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An analysis of 16-year long datasets of GNSS-estimated atmospheric humidity content in Europe

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During the last few decades Global Navigation Satellite System (GNSS) has proved to be a trustworthy and accurate method for estimating integrated water vapour (IWV). However, relationship between its data quality and the receiver antenna elevation cutoff angle is a topic which needs further studies. We have investigated datasets from 8 stations in Europe during 2000–2015 to compare IWV values provided by GNSS with their radiosonde and Sun photometer counterparts. The analysis was carried out for three different GNSS receiver antenna elevation cutoff angles: 10°, 20° and 30°. Except at one station, the highest correlation coefficients from 0.93 to 0.99 were obtained for 10°. In addition, a detailed inspection of IWV diurnal cycle at 17 stations in Europe will be presented. The study will be continued with a correlation analysis of the IWV trends between GNSS and radiosonde for the three cutoff angles mentioned.