



Predicting and Mitigating Outbreaks of Vector-borne Disease Utilizing Satellite Remote Sensing Technology and Models AGENDA

An overview of NASA Public Health Applications using Remote Sensing Data

Sue M. Estes

Roles of remote sensing and GIS in avian and pandemic influenza surveillance and risk prediction

Richard K. Kiang

Enhancing Malaria Early Warning System (MEWS) with earth observation and modeling results

Stephen Conner

Mosquitoborne Encephalitis Virus Integration using Remote Sensing for Decision Support systems

Chris Barker





NASA Applied Sciences Program Update

*Sue M. Estes
Deputy Program Manager, Public Health*

*National Aeronautics and Space Administration
Applied Sciences Program
Earth Science Division
Science Mission Directorate*

Huntsville, AL



2006 NASA Strategic Plan

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.*

Applied Sciences Program

Eight Program Elements



**Agricultural
Efficiency**



Air Quality



Climate



**Disaster
Management**



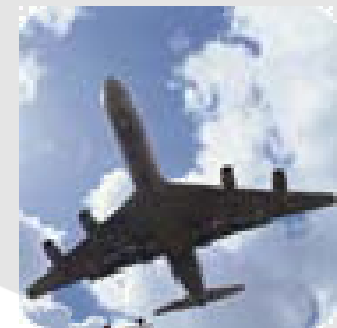
**Ecological
Forecasting**



Public Health

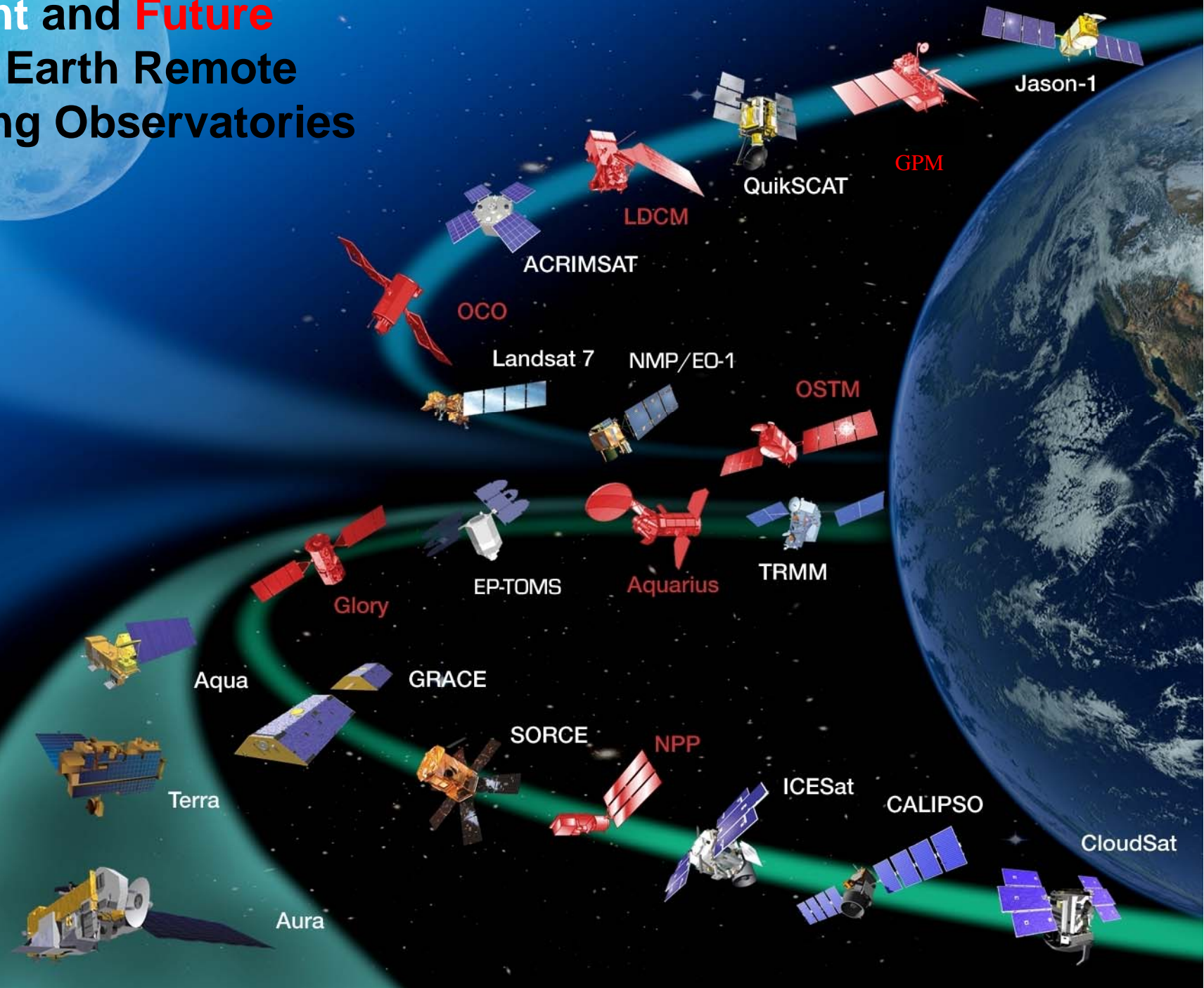


**Water
Resources**

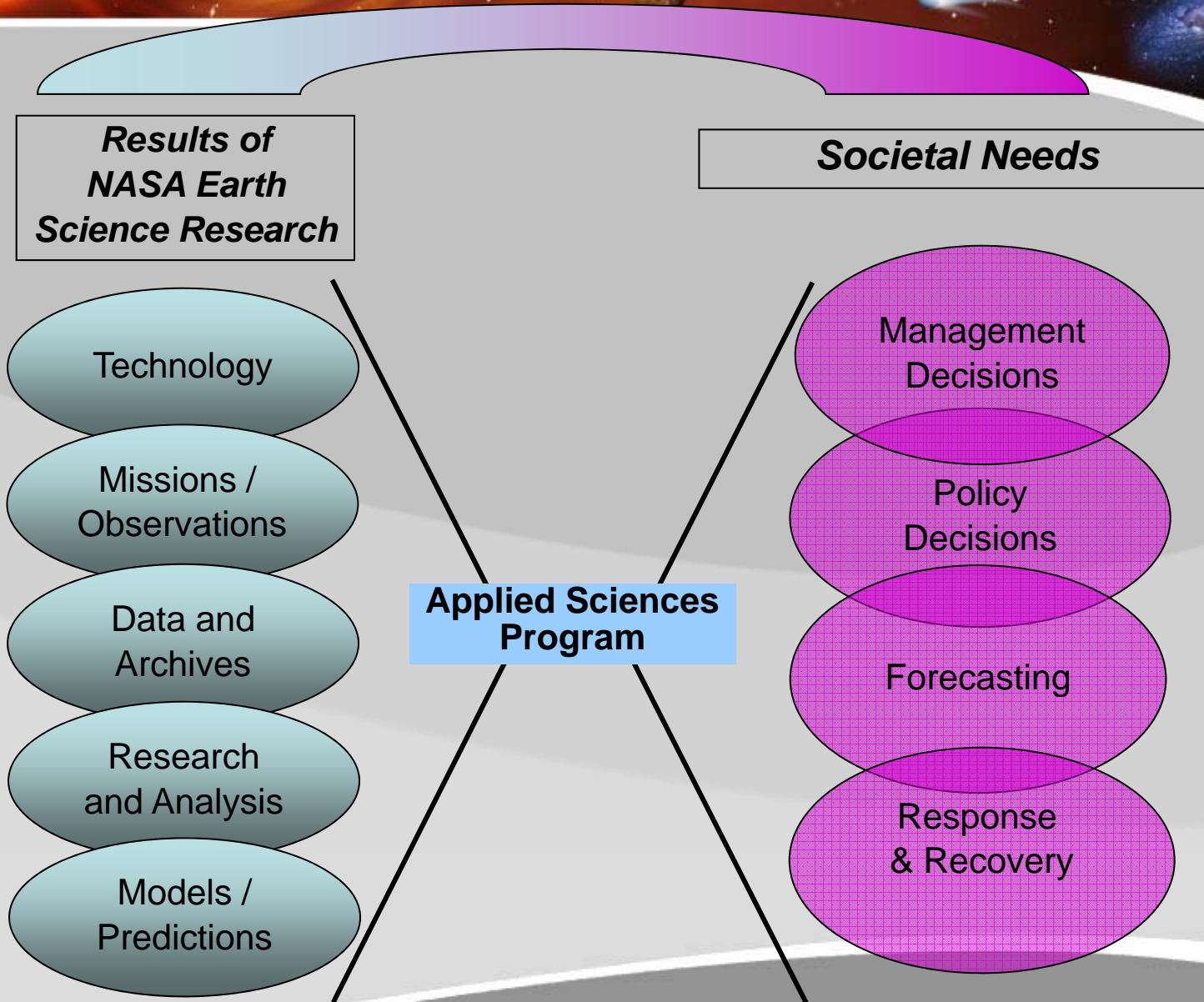


Weather

Current and **Future** NASA Earth Remote Sensing Observatories



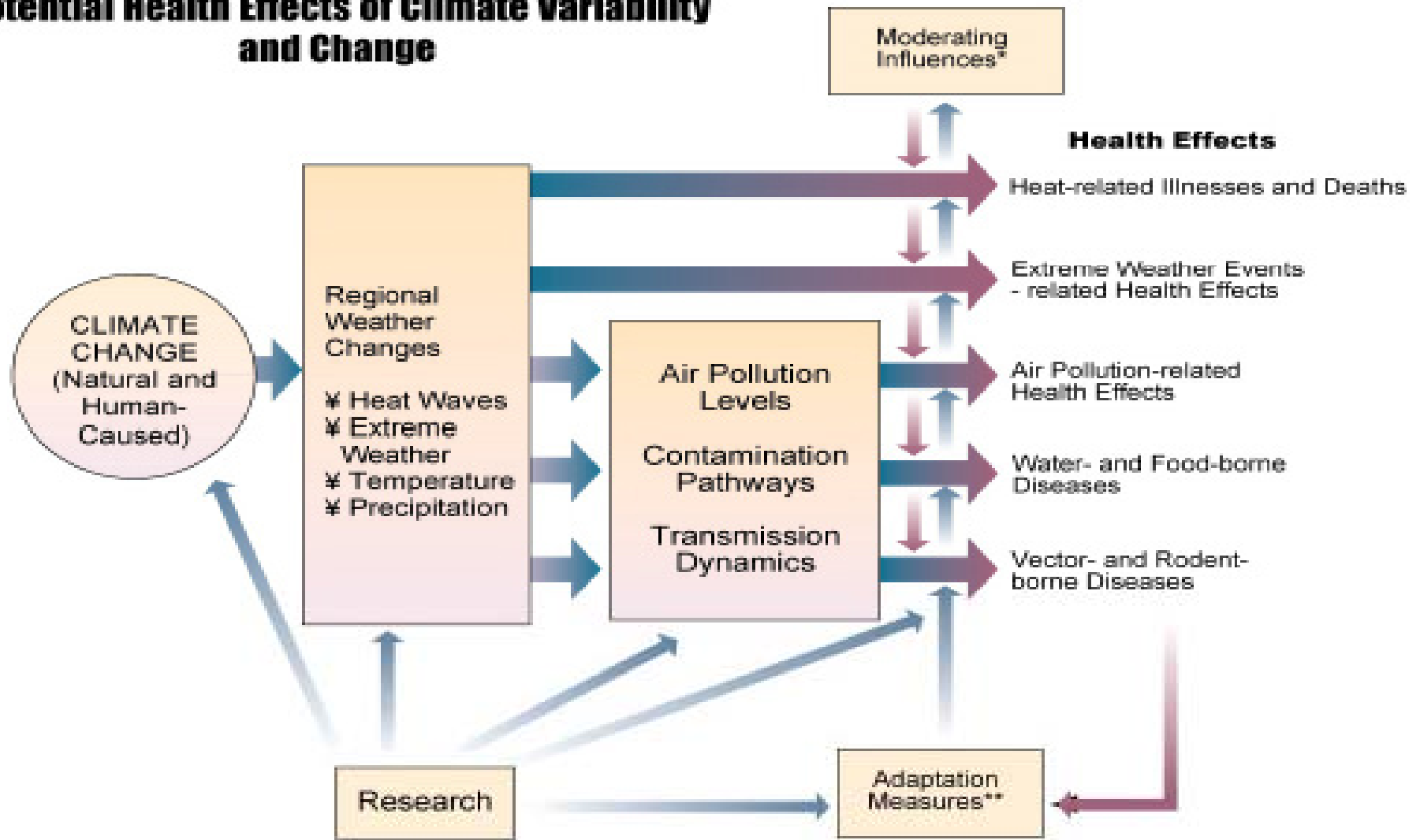
NASA Applied Sciences Architecture





Why public health?

Potential Health Effects of Climate Variability and Change





Focus Areas of Public Health

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.



NASA Public Health & Safety Research

NASA Infectious Disease Research Includes:

Programs in Progress:

- Malaria Modeling and Surveillance System/Global Situational Awareness Tool
- Avian Influenza Risk Prediction in Southeast Asia and Early Warning of Pandemic Influenza
- 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

New Programs:

- Application of NASA Data to Develop an Influenza Forecasting System
- Environmental Factors and Population Dynamics as Determinants of Meningococcal Meningitis Epidemics in the Sahel: An Investigation of NASA and NOAA Products



Working with NASA Collaborators

- NASA employs scientists with diverse backgrounds and expertise
- NASA researchers bring to the table a strong desire to collaborate
- Where to find NASA researchers



NASA's Public Health Partners

.gov/ph



.gov/rs



.org



.edu



.int



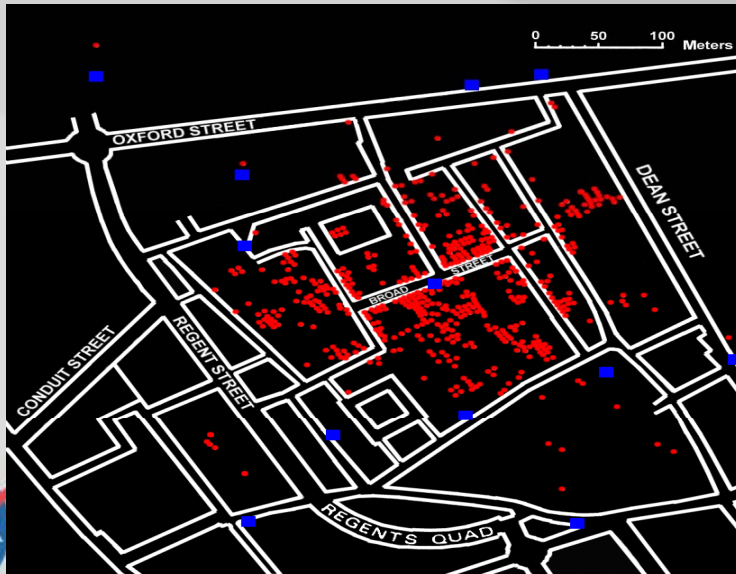
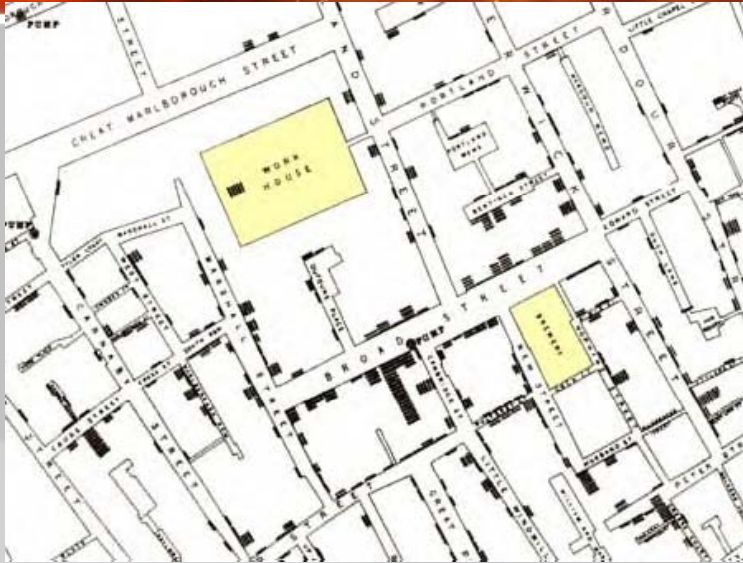


Funding

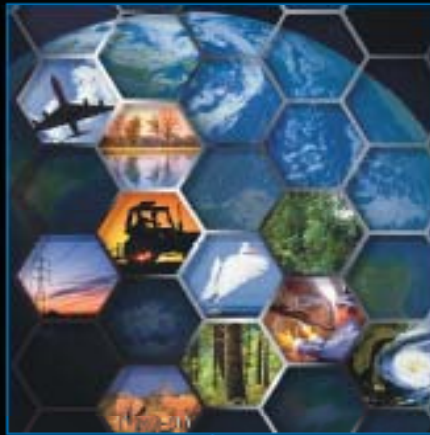
- NASA has several avenues of external funding available to non-NASA scientists
- Public Health Proposal Call in February, 2010
- Website for solicitation:
<http://nspires.nasaprs.com/external/>



Epidemiology in the 21st Century

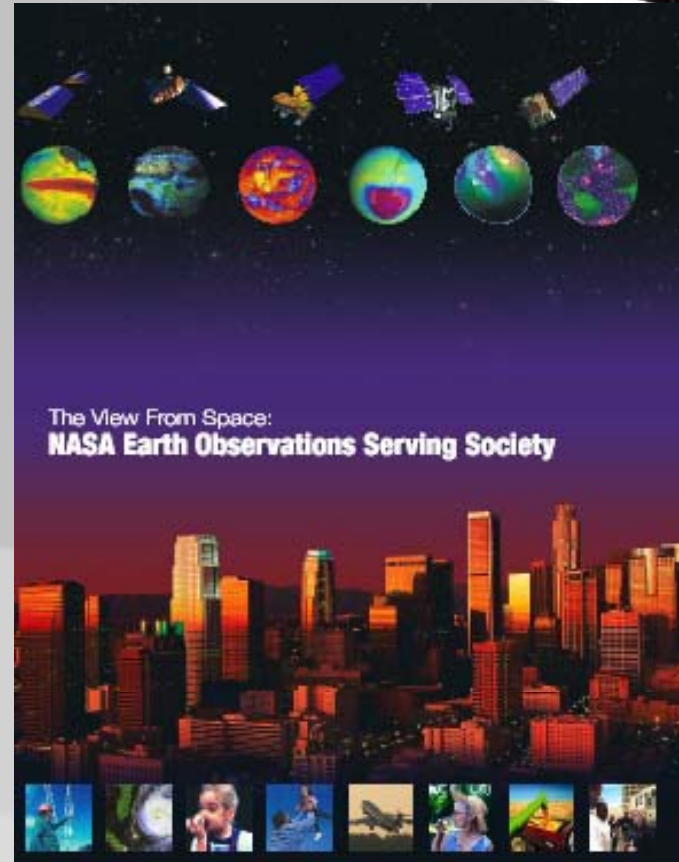


Applied Sciences Program



National Aeronautics and
Space Administration

Earth Science Enterprise
Applications Plan



<http://nasascience.nasa.gov/earth-science/applied-sciences>

<http://aiwg.gsfc.nasa.gov/>

