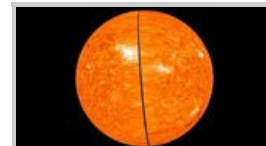


Seeing the Sun from all Angles

Posted on Wednesday 9th February 2011

A unique 360 degree view of the Sun was unveiled on Sunday 6 February 2011 when NASA's two STEREO spacecraft were aligned exactly opposite each other on either side of the Sun. The camera systems on board the spacecraft were developed by University of Birmingham physicists and engineers, together with colleagues at the Science and Technology Facilities Council Rutherford Appleton Laboratory.



The 360° coverage from STEREO is enhanced by NASA's SDO (Solar Dynamics Observatory) mission which images the Sun in high resolution. As the STEREO probes continue flying around the far side of the Sun, the area of unseen solar territory on the near side will increase, and SDO's cameras will play a vital role in filling the gap.

Working together, these new views of the Sun will allow scientists to better predict space weather and the violent eruptions from the Sun's surface, which can damage satellites, disrupt communications and disable power systems on Earth.

The UK, including STFC scientists and engineers, has provided essential expertise and technology to both SDO and STEREO. The instruments for both missions use cameras designed at STFC's Rutherford Appleton Laboratory (RAL).

Minister for Universities and Science David Willetts said, 'Our Universe is truly fascinating, yet so much of it is still a mystery. This breakthrough has the potential to teach us so much more about what lies beyond our planet, and I'm extremely proud that UK scientists have played a pivotal role in the research and development of this important imaging technology.'

All the cameras now operating on STEREO were built and tested in at the University of Birmingham. Dr Chris Eyles from the University of Birmingham's School of Physics and Astronomy whose team helped to design and build the cameras said, "These unprecedented images can perhaps be likened to the first images of the far side of the Moon taken some 50 years ago.

However, in many ways the significance for mankind is probably much greater in view of the effect that the Sun and "space weather" can potentially have on our advanced technological society. Having the ability to image the entire disk of the Sun, including the far side, will enable us to continually monitor solar active regions, sunspots, and solar flares, etc as they rotate around the Sun and hence improve our understanding of solar activity and our ability to predict space weather."

Professor Richard Harrison, Principal Investigator for the UK instruments on STEREO and SDO Co-Investigator said, 'The Sun is a truly complex object which influences many aspects of our lives. In the same way that you would not expect to understand the workings of the brain by studying just a small part of it, a global investigation into the nature of our star as a complete object is essential to understanding how it works.'

Dr Chris Davis, STFC STEREO Project Scientist said, 'The STEREO mission has already shown us some wonderful sights, solar eruptions arriving at the Earth to comets struggling against the solar wind. I'm very excited about this new stage of the mission and am looking forward to many years of unique observations.'

Dr Davis is also a leading scientist in Solar Stormwatch , a project in which members of the public use images from STEREO to spot explosions on the Sun, track them across space to Earth and provide an early warning to astronauts.

Dr David Parker, Director of Space Science and Exploration for the UK Space Agency, said, 'Solar missions such as STEREO and SDO not only give us more information about star formation and evolution throughout our Universe but are of vital importance in our quest to further understand the Sun's processes and the effect they can have on our planet and way of life. This spectacular 360° view is another triumph for the STEREO mission which continues to obtain some of the best images yet of the Sun. We're extremely proud of our skilled UK team who are playing an important role in this mission and helping to further unravel the secrets of our star.'

Scientists have already established that the magnetic fields in the Sun's atmosphere drive solar activity on a global scale. This view of the entire Sun will enable more detailed studies of these processes at work. The 360° observations will continue for the lifetime of the missions.

Notes to Editors

Further information

The CCD-based camera systems on all of the solar imaging instruments aboard both STEREO and SDO were developed in the UK by a collaboration between the STFC Rutherford Appleton Laboratory and the University of Birmingham, with e2v Ltd providing world-leading camera technology.

UK collaboration

UK institutions involved in STEREO are:

- University of Birmingham
- University of Aberystwyth
- Imperial College London
- University of Glasgow
- University of St Andrews
- University College London, Mullard Space Science Laboratory

UK institutions involved in SDO are:

- e2v Ltd
- STFC Rutherford Appleton Laboratory
- University College London, Mullard Space Science Laboratory
- University of Sheffield

STEREO

The NASA STEREO mission was launched in October 2006 and is providing a totally new perspective on the Sun. The two identical spacecraft are offset from one another, one flying ahead of the earth and the other behind. The spacecraft look back at the sun and the space between the sun and the earth which allows 3D images of the sun to be produced.

The cameras (Space-led Heliospheric Imagers) on board STEREO were designed at RAL and were built and tested at the University of Birmingham. These cameras look at the space between the Sun and the Earth using wide-angle telescopes. STEREO is funded by the UK Space Agency ([link opens in a new window](#)).

Solar Dynamics Observatory

The Solar Dynamics Observatory (SDO) is the first mission in NASA's 'Living with a Star' (LWS) programme and was launched in February 2010.

SDO's unique orbit allows high resolution images of the Sun to be recorded every three quarters of a second, providing in-depth information about the Sun's complex magnetic fields and space weather generated by solar flares and violent eruptions (CME's) from the Sun's atmosphere which can disable satellites, disrupt communications, cause power grid failures, and expose astronauts to deadly particle doses.

The UK, including STFC scientists and engineers, has provided essential expertise and technology to the mission. In addition CCD Camera electronics systems for two of the three scientific instruments on SDO, STFC has a scientific interest through a co-investigator role and receipt of high data-rate data, automated analysis, and storage of data for UK Scientists.

Solar Stormwatch

Solar Stormwatch is a web project where members of the public can help spot and track solar storms and be involved in the latest solar research.

For further information:

Kate Chapple, Press Office, University of Birmingham, tel 0121 414 2772 or 07789 921164.

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