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2009 Red River Valley Flood: Impact on Agriculture

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. not available for any reference period
.. not available for a specific reference period
... not applicable
0 true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

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2009 Red River Valley Flood: Impact on Agriculture

From the analysis of satellite image data acquired between March 31 and April 14, 2009, the overflow of the Red River in southern Manitoba had flooded an area reaching 46,800 hectares of agriculture land on April 14. About 124 farmers had been affected by the flood on that date. The flooded areas for this period spread from Emerson, just north of the Canada - United States border, to south of the city of Winnipeg. Land in this region is almost entirely devoted to cereal and forage crops.

Figure 1 provides a series of five maps showing the progression of the flood of the Red River between March 31 and April 14, 2009. The total area of flooded land has steadily increased during this period, reaching 11 kilometres wide at the community of St. Jean Baptiste. The flooding has moved from south to north, stopping just south of Winnipeg, where a drainage canal diverts part of the water of the river around the periphery of the city. The maps also illustrate the approximate coverage of the 1997 flood, which covered a larger area than had been experienced so far as of April 14, 2009.

The area of flooded agriculture land is estimated using the 2006 Census of Agriculture data. Table 1 shows a constant increase of flooded agricultural land from 1,300 hectares on March 31 to 46,800 hectares on April 14, affecting up to about 124 farmers. The 1997 flooding of the same region covered 141,900 hectares of cultivated land, three times in area compared with the 2009 flood as of April 14. The 1997 flood affected close to 350 farmers.[1]

Table 1
Area of flooded agricultural land and number of farmers affected between March 31 and April 14, 2009 and comparison with the 1997 flood

Date	Estimate of flooded agriculture land (hectares)	Estimate of number of farmers affected
2009		
March 31	1,300	x

April 4	4,200	x
April 8	12,700	39
April 11	26,900	73
April 14	46,800	124
1997		
May 8	141,900	346

x = suppressed to meet the confidentiality requirements of the Statistics Act

The acquisition of radar imagery from the Canadian satellite Radarsat-2, launched in December 2007, allowed the delineation of the flooded areas. This type of sensor allows image acquisition at any time (day or night), and in all weather conditions. Figure 2 shows in the background the radar satellite image of April 14, 2009, on which were delineated in blue flooded areas of the Red River. Main roads and rural communities are also identified. Small black pockets located outside the flood region represent wet areas caused by the recent snow melt and are not included in this analysis.

The availability of additional imagery acquired after April 14 will allow further analysis of the progression of the flood. It is not possible at this time to determine on which date the maximum area of agriculture land will be flooded.

Note

1. 2006 Census of Agriculture data was used to compare the number of farmers affected by the 1997 and 2006 floods to allow direct comparison between the two years. 1996 Census data would provide better estimates for the 1997 flood, but would not allow this direct comparison.

Figure 1
Map showing the progression of the flooded area of the Red River in 2009 and comparison with the 1997 flood

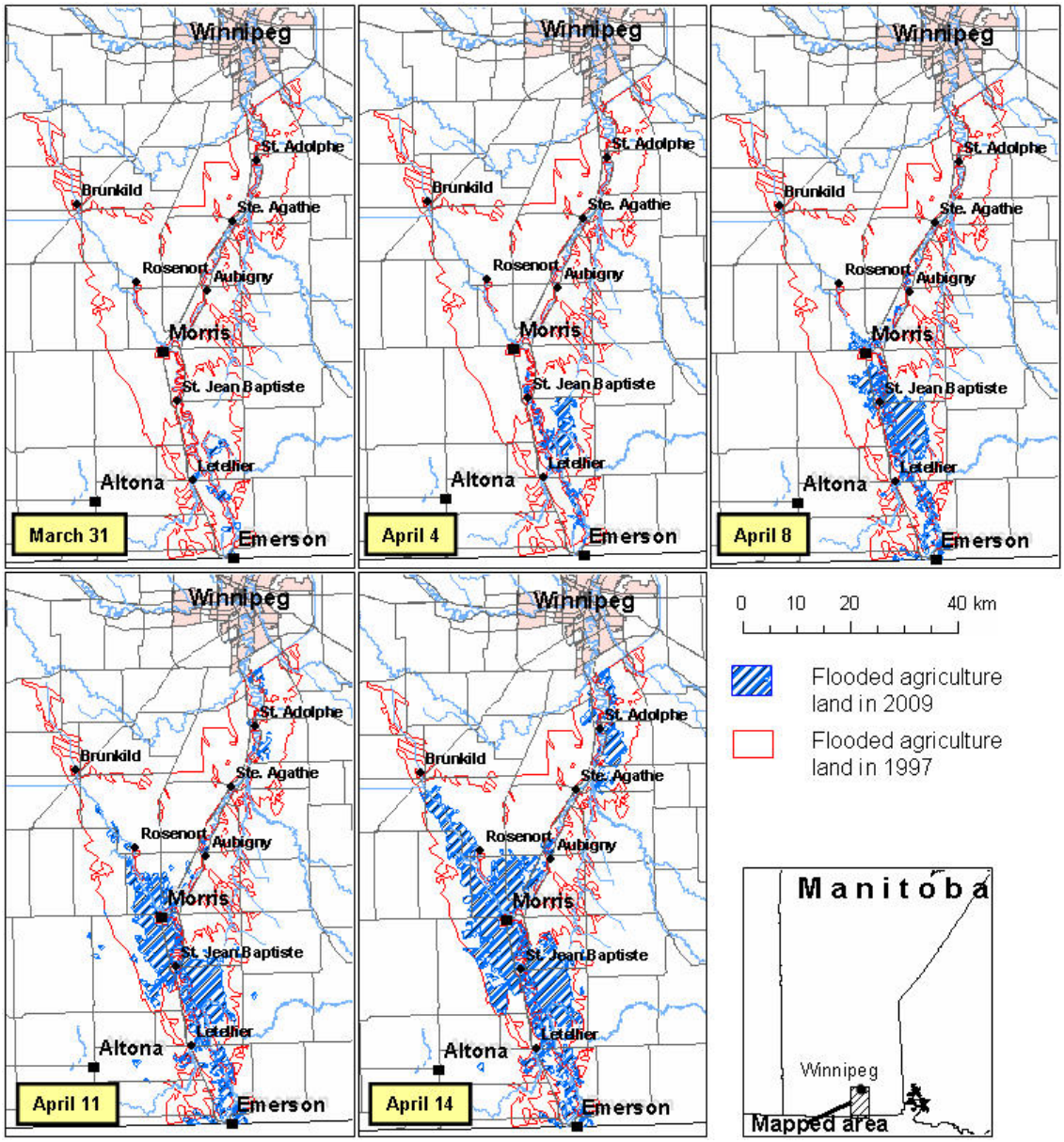
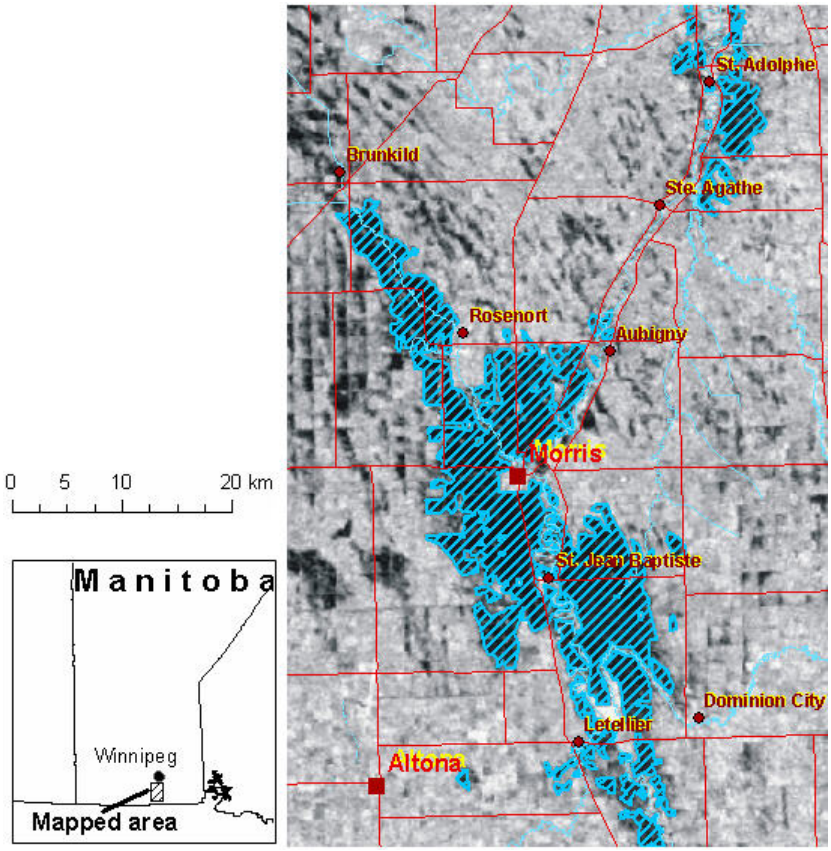


Figure source: Statistics Canada, 2009, "2009 Red River Valley Flood: Impact on Agriculture", catalogue number 18-504-X.

Figure 2
Radar image of the flooded area on April 14, 2009



Source: Radarsat-2 images provided courtesy of the Canadian Space Agency (CSA), Canada Centre for Remote Sensing, Natural Resources Canada and MacDonald Dettwiler and Associates Ltd. (MDA).
Figure source: Statistics Canada, 2009, "2009 Red River Valley Flood: Impact on Agriculture", catalogue number 18-504-X.