TRENDS ANALYSIS: STREAM FLOW

FALL 2014

What does this measure & why is it important?

This indicator measures the change in stream yield (volume of stream discharge per square kilometer of drainage area) over the period 1980-2011. This time period is used as it avoids years when changes in natural climate oscillations, which have been shown to have a significant impact on temperature and precipitation patterns, would have skewed results. Results are reported for both peak yield and late summer minimum yield. The term, 'yield', refers to the discharge of a stream normalized to its catchment area. Data from 36 active monitoring stations on unregulated streams are included in the analysis. Data for this indicator were gathered from the Water Survey of Canada and analysed by Dr. Janice Brahney at the University of British Columbia.

Stream flow patterns are important to track because they indicate the availability of water for ecological processes and human use. Climate change research suggests that shifts in temperature and precipitation regimes have, and will continue to, influence stream flow patterns in our region.

What are the trends & current conditions?

Data show that yield in most Basin-Boundary streams has decreased since the 1980s during periods of peak flow and late summer low flow (table 1). The decreasing trend in late summer minimum yield is particularly strong and of important consequence for Basin-Boundary communities, where water demand is typically highest during the late summer.

Trends tend to be more strongly negative on Boundary streams like the West Kettle River and Trapping Creek, where changes in peak yield measure -24% in both cases. Trends tend to more weakly negative, or sometimes positive, in the eastern and northern portions of the region. For example, changes in peak yield measure +2% on both the Columbia River at Nicholson and the Canoe River. Full site-specific results are available on the Digital Basin.

It should be noted that these results have been calculated using a regression method that makes certain assumptions about the nature of the dataset. Users should therefore focus on the direction and magnitude of the trend, rather than the specific result.

	Peak Yield (1980-2011)	Late Summer Yield (1980-2011)
Average Change Across All Stations (%)	-7.6	-29.2
Stations Showing Decreasing Trend (%)	86	97
Stations Showing Increasing Trend (%)	14	3

Table 1: Results of analysis for stream flow metrics. Visit the Digital Basin for detailed data tables and maps. Source: Data – Environment Canada (2014); Analysis – Brahney (2014)

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The Columbia Basin Rural Development Institute, at Selkirk College, is a regional research centre with a mandate to support informed decision-making by Columbia Basin-Boundary communities through the provision of information, applied research and related outreach and extension support. Visit www.cbrdi.ca for more information.

References

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Environment Canada. (2014). Water Survey of Canada Hydrometric Data [Database]. Retrieved from: http://wateroffice.ec.gc.ca/search/search_e.html?sType=h2oArc