



Contribution ID: 49

Type: **Talk**

## Land surface model TerM: design, applications and HPC aspects

*Wednesday, 6 December 2023 11:00 (15 minutes)*

Terrestrial model (TerM) is the land surface scheme developed jointly at the Institute of Numerical Mathematics RAS and Moscow State University. It has been originally a part of INM-CM Easth system model and SL-AV weather forecasting system, and is responsible for providing fluxes of radiation, heat, moisture and greenhouse gases to the atmosphere from the land surface. TerM uses multilayer soil, snow and lake models, vegetation controls on evaporation and energy exchange, terrestrial carbon and methane cycles. TerM is currently implemented also in a standalone mode, enabling more flexibility in land surface research. The standalone TerM includes advanced river routing scheme, and can be used in single-column, regional and global domains of arbitrary longitude-latitude regular mesh, forced by meteorological observations, reanalysis, or climate models data. It is supplemented with preprocessing system supplying external data on land cover types, soil, lakes, rivers, etc. To increase the model performance, an automatic calibration system is developed. The model is implemented for multicore systems using MPI+OpenMP technologies. We present examples of the TerM application for hydrological and carbon cycle studies.

### Student or Postdoc?

No. Not a student nor Postdoc.

**Primary authors:** Dr STEPANENKO, Victor (Moscow State University); Mr MEDVEDEV, Alexander (Lomonosov Moscow State University); Dr BOGOMOLOV, Vasiliy (Institute for Monitoring of Climate and Ecological Systems SB RAS); Mrs SHANGAREEVA, Sumbel (Lomonosov Moscow State University)

**Presenter:** Dr STEPANENKO, Victor (Moscow State University)

**Session Classification:** Special

**Track Classification:** Earth Systems Modelling