International Cooperation at NASA

Michael F. O'Brien
Assistant Administrator
for External Relations

Project Management Challenge
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Agenda

- **International Cooperation**
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  - Guidelines
  - Challenges
- **International Cooperation by Mission Directorate**
- **Looking Forward:**
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  - “Non-traditional” partners
- **Summary**

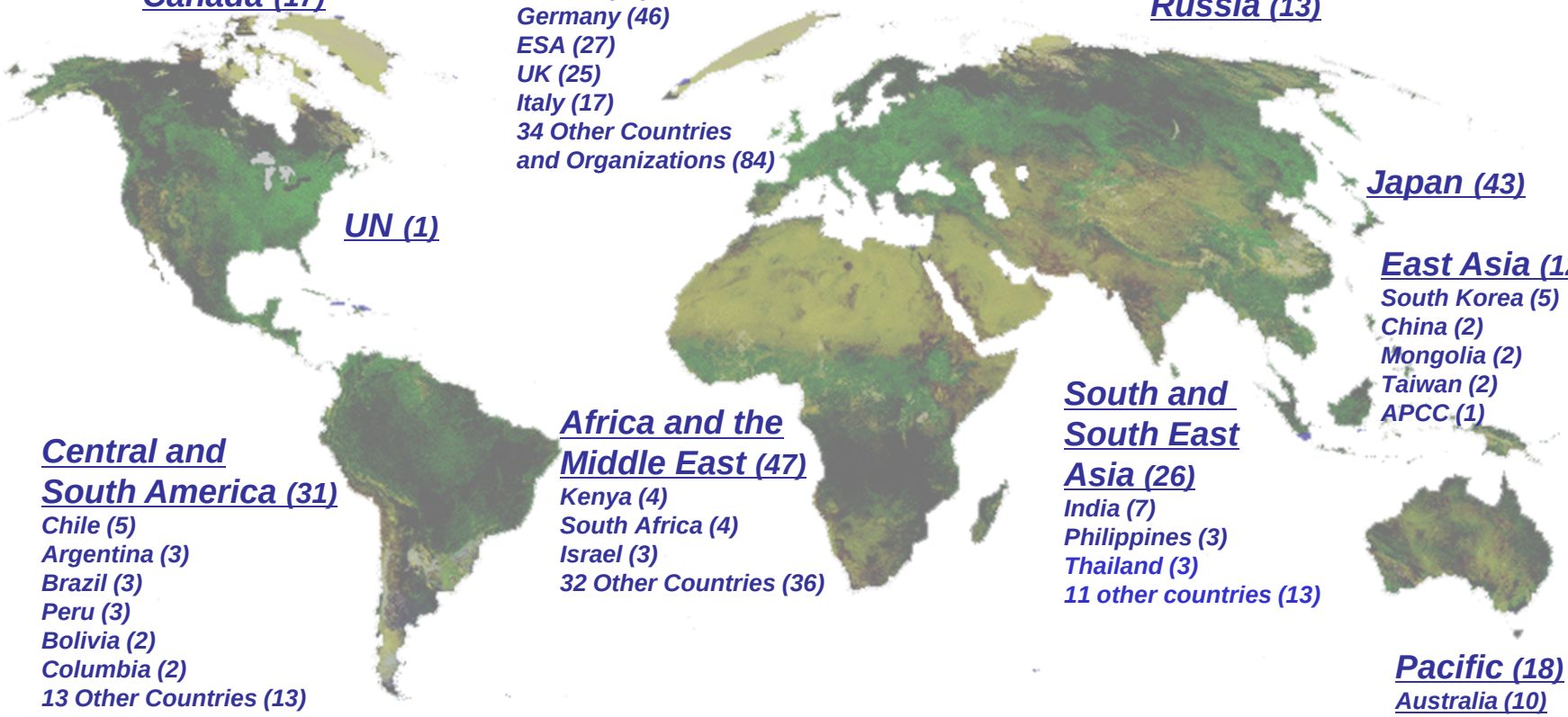
International Cooperation: Overview

- **International cooperation at NASA:**
  - Is directed by the National Aeronautics and Space Act that created NASA in 1958 and continues to be part of national space policy
  - Has been a cornerstone of NASA's activities throughout its history
  - Includes over 3,000 agreements with over 100 nations
  - Brings multiple benefits to NASA and its partners
  - Is developed through a combination of choice and necessity

- **Current international cooperation:**
  - 458 active international agreements, 118 countries
  - 10 partners account for 50% of the agreements (France, Germany, ESA, Japan, UK, Italy, Canada, Russia, Australia, Spain)
  - By mission area: 2/3 are in the NASA science missions
  - By region: 1/2 are with partners in Europe

Current International Cooperation

Total International Agreements = 458, total countries = 118



Multilateral (3)

Europe (247)
France (48)
Germany (46)
ESA (27)
UK (25)
Italy (17)
34 Other Countries and Organizations (84)

Canada (17)

Russia (13)

Japan (43)

UN (1)

East Asia (12)
South Korea (5)
China (2)
Mongolia (2)
Taiwan (2)
APCC (1)

Central and South America (31)
Chile (5)
Argentina (3)
Brazil (3)
Peru (3)
Bolivia (2)
Columbia (2)
13 Other Countries (13)

Africa and the Middle East (47)
Kenya (4)
South Africa (4)
Israel (3)
32 Other Countries (36)

South and South East Asia (26)
India (7)
Philippines (3)
Thailand (3)
11 other countries (13)

Pacific (18)
Australia (10)
New Zealand (3)
5 other countries (5)

Guidelines for International Cooperation

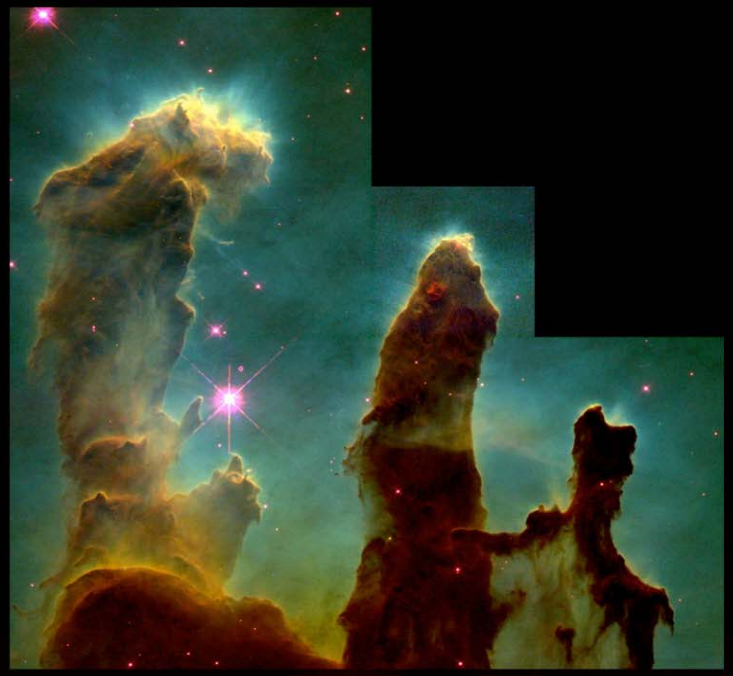
- **NASA's international partners are generally government agencies**
- **Each Partner funds its respective contributions, but contributions need not be equivalent**
- **Cooperation must be consistent with U.S. foreign policy objectives**
- **International Projects/Partnerships:**
  - Must have scientific and technical merit
  - Must demonstrate a specific benefit to NASA
  - Are structured to protect against unwarranted technology transfer
  - Are structured to establish clearly defined managerial and technical interfaces to minimize complexity
  - Are documented in a written, binding agreement, closely coordinated with the U.S. Department of State and other U.S. government agencies

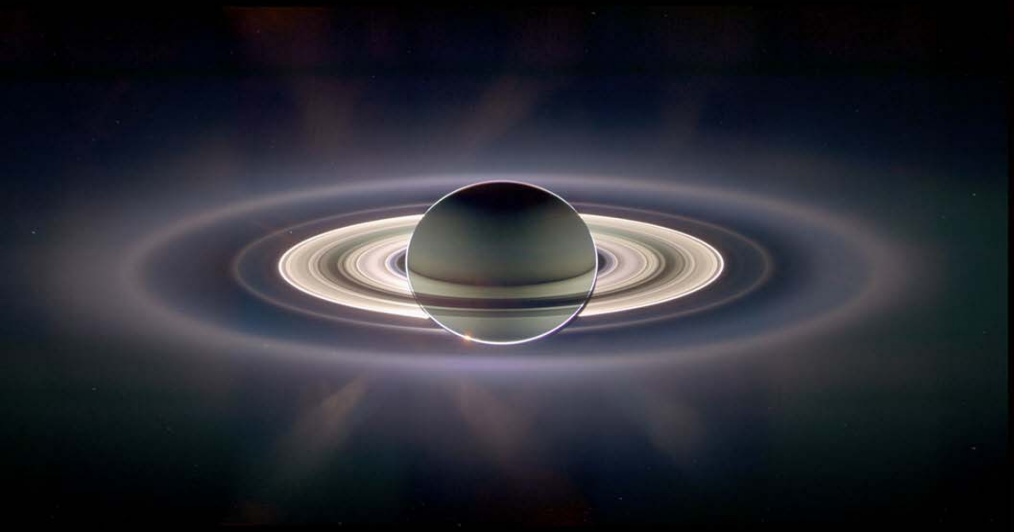
Challenges to Cooperation

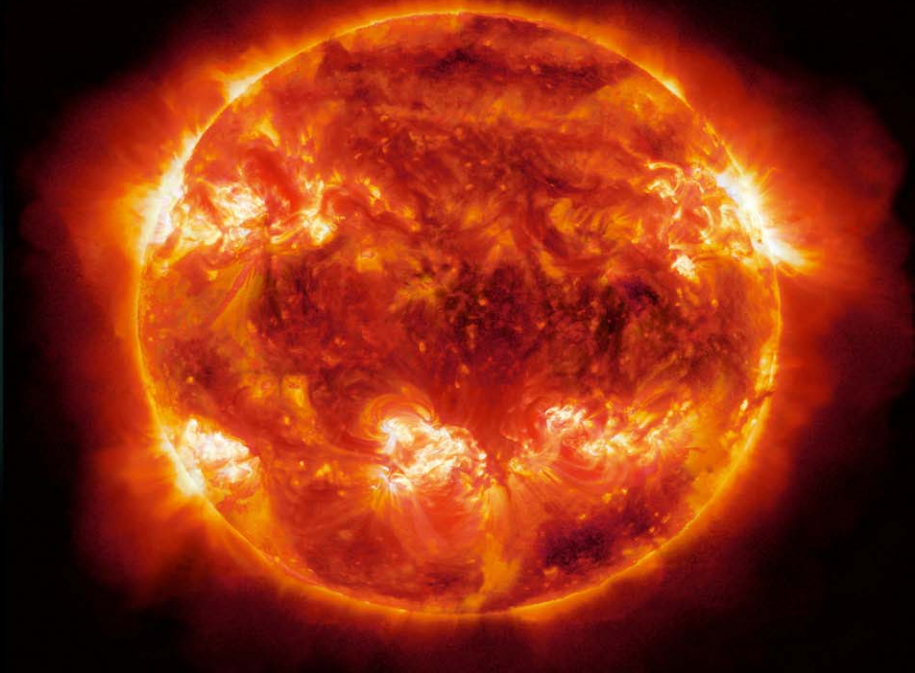
- **Management Complexity**
  - Decision-making
    - complexity grows with number of partners
    - timing of decisions
    - who is in charge?
  - Communications difficulties
  - Differing specifications, standards and assumptions

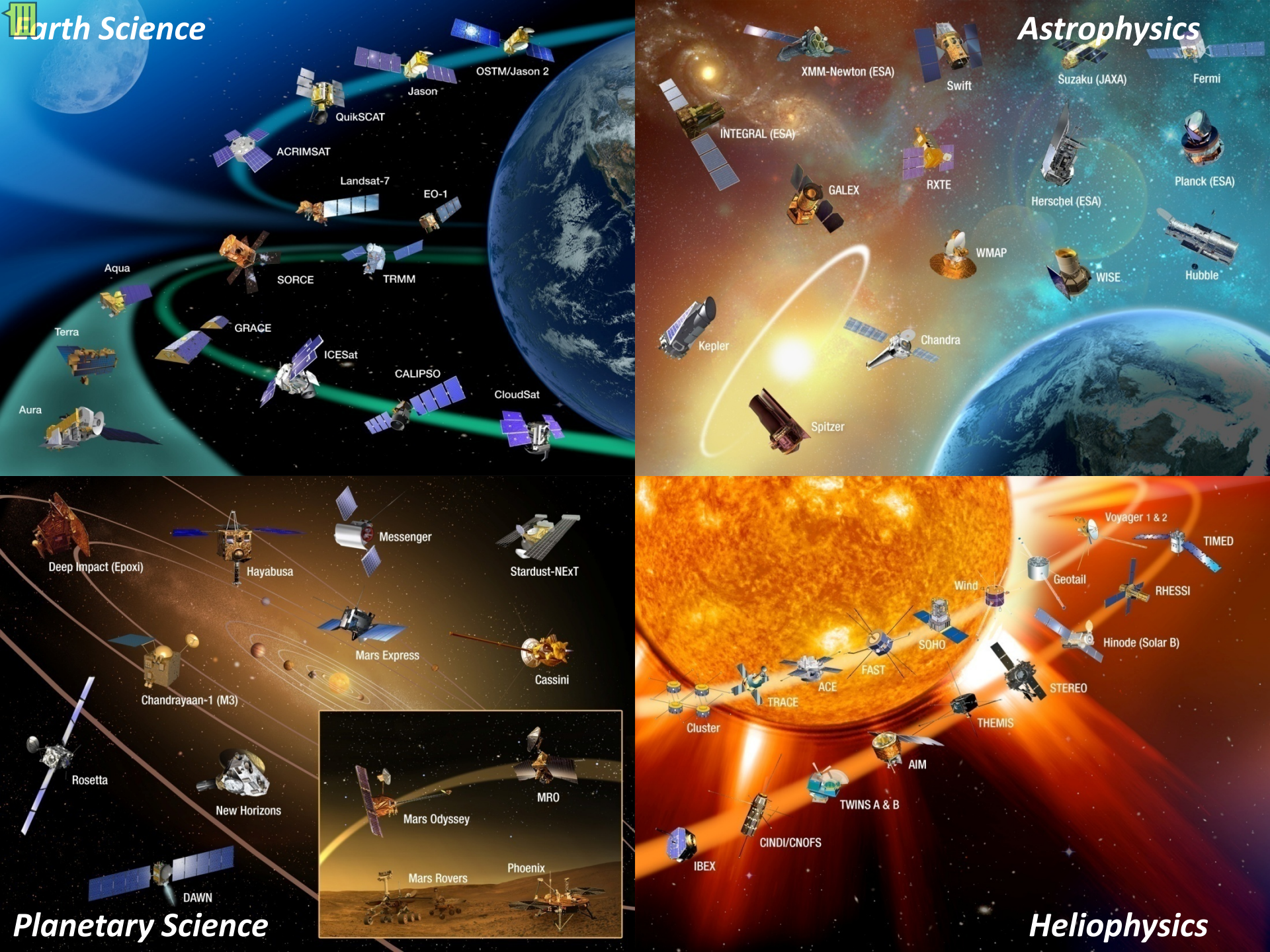
- **Technical and Programmatic Risk**
  - The “critical path” – open for discussion
  - Interfaces difficult to manage at a distance
  - Difficult to monitor progress and get early warning of problems

- **Political Risk**
  - Budgetary and bureaucratic uncertainties
  - Potential linkage to political activities unrelated to the cooperation



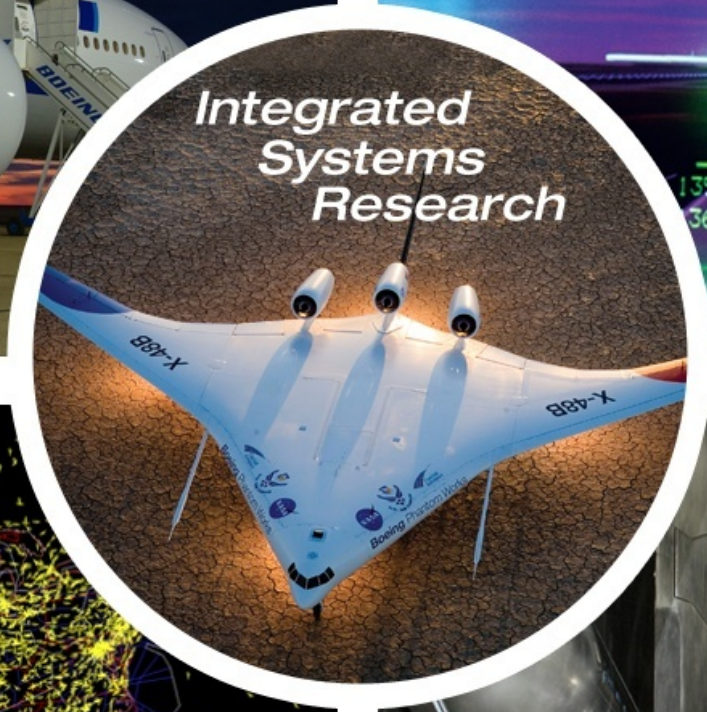





Earth Science
OSTM/Jason 2
Jason
QuikSCAT
ACRIMSAT
Landsat-7
EO-1
Aqua
SORCE
TRMM
Terra
GRACE
ICESat
CALIPSO
CloudSat
Aura
Astrophysics
XMM-Newton (ESA)
Swift
Suzaku (JAXA)
Fermi
INTEGRAL (ESA)
GALEX
RXTE
Herschel (ESA)
Planck (ESA)
WMAP
WISE
Hubble
Kepler
Chandra
Spitzer
Deep Impact (Epoxi)
Hayabusa
Messenger
Stardust-NExT
Mars Express
Cassini
Chandrayaan-1 (M3)
Rosetta
New Horizons
DAWN
MRO
Mars Odyssey
Mars Rovers
Phoenix
Planetary Science
Voyager 1 & 2
TIMED
Geotail
Wind
RHESSI
SOHO
Hinode (Solar B)
FAST
ACE
TRACE
STEREO
Cluster
THEMIS
AIM
TWINS A & B
CINDI/CNOFS
IBEX
Heliophysics

Exploration: Future Systems

NASA Aeronautics Research



Looking Forward: Some International Issues

- **International Space Station**
  - Several ISS partner Heads of Agency gave presentations to the Augustine Committee: some credit those presentations with the Committee recommendation to continue ISS operations beyond 2016
  - Utilization of ISS
  - Crew transportation and rescue
  - Resupply (future US capability, HTV, ATV, Russian “Progress” vehicles)

- **Exploration**
  - Strong international interest in changes to the U.S. space program -- in some cases, the U.S. program will have direct implications on international partner planning and budgets
  - How will cooperation evolve in the new environment?
  - The Global Exploration Strategy dialogue will continue via the International Space Exploration Coordination Group as we work through the implications of the U.S. FY 2011 budget request

Looking Forward: Some International Issues

- **Meeting existing commitments**
  - Successful implementation of existing international cooperation is important for NASA credibility
  - Open and transparent dialogue as NASA plans evolve is a critical component of that credibility

- **“Non-traditional” partnerships**
  - We are reaching out to non-traditional partners in Africa, the Middle East, Asia
  - Generally such cooperation will likely initially focus on mutually beneficial activities that are easy to implement at a low cost, yet have high impact results and benefits to society
  - Examples of areas of potential cooperation include scientific research, earth science applications and education initiatives, but cooperation in all programmatic areas is welcome
  - Specific Examples: Global Learning and Observations to Benefit the Environment (GLOBE), Aerosol Robotic Network (AERONET), SERVIR

Summary

- **International cooperation will remain very important to NASA in all of its program areas**
- **Well structured international cooperation can contribute significantly to national goals of each partner**
- **We anticipate continuing opportunities for international cooperation, particularly with our traditional partners**
- **NASA also welcomes discussions with potential new partners in areas of mutual interest, particularly in regions of the world in which NASA currently has little cooperation**