



Department of Space and Climate Physics Newsletter

Volume 3, Issue 2

15th October 2005

Covers events between 1st June 2005 and 31st August 2005

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A few words from Alan Smith - MSSL's new Director

It is with great pride, humility and trepidation that I accepted the post as Director of MSSL. I've been at the laboratory for over 15 years but still feel somehow a newcomer - although it does seem a long time ago that I benefited from Club Class air travel with the European Space Agency! Given my new role I felt it was appropriate to spend more time at the lab and less at UCL. By passing on several responsibilities I think I've been able to achieve my objective and am enjoying a fairly regular cycle journey to and from Cranleigh.



MSSL has many impressive strengths. Our science team has never been stronger and we continue to develop world-beating instrumentation. We stand upon a bridge

that connects science with technology and so can offer an almost unique service to a broad community, including space agencies and industry, while maintaining an internationally high reputation for our science. No doubt we will face pressures from many sides as the world out there continues to change - but we've seen changes before and generally found a way to thrive in their face. Some of the changes we see are extremely positive, with over £2m investment in facilities coming on line in the next 18 months. We are very well placed in many key space mission opportunities and hopefully will soon see the return on several years of strategic investment targetted at those missions.

Finally my thanks to Len Culhane and Keith Mason who have directed the laboratory so ably before me.

Promotions

Louise Harra has been appointed Deputy Head of Department. In this capacity she will act on Alan Smith's behalf while he is away for extended periods.

Steve Welch has taken over from Alan Smith as Director of the Centre for Advanced Instrumentation Systems (CAIS) and Director, Space Applications for the Smart Optics Faraday Partnership.

For more than 10 years MSSL has been 'host department' for CAIS. Following agreement by the Dean of the Faculty of MAPS it has been agreed to fully integrate CAIS into MSSL making it part of our general activity. CAIS will form part of MSSL's Technology Management Group but will continue to be located in Taverton Street on the UCL main campus.

New Staff Members

Professor Jingxiu Wang (Beijing Astronomical Observatory, Chinese Academy of Sciences) and Dr. Cristina Mandrini (Instituto de Astronomía y Física del Espacio, Argentina) have been appointed honorary professors.

Iryna Rozum and Hina Khan have joined the Plasma group.

Visitors

"Sun-Earth workshop" – 27 June-1 July. Nine international visitors worked alongside MSSL personnel on 3 different solar events tracking them from the Sun to the Earth. Details are on; http://www.mssl.ucl.ac.uk/www_solar/sun_earth_workshop.html

Prof Jingxiu Wang from Beijing Astronomical Observatory worked with us for a week at the start of July.

Summer students: Zhen Li from Tsing Hua University worked in the solar and stellar physics group for 1 month. Hilary Martens joined us from University of Montana to work on Cassini (13 Jun – 19 Aug).

On 3 August MSSL hosted the MAPS Faculty summer student lectures and talks.

40 students from London International Youth Science Forum visited MSSL on 2 August and had several talks and demonstrations from MSSL staff and students.

15 Stewards from Brooklands Motorsport & Aviation Museum visited the lab on 13th July and enjoyed lectures by Phil Guttridge and John Coker as well as a tour of the workshops. The visit over-ran by at least an hour because they asked so many questions! Judy will be organizing a return visit to the Museum in due course.

Prizes and Awards

- Judy Bartley – The Elizabeth Puchnarewicz Prize for Outreach.
- Lucie Green - The Royal Television Society Lifelong learning and multimedia award for Venus transit programme. (Lucie presented and helped on the programme preparation.)
- Tom Kennedy – The John Raymont Prize for Engineering
- The Swift Science Team (Alex Blustin, Alice Breeveld, Mark Cropper, Simon Rosen, Silvia Zane) – NASA Group Achievement Award.
- The Swift Engineering Team (Mary Carter, Barry Hancock, Howard Huckle, Tom Kennedy, Phil Smith) – NASA Group Achievement Award.

Appointments

Lucie Green has been awarded a 4 year Royal Society Dorothy Hodgkin Fellowship. This will be held in the Solar & Stellar Physics Group.

Grants and Contracts Awarded

Ian Hepburn has been awarded a 9 month grant from the Research Councils Follow-on fund (value £49,000) entitled "Helium free Refrigeration Solutions".

Venus Express Operations (PPARC), Cassini operations extension (subject to PPARC Science Committee/Programmatic Review).

Telescope/Satellite Time Awards/Proposals

Ground based observations

Deep Impact observations were performed at INT (by Steve Lowry, QUB) and UKST (by Rob Sharp, AAO) (Andrew Coates – PI).

Space-based telescope time awards:

Chandra Proposals:

Roberto Soria – time awarded on Chandra to study X-ray emission from nuclear sources in late-type spiral galaxies (RS -PI).

Roberto Soria - was also Co-I in two successful proposals: one for a study of the nearby galaxy NGC300 (PI A Kong, CfA), and one to do a complete Chandra survey of ULXs in the local Universe survey (PI D Swartz, MSFC).

Mission Status and Developments

Aurora ExoMars - Stereo camera team (A. Coates, PI) for PANCAM was represented at ESTEC ExoMars meeting by A. Griffiths. Funding proposal developments are underway.

Cassini-Huygens - Enceladus close flyby (14 July) and Titan flyby (22 Aug) gave further interesting data. Analysis of these and many other aspects is underway. Some results presented by A. Coates, Abi Rymer and Gethyn Lewis at IAGA (Toulouse), A. Coates, A. Rymer and H. McAndrews at MOP (Leicester).

CryoSat – CryoSat was launched on 8 October from Plesetsk in Northern Russia, but the mission was lost a few minutes after lift-off. The failure was in the 2nd stage of the Rockot launcher which failed to shutdown at the required time and failed to separate from the 3rd stage. The combined stack of the 2nd stage, the Breeze 3rd stage and the CryoSat satellite, fell into the nominal drop zone north of Greenland into open seas far from populated areas.

Prof Duncan Wingham was the Lead Scientist for the mission and took part in several press events and televised interviews prior to the launch. The department had staff representatives at the launch events in ESRIN and Darmstadt. After the mission loss Duncan immediately started to gather support for a recovery "CryoSat 2" mission. There is strong support for the follow-on mission from ESA staff and industry. We expect the case to be decided at the ESA-Ministerial meeting in December.

Magnetospheric MultiScale - SOI submitted to PPARC, discussed at community meeting in August.

Mars Express - Data analysis is underway. Some results were presented by A. Coates at IAGA (Toulouse).

Moses - Due to technical problems with the on-board computer the MOSES launch has slipped from its original launch date in August. Launch is planned for 15th November.

Solar-B EIS - The EIS instrument was successfully re-integrated to the Solar-B spacecraft in June. The next major activity is the spacecraft vibration testing in October.

Venus Express - Spacecraft is at Baikonur awaiting launch on 26 October.

News from the Groups

Tracey Poole reports on MSSSL's activities for Outreach.

On 25 July, MSSSL held an engineering workshop at the highly popular Space School UK at Leicester University. The space school is a university-based activity week for 14-18 year olds who are interested in Space and Space Science. This is the second year that MSSSL has been invited to participate.

Chris Brockley-Blatt and Tracey Poole organized the workshop where teams of students competed to design and build a space structure from various materials to support three heavy chocolate eggs. The winner was the team that built a tower with the smallest cost to height ratio. Everyone enjoyed the workshop - the winning team's tower was made from rolled paper and stood at a height of 1.7m.



On Sunday 12 June the Lab hosted a Scout Space Fun Day with 100 Beavers, Cubs, Scouts and Explorers from the 5th/10th Horsham Scout Group participating. The workshops and activities included launching rockets, making craters and solar panel boats, as well as Mars Lander and Space Engineering workshops. The day was a great success and we received a lot of positive feedback from parents and group leaders.

As part of National Science Week 2005 the Lab organized a four-day space event at St. Teresa's School in Effingham. The event which ran from 14-17 March attracted over 1000 children and adults.

A different age group was targeted each day: 300 primary school children attended on each of the first two days, on the third 100 sixth formers enjoyed a space careers orientated day, followed by 300 secondary school children on the final day. The days were tailored to the age group attending and included a wide range of space-related talks and activities covering from the solar system to the far reaches of space. All the subject matter was tied into the National Curriculum.

Poetry and collage competitions were run for the primary schools with over 100 entrants for each competition. There were also Solar System, Mars Lander and Space Engineering workshops.



Yasir Soobiah making comets

A talk entitled, "An Evening with the Stars (and Planets)" by Chris Lintott and Lucie Green was enjoyed by over 350 people and members of Guildford Astronomical Society set up some telescopes so that the audience could have a first-hand view of the stars and planets.

A big thank you goes out to all those involved in Science Week for making it such a successful and popular event.

Publications - Refereed

S & CP authors are shown in upper case.

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Invited Talks and Lectures (National and International)

Lucie Green gave an invited talk to the Bath scientific society entitled, "Robotic telescopes and astronomy education" (3 June).

Louise Harra gave an invited review at IAGA 2005, Toulouse, on latest results on solar flares.

Roberto Soria presented two talks (one on quiescent supermassive black holes in elliptical galaxies, and the other on ultraluminous X-ray sources) at the Aspen Center for Physics workshop on astrophysical black holes.

A.J. Coates, F.J. Crary, **A.M. Rymer**, K. Szego, J. Steinberg, J. Vilppola, D.T. Young, and the CAPS team, Cassini's first Titan encounters: plasma results (solicited), presented at IAGA, Toulouse, 18-29 July, 2005.

A.Coates "Exploring Saturn, Titan and Mars", principal address at opening ceremony of London International Youth Science Forum, 28 July 2005.

G.Branduardi-Raymont, "Space astronomy and XMM-Newton", specialist lecture at London International Youth Science Forum, 1 August 2005.

Conference and Workshop Presentations (National and International)

Members of the Astrophysics Group gave presentations at:

- IAU Symposium 230, Dublin
- Amsterdam meeting in honour of Prof Ed van den Heuvel

Members of the Planetary and Plasma Physics groups gave presentations at:

- ISSI comet modeling workshop, 20-22 June 2005;
- AOGS conference, Singapore, 20-24 June 2005 (3 presentations);
- IAGA, Toulouse, 18-29 July, 2005 (8 presentations);
- Magnetospheres of the Outer Planets 2005, Leicester, 7-12 August 2005 (11 presentations);
- ISSI team "Combined Cluster - Double Star observations of the dayside magnetosphere" meeting, 30 August - 1 September 2005, ISSI, Bern.

Press Releases

- PPARC press conference on Deep Impact, 4 July 2005 (presentation by A.Coates).
- PPARC press release on Cassini-Huygens at British Festival of Space.
- A. Coates talks at British Festival of Space press conferences on Deep Impact and Cassini-Huygens results.
- PPARC press release on Mars Reconnaissance Orbiter (quote from AJC).
- ESA press release on Saturn's ring analysis
http://www.esa.int/esaSC/SEMSF0908BE_index_0.html.

Media Broadcasts and Features

Andrew Coates and Lucie Green: Sky at Night masterclass: aurorae, BBC Sky at Night magazine, October 2005.

Lucie Green –

- 4 July - BBC Stardate programme (presenter)
- CBBC Xchange programme, BBC radio Wales, BBC Breakfast TV, BBC News 24, GMTV, BBC News 24, BBC World

Andrew Coates -

- Beagle, Mars and Aurora programme (BBC News 24, CNN).
- Deep Impact - BBC Sky at Night (guest), Sky News, British Satellite News, ITN, BBC R5 live, CNN, ESA TV, BBC News 24, Channel 4 News, BBC World, BBC R4 PM, ITN News, BBC Radio Swindon, D.Telegraph, D.Mail, BBC News online, The Times, Guardian, Herald, Daily Record, Nature News, Ireland Online, the Register, New Scientist (printed and online), Nature, Surrey Advertiser, BBC Southern Counties radio ("Guest of the Day").
- Cassini Saturn ring atmosphere (BBC News Online, ESA press release – appeared in Space News and many other media).
- Shuttle and space exploration (Sky News, BBC World, BBC4 News, ITN News, BBC News 24, BBC World Service, BBC R4 Today programme, BBC 1 O'clock news, ITV lunchtime news, Sky News, BBC News 24, GWR, The Times, BBC R5, ITN, Channel 4 News, BBC World, BBC Southern Counties radio, BBC Radio Swindon, Sunday Herald, BBC1 1 O'Clock News, BBC R4 World at One, BBC Radio Wales, CNN).
- Mars Express water ice discovery for CFRA 580, Ottawa.

Other News

Lucie Green ran the following activities:

Solar system activity at the Space Day at Reigate School, 2nd June;

Space science section at Beds and Luton Education Business Partnership summer school, 15-19 Aug;

Astronomy section. NAGTY (National Academy for Gifted and Talented Youth) Summer school at Imperial College, 22-26 Aug.

Acknowledgements

Andrew Coates would like to thank all who helped with the LIYSF visit.

Next Issue

The next issue of the Department of Space and Climate Physics Newsletter (Volume 3, Issue 3) will be published in mid-December 2005. This will cover activities from 1 September 2005 to 30 November 2005.