



GPS monitoring of the tropospheric water vapor fields due to "Vince" tropical cyclone in October 2005 (South Iberian Peninsula)

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We present the GPS estimated water vapor content, distribution and temporal variation due to the "Vince" tropical cyclone on October 11th, 2005 in its track over the Southern part of the Iberian Peninsula. The anomalous event (Vince is the only "historical" tropical cyclone that arrived the Iberian Peninsula) was studied using a sparse array of GPS stations throughout South Portugal and Spain. Analysis of GPS data recorded significant increases of Zenith Tropospheric Delay (ZTD), Zenith Wet Delay (ZWD) and precipitable water (PW). These increments were observed in all the GPS stations along October 11th, corresponding with the West-to-East observed track of Vince. Unusual values of ZTD, ZWD and PW was decreasing gradually from the western stations to the eastern stations. This observation correlates well with the Vince's weakening, due to lack of water vapor inputs (Atlantic ocean) and its intrusion into the continental area (Southern Iberian). Furthermore, good correlation has been observed between PW values and torrential rainfalls registered at rain gauges from the available meteorological networks.