



Estimation of tropospheric parameter with GPS data

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Water vapor is an important parameter in many physical processes and dynamics of the atmosphere (radiative transfer, clouds, precipitation,) but is highly variable in time and space and difficult to measure. The Global Positioning System, in addition to its geodetic positioning, also allows the estimation of atmospheric water vapor. Indeed, it is possible to convert the propagation delay of the electromagnetic wave in integrated content of water vapor in the atmosphere when the corresponding temperature and pressure are known. Therefore, GPS is as an instrument suitable for the study and characterization of the atmospheric water vapor as it has characteristics of very interesting measures: continuous measurements and all times, and good temporal and spatial resolution. The various tests performed on several baselines allowed estimating the 2D distribution of humidity through integrated values of a permanent network composed of 3 stations (Algiers, Arzew, and Madrid). The methodology is based on the Saastamoinen model in the software processing of GPS data Bernese 4.2.