



Characteristics of polar mesosphere summer echoes (PMSE) at 78°N

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During the summer months (polar) mesosphere summer echoes ((P)MSE) are observable by VHF radars in middle and polar regions. In the previous years measurements have been carried out also at very high latitudes using the SOUSY-Svalbard-Radar at Spitsbergen (78°N). Here we present results obtained from observations during several summer seasons. PMSE were observed from mid of May to end of August. At the beginning of this period the daily PMSE occurrence increases during the very short time of two or three weeks from 0% to 100% and decreases at the ending of this period similar rapidly. Between these times polar mesosphere summer echoes occur nearly permanent during about 12 weeks even though the received echo power is unbalanced. Nevertheless diurnal variations in PMSE strength, thickness and layering are identifiable. PMSE occur from 78 km to 92 km with a maximum occurrence height near 85 km. However the height distribution over Spitsbergen is not symmetrically arranged around this peak. Multiple layers are observable more frequently than in middle and in moderate polar regions. Especially in June/July the appearance of double and triple layers is a very characteristic feature. In contrast single layers are observable only in about 10 per cent of all cases. All these results are different to observations at lower polar and mid latitudes and will be discussed in this presentation.