



Measurements of Scintillation and Total Electron Density in the Arctic and Antarctica available in the Madrigal Database: Analysis of 2025 data

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The Madrigal database has included scintillation observations from networks of scintillation GNSS receivers since 2018. However recently this database has been expanded to include data from new GNSS receivers on the island of Palua in South East Asia (SEA) and the McMurdo Antarctic station. Additional receivers are planned for Antarctica at the Palmer station and the South Pole station as well as others to be situated in SEA. The focus of this talk will be on the analysis of the new data from McMurdo, and its comparison to data from other high latitude sites. The Madrigal database includes data from the following networks included in this database: the NSF MRI Collaborative: Development of Monitors for Alaskan and Canadian Auroral Weather in Space (MACAWS), the Canadian High Arctic Scintillation Network (CHAIN), the Low-Latitude Ionospheric Sensor Network (LISN), the international Meridian Project (IMP), and the Istituto Nazionale di Geofisica e Vulcanologia (INGV) network. We will review the Madrigal offerings which include both individual scintillation plots of S4 and Sigma-Phi observations overlaid onto total electron content maps as well as daily global movies. Scintillation observations collected during the two large geomagnetic storms in May and October 2024, as well as future 2025 geomagnetic storms, will be discussed. Direct comparisons of the Arctic and Antarctic observations, especially during storm times, will be shown along with corresponding data from all-sky imagers and other sensors.