

Some Reflections on the Methodology and on Reference Frames Inherent in GPS Heighting

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Key words:

SUMMARY

Although GPS technique is by nature three-dimensional, it has become, in combination with a gravity field model, an efficient tool for the determination of traditional sea level heights. A feasibility of GPS heighting is discussed from different viewpoints including methodology and inherent reference frames with a special regard to the extension of the application area. Considerations are focused on two separate aspects of GPS heighting - on the determination of height differences by GPS and on (quasi)geoid modelling. A compatibility of GPS-derived sea level heights with "classical" sea level heights determined by levelling and related to a conventionally defined vertical reference system is discussed in detail. Attention is paid to several factors influencing this compatibility, among them also to less known ones like e.g. tidal reference frames to which different space and terrestrial observation techniques are related. Statements are illustrated by examples mostly taken from experience gained from European and special local projects.

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