



Application of GNSS meteorology for intense precipitation case studies in Bulgaria

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One of the applications of the Global Navigation Satellite Systems (GNSS) Meteorology is to study intense precipitation events. Development of these applications is one of the tasks of working group two of the COST Action ES1206 Advanced Global Navigation Satellite Systems tropospheric products for monitoring severe weather events and climate (GNSS4SWEC). This work is a contribution to the COST Action ES1206 and targets the use of Integrated Water Vapour (IWV), derived with the GNSS Meteorology method, during convective events with heavy precipitation in Bulgaria. Twenty-two case studies were selected for 2012. For the analysis two-dimensional maps of the IWV distribution from GNSS and Meteosat are used. A case study on the 27 June 2012 shows a strong south north gradient of the water vapour on the Balkan Peninsula before the intrusion of cold and dry air. By using these techniques the passage of a cold front is timed on the 25 May 2012. The IWV peak is between 06:00 UTC and 12:00 UTC before the passage of the cold front at 18:00 UTC. Future work will be the use of NWP model (WRF)simulations and evaluate the model performance for the selected case studies for 2012.