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To whom it may concern,

Support letter for THAW: *“Trends and Hazards in Arctic Warming: Climate change and greenhouse gas emissions from Arctic permafrost regions”*

I am writing to indicate my strong support for the proposed THAW project to be submitted under the EU 7 Framework Programme. The goal of the proposed research is to improve understanding of the vulnerability of Arctic permafrost to climate change, and to estimate the implications of this on global greenhouse gas concentrations and future climate. I believe that fulfilling this objective will help close one of the major gaps in knowledge regarding the future of the terrestrial cryosphere and the impact of its change on the world as a whole.

Research to date on subjects relating to THAW has been undertaken by individuals and groups falling into several different scientific areas: climate modeling, atmospheric research, field research on terrestrial permafrost and sub-sea permafrost, terrestrial carbon stocks, and methane hydrates. As editor of the international journal *Permafrost and Periglacial Processes*, I can see that the terrestrial permafrost and sub-sea permafrost communities talk to each other, but there is far less communication with the soil scientists working on carbon stocks and even less with those modeling climate or examining questions of greenhouse gas emissions. Progress at the key interdisciplinary interfaces will not occur without the development of projects, such as THAW, that bridge the disciplines and bring together experts in numerous domains.

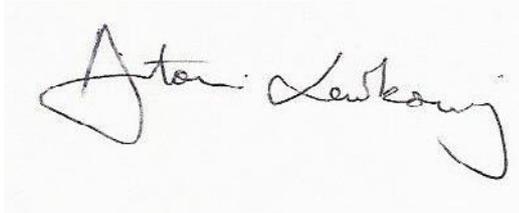
In my view, there is a currently considerable speculation but limited hard evidence on the impact of future change in permafrost. What we know, thanks to results obtained prior to and during the International Polar Year, is that permafrost is warming throughout the polar regions, that in some places it is disappearing or has disappeared, and that there are immense amounts of carbon stored in permafrost regions. These results have helped validate climatically-based models of permafrost dynamics that show permafrost areas contracting and the active layer thickening in the future as the climate continues to warm. However, there remain important information gaps. For example, we have little knowledge on the rate of thickening active layers and/or talik formation and associated greenhouse gas emissions, rates of formation of thermokarst lakes and greenhouse gas emissions from these lakes, rates of change in sub-sea permafrost temperatures and changes in emission rates, and so on. The size of the carbon pool and the possibility of positive feedback (between warming, permafrost thaw and greenhouse gas emissions leading to more warming) means that we know enough to be concerned, but we do not know if these concerns are valid.

There is a clear and urgent need for major projects, such as THAW, that will bring together scientific researchers who can answer these questions in a holistic fashion. THAW will also create the next generation of scientists who will be trained in a multidisciplinary environment

and who will develop contacts with scientists in other domains that they can maintain throughout their careers. Thus THAW will have an impact that continues after the end of the project itself.

As a Canadian scientist, I will not be directly involved in the THAW project, but I recognize its importance for the entire community of Arctic researchers and for society as whole, and I support it most strongly.

Yours sincerely,

A handwritten signature in black ink on a light background. The signature is written in a cursive style and reads "Antoni Lewkowitz". The first name "Antoni" is written in a larger, more prominent script, and "Lewkowitz" follows in a similar but slightly smaller cursive hand.

Antoni Lewkowitz
Professor, Department of Geography
University of Ottawa

Editor, *Permafrost and Periglacial Processes*