

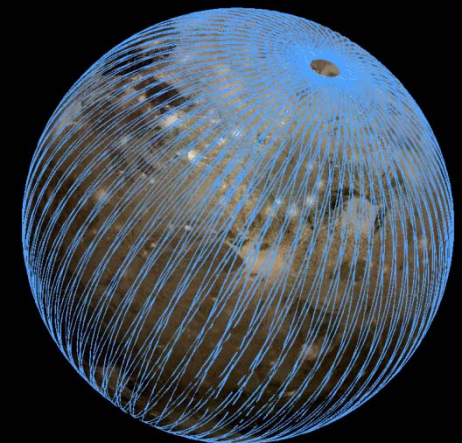
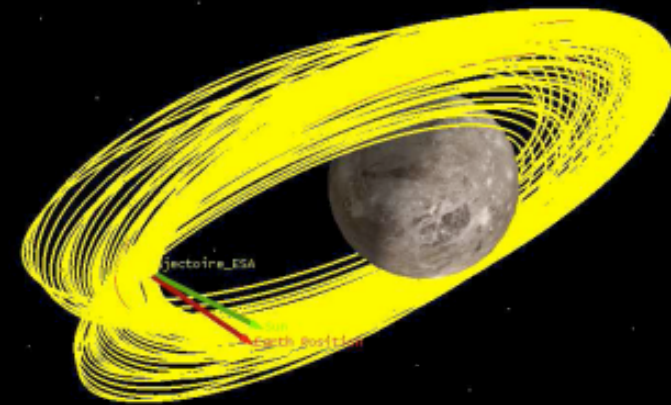
- JGO is part of a competition, which has been delayed but a decision re the L-class missions will be made no earlier than February 2012
- “Each revised team will be asked to examine if they can restructure their mission and its science case to meet a scenario, where in the least optimistic case, a Europe-alone mission could be envisaged. **The goal of this activity will be to examine to what extent it would be possible to preserve essential parts of the science goals of the original missions within the framework of a European-led mission with an affordable budget for Europe”**
- European SDT was only told in April 2011 about the delay in the decision and the new situation – New Scientific Report for a “new” mission due for the end of October 2011.

EJSM – LAPLACE is ended – Welcome to JUICE



Mission Trajectory

Launch	March 2020 (June 2022)
Interplanetary Transfer	5.9 years (7.3 years)
Jupiter Orbit Insertion to Callisto	~11 months
Callisto flybys	~13 months
Callisto to Ganymede	6 months
Ganymede (polar)	
10,000x200 km & 5000 km	120 days
500 km circular	120 days
200 km circular	60 days
Total mission duration	9.2 years (10.6 years)



Ganymede



- Ganymede :**

	LAPLACE	JGO
Characterise Ganymede as a planetary object including its potential habitability		

Except for Astro, no suggestion to reduce any phase, but need for extended phase to recover
 MAG - still OK - Extended GEO wanted
 GEOPH - OK as is
 GEOL - OK as is
 COMP. - OK as is
 ASTROBIO - Not a high priority?
- Europa :**

	LAPLACE	JGO
Explore Europa to investigate its habitability		

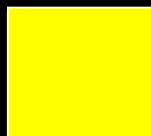
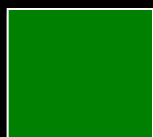
Except for GEOL, no science from the existing mission profile.
 MAG: Extended mission or flybys
 ENA imager to be improved
 GEOPH: Priority is ocean detection
 Steerable antenna
 At least four flybys
 GEOL: Any new observation welcome
 Even 1 flyby makes a lot
 COMP.: Priority to non-ice material at small space scales.
 ASTROBIO: Europa is a much higher priority than Ganymede.

- **Jupiter System**

LAPLACE

JGO

Jovian atmosphere



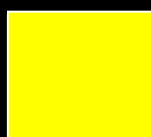
No critical issues
 Extended jovian tour requested
 Need for a thermal IR for troposphere
 Need for a higher inclination during the tour

Jovian magnetosphere environments



No critical issues
 Extended tour
 Extended GEO
 Vary inclination during CPO

Callisto



Except for GEOL, Sounds like everyone is ready to reduce its objectives for Europa's benefits (only if it does not cost too much)

- **Radiation doses**

One Europa F/B = entire Callisto phase

X krads as a basis

Callisto Phase : X krads

Transfer to Ganymede: 2.5 X

Ganymede EO: 5 X

Ganymede 500: 5 X

Ganymede 200: 2 X

Europa F/B: X krads

- **Planetary protection**

NO impact if F/B CA > 300 km

Ganymede is Class II

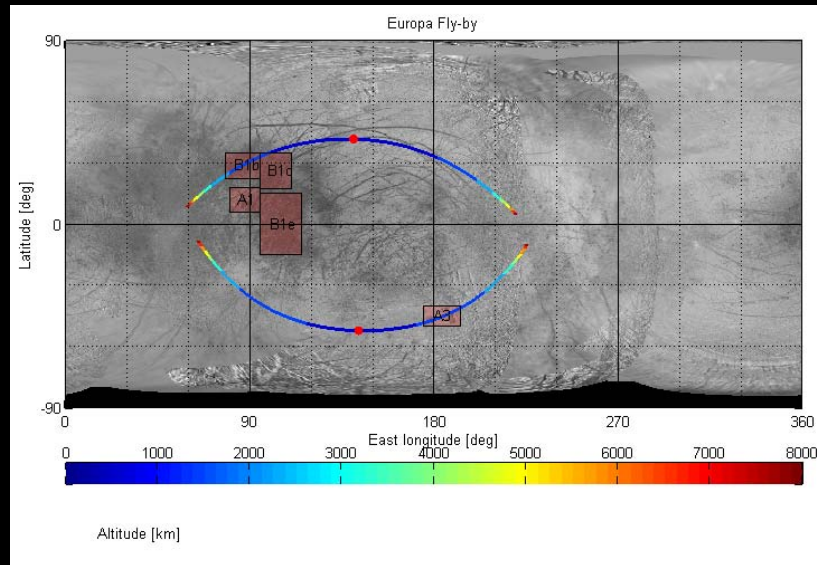
Europa is Class III

Need to prove that the probability of an accidental crash is very low

If impact possible -> huge impact of the mission cost and feasibility

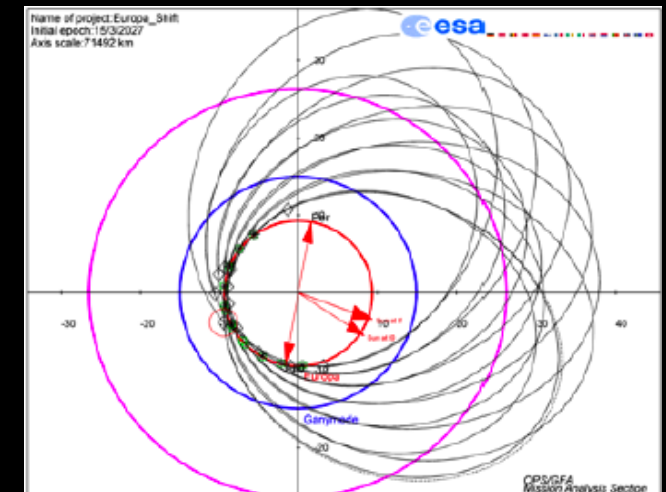
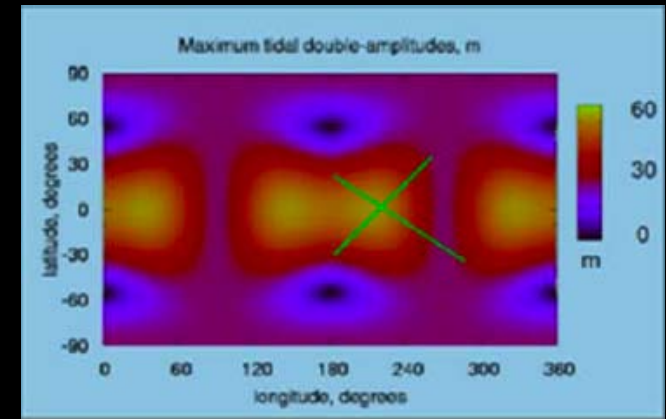
- **JUICE = Previous JGO**
 - Feasible
 - Recover Europa science from remote
 - Recover MAG and Jup.
 - Need for being convincing about Ganymede science for class L
- **JUICE = previous JGO but reduced phases around Ganymede & Callisto + a few flybys of Europa**
 - Radiation dose concern
 - Planetary Protection Concern
 - Higher risk (radiations, instruments) to be avoided
- ~~**JUICE = New JGO with reduced P/L and a significant amount of Europa flybys (x10).**~~
 - ~~Try to recover most of the Europa science~~
 - ~~the price is huge (Jup, Mag, Callisto...)~~
 - ~~Mission = Europa + Ganymede only~~

Composition / Geology / Astrobiology objectives



Two F/B with CA close to ROI seems feasible.
Strategy of observations under study

Geophysics objectives



To demonstrate the presence of the ocean
Mag field: Need for > 50 F/B
Geophys.: Need for > 4 F/B wrt science
Need for >10 F/B wrt MA

- Ganymede :**
 Characterise Ganymede as a planetary object including its potential habitability
- Europa :**
 Explore Europa to investigate its habitability
- Jupiter System**
 Jovian atmosphere
 Jovian magnetosphere and environments
 Callisto
 Io and small bodies

LAPLACE

JGO

JUICE

No F/B

2 F/B

