[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG36]Satellite Earth Environment Observation

convener:Riko Oki(Japan Aerospace Exploration Agency), Yoshiaki HONDA(Center for Environmental Remote Sensing, Chiba University), Yukari Takayabu(東京大学 大気海洋研究所, 共同), Tsuneo Matsunaga(Center for Global Environmental Research and Satellite Observation Center, National Institute for Environmental Studies)

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In recent years, we cannot avoid facing issues on global environmental changes that occur in various spatiotemporal scales. The earth environmental observation data by satellites became the necessary basic data to tackle and solve those issues. Due to the recent advancement in the observation sensor technique and the data processing technique, the satellite observation has been showing rapid progress, and the time is changing from examining the accuracy of the observation sensor data to the advancement of the data application, leading to broaden potential users. In these days application became synergetic, so we comprehensively pick
up this topic in the Atmospheric and Hydrospheric Sciences Session of this Union Meeting that enables to comprise the atmospheric, oceanic and land sciences; by combining the intelligence and the knowledge of the party, we propose a session that aims to prompt further studies towards the issues on earth environmental change, the advancement in the data application and future plans of Earth Observation missions.

[ACG36-P15]Introduction about First Imagery of Ocean Color Products on GCOM-C/SGLI

*Kazunori Ogata[1], Mitsuhiro Toratani[2], Hiroshi Murakami[1] (1.Earth Observation Research Center, Japan Aerospace Exploration Agency, 2.Department of Optical and Imaging Science and Technology, Tokai University)

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The main aims of Global Change Observation Mission for Climate (GCOM-C) is global and long-term observation of the carbon cycle mechanism and radiation budget to understanding climate change. GCOM-C satellite which was launched on 23 Dec. 2017.carries Second Generation Global Imager (SGLI) which is a successor to Global Imager (GLI) aboard Advanced Earth Observing Satellite II (ADEOS II). SGLI which is an optical sensor capable of multi-channel observation from near ultraviolet (380 nm) to thermal infrared (12 um) wavelength is comprised of Visible and Near Infrared Radiometer (VNR) and Infrared Scanning Radiometer (IRS). VNR has eleven channels of non-polarization nadir view (VN) and two channels of polarization/along-track slant view (P). IRS has four short wavelength infrared channels (SWIR) and 2 thermal infrared channels (TIR). All the VNR channels, one SW channel (1.6um) and all the TIR channels are capable of 250 m spatial resolution observation, the other channels observe on 1 km resolution.

Ocean color products is 250 m spatial resolution in coastal region or 1 km over offshore area. The products are made using ocean color channels which have high gain and Signal-Noise-Ratio (SNR) . The products consist of 6 products: Normalized Water Leaving Radiance (NWLR) [$W/m^2/str/um$] , Atmospheric Correction Parameters (ACP: aerosol optical thickness 670 and 865), Photosynthetically Available Radiation (PAR) [$Ein/m^2/day$] , Chlorophyll-a concentration (CHLA)[mg/m^3] , Suspended Solid concentration (SS) [g/m^3], Absorption coefficient of Colored Dissolved Organic Matter (CDOM) [m^{-1}]. The NWLR and the ACP algorithms is an extension of the OCTS and GLI atmospheric correction

algorithms. The new features are absorptive aerosol correction using 380 nm band (VN1) and aerosol model selection over high turbid water using two SWIR channels.PAR is estimated by an algorithm used on SeaWiFS and MODIS. The CHLA is estimated by Ocean Color Index (OCI) algorithm to improve accuracy of chlorophyll-a concentration over the low concentration area. The CDOM algorithm consists of two steps. First, Inherent Optical Property (IOP) is calculated with iterative procedure. And then, CDOM is obtained from an absorption coefficient of detritus and CDOM contained in the former IOP. The SS product is estimated by empirical algorithm.
Observations of VNR and SWIR started on 1 January, 2018, the initial check out which confirms observation and calibration functions was conducted till three months from the launch. This report introduces the first imagery of ocean color products on GCOM-C/SGLI after the check out period.