

Planetary Science Update

David Schurr
Deputy Director Planetary Science
July 23, 2014

Outline

- Planetary upcoming mission events
- Recent accomplishments
- Use of Astrophysics Telescopes
- R&A status



Planetary Science Missions Events as of July 15, 2014

2014

July – *Mars 2020* Rover instrument selection announcement

August 6 – 2nd Year Anniversary of *Curiosity* Landing on Mars

Fall - *Curiosity* arrives at Mt. Sharp

September 21 - *MAVEN* inserted in Mars orbit

October 19 – Comet Siding Spring encounters Mars

November 11 – ESA's *Rosetta* mission lands on Comet Churyumov–Gerasimenko

2015

March - *MESSENGER* spacecraft impacts Mercury

Late March – *Dawn* inserted into orbit at dwarf planet Ceres

April - Europa instrument Step 1 selection

June - Discovery 2014 Step 1 selection

July 14 – *New Horizons* flies through the Pluto system

2016

March – Launch of Mars missions *InSight* and ESA's *ExoMars Trace Gas Orbiter*

April - Europa instrument step 2 selection

July - *Juno* inserted in Jupiter orbit

July – ESA's Bepi Colombo launch to Mercury

August - Discovery 2014 Step 2 selection

September - *InSight* Mars landing

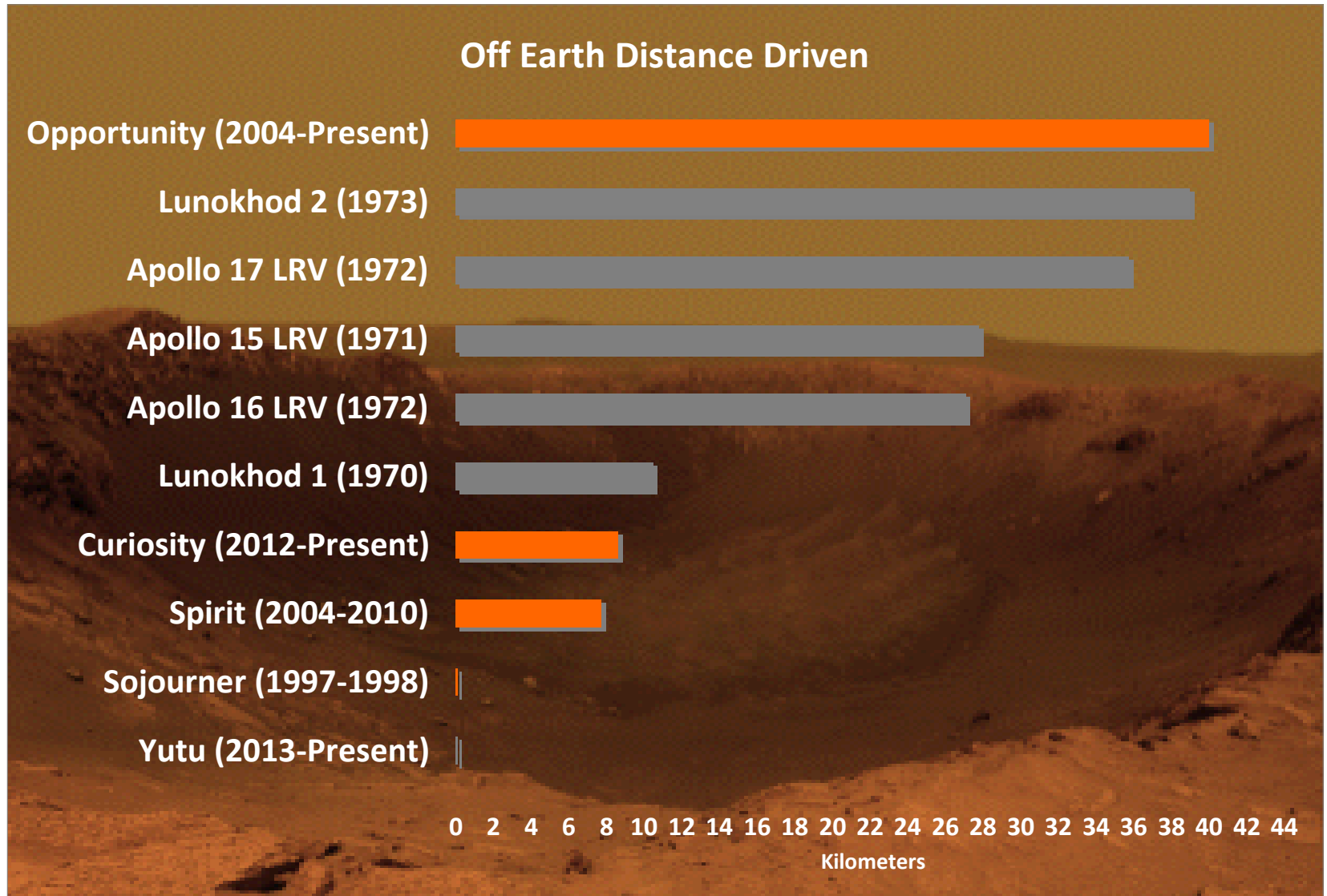
September – Launch of Asteroid mission *OSIRIS – REx*

September - *Cassini* begins to orbit between Saturn's rings & planet

Recent Accomplishments

- Release of *draft* Discovery AO – July 2, 2014
 - Comments were due July 16, 2014
 - AO release planned by first week in October
 - Step-1 proposals will be due late in CY2014.
- Release of Europa Instrument AO – July 15, 2014
 - Proposals due October 17, 2014
- 2014 Senior Review completed
 - includes Cassini

Off-Earth Odometry Records



Use of Astrophysics Telescopes

Astrophysics Division telescopes

- HST surveys approved:
 - Looking for a NH KBO & Europa plumes
 - More planetary proposals to HST are encouraged!
- Spitzer operations extended for the next two yrs
 - Astrophysics and the Planetary Science Divisions have requested observing time commitments for FY15
- Spitzer & Keck solicit high priority investigations of solar system objects, including monitoring campaigns
 - Planetary science proposals reviewed, and selected in accordance with current Spitzer and Keck proposal practice
 - PSD strongly encourages you to submit Planetary proposals for time

Spitzer Warm Mission- Solar System Programs

Near Earth Objects – 600 hours

- The Warm Spitzer NEO Survey: Exploring the history of the inner Solar System and near Earth space (500 hours – an Exploration Science Program)
- 3552 Don Quixote (asteroid found to be a comet)
- Pilot program to use Spitzer to search for NEOs
- Eclipsing near earth asteroid 1996 FG3

Comets – 105 hours

- Tempel 1, Tempel 2, Encke, Gunn, Hartley 2, Wild 2, Wild 4, Schwassmann-Wachmann1, SW3, C/2009 KS McNaught, P2010 A1 LINEAR, C/2012 K5 LINEAR, C/2012 K1 PANSTARRS
- Sungrazing Comet C/2011 W3 Lovejoy
- C/2012 S1 (ISON)

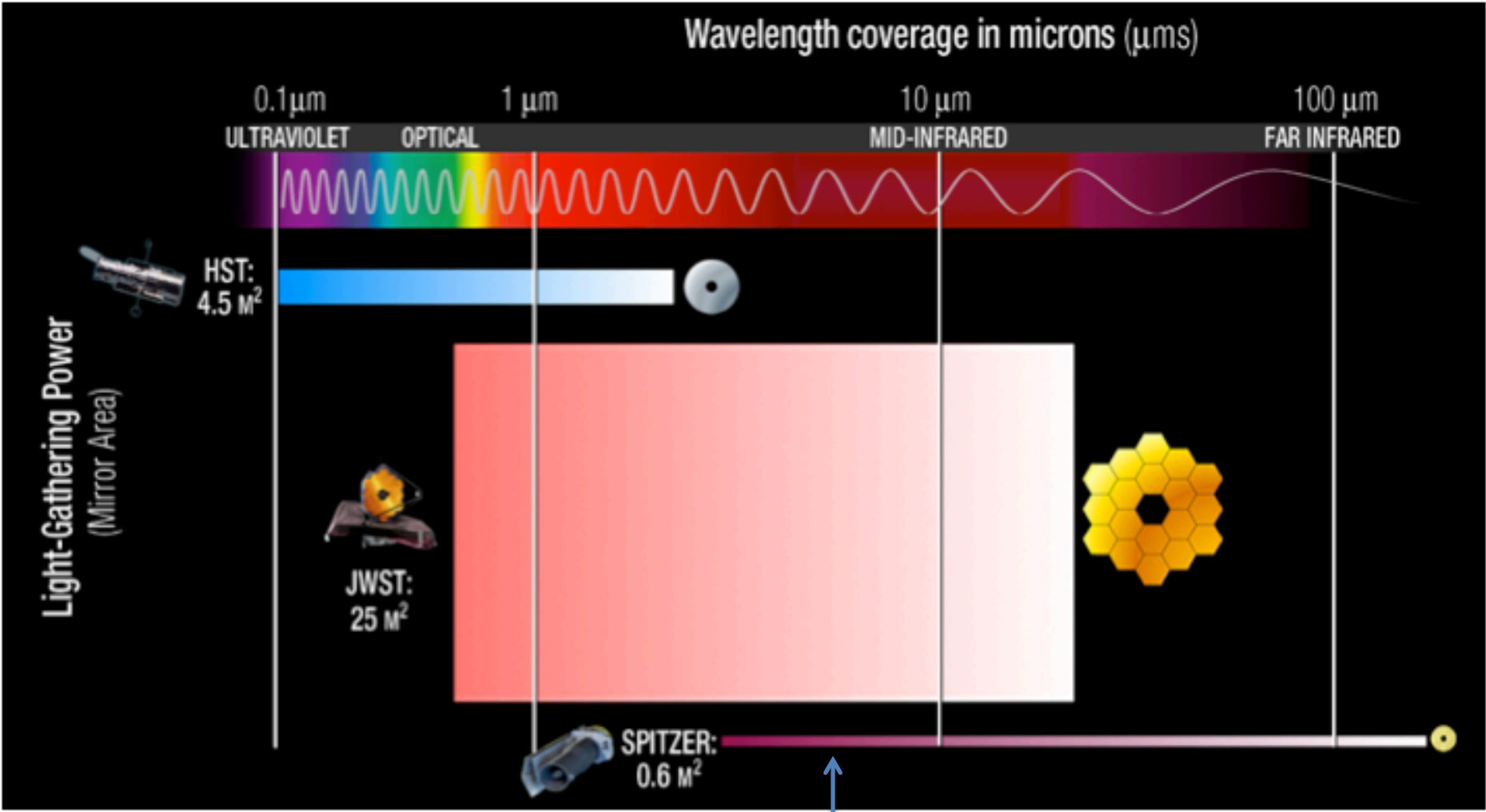
Asteroids and KBOs – 377 hours

- Many KBOs, KBO binaries, Centaurs
- Eclipsing binary asteroid 2000 DP107

Mission Support – 140 hours

- OSIRIS-REx targets, Hayabusa 2 (1999 JU3)
- The primary target (2009 BD) of the Asteroid Retrieval Mission (**Cycle 10**)
- Study Of Pluto In Support Of the NASA New Horizons Mission (**Cycle 10**)
- Siding Spring (C/2013 A1) (**Cycle 10**) – potential impact to orbiting spacecraft at Mars when the comet passes close to the planet in Oct 2014

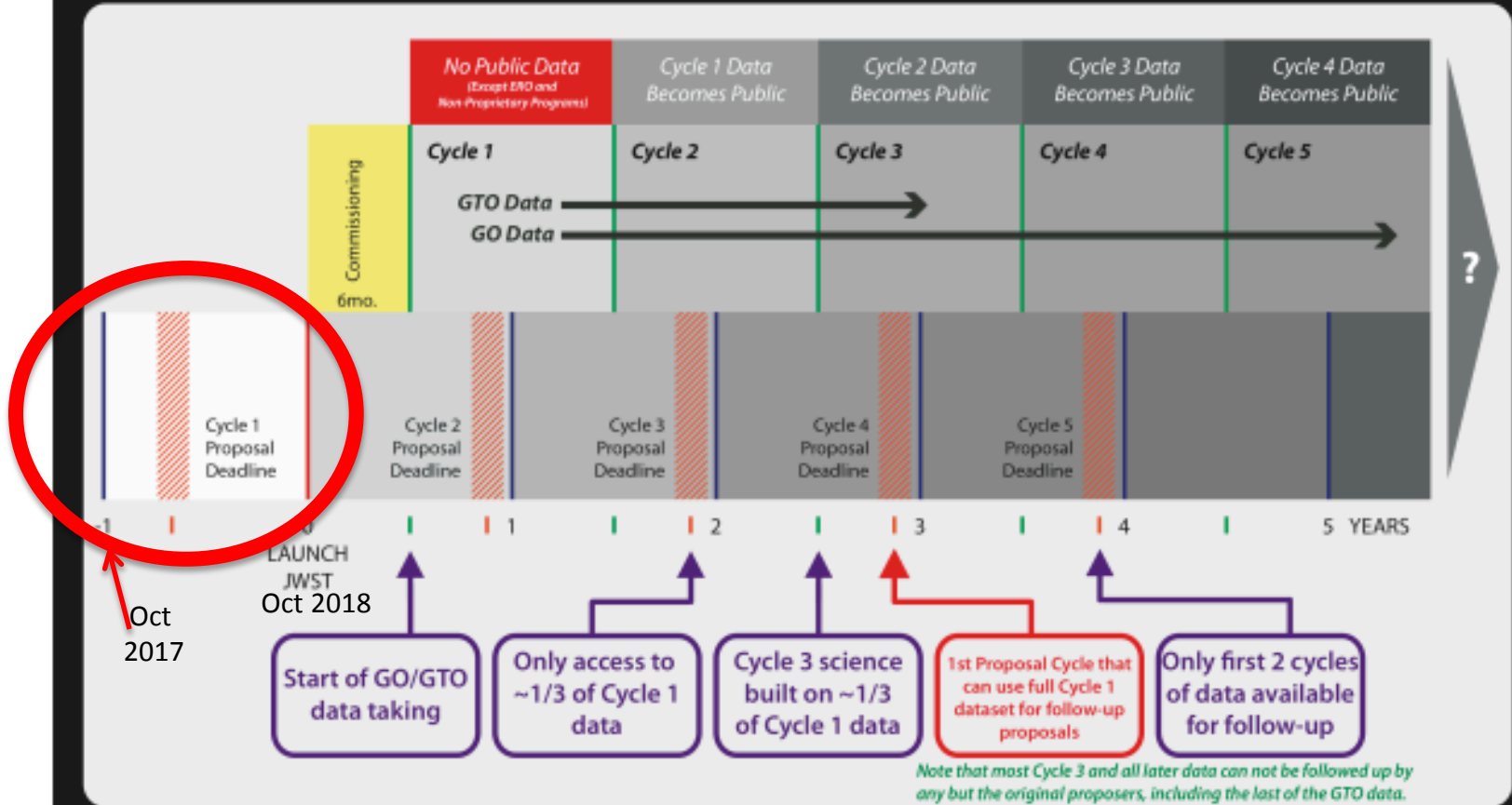
Astrophysics Telescopes



Spitzer Warm Mission Cutoff

JWST Science Data Availability Relative to Proposal Deadlines

(for required 5yr science mission)



GDI – 11/04/09 JSTAC
 (with 7-8 months between proposal deadline and start of science observations)

R&A Update

PSD R&A Program List

Program Name	Step-1 Due Date	Step-2 Due Date
Emerging Worlds	03/31/2014	06/04/2014
Solar System Workings	05/23/2014	07/25/2014
Habitable Worlds	11/24/2014	01/23/2014
Exobiology	04/14/2014	06/03/2014
Solar System Obs.	04/14/2014	06/06/2014
PDART	07/17/2014	09/17/2014
Lunar Data Analysis	08/29/2014	10/24/2014
Mars Data Analysis	08/04/2014	10/03/2014
Cassini Data Analysis	07/28/2014	09/26/2014
Discovery Data Analysis	07/21/2014	09/19/2014
LARS	04/28/2014	06/27/2014
Exoplanets	03/31/2014	05/23/2014

Due date has passed

Step-1 Proposal Decisions

- The time-to-notify after the Step-1 deadline is consistent across the Core programs
- The dominant factor is not the number of proposals, but this year's discussion between program caucuses

Program Name	Submissions	Days to Step-1 Notifications
Emerging Worlds	217	23
Solar System Wkgs.	505	21
Exobiology	189	22
Solar System Obs.	99	23
LARS	29	3
Exoplanets	168	16

Time-to-notification is given as calendar days between the Step-1 deadline and when the majority of the NSPIRES notifications were sent.

Step-1 Proposal Decisions

Program Name	Submissions	Encouraged	Discouraged (w/ redirect)	Discouraged (w/o redirect)
Emerging Worlds	217	195	19	4
Solar System Workings	505	474	31	0
Exobiology	189	177	9	3
Solar System Obs.	99	86	0	13
LARS	29	29	0	0
Exoplanets	168	162	2	4
	1207	1124	61	24

- EW redirects were primarily to SSW and Exoplanets
- SSW redirects were to PDART, EW, and the Data Analysis Programs

Summary

Moving Forward for Outer Planets

- Concentrate on Outer Planets decadal priorities:
 - Cassini extended through FY 2017 (pending senior review)
 - Europa – our next Outer Planets priority
 - Getting ready for the next decadal survey: how do we make missions cheaper (i.e., Uranus and Enceladus)?; are there other targets of importance to consider (e.g., Titan, Triton)?; what research/technology is needed?
- Establish stronger connections with current Astro assets
 - HST – do we need to monitor outer planet atms? And if so how do we make that compelling? How do we sell this?
 - Outer planets monitoring campaigns for Spitzer and Keck
 - What can we do NOW to get ready for JWST?
 - How do we create a stronger tie-in with Exoplanets?

Back-up: Spitzer Visibility Opportunities For the Outer Planets

Jupiter

7 Feb - 19 Mar 2015; 9 Jul - 18 Aug 2015; 18 Mar - 27 Apr 2016; 17 Aug - 27 Sep 2016

Saturn

1 Oct - 6 Nov 2014; 19 May - 26 Jun 2015; 22 Oct - 1 Dec 2015; 7 Jun - 15 Jul 2015; 11 Nov - 21 Dec 2016

Uranus

21 Sep - 31 Oct 2014; 2 Mar - 10 Apr 2015; 4 Oct - 12 Nov 2015; 13 Mar - 21 Apr 2016; 15 Oct - 24 Nov 2016

Neptune

11 Aug - 19 Sep 2014; 21 Jan - 1 Mar 2015; 22 Aug - 30 Sep 2015; 1 Feb - 11 Mar 2016; 31 Aug - 9 Oct 2016

Pluto

thru 25 Jul 2014; 26 Nov 2014 - 4 Jan 2015; 27 Jun - 4 Aug 2015; 6 Dec 2015 - 14 Jan 2016; 6 Jul - 14 Aug 2016