



Wednesday
October 1, 2025
3:10 pm
Room 1003 EECS

Dr. Jesse Woodroffe
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Space Science in an Anthropogenic Environment

In 1962, the Starfish Prime high-altitude nuclear test marked the first occasion on which mankind ever created an entirely new region of space — a long-lasting radiation belt that significantly changed the character of geospace for months if not years. On the flip side, long-term persistent VLF transmission has been identified as a likely source of electron losses and may be entirely responsible for the existence of a depleted radiation belt slot region. This highlights the dual nature of humanity's presence in space — creator and destroyer, influencer and observer. As we become progressively more active in space, particularly through frequent space launches and the mass population of low earth orbit, the character of the natural environment is itself starting to change in response to our activity. The presence and composition of debris in LEO is a high-profile example, but far from the only one. Electromagnetics, chemistry, and plasma physics throughout the domain of human activity are being changed, sometimes in surprising ways. In this talk, I will take a holistic look at the growing impact of human activity on the space environment and potential future implications for both science and society.

About the Speaker: Jesse Woodroffe leads the Space Sciences and Applications Group (ISR-1) at Los Alamos National Laboratory (LANL) where he has overseen a portfolio work related to space-based plasma and charged particle sensing since joining LANL in 2023. From 2021-2023, he was a program scientist at NASA Headquarters where he oversaw the research component of the NASA space weather research program. Other prior work includes serving a consultant on the space environment for the Defense Advanced Research Projects Agency (2019-2021), and as a researcher at LANL investigating space weather impacts to the power grid. Jesse received his BA in physics from Augsburg College in 2003 and his PhD in physics from the University of Minnesota in 2010.