



## **Possible Impact of climate change on future extreme precipitation of the Oldman, Bow and Red Deer River Basins of Alberta**

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The impact of climate change on extreme precipitation events in the Oldman (ORB), Bow, (BRB) and Red Deer (RRB) River Basins of southern Alberta, Canada, was assessed using six extreme climate indices for the rainy period of May–August (MJJA), and 9-km resolution Special Report on Emission Scenarios (SRES) A2 and A1B climate scenarios of four Coupled Model Intercomparison Project Phase 3 (CMIP3) Global Climate Models (GCMs) dynamically downscaled by a regional climate model, MM5. R95p of the three study sites showed an increase of 4% for the 2050s (2041–2070) and 10% for the 2080s (2071–2100) period, whereas R99p increased by 39% (2050s) and 42% (2080s) which suggest a projected increase in the volume of precipitation expected in future very wet and particularly extremely wet days. Similarly, R20mm, P30yr, RX1day and RX5day are also projected to increase by about 15% by the mid- and late 21st century in the three study sites. However, compared to BRB and RRB, ORB located in the southernmost part of the study site is projected to undergo a relatively higher increase in both temperature and precipitation intensity, which is assessed in terms of indices such as P30yr, RX1day and RX5day. On the other hand, RRB and BRB are projected to experience higher increase in R20mm, which suggest a relatively higher increase in the number of very heavy precipitation days projected for these two basins. Overall, these results suggest that in the 2050s and 2080s, southern Alberta will be expected to experience more frequent and severe intensive storm events in the MJJA season that could potentially increase the risk of future flooding in this region.

Ref: Gizaw, M., and Gan, T. Y., 2015, Possible Impact of climate change on future extreme precipitation of the Oldman, Bow and Red Deer River Basins of Alberta, *Int. Journal Climatology*, DOI:10.1002/joc.4338