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NEUTRAL DYNAMICS IN THE CANADIAN ARCTIC UPPER ATMOSPHERE

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Because of its location relative to the northern magnetic pole, Canada has a long tradition of auroral research. As a complement to this ionospheric activity, work on observing neutral motions which have the potential to penetrate from the middle atmosphere into the thermosphere was initiated in 2014. This project is called Dynamics of the Neutral Thermosphere (DNT) and is supported by the Canadian Space Agency. Currently instruments are sited at Eureka, Nunavut (80 N) at the Polar Environment Atmospheric Research Laboratory and Resolute Bay, Nunavut (74 N). Instrumentation includes meteor radars at both sites, Fabry-Perot interferometers at both sites (multi-wavelength at Resolute Bay and oxygen red line at Eureka), all sky imagers at both sites, and a spectral airglow temperature imager and a field-widened Michelson interferometer at Eureka. Together they provide observations of airglow and auroral brightness and morphology, wind and temperature over the two stations and the possibility of identifying large scale waves propagating vertically over the two stations. Collaborations with the Resolute Incoherent Scatter Radar and PolarDARN are also being pursued. This paper will describe the observation network and its capabilities and results from the first full season of operation.