



GPS measurements for precise tropospheric sounding: fitted processing strategy within the AMMA project.

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Six permanent GPS stations have been deployed in West Africa within the AMMA project framework since 2005 and 2006. They form 2 N-S transects around Niamey, location of special interest during the 2006 SOP period. At Niamey, the GPS observations were transmitted and processed automatically in near real time (2 hour delay). From this analysis, we obtain NRT Integrated Water Vapour with sufficient precision to be compared to different models and discriminate them. A comparison with more precise analyses (rapid or precise IGS orbits) shows a good consistency but a larger scattering of the NRT results. This first row of analysis indicates small variations at different time scales in the African atmospheric humidity. We therefore performed some further tests in order to ensure the most precise IWV determination. Using the GAMIT 10.3 release, we test the effects of different mapping functions (NMF, GMF and VMFgrid) and we investigate the impact of atmospheric loading corrections; relative or absolute antenna phase center models, and gradient estimation. Our analyses demonstrate that this kind of modelling has a significant impact at the level of 1mm of precipitable water.