



The influence of snow properties and meteorological conditions on sea-ice radar backscatter in the Southern Ocean

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The temporal and spatial variability of sea-ice radar signatures in the Southern Ocean during late winter, spring and early summer from QuikSCAT data is presented. We observe a circumpolar and broad band of sea ice close to the MIZ that is characterized by very high radar backscatter. This feature is explained through detailed in-situ observations of snow and sea-ice properties as well as in relation to meteorological conditions, which were derived from NCEP/NCAR reanalysis data. Our results indicate that high backscatter regions are caused by metamorphous snow which forms through refreezing after short-term melt events. This process is connected with the episodic passes of low pressure systems entraining warmer air from the north. South of the Antarctic Circumpolar Trough, sea ice is not affected by this influence and shows spatially homogenous microwave signatures with low backscatter.