



Jason-3 Information Briefing

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NOAA NESDIS



Mission Overview

Science Measurements

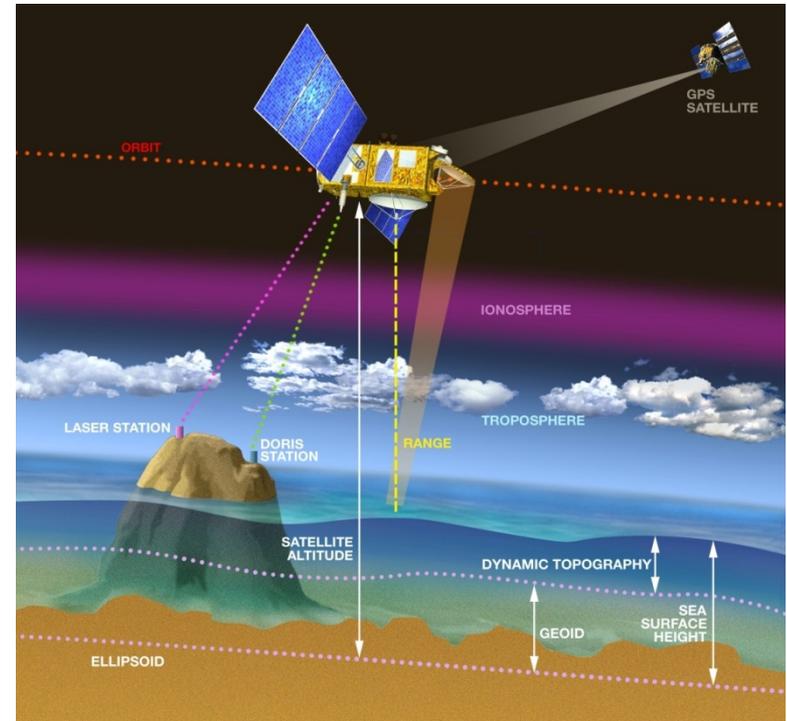
Global sea surface height to an accuracy of ≤ 4 cm every 10 days, for determining ocean circulation, climate change and sea level rise

Mission Objectives

- Operational ocean altimetry mission to enable the continuation of multi-decadal ocean topography measurements achieved through TOPEX/Poseidon, Jason-1 and OSTM/Jason-2
- NOAA and EUMETSAT are lead agencies with CNES and NASA/JPL providing implementation support

Instruments*

- Core Mission:
 - Poseidon-3B Altimeter
 - DORIS (Precise Orbit Determination System)
 - **Advanced Microwave Radiometer (AMR)**
 - **GPS Payload (GPSP)**
 - **Laser Retro-reflector Array (LRA)**
- Passengers (Experiments):
 - JRE (Carmen3 + LPT)



Mission Overview

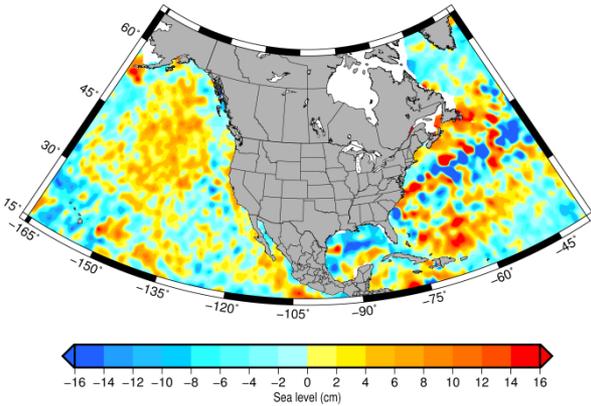
- Launch Date: July 2015 (Re-planned)
- **Launch Vehicle: Falcon-9**
- Proteus Spacecraft Bus provided by CNES
- Mission life of 3 years (goal of 5 years)
- 1336 km Orbit, 66° Inclination

NOAA funded items in BLUE

* Same Requirements, S/C Bus, and orbit as Jason-2. Implementation approach is to maximize recurrence

Jason Altimetry Applications & End Users

Operational Ocean "Weather"- 3-13 Feb 14



- Near real-time operational oceanography: high wave warnings, search & rescue, hurricane intensity forecasting
- Season/Inter-annual: El Niño/La Niña forecasting
- Climate: continuity of 20+ year Jason sea level rise record

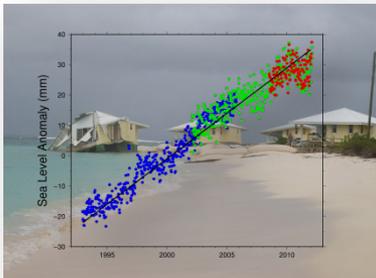
High Wave Forecasting



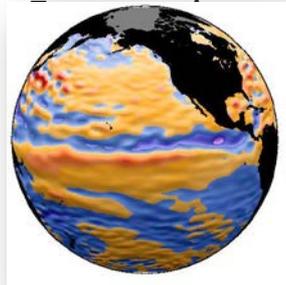
Coast Guard Search & Rescue



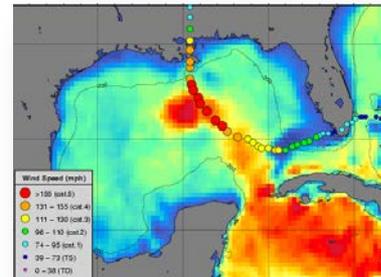
Global & Regional Sea Level Rise



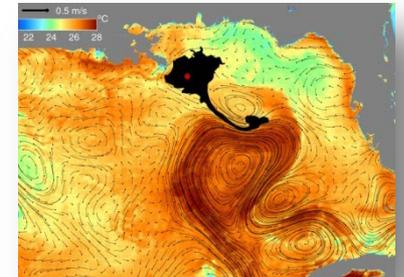
El Niño/La Niña



Hurricane Intensity Forecasting



Oil Spill Monitoring



Jason-3 Mission Roles

- **NOAA activities:**

- **Project Management**
- **Ground System & Operations ***



- Satellite Operations Control Center (SOCC)
- CDA Stations (2)
- NRT product processing
- All product distribution
- All archiving
- Ground network
- Satellite operations after handover

- **User interface**

* Modernizing the existing NOAA Jason-2 Ground Segment to serve both Jason-2 and Jason-3 satellites

- **NASA activities: (On Behalf of NOAA)**

- **Project Management**
- **Launch vehicle**
- **Payload**



- Advanced Microwave Radiometer (AMR)
- GPS Receiver (GPSP)
- Laser Retro-reflector Array (LRA)

- **JPL Payload integration and test**
- **Mission Operation support for JPL instruments**

- **EUMETSAT activities:**



- **Project Management**
- **Ground System & Operations**
 - Earth Terminal (1)
 - NRT product processing, archiving and distribution
 - Ground network
- **User interface**

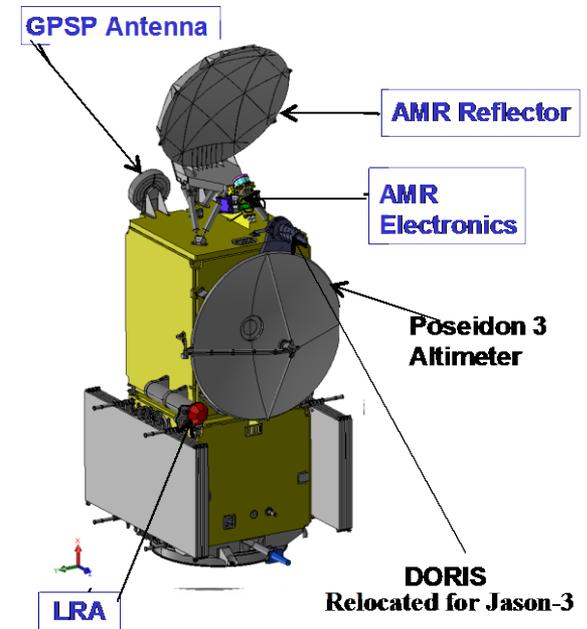
- **CNES activities:**



- **Project Management**
- **Satellite, Proteus bus**
- **Payload (on Behalf of EUMETSAT)**
 - Nadir Altimeter POS3B
 - DORIS
- **Joint Radiation Experiment Payload**
 - CARMEN3 – LPT (Passenger – Experimental)
- **Ground System & Operations**
 - Satellite Control Command Center (CCC)
 - OFL product processing and distribution
 - All archiving
 - Ground network
 - Satellite Operations before handover
 - Navigation, Guidance, Expertise for all mission
- **System integration & test**
- **Mission Operation support for CNES instruments**
- **System Coordination for all mission phases**
- **User interface**

Jason-3 Instruments

Payload	Provided By	Description
Poseidon-3B Altimeter	EUMETSAT	A radar altimeter. The mission's main instrument. Measures sea level, wave heights and wind speed.
Advance Microwave Radiometer (AMR)	NOAA	Measures water vapor content in the atmosphere so that we can determine how it impacts radar signal propagation
GPS Payload receiver (GPSP)	NOAA	Tracking system that uses GPS constellation of satellites to determine exact position of a transmitter. Enhances the Precise Orbit Determination (POD) performance of DORIS and LRA
Laser Reflector Array (LRA)	NOAA	Allows the spacecraft to be tracked with centimeter accuracy by 40 satellite laser ranging stations
Doris Tracking Receiver	EUMETSAT	Provides Precise Orbit Determination (POD). Locates the satellite on orbit in real time
Joint Radiation Experiment (JRE) (Passenger - Experimental)	CNES/JAXA	Includes Carmen-3 (radiation and particle detectors) and Light Particle Telescope (LPT). Used to measure the influence of space radiation on advanced components



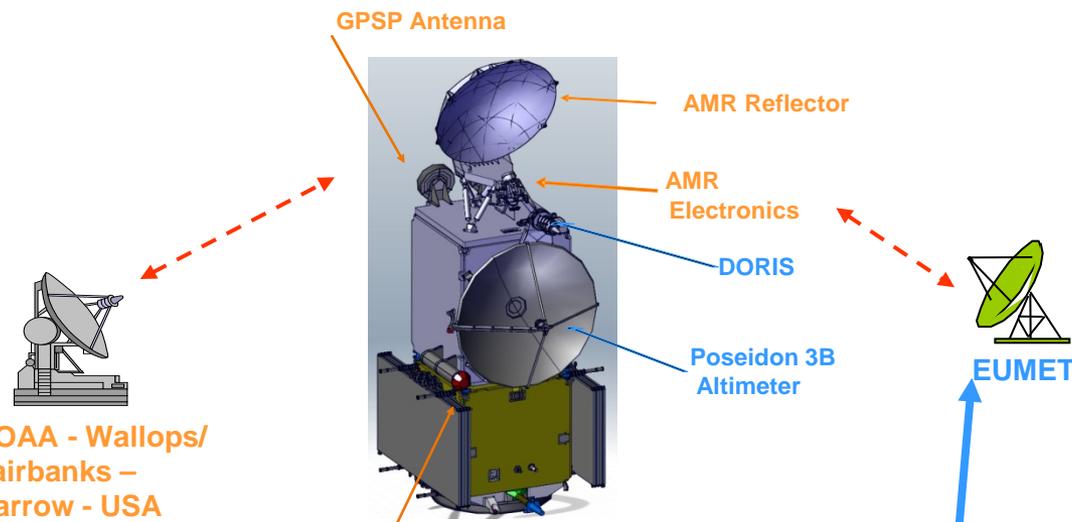
NOAA funded items are in blue

Jason-3 System elements

U.S. Elements
European Elements



Dedicated Launch Vehicle : Falcon9 v 1.1

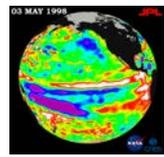


NOAA - Wallops/
Fairbanks -
Barrow - USA

NOAA S/C Operations
(Suitland, MD)



Operational product
processing and Science
Data archive &
Distribution

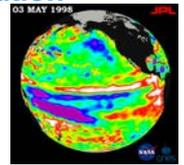


NASA/JPL
NASA Instrument
Ops



EUMETSAT - Usingen, Germany

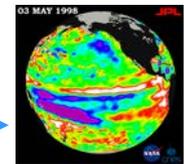
Operational product
processing &
Distribution



EUMETSAT



Science data
processing, archive &
Distribution



CNES

S/C Operations
(Toulouse,
France)



Passengers Ops
and mission
centers
CNES- JAXA

Spacecraft Status

Spacecraft: Jason-3 spacecraft development is complete
Spacecraft is in storage.

- Pre-Ship review May 12, 2015
- Satellite Shipment to the launch site is early June



Launch Vehicle Status

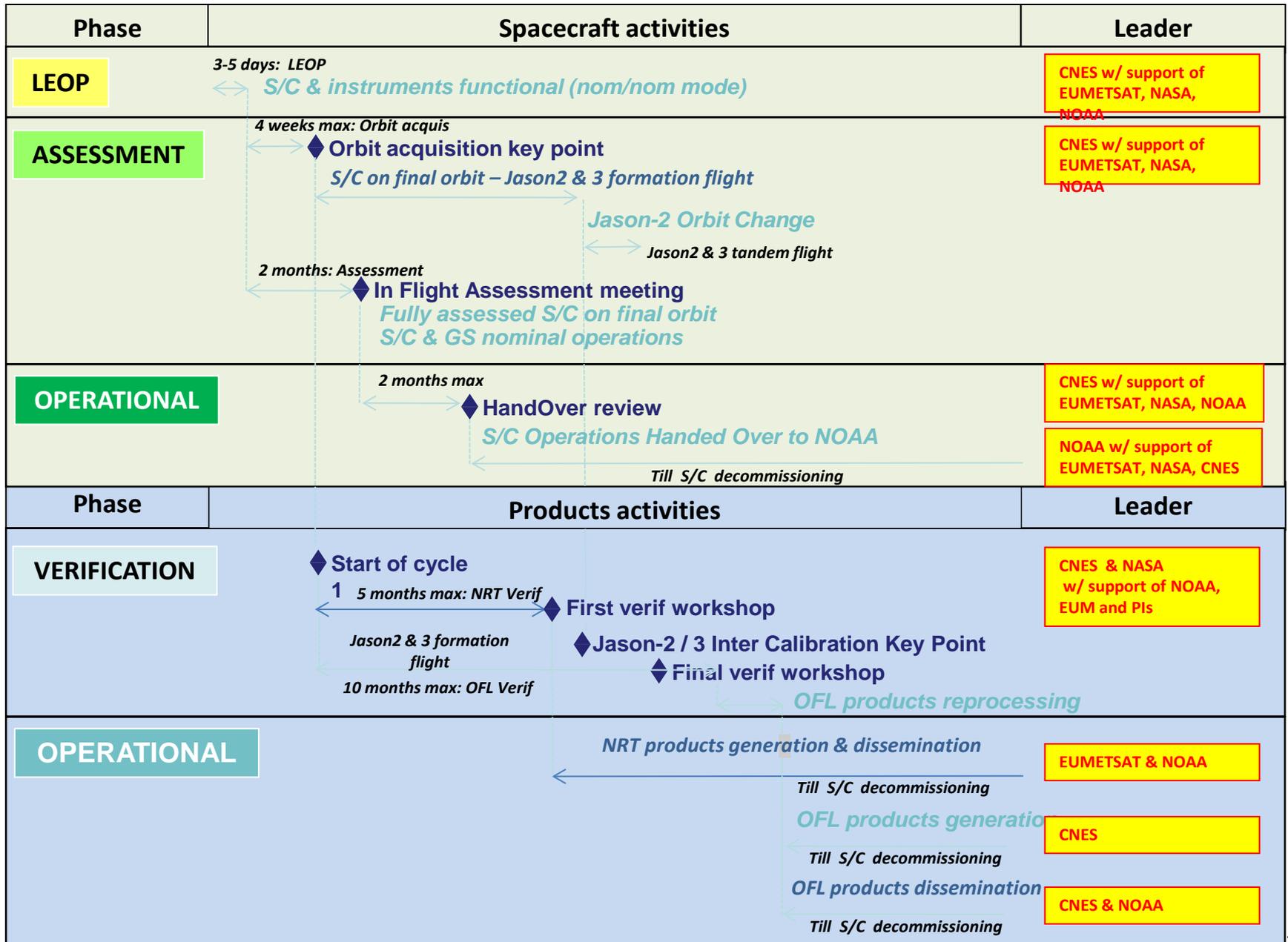
- SpaceX achieved multiple successful launches with the new Falcon-9 Version 1.1
 - Falcon-9 Version 1.1 scheduled to launch the Jason-3 spacecraft from Vandenberg AFB on July 22, 2015



Ground System Status

- CNES, EUMETSAT, NOAA, JPL
 - All 4 partner ground systems are implemented and validated
 - CNES Control Center and Mission Center SSALTO
 - EUMETSAT Processing Center and Usingen2 Earth terminal
 - NOAA Control Center, Stations and Processing Center
 - JPL Instrument Data system (IDS) and Radiometer Calibration system (ARCS)
- Successfully completed all Technical Qualification Testing with all partners
- Continue to conduct Operational Qualification Tests
 - First Launch Dress Rehearsal was completed successfully in March 2015

Mission phases



Summary

- Jason-3 spacecraft development is complete
 - Spacecraft is in storage. Pre-Ship review May 12, 2015
- Ground System Status
 - All ground systems developments and tests are complete
 - Ground System Operational Qualification (QO) will continue through launch
 - First Launch Rehearsal (RG1) for GS was completed successfully in March
- Launch Vehicle Development and Certification continue to be on the critical path
- On target to launch Jason-3 spacecraft on July 22, 2015

Back Up

Acronyms

AMR	Advanced Microwave Radiometer
CDR	Critical Design Review
CLA	Coupled Load Analysis
CLASS	Comprehensive Large-Array Stewardship System
CNES	Centre National d'Etudes Spatiales
DORIS	Doppler Orbitography and Radiopositioning Integrated by Satellite
GDR	Geophysical Data Record
GOWG	Ground Operations Working Group
GPSP	Global Positioning System Package
IGDR	Interim Geophysical Data Record
KDP	Key Decision Points
KSC	Kennedy Space Center
LRA	Laser Retroreflector Assembly
LRD	Launch Readiness Date
LSP	Launch Service Program
LSWG	Loads & Structures Working Group
L/V	Launch Vehicle
MIWG	Mission Integration Working Group
NESDIS	National Environmental Satellite, Data, and Information Service
NODC	National Oceanographic Data Center
OGDR	Operational Geophysical Data Record
PIM	Payload Instrument Module
PSWG	Payload System Working Group
SIR	System Integration Review
SpaceX	Space Technology Corporation