

RECENT ACTIVITIES AT THE WARWICK CENTRE FOR SPACE DOMAIN AWARENESS.

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The University of Warwick's Centre for Space Domain Awareness (CSDA) launched in 2021, bringing together researchers from a variety of disciplines, including astronomy, solar physics, and statistics. The CSDA draws from the experience and expertise of multiple research groups to tackle issues relating to the safety and sustainability of satellite operations in the space domain. This brief will provide an overview of ongoing research activities within the CSDA, with a particular focus on efforts to apply astronomical tools and techniques to the problem of monitoring near-Earth space.

The CSDA is leading an international collaboration involving the Defence Science and Technology Laboratory (UK), Australian National University, and Japan Aerospace Exploration Agency, to conduct simultaneous optical surveys of the geosynchronous region from multiple perspectives across the globe, as part of the DebrisWatch programme. The Centre has also contributed observations to the Five-Eyes Phantom Echoes campaigns, monitoring the rendezvous and proximity operations of Northrup Grumman's Mission Extension Vehicles with active client satellites in geostationary orbit. Warwick facilities at the Roque de los Muchachos Observatory on the island of La Palma have been used to accrue databases of high cadence and precision light curves for objects in low Earth orbit, including the re-purposed SuperWASP-North array and the recently commissioned CLASP prototype telescope, comprising two 36 cm astrographs and sCMOS detectors. These databases are feeding into the development and testing of bespoke object detection and classification algorithms.

Members of the CSDA are heavily involved with the management of the Global Network On Sustainability In Space (GNOSIS), which promotes, coordinates and develops collaboration across the academic, defence, industrial and political sectors to understand and solve problems relating to space sustainability. The brief will conclude with a look ahead to the future GNOSIS programme, including this year's annual conference on "Space Sustainability for the Next Decade (and Beyond)".