The microwave signals of the GNSS satellites (GPS, GLONASS and in future GALILEO) are time delayed when passing the atmosphere. Based on this signal delay, e.g. the humidity distribution within the troposphere can be determined. This presentation deals with the results of the project GNSSMET-AUSTRIA initiated in late 2009 as a cooperation of the Institute of Geodesy and Geophysics, Vienna and the Austrian Central Office for Meteorology and Geodynamics (ZAMG). GNSSMET-AUSTRIA provides integral humidity values estimated with a temporal resolution of 1 hour from observations of a 40 stations GNSS network covering the Austrian territory. The goal of the project was to investigate how the atmospheric precipitable water content (derived from GNSS data) can be assimilated into an operational high resolution Nowcasting system (INCA) as well as into the forecast model ALADIN. It has been proved that passing weather fronts can be analysed much better by introduced GNSS derived tropospheric wet delays because this data is influenced by changes in humidity in the free atmosphere, whereas the data at the meteorological ground stations reacts to these changes only with a time delay. This allows to forecast heavy rainfall causing potentially local floodings more reliable and to narrow down the affected region.

In addition to the applied assimilation procedure, results of alternative GNSS data modelling techniques will be presented. This concerns for example the determination of the tropospheric delay by means of the Precise Point Positioning (PPP) techniques and the gain of introducing GLONASS observations compared to a GPs only scenario.