N2
Discipline working groups
Annual report 2006

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- **N2 Website:**
  http://www.mps.mpg.de/de/projekte/europlanet

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EuroPlaNet

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EuroPlaNet

European Planetology Network

Launched on January 1st 2005, The European Union-funded project "European Planetology Network" (EuroPlaNet, Project 001637 Integrating Activity Implemented as Coordination Action) will provide an important added value to the European Planetology Community and the science produced by the international planetary missions. During four years, EuroPlaNet will strengthen the networking of the European Planetary Sciences community by promoting the exchanges between its different partners and providing a support to the planetary exploration missions. The primary objective of the network will be to support the Cassini-Huygens mission. In the meantime, this project will take a particular attention to associate through specific outreach activities the European citizens to the planetary exploration programme in Europe. EuroPlaNet co-ordinates activities in Planetary Sciences in order to achieve a long-term integration of this discipline in Europe.

Science Objectives

The objectives are to:

1. increase the productivity of planetary projects with European investment, 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 this research area
4. improve public understanding of planetary environments

These objectives will be achieved by:

1. maximizing synergies between different fields contributing to planetary sciences: space observations, earth-based observations, laboratory studies, numerical simulations, data base development
2. co-ordinating the design and development of an Integrated and Distributed Information Service (IDIS) providing access to the full set of data sources produced by these complementary fields. EuroPlaNet integrates most of the European planetary exploration work, with initial focus on the Cassini/Huygens mission to Saturn and Titan, operative between 2004 and 2008. The considerable involvement of the European science community in this mission, the broad diversity of its research objectives and the urgent need to achieve a balanced share of data analysis and its results with American colleagues make Cassini/Huygens an ideal test-bed for the development of activities and tools which will contribute to the optimal exploitation of subsequent planetary missions

In addition to overall co-ordination, 6 further activities N2-N7 will be carried out over a 4-year period:

a. N2 discipline working groups
b. N3 co-ordinate Earth-based observations to support and complement space missions
c. N4 develop an outreach strategy
d. N5 exchange of personnel
e. N6 EuroPlaNet-specific meetings and conferences
f. N7 definition of the basic requirements for future implementation of IDIS for planetary sciences

MPS contribution

MPS is co-ordinating activity N2 (discipline working groups) in collaboration with the Finnish Meteorological Institute (FMI). The objective of this activity is to initiate a long-term integrating force that will allow the coherent and effective use of large European space- or ground-based facilities. It is the major task of discipline working groups to bring the experts in the different science areas of planetary sciences together to co-ordinate and maximize the outcome.

List of discipline working groups and group members

Actions

Within activity N2, meetings of the discipline working groups are conducted.

First Europlanet N2 Meeting
Nov. 21-23, 2005
Waldhotel Gesundbrunnen
Northeim, Germany

Europlanet N2-N7 Workshop
April 24 - 26, 2006
ESAC
Villafranca, Spain

ISSI Workshop Proposals
May 12, 2006

ISSI science commitee results
May 18, 2006
Workshop topics "selected" from ISSI
(Outcome of ISSI science committee meeting, May 2006)
For 2007

- Planetary atmospheric electricity (Lebreton, Leblanc)

For 2008

- Exchange processes from the deep interior to the surface of icy moons (Grasset)
- Quantifying the Martian geochemical reservoirs (Toplis)

in addition possible:

- Planetary aurorae and their electrodynamic drivers: solar wind vs. internal processes (Krupp)

Europlanet Coordinator Meeting, ESA HQ, Paris
May 22-23, 2006
During the face-to-face Europlanet coordinator meeting at ESA HQ in Paris on May 22-23, 2006 the N2 coordinators Norbert Krupp, Ari-Matti Harri and Bjoern Grieger presented the status of N2 for the first 17 months of the project.

Second Europlanet N2 Meeting
Aug 21-23, 2006
Finnish Meteorological Institute (FMI)
Helsinki, Finland

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Links

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 €

N2 budget

		meetings			coordinator				activity	total
		direct	indirect	total	FMI	MPS	indirect	total		
2006	Jan. 06	2325,62	465,12	2790,74	5000,00	0,00	1000,00	6000,00	add. costs N2 meeting #1	
	Jan. 06					339,55	67,91	407,46	add. costs brussels 2005	
	Feb. 06					357,12	71,42	428,54	ISSI Bern	
	Mrz. 06					1299,02	259,80	1558,82	N4 workshop Toulouse	
	Apr. 06	6340,01	1268,00	7608,01		1689,48	337,90	2027,38	N2-N7 Meeting Villafranca	
	Mai. 06					1011,36	202,27	1213,63	Coord meeting Paris	
	Jul. 06				3000,00	0,00	600,00	3600,00	Advance FMI	
	Aug. 06	5921,55	1184,31	7105,86		830,95	166,19	997,14	N2 meeting #2	
	Sep. 06					446,80	89,36	536,16	Coord meeting Brussels	
	Sep. 06	3646,42	729,28	4375,70			0,00	0,00	EPSC #1	
	Okt. 06	795,71				494,12	98,82	592,94	ISSI Bern	
	Nov. 06					1350,77	270,15	1620,92	N3 workshop London	
	Dez. 06					6,73	1,35	8,08	phone costs	
	Dez. 06					326,30	65,26	391,56	Coord meeting Paris	
Sum		19029,31	3805,86	22835,17	8000,00	8152,20	3230,44	19382,64		42217,81

N2 Activity report 2006
Months 13-24

Month 14:	-N2-ISSI cooperation meeting #2, Bern, Switzerland
Month 15:	-Participation at N4 workshop in Toulouse, France
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 an 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)

Workshop topics for ISSI

(Outcome of Europlanet N2-N7 workshop
ESAC Villafranca, Madrid, Spain, April 24-26, 2006)

1. Circulation in atmospheres of terrestrial planets (Grieger)
2. Planetary atmospheric electricity (Lebreton, Leblanc)
3. Solar wind interaction at Jupiter and Saturn including aurorae (Krupp) (2008)
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)
10. Planets under extreme stellar conditions (Lammer) (2008)

N2-N7 IDIS requirements (example)

(Outcome of Europlanet N2-N7 workshop
ESAC Villafranca, Madrid, Spain, April 24-26, 2006)

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:
  - Jupiter, oct2000-feb2001, particle instruments and UV images
- IDIS output:
  - Galileo
    - EPD data available (energy ranges,...)
  - Cassini
    - MIMI, CAPS
  - Hubble
    - 20 images

N2-N7 IDIS requirements (example)

(Outcome of Europlanet N2-N7 workshop
ESAC Villafranca, Madrid, Spain, April 24-26, 2006)

- 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, ...

N2 science cases presented at EPSC #1, Berlin, 2006

A1. EPSC2006-A-00395 Krupp, N.
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

A3. EPSC2006-A-00393 Grieger, B.; Leblanc, F.; Fränz, M.; Lammer, H.; Siili, T.; Tokano, T.
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

A6. EPSC2006-A-00417 Coustenis, A.; EUROPLANET WG3&5
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

Deliverable/ Milestone No	Deliverable/Milestone Name	Work package /Task No	Lead Contractor(s)	Planned (in months)	Achieved (in months)
D2.1	List of science cases as an outcome of N2-N7 workshop in Villafranca, Spain		MPG-MPS FMI	13-15	16
D2.2	Participants of N2-N7 workshop, ESAC, Villafranca, Spain, April 2006		MPG-MPS FMI	16	17
D2.3	ISSI workshop proposals		MPG-MPS FMI	17	17
D2.4	Minutes of N2 meeting #2, FMI, Helsinki, Finland		FMI MPG-MPS	17-20	20
D2.5	List of participants for N2 meeting in Helsinki		FMI MPG-MPS	20	20
D2.6	Backup plan for N7		MPG-MPS	20-24	24

Future N2-ISSI collaboration

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

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 instrastructure-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