Project: **1065**

Project title: **Estimating impacts of non-vascular vegetation on global biogeochemical cycles from the geological past to the future**

Principal investigator: **Philipp Porada**

Report period: **2018-01-01 to 2018-12-31**

Text: maximum of two pages incuding figures.

The project was originally planned to start on January 1st 2018, but was delayed by 6 months due to administrative procedures. The project now has a confirmed duration from 01.07.2018 until 30.06.2021. In addition to my own position, a PhD position is funded for 3 years. The candidate will likely start in early 2019.

In the last months, I created new MPI routines for parallelization and routines for netCDF file input and output. This was necessary since the original LiBry model is integrated into an interface for parallel computing developed at the Max-Planck-Institute for Biogeochemistry in Jena, which is also used by other models and has several limitations. I have now successfully tested the new, fully stand-alone LiBry version both at Jena and at the HLRE-3 (ifort compiler, modules intel/18.0.2 and intelmpi/2018.1.163). However, this version does not yet include nutrient processes. I will use the remaining computational resources from the allocation period 01.01.2018 – 31.12.2018 for sensitivity analyses and for testing how the introduction of new physiological processes affects the global model estimates.

The model scales well at the HLRE-3, details are shown in the request form for the allocation period 01.01.2019 – 31.12.2019. The model is functional and the estimates are consistent with the previous version, which was run at the Max-Planck-Institute for Biogeochemistry in Jena (see Fig. 1).

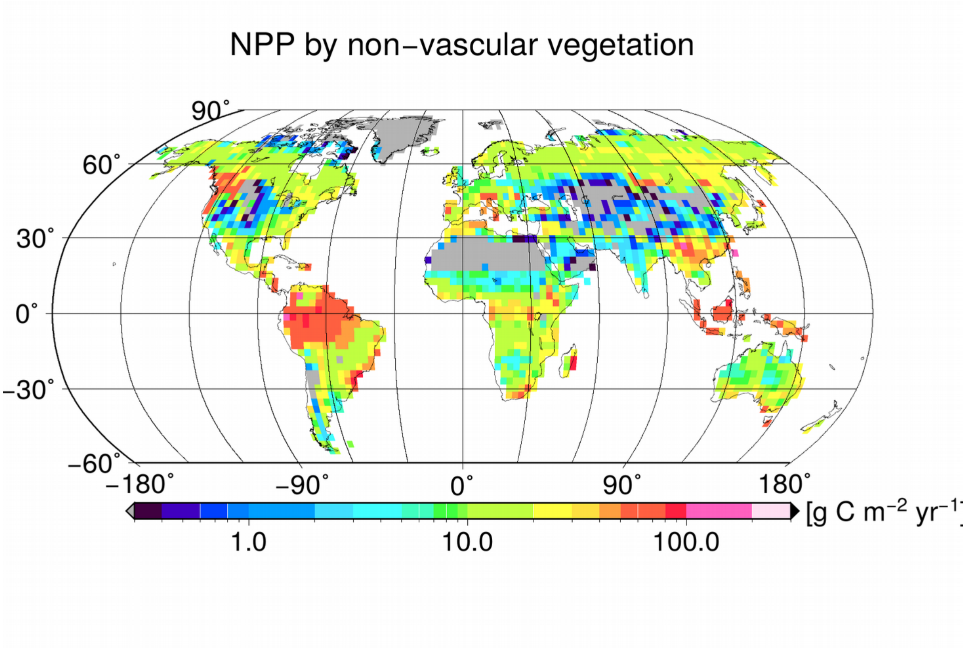

Fig. 1 | Net Primary Productivity (NPP) by non-vascular vegetation for current climatic conditions calculated by the LiBry model at the HLRE-3. An initial number of 3000 physiological strategies in each grid cell was used, the simulation time was 600 years and the last 20 years of the run were used to average the model output. The resolution is T42 (2.8125° x 2.8125°).