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SGD001-06

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## Hybrid determination of 4D refractivity fields for the correction of space geodetic techniques

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Microwave space-geodetic applications suffer from the fact that electromagnetic waves are delayed and bended when they propagate through the Earth's atmosphere, an effect known as troposphere refraction. Beside post-processing methods, which rely on simplified models about the atmospheric behavior, numerical weather models are used to compute the atmospheric delay. Nevertheless, even the most sophisticated weather models are not capable to represent the true 3 D refractivity field, in order to derive millimeter accurate delay corrections. Recently, GPS derived parameters of the troposphere are assimilated into meso-scale numerical weather models, which helps to reduce model biases and brings them closer to reality. For fine-mesh models, which are of interest for remote sensing applications, the assimilation of such information is difficult to realize. Therefore, a hybrid algorithm has been developed, which combines GPS derived troposphere parameters with numerical weather models without the need of assimilation.

Keywords: GPS, ray-tracing, numerical weather model