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Investigation of loading an infrared sounder on a geostationary satellite by the infrared sounder subcommittee of the Next Generation GEO/Mission Investigation Team (NGG/MInT)

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In 2013, the " Remote Sensing Subcommittee under the Task Force (TF) on the Future Space System Development" was established as an organization that is supported by 23 academic societies related to earth observation in Japan. It summarizes user requirements for satellite remote sensing, and its activities such as discussions on future mission plans have started. As one of the sub-organizations, the "Next Generation GEO / Mission Investigation Team (NGG/MinT)" was established to discuss the future geostationary-satellite based sensor development. We report on the activities of the Infrared Sounder Subcommittee. The subcommittee first conducted a detailed review of past infrared sounders. At the same time, an Observing System Simulation Experiment (OSSE) based on a numerical weather forecasting model was conducted. As a result, it was shown that the accuracy of precipitation forecasting is improved by assimilating the water vapor profile observed by the infrared sounder mounted on the geostationary satellite (Okamoto et al., 2020). On the other hand, since there are persistent requirements for greenhouse gas observations from the geostationary orbit, JAXA is studying the feasibility of imaging FTS based on the thermal infrared sounders mounted on the greenhouse gas observation satellites, GOSAT and GOSAT-2. So far, it has been shown that the required signal-to-noise ratio (SNR) is approached to the required value by adding an afocal optics and optimizing the instantaneous field of view (IFOV) and the number of integrations of the scan. In the future, we will continue to make improvements to achieve the required specifications by improving the detector performance.