EuroPlanet N2 Meeting in Helsinki, 21.-23 Aug, 2006

1. Welcome by Ari-Matti Harri
2. Agenda issues

3. N2 and Europlanet status (Ari-Matti)
Achieved so far: Set-up of working groups, definition of scientific key questions for each discipline working group
Europlanet General Assembly with N2 presentation, Vienna, Austria
N3 kick-off participation

Expected outcome:
- Identification of world leading experts for each discipline working group/OK
- Definition of scientific targets for N7
- Collect inputs of each discipline working group for planned observations etc
- Setting up of data base

Summary of activities: Space observation / Laboratory work / Num.simulations /
Earth observations will be made accessible by IDIS
N2 input: define needed or useful input sources and types

Suggestion: get new people into the discipline working groups
Response from Norbert: As external experts this is possible, else they should come from the currently associated institutes

Budget issues: 57600 EUR received for first 18 months, but until June 30 only 69% of the budget was spent, so that an additional report had to be presented by end of June to receive the 2nd payment.

15. IDIS (N7) implementation and Ns-N7 collaboration (Enrico)
Cassini-Huygens mission related science case will be used as model during this year to implement a model data base and service system to allow the access to information needed in related research. Target, Time period and Instrument type as main query input. Also without specific knowledge of available instruments, the system should be able to support finding related data sets.

Implementation strategy: Existing services will not be duplicated. Europlanet should propose the integration of existing services and new services following new explicit needs, like laboratory data archiving, amateur observer groups, etc.
As far as possible existing or past activities will be utilized, using existing systems like PDS and ESA PSA.

To collect answers the “Green Paper” with a set of questions to the Europlanet community was released. Remark: no one had seen it so far due to server access problems.

Level 1 Requirements Document Draft 1 by end of 2006, issue 1 by end of 2007
A demonstration version of IDIS by the end of the current contract
The details of how to achieve the req.doc. draft in time should be discussed now.

As forum for Europlanet a web page has been opened including reports and discussions during Europlanet meetings, links to events etc
http://europlanet.cesr.fr/
Webmaster: Christine Guidice, christine.guidice@dr14.cnrs.fr

4. Preparation for FP7:
Brussels meeting in preparation of FP7-proposal September 4/5. Emphasis is on detailed N2 - N7 co-operation.
Michel Blanc participated in the related discussions via a phone conference on Tuesday afternoon.

Science cases:
Solar wind interaction at Jupiter and Saturn including aurora
This mainly Cassini-related case will be used initially for IDIS
Suggestion: The template "Others" should be used to define possible keywords suitable for the respective Science Case

Refining Science Case for laboratory experiment data base for IDIS (O.Grasset)
Examples for needed data: Spectroscopy data bases, Photoabsorption, photoionisation cross sections, reaction rate constants

Comments: Contact persons inside EuroPlanet for critical evaluation of data from data bases and literature
Foster collaboration and suggest new laboratory experiments
Uncertainties are hardly ever given in literature, though they are very important.
A related flag/information should already be introduced at IDIS level
Important are experts for e.g. suggesting additional laboratories for complementing measurements to solve open questions.

9. *Planets under extreme conditions* (H.Lammer)
Remarks to planned workshop in ISSI:
Circulation in atmospheres of terrestrial planets (Grieger)
Solar wind interaction at giant planets including auroras (Krupp)

17. Presentation by Anssi Mälkki/FMI:
IGACO-Ozon (Integrated Global Atmospheric Chemistry Observations)
Part of IGOS (Integrated Global Observation System)

Intention: Improving global access to Ozone observations
Goals:
- ensure continues global observation of key atm. Gases and aerosols
- establish a system for ground-based, in-situ and satellite observations
- make integrated observations accessible to users

Team: FMI is coordinating these activities on behalf of WMO
4 FMI workers, daily observations by about 100 independent instrumentations

Work on promoting homogeneous quality control and documentation

Develop modeling and assimilation capabilities, keep models as far as possible separate from the data
Continuity: mission overlap for cross-calibration

Suggestion ("dream"): IGACO-organized data access possibility with unified access by the users: 1 link to IGACO to get access to all atmospheric data including complete overview over all data sets. Problems are mainly political, but also practical routine implementation is difficult without dedicated budget. High-level support is there, but no funding.
Link to Europlanet: Parallel development of data system user requirements with mutual information exchange between IGACO and EuroPlanet
Comments from Enrico: problems and envisaged solutions look similar. Main problem in both cases is with less well organized data. Data base of experts is important
Difference: Data volume in Earth observation is huge.

Timescale for implementation: 5 to 10 years
Web-site: www.igaco-o3.fi/en/index.html

23. Towards the Seventh Framework Programme 2007-2013 (NK)
Two possibly applicable aspects found:
9. Security and space
- Space-based applications at the service of the European Society
- Exploration of space
- RTD for strengthening space foundations

Instrument: Network of excellence (NoE)
A NoE for the use of the data

Preparation for FP7 proposal: Networking: basically N5, N6, N2, N3
"Joint research activities" should come out of N2 discipline working groups and of N3. Activities should use IDIS

Michel Blanc's comments during phone conference at 15:30 Finnish time:
Key science questions or projects, using space mission(s) and ground data. For future data like Rosetta data usage. "Science case" format is appropriate, but difference should be made to IDIS-related science case definitions. We agreed on a Science-case 1 related demonstrator version of IDIS in preparation for FP7. Suggestion to include a Mars-related Science case.
Define new science case related to Mars plasma environment, linked to other planets (Walter)

More Science Case Presentations
8. *Small bodies and dust* (Amara Graps)
There was a response from Kathrin Altwegg (University Bern): Rosetta Science Working Group is organizing a Rosetta- related ISSI workshop

A Rosetta Lander PHILAE related workshop is scheduled for September 3-6, 2006 in Helsinki. It was suggested to include this information on the Europlanet homepage. Christine was informed accordingly.

What are the relative contributions of asteroidal dust, cometary dust, meteor streams, interstellar dust and circumplanetary dust to the structure of the zodiacal dust cloud.

What is the dynamical and morphological structure of the Kuiper Belt Objects?

Amara Graps compiled related lisst of institutes building related instruments and of institutes with laboratory facilities.

19. Report about the planned ISSI workshop 2007: Planetary Atmospheric Electricity
Topics: Detected: Earth, Jupiter, Saturn, Uranus
To be confirmed: Neptune, Venus
None: Mars, Titan

- Understanding of the electric general circuit of solar system planets
- Role of cosmic rays etc
- Formation of large electric field by charge separation, inductive or none-inductive charge transfer
- Electromagnetic waves
- Ground based observations and future space missions

List of convenors and preliminary participant list was presented. Request to send additional suggestions for participants to Francois.

Information from Malcolm Fridlund:
ESA supports workshops in the order of 5kEUR and is willing to take care of printing related publications including a CD.

11. Presentation by J.Schneider: **How to detect and characterize exoplanets?**
Status on August 21: 203 exoplanets have been detected.

Corot-mission: Mission goal: Search for telluric exoplanets
launch planned for October 15, 2006. Delay due to launcher problems, no clear new launch date is set with the launch contract ending end of October. Support from Europlanet requested.

Super-Earths Explorer: Mission goals: Search for life on exoplanets, understand how planets work: atmospheric gases, clouds, surface, environment (rings,..), Exo-zodi, debris disks, UV imaging
Method: stellar flux reflection
Status: to be submitted to “Call for missions” with foreseen launch in 2016 or later

Interactive exoplanet Catalog http://exoplanet.eu/catalog
Updated every day, 7 languages, many cross references

12. Darwin and ESA Cosmic Vision Program 2015-2025 (Malcolm Fridlund)
H2000+ missions in preparation:
GAIA: 2011/2012
Bepi-Colombo: 2014
LISA/Pathfinder: about 2009, still open
Solar orbiter: under review

Cosmic Vision program: intended call for proposal in 2006: on hold for review
1 small mission about 300MEUR for 2015-16
1 larger mission after 2020 (Darwin?)
3 missions for each slot will be selected for further study

CV: 4 grand themes for 2 slots

1. Conditions for planet formation and the emergence of life
from exo-planets to biomarkers
2. How does the Solar system work
3. Fundamental laws of the universe

Suggested role of Europlanet:
Get DARWIN into the CV program by broadening the interest base:
Solar system community, biology, paleontology, geophysics
Preparation: models of planetary evolution
Suggested themes:
Planetary evolution modelling with different star types or stars at different ages, at different distances, list of tasks Europlanet members are interested in.

18 DWG talks in Berlin
Another N2-N7 meeting planned for November in Frascati

Presentation of MAPSview web page for CASSINI key-parameter (NK)
http://mapsview.engin.umich.edu/ (one has to register with one of the PIs):
MAPSview - Register
In order to download or view MAPS Key Parameter data you must be a member of one of the Cassini/Huygens instrument or IDS teams.
In order to register below, the Principle Investigator (PI) or Lead of your team must add your name to the access list. In addition, you must agree to abide by the MAPS Rules-of-the Road and the Cassini Rules-of-the-Road when using any figure or data obtained from this site. Please read these documents before registering.
After you enter your email address and choose a password, please check your email. You will receive an email with a link which you must access in order to activate your MAPSview account.

21 More Science Cases:
The Deep Impact Event as Seen by the SWAN/SOHO Instrument (T.Mäkinen)
Result: no significant increase in activity seen directly after the impact. Some increase 2 weeks after the impact, possibly not related to the impact

Plasma Environment of Mars, Venus and Titan (E.Kallio, I.Sillanpää)
Purpose for Mars-related studies: Atmospheric non-thermal escape processes and comparision with MarsExpress (Aspera3) observations
Relates to 3 different science cases
Titan relates to Cassini flybys and Huygens

Surface exposure of solar wind protons under various conditions (H.Lammer)
Model development for high energy sputtering effects on planetary surfaces.

Summary N7 Action List (Enrico)

- Select 2 science cases for developing the Req.Draft 1
    a) related to Cassini Huygens (Template available)
    b) related to Rosetta (Template to be prepared)

- IDIS will include a data base of personnel/institutions
- Study the need to provide a data base for all those data produced by laboratory or ground observations
- Models and Lab data should be marked in order to show if they are validated or not
- IDIS will include the meetings relevant to the subject of the query
- Verify and if not extend the forum to all the coordinators or active participants
- Call for a N7-N2 meeting (end of October – mid November, date TBC within September 4)

N2 actions for IDIS:
- Prepare a science case for Mars that could address results from existing instruments (or on comparative planetology Mars and Venus)
- Prepare the list of personnel/laboratories
- Provide and update list of the relevant links

Science activities using existing planetary mission and ground based data with GREAT AND EXCELLENT HELP from the IDIS information system.

1. Cassini-related science questions (also our IDIS SC-themes with a scientific spin on them) [To Be Phrased out better]
2. How can we best optimise from observations, numerical experiments, laboratory simulations, further analysis of past mission data the science return of Rosetta?
3. What are the relative contributions of asteroidal dust, cometary dust, meteor streams, interstellar dust and circumplanetary dust to the structure of the zodiacal dust cloud as a function of heliocentric distance, latitude (and time)?
4. What are the values and ranges of key properties of a significant number of small bodies to constrain the formation environment and evolution of these bodies, e.g. density, bulk composition, mineral composition, isotopic, elemental, molecular composition, chemical and physical properties, dynamical evolution, etc.?
5. Electricity in planetary atmospheres: Current Mars missions, Cassini etc
6. Distant activity, outbursts, splitting and disruption of cometary nuclei
7. Evolution of the atmospheres
8. What is the extent of non-thermal mass outflow from planetary atmospheres [+ ESO]
9. How does the Solar Wind interact with the solar system bodies ?
10. Behavior and evolution of a planetary atmosphere in subsonic plasma flow [+ ESO]
11. … More questions to com, aot: atmospheric circulation [+giant planets and ESO] etc.

Science activities to support future planetary exploration

1. What are the connections between TNOs, centaurs, trojans, comets and icy satellites and what is the dynamical and morphological structure of the Kuiper belt? (e.g. Herschel)
2. High contrast imaging techniques (Visible 10 E11, IR 10E7), could be used for exoplanet detection.
3. Formation and evolution of the Earth-size exo-planets (also comparative planetology)
4. Characterization of EXO-planets in unusual (e.g. non-solar) environment
5. Definition of the detailed cross-disciplinary science objectives of the ESA's next "exo-planet observations" –mission (like Darwin)