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GPS Occultation in FORMOSAT-3 Mission

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The FORMOSAT-3 (FS-3) mission, also known as COSMIC (Constellation Observing System for Meteorology, Ionosphere and Climate), is an international cooperation program between NSPO of Taiwan and UCAR (University Corporation for Atmospheric Research) of USA. The mission goal is to launch a constellation of six micro-satellites. An integral part of the science mission is to use GPS Occultation Receivers (GOX), which are carried by each satellite, to track GPS occultation signals. The GPS occultation data collected by these instruments are for weather prediction simulations, global climate-change analysis, and ionosphere and gravity research. The FORMOSAT-3 satellites are planned for launch before early 2006. The FORMOSAT-3/COSMIC mission will significantly improve the coverage and accuracy of atmospheric data collection of weather study and ionospheric electron density measurement for space weather study. The GOX instrument will provide the atmospheric density, pressure and vapor data by inferring from the refracted GPS signals. Most weather forecasting currently relies on traditional balloon-borne radiosonde systems from some 900 locations, which are restricted to certain terrestrial regions. The FORMOSAT-3 micro-satellite constellation will provide at least 2500 sounding points with uniform coverage around the globe, which gives about three times more data than the current observations.

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