

Ionosphere Profiling Based on FORMOSAT-3/COSMIC Radio Occultation Experiment

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FORMOSAT-3/COSMIC (F3/C) is a Taiwan-US collaborative satellite mission for sounding Earth's atmosphere and ionosphere in recent years. The primary payload of each F3/C satellite is a GPS radio-occultation (RO) receiver, which measures the phase delay of radio waves from GPS satellites occulted by the Earth's atmosphere or ionosphere. By estimating the bending angles of radio wave trajectories, accurate and precise vertical profiles of the global troposphere, stratosphere and ionosphere are obtained. This presentation reveals data processing from F3/C RO phase measurements to ionospheric electron density profiles by means of single-difference excess phase estimation, bending angle estimation and ionosphere inversion technique. In addition, related RO experiments on board the next generation of F3/C, FORMOSAT-7, to be launched in 2016 and 2018, will be mentioned.

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