



## **GPS global TEC model based on parallel algorithm and DCB analysis**

Xiaoya Wang and Guanghui Gao

Shanghai Astronomical Observatory, Chinese Academy of Sciences, Shanghai, China (wxy@shao.ac.cn)

More and more globally distributed GPS stations make it possible to establish the high accuracy global GPS TEC model. This is very useful to high-precision satellite navigation, ionospheric correction to other explorations, ionospheric activity monitor and relation study between the Sun and the Earth. These applications require high accuracy and real time. In order to get high accuracy, we need process the large number of GNSS data. But this real time faces difficulties with high accuracy. So, we use the OpenMP parallel algorithm to speed up the computing process by 5-6 times. Comparing with the post GIMs from CODE, the result shows that the global ionospheric model established is reliable and can provide satellite DCBs with the accuracy better than 0.5ns and Vertical Total Electron Content (VTEC) in the northern hemisphere up to 3TECU. But the situation is less accurate in the southern hemisphere mainly because of poor distribution of stations in the southern hemisphere. The DCBs show the significant seasonal character and constant within short period.