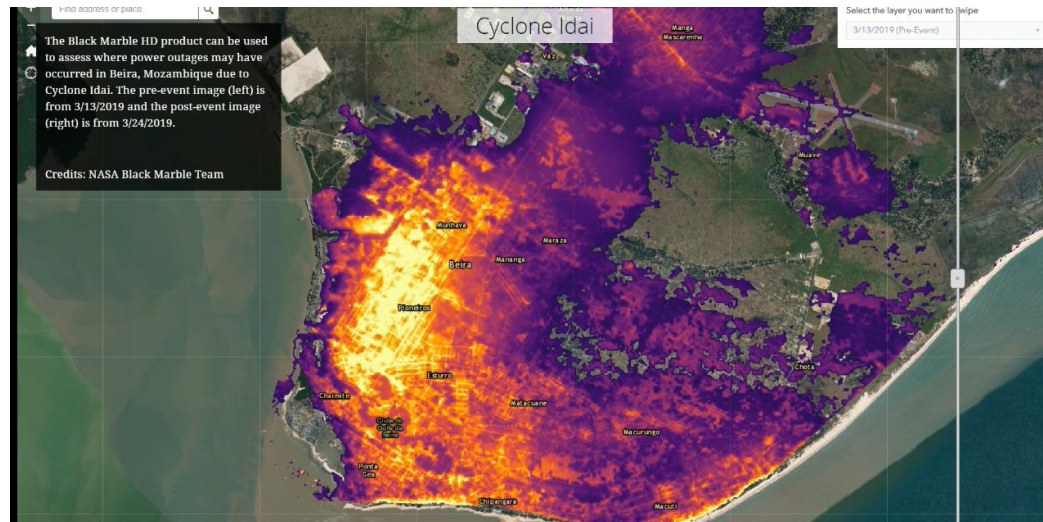
Supporting stable energy, food, and water lifelines

Building collaborative global to local networks

Communicating and visualizing solutions

Developing sustainable disaster resilience

Monitor areas and communities at risk > provide early warning



Detect change > assess damage and loss > speed recovery



Thank You.

For further questions, please contact:
david.s.green@nasa.gov

<https://disasters.nasa.gov>



DISASTERS





Ellicott City Disasters III:

Building a Real-Time Predictive Flood Model for Improving
Early Warning Systems in Ellicott City, Maryland

Erika Munshi*, Alina Schulz, Ryan Hammock, Eli Orland



DISASTERS



CAPACITY
BUILDING

COMMUNITY CONCERNS AND PROJECT PARTNERS

- Ellicott City has been effected by more than 10 devastating floods in the last 100 years
- The intensity of flood events is severe enough to to move cars, destroy buildings, and wash-out roadways.
- Our partners, the NOAA and NWS Weather Forecast Office and the Howard County Stormwater Management Division and Office of Emergency Management, are interested in enhancing their early warning system to alert residents of flooding events

Our objective is to help improve the Howard County Office of Emergency Management's early warning system through implementing a real-time flood forecasting tool.

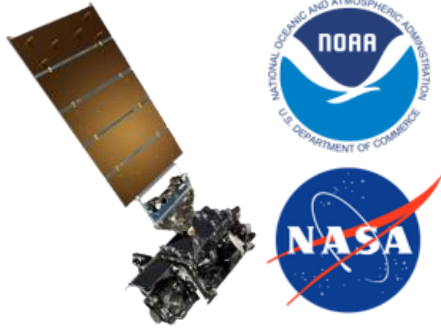


Video: Ron Peters, Ellicott City Resident

EARTH OBSERVATIONS AND METHODS

Data Acquisition

In situ gauges

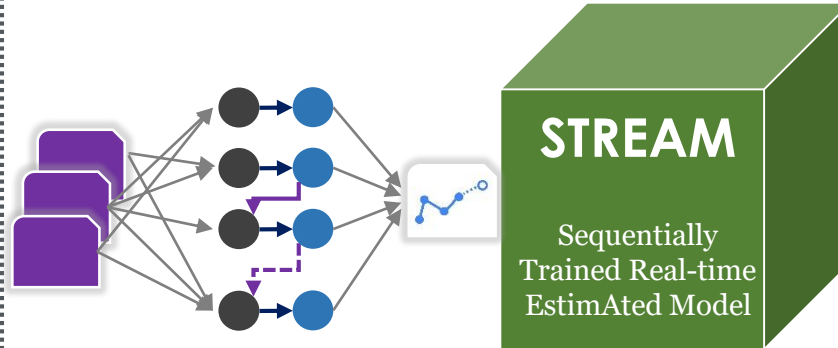


GOES-16 Earth Observations



NOAA Real-time and Modeled Weather Products

Model Development



Stage Height Prediction

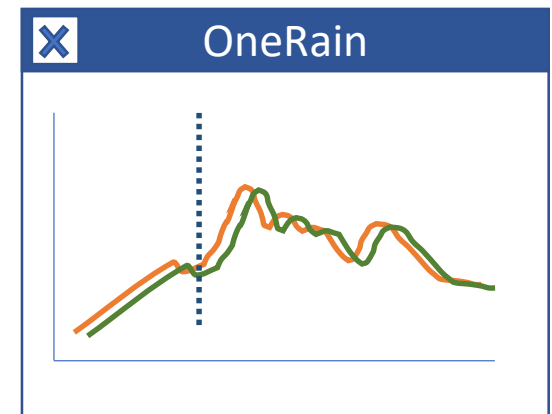


Sensitivity and Error Analysis

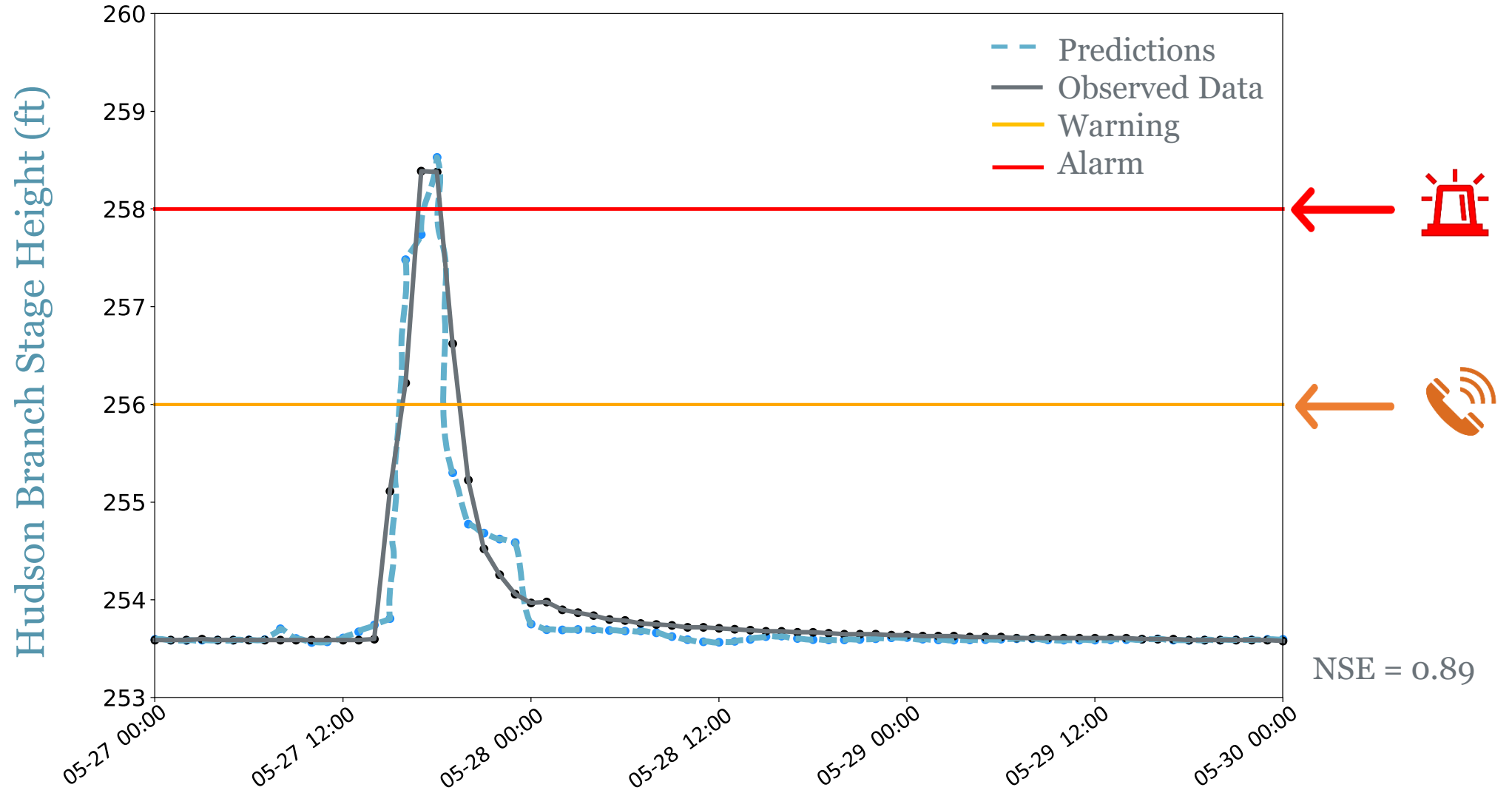
Real-time Model Output



Portal Integration



MODEL PERFORMANCE



END USER BENEFIT

- Model outputs are iteratively displayed on a customized dashboard within an online portal called OneRain.
- In addition to our real-time model output, the dashboard includes:
 - Regional radar
 - Local precipitation
 - Twitter feed
 - Real-time camera footage
 - Real-time Gauge data

Together, the elements of the dashboard can support a comprehensive early-warning system for our partners in Howard County.

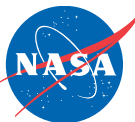




Thank You.

For further questions, please contact
us at NASA-DL-DEVELOP@mail.nasa.gov

<https://develop.larc.nasa.gov>



EARTH SCIENCE
APPLIED SCIENCES





Water Resources Program and Western Water Application Office Highlights

Sarah Brennan, NASA HQ

Indrani Graczyk, NASA JPL



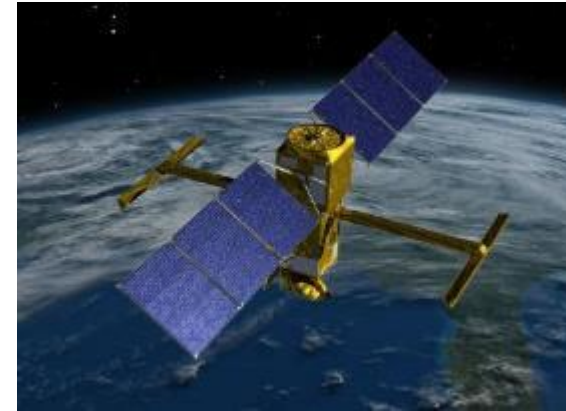
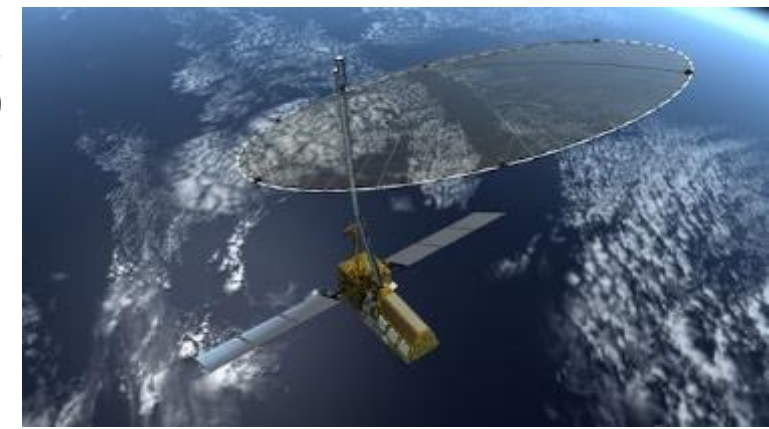
WATER
RESOURCES

**IN THE NEXT DECADE NASA IS LEADING
AN OUTPOURING OF FRESHWATER
INFORMATION FROM SPACE**



**NASA-ISRO SAR
(NISAR)**

**Launch Target Date
– May 2022**

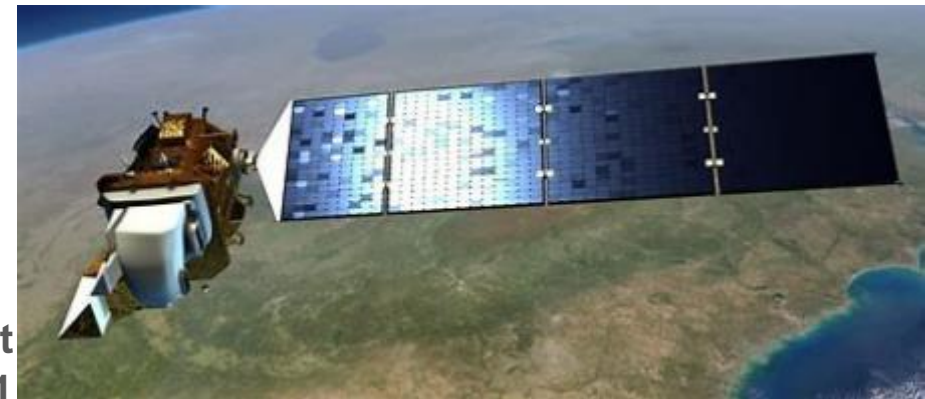


**Surface Water and
Ocean Topography
(SWOT)**

**Launch Target Date –
28 Feb 2022**

Landsat 9

**Launch Target
Date – Sept 2021**



APPLIED WATER RESOURCES

In the field of water resources, Earth observations can help us:

- Improve efficiency and accuracy of freshwater availability
- Better predict freshwater availability, especially under- and over-supply events
- Optimize basin-level water management for long-term sustainability (e.g. reservoir storage and infrastructure planning information)
- Better understand water use to efficiently manage water allocations, including improving irrigation management strategies
- Protect human health and environment by providing water quality indicators

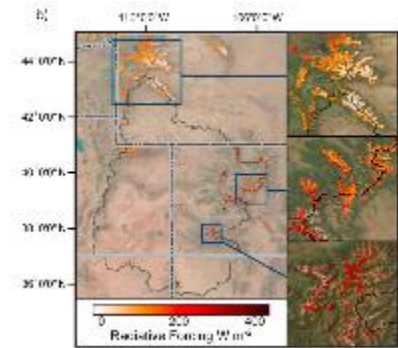


Identify gaps and opportunities

Harness Earth observations

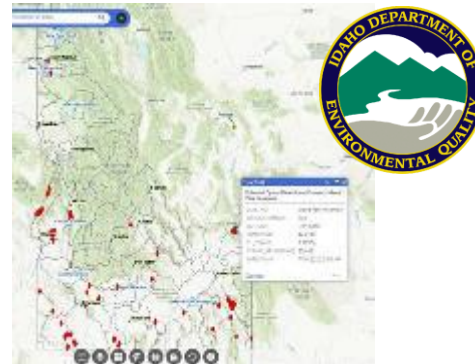
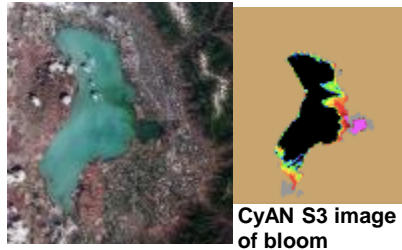
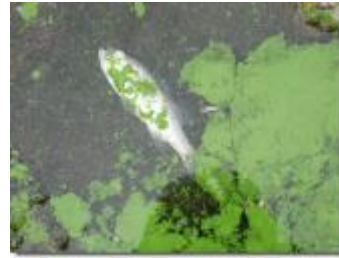
Work with partners for sustainable impact

Improving Snowmelt Estimates

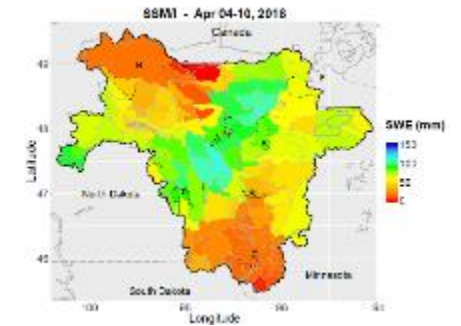


Colorado River Basin Forecast Center

Detecting Algae Blooms



Information on Flood Risks



North Central River Forecast Center

HOW?

- Exploring technology and capabilities
- Connecting the science to the decision makers
- Increasing access to information

THE PILLARS OF THE NASA APPLIED SCIENCES WATER RESOURCES PROGRAM

Portfolio of Applied Research Projects

- Support individual applied research that may include capacity building and transfer of technology or information to decision-making entities

Western Water Application Office

- Stakeholder engagement
 - Basin assessments
 - Private company engagement
- Transfer of technology

Program Activities

- Contribute to Interagency and International Working Groups
- Engage with private and public entities to amplify benefits of EO

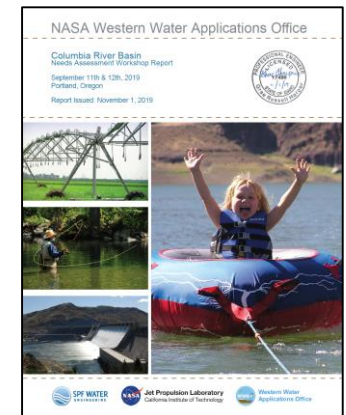
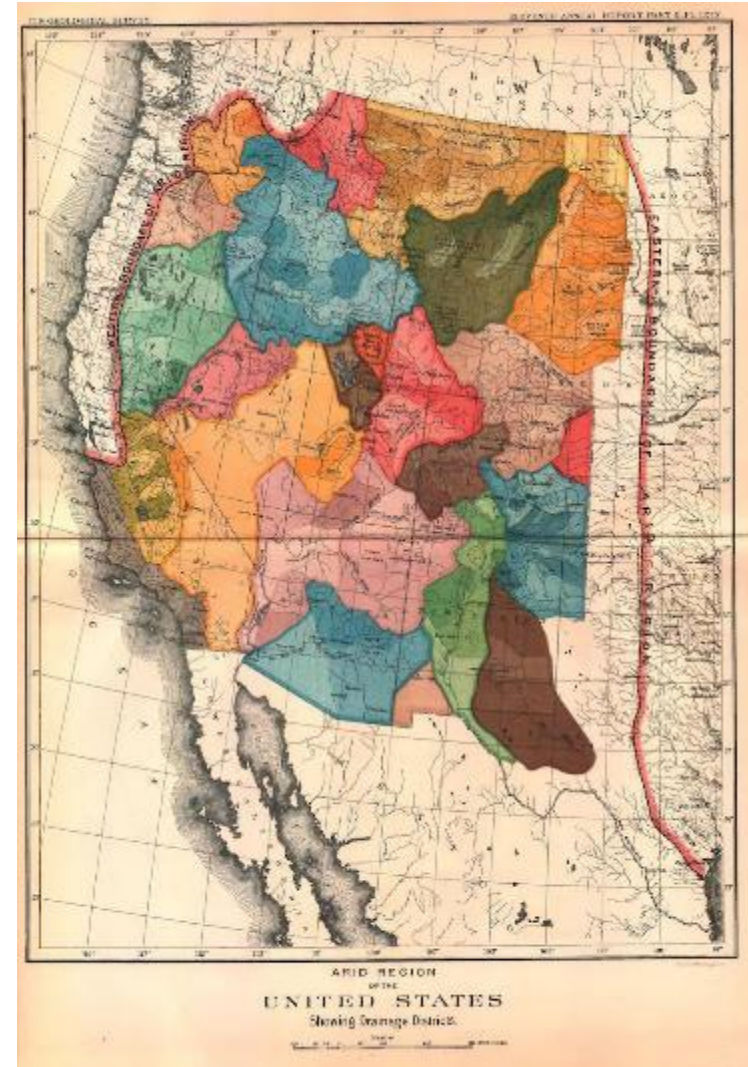


THE POWER OF PERSPECTIVE

NASA's Western Water Applications Office (WWAO)

WWAO's mission is to **improve how water is managed by getting NASA data, technology and tools into the hands of western water managers.**

- To achieve this, WWAO:
 - **Identifies Water Needs** that NASA can address
 - **Makes Connections** between stakeholders and NASA to address needs
 - **Transitions** water applications into operations for sustainable and long-term impact



WATER IS LIFE

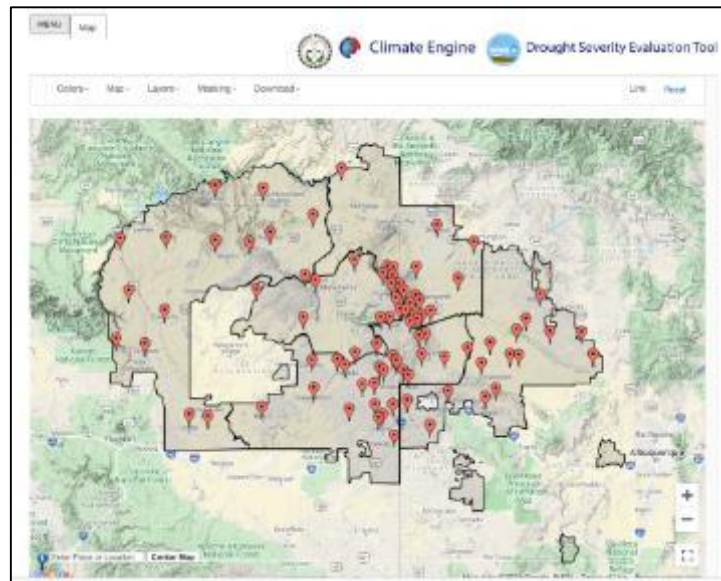


Credit: Carlee McClellan

NAVAJO DROUGHT RELIEF



- WWAO's Drought Severity Evaluation Tool (DSET) delivers maps and trends of drought severity and precipitation in near-real-time
- DSET was built by WWAO, the Navajo Nation Dept. of Water Resources, Climate Engine, and Desert Research Institute
- The tool "*will ... aid the Navajo Nation in its drought decision-making processes for many, many years to come.*" -- Carlee McClellan, Navajo Nation Water Management Branch



Over 80% of homes on the Navajo Nation lack running water. Drought is common and pervasive. WWAO's new tool, with the help of data from space, is enabling Navajo managers to better respond to drought.



Navajo Nation Department
of Water Resources



Climate Engine





TOOLS FOR MANAGING A PRECIOUS RESOURCE



Credit: Glow by G Photography

EYES ON THE EARTH

2 billion people rely on snowmelt for water. As the planet warms, water managers need to adapt to changing snow. NASA's Airborne Snow Observatory (ASO) – “*the most significant development in the history of snow surveys*” – is a powerful eye in the sky.



- With WWAO's help, ASO showed it can forecast snow water equivalent in mountain snowpack up to 98% accurately
- As part of its **Research to Operations** program, WWAO determined a commercial spin-off for ASO was viable
- In 2019, ASO Inc. was founded to transfer the NASA technology to commercial global operations. Its vision is to support sustainable water supplies by reaching every mountain system in the world.



NASA Earth

Water Resources Leadership

Christine Lee



John Bolten



Sarah Brennan



Brad Doorn



Forrest Melton



Indrani Graczyk



+ + + + + + + +

+ + + + + + + +

+ + + + + + + +

Thank You!

For further questions, please contact:

Sarah.Brennan@nasa.gov

Indrani.Graczyk@jpl.nasa.gov



WATER
RESOURCES





Food Security and Agriculture

Sarah Brennan, NASA HQ

Alyssa Whitcraft, NASA Harvest

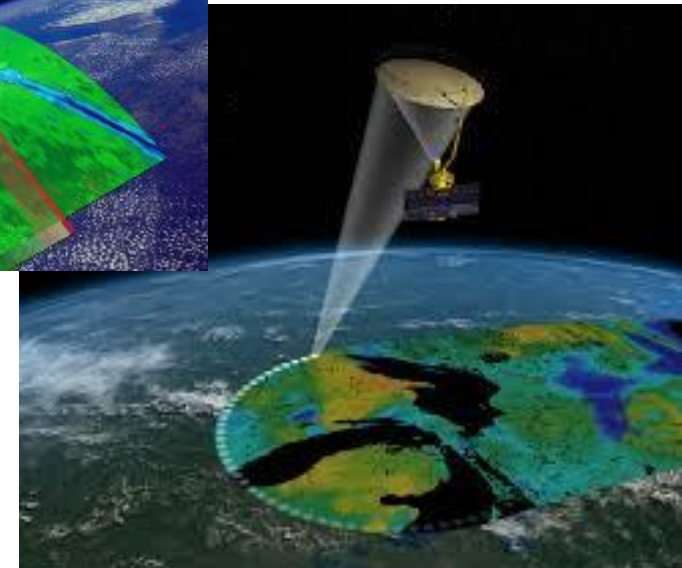
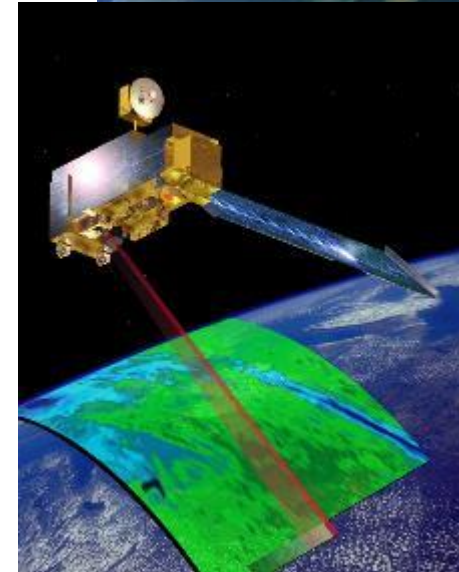
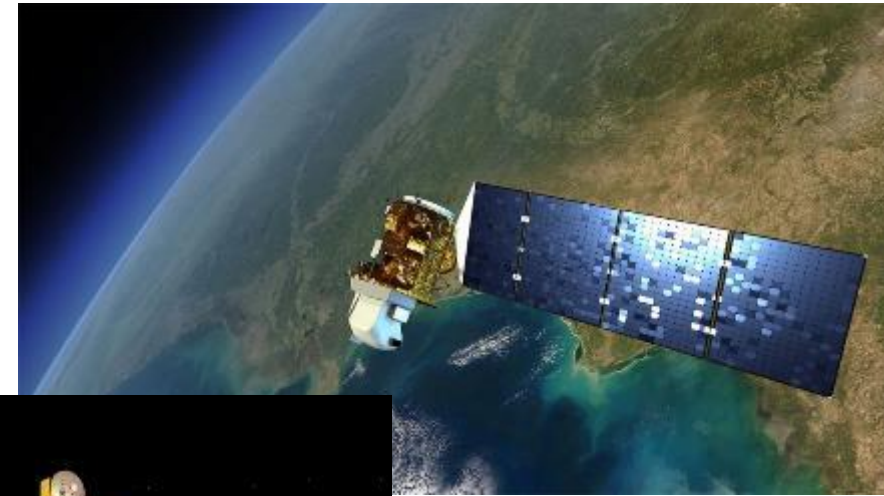


FOOD SECURITY
& AGRICULTURE

FROM SPACE TO SOIL

NASA contributes to the field of Food Security and Agriculture by:

- Gathering data about agriculture relevant factors including soil moisture, evapotranspiration, plant stress, water availability for irrigation, and crop yield/type indicators
- Working with key partners, such as the United States Department of Agriculture and the United States Agency for International Development
- Supporting applied research that connects producers, agriculture industry and governments that enables sustainable solutions
- Encouraging a community that promotes the use of Earth observations in decision- making processes for transparent, objective, and trusted solutions that meet that Nation's and global food security needs

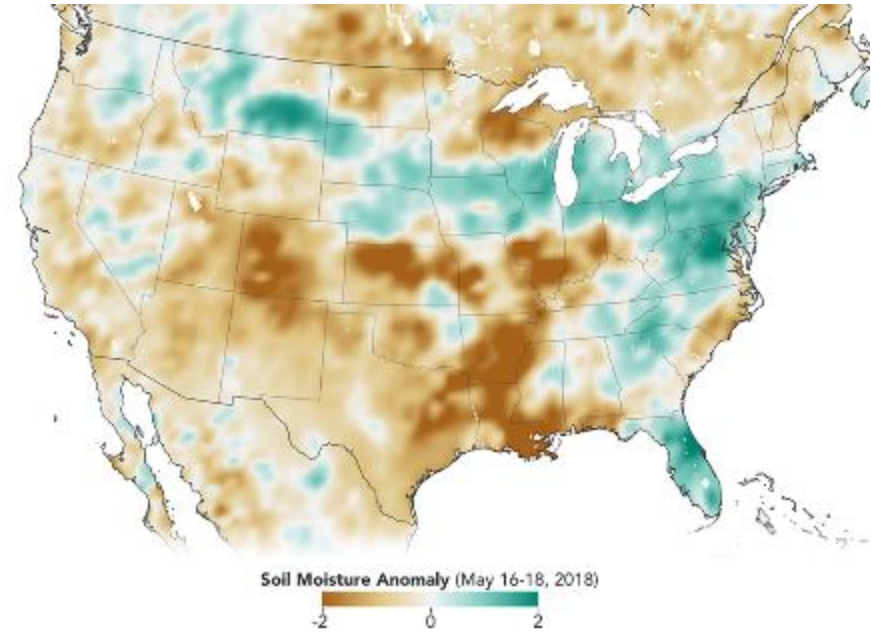




Partnering with the USDA

- The relationship began in the 1970s with the NASA-initiated Large Area Crop Inventory Program
- Continues to expand and strengthen the ongoing partnership with a signed Memorandum of Understanding (MOU) that enables USDA to draw on the best scientific and technical information available from NASA research in Earth observation and systems engineering
- Since 2017, over 120 joint activities and projects

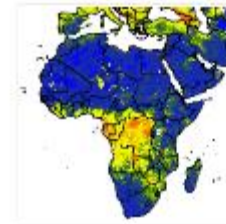
NASA Soil Moisture Data Advances USDA Global Crop Forecasts



Earth Engine Data Catalog

HOME VIEW ALL DATASETS BROWSE BY TAGS LANDSAT MODIS SENTINEL API DOCS

NASA-USDA SMAP Global Soil Moisture Data



Dataset Availability

2015-04-01T00:00:00 Present

Dataset Provider

NASA GSFC

Earth Engine Snippet

```
ee.ImageCollection("NASA_USDA/HIS1")
```

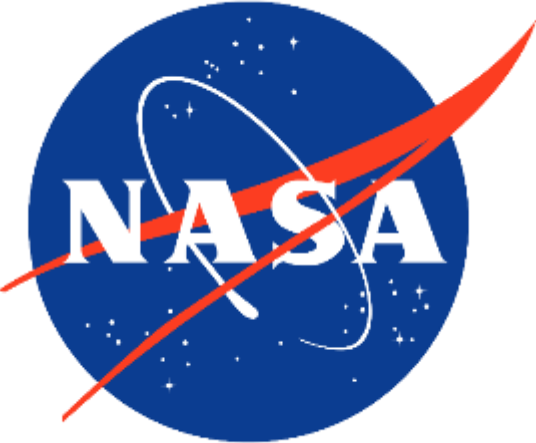
Tags

geospatial soil moisture nasa



Google Earth Engine

DEVELOPING A CONSORTIUM



EARTH DATA
FOR INFORMED AGRICULTURAL DECISIONS





*Improved Food Security,
Markets Stability,
Economic Progress,
Sustainable Crop Production*

EO Investments
Targeted at
End-User Needs



Improved Agricultural
Assessments



Enhanced,
Timely, Actionable
Information



Improved
Decision Making by
End-users



NASA Harvest

NASA Applied Sciences' Food Security & Agriculture Program

Alyssa K. Whitcraft, on behalf of Harvest Team



FOOD SECURITY
& AGRICULTURE

NASA'S FOOD SECURITY & AGRICULTURE PROGRAM

NASA HARVEST

A multi-sectoral Consortium enabling and advancing awareness, use, and adoption of satellite Earth observations by public & private organizations to benefit food security and agriculture in the US and worldwide



- Diverse Consortium of >60 members from public, private, NGO, intergovernmental, & humanitarian sectors
- Driven by stakeholder and end-user needs
- Focused on operational R&D and transition
- Demonstrating socioeconomic benefits of EO for agriculture and food security
- NASA's contribution to GEOGLAM
- Established Nov. 2017



For more info: www.harvest.org
Follow us on Twitter: @NASAHarvest

Agricultural
Land Use

Agricultural
Sustainability

Agricultural
Productivity



HARVEST DOMESTIC AGRICULTURE ACTIVITIES

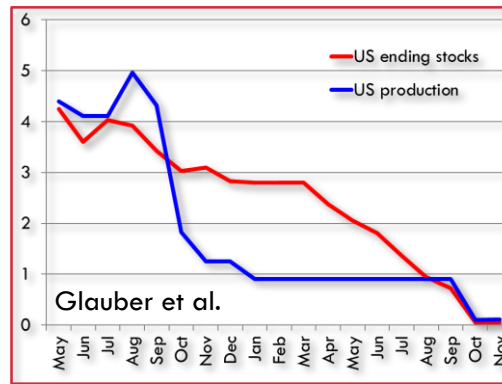
6 Focus Areas:

- Supporting improved USDA methods
- Within-season yield + area (drivers & gaps)
- Food supply & trade tracking support
- Sustainable land management impacts
- Supporting private sector innovation
- Irrigation and fertilizer management

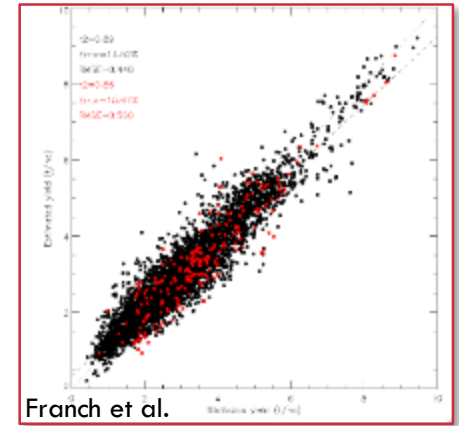
In Partnership with:



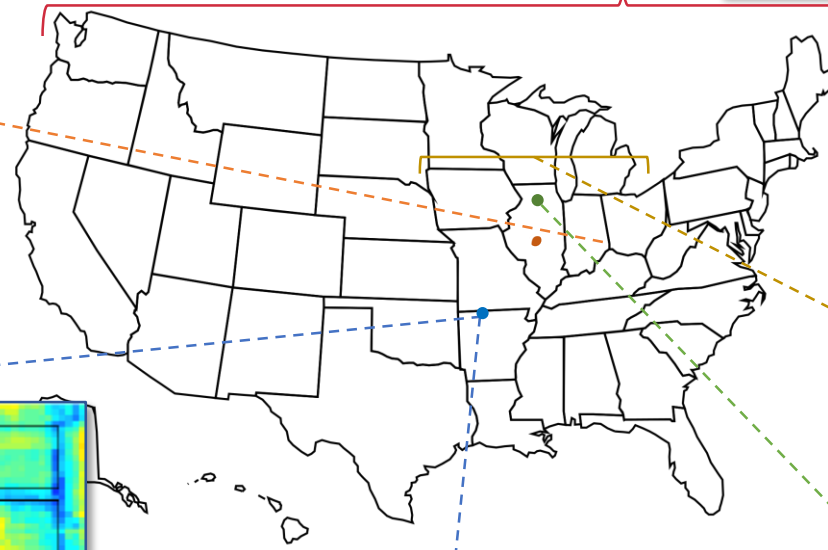
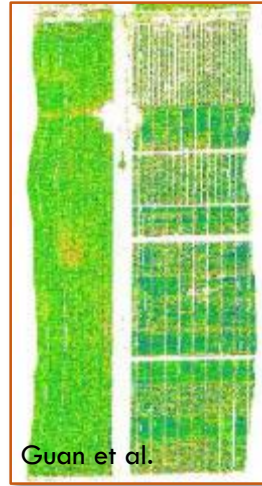
Using satellites to decrease production uncertainty



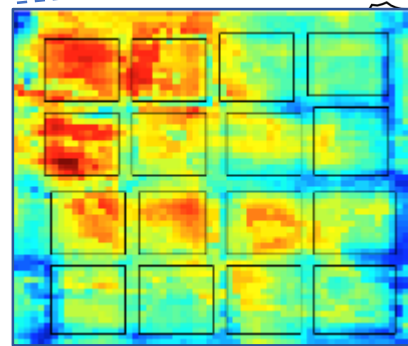
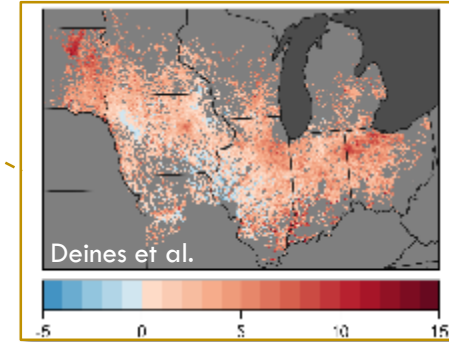
County-level Yield Forecasting



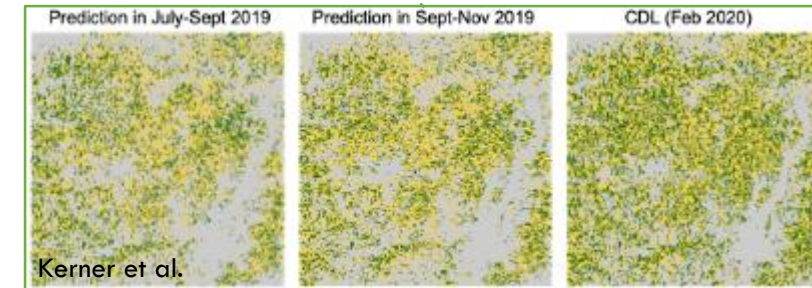
Canopy-Level Nitrogen



Tillage Impacts on Yield



Helping farmers in mid-South improve water resource management



Predicting crops planted 6+ months before official stats



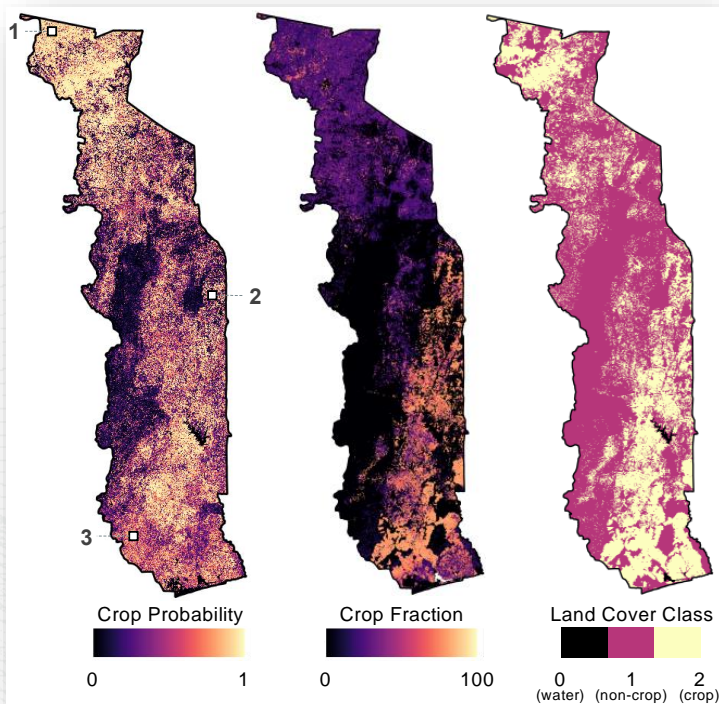
Cina Lawson

*Togolese Minister of Post,
Digital Economy and
Technological Innovation*

“This map provides unmatched clarity into the nature and distribution of agricultural land nationwide [and helps] provide decisive knowledge being used to design social protection policies aimed at improving the livelihoods of agrarian rural communities.”

Top: A quote from Minister Cina Lawson about the map and the program it supports

Right: 10-m cropland maps over Togo produced by Kerner *et al.* at NASA Harvest using Sentinel-2, Planet, & machine learning.



Satellite data help Togo allocate aid to farmers in a global pandemic

NASA Harvest delivered to the Togolese government a national-scale 10-m map of croplands 10 days after request in order to help them implement a COVID-19 response loan program to farmers.

Partners at Planet Mobilized within 48 hours to provide data to NASA Harvest – demonstrating agility of Public-Private Partnerships.

Esteban J. Copati @ecopati · Jun 2

Clima seco que impulsó la cosecha de soja, compromete la siembra de trigo. En Córdoba, la humedad del suelo es la más baja de los últimos cinco años. Comparto herramienta desarrollada por @NASAHarvest que presentaron en una excelente reunión de @AgAmericas bit.ly/2U66foK

GLOBAL AGRICULTURE MONITORING SYSTEM

WHEAT PLANTING
SOIL WATER INDEX
CÓRDOBA

The lack of soil moisture condition is affecting the planting intention in Córdoba.

AS OF
18 JUNE, 2020

#WAG

WAG Bolsa de Cereales

Secciones **LA NACION** SUSCRIBITE

LA NACION | ECONOMÍA | CAMPO | ACTUALIDAD

Trigo: la imagen de la NASA que enciende una señal de alerta

Wheat: the NASA image that sounds the alarm

<http://glam.nasaharvest.org/>

Easy-to-use NASA data viz fills knowledge gaps in agriculture & food security

NASA Harvest’s “Global Agricultural Monitoring” (GLAM) system revealed very dry conditions imperiling wheat planting in Córdoba, Argentina to the Head of Estimations for the Bolsa de Cereales (Argentina).

His tweet of the interface & conditions was immediately picked up by one of Argentina’s most important news outlets, *La Nación*, drawing national attention to this threat to agricultural markets and food security.



Thank You.

For further questions, please contact:
alyssakw@umd.edu (Deputy Director + PM)
ireshef@umd.edu (Director)



FOOD SECURITY
& AGRICULTURE



HARVEST
EARTH DATA
FOR AGRICULTURE