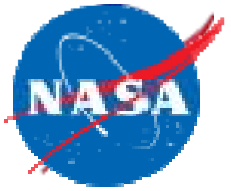
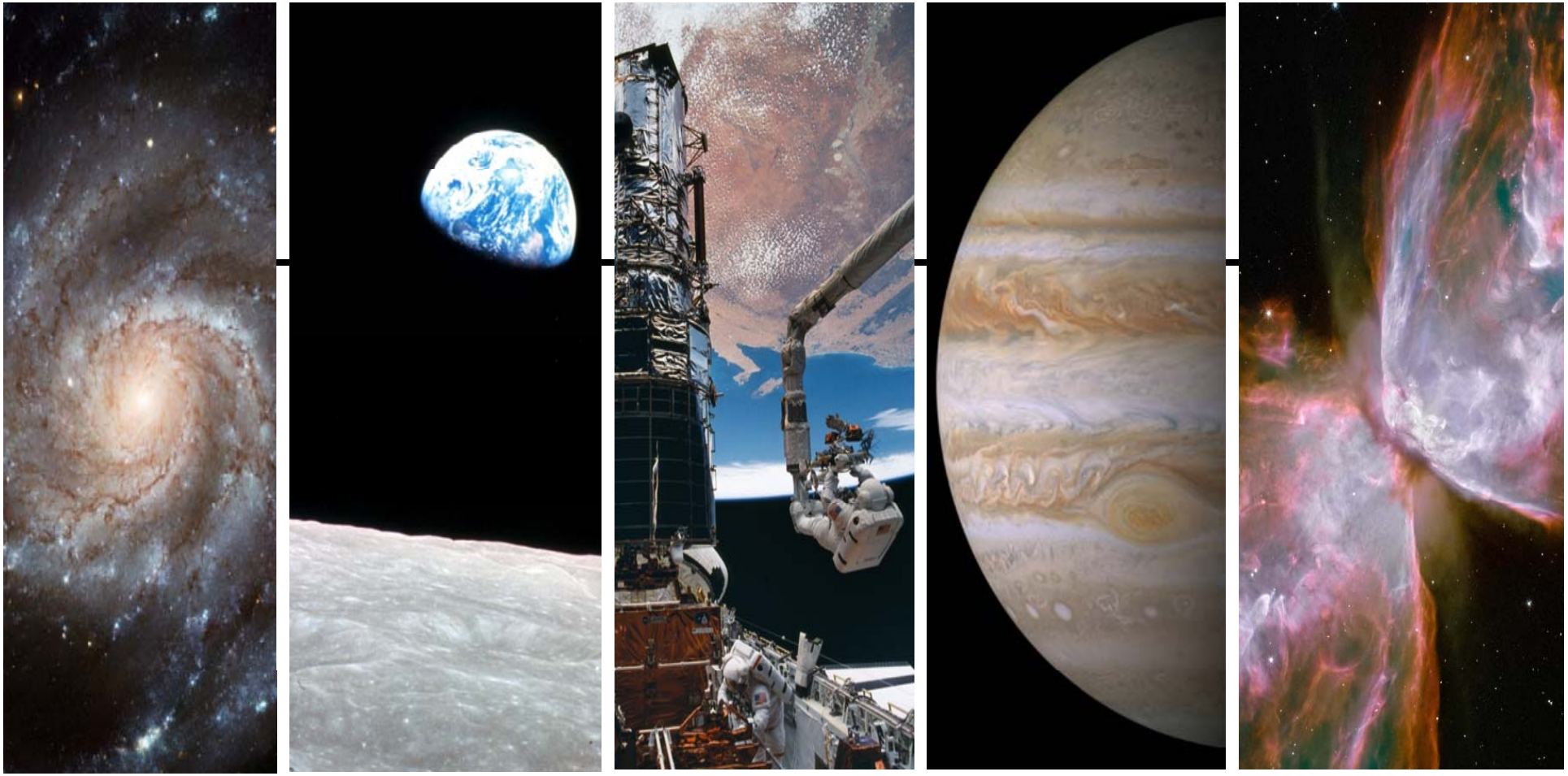
National Aeronautics and Space Administration



NASA Science Briefing to the Space Studies Board

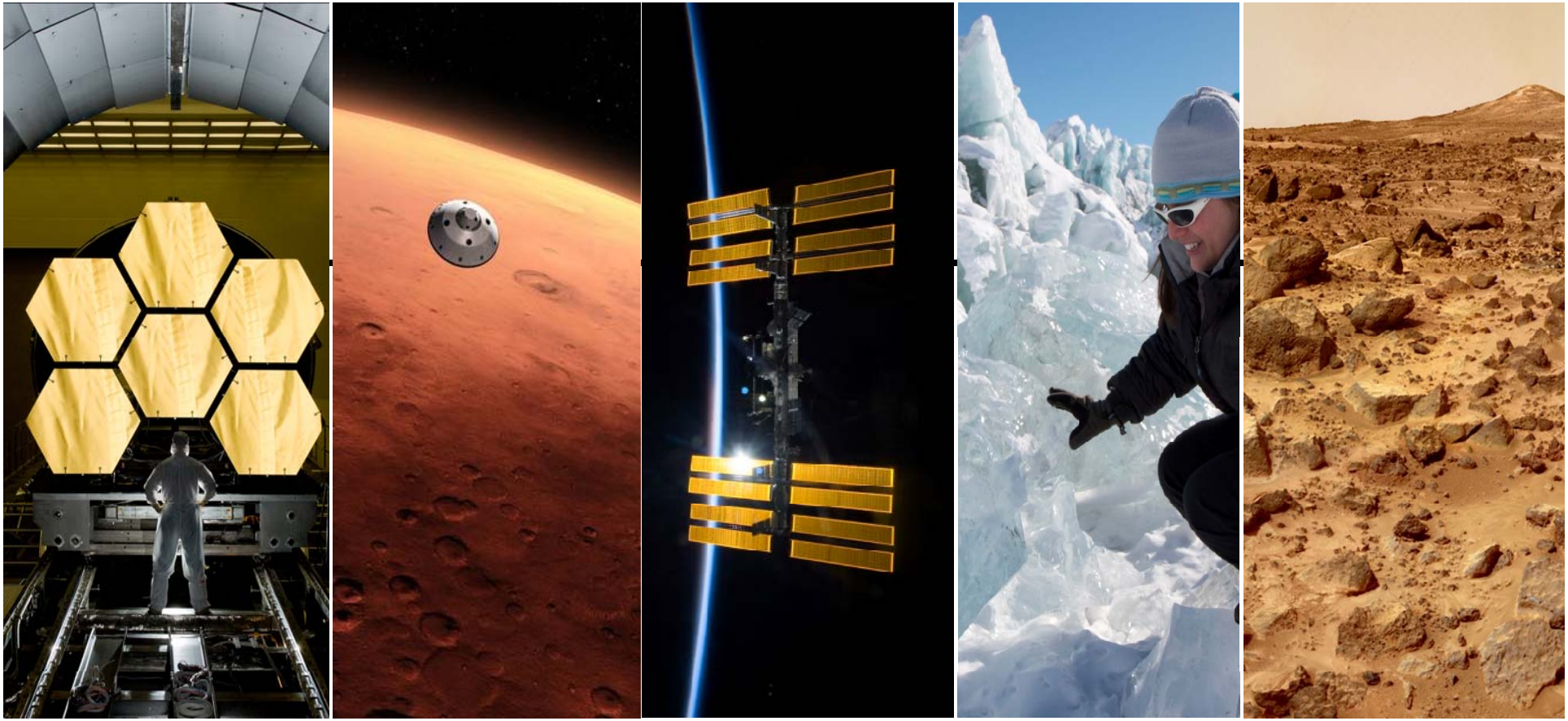
NASA HQ
Office of the Chief Scientist
Dr. Gale Allen

Washington, DC
4 Apr 2012



science to inspire

science to SERVE



science for the future

NASA 2013 Budget Proposal

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FY 2013 PRESIDENT'S BUDGET REQUEST SUMMARY

Budget Authority, dollars in millions	FY 2011 Actual	FY 2012 Estimate	FY 2013 Request	Notional			
				FY 2014	FY 2015	FY 2016	FY 2017
NASA FY 2013	**18,448.0**	**17,770.0**	**17,711.4**	**17,711.4**	**17,711.4**	**17,711.4**	**17,711.4**
Science	**4,919.7**	**5,073.7**	**4,911.2**	**4,914.4**	**4,914.4**	**4,914.4**	**4,914.4**
Earth Science	1,721.9	1,760.5	1,784.8	1,775.6	1,835.5	1,826.2	1,772.8
Planetary Science	1,450.8	1,501.4	1,192.3	1,133.7	1,102.0	1,119.4	1,198.8
Astrophysics	631.1	672.7	659.4	703.0	693.7	708.9	710.2
James Webb Space Telescope	476.8	518.6	627.6	659.1	646.6	621.6	571.1
Heliophysics	639.2	620.5	647.0	643.0	636.7	638.3	661.6
Aeronautics	**533.5**	**569.4**	**551.5**	**551.5**	**551.5**	**551.5**	**551.5**
Space Technology	**456.3**	**573.7**	**699.0**	**699.0**	**699.0**	**699.0**	**699.0**
Exploration	**3,821.2**	**3,712.8**	**3,932.8**	**4,076.5**	**4,076.5**	**4,076.5**	**4,076.5**
Exploration Systems Development	2,982.1	3,007.1	2,769.4	2,913.1	2,913.1	2,913.1	2,913.1
Commercial Spaceflight	606.8	406.0	829.7	829.7	829.7	829.7	829.7
Exploration Research and Development	232.3	299.7	333.7	333.7	333.7	333.7	333.7
Space Operations	**5,146.3**	**4,187.0**	**4,013.2**	**4,035.1**	**4,035.1**	**4,035.1**	**4,035.1**
Space Shuttle	1,592.9	556.2	70.6	0.0	0.0	0.0	0.0
International Space Station	2,713.6	2,829.9	3,007.6	3,177.6	3,170.9	3,212.8	3,234.3
Space and Flight Support (SFS)	839.8	800.9	935.0	857.5	864.2	822.3	800.8
Education	**145.4**	**136.1**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Cross-Agency Support	**2,956.4**	**2,993.9**	**2,847.5**	**2,847.5**	**2,847.5**	**2,847.5**	**2,847.5**
Center Management and Operations	2,189.0	2,204.1	2,093.3	2,093.3	2,093.3	2,093.3	2,093.3
Agency Management and Operations	767.4	789.8	754.2	754.2	754.2	754.2	754.2
Construction and Environmental Compliance and Restoration	**432.9**	**487.0**	**619.2**	**450.4**	**450.4**	**450.4**	**450.4**
Construction of Facilities	373.3	441.3	552.8	359.5	362.9	360.0	360.0
Environmental Compliance and	59.6	45.6	66.4	90.9	87.5	90.4	90.4
Office of Inspector General	**36.3**	**38.3**	**37.0**	**37.0**	**37.0**	**37.0**	**37.0**
NASA FY 2013	**18,448.0**	**17,770.0**	**17,711.4**	**17,711.4**	**17,711.4**	**17,711.4**	**17,711.4**

1. FY 2011 and FY 2012 are consistent with submitted operating plans. However, for comparability purposes, values for Space Technology in those years reflect the funding for Space Technology-related activities executed in Exploration, Space Operations, and Cross Agency Support.

2. FY 2012 Estimates include the impact to appropriation accounts of the $30 million rescission included in the 2012 Appropriation Act, in addition to ~$1 million from other prior appropriations included in the total.

3. Funds associated with outyear estimates for programmatic construction remain in programmatic accounts.

4. FY 2014 – FY 2017 outyear amounts are notional.

NASA 2013 Budget Status

NASA's budget is flat - $17.7B

NASA Priorities

- Space Launch Systems (SLS)
- Multipurpose Crew Vehicle (MPCV)
- James Webb Space Telescope (JWST)
- Commercial Crew Capability

Challenges Remain

- We had to prioritize remaining resources across the agency
- Tough choices had to be made

Status of NASA Planetary Science

Planetary – 21% decrease in budget

- $1.5B in 2012; $1.2B proposed in 2013
- This is still a healthy budget to work with

Adjusting course to try to do things smartly within available resources

Humans will be exploring and science will be conducting scientific missions; going together makes sense

Status of NASA Planetary Science

- Some examples of missions currently in operations phase
  - Juno is on its way to Jupiter
  - Lunar Reconnaissance Orbiter (LRO) – revealing new information about the moon
  - GRAIL (Ebb and Flow) – learning about the lunar interior
  - Messenger - conducting the first orbital study of the innermost planet Mercury
  - New Horizons - halfway between Earth and Pluto, on approach flight past the icy planet in July 2015
  - Dawn - has provided details about Vesta, which has one of the largest mountains in the solar system; on to Ceres
  - MSL (Curiosity) – on its way to Mars to search for building blocks of life

Status of NASA Planetary Science

Planetary –

- Some examples of missions in formulation and implementation phases
  - MAVEN is launching in 2013 (devoted to studying Martian atmosphere)
  - LADEE is launching in 2013 (will gather detailed information about conditions near the surface and environmental influences on lunar dust)
  - OSIRIS Rex is launching in 2016 for an asteroid sample return (asteroid 1999 RQ36)

Science and Human Space Flight

- Moving forward with objectives in both areas
- In Science Directorate, science is the primary endeavor
- The Space Launch System (SLS) 70 metric ton launch capability is a platform for enabling science opportunities
- The Agency and the nation benefit when we consider a broad group perspective vs individual requirements

Human Exploration and Operations Mission Directorate

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

FY 2013 PRESIDENT'S BUDGET REQUEST SUMMARY

Budget Authority, dollars in millions	FY 2011 Actual	FY 2012 Estimate	FY 2013 Request	Notional FY 2014	Notional FY 2015	Notional FY 2016	Notional FY 2017
Exploration Research and Development	**232.3**	**299.7**	**333.7**	**333.7**	**333.7**	**333.7**	**333.7**
Human Research Program	154.7	157.7	164.7	164.7	164.7	164.7	164.7
Human Research Program	154.7	157.7	164.7	164.7	164.7	164.7	164.7
Advanced Exploration Systems	77.6	142.0	169.0	169.0	169.0	169.0	169.0
Advanced Exploration Systems	77.6	142.0	169.0	169.0	169.0	169.0	169.0
Space Operations	**5,146.3**	**4,187.0**	**4,013.2**	**4,035.1**	**4,035.1**	**4,035.1**	**4,035.1**
Space Shuttle	**1,592.9**	**556.2**	**70.6**	**0.0**	**0.0**	**0.0**	**0.0**
Space Shuttle Program	1,592.9	556.2	70.6	0.0	0.0	0.0	0.0
SPOC Pension Liability	0.0	470.0	0.0	0.0	0.0	0.0	0.0
Program Integration	618.6	19.4	31.9	0.0	0.0	0.0	0.0
Flight and Ground Operations	502.4	40.0	24.9	0.0	0.0	0.0	0.0
Flight Hardware	471.9	26.8	13.8	0.0	0.0	0.0	0.0
International Space Station	**2,713.6**	**2,829.9**	**3,007.6**	**3,177.6**	**3,170.9**	**3,212.8**	**3,234.3**
International Space Station Program	2,713.6	2,829.9	3,007.6	3,177.6	3,170.9	3,212.8	3,234.3
ISS Systems Operations and Maintenance	1,681.1	1,418.7	1,493.5	1,354.4	1,200.1	1,170.0	1,077.8
ISS Research	175.7	225.5	229.3	227.4	231.3	238.3	241.7
ISS Crew and Cargo Transportation	856.8	1,185.7	1,284.8	1,595.8	1,739.6	1,804.5	1,914.8
Space and Flight Support	**839.8**	**800.9**	**935.0**	**857.5**	**864.2**	**822.3**	**800.8**
21st Century Space Launch Complex	142.8	123.5	41.1	47.0	47.0	47.0	47.0
21st Century Space Launch Complex	142.8	123.5	41.1	47.0	47.0	47.0	47.0
Space Communications and Navigation	456.7	445.5	655.6	570.7	577.3	535.4	513.9
Space Communications Networks	347.8	364.2	440.3	423.9	432.9	435.1	437.0
Space Communications Support	92.0	66.0	78.2	79.5	71.5	71.8	74.3
TDRS Replenishment	16.9	15.2	137.1	67.2	73.0	28.6	2.6
Human Space Flight Operations	112.8	107.3	111.1	111.1	111.1	111.1	111.1
Human Space Flight Operations	112.8	107.3	111.1	111.1	111.1	111.1	111.1
Launch Services	83.3	81.0	81.2	82.8	82.8	82.8	82.8
Launch Services	83.3	81.0	81.2	82.8	82.8	82.8	82.8
Rocket Propulsion Test	44.2	43.6	45.9	45.9	45.9	45.9	45.9
Rocket Propulsion Testing	44.2	43.6	45.9	45.9	45.9	45.9	45.9
Education	**145.4**	**136.1**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Education	**145.4**	**136.1**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Aerospace Research and Career Development	70.4	56.1	33.0	33.0	33.0	33.0	33.0
NASA Space Grant	45.5	38.9	24.0	24.0	24.0	24.0	24.0
EPSCoR	24.9	17.3	9.0	9.0	9.0	9.0	9.0
STEM Education and Accountability	75.0	80.0	67.0	67.0	67.0	67.0	67.0
Minority University Research Education Program	28.5	30.0	30.0	30.0	30.0	30.0	30.0
STEM Education and Accountability Projects	46.5	50.0	37.0	37.0	37.0	37.0	37.0
Cross-Agency Support	**2,956.4**	**2,993.9**	**2,847.5**	**2,847.5**	**2,847.5**	**2,847.5**	**2,847.5**
Center Management and Operations	**2,189.0**	**2,204.1**	**2,093.3**	**2,093.3**	**2,093.3**	**2,093.3**	**2,093.3**
Center Management and Operations	2,189.0	2,204.1	2,093.3	2,093.3	2,093.3	2,093.3	2,093.3
Center Institutional Capabilities	1,710.8	1,703.4	1,628.5	1,623.6	1,617.0	1,606.7	1,594.2
Center Programmatic Capabilities	478.1	500.7	464.8	469.7	476.3	486.6	499.1
Agency Management and Operations	**767.4**	**789.8**	**754.2**	**754.2**	**754.2**	**754.2**	**754.2**
Agency Management	401.9	403.2	391.8	391.8	391.8	391.8	391.8
Agency Management	401.9	403.2	391.8	391.8	391.8	391.8	391.8
Safety and Mission Success	191.2	198.2	182.4	182.4	182.4	182.4	182.4
Safety and Mission Assurance	48.1	49.4	47.8	47.8	47.8	47.8	47.8
Chief Engineer	99.2	105.2	98.6	98.6	98.6	98.6	98.6
Chief Health and Medical Officer	4.0	4.5	4.3	4.3	4.3	4.3	4.3
Independent Verification and Validation	39.9	39.1	31.7	31.7	31.7	31.7	31.7
Agency IT Services	145.0	159.1	152.0	152.0	152.0	152.0	152.0
IT Management	15.0	14.6	10.5	10.5	10.5	10.5	10.5
Applications	75.3	67.8	67.8	67.8	67.8	67.8	67.8
Infrastructure	54.7	76.6	73.7	73.7	73.7	73.7	73.7
Strategic Capabilities Assets Program	29.4	29.3	28.0	28.0	28.0	28.0	28.0
Strategic Capabilities Assets Program	29.4	29.3	28.0	28.0	28.0	28.0	28.0

International Space Station

ISS Research Funding

- **Research budget augmented to fund additional science grants on ISS**
- **NPO/CASIS continues to be funded at $15M annually**

			Notional			
RY $ in Millions*	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
Total ISS Research FY 2012 President's Budget	221.1	210.7	213.2	221.1	223.5	
Augment ISS Research Grants and other Adjustments	4.3	18.6	14.3	10.2	14.8	
Add FY 2017						241.7
FY 2013 President's Budget - Research (includes NPO)	225.5	229.3	227.4	231.3	238.3	241.7
Biological & Physical Research	58.3	60.3	56.8	58.1	60.7	60.4
Non-Profit Organization (NPO)	15.0	15.0	15.0	15.0	15.0	15.0
Multi-User System Support (MUSS) (Including Enabling)**	152.1	154.0	155.6	158.2	162.6	166.3

* Budget in Full Cost (includes Labor)

** MUSS is the infrastructure required to support Research

HRP	**157.7**	**164.7**

Life and Microgravity Science

- Budgets still distributed under multiple wbs lines
- Decadal has been addressed; implementation plan to be completed at NASA workshop in May
- Program Project Budget Execution (PPBE) 14 utilizing decadal product to ensure alignment
- IPA for Space Life and Physical Sciences Research and Applications Division selected; participating in PPBE 14
- Establishing a life and microgravity science advisory subcommittee in Human Exploration and Operations Mission Directorate


NASA