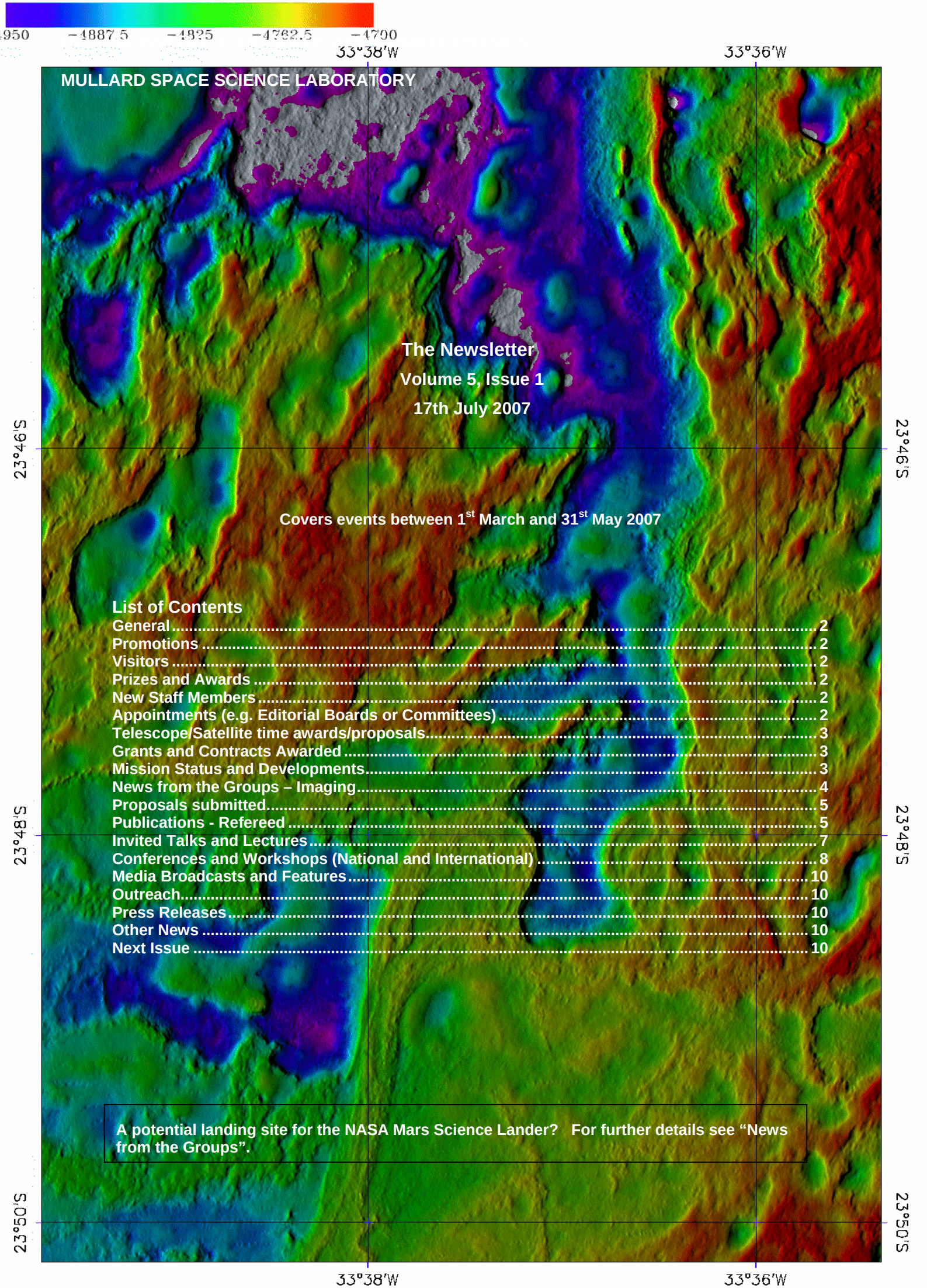


MULLARD SPACE SCIENCE LABORATORY

The Newsletter

Volume 5, Issue 1

17th July 2007

Covers events between 1st March and 31st May 2007

List of Contents

A potential landing site for the NASA Mars Science Lander? For further details see “News from the Groups”.

General

Congratulations go to Hina Khan (now Bacai) and to Andrew Fazakerley both of whom were married in March.

Shashi Pandey of the MSSL Swift team returned to India to take up a permanent position in charge of a new robotic telescope for gamma-ray bursts. His wife, Nandini, gave birth to their baby boy on 7 May.

Roberto Soria returned to MSSL after spending three years at Harvard Center for Astrophysics.

Promotions

Andrew Coates to Professor of Physics and Andrew Fazakerley to Reader.

Visitors

- Abi Rymer (now JHU-APL) visited on 12 March and gave a seminar.
- Nick Achilleos (APL/UCL) visited Chris Arridge on 2 May to discuss Cassini data.
- Norbert Krupp (MPS Lindau) and Caitriona Jackman (Imperial) visited Chris Arridge, Geraint Jones and Andrew Coates on 23 May to discuss Cassini data.
- Dr. Panagiota Petkaki from British Antarctic Survey visited on 5 March and gave a seminar entitled ‘Cluster observations of broadband electromagnetic waves close to a reconnection region in the Earth's magnetotail’.
- Drs. Mike Hapgood and Jackie Davies, from RAL, visited on 8 May. Mike Hapgood gave a seminar entitled, ‘The magnetopause transition parameter’.
- Prof. Malcolm Dunlop from RAL visited on 20 April to discuss different types of low-latitude boundary layers with Yulia Bogdanova. He also visited on 29 May to discuss magnetotail dynamics with Andrew Fazakerley.
- The Plasma Physics Group organised and hosted the 13th Cluster Workshop, 26-30 March 2007. Forty people participated.

Prizes and Awards

Congratulations go to Glyn Collinson for being selected to receive the Annual Scholarship for 2006/2007 from the Worshipful Company of Scientific Instrument Makers for his charged particle optics work on space plasma instruments.

Roberto Soria has been awarded a Leverhulme Trust Fellowship to start in March 2008.

David Brockley won the UK section of a mathematics competition launched by the Royal Society of Chemistry. Their aim was to illustrate how much Chinese science students are outstripping their UK counterparts.

More details are available at http://www.rsc.org/AboutUs/News/PressReleases/2007/CompWinner.asp.

New Staff Members

Geraint Jones joined the Planetary Science group as an STFC Advanced Fellow working on ion pickup in the solar system.

Chandrasekhar Anekallu joined the PEACE Operations Team.

Ludwig Brinckmann joined the Imaging Group as a NERC-CASE PhD student. He is supervised by Prof Peter Muller and Dr Caroline Poulsen (RAL) and will study, "New cloud products from (A)ATSR(2) by fusing stereo photogrammetry and Optimal Estimation for improving the detection of global climate change from changing cloud-top height distributions after validation using ground-based radar, lidar and imaging."

Appointments (e.g. Editorial Boards or Committees)

Andrew Coates and Stan Cowley (Leicester) convened a session on Solar System Planetary Science at NAM, Preston, 16-20 April 2007.

Andrew Coates was a UK delegation member for 3rd UK-China Space Science & Technology workshop, Shanghai, 29-31 March, 2007. He presented talks on: Penetrators for the Moon and beyond, Planetary Imaging, and Plasma Instrumentation & miniaturisation.

Louise Harra is now a member of the STFC Science Strategy Team.

Telescope/Satellite time awards/proposals

Geraint Jones was a Co-I on a successful infrared observation of comet C/2006 P1 (McNaught) by the Spitzer Space Telescope on 4 May; the investigation was led by Carey Lisse of JHUAPL.

Roberto Soria submitted the following Chandra X-ray telescope proposals as PI:

- proposal to detect nuclear X-ray emission in the dwarf galaxy VCC128 (with MSSL Co-I: Ignacio Ferreras);
- proposal to study the colliding galaxies NGC7714/15 and their nuclear starburst
  and he is Co-PI on:
- proposal by A Prestwich (CfA) et al, to study the diffuse gas emission in the spiral galaxy M83;
- proposal by William Blair (Johns Hopkins) et al to study the discrete source population (in particular, supernova remnants) also in the M83 galaxy;
- proposal by Rosanne DiStefano (Tufts) to test X-ray binary evolution in pristine, ancient dwarf galaxies;
- proposal by D Swartz (MSFC) et al, to study the M81 galaxy group.

Grants and Contracts Awarded

CRYOSAT Instrument Processing Facility development contract: A modest CCN to the existing contract was agreed with ESA for activities in 2007. Value £15K (FEC). PI - Steve Baker.

ExoMars PanCam interim funding has been received from STFC.

Mat Page and Berend Winter were awarded a grant from STFC to develop the science and technical case for SPICA, a Japanese (and potentially ESA Cosmic Vision) Infrared spectroscopy mission, that would be a follow-up to Herschel.

"Origin and evolution of the outflow channels on Mars using HRSC 3D-Imaging," STFC, £436k July 2007-June 2010.

Mission Status and Developments

Cassini – Operating well. Several papers were presented at the EGU and Iowa MAPS meeting. Several papers published, in press and submitted. Chris Arridge and Gethyn Lewis attended CAPS team meeting in Chios, Greece and gave talks.

Cluster – All four PEACE instruments are in good condition and returning good data. CAA review: PEACE team was praised for calibrations improvement.

Cosmic Visions Candidates – Various activities, instrument inputs and meetings related to several planetary missions: Jupiter-Europa orbiter, Titan-Enceladus (TANDEM), Mars Escape and Magnetic Orbiter, Near Earth Asteroid Sample Return, EVE (Venus), LunarEx, Mars Origins Mission.

Cross-Scale – Members of the group are involved in drafting the proposal for the Cross-Scale mission in response to the AO for Cosmic Visions 2015+.

Double Star – The PEACE instruments continue to work well.

ExoMars – PanCam was selected as a top priority science instrument in all payload options in the Payload Confirmation Review. The Mission Implementation Review is still underway. Andrew Coates (chair), Peter Muller and Andrew Griffiths attended PanCam team meeting at EGU, Vienna, 18 April. Andrew Coates and Andrew Griffiths attended STFC steering committee meeting on 15 May, AJC presented on behalf of PanCam. AJC and ADG also visited collaborators in Neuchatel on 21 May, with STFC representative.

FP7: Various activities for two proposals and associated meetings for system and software studies to support current and planned planetary missions: 3MISS (data base of Mercury, Mars and Lunar samples and analogues) and PROVISIG (software and methods for 3D image data analysis and visualization for rovers).

Hinode - Hinode data was released on the 27th May this year. A lot of hard work was put in by the team to get to this stage, and we have great data and a great website! The first science papers have been submitted to PASJ hopefully to be published in early autumn.

Centre for 'Origins' - a new 'virtual' research centre is being developed within the Mathematical and

Physical Sciences faculty. This encompasses research based around the origin of life and origin of the universe which includes research carried out within a number of departments in the faculty. Louise Harra will be the coordinator of this centre and will be spending more time up at UCL with this.

Solar Orbiter - Work on the Solar Orbiter PRD is continuing in anticipation of the AO in September.

Venus Express and Mars Express – Operating well. Andrew Coates, Neville Shane and Dhiren Kataria attended a team meeting in Stockholm, 9-11 May. Talks by Andrew and Dhiren. Papers presented at EGU. Coates et al paper on Venus ionospheric photoelectrons accepted for Planetary and Space Science Letters. HRSC on Mars Express completed 3 years of continuous uninterrupted operations in January 2007. MISR aand MODIS completed 6 years of continuous uninterrupted operations on 28 February 2007

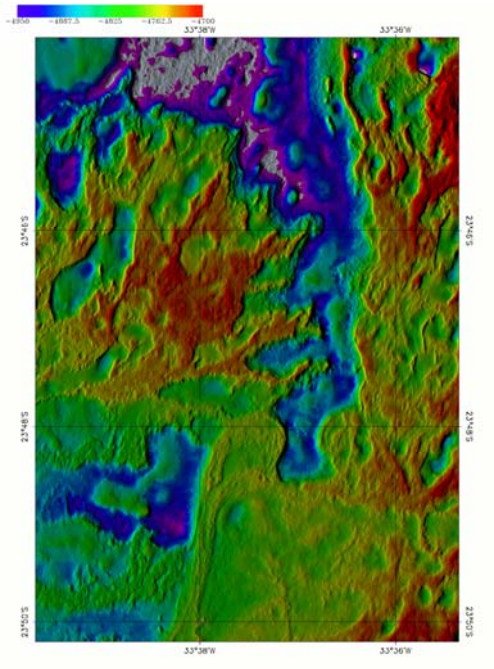
News from the Groups – Imaging

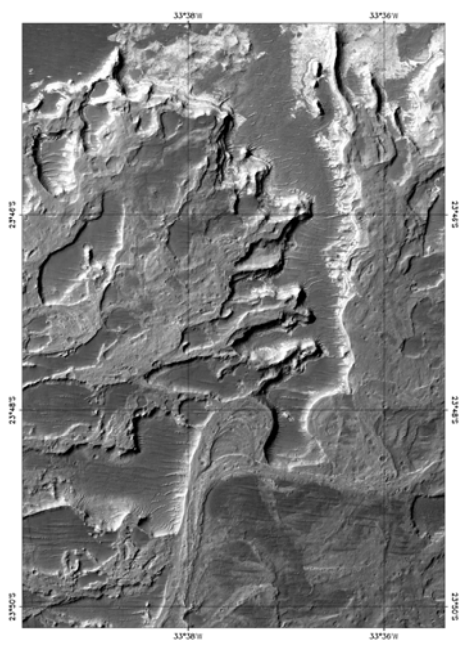
Professor Jan-Peter Muller joined MSSL on 15 September 2006. Previously he was Professor of Image Understanding and Remote Sensing in the Department of Geomatic Engineering which, from 1 August 2007, is being absorbed into UCL's Department of Civil and Environmental Engineering.

Prof. Muller has formed the Imaging Group to provide a centre of excellence in image processing and understanding, image sensors and image mapping which have numerous applications across all the scientific fields of interest within MSSL. Current research includes development of techniques and their interpretation using Earth System Science models for the detection of climate change signatures. Effects of interest include changes in land surface albedo or cloud-top height distributions to changes in atmospheric dimming due to increased particulate matter from anthropogenic or natural sources. We are interested in the recent role of water in forming the surface shape of Mars leading to the tantalising possibility of finding exobiological signatures on nearby planetary surfaces. The Imaging group is also involved in exploring new technologies for combined hyperspectral imaging and ranging using LADAR technology for future rover, aerobot as well as orbital planetary exploration. We also hope to combine this technology with multi-view pushbroom systems for mapping cloud-top and aerosol top heights and wind-fields for future EO and planetary mapping.

Prof. Muller is very keen to work with different groups at the lab. developing automated solutions to retrieving new information and its increasingly interactive 3D and stereo visualisation. This includes 3D information on the surface of Mars (from the upcoming ExoMars rover stereo Panoramic cameras), CMEs from the NASA STEREO sensor and the use of terrain. In addition the use of satellite real-time cloud information for forecasting natural disasters such as floods and tornadoes. Also, data mining techniques for the automated detection of Earth-like extra-solar planets and gravitational ripples in extra-galatic radio and other frequency images.

The figures below show the World's first very high resolution Digital Terrain Model (DTM) at 2.4m resolution of a potential landing site for the NASA Mars Science Lander and the corresponding 30cm orthoimage of the Eberswalde Delta area. Such DTMs and orthoimages will be employed in future to select a landing site for the ESA ExoMars rover on which MSSL are PI for the stereo Panoramic Camera (Kim & Muller, 2007).





Proposals submitted

A proposal to fund an initial design study for EST: a large aperture European Solar Telescope was submitted to the Fp7 programme at the beginning of May. EST would be a 3.5 -4 m ground-based solar telescope based in the Canaries.

Publications - Refereed

S & CP authors are shown in upper case.

A. Published

Apatenkov, S.V., Sergeev, V.A., Kubyshkina, M.V., Nakamura, R., Baumjohann, W., Runov, A., ALEXEEV, O., FAZAKERLEY, A., Frey, H., Muhlbachler, S., Daly, P.W., Sauvaud, J.-A., Ganushkina, N., Pulkkinen, T., Reeves, G.D. & Khotyaintsev, Y., Multi spacecraft observation of plasma dipolarization/injection in the inner magnetosphere, Ann. Geophysicae, 25, 801-814, 2007.

ARRIDGE, C.S., Russell, C.T., Khurana, K.K., Achilleos, N., Rymer, A.M., Andre, N., COATES, A.J. & Dougherty, M.K., The mass of Saturn's magnetodisc, Geophysical Research Letters, 34, 2007. 10.1029/2006GL028921

Burch, J.L., Goldstein, J., Lewis, W.S., Young, D.T., Coates, A.J., Dougherty, M.K. & Andre, N., Tethys and Dione: Sources of Outward Flowing Plasma in Saturn's Magnetosphere, Nature, 447, 833-835, 2006. 10.1038/nature05906

Campana, S., Rea, N., Israel, G.L., Turolla, R. & ZANE, S., Swift and Chandra confirm the intensity-hardness correlation of the AXP 1RXS J170849.0-400910, Astron. & Astrophys., 463, 3, 1047-1051, 2007.

Chapman, L., J. E. Thorne, J.-P. MULLER, and S. McMuldroch, Potential applications of thermal fisheye imagery in urban environments. IEEE Geoscience and remote Sensing Letters, 4, 56-59, 2007.

Denis, M. A., J.-P. MULLER, and H. Mannstein, ATSR-2 camera models for the automated stereo photogrammetric retrieval of Cloud-Top heights. International Journal of Remote Sensing, 28, 1939-1955, 2007.

Foucaud, S., Almaini, O., Smail, I., Conselice, C.J., Lane, K.P., Edge, A.C., Simpson, C., Dunlop, J.S., McLure, R.J., Cirasuolo, M., Hirst, P., Watson, M.G. & PAGE, M.J., Number counts and clustering properties of bright distant red galaxies in the UKIDSS Ultra Deep Survey Early Data Release, Mon. Not. R. astr. Soc., 376, 1, L20-L24, 2007. 10.1111/j.1745-3933.2007.00278.x

Jackman, C.M., Russell, C.T., Southwood, D.J., ARRIDGE, C.S., Achilleos, N. & Dougherty, M.K., Strong rapid dipolarizations in Saturn's magnetotail: In situ evidence of reconnection, Geophysical Research Letters, 34, L11203, 2007. 10.1029/2007GL029764

Lui, A.T.Y., Zheng, Y., Reme, H., Dunlop, M.W., Gustafsson, G. & OWEN, C.J., Breakdown of the frozen-in condition in the Earth's magnetotail, J. Geophys. Res., 2007. 10.1029/2006JA012000

MASON, K.O., Chester, M., Cucchiara, A., Gronwall, C., Grupe, D., Hunsberger, S., JONES, G.H., Koch, S., Nousek, J., O'Brien, P.T., Racusin, J., Roming, P., Smith, P., Wells, A., Willingale, R., BRANDUARDI-RAYMONT, G. & Gehrels, N., Swift ultraviolet photometry of the Deep Impact encounter with Comet 9P/Tempel 1, ICARUS, 187, 123-131, 2007. 10.1016/j.icarus.2006.09.021

MULLER, J.-P., Cover: New satellite cloud products for cirrus and contrails (CLOUDMAP): example of multi-layer cloud detection using multi-spectral stereo. International Journal of Remote Sensing, 28, 1913-1914, 2007.

MULLER, J.-P. and J. Fischer, The EU-CLOUDMAP Project on "Cirrus and contrail cloud-top maps from satellites for weaather forecasting climate change analysis". EDITORIAL on Special Issue of the International Journal of Remote Sensing, 28, 1915-1919, 2007.

MULLER, J.-P., M. A. Denis, R. Dundas, K. L. M. Mitchell, C. M. Naud, and H. M. Mannstein, Stereo cloud-top height and amount retrieval from ATSR2. International Journal of Remote Sensing, 28, 1921-1938, 2007.

Naud, C., K. L. Mitchell, J.-P.,MULLER, E. E. Clothiaux, P. Albert, R. Preusker, J. Fischer, and R. Hogan, Comparison between ATSR2 stereo, MOS O2-A band and ground-based derived cloud top Heights. International Journal of Remote Sensing, 28, 1969-1987, 2007.

Retino, A., Sundkvist, D., Vaivads, A., Mozer, F., Andre, M. & OWEN, C.J., In-situ evidence of magnetic reconnection in turbulent plama, Nature, 2007. 10.1038/mphys574

Roussos, E., JONES, G. H., Krupp, N., Paranicas, C., Mitchell, D. G., Lagg, A., Woch, J., Motschmann, U., Krimigis, S. M., Dougherty, M. K. Electron microdiffusion in the Saturnian radiation belts: Cassini MIMI/LEMMS observations of energetic electron absorption by the icy moons, J. Geophys. Res., Vol. 112, No. A6, A06214, 10.1029/2006JA012027, 2007.

SCHADY, P., MASON, K.O., PAGE, M.J., DE PASQUALE, M., Morris, D.C., Romano, P., Roming, P.W.A., Immler, S., & vanden Berk, D.E., Dust and gas in the local environments of gamma-ray bursts, Mon. Not. R. astr. Soc., 377, 1, 273-284, 2007. 10.1111/j.1365-2966.2007.11592.x

Siscoe, G., Kaymaz, Z. & BOGDANOVA, Y.V., Magnetospheric Cusps under Extreme Conditions: Cluster Observations and MHD Simulations Compared, Solar Phys., 2007. doi:10.1007/s11207-007-0359-7

SOOBIAH, Y., COATES, A.J., LINDER, D.R., KATARIAS, D.O., Winningham, J.D., Frahm, R.A., Sharber, J.R., Scherrer, J.R., Barabash, S., Lundin, R., Holmstrom, M., Andersson, H., Yamauchi, M., Grigoriev, A., Kallio, E., Koskinen, H., Sales, T., Riihela, P., Schmidt, W., Kozyra, J., Luhmann, J., Roelof, E., Williams, D., Livi, S., Curtis, C.C., Hsieh, K.C., Sandel, B.R., Grande, M., Carter, M., Sauvaud, J.-A., Fedorov, A., Thocaven, J.-J., McKenna-Lawler, S., Orsini, S., Cerulli-Irelli, R., Maggi, M., Wurz, P., Bochsler, P., Krupp, N., Woch, J., Fraenz, M., Asamura, K. & Dierker, C., Erratum to "Observations of magnetic anomaly signatures in Mars Express ASPERA-3 ELS data" [Icarus 182 (2006) 396 405], ICARUS, 187, 623-625, 2007. 10.1016/j.icarus.2005.11.025

Teste, A., Fontaine, D., Sauvaud, J.-A., Maggiolo, R., Canu, P. & FAZAKERLEY, A., CLUSTER observations of electron outflowing beams carrying downward currents above the polar cap by northward IMF, Ann. Geophysicae, 25, 953-969, 2007.

Vaivads, A., Santolik, O., Stenberg, G., Andre, M., OWEN, C.J., Canu, P. & Dunlop, M., Source of whistler emissions at the dayside magnetopause, Geophysical Research Letters, L09106, 2007. 10.1029/2006GL029195

Waite, J.H., Young, D.T., Cravens, T.E., Coates, A.J., Crary, F.J., Magee, B. & Westlake, J., The Process of Tholin Formation in Titan's Upper Atmosphere, Science, 316, 870, 2007. 10.1126/science.1139727

B. In Press

Baumjohann, W., Roux, A., Le Contel, O., Nakamura, R., Birn, J., Hoshino, M., Lui, A.T.Y., OWEN, C.J., Sauvaud, J.-A., Vaivads, A., Fontaine, D. & Runov, A., Dynamics of thin current sheets: Cluster observations, Ann. Geophysicae, 2007.

BOGDANOVA, Y.V., OWEN, C.J., Siscoe, G., FAZAKERLEY, A.N., Dandouras, I., Marghitu, O., Kaymaz, Z., Reme, H. & Lucek, E.A., Cluster Observations of the Magnetospheric Low-Latitude Boundary Layer and Cusp During Extreme Solar Wind and Interplanetary Magnetic Field Conditions: 2. 07th November 2004 ICME and Statistical Survey, Solar Phys., 2007.

COATES, A.J., Frahm, R.A., LINDER, D.R., KATARIA, D.O., SOOBIAH, Y., COLLINSON, G., Sharber, J.R., Winningham, J.D., Jeffers, S.J., Barabash, S., Sauvaud, J.-A., Lundin, R., Holmstrom, M., Futaana, Y., Yamauchi, M., Grigoriev, A., Andersson, H., Gunell, H., Fedorov, A., Thocaven, J.-J., Zhang, T.L., Baumjohann, W., Kallio, E., Koskinen, H., Kozyra, J.U., Liemohn, M.W., Ma, Y., Galli, A., Wurz, P., Bochsler, P., Brain, D., Roelof, E.C., Brandt, P., Krupp, N., Woch, J., Fraenz, M., Dubinin, E., McKenna-Lawlor, S., Orsini, S., Cerulli-Irelli, R., Mura, A., Milillo, A., Maggi, M., Curtis, C.C., Sandel, B.R., Hsieh, K.C., Szego, K., Asamura, A. & Grande, M., Ionospheric photoelectrons at Venus: Initial observations by ESPERA-4 ELS, Planetary and Space Science Letters, 2007.

FOULLON, C., OWEN, C.J., Dasso, S., GREEN, L.M., Dandouras, I., Elliott, H.A., FAZAKERLEY, A.N., BOGDANOVA, Y.V. & Crooker, N.U., Multi-Spacecraft Study of the 21 January 2005 ICME: Evidence of Current Sheet Substructure Near the Periphery of a Strongly Expanding, Fast Magnetic Cloud, Solar Phys., 2007. We report on a study of an interplanetary CME observed near Earth, associated with a solar event that was spectacular and historic in many ways. The implications of those observations for the dynamics and structure of the solar coronal region that produced it can provide powerful constraints for ongoing efforts to model this event.

Galli, A., Wurz, P., Bochsler, P., Barabash, S., Grigoriev, A., Futaana, Y., Holmstrom, m., Andersson, H., Lundin, R., Yamauchi, M., Fraenz, M., Krupp, N., Woch, J., Asamura, K., COATES, A.J., Curtis, C.C., Hsieh, K.C., Sandel, B.R., Fedorov, A., Grande, M., Koskinen, H., Kallio, E., Kozyra, J., Luhmann, J., McKenna-Lawlor, S., Orsini, S., Cerulli-Irulli, R., Mura, A., Milillo, A., Roelof, E., Brandt, P.C., Szego, K., Winningham, D., Frahm, R. & Sharber, J., First observations of energetic neutral atoms in the Venus environment, Planetary and Space Science Letters, 2007.

SORIA, R., Baldi, A., Risaliti, G., Fabbiano, G., King, A.R., LaParola, V. & Zezas, A., New flaring of an ultraluminous X-ray source in NGC 1365, Mon. Not. R. astr. Soc., 2007. Study of ann accreting black hole in the galaxy NGC1365, which became one of the brightest of its class then faded sharply within one week, possibly when the accreting gas was blown away in an outflow. We discuss the mass and the accretion state of this black hole.

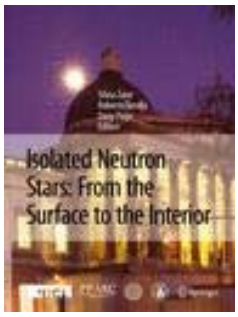
SORIA, R. & Kuncic, Z., Black hole mass estimates from soft X-ray spectra, Adv. Space Res., 2007. Discussion of whether and how the peak temperature and luminosity of an accretion disk around a black hole can be used to infer the black hole mass.

Ziaeepour, H., Nonparametric determination of the sign of w+1 in the equation of state of Dark Energy, 6-, 2006. A method is suggested to determine the sign of w parameter in the equation of state of dark energy.

Publications - Non-refereed

A. Published

BAKER, S.G., Laxon, S., Ezraty, R., Hass, C., Kwok, R., Ridley, J., Ridout, A., Tennvassas, T. & Seifert, F.M., A Contribution to Improved Modelling of Arctic Sea Ice Dynamics in Global Climate Models: Early Results from the GlobIce Project, in Proceedings of the ENVISAT Symposium 2007, 2007. This paper gives an overview of the GlobICE Project (led by UCL) which is a part of ESA's Data User Element (DUE) of the Earth Observation Envelope Programme. The main purpose of GlobICE is to derive information from Sea Ice data sets that will improve understanding of the role of the Arctic in global climate in support of CliC and World Climate Research Programme objectives.



Hancock, S., Lewis, P., Muller, J.-P. and Disney, M., Using Monte-Carlo ray tracing to investigate the measurement of forest parameters with the Echidna™ laser scanner, 10th Intl. Symposium on Physical Measurements and Signatures in Remote Sensing. ISPRS, Davos, Switzerland, 2007.

Zane, Silvia; Turolla, Roberto; Page, Dany (Eds.) Isolated Neutron Stars: from the Surface to the Interior, Reprinted from Astrophysics and Space Science Vol. 308 Nos. 1-4, 2007, VI, 654 p.

B. In Press

BAKER, S.G., Laxon, S.W. & MUIR, A.S., RA-2 ice and Land Measurement Performance, Long Term Monitoring and Routine Verification, in Proceedings of the ENVISAT Symposium 2007, 2007. An expert team at MSSL/UCL has routinely monitored the performance of the ENVISAT RA2 since launch in 2002. This paper describes the the monitoring processes applied, the anomalies they can detect and the seasonal and long-term performance drifts observed from analysis of 40 cycles of data.

Invited Talks and Lectures

Andrew Coates - “Titan’s plasma environment” at UCL/Birkbeck APEX seminars, 8 March 2007. “Space weather effects at Titan, Venus and Mars”, presented at EGU, Vienna, Austria, 15-20 April 2007.

Chris Arridge – “Magnetodiscs at Jupiter and Saturn”, in Solar System Planetary Science session at NAM, Preston, 18 April 2007.

Andrew Fazakerley - “Relating in situ observations of interplanetary coronal mass ejections near Earth to the conditions at the site of their origin in the solar corona”, Radio and Space Plasma Physics

Group Seminars, University of Leicester, 7 March 2007.

Claire Foullon – “Evolution of Kelvin-Helmoltz Activity along the Dusk Flank Magnetopause from Two-point Distant Observations”, Space Science Center Seminar, University of New Hampshire, USA, 13 April 2007.

Paul Henderson – “Cluster PEACE observations of electron pressure tensor divergence in the magnetotail”, Radio and Space Plasma Physics Group Seminars, University of Leicester, 23 May 2007.

Chris Owen, “On the need for multi-point, multi-scale and multi-region measurements for investigations of fundamental plasma processes in the Earth's magnetosphere”, EGU General Assembly 2007, Vienna, Austria, 15-20 April 2007.

Roberto Soria gave a seminar at the Harvard-Smithsonian Center for Astrophysics.

Conferences and Workshops (National and International)

Planetary Science Group

National Astronomy Meeting in Preston, April 2007. Chris Arridge gave 2 talks – his own and Geraint Jones’. (G.H. Jones et al., Saturn's Rings' Spokes: The Mark of Thor's Hammer?).

EGU, Vienna, Austria, 15-20 April. Andrew Coates and Andrew Griffiths attended. Planetary science group authors were on 20 papers and presented 2 (in addition to AJC invited talk):

Arridge, C.S.; Sittler, E.C.; André, N.; Coates, A.J.; Dougherty, M.K.; Khurana, K.K.; Lewis, G.R.; McAndrews, H.J.; Russell, C.T., Thermal electrons in Saturn's magnetotail.

Griffiths, A.; Coates, A.; Jaumann, R.; Josset, J.; Michaelis, H.; Paar, G.; Barnes, D.; Muller, J., The Panoramic Camera (PanCam) instrument for the ESA ExoMars rover.

Jones, G. H.; Roussos, E.; Krupp, N.; Woch, J.; Lagg, A.; Krimigis, S. M., Short-lived dispersive electron events in Saturn's magnetosphere: A thunderstorm-induced phenomenon?

Rengel, M.; Jones, G. H.; Küppers, M.; Keller, H. U.; Owens, M. The Ion Tail of Comet Machholz observed by OSIRIS as a Tracer of the Solar Wind Velocity

Dartnell, L. R.; Desorgher, L.; Ward, J. M.; Coates, A. J., Modelling the surface and subsurface Martian radiation environment: Implications for Astrobiology.

MAPS workshop in Iowa - Chris Arridge attended and presented a talk. MSSL co-authors were on several other talks.

Chris Arridge et al., CAPS ELS Observations of electron modulations in Saturn's inner magnetosphere; Plasma electrons in Saturn's magnetotail, presented at Cassini MAPS working group meeting, University of Iowa, 17-18 May 2007.

AGU Joint Assembly, Acapulco, 22-25 May 2007 - Frahm, R A, Winningham, J, Sharber, J R, Jeffers, S J, Coates, A J, Linder, D R, Observations of Photoelectron Energy Peaks Below 400 km in the Dayside Ionosphere of Mars.

Members of the *Space Plasma Physics Group* attended the following meetings:

The 13th Cluster workshop at MSSL, 26-30 March 2007. 6 papers which included MSSL authors were presented with MSSL lead authors on the following 5:

Alexeev, I., High Latitude Substorm: event presentation;

Fazakerley, A.N., Version 5 PEACE Calibrations;

Henderson, P., Cluster measurements of the divergence of the electron pressure tensor and J × B: Relative contributions to Ohm's law;

Walsh, A., Near-Simultaneous Magnetotail Flux Rope Observations with Cluster and Double Star;

Walsh, A., Cluster - Double Star Substorm Studies:events presentation.

RAS NAM/MIST meeting, Preston, 16-20 April 2007. 8 papers which included MSSL authors were presented with MSSL lead authors on the following 6:

Alexeev, I., V. Sergeev, C.J. Owen, A.N. Fazakerley, E. Lucek, H. Reme, Reconnection accelerated electrons in the magnetotail;

Bogdanova, Y.V., C.J. Owen, G. Siscoe, O. Marghitu, I. Dandouras, Z. Kaymaz, H. Reme, E.A. Lucek, A.N. Fazakerley, The Magnetospheric Low-Latitude Boundary Layer and Cusp Dynamics during Interplanetary Coronal Mass Ejection Events;

Fazakerley, A.N., C.J. Owen, S.J. Schwartz, T. Horbury, W. Baumjohann, P. Canu, P. Louarn, M. Fujimoto, R. Nakamura, A. Roux, A. Vaivads, The Cross-Scale Mission;

Foullon, C., C.J. Owen, S. Dasso, L.M. Green, I. Dandouras, H.A. Elliott, A.N. Fazakerley, Y.V. Bogdanova, N.U. Crooker, Multi-spacecraft study of the January 21st 2005 ICME;

Foullon, C., C.J. Farrugia, F.T. Gratton, C.J. Owen, R.B. Torbert, A.N. Fazakerley, Evolution of Kelvin-Helmoltz Activity along the Dusk Flank Magnetopause from Two-point Distant Observations;

Walsh, A., A. N. Fazakerley, R. J. Wilson, I. V. Alexeev, P. D. Henderson, C. J. Owen, E. Lucek, C. Carr, I. Dandouras, Near-Simultaneous Flux Rope Observations with Cluster and Double Star: Evidence for Multiple X-Point Reconnection?

EGU General Assembly 2007, Vienna, Austria, 15–20 April 2007 – Chris Owen attended and 21 papers, which included MSSL authors, were presented with MSSL lead authors on the following:

Owen, C.J., On the need for multi-point, multi-scale and multi-region measurements for investigations of fundamental plasma processes in the earth's magnetosphere. (solicited)

5th Cluster Cross-calibration workshop, ESTEC, The Netherlands, 14 May 2007. Andrew Fazakerely and Andrew Lahiff attended The following paper was presented:

Lahiff, A.D., I. Rozum, A.N. Fazakerley, H. Bacai, PEACE calibration status

Cluster Active Archive Operations Review 2, ESTEC, The Netherlands, 15 May 2007. The following paper was presented:

Bacai, H., A.D. Lahiff, A.N. Fazakerley, I. Rozum, Operations Review 2: CAA PEACE Team Report.

AGU, Acapulco, Mexico, 22-25 May 2007. 4 papers which include MSSL authors were presented with MSSL lead authors on the following 2:

Henderson, P.D., Owen, C., Lahiff, A., Alexeev, I., FAZAKERLEY, A., Stenberg, G., Lucek, E., Reme, H., Cluster measurements of the divergence of the electron pressure tensor and J×B: Relative contributions to Ohm's law;

Owen, C.J., M. Opher, Dynamics of Local Solar Activity and Its Evolution With the Cycle: II.

Imaging Group

EGU Vienna - Griffiths, A.G. Coates, A., Muller, J-P., et al., 2007. The Panoramic Camera (PanCam) instrument for the ESA ExoMars rover.

EGU Congress. EGU, Vienna - Paar, G. Griffiths, A., Coates, A. et al., 2007. Requirements and Solutions for ExoMars Rover Panoramic Camera 3d Vision Processing.

10th Intl. Symposium on Physical Measurements and Signatures in Remote Sensing. ISPRS, Davos, Switzerland. - Hancock, S., Lewis, P., Muller, J.-P. and Disney, M., 2007. Using Monte-Carlo ray tracing to investigate the measurement of forest parameters with the Echidna™ laser scanner; Muller, J.-P. et al., 2007. MERIS land surface BRDF/albedo retrieval using data fusion with MODIS BRDF and its validation using contemporaneous EO and in situ data products.

ENVISAT Symposium. ESA, Montreux, Switzerland - Zeng, Q., Muller, J.-P., Li, Z., Zhang, J. and Xue, H., 2007a. Monitoring landslide susceptibility in Three Gorges Area using Corner Reflector Differential Interferometry; Zhang, J., Muller, J.-P., Li, Z., Zeng, Q. and Gong, L., 2007. Studying Fault Activity in Dangxiong by Corner Reflector D-InSAR Technique.

Year 3 Report, 4th Annual Dragon Symposium. ESA, Aix-en-Provence - Zeng, Q. Muller, J-P., et al., 2007b. Monitoring landslide susceptibility in the Three Gorges Area using Corner Reflector Differential Interferometry DRAGON (2558).

Media Broadcasts and Features

Andrew Coates:

- Info for THES on MoonLITE, 22 Feb (appeared 9 Mar).
- Interview on US-UK cooperation agreement in space for BBC News Online, appeared 20 April.
- Interview on Venus Express, BBC R4 Material World, 26 April.
- Quoted on present and future missions in Tim Radford article 'The satellite that set alight science', on 50th anniversary of space exploration, the Guardian, 4 May.
- Various quotes on the Titan smog result.

Geraint Jones:

- Quoted in article on Saturn's ring spokes, Ciel et Espace (France).
- Work featured in "Saturn's Spokes: Spawned by Storms?", Science magazine's ScienceNOW daily news, 19 April.

Peter Muller

- Sky at Night, 4 Feb. (BBC1), 5 Feb. (BBC4), 10 Feb. (BBC2).

Outreach

Several MSSL staff and students attended the 2007 British Rocket Oral History Programme conference at Charterhouse School in Godalming on 12-14 April. MSSL had a large stand showcasing the past, present and future work of the Lab, with a display of space science instrumentation. Various people also gave talks on current missions, the history of the Lab and PhD opportunities at MSSL, spoke with school groups, teachers and potential students, and took part in a panel discussion on academia and industry in space research. The event ended with the very enjoyable Sir Arthur Clarke award ceremony. Many thanks to those involved: Chris Arridge, Alex Blustin, Laura Bone, Andrew Coates, Mark Cropper, Lucie Green, Louise Harra, Jan-Peter Muller, Laura Pickard, Curtis Saxton, Patricia Schady, Alan Smith and Andrew Walsh.

Andrew Coates gave talks at Fortismere School, Haringey, for Year 10 gifted and talented students; Crayford Manor House Astronomical Society 26 April 2007; Orpington Astronomical Society, 24 May 2007 and attended UK goes to the Planets meeting in Swindon, 23 March.

Ian Hepburn, Julia Gaudelli, Dhiren Kataria and Yulia Bogdanova ran the Space Laboratory for Beavers and Scouts during 25-29 May, Horsham Weald District Scouts - 2007 Centenary Camp.

Claire Foullon was a judge at the 6th Annual Science Fair (evaluating childrens' projects), Amesbury Middle School, Massachusets, USA, 10 March 2007.

Press Releases

STFC, UCL press releases relating to Science paper which includes results from our Cassini electron spectrometer. We observed very heavy negative ions in Titan's ionosphere which play a key role in aerosol formation and probably tholin production (the latter relates to predictions by Carl Sagan, and may play a key role in coating Titan's surface with organic material). Some worldwide media coverage.

MSSL press release on FONEMA as part of the new Science Museum space gallery.

Other News

Sarah Matthews has taken over from Louise Harra as Director of Postgraduate Studies.

Graziella Branduardi-Raymont and Chris Owen became Pastoral Tutors to students.

Next Issue

The next issue of the Department of Space and Climate Physics Newsletter (Volume 5, Issue 2) will be published in September 2007. This will cover activities from 1 June 2007 to 31 August 2007.