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Poster
In Aotearoa New Zealand (NZ), geomagnetic waveform data has been recorded since 1916. The Eyrewell Geomagnetic Observatory (EYR), a member of INTERMAGNET since 1994, and has contributed to the global Kp index since its early years. However, it is only in recent years that this data has gained prominence in space weather research and monitoring.

Historical magnetograms, recorded on photographic paper from 1916 to 1991, offer valuable insights that enhance statistical models for predicting extreme geomagnetic storm scenarios in NZ. These pre-digital-era records have been painstakingly maintained by the NZ Geomagnetic Database – a long-term programme aimed at safe-guarding and providing current and historic geomag data. As part of the "Solar Tsunamis" research programme, we have digitized key portions of this dataset, producing 1-minute resolution data for major storms since 1951, and will present the 4th August 1972 storm as an example here.

We have developed a real-time magnetic field monitoring tool for EYR, delivering rate of change information to support space weather monitoring, leveraging correlations between GICs (geomagnetically induced currents) and magnetic field measurements. This tool powers a dashboard (https://www.geonet.org.nz/data/geomag/dashboard) and API, providing openly available 1-minute and 1-second resolution data streams.

Additionally, the Solar Tsunamis programme established the Magnetometer Array for New Zealand Aotearoa (MANA), adding five new sites to the national network. The May 2024 "Gannon" geomagnetic storm, which exhibited a maximum rate of change of 320 nT/min at EYR, highlighted NZ's enhanced ability to capture and characterize geomagnetic events across the country.

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