H13-220

SMART CLIMATOLOGIES FOR PREPARATION AND PLANNING OF HAZARDOUS RELEASE EVENTS

F. Vandenberghe, J. Copeland, Tom Warner

Under the sponsorship of the National Ground Intelligence Center, the National Center for Atmospheric Research (NCAR) has developed the Global Climatology Analysis Tool (GCAT) to generate “on demand” large databases of atmospheric parameters at high resolution, tailored to the specific transport and Dispersion needs of NGIC. The approach takes advantage of the zooming and relocation capabilities of the embedded domains that can be found in regional models like the community Weather Research and Forecast model (WRF). The WRF model is applied to dynamically downscale NNRP and ERA40 global analyses and to generate long records, up to 30 years, of hourly gridded data over 200km2 domains at 3km grid increment. To insure accuracy, observational data from the NCAR ADP historical database are used in combination with the Four-Dimensional Data Assimilation (FDDA) techniques to constantly nudge the model analysis toward observations. Artificial Intelligence techniques such as the Self Organizing Maps (SOMs) are used to automatically classify the large volume of high-resolution model data and extract weather regimes representative of the local climate. Dispersion calculations of with the Second order Closure Integrated PUFF (SCIPUFF) model for those climatological typical weather situations provide scenarios for protection and evacuation planning, and « what if » exercises.