EISCAT Tri-Static Observation of Polar Mesosphere Winter Echoes on 8 January 2014

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Polar Mesosphere Winter Echoes (PMWE) are strong coherent signals from 50-80 km altitudes observed by VHF radars in the equinox and winter seasons. PMWE are not everyday phenomena since in order for the radars to see them the lower ionosphere has to be additionally ionised e.g. by solar protons or energetic electrons of magnetospheric origin. Thus PMWE observations with the EISCAT VHF radar (unlike with continuously operated MST radars) have not been frequent and were mainly limited to the mono-static configuration. During the solar proton event on 8 January 2014 the vertically pointed EISCAT 224 MHz radar in Tromsø ran the manda experiment and observed patches of PMWE at about 70 km. The EISCAT remote receivers in Kiruna and Sodankyla also detected an enhanced signal from the same altitude. We analysed the spectrum of the strongest PMWE observed from three sites during interval 12:05 -12:12 UT and compared it with IS spectra from the background plasma. We discuss the possible relation of the observed PMWE to gravity waves and wind shear.