

**Séminaire vendredi le 8 novembre 2019 11:00 / Seminar Friday November 8<sup>th</sup> 2019 11:00h**

**Sujet/Subject:** The US-NAS Decadal Survey's Aerosol-Cloud, Convection-Precipitation (ACCP)

**Langue/language** : Anglais/English

**Conférenciers/Lecturers:** Howard Barker (ECCC-RPN-A)

**Résumé/Abstract:**

The purpose of this seminar is to introduce the satellite observation program referred to as Aerosol-Cloud, Convection-Precipitation (ACCP). This program has been recommended by the US National Academy of Sciences (NAS) to the National Aeronautics and Space Administration (NASA) via their 2017-2027 Decadal Survey. Unlike conventional satellite “missions”, ACCP stems from extended consultations that identified climatological and meteorological variables in urgent need of (global) observation in order to facilitate marked improvements in the abilities of numerical models to predict both weather (including air quality) and climatic change (both local and global). As its name suggests, processes that are key to the atmospheric hydro-radiative cycle are at the core of ACCP, with essential observations being the vertical structure of: water clouds; aerosols and convection (which predetermine cloud conditions); and precipitation (which marks the end of the cloud life-cycle and often the beginning of both fortune and misfortune for human activity). Such observations will help improve the representation of atmospheric hydrology in both weather and climate prediction models, as well as their associated data assimilation systems. They will also help ECCC achieve one of its core mandates: “...equipping Canadians to make informed decisions on weather, water and climate conditions...” as well as aid in the realization of ECCC’s science plan objective: “to better understand the changing state of the environment with a focus on comprehensive and integrated environmental monitoring systems”.

In order for ACCP to succeed, its payload is *expected* to include cloud and precipitation-profiling radars, backscattering lidars, polarimeters as well as conventional, and possibly avant-garde, passive radiometers. Note the centrality of atmospheric radiative transfer to ACCP’s science problems AND inference of properties from its measurements. Currently, three radiometers developed in Canada (universities, industry, Canadian Space Agency) are being considered by a host of panels that are charged with establishing an optimal, cost-effective observing system for ACCP. Members of the

Canadian Space Agency, ECCC scientists with experience in active-passive remote sensing, and Canadian radiometer developers are all formal participants on these panels. This seminar summarizes their perspectives on ACCP and will argue for ECCC's continued participation in, and support of, ACCP.