

ACG032-14

Room:105

Time:May 27 12:00-12:15

Estimation of radiation budget using geostationary satellites by the VL project

Hideaki Takenaka^{1*}, Munehisa Yamamoto¹, Masamitsu Hayasaki¹, Atsushi Higuchi¹, Naoko Saito¹, Hiroaki Kuze¹, Fumihiko Nishio¹, Tamio Takamura¹, Satoru Fukuda², Teruyuki Nakajima², Arata Okuyama³, Yuki Kosaka³, Ryuichiro Nakayama³, Owada Hiromi³, Tomoaki Ono³

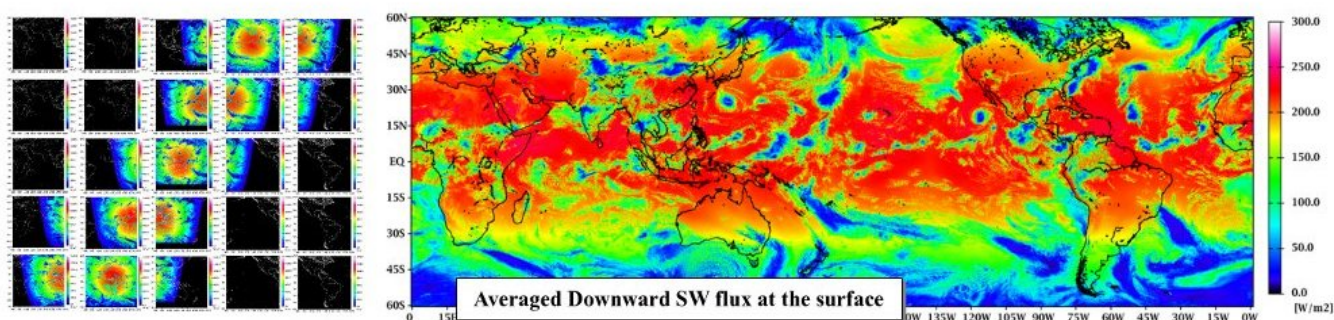
¹CEReS, Chiba University, ²AORI, Tokyo University, ³MSC, JMA

Clouds can cool the Earth by reflecting solar radiation and also can keep the Earth warm by absorbing and emitting terrestrial radiation. They are important in the energy balance at the Earth surface and the Top of the Atmosphere (TOA) and are connected complicatedly into the Earth system as well as other climate feedback processes. Aerosols reflect solar radiation and cool the earth, and it is called a direct effect. Moreover, aerosols influence the condensation of the cloud particles by indirect effect. Thus, cloud and aerosol are one of the important elements in Earth's energy system, and it's important to estimate the radiation budget to better understand climate and environmental change.

Geostationary satellite observations are useful for estimating the upward and downward radiation budget at the surface and the TOA over wide regions and at high temporal resolution. We develop a vicarious calibration technique for the global analysis. An accurate calibrated data propose the better accuracy for analysis of cloud and radiation budget. (In this study, five satellites: GMS-5, GOES-8, GOES-10, METOSAT-5, METEOSAT-7 are used for analysis). An accurate calibrated data propose the better accuracy for analysis of cloud and radiation budget. Additionally, the possibility of aerosol-cloud-radiation interaction is discussed.

- Formation of a Virtual Laboratory for Diagnosing the Earth's Climate System -

In order to diagnose the earth's climate system under severe stress such as a global warming, the cooperative research centers (CCSR, HyARC, CAOS, and CEReS,) construct "Virtual Laboratory", and research climate and environmental studies cooperatively with properties of each center. CEReS activities are Geostationary satellites global data archives and construction of Satellite information data base. Moreover, development of atmospheric radiation budget product. We aim at the contribution to a climate model and the better understanding of the climate system.



Keywords: Radiation budget, Geostationary satellite, Virtual laboratory