[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-AS Atmospheric Sciences, Meteorology & Atmospheric Environment

[A-AS04]Towards integrated understandings of cloud and precipitation processes

convener:Kentaroh Suzuki(Atmosphere and Ocean Research Institute, University of Tokyo), Yukari Takayabu(Atmosphere and Ocean Research Institute, the University of Tokyo), Hirohiko Masunaga
Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
Clouds and precipitation are among the largest uncertainties in weather predictions and climate projections. To overcome this difficulty, substantial progresses are required in understandings of cloud and precipitation processes and their interactions with large-scale environment. Such progresses, however, have been hampered by historical separation of the science community into two, namely, one for clouds and the other for precipitation, despite the fact that clouds and precipitation are inseparable phenomena.
This session aims to integrate various studies of clouds and precipitation across the two communities over different spatial and temporal scales. A particular focus is placed on better understandings of fundamental processes governing the cloud and precipitation phenomena and their multi-scale interactions with environment through dynamical, thermodynamical and radiative processes. A wide variety of studies with theoretical, modeling and observational approaches are solicited in this session to seek a novel way for combining different methodologies to obtain unified, holistic understandings of the cloud and precipitation systems. The solicited area of research includes but is not limited to cloud microphysics, cloud-radiation interaction, convection dynamics, meso-scale phenomena and various multi-scale interactions including tropical aggregation of clouds, by means of a breadth of approaches encompassing in-situ and satellite observations, theoretical process studies and numerical modeling. Through discussion of presented papers, the session is also intended to enhance collaborations among different disciplines and communities for substantially advancing our understandings of cloud and precipitation processes.

[AAS04-P10]An Improvement of Height Assignment Method on CPTEC's Wind Estimation Algorithm for GOES-16

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Keywords:AMV, Cloud Top Height, GOES-16

The satellite estimation of cloud top height is an essential ancillary variable for the derivation of satellite winds, commonly know as Atmospheric Motion Vectors (AMVs), which are later assimilated into numerical weather models to provide a diagnostic of the atmosphere. An important driver of the uncertainty of the AMVs is the height assigned to each vector, which are estimated by different algorithms according to each satellite's capabilities and physical assumptions made. The goal of this study is to compare the operational height assignment algorithms for AMVs being used in Brazilian Center for Weather Forecasting and Climate Studies (CPTEC) with state of the art techniques for the Geostationary Operational Environmental Satellite version 16 (GOES-16). The generation of GOES-16 products by CPTEC provides its faster deployment and adaptation for South American applications. The analysis will include the improved treatment for multilayer and semitransparent clouds, the optimal estimation methods’ advantages, and the reduction of assumptions on cloud microphysics. Another aspect of this work is to evaluate the estimation of cloud heights with the subset of pixels

relevant to AMV tracking schemes. It is expected better results from the state of the art pixel-based cloud retrieval algorithms, that also will be faced to observations from Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation (CALIPSO). The newest algorithms takes advantage from the improved spectral resolution of GOES-16, that is operational in 75.2 degrees west since December of 2017.