Séminaire Vendredi 19 Septembre 11h00 / Seminar Friday September 19, 11:00 AM

Conférencier/Lecturer: Xiaolan L. Wang (Climate Research Division, ASTD, STB Environment Canada)

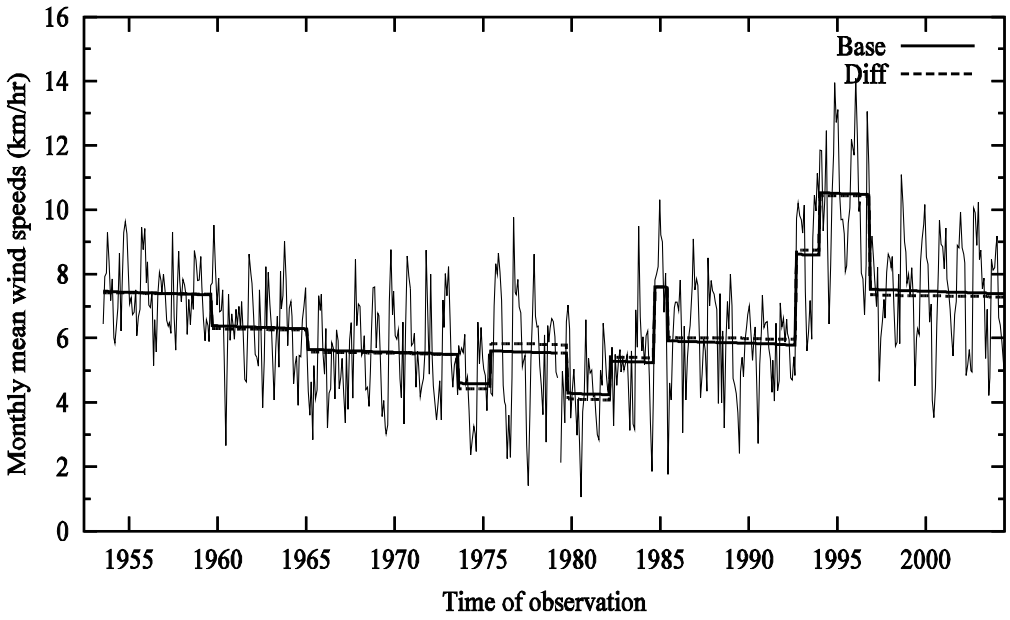
Sujet/Subject: New techniques for climate data homogenization

Présentation/Presentation: Anglais / English

Lieu/Room: Grande salle du premier étage CMC

Résumé / Abstract:

The accuracy and homogeneity of climate data are indispensable for many aspects of climate research. In particular, a realistic and reliable assessment of historical climate trends and variability is hardly possible without a long-term, homogeneous time series of climate data. Accurate and homogeneous climate data are also indispensable for the calculation of related statistics that are needed and used to define the state of climate and climate extremes, for validation of numerical model simulations, and for calibration of statistical relationships for statistical weather forecasts. Unfortunately, many kinds of changes (such as instrument/observer changes, and changes in station location/exposure, observing practices/procedure, etc.) that took place in the period of data record could cause non-climatic sudden changes (artificial shifts) in the time series. Such artificial shifts could have huge impacts on the results of climate analysis, especially those of climate trend analysis. Therefore, artificial shifts shall be eliminated, to the extent possible, from the time series prior to its application, especially its application in climate trend assessment. This presentation will focus on new techniques for detecting and adjusting for artificial shifts and a software package for implementing these techniques. Examples of artificial shifts in several climate variables will also be presented to show their impacts, including the example below.



Time series of monthly mean surface wind speeds recorded at Nanaimo Airport (Canada) for the 50-year period from January 1954 to December 2004 and its multi-phase regression fits, with the artificial shifts identified and estimated.