N2
Discipline working groups
Annual report 2006

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• **N2 Website:**

http://www.mps.mpg.de/de/projekte/europlanet
**Europlanet**

**Europlanetary Network**

Launched on January 31, 2005, the European Union-funded project "Europlanetary Network" (Europlanet, Project GIHEP-CT2004-505357) has the potential to bring together all European research activities dealing with the Earth and the other planets of the Solar System. In its initial phase, the project aims to

1. Increase the productivity of planetary projects in European involvement, with emphasis on major planetary exploration missions.
2. Initiate a long-term integration of the European planetary science community.
3. Improve European scientific competitiveness, develop and spread expertise in the research area.
4. Improve public understanding of planetary developments.

**Science Objectives**

- Increase the productivity of planetary projects in European involvement, with emphasis on major planetary exploration missions.
- Initiate a long-term integration of the European planetary science community.
- Improve European scientific competitiveness, develop and spread expertise in the research area.
- Improve public understanding of planetary developments.

**MPS Contribution**

MPS is co-ordinating activity K2 (discipline working groups) in collaboration with the European Space Agency (ESA) and the European Space Research and Technology Centre (ESTRACK). The objective of this activity is to bring together the scientific and effective use of large European space- and ground-based facilities. It is the major task of discipline working groups to bring the expertise in the different scientific areas of planetary sciences together to co-ordinate and maximise the outcome.

**N2 Website**

http://www.mps.mpg.de/de/projekte/europlanet
N2 Budget

- allocated:
  - 10% of 2 Mio € = 200000 € -> 50000 €/year
  split into
    - 10000 coordinators
    - 2000 N1 management
    - 38000 N2 activities

- spent in 2006:
  - as of Dec 31: 42217,81 €
<table>
<thead>
<tr>
<th>Date</th>
<th>Meetings</th>
<th>Coordinator</th>
<th>Activity</th>
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<td>Month 14:</td>
<td>-N2-ISSI cooperation meeting #2, Bern, Switzerland</td>
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<td>Month 15:</td>
<td>-Participation at N4 workshop in Toulouse, France</td>
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</table>
| Month 16: | -Participation at N3 workshop in Vienna, Austria  
           -N2-N7 workshop, Villafranca, Spain  
           -Workshop topics selected and proposed to ISSI |
| Month 17: | -Europlanet coordinator meeting, Paris, France with N2 presentation |
| Month 20: | -N2-meeting #2, Helsinki, Finland |
| Month 21: | -Europlanet General Assembly with N2 presentation, Berlin, Germany  
           -N2 presentations at EPSC #1, updated science cases, Berlin, Germany |
| Month 23: | -Participation at N3 workshop in London, United Kingdom |
| Month 24: | -Europlanet coordinator meeting, Paris, France, N2 supported presentation of N7 backup plan |
N2 science cases
(Outcome of Europlanet N2-N7 workshop
ESAC Villafranca, Madrid, Spain, April 24-26, 2006)

1. Understanding super-rotation (Grieger)
2. Ion-neutral chemistry at Titan (Leblanc)
3. Solar wind interaction at Jupiter and Saturn including aurorae (Krupp)
4. What is the origin of the planetary modulated (quasi-periodic) signatures at Saturn? (Krupp)
5. Investigation of the interaction of magnetospheric plasma with icy moons in the Saturnian system and other giant planet systems (Krupp)
6. Definition and archiving of ground-based observations in support of space missions (Coustenis)
7. Catalogue of IR and Raman spectra of gas CH4 coefficients, organics (Coustenis)
8. Dating planetary surfaces from cratering processes: formation of the solar system (Coustenis)
9. Quantifying the Martian geochemical reservoirs (Toplis)
10. Exchange processes between surface and interior of icy moons (Grasset)
11. What are the relative contributions of asteroidal dust, cometary dust, meteor streams, interstellar dust and circumplanetary dust to the structure of zodiacal cloud as a function of heliocentric distance, latitude and time (Graps)
12. What is the dynamical and morphological structure of the Kuiper belt (Graps)
13. How can we best optimize from observations, numerical experiments, lab simulations, further analysis of past mission data, the science return of Rosetta
14. Solar wind-comet surface interaction (Schmidt)
15. Surface material composition (Schmidt)
16. Distant activity, outbursts, splitting and disruption of cometary nuclei (Makinen)
17. Planets under extreme stellar conditions (Lammer)
1. Circulation in atmospheres of terrestrial planets (Grieger)
2. Planetary atmospheric electricity (Lebreton, Leblanc)
4. Planetary chemistry issues in support to the analysis of space mission data (Coustenis)
5. Quantifying the Martian geochemical reservoirs (Toplis)
6. Exchange processes between surface and interior of icy moons (Grasset)
7. What are the connections between TNOs, Centaurs, Trojans, comets and icy satellites and what is the dynamical and morphological structure of the Kuiper belt (Graps)
8. How can we best optimize from observations, numerical experiments, lab simulations, further analysis of past mission data, the science return of Rosetta (Graps)
9. Distant activity, outbursts, splitting and disruption of cometary nuclei (Makinen)
IDIS shall provide a web interface that allows to query the TARGET, a TIME period and an INSTRUMENT type. The result of the query shall be a list of individual missions, their instruments and the time period of available data that match the query. The query shall allow to combine several instrument types.

Example:

• user input:

• IDIS output:
  – Galileo
    • EPD data available (energy ranges,...)
  – Cassini
    • MIMI, CAPS
  – Hubble
    • 20 images
• IDIS shall provide a web interface that allows to query all laboratory measurements that contribute to the analysis of a planetary mission.

• IDIS shall provide a web interface that allows to query all models existing that contribute to the analysis of a planetary mission.

• IDIS shall provide support to the laboratories to provide the lab data in an agreed format. The support shall include at least the consultancy on data format and standard, software routines for data conversion, ...
Planetary aurorae and their electrodynamic drivers: solar wind vs. internal processes

A2. EPSC2006-A-00306  Leblanc, F.  
IDIS Science Case: Titan Ion-Neutral chemistry: understanding observations and constraining models

A science case on atmospheric circulation

A4. EPSC2006-A-00422  Coustenis, A.; EUROPLANET WG3&5  
Catalogue of IR and Raman spectra of gas CH4 and other molecules’ coefficients, organics, minerals and ices

A5. EPSC2006-A-00321  Grasset, O.  
Exchange processes from the deep interior to the surface of icy moons

Dating planetary surfaces from cratering processes: formation of the solar system

A7. EPSC2006-A-00405  Lammer, H.; Selsis, F.; Eiroa, C.; Fridlund, M.  
Planets under Extreme Stellar Conditions

A8. EPSC2006-A-00416  Coustenis, A.; EUROPLANET WG3&5  
Definition and archiving of ground-based observations in support of space missions
## N2 Deliverables/Milestones in 2006

<table>
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<tr>
<th>Deliverable/Milestone No</th>
<th>Deliverable/Milestone Name</th>
<th>Work package/Task No</th>
<th>Lead Contractor(s)</th>
<th>Planned (in months)</th>
<th>Achieved (in months)</th>
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<td>MPG-MPS</td>
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## Future N2-ISSI collaboration

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<th>year</th>
<th>Workshop title</th>
<th>proposed by</th>
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<td>2007</td>
<td>Planetary atmospheric electricity</td>
<td>Lebreton, Leblanc</td>
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<td>2008</td>
<td>Exchange processes from the deep interior to the surface of icy moons</td>
<td>Grasset</td>
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<td>Quantifying the Martian geochemical reservoirs</td>
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<td></td>
<td>Planetary aurorae and their electrodynamic drivers: solar wind vs. internal processes</td>
<td>Krupp</td>
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N2 future actions

- further N2-N7 meetings
- Dedicated N2-N3 meetings
- implement new discipline working groups focused on specific topics, i.e. “Planetary Mapping” as proposed by T. Zegers (ESA/ESTEC)
  - test case for Moon or Mars
  - roadmap for planetary mapping in Europe
  - FP7 proposal
N2 role in FP7

• The Europlanet consortium should submit proposals for the continuation of the excellent work performed by the Europlanet teams by now.

• Various good candidate proposals are possible, e.g.
  – an infrastructure-focused project (e.g. IDIS development, Capacity)
  – a Science & Collaboration-focused project (Scientific utilization of planetary cooperation).

• To all of the possible FP7-proposals submitted by the Europlanet the N2 activity is willing and capable of giving a substantial and essential contribution.

• Practically, the N2 contributions to FP7 projects could include e.g.
  – Science objectives definition
  – Collaboration medium between the planetary science community and industry
  – Arranging for meetings and conferences