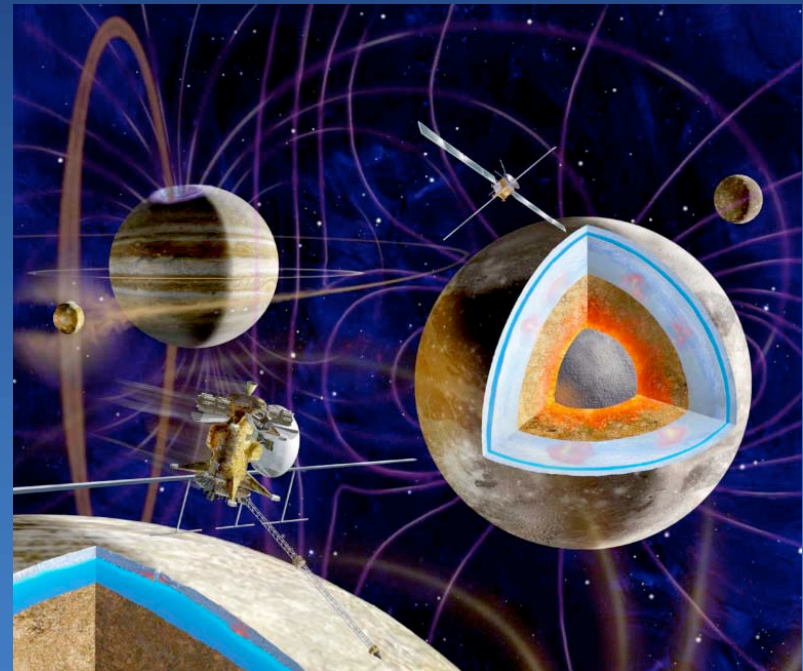


JOINT JUPITER SYSTEM MISSION (a.k.a. *EJSM*)

Science Definition Team Current Activities

- Forging “one mission” science via two (or more) spacecraft
- Science community engagement
- Public engagement
- Getting ready! (Instrument Workshop, AO, etc.)



TWO EJSM ORBITERS = OUTSTANDING SCIENCE

NASA Jupiter-Europa Orbiter + ESA Jupiter-Ganymede Orbiter

EJSM enables understanding Jupiter and icy worlds of “gas giants” from water-poor Io to water-rich Callisto; Ganymede is the bridge between Europa and Callisto

Unique science from concurrent orbiter operation

- **Magnetosphere science: Simultaneous measurements of spatial and temporal variations of different components of the Jovian magnetosphere environment (response of magnetosphere to solar wind shock from two vantage points)**
- **Io volcanism: Simultaneous observations of plumes and interaction with the Io torus; observations of plume dynamics and tracking of active volcanoes from day to night sides**
- **Satellite monitoring: Simultaneous low and high sun imaging for photometric effects; simultaneous observations of the day and night sides**
- **Ganymede magnetosphere investigation: One of only 3 “terrestrial” bodies with an intrinsic magnetic field; testing theories of magnetospheric reconnection in a steady state system; simultaneous monitoring of upstream field and plasma conditions concurrent with Ganymede’s magnetosphere**
- **Jupiter Science: Simultaneous views of atmospheric features at different emission angles to characterize vertical structure uniquely; tracking of atmospheric phenomena from day to night; simultaneous views of ring features at two phase angles**

TWO EJSM ORBITERS = OUTSTANDING SCIENCE

Complementary imaging at 0.5-1.0 km/pixel

	Galileo & Voyager	JEO	JGO	EJSM
<u>Europa</u>	35%	100%	0%	100%
Io	25%	30%	0%	30%
<u>Ganymede</u>	25%	50%	100%	100%
Callisto	30%	85%	100%	100%

Complementary imaging at 100-200 m/pixel

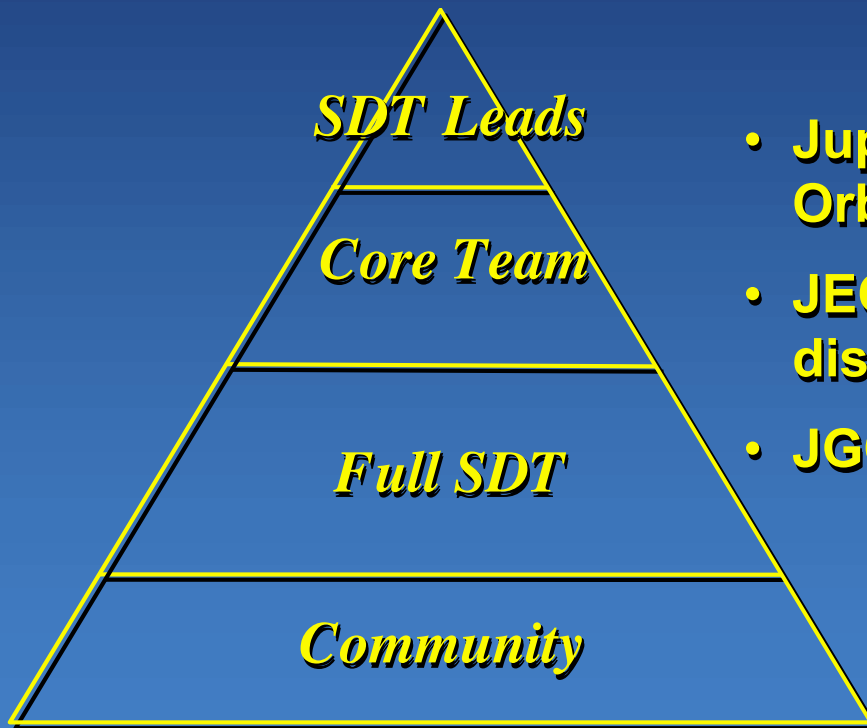
	Galileo & Voyager	JEO	JGO	EJSM
<u>Europa</u>	10%	100%	0%	100%
Io	<1%	20%	0%	20%
<u>Ganymede</u>	5%	50%	100%	100%
Callisto	1%	75%	50-75%	Up to 100%

- **Complete global (0.5-1.0 km) coverage of Europa, Ganymede & Callisto**
- **Regional (100-200 m) satellite coverage at least x10 better than Galileo and Voyager**
- **High spatial (5-10 km) and temporal (2-3 years) coverage of Jupiter for selected targets and rings**

(Results depend on actual tour designs for JEO and JGO)

EJSM SCIENCE PLAN

Building the Pyramid



- **Jupiter Europa Orbiter-Jupiter Ganymede Orbiter tour design(s)**
- **JEO Level 1 science requirements (initial discussions)**
- **JGO Science Requirements matrix**

SCIENCE DEFINITION TEAM WORKING GROUPS

Working Group 1 (Satellites)

Geophysics
Composition
Ice
Geology
Atmospheres/exospheres

Bruce Bills, Hauke Hussman
Federico Tosi, Tom McCord
Don Blankenship, Olivier Grasset
Ralf Jauman, Jeff Moore
Melissa McGrath, Andrew Coates

Working Group 2 (Jupiter)

Working Group 3 (Magnetospheres)

Working Group 4 (Jupiter System)

Pierre Drossert, Amy Simon-Miller
Krishan Khurana, Norbert Krupp
Tim Van Hoolst, Melissa McGrath

Transverse/cross-cutting Working Groups

Working Group 5 (Origin and Formation)

Working Group 6 (Astrobiology)

Working Group 7 (Cosmic Connections)

Working Group 8 (Radio Science)

Working Group 9 (Education Public Outreach)

Angioletta Coradini, Bill Moore

Kevin Hand, Olga Prieto-Ballesteros

Athena Coustenis, Masaki Fujimoto

Paolo Tortora, Essam Marouf

**Athena Coustenis, Ron Greeley,
Michel Blanc, Louise Prockter**

Volunteer members of the various working groups are being sought; if you have an interest, let me know!

COMMUNITY ENGAGEMENT: SPECIAL SESSIONS

- *European Planetary Science Congress* (Potsdam, 13-18 Sept. 2009)
Four sessions and two workshops
- *Division of Planetary Science* (Puerto Rico, 4-9 Oct. 2009)
Several relevant sessions
- *Geological Society of America* (Portland, 18-21 Oct. 2009)
Cryovolcanism in the Solar System
- *American Geophysical Union* (San Francisco, 14-18 Dec. 2009)
The Galilean Satellites: 400 years of Discovery

Slides / PowerPoint materials, facts sheets, etc. are readily available for use by speakers and session organizers for these and future activities (<http://opfm.jpl.nasa.gov/europajupitersystemmissionejsm>)

PUBLIC ENGAGEMENT

The goal is to stimulate interest in the Jupiter System and support for its exploration

- **Develop / refine web sites**
- **Solicit help from organizations such as *The Planetary Society***
- **Work with relevant media, such as the *Discovery Channel***
- **Go “on the road” with presentations (e.g., astronomy clubs)**
- **Take advantage of the 400th anniversary of Galileo’s discoveries**

You can help with these and other activities. We can help if you want to develop local programs, such as Galileo’s 400th anniversary, with speakers and materials