

GPS DIRECT AND INVERSE RADIOINTERFEROMETRY --- NEW METHODS OF INVESTIGATING TRAVELLING IONOSPHERIC DISTURBANCES

Acta Geod. Geoph. Hung., Vol. 32(3-4), pp. (1997) 469-479

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The new ways for remote diagnostics of Travelling Ionospheric Disturbances (TIDs) are based on exploiting standard measurements of transionospheric radio signal characteristics and coordinate-time measurements using dual-frequency multichannel receivers of the Global Positioning System (GPS). Signals from GPS satellites can be used following a classical radiointerferometry scheme at a network of GPS receivers located at the desired distance from each other. However, implementing a direct scheme can turn out to be an expensive and not always convenient method (when installed aboard ships, for example). We offer a new method of detecting TIDs based on the GPS, inverse radiointerferometry. The essence of this technique is that, unlike a direct scheme, all measurements are taken at a single point where the GPS receiver is located. Primary data of phase delay measurements from different satellites residing in the receiver's field of view are used to reconstruct TIDs characteristics.

Keywords: GPS; radiointerferometry; TEC perturbations; travelling ionospheric disturbances