NASA Applied Sciences Program

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National Aeronautics and Space Administration
Universities Space Research Association
Huntsville, AL
NASA Strategic Goal 3
Develop a balanced overall program of science, exploration, and aeronautics consistent with the redirection of human spaceflight program to focus on exploration.

NASA Sub-Goal 3A:
Study Earth from space to advance scientific understanding and meet societal needs.

NASA’s partnership efforts in global modeling and data assimilation over the next decade will shorten the distance from observations to answers for important, leading-edge science questions. NASA’s Applied Sciences program will continue the Agency’s efforts in benchmarking the assimilation of NASA research results into policy and management decision-support tools that are vital for the Nation’s environment, economy, safety, and security. NASA also is working with NOAA and inter-agency forums to transition mature research capabilities to operational systems, primarily the polar and geostationary operational environmental satellites, and to utilize fully those assets for research purposes.
Current and Future NASA Earth Remote Sensing Observatories
Applied Sciences Program

Eight Program Elements

- Agricultural Efficiency
- Air Quality
- Climate
- Disaster Management
- Ecological Forecasting
- Public Health
- Water Resources
- Weather
Why Public Health?

Potential Health Effects of Climate Variability and Change

CLIMATE CHANGE (Natural and Human-Caused)

Regional Weather Changes
- Heat Waves
- Extreme Weather
- Temperature
- Precipitation

Air Pollution Levels
Contamination Pathways
Transmission Dynamics

Health Effects
- Heat-related Illnesses and Deaths
- Extreme Weather Events-related Health Effects
- Air Pollution-related Health Effects
- Water- and Food-borne Diseases
- Vector- and Rodent-borne Diseases

Moderating Influences*

Research

Adaptation Measures**
The Public Health application area focuses on Earth science applications to public health and safety, particularly regarding infectious disease, emergency preparedness and response, and environmental health issues. The application explores issues of toxic and pathogenic exposure, as well as natural and man-made hazards and their effects, for risk characterization/mitigation and improvements to health and safety.
The Public Health application area focuses on Earth science applications to public health and safety, particularly regarding infectious disease, emergency preparedness and response, and environmental health issues. The application explores issues of toxic and pathogenic exposure, as well as natural and man-made hazards and their effects, for risk characterization/mitigation and improvements to health and safety.

Programmatic Themes
1. Environmental Health (including Oceans and Human Health) (9)
2. Infectious Disease (6)
3. Emergency Preparedness/Response (1)
4. Public Health Tracking/Information Networks (crosscuts)
5. Climate (crosscuts)

Goals
• Collaboration with other agencies to define the impact of climate change on public health
• Integration of NASA research into Public Health Information/Tracking Networks with the ability to track weather, climate, and environmental factors to improve disease outbreak and environmental health risk predictions to increase the public’s warning time
• NASA research utilized to enhance our nation’s emergency response and preparedness (e.g., DOD-GEIS, Coast Guard)
• Issue joint solicitations with other agencies
• Focus on upcoming missions (Decadal Survey)
• Through community, stay abreast and ahead of emerging diseases/issues (past – pandemic flu)

Federal Partners: CDC, EPA, DOD, USGS, USAID
The Health and Environment Linked for Information Exchange (HELIX)-Atlanta.
Regards – Reasons for Geographic and Racial Differences in Stroke Research
Predicting and simulating pollen emission and downwind concentrations
PHAiRS: Public Health Applications in Remote Sensing
Mississippi Research Consortium Projects
Malaria Modeling and Surveillance System/Global Situational Awareness Tool
Avian Influenza Risk Prediction in Southeast Asia and Early Warning of Pandemic Influenza
Using NASA Data and Models to Improve Heat Watch Warning Systems for Decision Support
ArboNET/Plague Surveillance System
Predicting Zoonotic Hemorrhagic Fever Events in Sub-Saharan Africa using NASA Earth Science Data for DoD - Global Emerging Infections Surveillance and Response System
Famine Early Warning System (FEWS)
Malaria Early Warning System (MEWS)
Integration of Remote Sensing into Encephalitis Virus Intervention Decision Support Systems
Impact of NASA Satellite Data and Models on U.S. Coast Guard’s Decision Support Tool for Search and Rescue in the Northeastern Pacific Ocean
Monitoring and Forecasting Cyanobacterial Blooms for Public Health Protection and Response
Application of NASA Data to Develop an Influenza Forecasting System
Towards Predictive/Operational Assessment of Beach Closures Using Remotely Sensed Data

NASA Public Health & Safety Research
Epidemiology in the 21\textsuperscript{st} Century
Applied Sciences Program

http://nasascience.nasa.gov/earth-science/applied-sciences
http://aiwg.gsfc.nasa.gov/