



Analysis of GPS ionospheric signals in the Campi Flegrei volcanic area

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The Geodesy department of the Osservatorio Vesuviano-INGV installed and operates a small-scale continuous GPS network in the Campi Flegrei volcanic area located to west of the city of Naples. Deformation monitoring using GPS is usually carried out by sampling data at a 30 second interval and estimating positions at 24-hour intervals by batch method. The signal delay or advance caused by ionosphere is the major concern for GPS applications because it corrupts the positioning results. A small scale network can also be used to estimate the ionosphere delays above the covered regional area. In this paper the ionosphere measurements described from carrier phase observations are examined. GPS dual-frequency carrier phase measurements are the principal observable used to determine the ionosphere delay. Once the ambiguities are correctly resolved, the double difference ionosphere measurement can be derived through the geometric-free linear combination. The results are discussed with respect to different baseline lengths and two data sets corresponding to different conditions of solar activity.