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# HISTORICAL AND FUTURE GROWTH OF MANITOBA MAPLE SHELTERBELTS IN SASKATCHEWAN

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No. SASK-27

We wanted to better understand how shelterbelt trees will grow in the future based on how they have already grown on the landscapes in the past. To do so, we sampled 125 shelterbelt locations across Saskatchewan covering the six dominant shelterbelt tree species, and covering a spatial network across all of southern Saskatchewan.

## ALL TREE SPECIES

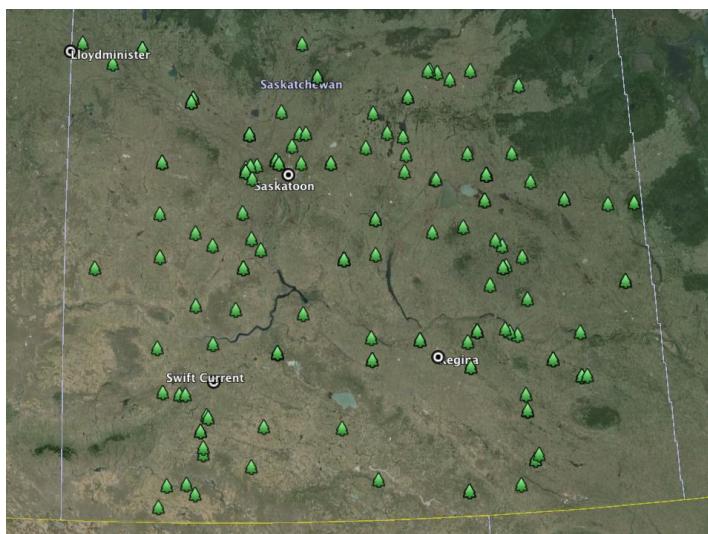


Figure 1: Locations where all six different tree species were sampled in southern Saskatchewan.

## THE MANITOBA MAPLE SPECIES

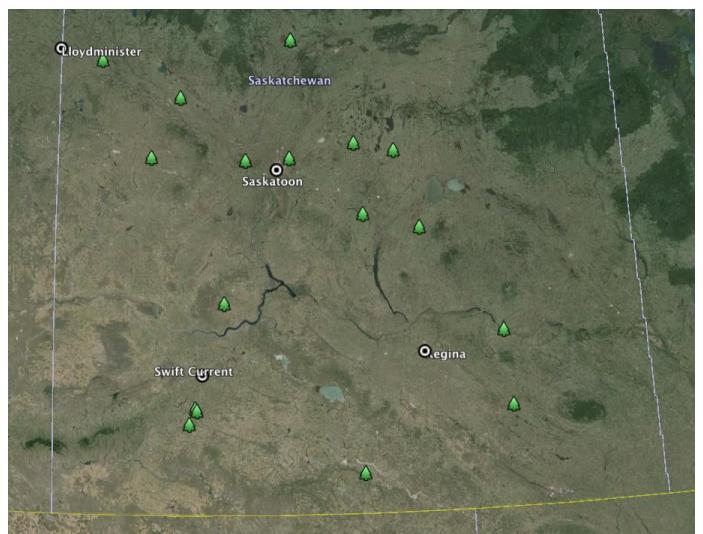


Figure 2: Locations where all of the Manitoba Maple species were sampled in southern Saskatchewan.

## CLIMATOLOGICAL LIMITING FACTORS

The most common climatological limiting factors that drive the radial growth of white spruce trees in order of importance across the southern part of the province are:

- Current year July Precipitation;
- Current year April and May precipitation and;
- Past year April and May precipitation.

From these data we get a better understand that Manitoba Maple is dominated by moisture signals. When it gets good moisture at key times in its growth cycle, it can do well. Most important is for it to get good moisture inputs when its rings are actively being formed in July. Next, spring moisture seems to be very import to its growth. First it needs good spring moisture in the current year of growth, and secondly, there is a carry over effect if it received good moisture inputs from the previous year's spring months. Conversely, if it does not get good moisture inputs during one or all three of these key times, it will produce a small or very small growth ring in that given year.



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## AN EXAMPLE OF MANITOBA MAPLE MODELLED FUTURE GROWTH

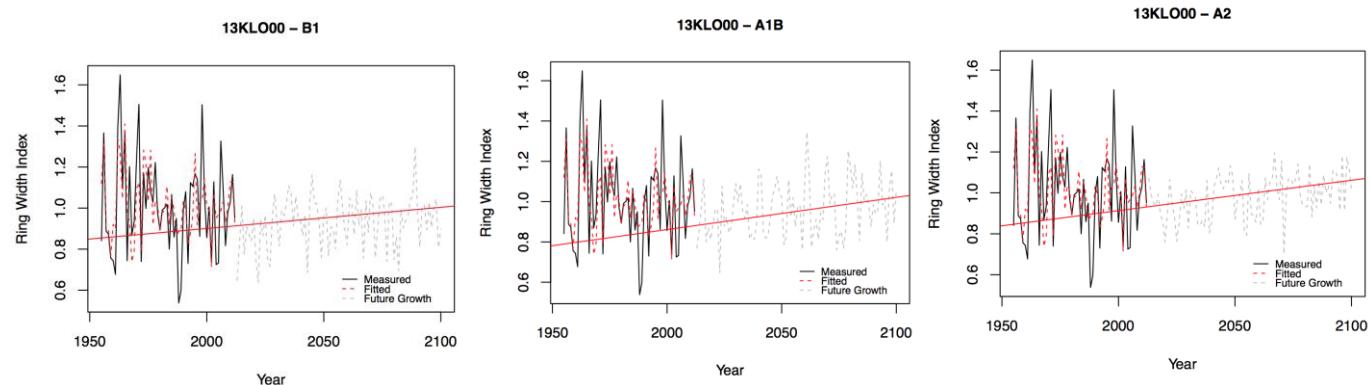


Figure 3a-c: An example of past (black lines) and modelled future growth (dashed lines) from a Manitoba maple site near Raymore Saskatchewan. The three future scenarios illustrate low (B1), medium (A1B) and high (A2) simulated CO<sub>2</sub> emission scenarios. The red line indicates the overall long-term trajectory of radial growth for Manitoba maple.

## TRAJECTORIES ACROSS PROVINCE

Of the 13 Manitoba Maple locations modelled, most of the scenarios illustrated a neutral or positive upward trajectory into the future, especially in areas of southernmost Saskatchewan that are projected to be hotter and drier in the future. As one moves northward in the province, the radial growth in general decreases at these locations, as these areas are projected to have less moisture deficits in the mid-summer which is a key to Manitoba Maple radial growth.

## INDIVIDUAL MODELLING LOCATIONS

For more specific information on future forecasted growth for each species in specific locations in Saskatchewan, please visit our radial growth model at:

[http://madlabsk.ca/model2/externaldatas\\_3.html](http://madlabsk.ca/model2/externaldatas_3.html)

## OTHER FACTSHEETS IN THE SERIES

Specific analysis on most of the locations in the study can be found on our web site at <http://www.madlabsk.ca/> and <http://www.madlabsk.ca/reports.html>

## CONTACT FOR MORE INFORMATION: SASKAGROFORESTRY.CA/

## ACKNOWLEDGEMENTS & COPYRIGHT

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