**BOUALEM KHOUIDER**, University of Victoria, 3800 Finnerty Road, Victoria, BC
*Multicloud parametrizations for convectively coupled tropical waves*

The tropical large scale circulation has a significant impact on our weather and climate through various meteorological disturbances originating near the equator such as El Niño, the Madden–Julian Oscillation, and various convectively coupled tropical waves. Such disturbances are often a result of organized tropical convection over a large range of scales; from the single clouds of 1 to 10 km to cloud clusters and superclusters of a few hundred to a few thousand kilometers. However, today's general circulation models (GCMs) perform very poorly in predicting/representing these phenomena because on the one hand they occur at the sub-grid scale for the GCMs and on the other hand the underlying physics are still not completely understood—impossible to parametrize accurately.

Recent observational analysis reveals the central role of three multi-cloud types, congestus, stratiform, and deep convective cumulus clouds, in the dynamics of large scale convectively coupled Kelvin waves, westward propagating two-day waves, and the Madden–Julian oscillation. We present in this talk a systematic model convective parametrization highlighting the dynamic role of the three cloud types through two baroclinic modes of vertical structure: a deep convective heating mode and a second mode with low level heating and cooling corresponding respectively to congestus and stratiform clouds.

Joint with A. J. Majda (NYU).