

# *Space Science and Space Policy*

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Cape Town, October 2005

# Space & Earth Sciences

- *Science Community has Considerable Clout*
  - *To recommend science direction*

# *The Challenges of Hubble*

- *Hubble space telescope—largest telescope in space*
  - *Launched on space shuttle on ...*
  - *Designed to be serviced by astronauts*
    - *Astronauts inserted corrector for faulty mirror*
  - *Impressive record of scientific achievement*

# *Human spaceflight—science interaction*

- *Hubble due for servicing mission*
    - *Yet, since Columbia failure, NASA reluctant to fly the mission*
      - *International Space Station not completed and will require some 18 shuttle flights*
      - *Administrator Sean O’Keefe declined to use shuttle to service Hubble*
  - *National Academy of Sciences recommended that the Hubble repair mission proceed*
  - *Administrator Dr. Mike Griffin has decided to wait and see*
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# *Earth Observations*

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# *The Successes of Tropical Rainfall Measuring Mission*

- *Joint U.S.-Japan Project*
- *Scientific, technology goals:*
  - *Test new or upgraded technologies*
    - *Precipitation radar (PR—Japan)*
    - *TRMM microwave imager (TMI—U.S.)*
  - *Collect detailed data on tropical precipitation through several yearly cycles, especially tropical cyclones*
- *Launched in 199\_ on Japanese HII launcher*

# *TRMM Both a Scientific and Operational Success*

- *Proved the value of the precipitation measurements*
  - *Science*
    - *Characterize the internal details of the cyclone structure*
  - *Operations*
    - *Tropical cyclones—much better predictions of the cyclone track*
    - *Enhanced ability to predict rainfall over a region (flood warnings)*

# *NASA's Dilemma*

- *TRMM has outlived its expected mission life by \_\_\_ years*
- *TRMM continues to work well, but...*
  - *Nearing end of time it can be brought back in guided trajectory*
  - *Fuel will run out this \_\_\_\_\_*
- *If exhausts fuel, it could fall in a populated area*
  - *Risk of loss of human life or property damage small, but not zero*
  - *Chance of one in \_\_\_\_\_*
- *Costs ~\$4 million yearly to operate \_\_\_\_\_*

# *NRC Committee*

- Detailed scientific accomplishments
- Enumerated operational benefits
- Concluded: