

New research contributes to defense of Earth's technologies

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University of Leicester researchers have taken a step forward in helping to create a defence for earth's technologies -from the constant threat of space weather.

They have implemented a "double pulse" radar-operating mode on two radars, which form part of a global network of ground based coherent scatter radars called SuperDARN (Super Dual Auroral Radar Network).

These radars allow observations of [space weather](#), which can have devastating impacts for technologies on earth.

James Borderick, of the Radio and Space Plasma Physics group, within the Department of Physics and Astronomy, said: "Intense space weather events are triggered by the explosive release of energy stored in the Sun's magnetic fields.

"A strong burst of electromagnetic energy reaches the Earth with the potential to disrupt many of our fundamental services, such as satellite and aviation operations, navigation, and electricity power grids. Telecommunications and information technology are likewise vulnerable to space weather.

"All modern societies rely heavily on space systems, for communications and resource information (meteorological, navigation and remote sensing). There are high cost and high risks associated with the consequences of space weather events, as insurance companies

recognise.

"We have implemented a new "double pulse" radar-operating mode on the Radio Space Plasma Physics Group's Co-operative UK Twin Located Auroral Sounding System (CUTLASS) radars.

"The new sounding mode enhances our temporal resolution of plasma irregularities within the ionosphere. The resolution increase may help our understanding of coupling processes between the solar wind and the Earth's magnetosphere by allowing the observation of smaller scale phenomena with an unprecedented resolution.

"Utilising our new [radar](#) mode and the vastness of ground based and space based instruments at our disposal, we are ever increasing our understanding of the countless phenomena associated with the Solar-Terrestrial interaction, and one day, may lead us to the accurate predictions of intense weather events- and an active defence."

The research introduces the importance of utilising ground-based measurements of the near space environment in conjunction with spacecraft observations and then proceeds to explain the direct influences of space weather on our own technological systems.

Mr Borderick will be presenting his doctoral research at the Festival of Postgraduate Research, which is taking place on Thursday 25th June in the Belvoir Suite, Charles Wilson Building between 11.30am and 1pm.

Source: University of Leicester ([news](#) : [web](#))

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