
[ATM-03] Differences between the TOPEX/Jason and GPS TEC measurements

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The TEC data obtained from the TOPEX/Jason and GPS satellites have been extensively utilized for the various studies on the ionosphere due to their unprecedented temporal and spatial coverage. The TOPEX/Jason observations have been continuously providing the TEC data over the global 'ocean' from the launch of the satellite in 1992. On the other hand, the GPS TEC data are based on the world-wide network of the ground receiver stations, which are mostly distributed over the 'continent' but scarce in the ocean. It seems to be very plausible that these discrepancies in the spatial coverage of the two can make them a perfect global TEC data set if they are combined. However, they have been hardly merged in the study of the ionosphere since there are additional differences in the data sets: the altitudes of the satellites are very different. The TOPEX/Jason satellites are orbiting at about 1330 km altitude, an approximate boundary between the topside ionosphere and plasmasphere at mid-latitudes, while the GPS satellites circle around the Earth at about 20,200 km altitude. This large discrepancy of the satellite orbit can yield significant differences in their TEC data. In this study, we perform a comprehensive comparison between the two data sets in order to quantify the differences in various geophysical conditions. The resulting TEC differences between 1330 and 20200 km altitudes may also provide an indication of the electron densities of the plasmasphere in the various geophysical conditions. The preliminary results of this study will be presented.