



Variation of humidity in the atmosphere over Poland from Humicap sensor.

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Water vapour distribution has a direct impact on the Earth's radiation budget. Radiosoundings, as part of the daily worldwide routine measurements are reliable data source on relative humidity (RH). In Poland, RH has been measured with Vaisala Humicap since 1993. In 1999 the radiosonde type has been changed from RS-80A to RS-90 one. The change made data series inhomogeneous, because of different RS-80A's behaviour at low temperatures, in comparison to RS-90, which is much more sensitive.

For correction of RS-80A's humidity series, the method elaborated in Lindenberg have been used. Applying this method for Polish stations, a quasi – homogeneous series of humidity since 1993 from the ground up to 200 hPa, has been received.

Homogeneous temperature and relative humidity data series 1993 – 2004 from three Polish stations (Leba, Legionowo, Wroclaw), on main geopotential surfaces from the ground up to 200 hPa have been analysed. The monthly and long-term monthly means linear regression trends for temperature and relative humidity have been discussed. In the lower troposphere positive temperature trends and negative humidity trends have been observed. In the higher troposphere negative temperature trends and strong positive humidity trends have been found. This illustrates the accumulation of water vapour below the tropopause.