The Minnesota River is growing

You have probably noticed the significant changes in the amount of water falling on—and running off—the Minnesota River watershed. The river seemed to be flooding all year.

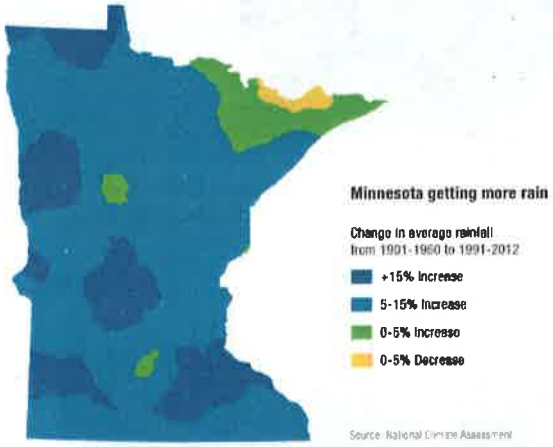


Figure 1 A climate primer from MPR. https://www.mprnews.org/story/2015/02/02/climate-change-primer

Figure 2. Minnesota River near St. Peter. http://titanbarriers.com/2019/03/28/from-rising-waters-to-peak-levels-flood-stages-vary-across-minnesota/

The combination of more annual precipitation, more high intensity rain events, plus crops that need drainage to thrive but also return less water to the atmosphere are adding up to increases in river flow.

There is simply a lot more water being sent to the rivers, including urban stormwater, especially in May and June.

We even see a second peak in river flow after the crops are harvested in the fall. Leaves are no longer returning moisture to the atmosphere.

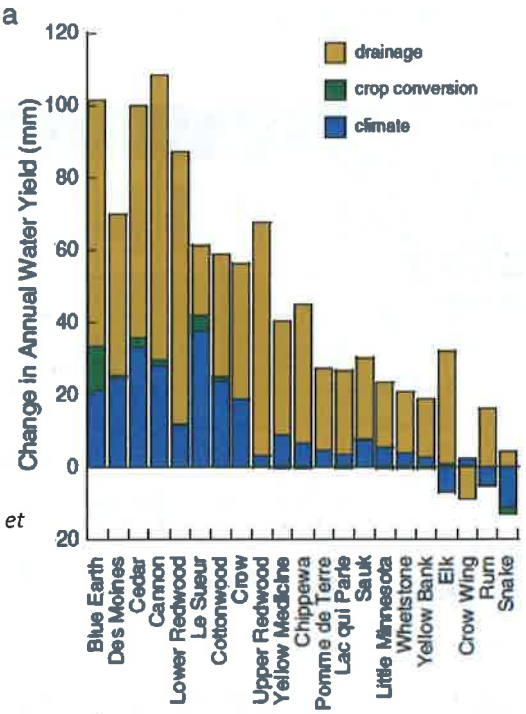


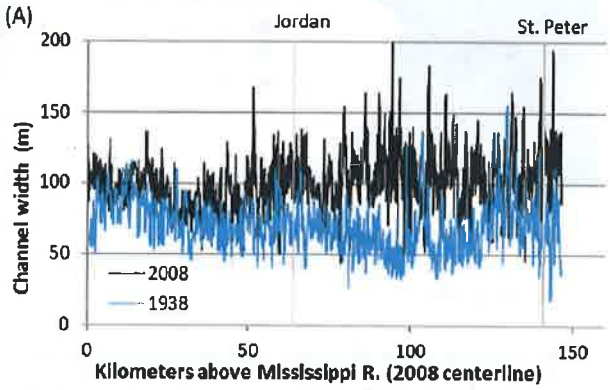
Figure 3 Changes in runoff by watershed and cause. From Schottler et al., 2013

Rivers across the state are eroding their banks to accommodate the highest flow. Dramatic increases in channel width at a rate of 2 to 10 inches per year impact property owners across the basin as they lose fields, yards and even homes.

Reach name	Rate of increase (m/y)
Blue Earth R. downstream	0.05
Blue Earth R. upstream	0.23
Chippewa R.	0.06
Cottonwood R.	0.05
Elk R.	0.03
Le Sueur R.	0.18
Little Cobb R. upstream	0.02
Little Cobb R. downstream	−0.07
Maple R.	0.05
Minnesota R. at Chaska	0.34
Minnesota R. at Jordan	0.47
Minnesota R. at Judson	0.71
Sauk R.	0.02
Watonwan R. downstream	0.15
Watonwan R. middle	−0.03
Watonwan R. upstream	0.00

Figure 5 Change in channel width from 1938 to 2008, from Lauer et al., 2016.

Figure 4 Increased flows and a flashy hydrology are the cause of erosion to riverbanks along Hawk Creek in Renville County, shown here in this West Central Tribune file photo.



Reducing river flows requires priority investment in temporary water storage

		Above ground		On ground		Below ground	
		Cover crops	Perennial crops	Restored wetlands	Detention basins	Reduced tillage	Controlled drainage
Increased	Spring transpiration	x	x				
	Surface water evaporation			x			
	Infiltration	x	x	x	x	x	
	Soil water retention	x	x			x	
Reduced	Total water delivery	x	x	x	x		x
	P and sediment delivery	x	x	x	x	x	
	Peak flows	x	x	x	x		x

Water storage is also a critical strategy to reduce sediment loading to rivers. This was the conclusion of the Collaborative for Sediment Source Reduction after a 5-year effort to find effective, cost-efficient, fair strategies for sediment source reduction. Participants included a diverse stakeholder group with local and state, agribusiness and environmental organizations represented. Recommendations were supported by all who participated.

Minnesota Pollution Control Agency · Clean Water Land & Legacy · Minnesota Department of Agriculture · MAWRC · Freshwater Society

Freshwater supports legislation introduced in the 2020 session (H.F. 3595, S.F.xxxx) to directsmoney to increase temporary storage of water and thereby reduce flow in our rivers.

FRESHWATER 50 YEARS