Stratospheric Warming Events and Cold Air Outbreaks During IPY 2007-2008 and 2008-2009

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The relationship between the timing of Arctic stratospheric warming events (SSWs) and North American Cold Air Outbreaks (CAOs) is studied during the IPY winters 2007-2008 and 2008-2009. We use the European Center for Medium Range Weather Forecasting 40-year Re-analyses and the U. K. Meteorological Office meteorological analyses to document SSWs and CAOs during the two IPY winters. Strong SSWs and CAOs occured during both winters but associations between the two have not been identified. The 3-dimensional structure and temporal evolution of the Arctic vortex and anticyclones during the SSW events will be presented. We will then document the timing and strength of tropospheric CAOs over North America. Coupling between the tropospheric and stratospheric dynamical phenomena via lagged correlation and composite analysis will be presented. This work will set the stage for modeling studies of troposphere-stratosphere coupling during IPY.