



NASA Earth Science Division Overview of FY11 Budget and Plans

**Michael H. Freilich
Director, Earth Science Division
Science Mission Directorate**

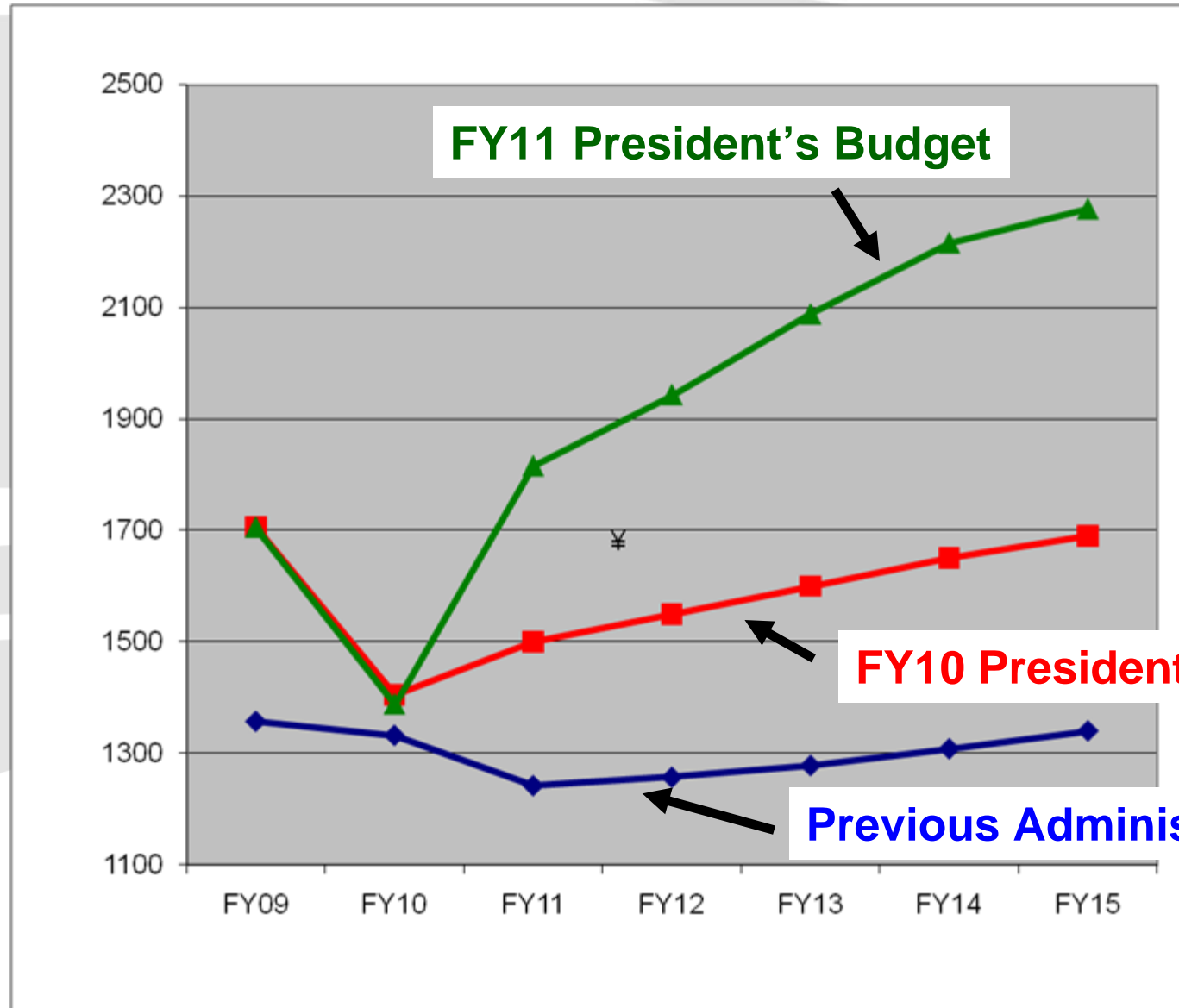
NASA Headquarters

April 14, 2010

NASA Earth Science Division BUDGET MARKS: FY11 Submit



BUDGET (\$M)



President's FY11 NASA Budget Request: Earth Science Plan

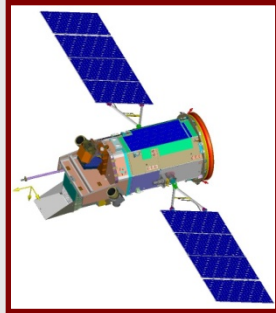


- **All Foundational missions launched by mid-CY2013**
(Glory, Aquarius, NPP, LDCM, GPM)
- **Continues existing balanced program (non-flight as well as flight)**
- **Enables OCO-2 development and launch by 2/2013**
- **Accelerates selected Decadal Survey systematic missions**
 - **Launches all 4 Tier-1 missions between 2014 and 2017**
 - SMAP: 11/2014; ICESAT-2: 10/2015 DESDynI*: 2017;
CLARREO-1*: 2017
- **Expands and accelerates Venture-class competitive, PI-led program**
 - **ANNUAL solicitations for major flight instruments PLUS every-other-year alternating airborne and small-mission solicitations**
 - **First small-sat selections in 2012**
 - Develops Common Instrument Interface, encouraging flight on ISS, international partner missions, private/commercial missions

**Constrained, focused refined mission*

(continued)

Foundational Near-Term Missions



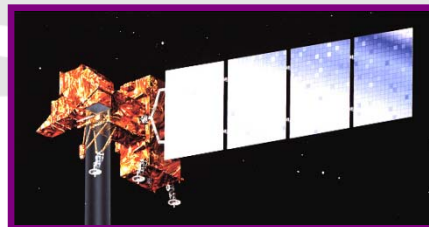
GLORY
11/2010



AQUARIUS
12/2010
w/CONAE



GPM
7/2013, 11/2014
w/JAXA



LDCM w/TIRS
12/2012



NPP w/CERES
NET 9/2011

President's FY11 NASA Budget Request: Earth Science Plan (cont.)



- **Develops selected Climate Continuity Missions**
 - **SAGE-III** refurbishment/hexapod development, ready for **flight to ISS** late CY2013
 - **GRACE-FO**, launch late CY2015 (joint with DLR)
 - **Potential additional measurements possible – identified in concert with USGCRP**
- **Enables Key Non-Flight activities**
 - Multi-year **carbon monitoring pilot** program
 - Expanded Earth Science-specific **technology** program
 - **SERVIR expansion**
 - **Expanded modeling, synthesis, computing capability**
 - **NASA substantial support/participation in National Assessment activities**
 - **Geodetic ground network expansion/modernization**
 - **Expanded NASA support for GLOBE**
- **With US Global Change Research Program, identifies and enables additional selected Tier-2 Decadal Survey missions to be developed for flight in 2019-2020 time frame**

MISSION LAUNCH CADENCE

NASA EARTH SCIENCE FY11 BUDGET



- GLORY (11/2010)
- Aquarius (12/2010) (with CONAE)
- NPP (NET 9/2011) (with Interagency partners)
- LDCM (12/2012) (agency external commitment 6/2013) (with USGS, TIRS capability)
- **OCO-2 (2/2013)**
- GPM Core (7/2013) (with JAXA)
- **SAGE-III on ISS (11/2013) (launch required and not in budget, includes hexapod)**
- **SMAP (11/2014) (date set by LV selection issues, SRB's recommendation for Phase C-D)**
- **ICESAT-2 (10/2015) (date constrained by technical development)**
- **GRACE-C (12/2015) (possibly with DLR)**
- **CLARREO-1 (10/2017) (cost-constrained mission)**
- **DESDynI RADAR+LIDAR (10/2017) (possibly with DLR, partnership not essential)**
- **Additional missions possible for launch prior to 2020, identified in concert with USGCRP**

- **Annual Venture major instrument solicitations starting in FY12**
- **First small-sat Venture mission call in FY12**