Pacific Institute *for the* Mathematical Sciences

PIMS UVic Site Distinguished Lecturer

Thursday, March 17, 2022
3:40 pm in COR A120

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Predicting rain and lightning using statistical and machine learning techniques

Convective storms are highly intermittent and intense, making their occurrence and strength difficult to predict. This is especially true for climate models, which have grid resolutions much coarser (e.g., 100 km) than the scale of a storm's microphysical and dynamical processes (< 1 km). Physically-based parameterizations struggle to account for this scale mismatch, causing large model errors in rain and lightning. This talk will explore some avenues of using statistical techniques (such as generalized linear and log-Gaussian Cox process models) and machine learning methods (such as random forests and neural networks) that are trained by satellite observations of thunderstorms to see how well they can improve upon existing physical parameterizations in producing accurate rain and lightning characteristics given a set of large-scale environmental conditions.