

ISR observations of topside ionline enhancements during a high-power HF-radio wave modification experiment at high latitudes

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Enhancements in the ion-spectra on the topside of the ionosphere have been observed during a high power, high frequency (HF) heating experiment of the polar ionosphere conducted near Tromsø, Norway in March 2016. The wave-plasma interactions were observed with the European Incoherent SCATer UHF radar co-located with the heating facility. HF pulses were swept through frequencies in 10 and 20 kHz steps from just below to just above the 3rd and 4th multiples of the F-region gyro-frequency. Simultaneous to the previously well-documented enhancements on bottomside of the F- layer at the HF reflection height, topside enhancements were observed for several pulses. These were evident semi-continuously until the bottomside enhancement abruptly disappeared as the HF frequency was increased. We present the observations and discuss the top-side enhanced ion-line in relation to Z and L-mode propagation through the F-region peak.