

A Severe Recent Drought over the Canadian Prairies

Drought has, and continues to be, a major concern in Canada but rarely has it been as serious or extensive as the recent 1999-2004/05 episode. This event produced the worst drought for at least a hundred years in parts of Canada and, in particular, the Canadian Prairies in the central region of the country. For example, locations such as Saskatoon, Saskatchewan received 30% less precipitation in 2002 than in other year over the last 110 years. This drought consequently led to enormous impacts on society and ecosystems. Farm income was zero or below over the region for the first time in 25 years; natural ponds were at their lowest level in recorded history; forest fires in Alberta were five times the 10-year average; and at least 31 major dust storms swept across Saskatchewan in 2001 alone.

This presentation will characterize key features of this drought and illustrate factors that led to its commencement, maintenance and cessation. This will include an examination of the large scale flow field and a preliminary assessment of the associated water and energy budgets over the Canadian Prairies. Many of the years of the drought were linked with reduced water vapour transport into the region, little snowfall over the Rocky Mountains on the western edge of the region, and reduced rainfall in the summer. However, there were exceptions and, in particular, the eastern Prairies in some years recorded near-record amounts of precipitation. This led to sustained, large gradients in precipitation across scales of order a few hundred kilometers. At the end of the presentation, plans for future research on this drought will be summarized.