



NASA Public Health Applications Program 2010 Program Review

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Program Review Goals

- Update and current status of ongoing projects
- Introduction of recently selected projects (ROSES 09 - GULF)
- Discussion of potential topics in ROSES 11
- Investigation of collaborative opportunities, including possible joint solicitations; leveraging existing programs (SERVIR, etc.)





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.*

2010 NASA Science Plan

The 2010 Science Plan identifies the direction NASA has received from the Administration and Congress, advice received from the nation's science community, principles and strategies guiding the conduct of our activities, and challenges we face. The plan that results enables NASA, as Administrator Bolden says, to "do the best science, not just more science."

The NASA Earth Science strategic goal is stated as, ***“Advance Earth System Science to meet the challenges of climate and environmental change.”***

http://science.nasa.gov/media/medialibrary/2010/08/30/2010SciencePlan_TAGGED.pdf



Supporting document for NASA Earth Science

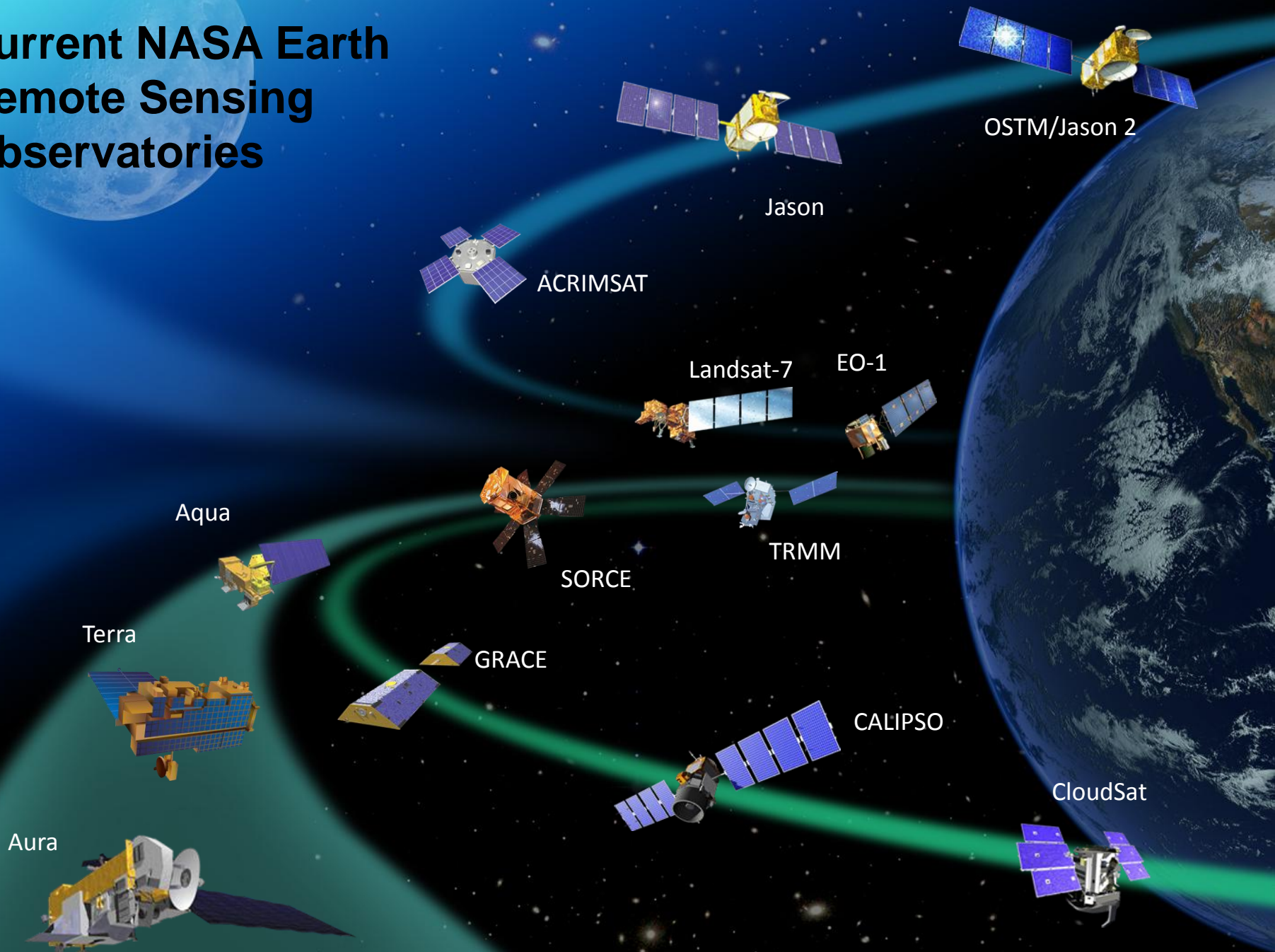
[Responding to the Challenge of Climate and Environmental Change](#): NASA's Plan for a Climate-Centric Architecture for Earth Observations and Applications from Space (June 2010)

NASA's plans to revitalize the nation's research satellite system; expand research, applications, technology, and education activities using NASA and non-NASA satellite data; and develop/mature technologies required for the next generation of Earth observing missions.

http://science.nasa.gov/media/medialibrary/2010/07/01/Climate_Architecture_Final.pdf



Current NASA Earth Remote Sensing Observatories



Earth System Science



Sun- Earth
Connection

Climate Variability
and Change

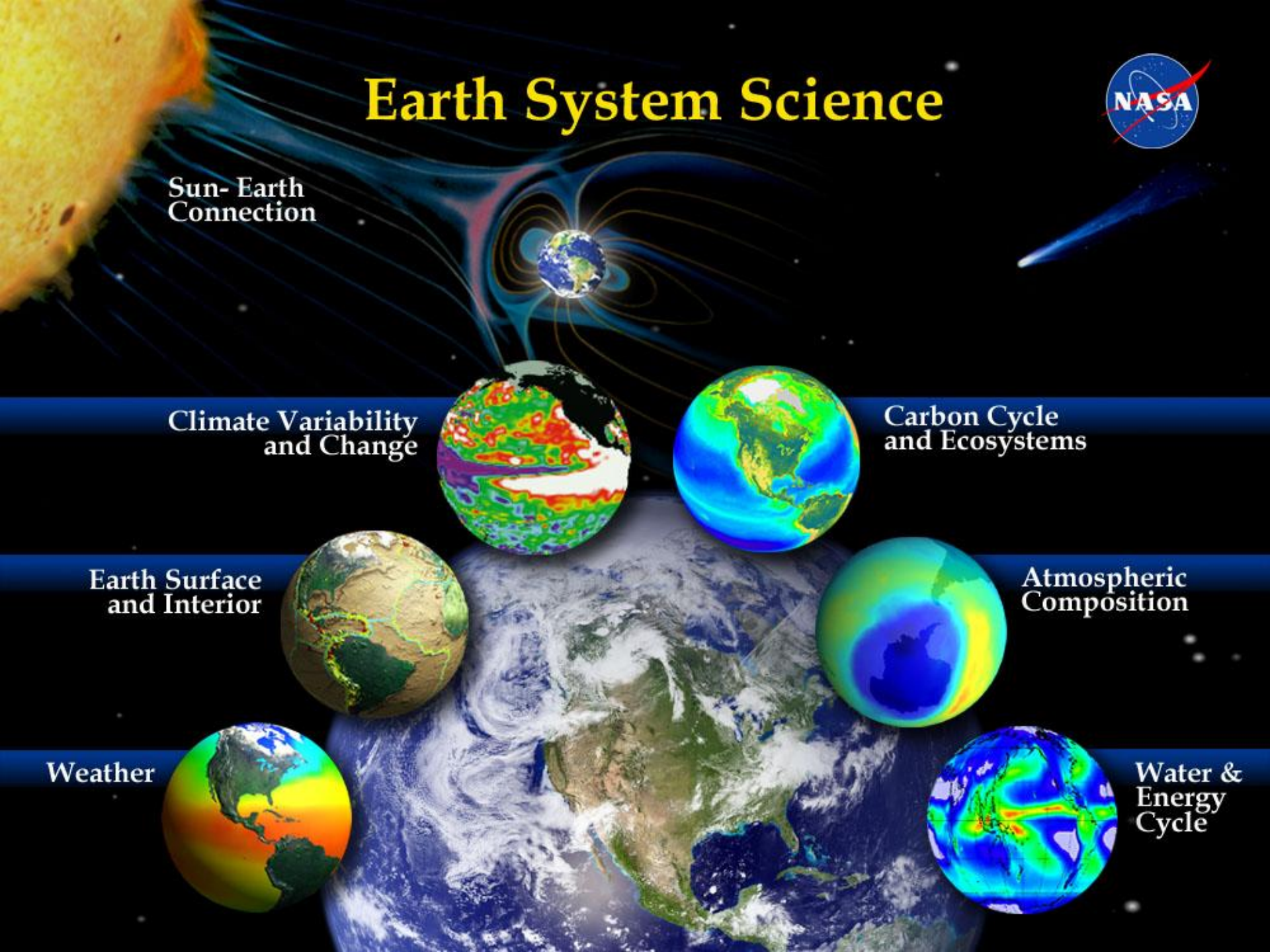
Carbon Cycle
and Ecosystems

Earth Surface
and Interior

Atmospheric
Composition

Weather

Water &
Energy
Cycle



NASA Earth Science Division FY11 President's Budget

- FY10: \$1,420.7 (\$ millions)
- FY11: \$1,801.8
- FY12: \$1,944.5
- FY13: \$2,089.5
- FY14: \$2,216.6
- FY15: \$2,282.2

■ Major Items:

- \$150M to accelerate Earth Science “Decadal Survey” Missions
- \$170M to develop and launch OCO-2
- New Climate Initiative to be launched (See June 2010 document)
- NPOESS restructured. NOAA and NASA will take primary responsibility for the afternoon orbit. The new “Joint Polar Satellite System” will consist of platforms based on the NPP satellite, with procurement structures modeled after the POES and GOES programs.

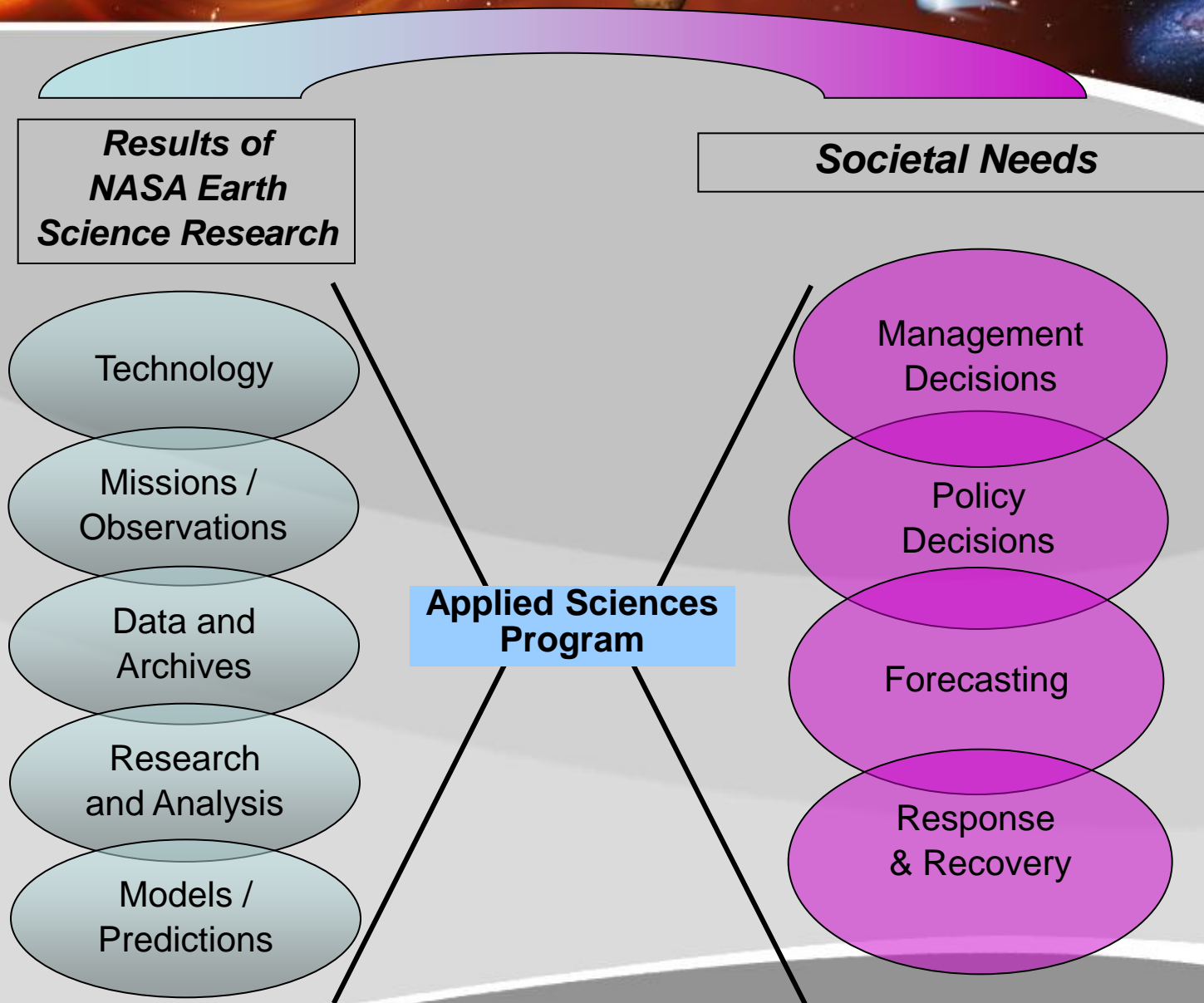


NASA Applied Sciences Program Mission Statement

Advance the realization of societal and economic benefits from NASA Earth science by identifying societal needs, conducting applied research and development, and collaborating with application developers and users.



NASA Applied Sciences Architecture





Applied Sciences Program

*Eight Program Elements – Aligned with
GEO SBAs*



**Agricultural
Efficiency**



Air Quality



Climate



**Disaster
Management**



**Ecological
Forecasting**



Public Health



**Water
Resources**



Weather

News Items in the ASP during 2009-10

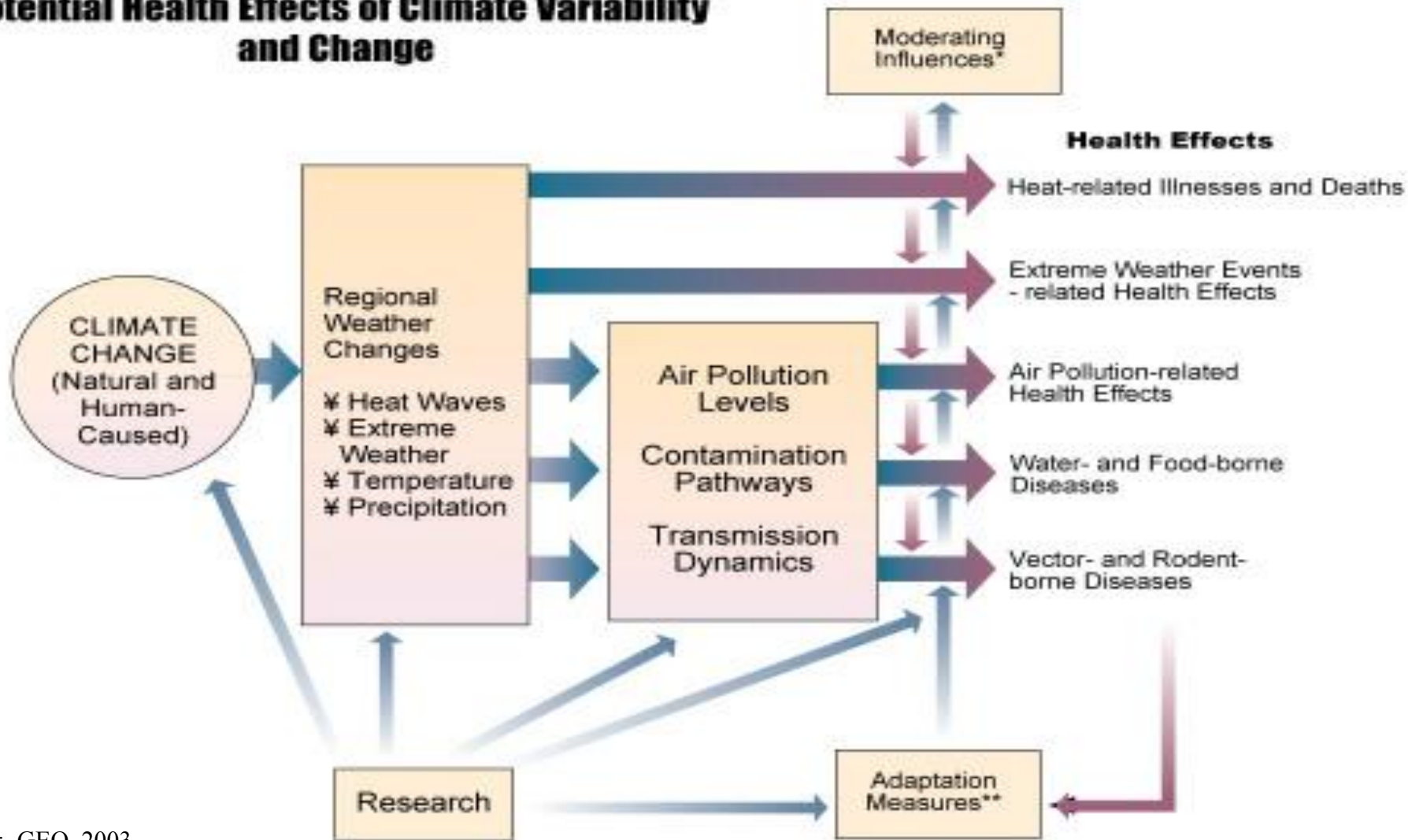
- Dr. Teresa Fryberger stepped down as Associate Director in October 2009 to take a position in the Office of the Deputy Administrator.
 - Lawrence Friedl is currently Acting Associate Director of the ASP
- Public Health Session at AMS 2010 (Atlanta, GA)
- NASA Earth Observing Missions Applications Workshop conducted in February 2010 in collaboration with the NASA Earth Science Flight Program.
- Two new competitively selected grants were awarded in the Public Health Applications program through NASA ROSES 2009 (GULF).
- Value of Information: Methodological Frontiers and New Applications Workshop at RFF (Washington, DC) in June 2010.
- GEO Health CoP Meeting in Paris, France (July 2010)



E-books launched

Why public health?

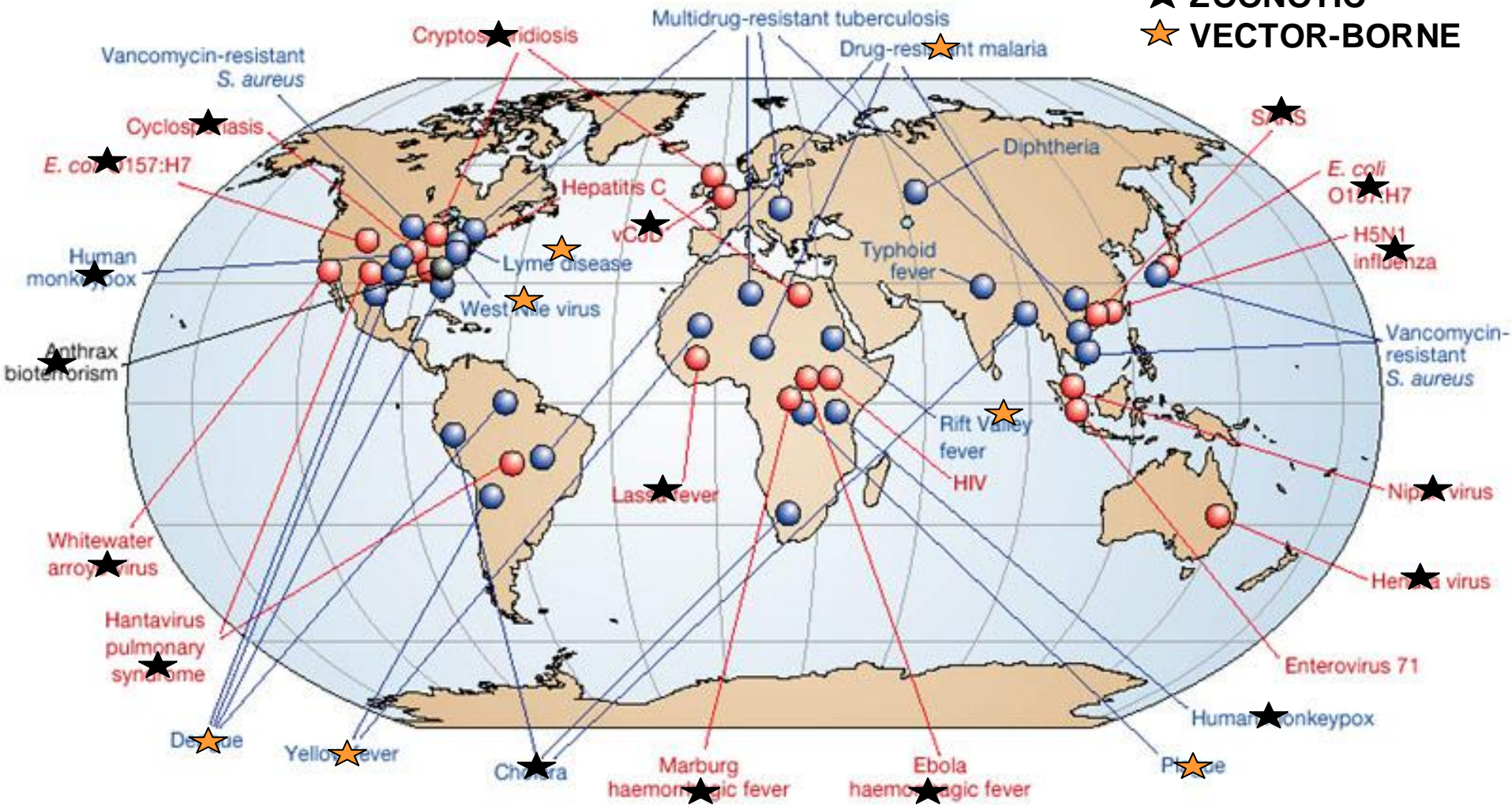
Potential Health Effects of Climate Variability and Change



Global Emerging Diseases*



★ ZONOTIC
 ★ VECTOR-BORNE

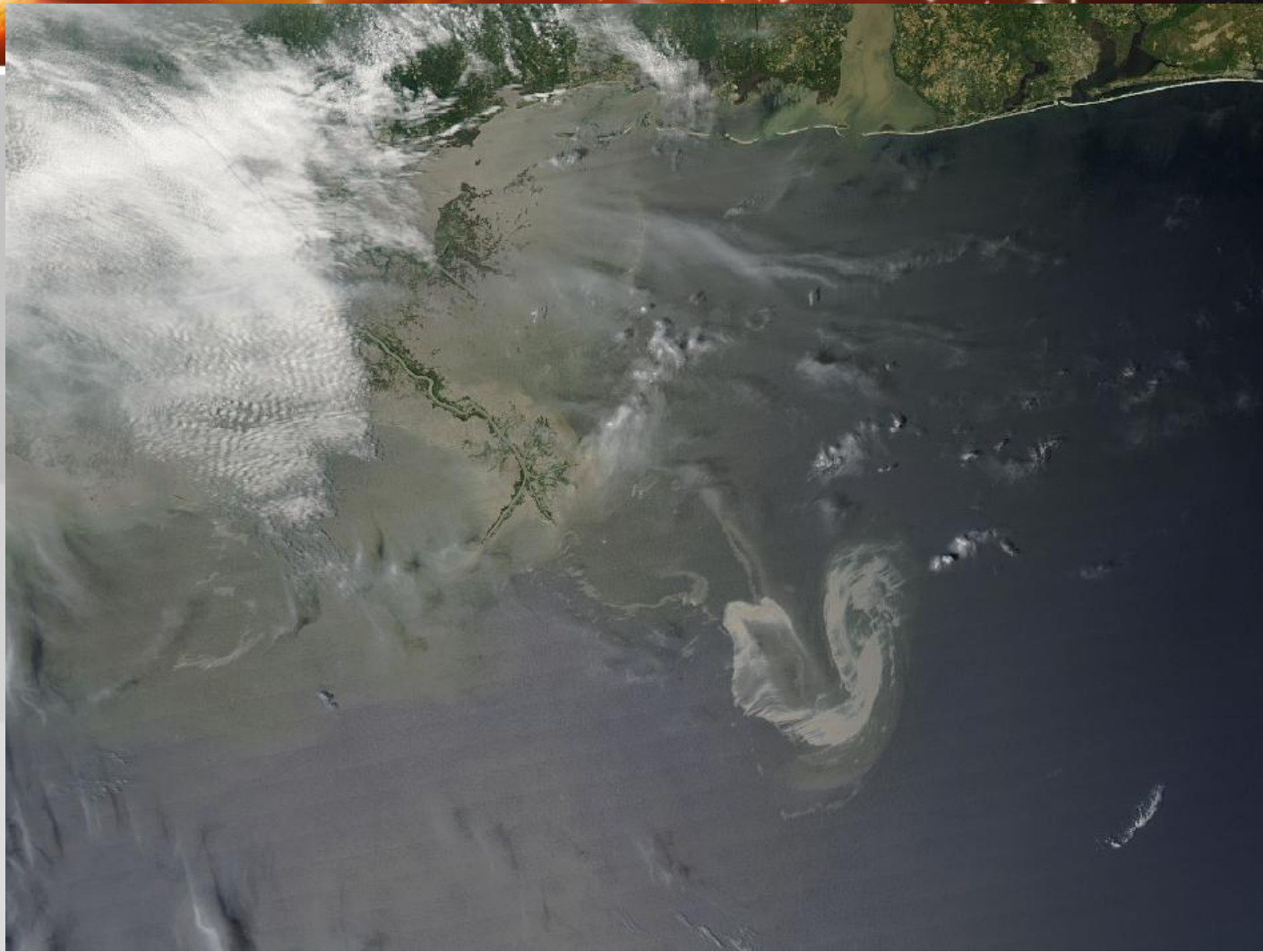


EMERGING
 RE-EMERGING

* Modified from Morens et al. 2004 *Nature* 430:242



New Environmental Threats



This visible image of the Gulf oil slick was taken on May 9 at 19:05 UTC (3:05 p.m. EDT) from MODIS aboard NASA's Aqua satellite. Crude oil brings volatile organic compounds into the air which can react with nitrogen oxides to produce ozone.





Public Health Applications Program

18 Projects*

Applied Sciences Program

Discovering Innovative & Practical
Applications of NASA Earth Science

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.

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
- Issue joint solicitations with other agencies (e.g., CDC)
- 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

* Includes 2 GULF 09 Projects



Applied Sciences – 2009 Solicitation

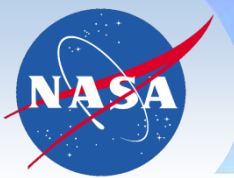
ROSES-2009 – A.40 GULF

The overall objective of this solicitation was to create a suite of projects to enhance the Gulf of Mexico region's ability to use NASA Earth science observations and research in decision making activities. This solicitation had a special emphasis on climate adaptation and climate change impacts in the Gulf region and southeast United States. The recent report "Global Climate Change Impacts in the United States" (U.S. Global Change Research Program, 2009) outlines expected climate change impacts to US coastal communities: "Sea-level rise and storm surge will increase threats to homes and infrastructure including water, sewer, transportation, and communications systems. Many barrier islands and coastal marshes that protect the coastline and support healthy ecosystems will be lost."

Proposals could:

- 1) perform a feasibility study of a concept(s) for potential application(s) of specific NASA Earth science research results to improve decision-making activities; and/or,
- 2) conduct a project focused on the integration, transition, and sustained use of Earth science research results in decision making activities.

The solicitation strongly encouraged multi-organizational and multi-disciplinary teams, including direct involvement of end user organizations as part of the project team.



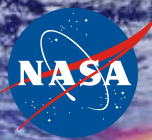
Applied Sciences – 2009 Solicitation

ROSES-2009 – A.40 GULF

This solicitation sought proposals that aligned with one or more of the following applications areas:

1. Agriculture
2. Weather
3. Public Health
4. Ecological Forecasting
5. Air Quality
6. Climate

The Program required proposals to include a transition plan that describes how and when the application will be transitioned to the end-user; “transition” means that the end-user is utilizing the capability *independent of NASA support*. (Note: It is not expected that full transition will occur within the period of these projects; rather that a clear path for transition is outlined and that barriers to transition are identified upfront and potential approaches are identified).



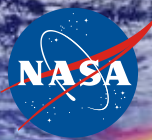
Distribution of Total Proposals, by PI organization – GULF (A.40)

Applied Sciences - ROSES-09 A.40 GULF

Total Proposals, by PI Organization

	Submitted	
Total Proposals	54	
By PI Organization	Proposals Submitted	% of Total Submitted
NASA	6	11%
Academia	36	67%
Other Fed	5	9%
Private (NGO/Industry)	7	13%
State Govt	0	0%

Selected: 13
24% of Total Proposals



Distribution of Recommended Selections (by PI organization) – GULF (A.40)

Applied Sciences - ROSES-09 A.40 GULF

Proposals by PI Organization (Total Proposals: 54)

PI Organization	Proposals Submitted	Selected	% Selected of Those Submitted	Total # of Awards	% Selected of Total Awards
NASA	6	1	17%	13	8%
Academia	36	9	25%		69%
Other Fed	5	2	40%		15%
Private (NGO/Industry)	7	1	14%		8%
State Govt	0	0	0%		0%

ROSES 2010 Solicitation

- **NASA ROSES 2010 (A.31): Earth Science Applications Feasibility Studies: Public Health**
 - Released February 12, 2010
 - Proposals due May 28, 2010 (24 submitted)
 - Peer Reviews October 2010
 - Selections December 2010
- Primarily requested feasibility studies of applications of Earth science research results that would improve decision-making activities concerning emerging and reemerging diseases and current infectious disease issues. These studies were particularly encouraged for the regions of North and South America, however, no region was discouraged from proposing.



NASA's Public Health Partners

.gov/ph



.gov/rs



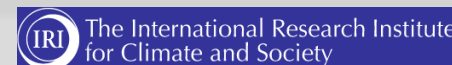
.org



.edu



.int



Future Observations for Health – Near Term

- **Glory – 2011**
 - Collect data on the properties of aerosols, including black carbon, in the Earth's atmosphere and climate system; collect data on solar irradiance for the long-term effects on the Earth climate record.
- **NPOESS Preparatory Mission (NPP) -- 2011**
 - NPP will serve as a bridge mission between the NASA Earth-observing research satellites Terra, Aura, and Aqua and the operational Joint Polar Satellite System (JPSS) constellation.
- **Landsat Data Continuity Mission (LDCM) -- 2013**
- **Global Precipitation Mission (GPM) – 2013**
 - Will provide accurate observations of the intensity and distribution of global precipitation. GPM builds on the heritage of the TRMM mission and is in partnership with JAXA.



Future Observations for Health – Decadal Survey

- **Hyperspectral Infrared Imager (HyspIRI) – NET 2015**
 - HyspIRI will employ a hyperspectral imager and a thermal infrared scanner to monitor a variety of ecological and geological features at a wide range of wavelengths, including data on changes in vegetation type and deforestation for ecosystem management .
- **Soil Moisture Active Passive (SMAP) – 2013**
 - SMAP will use a combined radiometer and high-resolution radar to measure surface soil moisture and freeze-thaw state.
- **Deformation, Ecosystem Structure, and Dynamics of Ice (DESDynI) – NET 2015**
 - DESDynI is a dedicated InSAR and LIDAR mission optimized for studying hazards and global environmental change, including the effects of changing climate on land use and species habitats.



2011



2012



2013



Aqua

Terra

Aura

Landsat-7

Glory

NPP

LDCM

SMAP

CALIPSO

CloudSat

TRMM

SORCE

GPM Core

Aquarius

OSTM/Jason 2

2014



2015

DesDynI



Aquarius



OSTM/Jason 2



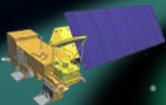
Landsat-7



ICESat II



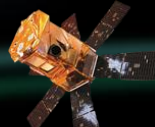
Aqua



Glory



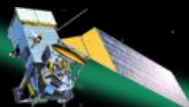
SORCE



NPP



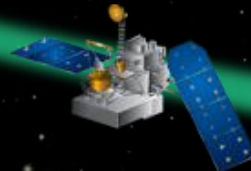
LDCM



SMAP



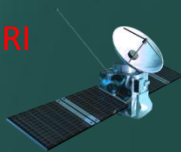
GPM Core



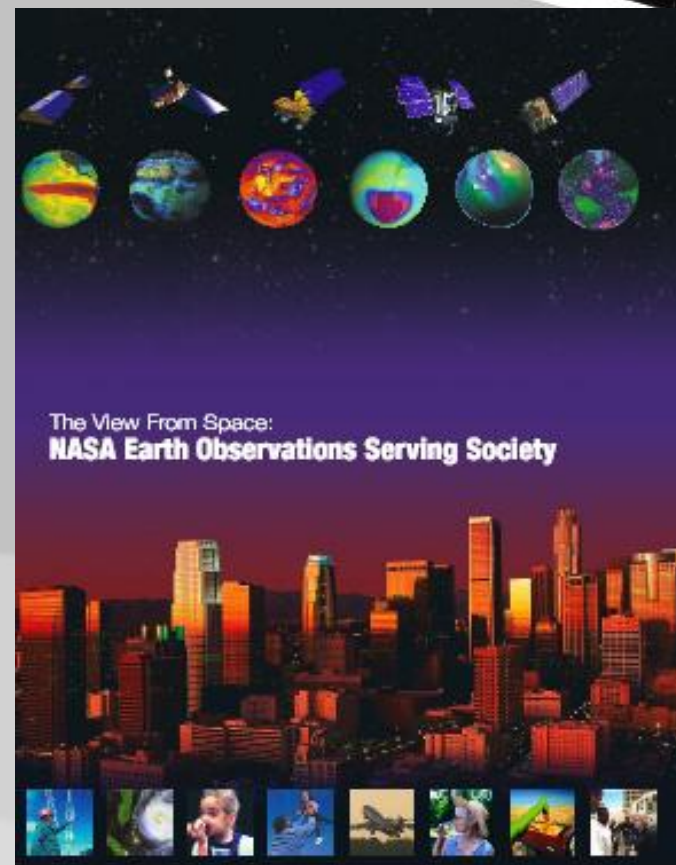
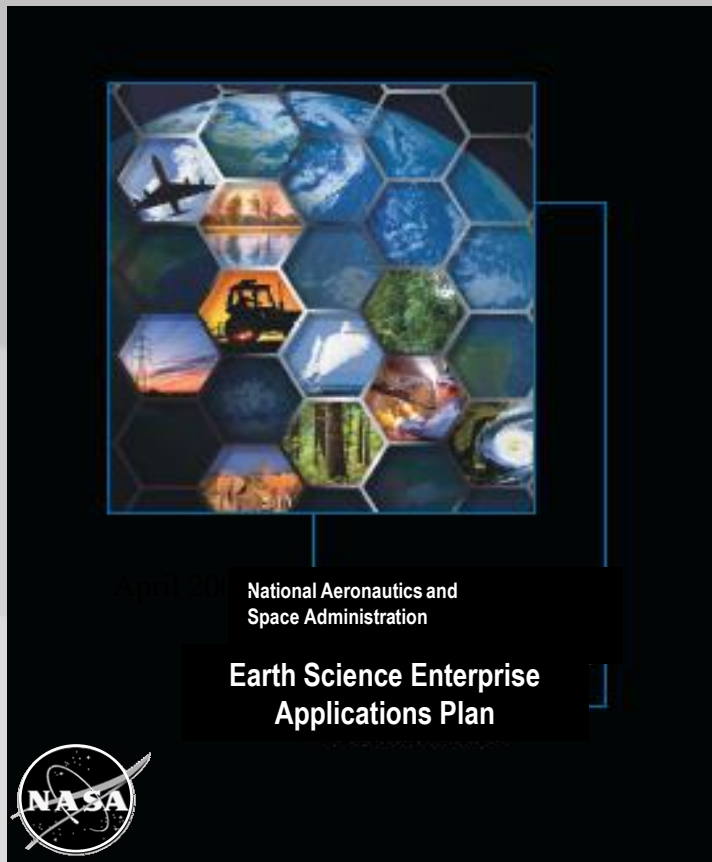
GPM Low



HyspIRI



Applied Sciences Program



<http://appliedsciences.nasa.gov>

