



A climatology of water vapor above ALOMAR from ground-based microwave observations.

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Although the importance of water vapor in the middle atmosphere is well understood no high resolution climatology for water vapor at polar latitudes exist. We have been observing the water vapor line at 22.235 GHz above ALOMAR in northern Norway (69N, 16E) since early 1996 with ground-based microwave spectrometers (WASPAM and cWASPAM) and will here present a climatology of water vapor based on these observations.

Care has been taken to make sure the different datasets are compatible and in order to maximize the sensitivity at high altitude a long integration time (168 hours) was chosen. The complete dataset was thereafter recompiled and rebinned into a climatology which describes the yearly variation of water vapor at polar latitudes on a weekly basis. It is divided into 2.5 km thick layers between 40 - 80 km.

Apart from the construction of a climatology such a large dataset also enabled us to investigate the long term behavior of water vapor. By comparing the measurements from individual years to the climatological mean we could deduce a trend in the amounts of water vapor. It can be shown that the long term behavior varies between the different altitudes during the time period. It was also possible to investigate any potential temporal drifts in the yearly variation.