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## **GPS-based ionospheric TEC mapping over Algeria: Application to single-frequency GPS solution**

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The knowledge of the ionospheric behaviour is an important factor in GPS positioning, especially when single-frequency receivers are used. In recent years many approaches, based on the use of multi-reference stations, were developed to enable high-accuracy single-frequency GPS positioning over longer distances. In this paper, data of five ALGEONET (ALgerian GEOdynamical NETwork) and a hundred IGS stations are processed with the Bernese GPS software, which is based on the use of spherical harmonic expansion, to provide an ionospheric mapping of the Total Electronic Content (TEC). The calculated ionospheric corrections are, thereafter, used to improve the quality of the single-frequency GPS solution. The obtained results show that the use of corrections, deduced from ionospheric maps, to correct single-frequency solution permits to reduce the deviation with respect to the Ionosphere-Free solution, which is considered as a reference solution in the sense where it permits to eliminate the quasi-totality of the ionospheric effect. A deviation of 10 cm in horizontal coordinates is obtained, where the deviation in the vertical component is reduced by about 50%. We note that the effect of the non-modelled ionosphere on the single frequency GPS solution causes an apparent contraction of the network.