

*Workshop on the Radio, Plasma and UV Exploration
of the Magnetospheres of Jupiter and Ganymede*

Outcome of the discussion

Dear Colleagues,

On March 14 and 15, 2011, a workshop was held in Meudon (France) on the "*Radio, Plasma and UV Exploration of the magnetospheres of Jupiter and Ganymede*". The audience was composed of 38 French scientists and engineers interested in the study of these two fascinating environments, as well as those of other Galilean moons. The broad topics covered by the presentations proved that the exploration of these environments is particularly rich, lively and promising.

The workshop dates fortuitously coincided with recent announcements of NASA and ESA about the programmatic difficulties faced by the EJSM mission. Far from discouraging the participants, these moves challenged them and a very positive discussion took place at the end of the meeting. After the scientific and instrumental presentations, it was clear to us that we should make a strong case that exploring Jupiter, Ganymede and Callisto is a top-level priority for our community and that these unique and extreme planetary and magnetospheric environments will bring 'L-class' science return in our understanding of fundamental processes operating in our Solar System and beyond. A few "recommendations" have emerged from our discussions and the participants assigned us to report them to the French and European (magnetospheric) part of the JSDT.

First of all, we want to emphasize that the magnetospheric studies of Jupiter and Ganymede are pluri-disciplinary by essence: for instance, auroral studies (at Jupiter and Ganymede) imply Radio, Plasma (waves and particles) and UV (spectro-imaging) instrumentation, which require intricate discussions between atmospheric and magnetospheric communities. Interactions of the Galilean moons with Jupiter's ionosphere and magnetosphere imply also coupled interactions between their exosphere (aurorae of moons), surface (sputtering processes), and the surrounding plasma. These studies are therefore of significant interest to a broad community.

Then, with the possibility of having a re-shaping of the EJSM/JGO mission at ESA level, we strongly re-affirm that a Ganymede orbiter in the last orbital phase of the mission is a key objective to be achieved. We however propose that modifications of the initial orbital phase of the mission could be studied in order to better explore the largely ignored dayside and evening sectors of the Jovian magnetosphere. It may indeed appear that by taking advantages of Callisto resonant orbits we could lengthen this orbital phase by several months in order to allow a better local time exploration of the Jovian magnetodisk.

Finally, we concluded that the radio, plasma and UV model payload (including the recent instrumental developments presented during this workshop) foreseen for EJSM/JGO is fulfilling most of its science objectives. However, if there were a missing instrument, which

could bring additional and new Europa-related remote science to JGO, it would be an Energetic Neutral Atom (ENA) instrument, comparable to the Cassini/INCA instrument (i.e. from a few 10's to a few 100's keV neutral particles). It was particularly motivating to see an illustration of the potential scientific outputs from this kind of instrument used in the final Laplace presentation on February 3rd 2011, despite not having it in the model payload (PDD).

We also want to heartily thank the JSDT for its very good work in promoting and supporting the EJSM mission concept at ESA and NASA levels. We hope that the recent and future moves will give us the opportunity to make a stronger case and re-affirm that this mission is a top-level priority for our community. We will pursue in the near future our current efforts to promote the EJSM/JGO mission at French, European and international levels.

Very sincerely,

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