

# Management Response and Action Plan for the Evaluation of the Climate Change and Atmospheric Research (CCAR) Initiative

## Context

The CCAR initiative provides grants that support a limited number of large-scale research networks focused on addressing challenges that are high priorities for both the Canadian academic research community and federal government departments. The challenges addressed by funded networks connect to at least one of the following three theme areas: 1) earth system processes and their representation in models; 2) earth system prediction through improved forecasting methodologies; and 3) understanding recent changes in the Arctic and other Canadian cold region environments.

While the CCAR initiative has been implemented for less than five years and will end in 2017-2018, it was decided that an evaluation would be conducted to provide NSERC senior management with findings regarding CCAR's relevance, delivery, performance and efficiency. The evaluation was designed to ensure that NSERC adheres to the requirements of the Treasury Board's *Policy on Results* (2016) and section 42.1(1) of the *Financial Administration Act*.

The 2017 Federal Budget did not include renewal funding for the CCAR program. Future actions described in this response will be implemented only if NSERC receives funding to launch a new cycle.

## Overall Comments

Management of the CCAR funding opportunity agrees with the conclusions of this report and the recommendations therein.

Management was pleased that the report confirmed that CCAR funding contributes to the role of the federal government in supporting research aimed at understanding the underlying physical processes that affect the Canadian climate. It is also an important finding that the scale and scope of the research conducted would not have been possible without CCAR funds and the use of a network approach. Moreover, management was pleased that the report showed that CCAR funded networks engaged in a high level of collaboration between network members, particularly university researchers, international researchers and federal government scientists. The outcome of these collaborations was also seen in the success of the dissemination and transfer activities. These activities in turn supported the use of the knowledge and/or products generated by the CCAR-funded networks by the federal government, particularly scientists working at Environment and Climate Change Canada (ECCC), as well as other potential end-users. Another very important finding was that CCAR funding supported the development of the next generation of scientists and helped to generate research capacity in climate change and atmospheric processes.

Responses to each recommendation and the management action plan are presented below.

## RECOMMENDATIONS

### Recommendation 1:

**The federal government continues to fund fundamental research in climate change and atmospheric processes through NSERC's CCAR initiative, as long as these areas remain priorities for the federal government.** CCAR is currently the only source of large-scale research funding available to Canadian academic climate and atmospheric researchers. Continued CCAR funding would reinforce valued capacity to conduct important research in this area, and continued opportunities to train the next generation of highly qualified personnel in the fields of climate change and atmospheric research. Sustained support for CCAR will build on the science base to inform decision-

making, protect the health and well-being of Canadians, build resilience particularly in Northern and Indigenous communities, and enhance competitiveness in key economic sectors. It will also allow movement into new climate-related research areas, as well as maintenance and enhancement of long-term research initiatives.

**Management Response: Agree**

Research supported under CCAR is mainly long-term in nature, and requires sustained funding to maintain continuous data sets and observations. Continued funding of the CCAR initiative would support both the continuity of critical data for ongoing monitoring, and the research capacity built by networks of collaborators and HQP that will otherwise disperse at the end of the funding. Very importantly, continued funding would support the federal government's delivery of the foundational actions described in the working group reports for *The Pan-Canadian Framework on Clean Growth and Climate Change*, particularly in the following areas: providing evidence to support decision-making; assessing climate risk and the state of resilience; improving observation, monitoring, and surveillance networks; and, promoting investments in training, skills, and capacity development.

**Recommendation 2:**

**Maintain the requirement that collaborations involve the active research participation of scientists from at least one federal government department.** Collaboration among university researchers and federal government scientists is an essential component of the CCAR initiative and a key factor contributing to network success. By requiring such collaborations, the CCAR initiative is perceived as reducing the research gap between academia and the federal government and supporting the sharing of expertise, as well as physical and human resources. Moreover, it is anticipated that these collaborations will facilitate the transfer of knowledge to and within federal government departments. It is also important to recognize the positive impact of other forms of collaborations within the CCAR-funded networks, particularly multidisciplinary collaborations and collaborations with international researchers. Such collaborations are important as research questions related to climate change and/or atmospheric processes are complex and rarely apply solely to one discipline or country. Consequently, the CCAR initiative should also continue to encourage these other forms of collaboration within funded networks.

**Management Response: Agree**

The CCAR initiative employs a network approach in part to encourage a high level of collaboration between network members, particularly university researchers and federal government scientists. The evaluation shows that CCAR-funded networks were successful in facilitating and/or strengthening research collaborations between these groups. This recommendation would be considered for a future CCAR funding cycle. However the range of potential partners would also be expanded to include other government departments, organizations and northern communities that are well-positioned to apply and benefit from the results for economic prosperity, to strengthen public policy and to transfer knowledge and technology.

**Recommendation 3:**

**Consider expanding the funding model of the CCAR initiative to include large networks and small research projects.** Large networks are valuable to address "big science" with a focused objective as they increase the scale and scope of the outputs produced. There are, however, several challenges to the network approach including a lack of flexibility to respond to emerging research questions and difficulties adapting to changing needs within the research community. This is primarily because network financial and human resources are already committed to ongoing research projects. Funding small projects is anticipated to mitigate some of these challenges by enabling researchers to quickly engage in short-term and targeted research to address new/emerging issues and/or events that may arise. To this end one of the recommendations stemming from the evaluation is that CCAR consider funding small research projects in addition to large-scale networks. It is anticipated that these research projects

will also support national research priorities and generate knowledge that will be transferred to the federal government and other potential users for the benefit of Canada. The expansion of the CCAR initiative's funding model is supported by the majority of members of the current CCAR-funded networks.

**Management Response: *Agree***

Management agrees that the network approach may lack the flexibility to respond to emerging research questions and adapt to changing needs within the research community. As part of the delivery of CCAR future funding, funds could be provided through a blend of networks and projects, which would provide greater responsiveness to emerging opportunities and evolving priorities, improve the ability to benefit from learning, and increase opportunities to work with multiple partners and engage in international collaborations.

**Recommendation 4:**

**CCAR management may want to consider developing a performance measurement strategy, as well as revising to their reporting templates.** As outlined in the new Policy on Results, federal government departments must demonstrate the achievement of results including outputs and outcomes. Defining and measuring the long-term scientific outcomes of the CCAR initiative and their indicators is a challenge, however, as funded networks are examining complex issues and these outcomes are not anticipated to transpire for many years. This process may be facilitated by using a working group approach and engaging federal government scientists involved with CCAR-funded networks to think strategically in terms of defining the key scientific outcomes of CCAR and how to measure the achievement of these outcomes. Moreover, adding closed-ended questions to the reporting templates will help increase the clarity and availability of performance information regarding the CCAR initiative, while still allowing the Principal Investigators (PIs) to highlight some of the unique attributes of and research generated by their network in response to the open-ended questions.

**Management Response: *Agree***

Management agrees that performance measurement strategy could be developed and a revision of the reporting template could be beneficial in a future CCAR cycle.

## Action Plan

Recommendation	Agree Partially Agree Disagree	Proposed Action	Responsibility	Timeline
<p><b>1. The federal government continues to fund fundamental research in climate change and atmospheric processes through NSERC's CCAR initiative, as long as these areas remain priorities for the federal government.</b> CCAR is currently the only source of large-scale research funding available to Canadian academic climate and atmospheric researchers. Continued CCAR funding would reinforce valued capacity to conduct important research in this area, and continued opportunities to train the next generation of highly qualified personnel in the fields of climate change and atmospheric research. Sustained support for CCAR will build on the science base to inform decision-making, protect the health and well-being of Canadians, build resilience particularly in Northern and Indigenous communities, and enhance competitiveness in key economic sectors. It will also allow movement into new climate-related research areas, as well as maintenance and enhancement of long-term research initiatives.</p>	Agree	Continue to deliver the CCAR funding on an annual basis (pending budget allocation)	Program staff	NA

Recommendation	Agree Partially Agree Disagree	Proposed Action	Responsibility	Timeline
<p><b>2. Maintain the requirement that collaborations involve the active research participation of scientists from at least one federal government department.</b></p> <p>Collaboration among university researchers and federal government scientists is an essential component of the CCAR initiative and a key factor contributing to network success. By requiring such collaborations the CCAR initiative is perceived as reducing the research gap between academia and the federal government and supporting the sharing of expertise, as well as physical and human resources. Moreover, it is anticipated that these collaborations will facilitate the transfer of knowledge to and within federal government departments. It is also important to recognize the positive impact of other forms of collaborations within the CCAR-funded networks, particularly multidisciplinary collaborations and collaborations with international researchers. Such collaborations are important as research questions related to climate change and/or atmospheric processes are complex and rarely apply solely to one discipline or country. Consequently, the CCAR initiative Agree should also continue to encourage these other forms of collaboration within funded networks.</p>	Agree	Maintain the requirement that collaborations involve the active research participation of scientists from at least one federal government department (pending launch of new funding cycle)	Program staff	NA

Recommendation	Agree Partially Agree Disagree	Proposed Action	Responsibility	Timeline
<p><b>3. Consider expanding the funding model of the CCAR initiative to include large networks <u>and</u> small research projects.</b> Large networks are valuable to address “big science” with a focused objective as they increase the scale and scope of the outputs produced. There are, however, several challenges to the network approach including a lack of flexibility to respond to emerging research questions and difficulties adapting to changing needs within the research community. This is primarily because network financial and human resources are already committed to ongoing research projects. Funding small projects is anticipated to mitigate some of these challenges by enabling researchers to quickly engage in short-term and targeted research to address new/emerging issues and/or events that may arise. To this end one of the recommendations stemming from the evaluation is that CCAR consider funding small research projects in addition to large-scale networks. It is anticipated that these research projects will also support national research priorities and generate knowledge that will be transferred to the federal government and other potential users for the benefit of Canada. The</p>	Agree	Expand funding model delivery to include large networks <u>and</u> small research projects (pending launch of new funding cycle)	Program staff	NA

Recommendation	Agree Partially Agree Disagree	Proposed Action	Responsibility	Timeline
<p>expansion of the CCAR initiative’s funding model is supported by the majority of members of the current CCAR-funded networks.</p>				
<p>4. <b>CCAR management may want to consider developing a performance measurement strategy, as well as revising to their reporting templates.</b> As outlined in the new Policy on Results, federal government departments must demonstrate the achievement of results including outputs and outcomes. Defining and measuring the long-term scientific outcomes of the CCAR initiative and their indicators is a challenge, however, as funded networks are examining complex issues and these outcomes are not anticipated to transpire for many years. This process may be facilitated by using a working group approach and engaging federal government scientists involved with CCAR-funded networks to think</p>	Agree	Develop a performance measurement strategy and revise the reporting templates (pending launch of new funding cycle)	Program staff	NA

Recommendation	Agree Partially Agree Disagree	Proposed Action	Responsibility	Timeline
<p>strategically in terms of defining the key scientific outcomes of CCAR and how to measure the achievement of these outcomes. Moreover, adding closed-ended questions to the reporting templates will help increase the clarity and availability of performance information regarding the CCAR initiative, while still allowing the Principal Investigators (PIs) to highlight some of the unique attributes of and research generated by their network in response to the open-ended questions.</p>				