UCL – DEPARTMENT OF SPACE AND CLIMATE PHYSICS

MULLARD SPACE SCIENCE LABORATORY

The Newsletter - Volume 7, Issue 2
23rd October 2009

Covers events between 1st June 2009 and 31st August 2009

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General

We welcome five new PhD students at MSSL: Roger Duthie (Plasma), Rob O'Neil (Solar); Jonathan O'Regan (Imaging/Solar); Dale Potts (Imaging); Jason Rawlings (Astrophysics).

Congratulations to Andrew Fazakerley on the birth of his daughter and to Sandrine Grimald on the birth of her son. Sandrine plans to take up a position at CESR, Toulouse, when she returns to France.

Teaching

With the beginning of the new academic year Graziella is taking on the role of Tutor of our space-related MSc programmes in Space Science and Spacecraft Technology and Satellite Communications: Matt Whyndham remains Tutor for the Systems Engineering Management programme, and Departmental Graduate Tutor for our taught programmes.

New Staff Members

Richard Darnley, Chris Dolding and Craig Leff

have joined the lab. Craig is the Pan Cam Project Manager for AJC.

Having completed his PhD thesis, Andrew Walsh has joined the Space Plasma group as a PDRA.

Visitors

Dr Martin Volwerk visited MSSL on 16 June to collaborate with Andrew Walsh. He gave a seminar entitled “Venus's magnetosphere after 3 years of Venus Express”.

High-school students, who were in receipt of Nuffield bursaries, worked at MSSL on projects involving Cubesats over a period of 4 weeks in July and August. They were supervised by Dhiren Kataria, Dave Walton, Colin Forsyth and Graziella Branduardi-Raymont.

Summer students: Kate Husband (Nuffield bursary) worked on Venus Express, Jun 22-Aug 14 2009, Yilmaz Gul (UCL) (23 Aug-end September) worked on comets and Venus Express, Joe Whittingham (Nuffield funded, Jul 2009) worked on Venus Express.

Work experience students: Caroline Taylor and Lottie Whalley both worked on the analysis of Cassini CAPS data with Chris Arridge.

Prizes and Awards

Chris Brockley-Blatt was elected to Fellow by the Institution of Mechanical Engineers.

Lucie Green was awarded the 2009 Royal Society Kohn Award for excellence in engaging the public with science.
http://royalsociety.org/page.asp?id=8736

NASA group achievement awards went to: Chris Arridge, Andrew Coates, Lin Gilbert, Sandrine Grimald, Geraint Jones, Sheila Kanani, Gethyn Lewis, Chris Owen and Annie Wellbrock, for their work as part of the Cassini/CAPS team.

Appointments (e.g. Editorial Boards or Committees)

Chris Arridge and Andrew Coates have been invited to join the scientific organising committee for an ISSI Workshop on “Comparison of the plasma-spheres of Mars, Venus, and Titan”.

Andrew Coates is an organising committee member for the 9th Annual Astrophysics Conference, organised by the University of Alabama at Huntsville. This will be held in Hawaii in March 2010 and will result in an AIP conference proceedings book.

Grants and Contracts Awarded

ExoMars PanCam extension (STFC), to March 2010, Andrew Coates PI.

Europa-Jupiter system mission study phase (STFC), Andrew Coates PI.

MSSL was awarded STFC funds for preparatory Cross-Scale studies in the period April to Dec 2009.

Carlos Allende Prieto received grants from the IAU ($1700), the Brazilian Astronomical Society (R$1122), and UCL Graduate School (£900) to attend the IAU General Assembly in Rio de Janeiro in August.

Iryna Rozum and Branislav Mihaljčić were awarded major travel grants to attend the Double Star IWG-13/SWT-17, to be held from14-18 September in Qingdao, China. Branislav will present work on Double Star status and calibrations.

Proposals Submitted

Chris Arridge (Planetary), and Colin Forsyth and Andrew Walsh (Plasma) submitted a proposal to the RAS for funding to hold a three day workshop and advanced school on magnetotail physics.

Telescope/Satellite Time proposals/awards

Roberto Soria

- awarded 95 ks on Chandra, for the study of the spiral galaxy NGC 2903. Ongoing collaboration with Doug Swartz and Allyn Tennant at NASA/MSFC.
- visited the Australia Telescope Compact Array to observe a microquasar in the galaxy NGC 7793 (6-8 Aug). This is an ongoing project in collaboration with Manfred Pakull at Strasbourg Observatory.

Mission Status and Developments

Cassini - Cassini is currently in the Equinox (extended) mission until July 2010, and hopefully this will be extended further in the Solstice mission until 2017. CAPS-ELS is working well and producing excellent science. MSSL staff were involved in several team meetings etc – see later.

CAPS team meeting in Toulouse, 3-4 June 2009, was attended by Andrew Coates, Chris Arridge and Gethyn Lewis who made presentations.

Cluster - PEACE instruments on all four Cluster spacecraft continue to work well.

Cross-Scale - Members of the Space Plasma Group provided technical and scientific reports in support of the Cross-Scale and Solar Orbiter "Yellow Book" inputs to the ESA Cosmic Vision selection process that will take place this autumn.

Double Star - No change in the status of the spacecraft. TC-1 not operational due to re-entry in Sep 2007; TC-2 lost contact with spacecraft in July 2008.Intensive work continues to prepare and deliver PEACE data to CAA, and to prepare for a parallel Double Star Active Archive (DAA).

EJSM - Rob Gowen and Tom Kennedy (penetrators), and Andrew Coates and Dhiren Kataria (plasma instrumentation) attended a meeting on declarations of interest at Noordwikerhout on 11-12 June. Barry Hancock and Rob Gowen attended EJSM instrument workshop at JHU-APL on 15-17 July.

ExoMars - PanCam is still the highest priority instrument on the payload following payload confirmation review 2. PanCam meeting at Kayser Threde, 23 June. 2nd ExoMars Science Working Team at ESTEC on 1-2 July attended by Andrew Coates and Andrew Griffiths. 8 July, mast meeting at Kayser Threde, Munich. Clare Cousins (UCL PhD student working partly with us on PanCam) attended the AMASE (Arctic Martian Analogue Svalbard Expedition) in August 2009, working as part of the 3-strong international PanCam team present (with Nicole Schmitz from DLR, Berlin and Arnold Bauer (Joanneum Research, Austria)). Clare was part of the science team working with Steve Squyres, and she will lead a paper on some of the results.

Solar Orbiter – See Cross-Scale

Mars Express and Venus Express - both missions are in extended mission and ASPERA is working well.

Publications - Refereed

Published

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Wahlund, J-E. M. Galand, I. Müller-Wodarg, J. Cui, R. V. Yelle, F. J. Crary, K. Mandt, B. Magee, J. H. Waite Jr, D. T. Young, A. J. Coates, P. Garnier, K. Ågren, M. André, A. I. Eriksson, T. E. Cravens, V. Vuitton, D. A. Gurnett, and W. S. Kurth, On the Amount of Heavy Molecular Ions in Titan's Ionosphere, Planet. Space Sci., doi:10.1016/j.pss.2009.07.014, in press, Aug 2009.
Wang, Y.-M., Muglach, K., KLIEM, B., Endpoint Brightenings in Erupting Filaments, ApJ, 699, 133-142, 2009. http://www.iop.org/EJ/abstract/0004-637X/699/1/133/ DOI: 10.1088/0004-637X/699/1/133
This paper describes the discovery of weak brightenings that occur in the course of filament eruptions and are spatially separate from the usual, much brighter flare ribbons. They mark the outer edges of the source area of the magnetic flux holding the filament, which is typically not discernible in quiescence; therefore, the brightenings facilitate the derivation of the magnetic connections and chirality of the filament

Publications - Non-refereed

Published

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http://adsabs.harvard.edu/abs/2009arXiv0909.0470A
Ramirez,I., Allende Prieto,C., Lambert,D.L., Koesterke,L., Asplund,M. 2009
To appear in the Proceedings for Joint Discussion 10 at the IAU General Assembly, Rio de Janeiro, Brazil, August 2009, in press. Granulation across the HR diagram
http://adsabs.harvard.edu/abs/2009arXiv0908.4571R

PhDs awarded

Andrew Walsh completed his PhD. His thesis is entitled "New Perspectives on Magnetotail Dynamic Processes from Combined Cluster and Double Star Observations"

Invited Talks and Conferences

Andrew Coates co-convened sessions at IAGA (August) and EPSC (September).

Carlos Allende Prieto gave an invited review on the Galactic thin disk at IAU Symp. 265, "Chemical Abundances in the Universe - Connecting First Stars to Planets" in Rio de Janeiro (August 10-14) He also gave a contributed talk on the effects of convection on spectroscopic radial velocity determinations at the IAU Joint Discussion #10 "3D Views on Cool Stellar Atmospheres - Theory Meets Observations" .

Andrew Walsh gave an invited talk at the 11th IAGA Scientific Assembly in place of Andrew Fazakerley. His talk reviewed the work of the ISSI Cluster-Double Star Magnetotail studies team.

Chris Owen participated in a Solar Orbiter meeting

in the USA related to preparing Yellow Book material.

UCL-MSSL hosted the Cassini PSG meeting at UCL/Birkbeck, 22-26 June 2009, organized by Geraint Jones. Talks were given by Sandrine Grimald, Sheila Kanani and Andrew Coates. (see Other Items/Activities).

UCL-MSSL hosted an Icy Satellites Workshop to discuss the exciting research being carried out on Saturn's icy moons. The Workshop, which was held at UCL on 29-30 June, was co-convened by Geraint Jones and sponsored by UCL MAPS, ESA, and STFC. Talks were given by Geraint Jones, Sheila Kanani, Chris Arridge and Andrew Coates.

Magnetospheres of the Outer Planets workshop, Institute of Geophysics and Meteorology, University of Cologne, Cologne Germany, 27-31 July 2009. Andrew Coates, Geraint Jones, Chris Arridge, Annie Wellbrock and Sheila Kanani attended and gave presentations.

Chris Arridge's invited talk was entitled, "Global magnetospheric fields of Jupiter and Saturn"; 20 other presentations involved MSSL personnel.

Chris Arridge attended the ***IAGA meeting in Sopron, Hungary, 23 – 30 August 2009*** *and* gave an invited talk entitled, " Global structure and dynamics in the magnetospheres of Jupiter and Saturn".

The Cassini MAG team meeting was held at Imperial College, 18-19 June 2009 and was attended by Chris Arridge who also presented a talk.

Roberto Soria gave an invited talk at the Marcel Grossmann Meeting, Paris, on X-ray studies of ultraluminous X-ray sources (13 July) and a seminar at the Institute of High Energy Physics, Beijing, China (20 Aug).

Media Broadcasts and Features

Santiago Vargas Dominguez was interviewed for SkyNews and by James Whale for London's Biggest Conversation (LBC, 97.3) to comment on the different aspects regarding the current solar activity and the expectations for the upcoming years according to the solar cycle predictions.

Andrew Coates gave interviews on BBC R4 12 o'clock News, and on Channel 4 News, on Titan as an Earth-like object, 6 Aug.

Outreach

Colin Forsyth took part in the IOP Physics in the Field exhibition at the East of England show in June, demonstrating simple physics experiments and principles to members of the public.

Sheila Kanani –

- helped out at "Saturn Day" at the Greenwich Observatory in June.
- gave a talk and made planetary landers with the children at the annual "Careers in Science" day at Wallington Grammar School in July.
- taught and mentored at Space School UK and Senior Space School UK (residential summer camps for children aged 13-18yrs) in Leicester from the 1-16 August.

Kimberley Steed visited Roman Way First School in Redditch, Worcestershire and presented a tour of the solar system to the pupils in key stage 2.

Roberto Soria - Careers conference talk at Collyer's school, Horsham (19 June)

Andrew Coates - Plenary talk at London International Youth Science Forum (LIYSF), on Exploring the Solar System (5 Aug).

A party from LIYSF visited MSSL on 4 Aug and several MSSL staff gave talks, demonstrations and tours.

Other News Items/Activities

CASSINI MEETING - MSSL and the Centre for Planetary Sciences at UCL/Birkbeck hosted the 42nd Cassini-Huygens Project Science Group meeting during June 22-26. Over 170 members of the Cassini-Huygens international science community, project managers, navigation and engineering teams met at Birkbeck for this event, to discuss mission operations, planning, and science results for this high profile mission. Two such meetings are held annually at the NASA Jet Propulsion Laboratory, and one at a European venue.

Social events included an evening meal at the Royal Observatory, Greenwich, and a trip to Stonehenge. Related public outreach events were held at the observatory, including several planetarium shows narrated by Cassini scientists, the launch of a Cassini image exhibition; a key part of the observatory International Year of Astronomy activities. This resulted in many related reports in the news media. Sponsorship for the meeting was provided by UCL's MAPS Faculty, the European Space Agency, and STFC.

The PSG meeting was organized by members of MSSL's Planetary Science Group. Geraint Jones wishes to express his thanks to Sheila Kanani, Anne Wellbrock, Chris Arridge, Andrew Coates, Gethyn Lewis, Rosalind Medland, and Julia Wehrle for their help at the meeting, to the sponsors for their generous support, and to everyone else who helped with the arrangements.

Bernhard Kliem has been working as a visiting scientist at the Naval Research Laboratory, Washington, DC, USA in June and July 2009.

Kimberley Steed attended the SOLAIRE Solar Observational Data Analysis School (SODAS) hosted by the University of Glasgow between 1–5 June 2009.

Press Releases

- Cryosat – An article on CryoSat 2 is on the BBC News website http://news.bbc.co.uk/1/hi/sci/tech/8257557.stm Launch is currently planned for 28 Feb 2010.
- Cassini press conference and release on sodium from Enceladus, UCL 23 June.
- The following press release was issued when MSSL completed the UVIT high voltage units contract for an Indian science mission:

  UCL Department provides satellite parts for Indian Science mission:

  University College London's Mullard Space Science Laboratory has successfully delivered important elements of an experiment to be flown on the Indian Space Agency Mission ASTROSAT. ASTROSAT will be India's first dedicated astronomy satellite mission and will be launched on an Indian "Polar Satellite Launch Vehicle" in 2010.

  MSSL developed the precision high voltage generators that will operate the image intensifiers (also UK produced) that are the sensing element of the Ultra Violet Imaging Telescope (UVIT) – part of the ASTROSAT scientific payload. This work was performed under contract to the Indian Institute of Physics.

  The UVIT instrument is being produced by a partnership between India and the Canadian Space Agency. UVIT has three telescopes, one each for visible, near infra-red and far infra-red wavelengths.

  MSSL has worked with all other major space agencies around the world in the past, including NASA, ESA Russian, Japanese and Chinese but this is the first involvement with an Indian programme. Professor Alan Smith, Director of MSSL said 'MSSL is very proud to have had the opportunity to support this exciting mission and hopes that this will be just the first instalment in a long and fruitful relationship with our Indian colleagues'.

  The programme began in November 2005 and the last unit (the flight spare) was shipped in June 2009.

  The detector system chosen by IIA for the UVIT telescopes, is based on the systems built by MSSL for the European Space Agency's XMM-Newton Optical Monitor, launched in December 1999 and the UV & Optical Telescope (UVOT) on the NASA mission SWIFT, launched in November 2004. Both these instruments have been highly successful and continue to operate in space.

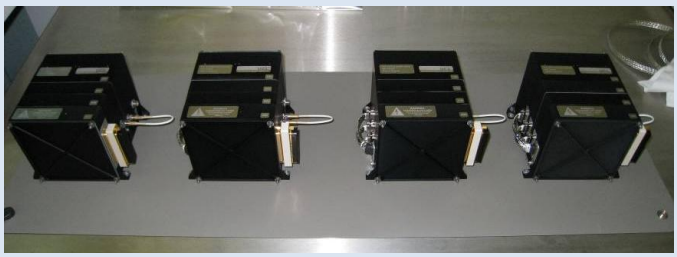

Figure caption: 4 completed flight units awaiting delivery at the Mullard Space Science Laboratory near Dorking, Surrey.

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Next Issue

The next issue of The Newsletter (Volume 7, Issue 3) will be published in December 2009. This will cover activities from 1 September to 30 November 2009.