A06-O16

GRENE-TEA MODEL INTERCOMPARISON PROJECT (GTMIP) STAGE 1

Kazuyuki Saito *(Japan Agency for Marine-Earth Science and Technology, Japan)*
Shin Miayazaki *(National Institute for Polar Research, Japan)*
Junko Mori *(National Institute for Polar Research, Japan)*
Takeshi Yamazaki *(Tohoku University, Japan)*
Takeshi Ise *(Kyoto University, Japan)*
Tetsuo Sueyoshi *(National Institute for Polar Research, Japan)*

ksaito@jamstec.go.jp

Here we presents the results of the stage 1 (one-dimensional, historical GRENE-TEA site evaluations) of the GRENE-Terrestrial Model Intercomparison project in Arctic (GTMIP), a part of the terrestrial branch on Japan-funded Arctic Climate Change Research (GRENE-TEA). It aims to 1) connect "mind and hands" between the modeling and field scientists, and 2) assess the uncertainty and variations in the simulated, stemming both from model designations and field variability in the Arctic terrestrial regions. Both physical and biogeochemical metrics are used for evaluation such as snow, permafrost, hydrology, and carbon budget.

At the stage 1, forcing and validation data have been prepared, taking maximum advantage of the observation data taken at GRENE-TEA sites (e.g., Fairbanks in Alaska, Yakutsk and Tiksi in Russia, and Kevo in Finland), to evaluate the inter-model and inter-site variations for 1980-2013. Backbone of the continuous forcing data (called level 0: L0) were constructed from a reanalysis data, due to limited coverage and/or missing or lack of the consistency in obseravions, and bias-corrected with the monthly CRU (for temperature) and GPCP (for precipitation) datasets at the respectively nearest grid to the sites. The ERA-interim reanalysis data was chosen from four products (i.e. NCEP/NCAR, NCEP-DOE, JRA55, ERA-interim) with the smallest bias relative to the monthly CRU and GPCP in terms of 2m air temperature and precipitation in the pan-Arctic region (north of 60 degree). Then, it was modified to reflect the local characteristics to derive the level 1 data (L1), and, in addition, the level 1 hybrid data (L1H) by replacing the observed data when available. These data and simulation protocol are available through Arctic Data Archive System (https://ads.nipr.ac.jp/gtmip/gtmip.html). The L1 data were provided in October, and the simulated outputs were submitted by mid November, 2014. The project is open to any modelers who are interested, and welcomes participation of wide range of the terrestrial models possibly with different levels of complexity and philosophy. As of November 4, 2014, participating models include a permafrost model (FROST), physical snow models (SNOWPACK and SMAP), land surface models (MATSIRO, 2LM, HAL), terrestrial ecosytem models (STEM-NOAHbgc and VISIT), a dynamic global vegetation model (SEIB-DGVM), a regional climate model (WRF), and, a coupled hydrological and biogeochemical model (CHANGE).