



Improvement of GPS VTEC maps by using Kriging interpolation technique

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The computation of the Global Ionospheric Maps (GIMs) from GPS data becomes specially difficult in Oceans and South hemisphere due to the low coverage of such regions by GPS receivers which are not homogeneously distributed over the Earth surface causing data gaps over that zones. In order to compute the GIMs several interpolation approaches can be used. However, these interpolation methods do not typically take into account any relationship among the data used. On the other hand, the kriging interpolation technique takes, as a basic feature, the spatial correlation among the data used in the interpolation. Therefore in this work the computation of GIMs with kriging technique is presented. We show that this technique can be suitable for ionospheric determination at global scale. The GIM performance has been determined from several ionospheric tests, such as the comparison with TOPEX/Poseidon altimeter VTEC data, and the GPS Self Consistency test among others. The corresponding results are presented, in particular the comparisons between different IGS and new Kriging GIMs performances. The improvement obtained is specially significant close to the Solar Maximum.