Observations of the diurnal and seasonal meteoric input variability at high latitudes using the 450 MHz PFISR

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We present a seasonal study of the micrometeor input function (MIF) at high latitudes using meteor head-echo radar observations performed with the new Poker Flat Incoherent Scatter Radar (PFISR). This flux is responsible for a number of atmospheric phenomena, one of which, may be the production of meteoric smoke which would act as a condensation nuclei in the formation of ice particles in the polar mesosphere. The observations were performed during 24 hrs periods near the summer and winter solstices and spring and autumn equinoxes, times at which the seasonal variability of the MIF is predicted to be large at high latitudes. Precise altitude and radar instantaneous line-of-sight (radial) Doppler velocity information are obtained for each of the hundreds of events detected ever day. The results to be discussed include, diurnal meteor rate curves and altitude and radial meteoroid velocity distributions. We compared observed and modeled results and find them to be in good agreement. A surprising result is that the peak of the detected meteor altitude distribution varies up to an atmospheric scale eight depending on season. We will discuss if these changes are due to seasonal variability of the atmospheric temperature in the mesosphere or in the directionality of the meteoric influx.