Abstract Details

AOGS 1st Annual Meeting > Ocean and Atmospheres > Ground based microwave remote se water vapour >

Corresponding Author : Prof. Niklaus Kaempfer (niklaus.kaempfer@mw.iap.unibe.ch)

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Title: Ground based microwave remote sensing of water vapour

Abstract:

Water vapour plays a key role in regulating Earth's climate. It is the important greenhouse gas and provides the largest known feedback mechanism for climate change. However even the net sign of these feedbacks is currently not known. The precise effect of changes in hu will depend on the altitude at which these changes occur. As there are very few stations world-wide which provide water vapour measureme there is an urgent need for precise measurements of the water vapou profile. As a matter of fact the measurement of water vapour amount difficult. Its abundance in volume mixing ratio ranges from a few tent percent in the troposphere to a few parts per million in the stratosphe mesosphere. No single measurement technique is able to provide the distribution from the troposphere to the mesosphere by itself, so diffe techniques must be combined at the same location and time for a cor picture. In situ measurements are mainly limited to altitudes below a 35 km and are performed on balloons or from aircraft thus being limit the cruising altitude of airplanes. A technique that is particularly well to investigate the vmr-profile from the ground is microwave radiomet retrieves the profile from pressure-broadened transition lines. We rep new mobile microwave radiometer called MIAWARA (Middle Atmosphe Water Vapour Radiometer) which is operated from Bern, Switzerland, during field campaigns, providing altitude profiles of water vapour fro approx. 20 - 80 km. Profiles covering the troposphere are complemer with data from balloon or lidar where available. MIAWARA will be use basis for a similar instrument to be operated from South Korea in the thus providing for the first time water vapour profiles measured with based remote sensing techniques in Asia.

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Co-Authors

No.	Title	First Name	Family Name	Organization
1	Mr.	Alexander	Haefele	IAP, University of Bern