

Specific Suggestions	Milestones
Aim: Investigation of solar-planetary interactions	
<p>Modelling: <i>New solar wind propagation modelling – to investigate different solar wind conditions at different orbital distances</i></p> <p>Observations: <i>2003/2004 interval: Cassini (~9AU), Ulysses (~5AU), Mars Express (~1.5AU), ACE (~1AU), solar monitor (SOHO ?)</i> <i>Other intervals : Mariner10, Messenger, Venus Express, New Horizons ?</i></p> <p>Expertise: <i>DWG2 + Gombosi/Hansen, R. Prange, J. Luhmann, D. McComas, J. Slavin +others</i></p>	<p>Initiate collaborations with solar system scientists</p> <p>Establish a solar wind propagation model</p> <p>Construct a database of multi-spacecraft observations</p>
Aim: What is the influence of the solar wind interaction at Jupiter?	
<p>Modelling: <i>Solar wind-magnetosphere-ionosphere coupling (Leicester, Warsaw) e.g. reconnection rates, cusp processes</i> <i>New global magnetic and plasma models</i></p> <p>Observations: <i>Millennium Campaign at Jupiter (Cassini, Galileo, Hubble Space telescope (UV), Chandra X-ray Observatory, X-ray Multi-Mirror, InfraRed Telescope Facility)</i></p> <p>Expertise: <i>DWG2 + Gombosi/Hansen, Graziella Branduardi-Raymont</i></p>	<p>Initiate collaborations with new scientists</p> <p>Further development of existing models</p> <p>Create a database for the Millennium Campaign</p> <p>Recommendations for future ESA jovian mission: - <i>multi-spacecraft observations</i> - <i>solar wind monitoring</i> - <i>dedicated moon orbiters</i></p>

Aims: What is the origin of the planetary modulated (quasi-periodic) signatures at Saturn?

Modelling:

Wave theory: investigate the global response of the magnetosphere to external/internal perturbations.

Solar wind-magnetosphere-ionosphere coupling (Leicester, Warsaw)

New global magnetic and plasma models (IC, Braunschweig, MSSL, U. Michigan, JHU/APL)

Observations:

magnetic field, particle data, radio emissions, energetic neutral atoms, UV observations from Cassini/Hubble Space Telescope, InfraRed Telescope Facility, Chandra X-ray Observatory, X-ray Multi-Mirror

Expertise:

DWG2 + Cassini Teams and PIs, Jean-Claude Gerard, Denis Grodent, Randy Gladstone, Graziella Branduardi-Raymont + other theoreticians/frequency analysis experts

Initiate collaborations with new scientists

Correlate multi-instrument and multi-observatory data sets

Use of models/expertise to characterise quasi-periodic signatures

Aims: Can we detect an exoplanet magnetosphere now?

Modelling:

- comparisons with Jupiter and other magnetospheres*
- consider sub-sonic versus super-sonic interactions*
- consider sub-Alfvenic versus super-Alfvenic interactions*

Observations:

Future radio emissions could indicate the presence of a magnetosphere (LOFAR from 2008-2010)

Expertise:

Uwe Motschmann, Helmut Rucker, Pekka Janhunen (FMI) Gombosi/Hansen

Initiate collaborations with new scientists

Extend available planetary models to exoplanetary conditions

