

Local Water Management is Crucial

by C. Lacombe

Robert Sandford expressed concern that public understanding of climate change may come from Hollywood when he spoke May 3 in Redwood Meadows at Our Elbow: Understanding and Respecting Our Local Waters.

For instance, The Day After Tomorrow movie borrows a little real science related to the “Atlantic Meridional Overturning Circulation (AMOC) or sometimes called the “global ocean conveyor belt.” But, the movie is as farfetched as it seems.

Sandford, EPCOR Chair, Canadian Partnership Initiative, United Nations Water for Life Decade, pointed out that these movies take a smidgen of real life and turn it into something called Sharknado. But reality is foreboding too and we can’t blame all the trouble on the climate.

“While exacerbated by the general warming of the global atmosphere, it is important to point out that the increasing number of heat waves in large cities is as much a consequence of urban design as it is of the greenhouse effect,” Sandford says. Modern city design exacerbates heat waves and urban planners need to change urban land and waterscape design to save lives.

He adds, “the legitimate fear these films appeal to is that we are experiencing an increased frequency and or intensity of extreme precipitation events — including heavy rains, damaging flooding, droughts, hurricanes and tornadoes.”

Sandford explains science has a clearer picture of the global inter-connectedness of weather patterns. Cut down a forest and the local temperature goes up and the water disappears. Pave the landscape and it becomes a heat sink and allows water to run away or evaporate quickly. The water does not cease to exist; it evaporates into an atmosphere with increased water retention capacity due to warmer air.

“The amount of water the atmosphere can hold increases by about 7% per degree Celsius or about 4% per degree Fahrenheit.” Sandford explains that as the atmosphere warms there is less difference between the temperature at the poles and the temperature at the equator.

“It is this difference in temperature between the polar region and the warmer air to the south that largely defines the behaviour of the jet stream.” Modern technology shows our atmosphere as dynamic with intense winds and moisture moving in river-like trails through the global skies.

“They can carry the equivalent of 10 times the average daily discharge of the St. Lawrence (River),” he says. He mentions the Pineapple Express as a North American example. Sandford then recites record floods from around the world in recent years all caused by spectacular rain events.

These rain events are rotating low pressure systems that hang over an area dragging in moisture from the south in large quantities. Almost as though one of the atmospheric rivers develops a temporary waterfall.

But rain floods are not the only impact of this phenomenon. The water held in these atmospheric rivers deprives regions of usual rainfall causing droughts that can end in a deluge.



Robert W. Sandford

He offers Russia in 2013 as an example where “the European jet stream caused by reduced snow and sea ice cover led to the creation of a heat dome in Northern Siberia. In July, hundreds of wildfires broke out that were so hot they melted the permafrost below the burning forests creating methane releases from the thawing tundra that added fuel to the fires.

“Then in early August, in the midst of what was coming to resemble a virtual fire storm, three atmospheric rivers collided over the region and within four days created a flood that covered a million square kilometres.”

Sandford points out that humans need time to adjust to the way our climate acts now and prepare for a future with amplified changes as the temperature continues to rise.

If we want children born at the beginning of this millennium to live comfortably on this planet, Sandford says the UN Intergovernmental Panel on Climate Change recommends we set new ecological restoration goals along with emissions cuts.

“Curbing greenhouse emissions will not be enough. In order to gain even partial rein over the hydrological cycle, we have to enlist all the help nature can provide us.” He insists that this means creating change right where we live and this gives us all power to act. What we do in our neighbourhood around our water resources matters.

If everyone protects, restores and respects the natural functions of our local ecosystems, we can influence the health of a whole watershed and therefore the way water behaves in it.