

**Study of total electronic content anomalies observed by FORMOSAT-3/COSMIC,
GIM, IRI, and Jason-1 satellite altimetry**

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The FORMOSAT-3/COSMIC (F-3/C) 6-satellite constellation radio-occultation satellite mission provides more than 2500 occultation data per day since the full operation of the 6 micro-satellites after 2007. For research in Space Physics, the retrieval of occultation data from the F-3/C constellation satellites is not only used to construct layered profiles of ion density below the satellite altitude (~800 km), but also used to compute the integrated Slant Range Total Electronic Content (STEC). In this contribution, we convert the STEC data of F-3/C to Vertical TEC (VTEC) over a time span between January 2007 and December 2008, and compare (1) with Global Ionospheric Maps (GIM), or other groundbased GPS regional network, (2) with International Reference Ionosphere (IRI2007), and (3) with the VTEC computed from Jason-1's dual frequency radar altimeter. In order to obtain a sufficient amount of data points and to eliminate daily variations in VTEC, we firstly separate data into two groups: peak time and quiet time, which are corresponding to local time 11 a.m.~1 p.m. and 2 a.m.~ 4 a.m. respectively. After that, we average data points in a monthly time span and conduct data smoothing. We concluded that all four data types agree well, allowing the interpretation of equatorial and mid-latitude ionospheric anomalies with a global perspective. Finally, we quantify the respective systematic VTEC differences between the four independent data sources, namely the F-3/C, GIM, IRI, and Jason-1.