Séminaire vendredi le 22 janvier 2016 11:00 / Seminar Friday January 22nd 2016 11:00h

Sujet/Subject: Evaluation of cloud properties in Environment Canada's high-resolution NWP simulations with satellite-borne radar, lidar, and aircraft in-situ observations

Langue/language   : Anglais/English

Conférencier/Lecturer: Zhipeng Qu (Environment Canada ,Downsview)

Résumé/Abstract:

A high-resolution, nested numerical weather prediction (NWP) model with an inner-domain of (252 km)2 and horizontal grid-spacing of 250 m has been developed recently at Environment Canada (EC). It aims to improve the representation of atmospheric phenomenon on scales smaller than ~1 km. Therefore, it has the potential to improve the representation of cloud, and related, process which are often crucial for weather prediction. For this study, a tropical convective system, over Guiana (~4° N) on 16-May-2015, was simulated. The timespan and location of the simulation included an overpass of A-Train satellites. Data from the W-band cloud radar on CloudSat, the cloud-aerosol lidar on CALIPSO, and the MODIS imaging spectroradiometer on Aqua were used to verify modelled cloud properties. The A-train product simulator, known as CFMIP Observation Simulator Package (COSP), was used to convert model-predicted variables to synthetic CloudSat and CALIPSO measurements. COSP represents an attempt to reconcile modelled clouds with remote observations; in this case radar reflectivity and lidar attenuated backscatter. In addition to A-train data, in situ observations of cloud properties were made from Canadian NRC Convair-580 and French SAFIRE Falcon-20 aircraft that flew along CloudSat's path and coincided at approximately the centre of the model's inner-domain. Both aircraft were equipped with a suite of remote sensing and cloud microphysical instruments. Further directions for using aircraft data together with COSP (i.e., A-Train data) to verify the NWP simulations will be discussed.