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Biodiversity for a Livable Climate

Restoring Ecosystems to Reverse Global Warming

March 15, 2017

Soaking up the Rain to Recharge Water Cycles

Rainwater harvesting can be a beautiful thing. The "Acqua Viva" hanging rainwater collection system by Mexican designer Araceli de la Parra consists of a series of sculptural "flowforms." Photo: inhabitat

The mainstream conversation on climate change is dry, brittle, and thirsty for answers. Dr. Michal Kravčík, the Slovakian hydrologist and climate expert, says the solution lies with rainwater - a critical missing link to restoring the broken land-based water cycles that are currently contributing to climate change.

We recently spoke with Dr. Kravčík and Jan Lambert, author of *Water, Land and Climate: The Critical Connection*, to discuss Kravčík's 2017 North American speaking tour on renewing water cycles.

A rainwater harvesting system on a farm in the Venice Lagoon. Photo: Marguerite Kahrl.

As they examine climate change, most writers in the media - and many climate activists - focus on the urgency of reducing fossil fuel emissions. But Kravčík and many fellow hydrologists see a different reason for why our storms, droughts, and floods are getting worse. They point to our severely damaged small water cycles.

Kravčík suggests a "new water paradigm," in which more rainwater is retained in local, small water cycles instead of draining into large bodies of water as it does now. He argues that moving toward this paradigm can induce a massive shift in the regulation of atmospheric temperatures. This may sound complicated, but the fundamental science is actually quite elementary.

Events

Restoring Wat er Cycles to Reverse Droughts, Floods and Global Warming

with Michal Kravčík, Author of *Water for the Recovery of the Climate: A New Water Paradigm*

Michal Kravčík argues that the "old water paradigm" of conventional rainwater management calls for wastefully draining precipitation, disrupting nature's small water cycles. Restoring local water cycles will reverse the large portion of climate change that is directly linked to excess drainage of all continents and the accompanying massive

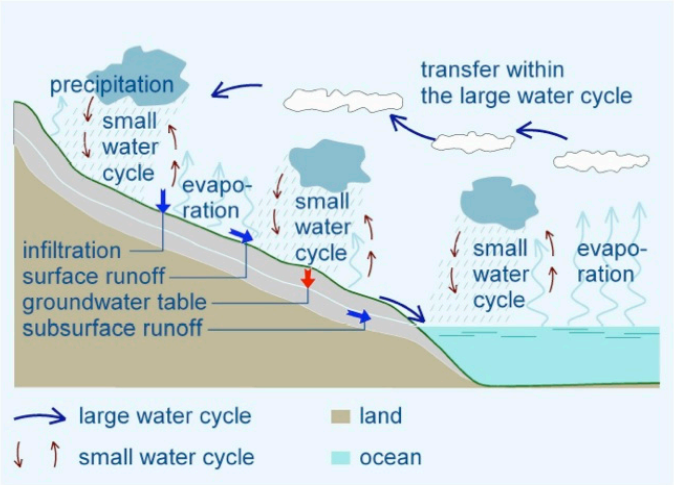

***Fig. 1* The large and small water cycles on land**

Photo: Our Food Future

In a healthy small water cycle, precipitation is captured in soils, vegetation and groundwater systems, transpired by plants, and evaporated back up to the atmosphere - where it again falls as precipitation over the same environment.

Human interference - in the form of industrial agriculture, extensive paving of roads, large drainage systems, etc. - has impaired the land's ability to retain precipitation. It now leaves the small water cycle as runoff and enters the large water cycle, moving over oceans and continents. That shift in water resources from the small to the large cycle is contributing to sea level rise and an increase of extreme precipitation events on land, including droughts and floods.

Jan Lambert comments, "It's assumed that water cycles are just there and humans have little or no impact - yet we have altered small water cycles enormously."

Those small water cycles have a crucial impact on local precipitation patterns, much greater than the large water cycle. The good news is that if we restore the small water cycle's ability to retain and recycle more rainwater locally, we can reduce extreme weather events and cool local climates.

generation of sensible heat.

When: Tuesday, March 28, 2017 at 5 PM

Where: Harvard University, Haller Hall, 24 Oxford Street.

Check out Voices of Water for Climate - Michal's organization webpage here for more information.

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Through education, policy and outreach, our mission is to promote the power of

A rain garden at Glencoe Elementary School in Portland, OR. Photo: WERF

Dr. Kravčík is not only a hydrologist, but also a land manager. He's collaborated on a number of landscape restoration projects in Slovakia, re-balancing local water cycles. Kravčík states that the single largest way that humans interfere in water cycles is conventional agriculture: depleted soils are unable to store rainwater, leading to massive amounts of surface runoff.

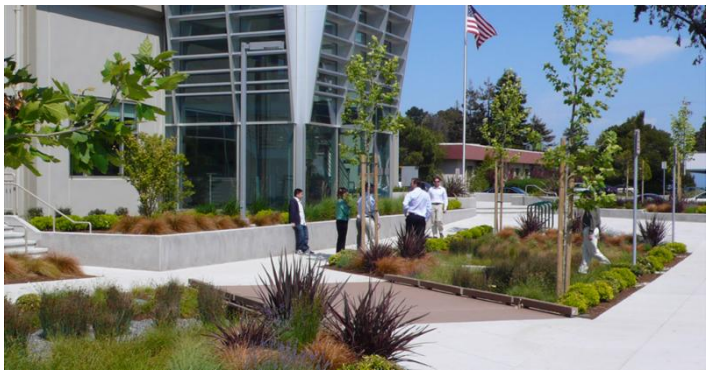
Meanwhile, in urban areas, rainwater is treated as a waste product rather than a resource.

Conventional techniques for managing stormwater typically divert rain into streams, rivers, and ultimately the ocean. Better approaches would repair the land's ability to absorb and store rain so it can replenish the small water cycle.

Kravčík believes that the work begins at the grassroots level: "The good news is that there are multiple ways to retain rainwater. It's a matter of getting people to understand that action can be taken on an individual level, as well as with international agreements."

the natural world to stabilize the climate and to restore biodiversity to ecosystems worldwide. Collaborating with organizations around the globe, we advocate for the restoration of soil, and of grassland, forest, wetland, coastal and ocean ecosystems - along with the associated carbon, water and nutrient cycles - to draw down excess atmospheric greenhouse gases, cool the biosphere, and reverse global warming, for the benefit of all people and all life on earth.

Learn more about our ongoing projects and upcoming events and find additional information and resources at bio4climate.org.



A retrofitted rain garden at Brisbane City Hall in Brisbane, CA. Photo: Urban Rain Design

One alternative to conventional rainwater management is the construction of rain gardens : bowl-shaped landscape designs that effectively retain rainwater in the soil and plants. Many farmers are learning how to utilize cover-cropping and no-till practices , or implement holistic grazing on grasslands to repair degraded soils. Regardless of scale, Kravčík's methods are cheap and accessible; any landowner can construct a water-retaining system.

Michal Kravčík will be speaking at several events around Boston from March 26 to 31, 2017. Learn more about his tour here and visit Voices of Water for Climate for more information.

-Jacqueline Sussman

Thinking Beyond Carbon

Photo: George King

Breaking down the science of Australian soil microbiologist, Walter Jehne, and others, farmer George King states in a recent post that we can reverse climate change by regenerating the planet's

soils and biosystems. He argues that not only can we affordably reverse damages to hydrological cycles - we can also produce more food in the process.