Making Space for Earth

NASA Earth Science Applications

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NASA Earth

Applied Sciences Program
Early Warning from Satellite Data Strengthens Food Security in Uganda

GEOGLAM Crop Monitor uses NASA MODIS satellite data to monitor crop and vegetation conditions. Poor conditions in satellite and field data trigger the Disaster Risk Financing fund, and the combined information supports proactive response to food insecurity from drought and crop failure.

2017: DRF funds (USD 4.11M) paid to 31K households for ~150,000 people. Ugandan gov’t saved USD 2.6 million.

2018: DRF funds (USD 2.6M) paid to 23K households when NDVI fell under threshold in 3 districts.
“In the past we always reacted to crop failure, spending billions of shillings to provide food aid. 2017 was the first time we acted proactively because we had clear evidence from satellite data very early in the season.”

– Office of the Prime Minister, Uganda
Some Types of Earth Observations at Global to Local Scales . . .

- Land Temperature
- Sea Surface Temperature
- Vegetation
- Sea Surface Salinity
- Total Rainfall
- Aerosols
- Fires & Thermal Anomalies
- Chlorophyll
- Sea Surface Height
NASA Earth Science
Missions: Present through 2023

ISS Instruments
LIS, SAGE III, TSIS-1, OCO-3, ECOSTRESS, GEDI, CLARREO-PF, EMIT

JPSS-2 Instruments
OMPS-Limb

InVEST/CubeSats
RAVAN, RainCube, TEMPEST-D, CubeRRT, CSIM, CIRI S, HARP, SNoOPI, HyTl, CTIM, NACHOS
NASA Earth
Applications and Capacity Development

Health & Air Quality
Water Resources
Ecosystems
Food Security
Disasters
Geospatial Training
Workforce
International Development

All areas incorporate climate and weather effects.
Decision-Support Applications: Three Styles

Enhancement of an existing decision support tool or process together with the partner organizations

Development of a new application and decision support tool or process together with the partner organizations

Development of information products, maps, and tools used by partner organizations to serve their customers, clients, and public
Mercy Corps & NASA

This partnership focuses on a collaborative approach to better understand humanitarian challenges by integrating Mercy Corps’ expertise in resilience-focused intervention and in-country stakeholder relationships along with NASA’s expertise in Earth system science and global datasets.

Together we will reach new audiences and users, and influence the broader Earth Science and humanitarian sectors to demonstrate what is achievable when science is integrated into risk-informed decision making.
Conservation International & NASA

Natural Capital Accounting

Freshwater Health Index

Cholera Forecasts Help Save Lives

For the first time ever, measurements from NASA Earth-observing research satellites are being used to help combat a potential outbreak of life-threatening cholera.

Humanitarian teams in Yemen are targeting areas identified by a NASA-supported project that precisely forecasts high-risk regions based on environmental conditions observed from space.
Upcoming Trainings

Water

Advanced Webinar: Integrating Remote Sensing into a Water Quality Monitoring Program
June 19, 2019

Disasters

Introductory Webinar: Earth Observations for Disaster Risk Assessment & Resilience
August 6, 2019
August 8, 2019
August 13, 2019
August 15, 2019

Land

Advanced Webinar: Sensing for Monitoring Land Degradation and Sustainable Cities SDGs
July 9, 2019
July 16, 2019
July 23, 2019

Q&A Session on Radar Remote Sensing
June 17, 2019

https://arset.gsfc.nasa.gov/
Imagery, Earth observations, and Earth science data are objective, transparent, and policy-neutral.

Agencies and organizations use the data and scientific results in their policy analysis and development.
This is Space For U.S., where the power of NASA’s Earth observations come to life through state-by-state stories featuring communities like yours—solving our country’s biggest challenges with innovative technology, groundbreaking insights, and extraordinary collaboration.

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Resources

NASA Worldview
https://worldview.earthdata.nasa.gov/

Scientific Visualization Studio
https://svs.gsfc.nasa.gov/

Earth Observatory
https://earthobservatory.nasa.gov
SERVIR announces launch of Collect Earth Online (CEO)

Launch date: December 12, 2018
- Developed by SERVIR in partnership with UN’s Food and Agriculture Organization, the Google Earth Engine Team and the USG SilvaCarbon Program
- Simplifies surveying, sample collection, incorporates crowdsourcing techniques for land cover monitoring and forest classification

Collect Earth Online is the primary data collection tool for FAO’s 2020 Global Forest Resources Assessment and will be used in ~190 countries. The first CEO collection was used for forest resource inventory in India in March 2019.

“This innovation allows the collection of up-to-date data about our environment and its changes in a more efficient and participatory manner, using the local experts that know the landscape and the underlying ecology”

– Mette Wilki, Head of Policy and Resources at FAO’s Forestry Division
The SAR Handbook, launched April 10, helps forestry professionals use Synthetic Aperture Radar (SAR) to measure forest health with an eBook and training materials

- SERVIR and SilvaCarbon partnered to build international capacity using SAR for forest monitoring
- Leveraging the global SERVIR Hub network, a series of training workshops were held throughout 2018 as part of the development of Handbook materials
- This initiative fills the gap of applied SAR knowledge, empowering the global remote sensing community to use freely-available datasets and prepare for the upcoming NISAR and BIOMASS SAR missions

The Handbook can be accessed from SERVIRglobal.net