

COMMISSION 15

PHYSICAL STUDIES OF COMETS AND MINOR PLANETS

*L'ETUDE PHYSIQUE DES
COMETES ET DES PETITES PLANETES*

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VICE-PRESIDENT
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Alan Fitzsimmons,
Petrus M. M. Jenniskens,
Dmitrij Lupishko, Thais Mothé-Diniz,
Gonzalo Tancredi, Diane H. Wooden

PROCEEDINGS BUSINESS SESSIONS, 5 August and 11 August 2009

1. Introduction

This report of the business meeting of Commission 15 at the 2009 IAU GA is based on notes provided by Walter Huebner, past president, and on the minutes taken by Daniel Boice, secretary of Commission 15 in the triennium 2006 to 2009, with additional notes from the current secretary, Daniel Hestroffer. The business meeting was split into two sessions, the first held on 5 August and the second held on 11 August. This report presents the minutes of the two Commission 15 business-meeting sessions held during General Assembly XXVII.

Walter Huebner opened the Business Meeting, welcoming members and others in the audience interested in the commissions activities. The incoming President, Albert Cellino, the past Division III President, Ted Bowell, and the incoming Division III President, Karen Meech, were in attendance, as were approximately two-dozen commission members. The agenda as presented by Walter Huebner was adopted.

The first item of business was the justification for the continuation of Commission 15. It had been proposed at the Prague GA XXVI that Commissions 15 and 20 be merged at this GA. After much discussion prior to the GA, the Commission 15 membership could not support this proposed merged for several reasons, among them, lack of commission membership overlap and responsibilities, the large size that would result from the merger, etc. Ted Bowell, outgoing Division III president, was present and expressed his opposition to the proposed merger. Commissions 15 and 20 will continue to be separate during the next triennium and for the foreseeable future.

The next item of business was the justification for continuation of the Commission Working Groups and Task Groups. Since the issues with which they are concerned are broad and cannot be resolved within a given triennium, it was approved that the Comets and Minor Planets WGs should continue, as well as their respective TGs. Task Group deliverables should be updated for the next triennium.

The Commission decided to continue preparing the Triennial Report in the same format as the five preceding reports. The research descriptions will be included in the printed version, while the references will be made available on the Commissions website.

2. Commission 15 Elections

Walter Huebners term as President came to an end at this IAU GA. The membership extended their gratitude to him for his excellent leadership during the past triennium. It was decided to

continue the tradition that the Vice President becomes President, insuring that the President has at least three years prior exposure to the operations of the Commission. As is also tradition, the new President selected the new commission secretary, Daniel Hestroffer. The position of Vice President is usually filled by the Chair of one of the two Working Groups on an alternating basis. Thus, the new Vice President would have been the Chair of the Comets Working Group of the previous triennium. However, Tetsuo Yamamoto (outgoing Chair of the Comets WG) had declined due to work commitments. As a result, Tetsuo strongly recommended Dominique Bockelée-Morvan for the position of Vice President. She was approached by the present and incoming presidents and accepted the nomination to fill this position. No additional nominations for the Vice President were submitted by the membership, so she was elected unanimously to this position. Tetsuo Yamamoto also completed his two-term limitation as Chair of the Comets WG so nominations to succeed him were solicited. Again, the appreciation of the membership for his service to the commission these past six years were extended to him. Nominations for the Chair of the Comets WG and the five open positions in the Organizing Committee to serve during the next triennium (2009-2012) were solicited via e-mail from the membership. Based on these nominations, an election was held prior to the IAU GA by e-mail with about one-fourth of the commission membership participating. The results of this election are summarized below.

Officers for Triennium 2009–2012:

PRESIDENT	Alberto Cellino (Italy)
VICE-PRESIDENT	Dominique Bockelée-Morvan (France)
SECRETARY	Daniel Hestroffer (France)
MINOR PLANETS WG CHAIR	Ricardo Gil-Hutton (Argentina)
COMETS WG CHAIR	Daniel Boice (USA)
ORGANIZING COMMITTEE	Björn J. Davidsson, Elisabetta Dotto, Alan Fitzsimmons, Petrus M. M. Jenniskens, Dmitrij Lupishko, Thais Mothé-Diniz, Gonzalo Tancredi, Diane H. Wooden

Thanks were given to the outgoing members of the OC who have completed their second term: Dominique Bockelée-Morvan (France), Yuehua Ma (China), Harold J. Reitsema (USA), and Rita M. Schulz (Netherlands). It was noted that more of an effort should be expanded to recruit members from the Asian continent.

3. Commission 15 Membership and Other Business:

Total memberships stands at 403 as of 5 August 2009.

New Members: The following 49 new members joined the Commission during the past triennium:

Baransky, Olexander	Ukraine
Barber, Robert	UK
Bendjoya, Philippe	France
Bhardwaj, Anil	India
Carruba, Valerio	Brazil
Chubko, Larysa	Ukraine
Conrad, Albert	United States
da Silveira, Enio	Brazil
Delsanti, Audrey	SF2A (France)
Doressoundiram, Alain	France
Duffard, Rene	Argentina
Filacchione, Gianrico	Italy
Fornasier, Sonia	SF2A (France)
Gajdoš, Stefan	Slovakia
Gounelle, Matthieu	France
Gulbis, Amanda	National Research Foundation (USA)
Jakubik, Marian	Slovakia
Karatekin, Özgür	Belgium
King, Sun-Kun	China Taipei
Koshkin, Nikolay	Ukraine
Küppers, Michael	Spain

Lara, Luisa	Spain
Licandro, Javier	Spain
Lo Curto, Gaspare	Chile
Marchi, Simone	Italy
Mazzotta Epifani, Elena	Italy
Mendillo, Michael	United States
Ortiz, Jose	Spain
Peixinho, Nuno	Portugal
Picazzio, Enos	Brazil
Roig, Fernando	Brazil
Roques, Françoise	France
Rosenbush, Vera	Ukraine
Schaller, Emily	United States
Sen, Asoke	India
Shinsuke, Abe	Japan
Sho, Sasaki	Japan
Tarashchuk, Vera	Ukraine
Tiscareno, Matthew	United States
Tosi, Federico	Italy
Trujillo, Chadwick	United States
Ugolnikov, Oleg	Russian Federation
Vzquez, Roberto	Mexico
Voelzke, Marcos	Brazil
Wang, Xiao-bin	China Nanjing CAS
Yang, Xiaohu	China Nanjing CAS
Zhang, Jun	China Nanjing CAS
Zhang, Xiaoxiang	China Nanjing CAS
Zhao, Haibin	China Nanjing CAS

Resignations: C.R. ODell (USA) resigned membership in the Commission, having retired and become inactive in the study of small solar system bodies.

Necrology: Five distinguished members of the Commission that had died during the preceding triennium were acknowledged and a moment of silence was observed in their memory.

Helin, Eleanor (Glo)	USA
Ostro, Steven	USA
Safaenili, Ali	USA
van Flandern, Tom	USA
Zucconi, Jean-Marc	France

It was noted that the category of IAU consultant has been eliminated.

4. Summaries of Working Group Reports

4.1. Working Group on Comets

Outgoing WGC Chair: Tetsuo Yamamoto (Japan), presented by incoming WGC Chair: Daniel Boice (USA)

Three major accomplishments of the Comets WG were reported during the business meeting. The first was the submission of the triennial report in June 2008. Thanks were given to Walter Huebner and other contributors to the comet section. A website for the Comet WG was initiated by Tetsuo Yamamoto at Hokkaido University (www.lowtem.hokudai.ac.jp/iau-c15-wg/index.html). This website includes the web pages for the Task Group on Cometary Magnitudes (TGCM). Due to inactivity, the TG on Cometary X-Rays was abolished. Plans were made to transfer the website to Southwest Research Institute where the new Comets WG chair resides. The last major accomplishment was holding a mini-workshop on cometary missions at the Prague GA in August 2006. Speakers included Rita Schultz (Rosetta); Uwe Keller (proposed Fresh From the Fridge Mission); and Mike A'Hearn, Karen Meech and the Deep Impact team.

4.2. Working Group on Minor Planets

WGMP Chair: Ricardo Gil-Hutton (Argentina)

Several issues were advanced and summarized in the Minor Planets WG report. The first, was the usage of the words minor planets after the redefinition of a planet during the previous GA. There was no objection during the discussion of this issue so the name of the WG will not be changed. Another issue is that the WG consists of only one person, so the Chair will approach other Commission 15 members to expand the WG. The WG also prepared the part of the triennial report for asteroids. A website for the Minor Planets WG was initiated by Ricardo Gil-Hutton at Complejo Astronómico El Leoncito (Casleo) (www.casleo.gov.ar/c15-wg).

5. Summaries of Task Group Reports

5.1. Task Group on Asteroid Magnitudes

TGAM: Ed Tedesco (USA) and R. Gil-Hutton (Argentina), co-chairs, presented by Alberto Cellino (Italy), 9 members total

The TGAM was charged with investigating the quality of asteroid absolute magnitudes and the accuracy of the asteroid magnitude phase function and to suggest ways to improve both. The fundamental role played by the absolute magnitude in numerous areas of research is well known. An accurate asteroid magnitude phase function is needed to reduce these observations. Thus, the Task Group was impressed by the very poor state of the H values listed in the major databases, by the potential consequences on the results of a number of recent investigations concerning the size-frequency distribution of the asteroid population, and inferences on the most likely values of asteroid collisional impact strengths.

The TGAM have created alternate formulations of the H, G1, G2 magnitude phase function to replace the current (H, G) phase function which, if used on properly transformed and calibrated data will eventually result in a catalog of accurate H values. A paper in preparation will detail application of the new magnitude phase functions to asteroid magnitude phase data. In particular, it will demonstrate how the two-parameter versions of the H, G1, G2 phase function can be used to predict asteroid brightness from sparse observational data and will provide an estimate of the accuracies to be expected.

5.2. Task Group for Albedo Polarimetric Albedo Calibration

TGAPAC: Albert Cellino (Italy) and R. Gil-Hutton (Argentina), co-chairs, 8 members total

This Task Group is charged with recalibration of the albedo-polarization relation for asteroids; specifically to define improved procedures to determine the relation between the albedo at the polarization minimum (Pmin) and the slope of the albedo. The Task Group prepared progress reports to the Commission 15 OC and prepared a final report at the IAU General Assembly in 2009. Two meetings were held by TGAPAC during the previous triennium: Astronomical Polarimetry (Quebec, 2008) and the ISSI International Team on *Light Scattering Phenomena in Small Body Surfaces* (Bern, two meetings in 2008). In the future, the primary goals of TGAPAC are new data collection for albedo calibrations, aimed at obtaining very accurate polarization measurements of the Shevchenko-Tedesco target list, more theoretical work is needed, additional studies are needed for peculiar objects (Barbarians, F-class, etc), and the need of new instruments and optimal use of telescopes in the 2- to 4-m class.

5.3. Task Group on Comet Magnitudes

TGCM: Gonzalo Tancredi (Uruguay) and T. Yamamoto (Japan), co-chairs, 7 members total

This report was given by Gonzalo Tancredi during the August 11 business meeting. He reminded us that the problem of deriving a magnitude of a comet has increased with the use of CCD and visual devices. The discussions by members within the task group also included the community of amateur astronomers. The tasks and deliverables consist in a new derivation of the total and nuclear magnitude, new rules to report them with other valuable data, and production of a final report. The database on cometary magnitudes should be made more accessible. The history of the IAU (m1, m2) system was introduced in 1960 and is no longer used. A short report of the "5th International Workshop on Cometary Astronomy (August 8)" was given: CCD photometry and reduction with FoCAs (photometry with Astrometrica) mostly used in the community; a dispersion between CCD and visual magnitudes was noted; and a definition

for the coma similar to the FWHM is proposed. D. Boice (USA) becomes the new co-chairman of the task group, replacing T. Yamamoto.

5.4. *Task Group for Physical Properties of Near-Earth Objects*

TGPPNEO: Karri Muinonen (Finland), 12 members total

The name was changed from physical properties of NEOs to geophysical and geological properties of asteroids and comets as originally proposed. The working group met by exchanging e-mails several times. The major goal is to collect knowledge and data on material properties (observed or simulated) of NEOs. There are many sources available on the web, journal publications, and in books. EuroPlanet will also be a potential source in the near future. Two points were raised: the introduction of spectroscopic properties into the database and whether one should reproduce the data in an internal database or (preferably) point to an external one. It is recommended to narrow the list of parameters, to prioritize those needed most, and to make systematic comparisons between specific asteroids and laboratory experiments on meteorites. A database has been established at: neodata.space.swri.edu.

6. New Task Groups

A TG for International Participation for Countermeasures Against Potentially Hazardous Objects (PHOs, asteroids and comet nuclei on a collision course with Earth) was proposed and discussed extensively. It was concluded that the new Division III President, Karen Meech, will approach the IAU Executive Committee to endorse international participation in research, planning, and execution of countermeasures against PHOs.

There was a call for other new Task Groups but no suggestions were put forth.

7. Proposals for IAU Symposia

It was suggested that a proposal be developed for an IAU Symposium for Countermeasures Against Potentially Hazardous Objects (PHOs) when the endorsement of the IAU Executive Committee mentioned above is obtained.

There was a call for other symposia sponsored by Commission 15 but no suggestions were put forth.

8. Closing Remarks

Outgoing President, Walter Huebner, closed the business meeting with a call to intensify the Commissions efforts to recruit new members, especially younger scientists, to keep the Commission vibrant and healthy. He then thanked all for their assistance during his tenure and wished the incoming Commission officers continued success. All present thanked the past President, Walter Huebner, and the past Secretary, Daniel Boice, for their untiring commitment and service to Commission 15.

Alberto Cellino
President of the Commission