The Newsletter - Volume 10, Issue 3  
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Covers events between 1 September 2012 and 30 November 2012

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New Staff Member
Welcome back to Massimiliano De Pasquale who has returned to the Swift team at MSSL after a 1.5 year spell in the Gamma ray burst group of the University of Nevada, Las Vegas.

Appointments
Chris Arridge began his Royal Society University Research Fellowship on 1 October. He will take up a new staff member position in the Planetary Science Group at the conclusion of the fellowship.

Appointments (Editorial Boards and Committees)
- Andrew Coates continues as chair of the planetary science sub-panel of STFC’s Astronomy Grants Panel;
- Chris Owen has been appointed as a topical editor for Annales Geophysicae. Chris also chaired a NASA review panel in Washington D.C., 25-27 Sept.
Grants and Contracts
The Cassini Operations grant was extended to 2014 by ESA via the UK Space Agency.

PhDs Awarded
Congratulations to Robert Bedington, Segheen Beyene, Missagh Mehdipour and Annie Wellbrock who have successfully defended their PhD theses subject to some small corrections/amendments.

MSSL Australia
Alan Smith visited MSSL Australia at the end of November. As well as attending the UCL Australia Steering Committee and Graduation he presented a paper on the QB50 project at an AIAA student conference at the University of Adelaide. Alan also presented a paper entitled ‘Model Based Systems Engineering - issues of application to Soft Systems’ at an INCOSE/SESA MBSE symposium.

Ady James and Alan Smith chaired a QB50 workshop for Australian teams involved in the project.

Mission Status and Developments
Cassini - is in its extended (Solstice) mission phase. The CAPS instrument (including ELS) was off during the reporting period: investigations are underway by NESC (NASA electrical safety committee). More information is expected in the New Year. Scientific analysis continued apace (see publications and presentations).

Cluster - The mission extension for 2013-4 was confirmed by ESA in November 2012. Plans for a further 2015-6 extension are expected to be reviewed by ESA in summer 2013.

All four Cluster spacecraft and all four PEACE instruments continue to operate well.

Andrew Fazakerley presented a PEACE status report at the Cluster SWT in Boulder in October.

Andrew Fazakerley participated in the Cluster Science Operations Working Group 29/30 November where planning for 2013 operations was discussed. This included overlap with SWARM and RBSP (now renamed Van Allen probes). Small separation inner magnetosphere and AAR region operations were prioritized during 2013. The high altitude southern cusp will be sampled in spring-summer 2013. The feasibility of future very small scale spacecraft separation operations at the bowshock was reviewed.

Natasha Doss, Iryna Rozum, Branislav Mihaljcic and Andrew Fazakerley attended and gave presentations at the 16th Cluster Active Archive Cross Calibration Workshop in IRAP, France, 6-9 Nov.

ESA CAA representatives visited MSSL on 14-15 November for a bilateral CAA-PEACE progress meeting, in which Natasha Doss, Iryna Rozum, Branislav Mihaljcic and Andrew Fazakerley participated.

ExoMars - Leading up to and following the ESA ministerial meeting in November, the mission preparations are resuming a high level of activity. ExoMars is now a joint ESA-Russia joint mission with a 2016 Trace Gas Orbiter and a 2018 Rover. For the latter we are leading the PanCam team (Coates PI, Leff PM). A telecon with Russian colleagues on a complementary infrared instrument (ISEM) on 14 September, various other team and ESA telecons in the period, and a meeting of ExoMars Oversight Committee (EXOC) was attended by Coates, Leff and Hancock, 7 Nov.

JUICE - A very busy period on the JuMP (Jupiter Moon and Magnetospheric Plasma, Coates PI) instrument proposal culminated in a proposal submission, 15 Oct. Instrument selection for JUICE is now underway at ESA.

KuaFu - A possible scenario for ESA support for a KuaFu-B mission involving participation via the (optional) SSA Programme together with the (mandatory) Science Programme, was not approved at the November ESA Council of Ministers Meeting. It is unclear whether an alternative approach is likely to be proposed, such as an earlier purely Science Programme scenario.

L-Depp - The Lunar Lander mission concept was not, in the end, presented to ESA ministers in November. The concept, along with the possible MSSL participation in the Dust and Plasma package, for which we have completed an ESA-supported concept study, presumably will go into a period of dormancy of undefined length.

Solar Orbiter - An SWA team meeting was held in Bruges on 7-8 September, immediately before the full Solar Orbiter Workshop, also in Bruges. A number of MSSL staff attended both the team meeting and/or the workshop.

Several members of the MSSL SWA team also attended a 2-day meeting of the Solar Orbiter Electromagnetic Cleanliness Working group, 4-5 Oct., to discuss latest progress on a number of items of concern relating to spacecraft charging effects which are likely to have impact on the quality of the science return from SWA if not satisfactorily resolved before launch.

MSSL staff have led the Solar Orbiter Boom
Working group in a series of meetings and telecons during this period in an effort to solve some difficult accommodation problems for sensors located on the spacecraft boom, which includes the SWA Electron Analyser system being built by MSSL. Various options are currently being considered, including the possibility of lengthening the boom and/or relocating the energetic particle package, STEIN, back onto the spacecraft body.

Chris Brockley-Blatt represented the MSSL SWA PI team at the NASA PDR for the SWA HIS sensor, in San Antonio, 6-7 Nov.

Chris Owen and Chris Brockley-Blatt represented the SWA team at the first UKSA Project Management Board meeting held in London, 21 Nov.

MSSL hosted members of the ESA and Astrium UK Solar Orbiter Project Teams, as well as international colleagues on the SWA team, for the latest in the series of “Technical Interface Meetings”, 27-28 Nov. Wide-ranging discussions on the progress of the wider project and the SWA sensors were held.

*Venus Express and Mars Express* - ASPERA continues to operate on both spacecraft and we are involved in scientific papers (see lists) and an MSc student is working on Vex data with us (supervisors Coates and Wellbrook).

**Publications – Refereed Published**


Papers in press
Rawlings, J., Polycyclic aromatic hydrocarbon emission in powerful high-redshift radio galaxies, accepted, MNRRAS.

Publications - Non-Refereed:
Stephen Pugh, Dave Barnes, Laurence Tyler, Matt Gunn, Nicole Schmitz, Gerhard Paar, Arnold Bauer, Claire Cousins, Derek Pullan, Andrew Coates, Andrew Griffiths and the PanCam Team., AUPE – A PanCam emulator for the ExoMars 2018 mission, submitted to International Symposium on Artificial Intelligence, Robotics and Automation in Space (i-SAIRAS), Turin, Sep 2012.

Invited Talks and Conferences
Andrew Coates, Geraint Jones, Chris Arridge, Annie Wellbrock, Tom Nordheim and Jamie Jasinski attended and presented at EPSC in Madrid 23-28 Sept. Planetary Science Group authors contributed to 13 papers:
- Coates, A.J., A. Wellbrock, G.H. Jones, D.T. Young, and C.S. Arridge, Photoelectrons in the plume of Enceladus;
- Lavvas, P., R.V. Yelle, A. Bazin, V. Vuitton, E. Vigren, M. Galand, A. Coates, and J.-E. Wahlund, Particle charging: its role in the ionospheric composition and the growth of aerosols;

Ady James presented a paper at the Australian Space Science Conference in Melbourne entitled "CubeSat instrument development for the QB50 project", 24-26 Sept.

Grazziella Branduardi-Raymont presented a poster on "X-ray imaging of the Earth's magnetosphere" (reporting on the medium- and small-size missions proposed to ESA as AXIOM and AXIM-C respectively) at the conference on 'X-ray astronomy: towards the next 50 years!' held in Milan, Italy, 1-5 Oct.

Chris Owen, Andrew Fazakerley and Colin Forsyth attended the joint Cluster and THEMIS workshop held in Boulder, Colorado. Chris presented work by his student Ali Varsani on high time-resolution electron observations of the magnetopause; Colin gave an invited talk on multi-spacecraft observations of auroral acceleration, 1-5 Oct.

Planetary Science Group authors contributed to 2 talks at the AAS DPS meeting, Reno, 14-19 Oct.
- Snowden, Darci; Yelle, R.; Galand, M.; Coates, A.; Jones, G.; Wellbrock, A.; Lavvas, P., A
Global Model of the Precipitation of Magnetically-mirroring Magnetospheric Electrons in Titan's Ionosphere;


Andrew Coates presented 2 talks at the Cassini PSG meeting at JPL on 22-26 Oct:

David Long gave an invited seminar "Using 'EIT Waves' to probe the quiet solar corona" at the Institute for Astronomy, University of Hawai'i Manoa Campus, 22 Oct.

Andrew Fazakerley and his PhD student, Kirthika Mohan, attended the Cluster and Double Star Cross-Calibration workshop, in Toulouse, France as well as a collaborative meeting regarding Kirthika's research into particle drifts of the Inner Magnetosphere, early Nov.

Andrew Coates gave 2 talks (1 invited) at the 9th European Space Weather Week, Brussels, 5-9 Nov:
- Coates, A.J., Space weather in the solar system (invited);

Geraint Jones attended the first meeting of the International Space Science Institute international team on Kinetic Plasma Processes at Airless Bodies at ISSI, Bern, 12-16 Nov.

Graziella Branduardi-Raymont participated in a Europlanet workshop on “Giant Planet Magnetodiscs and Aurorae” at ISSI, Bern, 26-30 November and presented a talk on “Spectral and spatial properties of the X-ray aura of the giant planets”. All the presentations at the workshop will be written up in the journal Space Science Reviews and reprinted as a hardcover book in the Space Sciences Series of ISSI.

Autumn MIST at the Royal Astronomical Society, 30 Nov was attended by members of the Planetary Science Group and the Plasma Physics Group:
- Duthie, R., Multi-spacecraft Detections of Plasma Sheet Fast Flows and spacecraft their Relation to Dipolarisations and Substorm Phase;
- Mohan, K., Exploring the Earth’s Inner Magnetosphere;

Outreach

Chris Arridge talked on:
- “Exploring the Solar System with Robots” at the Sheffield branch of the Institute of Physics on 20 Nov.

Chris also:
- participated in the UCL Horizons careers fair on 15 Sept;
- visited The Brooksbank School, Halifax on 10 October for a day of space science and careers talks;
- attended the Royal Society Research Fellows' Reception at St. James’ Palace, 18 Oct;
- gave a talk as part of Bright Club at the Bloomsbury Theatre, 24 Oct;
- visited Ashford Park School for an afternoon of space science activities for year 6 students on 8 Nov.

Andrew Coates:
- Talk at MSSL open day on planetary exploration and JUICE, 8 Sept.
- Talk at Wiltshire Astronomical Society, on Recent results from Cassini, 2 Oct.

Colin Forsyth:
• with Andrew Walsh and colleagues from the University of Leicester and Imperial College, exhibited the “Cluster: Aurora Explorer” display at the British Science Festival in Aberdeen as part of the British Astronomical Association program;
• was invited to speak on the effect of the Sun and space weather on radio communication at the Radio Society of Great Britain’s annual convention and to the Dorking and District Radio Society;
• presented at the annual National Space Academy careers event aimed at informing A-level students about space careers in the UK;
• with David Long attended the “Explore Your Universe” Training Academy run by the Association of Discovery & Science Centres (ADSC) and supported by STFC. Colin and David will begin working with ADSC as part of the “Explore Your Universe” program in the new year.


Kirthika Mohan represented the Cluster and Double Star missions at the MSSL open day in early September.

Media Broadcasts and Features

Chris Arridge:
• Interview for an article in Physics World on Cluster observations of Kelvin-Helmholtz vortices in the Earth’s magnetosphere.

Andrew Coates:
• Interview on BBC radio 4 Material World on Voyager at the edge of the solar system, 13 Sept.
• Interview on Voyager mission on BBC World Service, Newshour, 8 Oct.

Other News Items/Activities

PhD student Roger Duthie made a presentation on space plasma for visiting MSc students, 17 Oct.

The solar system side of the lab began a series of regular monthly meetings to replace individual group meetings in the last week of each month, with two groups presenting at each. Also a series of solar system seminars started with Lyndsay Fletcher (Glasgow) giving the first seminar on 16 October 2012.

Geraint Jones spent several weeks as a British Science Association Media Fellow at The Guardian during July-September. During that time, he wrote several articles for the print and online editions of the newspaper, as well as contributing to the weekly podcast. In September, he was the paper’s correspondent at the British Festival of Science, held in Aberdeen.

After 7 years at MSSL as both a student and post-doc, Andrew Walsh has left to take up an ESA Fellowship at ESTEC. We wish Andrew all the best for his future.

Acknowledgements

Huge thanks are due to the JUICE proposal team (particularly Richard Cole, Barry Hancock, Chris Arridge, Geraint Jones, Alan Spencer, Gethyn Lewis, Andrew Fazakerley and many others) for the hard work leading up to proposal submission

Next Issue

The next issue of The Newsletter (Volume 10, Issue 4) will be published in March 2013. This will cover activities from 1 December 2012 to 28 February 2013.