



The overall aim of GREENCYCLESII was to substantially improve the current understanding of the impacts of climate-biogeochemistry feedbacks on the evolution of the Earth system over the next two centuries. The Work Package 4 (WP4) was developed with the intention to improve our understanding of crosscutting issues relating to important feedback mechanisms between ecosystem functioning in the Arctic and global climate processes. We have achieved this through a number of reviews published in high impact journals as well as some concrete improvements of data availability and model improvements both at the process level and of land surface schemes in global dynamic vegetation models.

The achievements have important implications for our scientific understanding of the impacts human interference with the climate system have on the natural ecosystem dynamics. They are as such improving our capabilities in understanding climate feedbacks from the arctic natural ecosystems. Several “wild cards” have been identified in terms of methane emissions from thawing permafrost, the general carbon pool in tundra and its vulnerability to be released to the atmosphere as either carbon dioxide or methane as well as the teleconnections between a diminishing sea ice cover and the impacts it has not only on the ocean itself but also beyond this in the surrounding terrestrial realm. We have in this WP addressed all these issues; we have provided state-of-the-art reviews and improved our modelling capabilities and also the data availability necessary to make scientific progress in this area.

Following the data and model improvements and reviews of state-of-the-art in this area of science we have, hence, contributed significantly to a better basis for climate policy considerations that relate to natural ecosystem-climate interactions. We have also been able to point at key gaps remaining in our understanding and will as such also assist in targeting specific issues of importance for further work on model and data improvement.

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*This briefing statement is intended for use by Policy Makers and Journalists – if you have any questions or would like further information on the points raised above then please use contact the GCII Project Co-ordinator.*