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**N7 IDIS SBD Scientific
Manager (outgoing)**

N2 WG SBD Chair

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N7 IDIS SBD Technical Manager

N7 IDIS

Small Bodies and Dust Node

October 8-10, 2007, Frascati, Italy.

IDIS N7 Small Bodies and Dust Status

- Budget
- Hardware / Software
- Basic Documents Website
- Building the Information Resources

Related Necessary Tasks

- European-wide SBD Email List
- Mechanisms to input and inform about SBD meetings / workshops
- List of Europlanet Nodes?

Science Cases (2)

- Evolution of Rosetta/Comet Science Case
- (1) New Rosetta/Comet Science Case
- (2) Contributions to Zodiacal Cloud Science Case
- Engaging Experts

INAF / EUROPLANET FORMALITY COMPLETE



First: An important formality is complete and out of the way...

The INAF President has signed an agreement with Europlanet (M. Blanc) that transferred to INAF our previous CNR relationship. This agreement is valid for all INAF (Italian) institutions.

1. Budget:

Funds to be transferred from ASI to INAF

INAF - IFSI/IASF are contributing:

- Administrative Support: Monia Rossi (1/2 time, trained in EC protocol) + Secretary to be appointed (1/2 time)
 - Technical Manager: Francesco Carraro (IFSI) + Unspecified (1/2 time)
 - Scientific Manager: Amara Graps (outgoing), Maria Cristina De Sanctis (IASF) + Diego Turrini (IASF) (both incoming)
-
- Technical Status -- Hardware and Software (presentation by Francesco Carraro)

3. Basic Documents Website (exists now): <http://pplt4.ifs-roma.inaf.it/~sbd/>



Comet C/2006 P1 McNaught
by STEREO/SECCHI
18 January 2007

The goal of this [Europlanet N7 node](#) is to build the IDIS resource from a Small Bodies and Dust perspective.

In a working group N2 meeting in [Northheim, Germany in November 2005](#), the most relevant science questions pertaining to small bodies and dust in the solar system were constructed. These questions were handed to the N7 IDIS node in N2 and N2-N7 meetings in [Madrid \(April 2006\)](#) and in [Helsinki \(August 2006\)](#) to provide a focus with which to implement IDIS. The goal of this node is to continue and complete that work by Fall 2008.

Responsible Persons: [Amara Graps](#) (Scientific Coordinator), [Francesco Carraro](#) (Technical Implementation), (and more persons as needed).

| [Science Cases](#) | [Prioritized Science Cases](#) | [IDIS Inputs](#) | [Past Presentations](#) | [Miscellaneous](#) |

Relevant Documents for Implementing the N2 SBD Science Cases.

The purpose of this site is to inform our internal N7 IDIS SBD Team, the other IDIS teams, and the N2 SBD Working Group which originally proposed the science cases.

You'll find at this site:

- Science Cases
- Prioritized Science Cases
- IDIS Inputs
- Past Presentations
- Miscellaneous

4. Building the Information Resources (E. Pallier's database)

- a) Local (INAF- IFSI/IASF (**done**, with individuals updating their own records)
- b) European-wide, from the mailing list

HOW? Many reminders.

- Monthly email (first: October 11)
- Telephone or email to the Responsible Europlanet representative at each institute of a SBD node.

List exists of Responsible Europlanet representative at each institute?

Input from the Community.

Steps:

1) Comprehensive Email List.

Note: Europlanet is about ***Networking***. A good email list for the Small Bodies and Dust and SolSys Formation Working Group and IDIS Node is the first essential step. Especially necessary when persons representing that discipline are not physically present in the meetings.

Experts can be seen from the “Specialties” column of the email list.

2) Engage Experts.

For Our Science Cases - Email List



1) Generated Comprehensive Email List.

HOW: Selected researchers who presented work at ACM 2005, ACM 2002, Meteoroids 2001, GUCS, last 5 years.

(Solar System Formation is still not well-represented, however, and number of Rosetta Team members can be increased).

Result: We have 146 People. Excel Spreadsheet(s) versions sorted by name, institute.

Gives: last_name, first_name, email, institute, node, topic

Sample:

Specialty



Kathrin	Altwegg	kathrin.altwegg@phim.unibe.ch,	Physikalisches Institut, Universität Bern	?	comets
Marek	Banaszkiewicz,	marekb@cbk.waw.pl,	Space Research Centre	38	dust
Cesare	Barbieri	barbieri@oapd.inaf.it,	Dipartimento di Astronomia, Università di Padova	20	exospheres, Mercury, small bodies
Antonella	Barucci	antonella.barucci@obspm.fr,	Observatoire de Paris	2	asteroids
Johannes	Benkhoff	Johannes.Benkhoff@dlr.de,	DLR,	?	comets
Jérôme	Berthier	berthier@imcce.fr,	Institut de mecanique celeste	2.3	asteroids

BUT (European Institutes of Present Email Experts) DO NOT EQUAL (Europlanet Nodes) !

For Our Science Cases - Email List



1) (Continued) New and not existing yet Europlanet Affiliations. Suggest to add for FP7:

- Added —> DLR
- University of Oslo Institute of Theoretical Astrophysics
- University of Jena
- Physikalisches Institut, Universität Bern
- Added —> Technical University Braunschweig
- University of Kent at Canterbury
- Added —> Leiden University
- Queen Mary, University of London
- Queen's University Belfast
- Università di Pisa
- University of Helsinki Observatory
- Observatoire de Besançon
- Added —> Observatoire de Marseilles (?)
- Added —> Comenius University Bratislava
- Vatican Observatory
- Added —> University Stuttgart IR
- Added —> University of Warsaw IG

European Planetary Science Knowledge of Workshops



European planetary scientists are sometimes unaware that a planetary meeting/workshop in Europe exists. A unique place where all of the information is stored is missing.

Solution:

See:

http://www.europlanet-eu.org/index.php?option=com_jcalpro&Itemid=35

The outreach website developed under J-P Lebreton's and J. Zarnecki's outreach N4 activity.

- 1) Please send the info to Thierry Duprat, the new Europlanet project manager (thierry.duprat@cesr.fr), and
- 2) to Jean-Pierre Lebreton (jean-pierre.lebreton@esa.int)

For Our Science Cases - Engaging Experts



SBD Node Managers:

(incoming)
Cristina De Sanctis
Diego Turrini

(outgoing, advice)
Amara Graps

2) Engaging Experts.

Experts: “People”

Need at least one each for: comets,
asteroids/TNO, and dust

Future (FP7), Experts could also be “Facilities”

Ground-based Observations
(comets, asteroids/TNO, dust)

Space Mission
(comets, asteroids/TNO, dust)

Modeling
(comets, asteroids/TNO, dust)

Laboratory
(comets, asteroids/TNO, dust)

From November 2005 (Norheim) N2 Meeting. Results from systems analysis:
(most broad coverage of targets and most involved methods of study)

ISSI



HOW



COMETS (But this Comet/Rosetta Science Case 'Evolved')

1. How can we best optimise from observations, numerical experiments, laboratory simulations, further analysis of past mission data the science return of Rosetta?

'Added on' in April (due to a preponderance of participants working in comets):

7. What are the physical/chemical processes leading to distant activity, outbursts, splitting and disruption of cometary nuclei?

(Schmidt's)

Solar wind-comet surface interaction

-Surface material composition

WHAT



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)?

WHAT



6. What are the connections between TNOs, centaurs, trojans, comets and icy satellites and **what is the dynamical and morphological structure of the Kuiper belt?**

'Evolution' of Rosetta Science Case / ISSI Workshops



Comets Science Cases - Possible synergies with ISSI to be implemented.
Workshop and Rosetta SWT. Proposal: At the moment, we should:

- Follow the progress in the ISSI workshops and Team Meetings
- Follow the progress in the Rosetta SWTs

The years 2006-2007 demonstrated that too few comet workshops to address all of the Rosetta science questions. Note that existing ISSI workshops are small and invitation only.

Proposal: We should:

- Encourage Rosetta Science Workshops in Europe, whenever and wherever possible.
(Capri 2003: "The New Rosetta Targets" is good example)

New Comet/Rosetta Science Case

August 2007



Memo

To: Walter Schmidt
From: Amara Graps
CC: Francesco Carraro, Maria Teresa Capria, Angioletta Coradini, N7 Experts: Christophe Arviset, Reta Beebe, Robert Bentley, Francesca Ferri, Françoise Genova, Christopher Harvey, Angelo Pio Rossi, Thomas Roatsch, Francis Rocard
Date: August 3, 2007
Re: Science Cases for the IDIS Small Body and Dust Node

1. What can we expect in the different mission phases and heliocentric distances for the Rosetta mission of the CO, CO₂, H₂O gases and dust fluxes from comet Churyumov-Gerasimenko, assuming a nucleus thermal evolution model based on the ISSI Special Report 004 (June 2006): Heat and Gas Diffusion in Comet Nuclei, and how do the gas and dust output compare to the comets measured in-situ (for example: Borrelly, Halley, Tempel 1, Wild 2) at the same distances?

New Comet/Rosetta Science Case

August 2007



Reasons for Selection:

A Rosetta mission Science Case is deemed critical because the Rosetta mission involves a major swath of the European planetary scientists and is the premier small bodies and dust mission for the next decade.

The original N2 Rosetta Science Case underwent an evolution since 2005. It was originally a broad Science Case, more suitable for several ISSI workshops. The newly formed Rosetta ISSI workshops were and are small, however, by invitation only, and unable to address the broader questions that the N2 Working group proposed.

The new Science Case that the N7 SBD node formulated can utilize a specific thermal evolution expertise of IASF/IFSI scientists and their European colleagues that should be able to yield a helpful result by the end of the Europlanet FP6 project.

Our Science Cases



1. What can we expect in the different mission phases and heliocentric distances for the Rosetta mission of the CO, CO₂, H₂O gases and dust fluxes from comet Churyumov-Gerasimenko, assuming a nucleus thermal evolution model based on the ISSI Special Report 004 (June 2006): Heat and Gas Diffusion in Comet Nuclei, and how do the gas and dust output compare to the comets measured in-situ (for example: Borrelly, Halley, Tempel 1, Wild 2) at the same distances?
2. 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)?

For Our Science Cases: Comet C-G outgassing

1. What can we expect in the different mission phases and heliocentric distances for the Rosetta mission (at key positions) of the CO, CO₂, H₂O gases and dust from comet Churyumov-Gerasimenko, assuming Model(s) based on the ISSI Special Report 004 (June 2006): Heat and Gas Diffusion in Comet Nuclei, and how do the gas and dust output compare to the comets measured in-situ (for example: Borrelly, Halley, Tempel 1, Wild 2) at the same phases and distances?

ESA and European Southern Observatory



Comet 67P/Churyumov-Gerasimenko

Diameter of nucleus – estimated (km)	4
Orbital period (years)	6.6
Minimum distance from Sun (million km)	186
Maximum distance from Sun (million km)	857
Orbital eccentricity	0.6
Orbital inclination (degrees)	7.1
Year of discovery	1969

Mission Phases:

Comet approach
(January–May 2014)

Comet mapping /
characterisation
(August–October 2014)

Landing on the comet
(November 2014)

Escorting the comet
around the Sun
(November 2014 –
December 2015)

Science Case: Comet C-G outgassing



1) Objective or Science Goal WHAT IS THE FINAL PRODUCT?

Gas production rate of CO, CO₂, H₂O and dust flux at given heliocentric distances of comet C-G and other comets measured in-situ (Borrelly, Halley, Tempel 1, Wild 2)

2) Needed Data Sets WHICH INSTRUMENTS, RELEVANT KEYWORDS, HIERARCHY LIST

Which instruments: The instruments for the missions observing Borrelly, Halley, Tempel 1, Wild 2

Data sets:

- Output of the model(s)
- Observation data (other comets)

Relevant keywords:

- mission phase ("comet approach", etc)
- production rate (gas, dust)
- which chemical species
- orbital dynamic information (position along orbit)

Science Case: Comet C-G outgassing (2)



3) Problem Description DESCRIPTION OF PARAMETERS NEEDED

Position of comet along its orbit (both for comet and mission)

A set of parameters describing composition (dust/ice, ...) and structure (porosity, ...) of the comet nucleus

4) Current solution: HOW WOULD YOU DO IT MANUALLY

Direct contact between scientists

PDS data of other comets

Prepare and run the models with given inputs

Output are columns in an ASCII table

Then output as plots: production rates, temperatures maps

5) What services do users expect from IDIS to work more efficiently:

MORE DETAILS, WHAT TYPE OF MEASUREMENTS, ASCII-OUTPUT, PLOTTING ROUTINES?

Model that we can run publicly

Easy intercomparison of various in-situ and ground-based comet datasets

Science Case: Comet C-G outgassing (3)



6) Key References on the science and methodology for this science case

ISSI Scientific Report: SR-004: Heat and Gas Diffusion in Comet Nuclei, Huebner, W.F., Benkhoff, J., Capria, M-T., Coradini, A., De Sanctis, C., Orosei, R., and Prialnik, D. (eds.), ISSI (Bern, Switzerland), 2006.

The New Rosetta Targets, L. Colangeli, Epifani, E.M., Palumbo, Pasquale, P. (eds.), Kluwer (Dordrecht), 2004.

Comets II, Festou, M. C.; Keller, H. U.; Weaver, H. A. (eds.) University of Arizona Press, 2005.

special issue Planetary Space Science: Rosetta instruments

special Science issues for : Stardust, Borrelly,

special Icarus issue for Deep Impact

...

Science Case: Relative Contribution to Zodiacal Cloud?

2. 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)?

A thirty year old question in the dust community.. That still continues!

(See debate at the “Dust in the Solar System and Other Planetary Systems”, September 2005 Meeting).



<http://apod.nasa.gov/apod/ap070925.html>

“Découverte de la lumiere celeste qui paroist dan le zodiaque” (Cassini 1693)

Science Case: Relative Contribution to Zodiacal Cloud?



A SURVEY OF RADIAL VELOCITIES in the ZODIACAL DUST CLOUD

Brian Harold May

Astrophysics Group

Department of Physics

Imperial College
University of London

Thesis submitted for the Degree of Doctor of Philosophy to
Imperial College of Science, Technology and Medicine
University of London

· 2007 ·

The Zodiacal Cloud has larger-than-life supporters, asking and answering relevant questions.



© Brian May

<http://www.brianmay.com/brian/brianssb/brianssb.html>

Contribution to Zodiacal Cloud? (2)



1) Objective or Science Goal WHAT IS THE FINAL PRODUCT?

Mass of (asteroidal dust, comet dust, ISD, other) to the zodiacal cloud as a function of (particle size, heliocentric r , latitude, time).

2) Needed Data Sets WHICH INSTRUMENTS, RELEVANT KEYWORDS, HIERARCHY LIST For spatial distribution, number density, size, shape, structure, and composition.

Remote sensing instruments (these give large scale view of zodiacal cloud, size distribution, dust grain composition and optical surface properties)

Photopolarimeters Attached to Ground-based telescope (e.g. 1970s work at Tenerife)

Not usually considered, but should be: MER

"WIZARD" Camera (CCD) attached to Subaru telescope (e.g. 200Xs work at Mauna Kea)

D2A spacecraft (1970s): Photometer

HELIOS 1 and 2 spacecraft (1970s): Photopolarimeter

Pioneer 10 and 11 (1970s): Imaging Photopolarimeter (IPP)

Infrared Space Telescopes: IRAS, ISO, COBE, Spitzer, AKARI

2) Needed Data Sets WHICH INSTRUMENTS, RELEVANT KEYWORDS, HIERARCHY LIST

In-situ instruments

Large amount of data from 0.3 to 5 AU; only available method at larger distance from Sun than asteroid belt; gives individual grains properties: orbital elements, charge, elemental composition

HEOS 1, 2 Micrometeoroid Detector

Ulysses Dust Detector System (DDS)

Galileo Dust Detector System (DDS)

Hiten (MUSES-A) Munich Dust Counter (MDC)

GORID Dust Detector System (DDS)

Cassini Cosmic Dust Analyser (CDA)

Stardust Comet and Interstellar Dust Analyzer (CIDA)

Rosetta Cometary Secondary Ion Mass Analyser (COSIMA)

AMOR, Haystack radar stations

Laboratory Analysis

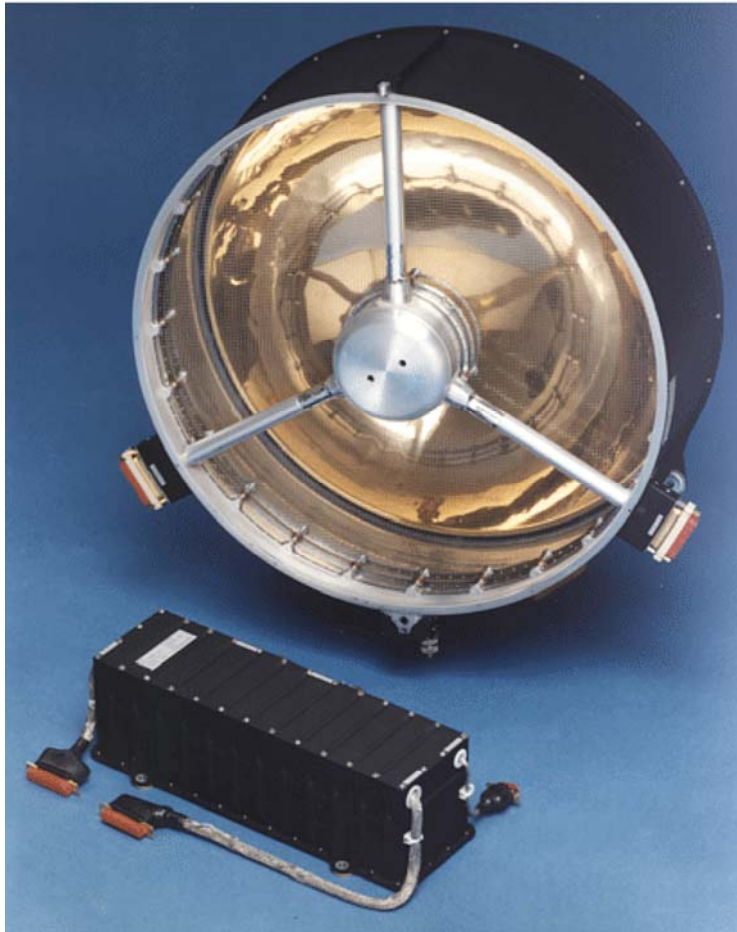
Stratospheric IDPs (A. Rotundi)

Arctic and Antartic Micrometeorites (S. Taylor)

IDP Database (NASA JSC)

Polarisation measurements (A-C Levasseur-Regourd, B.A.S. Gustafson)

Galileo Dust Detector System



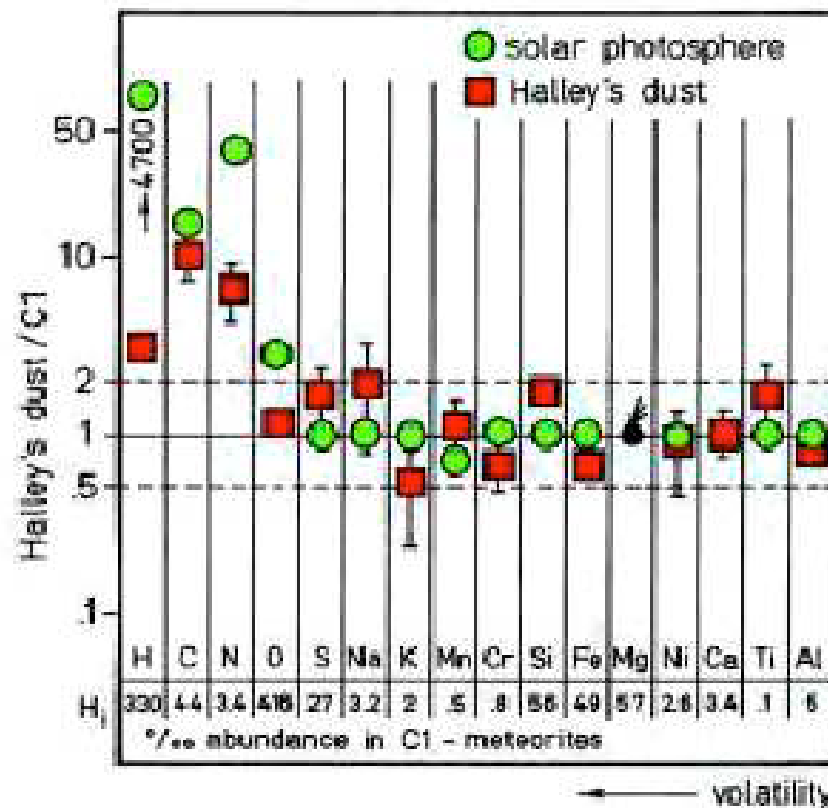
Databases: Galileo (*), GORID (*), Pioneer 10/11 (*), HEOS-2 (**), Helios (**), Ulysses, Cassini, , Rosetta,

(*) Mission ended. Data archived

(**) Don't know status of data..

(r.i.p. 21.9.03)

Comet Halley Dust Elemental Abundance Compared to Solar



Databases: Giotto, VeGa, Stardust, Deep Impact, Rosetta, New Horizons...

The average abundance of elements (with increasing refractivity from left to right in dust from comet Halley (squares) compared to element abundances in the solar photosphere (circles). All abundances are normalised to the elementary abundances of C1 chondrites. The error bars indicate the variability of the measured dust grains.

(Kissel, J. and Krueger, F.R. (1987). The organic component in dust from comet Halley as measured by the PUMA mass spectrometer onboard Vega 1. Nature 326, 755-760.)

2) Needed Data Sets WHICH INSTRUMENTS, RELEVANT KEYWORDS, HIERARCHY LIST

Models (for the temporal evolution and location in space):

- Empirical: Update of the Grün interplanetary complex: [Divine, Staubach Dikarev], and Kelsall (a different approach)
- Theoretical: Dynamical Evolution (Grogen, Holmes, Dermott, Krivov, Landgraf, Liou)
- Presently, the ESA Darwin mission is producing an open-source toolkit for exo-system modeling, where the zodiacal cloud models are based on [Kelsall et al., ApJ, 508:44-73, 1998]. Existing software: “Zodipic”

RELEVANT KEYWORDS: photopolarimetry, asteroidal dust, comet dust, interstellar dust, zodiacal cloud, zodiacal light, thermal emission, dust particle mass/size and beta, heliocentric distance and latitude, time

Contribution to Zodiacal Cloud? (5)



3) Problem Description DESCRIPTION OF PARAMETERS NEEDED

Modelling: Inverse Problem. (Whose Models?)

Assumption of dust particle optical properties, composition, size, mass properties, heliocentric location, velocity

Sources (assumptions): asteroids, comets, interstellar dust (ISD)

Sinks: mutual collisions, expulsion (as beta-meteoroids), PR drag (into the sun)

Dependent on location and time period

4) Current solution: HOW WOULD YOU DO IT MANUALLY

Direct contact between scientists

PDS: Many in-situ space mission data, available from databases on the Web
(MPI-K: Galileo DDS, Cassini CDA; ESA (Earth vicinity): GORID, Proba

Meteor Survey data: From the Individual Scientists

Antarctic/Arctic Ice, Stratospheric data: NASA JSC

Laboratory data: from the individual scientists

Running Models

Contribution to Zodiacal Cloud? (6)



5) What services do users expect from IDIS to work more efficiently:

MORE DETAILS, WHAT TYPE OF MEASUREMENTS, ASCII-OUTPUT, PLOTTING ROUTINES?

Dust Datasets that we can access

Models that we can run publicly ?? (Whose?)

Easy intercomparison of various in-situ and remote-sensing datasets

Laboratory data

Contribution to Zodiacal Cloud? (7)



6) Key References on the science and methodology for this science case (not complete yet)

BOOK: Interplanetary dust by Gruen, Eberhard; Gustafson, Bo A. S.; Dermott, Stan; Fechtig, Hugo (eds), Berlin : Springer, c2001.

ARTICLES:

(Remote Measurements)

Series: "Zodiacal Light Photopolarimetry" [Dumont and Sanchez (1975) I, II, ; Dumont and Levasseur-Regard 1976, 1978, 1980 III IV V], B.H. May PhD thesis, 2007

Pioneer 10 observations of zodiacal light by Hanner, M.S. et al., 1976

HELIOS zodiacal light measurements by Leinert, C. et al. 1982

WIZARD Zodiacal Light Measurements by Ueno et al, 2007

(In-situ Measurements)

"South-North and Radial Traverses through the Interplanetary Dust Cloud" by Gruen et al, 1997

(Empirical Models)

"Five populations of interplanetary meteoroids" by Divine 1993

"Temperatures of Zodiacal dust" by Staubach 1993

"Update of the ESA Meteoroid Model" by Dikarev et al, 2005

Contribution to Zodiacal Cloud? (8)



6) Key References on the science and methodology for this science case

ARTICLES:

(Dynamical Models)

Liou et al, 1995

Holmes et al., 1996, 2000, 2001

Grogen et al., 1996, 1998, 1999, 2001, 2002, 2004

Durda et al., 1996

Wyatt et al., 1998

Dermott et al., 1999, 2000, 2002, 2004, 2005

Landgraf et al., 1999, 2001, 2002

Mahoney-Hoppin et al., 2003

Kehoe et al., 2005

Espy et al., 2006

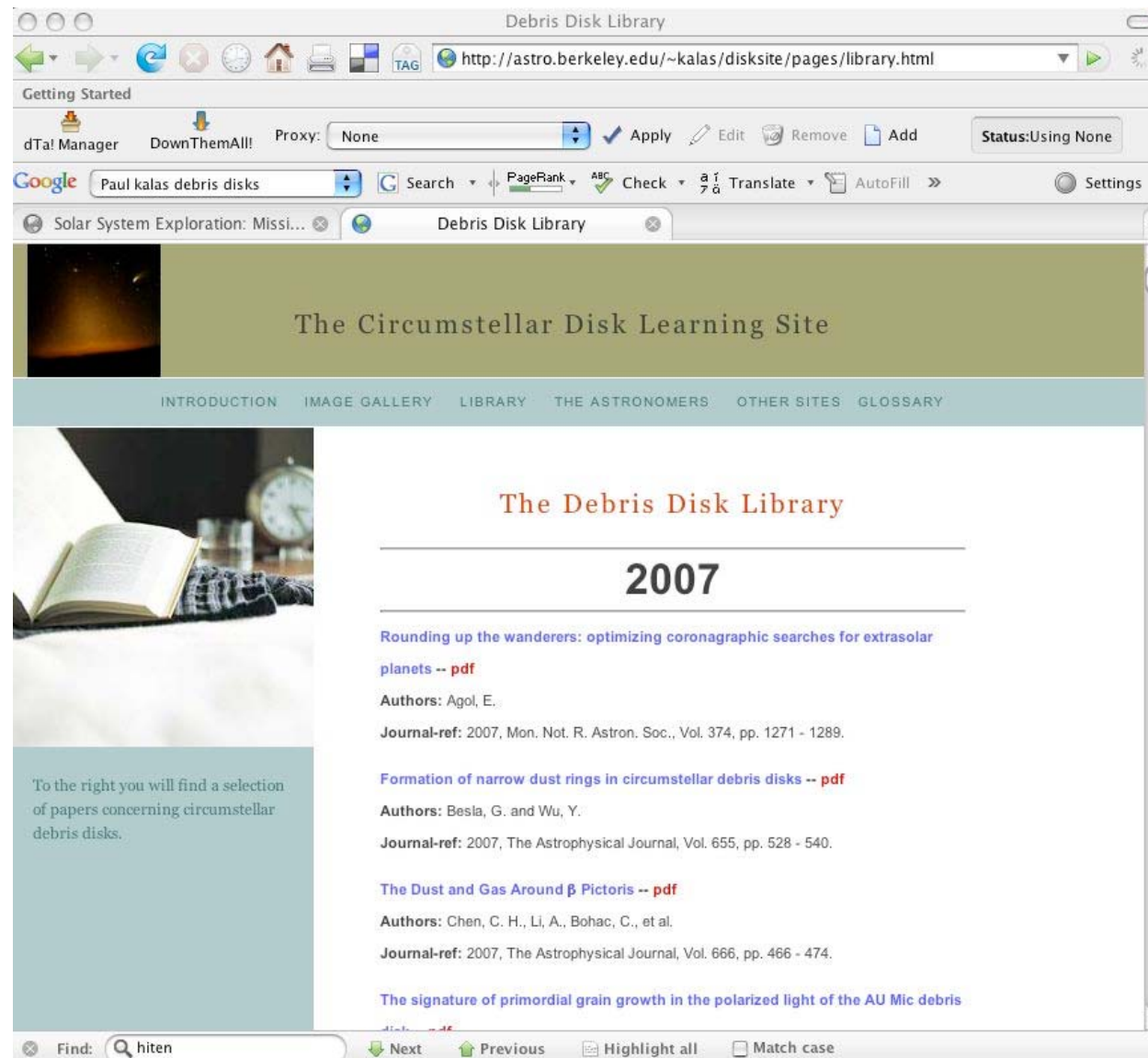
Contribution to Zodiacal Cloud? (9)

This is a complex and large Science Case with a 30 year old history of scientific efforts.

A ‘result’ will be difficult in the short time remaining in FP6, but a good beginning would be to link the resources here, and to compile the references into a ‘library’.

One good model for the references is Paul Kalas’ Debris Disk Library.

<http://astro.berkeley.edu/~kalas/disksite/pages/library.html>



The screenshot shows a web browser window titled "Debris Disk Library" with the URL <http://astro.berkeley.edu/~kalas/disksite/pages/library.html>. The page features a navigation menu with links for INTRODUCTION, IMAGE GALLERY, LIBRARY, THE ASTRONOMERS, OTHER SITES, and GLOSSARY. The main content area is titled "The Debris Disk Library" and displays a list of references for the year 2007. The references include:

- [Rounding up the wanderers: optimizing coronagraphic searches for extrasolar planets -- pdf](#)
Authors: Agol, E.
Journal-ref: 2007, Mon. Not. R. Astron. Soc., Vol. 374, pp. 1271 - 1289.
- [Formation of narrow dust rings in circumstellar debris disks -- pdf](#)
Authors: Besla, G. and Wu, Y.
Journal-ref: 2007, The Astrophysical Journal, Vol. 655, pp. 528 - 540.
- [The Dust and Gas Around \$\beta\$ Pictoris -- pdf](#)
Authors: Chen, C. H., Li, A., Bohac, C., et al.
Journal-ref: 2007, The Astrophysical Journal, Vol. 666, pp. 466 - 474.
- [The signature of primordial grain growth in the polarized light of the AU Mic debris disk -- pdf](#)

The browser's search bar at the bottom shows the text "Find: hiten".

EXTRA SLIDES

'Evolution' of Rosetta Science Case / ISSI Workshops



Comets Science Cases - Possible collusion/duplication of efforts with ISSI Workshop and Rosetta SWT. Proposal: At the moment, we should:

- Follow the progress in the ISSI workshops and Team Meetings
- Follow the progress in the Rosetta SWTs

From K. Altwegg, 10May06:

"The purpose of this [ISSI] working group is: "The Working Group (WG) shall identify and initiate investigation of hot scientific topics with data from Giotto and other spacecraft and remote sensing and thus prepare for coordinated composition investigations and raise interest for and attractiveness of the field within the next generation. Furthermore complementary laboratory measurements that are instrumental for quantitative Rosetta analyses shall be identified and initiated." Currently we are preparing an ISSI workshop on "Origin and Early Evolution of Comet Nuclei" which will be held in October this year at ISSI. Apart from this workshop the working group has started an archive on compositional data from comets (in situ and remote sensing) and on compiling a document which will specify the capabilities of the Rosetta instruments with regards to composition. It will also contain suggestions for common calibration campaigns and common science goals of all sensors which will analyze composition of the volatiles and the dust of C-G. We have also started a list of laboratory measurements to be done prior to the Rosetta rendezvous with C-G. I think that one of the results of this working group will also be a recommendation to ISSI which role ISSI should play in the preparatory work for Rosetta."

From ISSI Web site:

- 17-20 October 2006 ISSI Workshop: Origin and Early Evolution of Comet Nuclei - Workshop
- 7. August 2006 Working Group on "Composition of Comets "

'Evolution' of Rosetta Science Case / ISSI Workshops (2)



Comets Science Cases - The years 2006-2007 demonstrated that too few comet workshops to address all of the Rosetta science questions. Note that existing ISSI workshops are small and invitation only.

Proposal: We should:

- Encourage Rosetta Science Workshops in Europe, whenever and wherever possible. (Capri 2003: "The New Rosetta Targets" is good example)

From K. Altwegg, 20 August 2007:

"[...] ISSI workshops are generally on "invitation" only. Therefore it was not announced broadly. The title of the very successful workshop was "origin and evolution of cometary nuclei", the book is in progress and should appear in the ISSI series by the end of this year. As the working group focuses mainly on "composition" there is no interference with your proposed theme "thermal evolution". At the moment it is also not clear how to proceed because the Rosetta science working team has formed three subgroups addressing several science themes. We have to see how this progresses in order to assess if the work on composition is been adequately pushed by these new groups.

."

(FP7) Expertise in Building Instruments in Europe (for small bodies and dust)



FIRST DRAFT OF INSTITUTES WITH EXPERTISE IN BUILDING INSTRUMENTS WHICH ARE OF INTEREST FOR SMALL BODIES AND DUST IN EUROPE:

Near-UV, Visible, NIR imagers: Lindau; Marseilles; Orsay (IAS); DLR/Berlin
UV spectrometers: Aeronomie/France(IPSL-UPMC)
Visible spectrometry: IASF/Rome; IFSI/Rome; Observatoire de Paris-Meudon
Microwave spectrometry: Observatoire de Paris-Meudon
Dust spectrometry: Lindau
Gas spectrometry: CETP/France(IPSL); Lindau
Radar type instruments: Aeronomie/France(IPSL-UPMC); Grenoble; Lindau; Rome
Atomic force microscopy: Graz/Austria; ESTEC
Dust impact instruments: Univ. Naples; Capodimonte Obs. Naples; Heidelberg;
TU Muenchen; Open Univ./UK
Plasma instruments: LPCE/Orléans
Gas chromatography: Open Univ./UK; Aeronomie/France(IPSL-UPMC); LISA/France;
Lindau
Magnetometer: IC/London; Braunschweig; Orléans
Energetic particle instruments: Toulouse; Mainz; IRF/Kiruna; IFSI/Rome;
CETP/France(IPSL); Lindau
Radio science: DLR/Germany; Univ. Rome

(FP7) Laboratory Experiments Expertise in Europe (for small bodies and dust)



SOME EUROPEAN PLANETARY INSTITUTES WITH LABORATORY EQUIPMENT:

Capodimonte Obs. Naples/Univ. of Parthenope: dust production, processing and analysis

MPIK Heidelberg, Open Univ./UK; Univ. of Kent/UK; TU Munich: Dust impact simulation

TU Braunschweig; TU Munich; Univ. Jena: Dust coagulation experiments

Aeronomie/France(IPSL-UPMC), LPCE/Orléans: light scattering exp. for dust and regoliths; dusty plasma exp.

MPE Garching: dusty plasma exp.

Leiden: interstellar dust analogues