Canadian Foundation for Climate and Atmospheric Sciences (CFCAS)
Fondation canadienne pour les sciences du climat et de l'atmosphère (FCSCA)

Final Progress Report

Project Title: Atmospheric and Oceanic Teleconnections affecting Prairie Drought

DRI Collaborator: Amir Shabbar

1.0 Project Work

1.1 **Provide a summary description of a) the objectives of the study, b) the scientific findings and c) the project work undertaken.**

The objective of the study was to examine the influence of oceanic boundary conditions and atmospheric teleconnections on the growing season drought on the Canadian Prairies. It was found that the warming trend in the western tropical Pacific and the Indian oceans have a profound impact on the drying regimes on the prairies. Multivariate statistical methodologies were used to quantify the effects of interannual (ENSO) and decadal variability on the moisture availability in Canada.

1.2 **Explain how the project milestones and deliverables originally proposed were met.**

Milestones were met by presenting original work at the DRI workshops and collaborating with DRI researchers.

1.3 **Describe the tangible results or the measurable outputs generated by the project and how these results have been taken up by user groups for policy development or operational improvements.**

Publishing journal paper in the special DRI issue of Atmosphere-Ocean.
Writing a popular article on the role of large-scale circulation in 'DRI Professional' issue.
Contributing special sections on atmospheric circulation and teleconnection in the characterisation paper to be published in the special DRI issue.

2.0 Impact

2.1 Describe in broad terms how your work has contributed to the overall objectives of DRI and to our scientific understanding of drought.

Work provided insight as to how the synoptic and large-scale circulations interact to produce droughts or pluvials over the prairies. These findings form the basis for

developing prediction schemes for droughts on the Canadian Prairies.

2.2 Describe the significance / impact of the results in terms of some or all of the following areas:

Made contact and initiated collaboration with university scientists with interest in drought. The role of the global sea surface temperatures in initiating and maintaining drought on the Canadian prairies was explained and documented. This information can be used to devise a statistical prediction scheme for drought in Canada.

4.0 Reverse Impact Statement

4.1 Provide a reverse impact statement, describing what would have happened in terms of the project, the resulting science and the impacts on users/stakeholders, if the work had not been funded by CFCAS.

The role of global sea surface temperatures in initiating and maintaining protracted droughts on the prairies would not have been clearly documented. The interaction between large-scale circulation and synoptic scale circulation was identified as a key process in the maintenance of 1999-2005 drought.

5.0 Follow-on Science

5.1. Based on the findings of your research identify any outstanding scientific questions that need to be addressed in future drought studies.

In order to better understand the temporal and spatial variability of droughts on the Prairies, the role of the air-sea fluxes in the North Pacific in initiating atmospheric teleconnections patterns over western need to be better understood

6.0 Dissemination

6.1 Provide information on the dissemination of the research results (publications, including journal names and whether refereed), conference contributions, seminars, workshops or videos, websites or other methods of transferring the results.

Published article in the role of atmospheric and oceanic variability on the Prairie drought and on atmospheric teleconnections and circulation in the special issue of Atmosphere-Ocean.
Made four presentation on drought research in DRI workshops.
Results of the research will be presented at the 91st American Meteorological Society in January 2011.

6.3 Comment on any outreach or public information activities, including press interviews or other media interest or reports. Has the project helped to popularize science or increase public awareness?

Prepared a ‘popular article’ on the role of global sea surface temperatures in DRI Professional document.