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Feasibility study on the GPS occultation sensor based Next generation JAXA GPSR

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It is well recognized that the GPS occultation method is essential and most reliable measurement technique for the ionosphere and atmosphere. GPS occultation has been already applied to weather forecast system of major countries including Japan. GPS occultation, by its physical principle, is also strong research tool of ionosphere. GPS occultation sensors have been developed by NASA/JPL and ESA, since GPS occultation requires very high precision measurement (other than the differential GPS technique) not available from civilian GPS receiver system, such as car navigation systems. JAXA has already developed high precision space GPS receiver (JAXA-GPSR) in late 1990s, and it has been already applied to several earth observation satellites, such as ALOS "Daichi". It is already known in 1998, soon after the first report of GPS-Met experiment, that JAXA-GPSR can be modified easily to the GPS occultation sensor system (Suzuki et al. 2000). Currently JAXA is developing Next generation GPSR (NGPSR) which has much higher performance, capability, and potential expandability. This paper reports the status of feasibility study on the GPS occultation by using JAXA-NGPSR.

Another application of GPS system is GPS ocean surface reflection, which is useful for ionosphere (horizontal structure) and sea surface altitude variation measurement. This paper also reports the status of feasibility study of GPS reflection measurement in Japan.

Keywords: GPS Occultation, GPS Reflection