

Preliminary report of VLF Campaign observation with High-resolution Aurora Imaging Network (VLF-Chain) over Canada

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Whistler-mode waves in the VLF/ELF frequency range interact with high-energy (~10 keV) electrons to cause diffuse and pulsating auroras, and with MeV electrons in the radiation belts. However, simultaneous high-time resolution measurements of aurora and these waves have previously not been done sufficiently. We made a campaign observation of such high-time resolution measurements at Athabasca (54.72N, 246.69E, MLAT=61.3) and Fort Vermillion (58.38N, 243.99E, MLAT=64.5) using two loop antennas and several auroral cameras for February 16-26, 2012. The loop antennas at both stations measure east-west and north-south magnetic field variations with a sampling rate of 100 kHz. The panchromatic all-sky cameras at both stations measure auroras with a sampling rate of 30 Hz. The sampling timings of both instruments are corrected by GPS receivers. In addition we installed an oblique looking narrow-FoV EMCCD camera at Athabasca with a sampling rate of 100 Hz, to measure height variation of pulsating aurora. At Athabasca, routine measurements by an induction magnetometer, a proton photometer, an all-sky airglow imager, LF standard wave receiver, were also carried out. We also tried to compare these observations with satellite measurements by REIMEI, THEMIS, NOAA, and DMSP. In this presentation we will show preliminary results obtained from this comprehensive campaign of aurora and radio wave measurements at subauroral latitudes.

Keywords: whistler-mode waves, pulsating aurora, Pc1 geomagnetic pulsations, wave-particle interaction, subauroral latitudes, ground-based observation