P40 The sensitivity of high-latitude transport modeling to the choice of WRF model configuration.

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We evaluate the high-resolution WRF modeling that underlies the Carbon in Arctic Reservoirs Vulnerability Experiment (CARVE) science analysis. The NASA CARVE mission is an on-going, sub-orbital, multi-year (airborne field study period is 2012-2015), research campaign funded by NASA whose goal is to "quantify correlations between atmospheric and surface state variables for the Alaskan terrestrial ecosystems through intensive seasonal aircraft campaigns, ground-based observations, and analysis sustained over a 5-year mission." The atmospheric modeling provides high-resolution meteorological fields to drive an atmospheric transport model whose source-receptor ("footprint") fields are subsequently used in carbon budget analysis studies.

Here we provide an overview of the numerical weather prediction and atmospheric transport components of the modeling system. The Polar variant of the Weather Research and Forecasting (WRF) was used to drive the Stochastic Time Inverted Lagrangian Transport (STILT) model. Summary statistics of the WRF model performance indicate good overall agreement with surface and radiosonde observations. The sensitivity of the air parcel trajectories to the choice of WRF model configuration can be used to provide an estimate of the uncertainty in the surface-influence relationships ("footprints").