

Satellites search out South Pole snowfields

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As skiers across the world pay close attention to the state of the snow on the slopes, there are a different group of scientific snow-watchers looking closely at a South Pole snowfield this January.

Scientists from around the world coordinated by the UK's National Physical Laboratory (NPL) are examining an Antarctic snowfield this January as part of the world's largest inter-comparison between satellite sensors.

The results will allow scientists to fully quantify differences between the measurements made by the satellite instruments in orbit. This will lead to improvements in their calibration and ensure that the data collected is all quality assured. This will ultimately result in more confidence in the data used for climate change, weather systems and monitoring disaster areas. Some of these measurements require the detection of changes of a few tenths of a percent per decade, yet current sensors exhibit biases between themselves of many percent, often more than 20 times this level.

Over 30 sensors from space agencies across the globe, including several from the UK, ranging in spatial resolution from a metre to several hundred metres will measure the reflectance of the sun by the Antarctic snow. All of the data will be cross-compared to each other supported by ground measurements of the site.

The measurements will be taken over a snowfield in Antarctica known as 'DOME C'. These can only be performed in December and January when the Sun is relatively high in the sky during the southern

hemisphere summer.

Nigel Fox, head of Earth Observation in NPL's Optical Technologies software and computing team said:

"This is the most comprehensive comparison of its kind ever organised and is a direct result of efforts led by NPL to establish improved quality assurance of Earth observation data. As the data from many of the sensors involved in this comparison is used in studies of climate change, it is essential that we can reliably combine it together and start to use it as a truly global resource and reference for the future. This comparison will provide the information and evidence to allow this to happen"

This comparison is the first of a series led by NPL, supported by the Department for Innovation, Universities and Skills, the European Space Agency and the British National Space Centre, to address key issues in Earth Observation on behalf of the worlds Earth Observation community. Future ones include measurements of the temperature of the ocean and reflectance of a salt lake in Turkey.

Looking to the future, it is hoped that the UK can continue to take a lead in this niche but crucial role to underpin the calibration and validation of Earth Observation satellites. One example is the development of a "calibration satellite" in space to ensure the accuracy of satellites in orbit.

Source: National Physical Laboratory

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