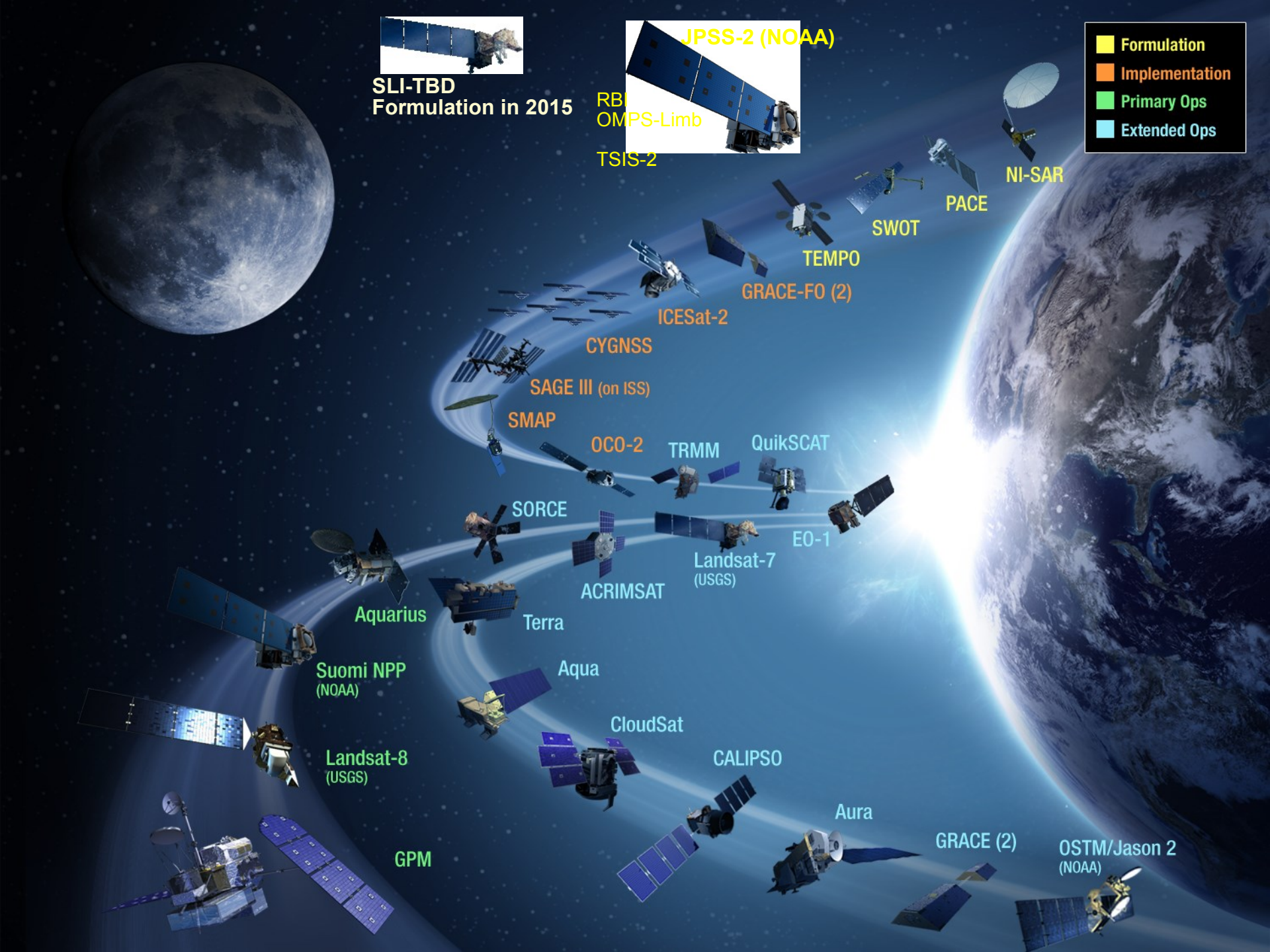




Western States Water Council Roundtable and Council Meeting



NASA Missions and Water Resource Program
Michael Freilich, Director – Earth Science Division - NASA



SLI-TBD
Formulation in 2015



JPSS-2 (NOAA)
RBI
OMPS-Limb
TSIS-2

- Formulation
- Implementation
- Primary Ops
- Extended Ops

NI-SAR

PACE

SWOT

TEMPO

GRACE-FO (2)

ICESat-2

CYGNSS

SAGE III (on ISS)

SMAP

OCO-2

TRMM

QuikSCAT

SORCE

EO-1

Landsat-7 (USGS)

ACRIMSAT

Aquarius

Terra

Suomi NPP (NOAA)

Aqua

Landsat-8 (USGS)

CloudSat

CALIPSO

GPM

Aura

GRACE (2)

OSTM/Jason 2 (NOAA)

★ Contributing to Water Cycle Studies



SLI-TBD
Formulation in 2015



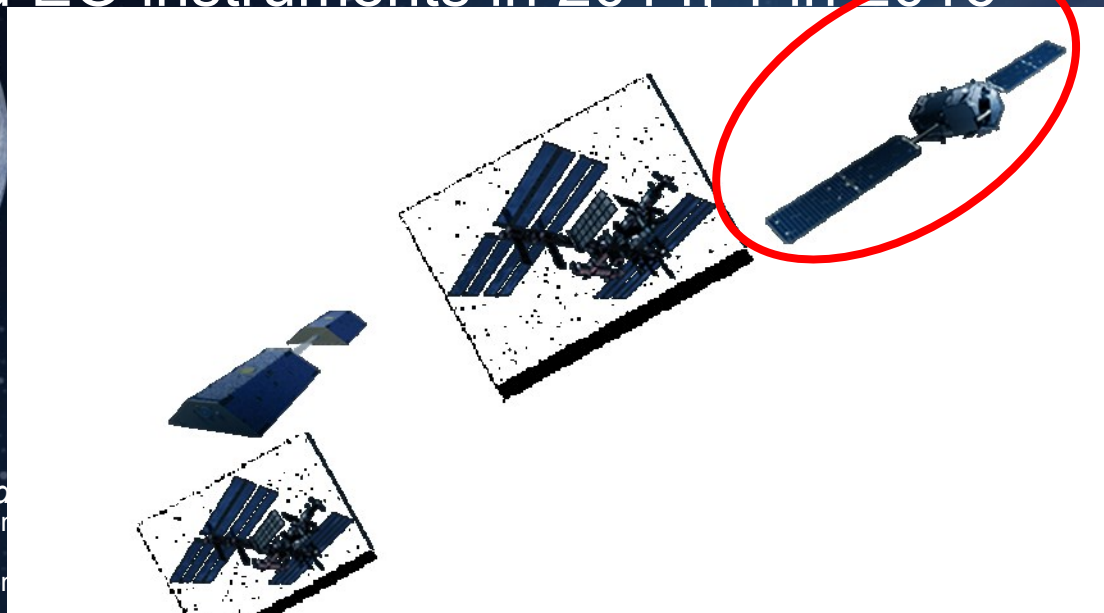
JPSS-2 (NOAA)
RBI
OMPS-Limb
TSIS-2

- Formulation
- Implementation
- Primary Ops
- Extended Ops



3 ESD-developed EO missions launch in CY 2014
2 ISS-developed EO instruments in 2014, 1 in 2016
9 more ESD EO

Rapido
(or
(or



(NOTIONAL)
CLARREO
NET 2023

NI-SAR
~2020/2021

PACE
~2020

EVM-

EVM-1, 2016



GPM



Landsat 8 Launch – Feb. 11, 2013

- ◆ **Landsat Data Continuity Mission (LDCM) developed through an interagency partnership between NASA and the U.S. Geological Survey (USGS)/Dept. of the Interior**
- ◆ **LDCM launched Feb. 11, 2013 from Vandenberg Air Force Base (VAFB), California – ATLAS V 401 launch vehicle**
- ◆ **On-orbit commissioning completed May 30, 2013**
 - USGS assumed lead responsibility for mission operations
 - Satellite renamed Landsat 8



Landsat 8 Performance Summary

- ◆ **The performance of the Landsat 8 sensors, OLI & TIRS, spacecraft, and ground system exceeds specifications in almost all respects**
 - Landsat 8 collects, and USGS EROS archives, over 500 scenes per day compared to a 400 scene per day requirement
 - By the first anniversary of the launch, USGS EROS distributed 1,332,969 Landsat 8 scenes (Level 1 digital data products)
 - Scenes are typically available within 5 hours of data collection compared to a 24 hour latency requirement
 - Image geometry and cartographic registration exceed specifications
 - The radiometric performance of OLI and TIRS exceeds specifications with one exception
 - ❖ The absolute radiometric uncertainty of TIRS data currently exceeds a 2% requirement due to a stray light issue under investigation
 - Early analyses are demonstrating backward compatibility with the Landsat archive and more accurate land cover mapping results



Land Imaging (2018-2035)

FY14 President's NASA budget featured a new activity for development of a cost-capped, national, sustained Land Imaging Satellite System (with USGS).

NASA/ESD Sustainable Land Imaging report due Aug. 2014.

Basic study tenets for the program

- » *Sustainability*: Provide data products for the long haul within the budget guidance provided (\$120M/year NASA cost).
- » *Continuity*: Continue the long-term Landsat data record; focus is on usable products that define the utility of the data record.
- » *Reliability*: Exhibit a form of functional redundancy.
Data sets should be able to draw on equivalent or "near equivalent" deliverables from different sources to provide the data for the highest priority land imaging data products; loss of a single satellite or instrument on orbit should not cripple the program.



GPM Core Observatory launched at 3:37 A.M. JST on February 28, 2014



The GPM Core Observatory was launched on a JAXA-supplied MHI H-IIA 202 launch vehicle from JAXA's Tanegashima Space Center, on Tanegashima Island, Japan.



The Core Observatory separation from the H-IIA second stage occurred ~16 minutes after launch.