

Comments on the report of the mid-term evaluation of the Greenland Climate Research Centre (GCRC)

The mid-term evaluation report includes several good recommendations, which the leadership acknowledge, appreciate and will take action on. The centre's leadership and principal investigators (PI's) have discussed the report in detail and consider that several important aspects of it warrant a response and should not be left to stand alone. This document represents a joint comment from the GCRC leadership and all PI's of the centre's individual projects.

Some criticism by the evaluation panel appears to have arisen due to the fact that it carried out all its work externally, i.e. outside Greenland. Furthermore, constraints imposed by the Commission for Scientific Research in Greenland (KVUG) on the structure and strategy for GCRC have apparently not been clarified with the evaluation panel for the purposes of its work. It is unfortunate and a matter of regret that the panel missed the opportunity to visit Nuuk and to experience GCRC first hand, to gain insight into the range of activities it carries out and supports, to meet key personnel, and to understand how GCRC is integrated within, and connects to, scientific and academic institutions in Nuuk and with the wider Greenlandic society. The absence of such an on-site visit reduces, in our view, the comprehensiveness of the evaluation process concerning a number of its key conclusions. Furthermore, the panel was invited but missed the opportunity to participate in GCRC's annual meeting where it would have been possible to meet all scientists and staff and gain a far richer understanding and more comprehensive overview of the centre's organization and the studies being conducted.

We have the following eleven comments on the evaluation report and the panel's nine recommendations:

- 1) The absence of a visit to the research facility itself in Nuuk is disappointing and has likely had major disadvantages and significant bearing on the conduct of the evaluation process. We recommend that the absence of a visit to the Greenland Institute of Natural Resources (GINR) and GCRC to see the facilities in Nuuk, meet the staff and gain a first-hand understanding of the unique environment of which GCRC is an integral part is mentioned clearly in the introduction to the evaluation report.
- 2) Valuable information on how GCRC actually performs locally in Greenland could have been acquired if the panel had conducted interviews with representatives of other Greenlandic stakeholders / institutions / partners, such as the Self-Rule Government, Asiaq, Inuit Circumpolar Council (ICC), Ilisimatusarfik/University of Greenland, local authorities, etc. As an example, the mayor of Nuuk and several Greenland government Ministers and officials have been crediting the initiatives and work carried out by GCRC and the Greenland Institute of Natural Resources (GINR). As a result, the evaluation report only weakly reflects how influential the center has been in a Greenland context.
- 3) As recommended in the evaluation report, it is important to identify a future full-time leader of the center to be based in Nuuk and advertisement for qualified candidates will

be announced when the centers form and financial situation after the first term is known. The energy and enthusiasm of Professor Søren Rysgaard is not easy to match and it is important to draw on his experience in a future center. Søren Rysgaard worked in Nuuk as a full-time leader from the date of the centre's establishment until autumn 2011 when, for personal reasons, he moved with his family to Denmark. This move was accepted and approved by the Commission for Scientific Research in Greenland (KVUG) and it was agreed that Søren Rysgaard should share the leadership with Professor Torben Røjle Christensen. The deputy head of GCRC, Peter Schmidt Mikkelsen, has been present continuously. In addition, Professor Mark Nuttall began his research and teaching activities under GCRC's 'Climate and Society' programme in February 2012, together with scientist and head of communications at GCRC, Lene Kielsen Holm. They have joined the team of leaders and have, since last year, ensured a stronger connection between GCRC, Ilisimatusarfik and the wider Greenland community. With a future full-time leader present in Nuuk, the mentoring of young local students and scientists can be done on a day to day basis and with this GCRC will achieve the necessary local structure.

4) GCRC has been driven by coherent visions developed in the first year of its operations during a three-day meeting held at Søminestationen, Denmark, which included all PI's and internal staff. Additionally, several meetings have been held in Greenland with the local GCRC team to update visions and strategies. We will strive to make these visions more visible on the GCRC home pages.

5) As stated by the panel, GCRC should be recognized for its research and activities and we find this has been achieved to a very high degree. That GCRC is affiliated with GINR was an initial condition stipulated by KVUG. In addition, all hiring and administrative support should be conducted through GINR. We find that it has proven to be a very fruitful constellation that has led to a tremendous development in infrastructure, capacity building and actual science in Greenland. A major part of this development has been accomplished through additional external funding obtained through joint applications and collaborative activities. During its short lifetime, GCRC has more than tripled the initial funding. Søren Rysgaard has been instrumental in this development. Greenland's population of some 57,000 is too small to support several research centers and we find that the best way to obtain local capacity building and synergy between different science disciplines is to combine local knowledge and administration. We recommend that GCRC continues along this more collaborative path, thus contradicting the panel's recommendation 3 that the GCRC should aim to become an independent centre recognized for its research in Arctic climate by 2020.

6) We find that GCRC's PhD programme has been successful. PhD students working within the Climate and Society programme are registered as full-time students at Ilisimatusarfik. Consequently, all student research, supervision, mentoring and teaching follow the "Guidelines for the Degree of Doctor of Philosophy (PhD) at Ilisimatusarfik". The PhD students within the Climate and Society programme are members of academic departments at Ilisimatusarfik and participate in the activities of those departments. They have a supervisor and supervisory team overseeing their research programmes, they participate in departmental meetings, they receive excellent training in research methods,

and they are expected to teach undergraduate courses. PhD workshops and PhD summer schools have also been organized. We are proud to have been able to achieve these high academic standards in Greenland and to bridge GCRC and Ilisimatusarfik, which is a successful model for graduate education and capacity building. GCRC has managed to solve financial issues and thus enabled PhD students to continue their studies in several cases. PhD students have also been registered at collaborating universities. While presence in Greenland is crucial, we find that these students, through collaboration with GCRC, have contributed to the capacity building of the center.

7) The self-evaluation of the “Climate and Society” programme outlines plans for multidisciplinary projects. This was emphasised by Mark Nuttall during his interview. Significant progress in developing multidisciplinary work has taken place. The comments by the panel seem redundant given what is outlined in the “Climate and Society” programme self-evaluation. It is also important to notice, that the commencement of the social science part of GCRC was delayed due to difficulties in recruiting scientific leadership in social science in Greenland. Hence the Climate and Society programme had only just started before the onset of the evaluation process.

8) The evaluation report states that “communication between GCRC leadership and the program PI’s and other researchers has been limited, and is hampered by a lack of formal structure and a decision making process that is not transparent”. Further it is stated: “This is partially the result of an overall absence of a culture of scientific sharing of information, which appears to stem from the lack of leadership”. The GCRC embraces 25 projects including 120 researchers spread over 25 institutions placed very far apart. It has been a challenge to obtain good communication. An important tool has been the annual meetings including all PI’s and as many team members as possible. In addition, the leadership has organized several smaller meetings to ensure communication and data sharing between different science disciplines and groups. There has been an overwhelming positive response from participants that our annual meetings, besides being well organized, are great opportunities to cross-fertilize the different projects and science disciplines. In fact, several new projects have been established between projects with funding from both national and international sources. Thus, we find the criticism from the evaluation board rather harsh, but will continue to strive towards improving and encouraging communication and collaboration in the future.

9) With respect to the panel’s recommendation 2 on the need of a clear vision of the programme: “The GCRC should focus on core climate change research in Greenland, such as the fate of the ice sheet and surrounding ocean circulation, sea-ice and atmosphere, which all play a critical role in determining much wider climate change impacts *and* take advantage of Greenland’s unique physical systems and ecosystems to address under-studied but important components of this coupled system”. This was the initial vision for the centre presented to KVUG by Søren Rysgaard. KVUG decided that the center should consist of individual projects that apply independently for funding and that the strongest projects – without evaluating the context, coherence or coupling – should be integrated in the center. This obviously posed challenges when defining a clear common research aim. However, in retrospect, GCRC has provided tremendous

opportunities for collaboration between scientists across universities and disciplines. This multiplicity of projects is one of the strengths of GCRC that differentiate it from more focused science topic initiatives. If GCRC should lose this colorful composition it may lose some of its unique character, and as such we are thankful for the initial decision to form the GCRC.

10) It seems vital that the evaluation panel is better informed on the background for setting up the center. The structural setup of the center was to a high degree defined by KVUG and has been complicated probably because it is an unusual and unique initiative from the Ministry. The division of the funding in three rounds of applications and evaluations results in a quite fragile situation especially in relation to field measurements needing to be long-term enough to create results and PhD students dependent on funding in all three periods. Another issue of which the panel seems unaware, causing much frustration to PI's and projects, is the late decision of a 44% overhead charge. This substantially reduced the funding and complicated project finances where initial budgets and plans were based on a 20% overhead. In addition, each project proposal had anticipated a time span of 3-5 years, but due to the rules applied to us by the Ministry of Science, Innovation and Higher Education funding for more than 1-2 years at a time could not be provided. This meant that several planned PhD positions were at risk and that each PI had to ensure a guarantee from their individual institutions of payment of expenses should the PI proposal not be funded in the next round of applications. The Centre leadership had no capacity to guarantee continued funding. Despite this fact we solved financial challenges to PhD funding along the way. This was only possible because of a very fruitful collaboration between the GCRC leadership, PI's and their institutions.

12) We find that the scientific results already emerging from GCRC are impressive and would have liked to see greater recognition of this by the evaluation panel. The report unfortunately seems to focus on administrative aspects of the center rather than judging what has actually been accomplished. At the time of this mid-term evaluation, GCRC scientists had published more than 150 peer-reviewed papers in international journals, including highly recognized journals. This is very impressive considering that several of these articles were prepared locally in Greenland, and demonstrates that it is possible to build a major modern research environment in Greenland. In addition, numerous articles in newspapers and journals have been published, and information on a wealth of national and international activities has been broadcasted. The centre has participated in numerous conferences, has itself organized several large international conferences, and has raised significant funding for new local research projects and large international science and education networks, such as the Arctic Science Partnership (www.asp-net.org). In addition, GCRC has collaborated with GINR to raise the necessary means for new buildings, ships and vessels, field stations, multiple field and laboratory equipment and instrumentation, a boathouse etc. Finally, GCRC has been instrumental in giving advice on climate-related issues to local authorities and the Self-Rule Government.

This response has been prepared and agreed upon by the leadership and all principal investigators in GCRC:

Søren Rysgaard, Professor, Center leader (GCRC)
Peter Schmidt Mikkelsen, Deputy head (GCRC)
Torben Røjle Christensen, Professor, Co-lead (GCRC)
Mark Nuttall, Professor, Co-lead (GCRC, University of Greenland)
Lene Kielsen Holm, Head of communications (GCRC, University of Greenland)
Klaus Nygaard, Director (Greenland Institute of Natural Resources)
Andre Visser, Professor (Danish Technical University)
Erik Jeppesen, Professor (Aarhus University)
Jesper Raakjær, Professor (Aalborg University)
Jens Hesselbjerg Christensen, Center leader CRES (Danish Meteorology Institute)
Einar Eg Nielsen, Professor (Danish Technical University)
Torkel Gissel Nielsen, Professor (Danish Technical University)
Ronnie Nøhr Glud, Professor (University of Southern Denmark)
Leif Toudal, Senior Scientist (Danish Meteorology Institute)
Dorthe Dahl Jensen, Professor (Copenhagen University)
Colin Stedmon, Associate Professor (Danish Technical University)
Malene Simon, Senior scientist (GCRC)
Martin Emil Blicher, Senior scientist (GCRC)
Kristine Arendt, Scientist (GCRC)
John Mortensen, Scientist (GCRC)
Kunuk Lennert, Program coordinator (GCRC)
Martin Truffer, Professor (University of Fairbanks)