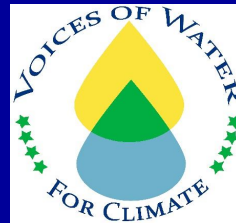


RAINWATER MANAGEMENT for SUSTAINABILITY

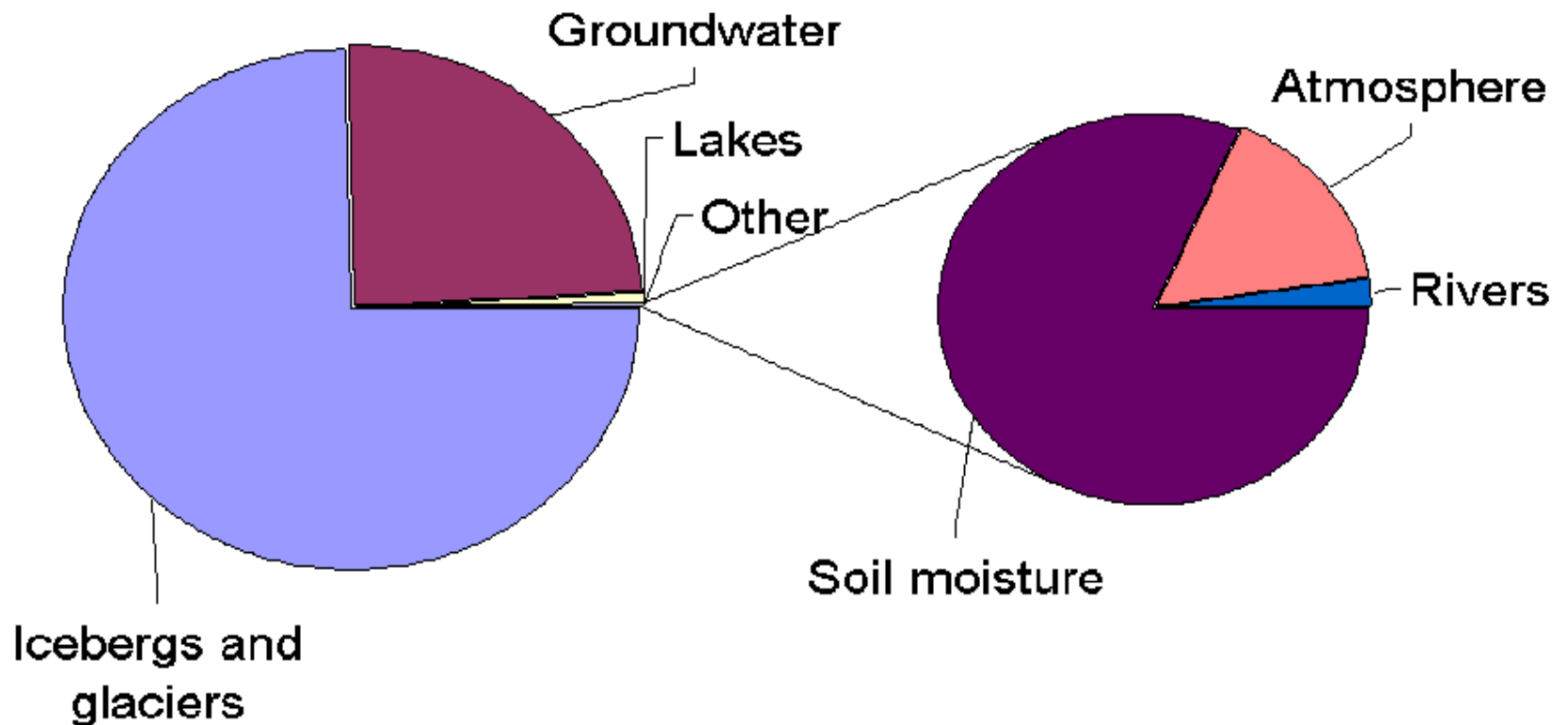
Michal Kravčík, Jan Lambert, Matt Maki
VOICES OF WATER FOR CLIMATE
CLAREMONT (NH, USA)



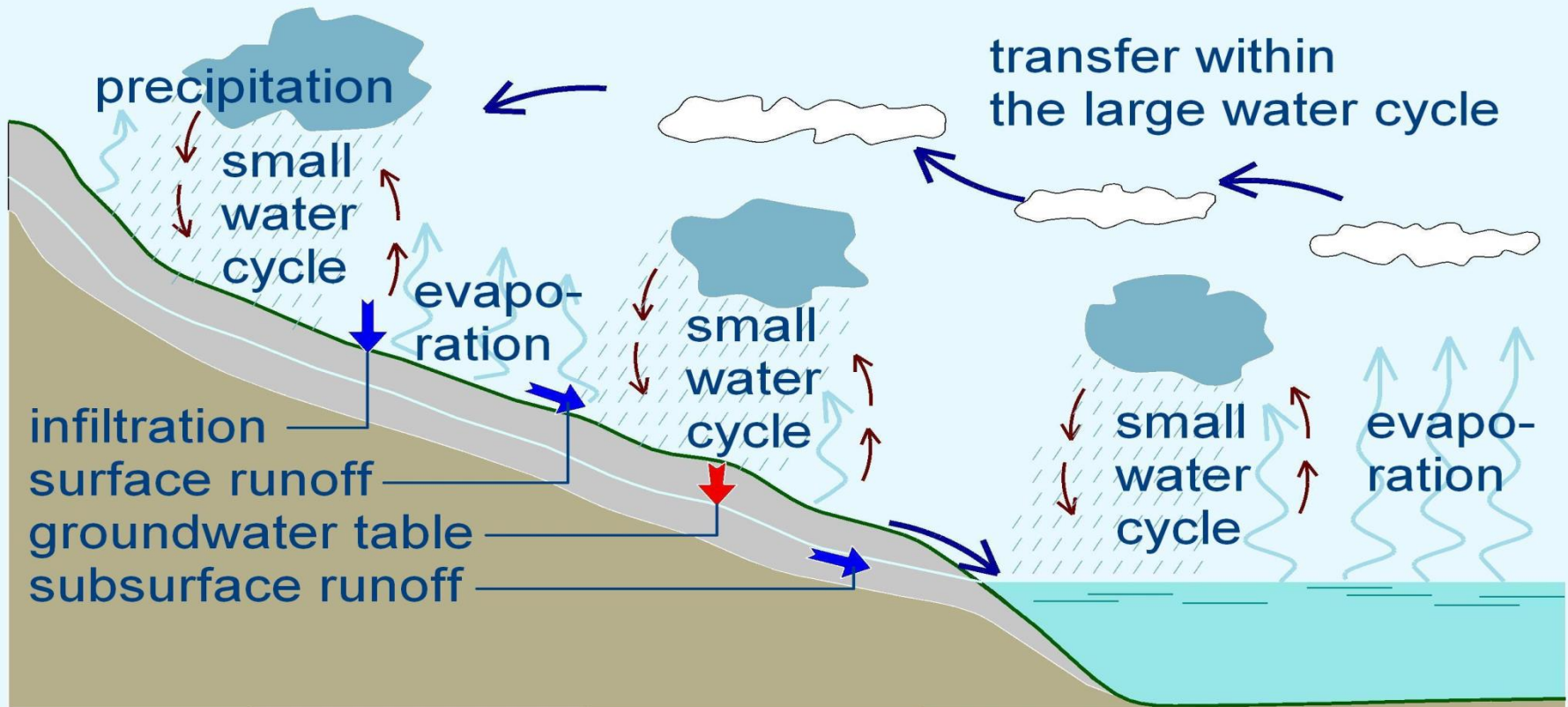
www.vow4climate.org

Montpelier, MARCH, 23TH 2017

FRESHWATER STOCKS ON EARTH



SOIL SEALING DESTROYS SMALL (short) WATER CYCLE(S) ON LAND

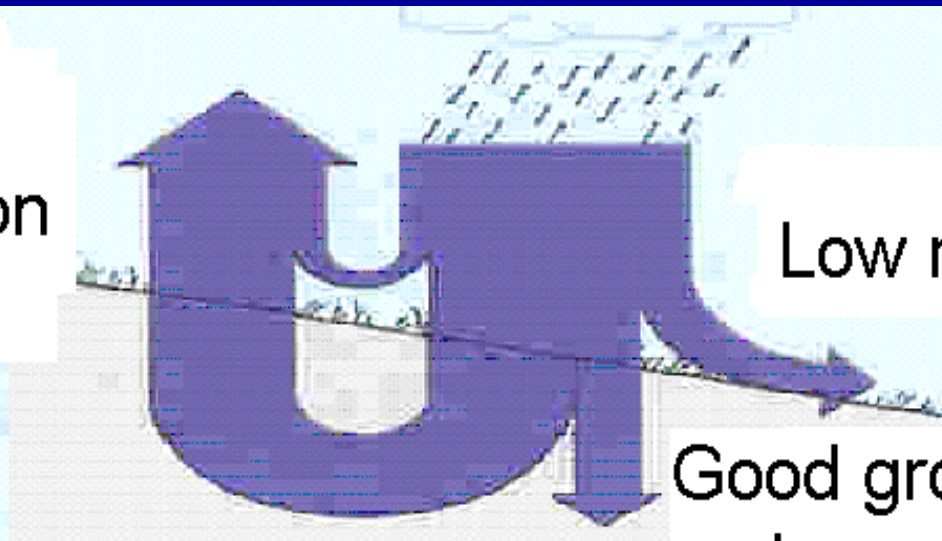


→ large water cycle
↓ ↑ small water cycle

land
ocean

NEW WATER PARADIGM MANAGEMENT

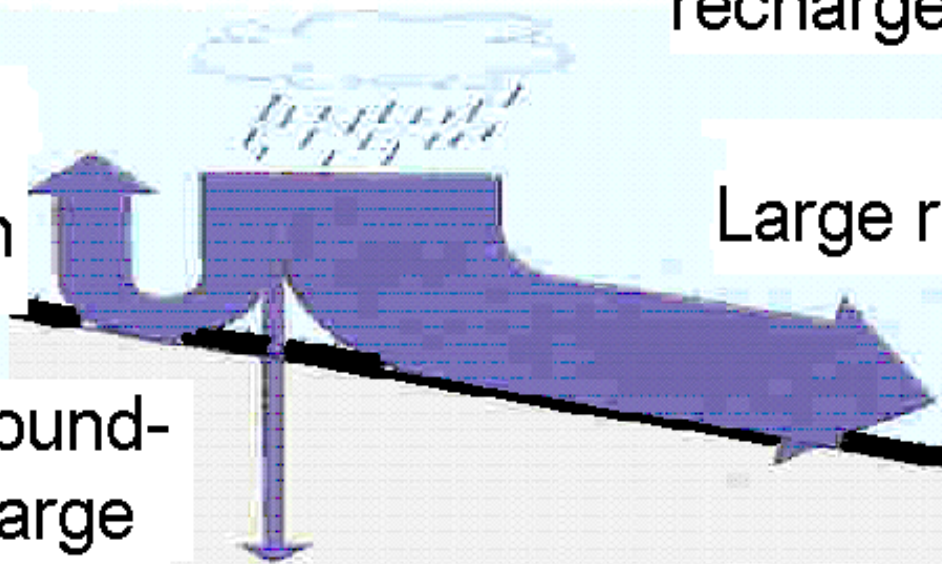
High evaporation



Low run-off

Good groundwater recharge

Decreased evaporation



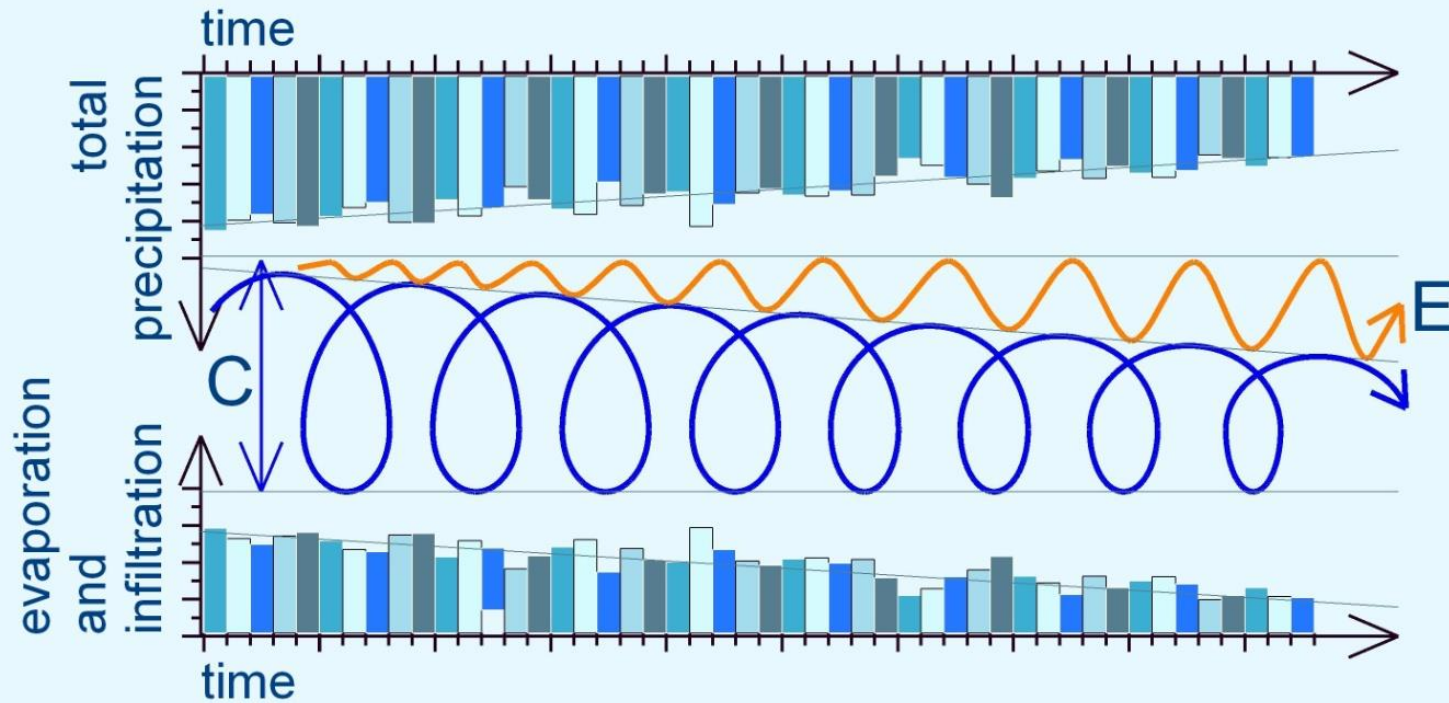
Large run-off

Minimal ground-water recharge



SOLUTIONS FOR OLD WATER PARADIGM

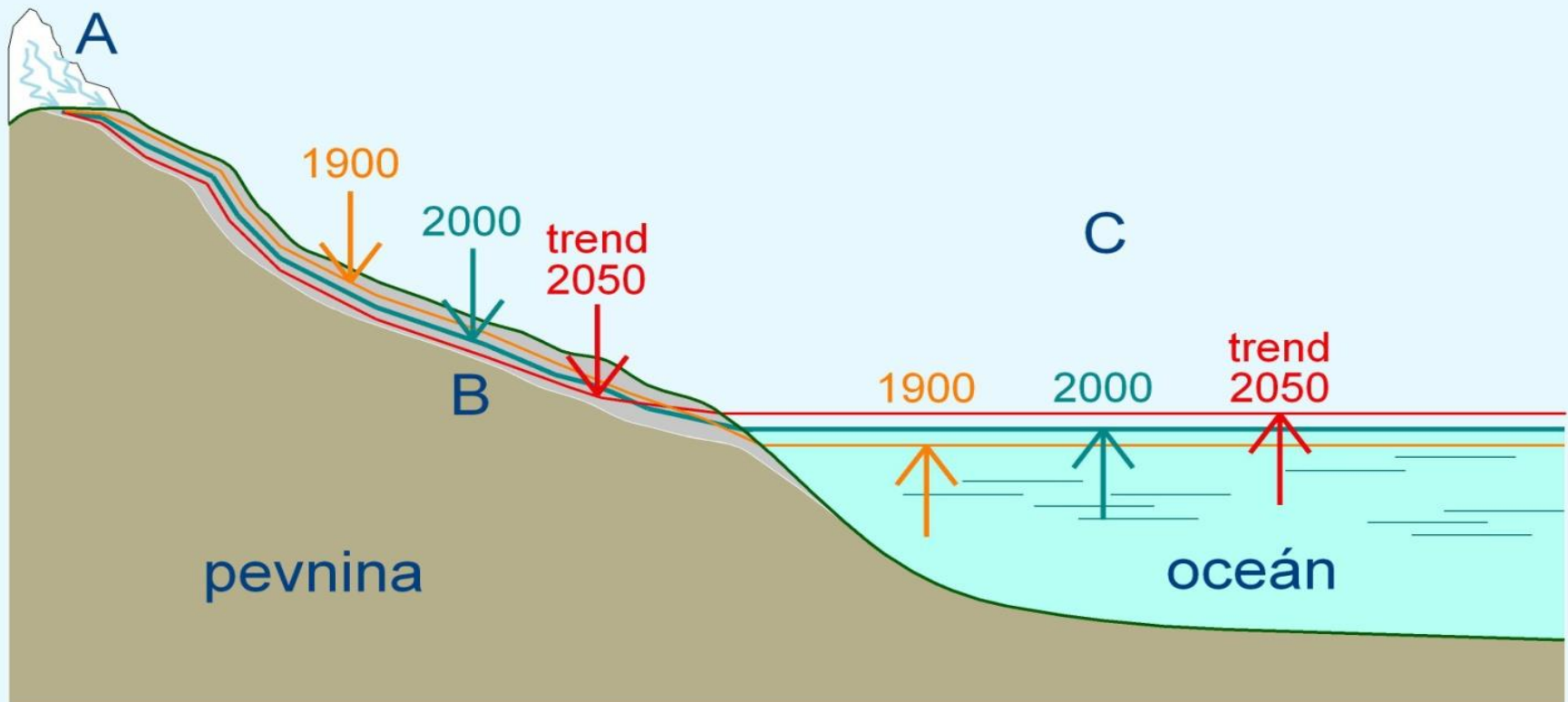
GROWTH OF EXTREME WEATHER WITH DECLINE OF SMALL WATER CYCLE



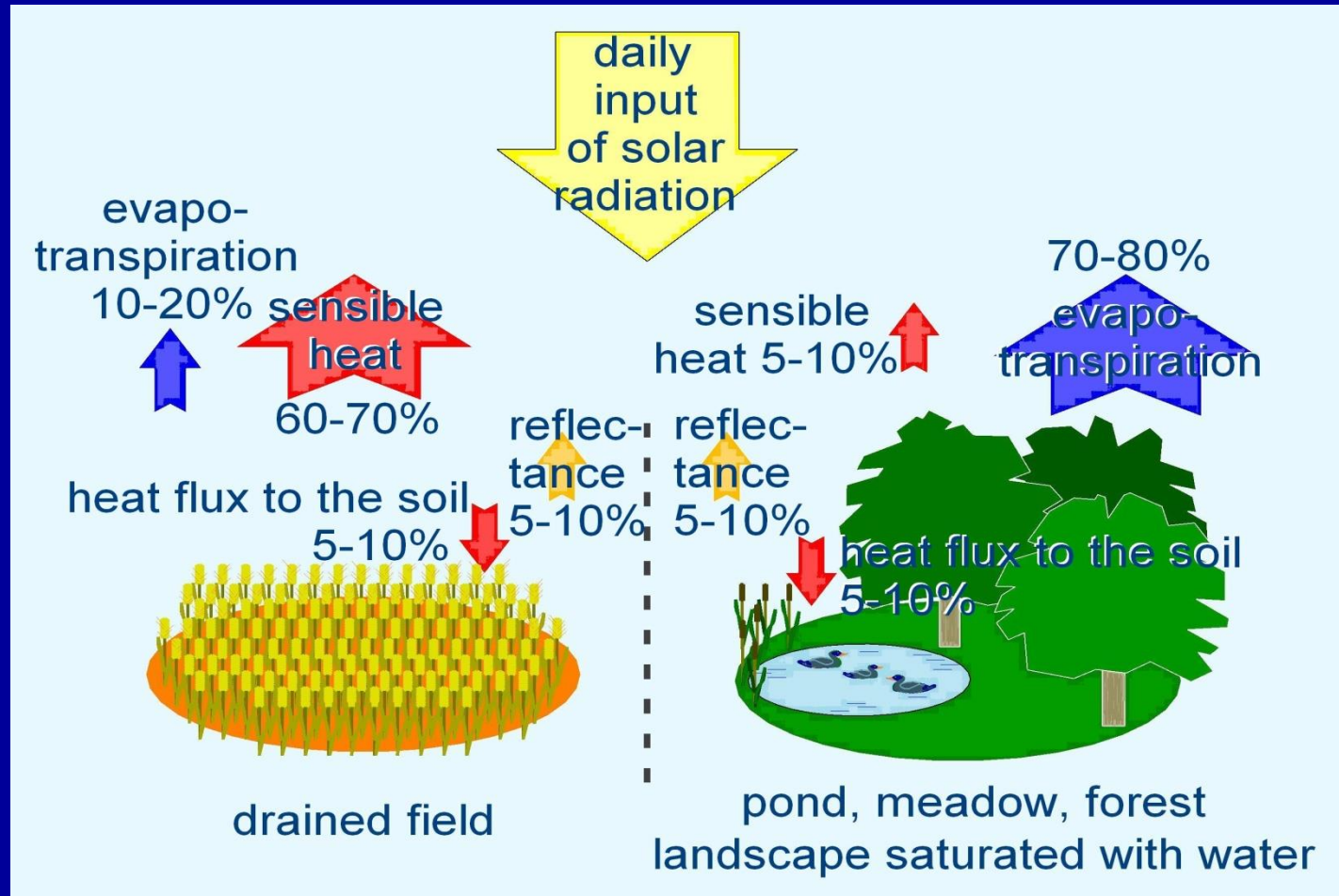
C - diagram of the circulation of water on land

E - diagram of extreme weather events

SEA LEVEL RISE FROM DRYING OF CONTINENTS



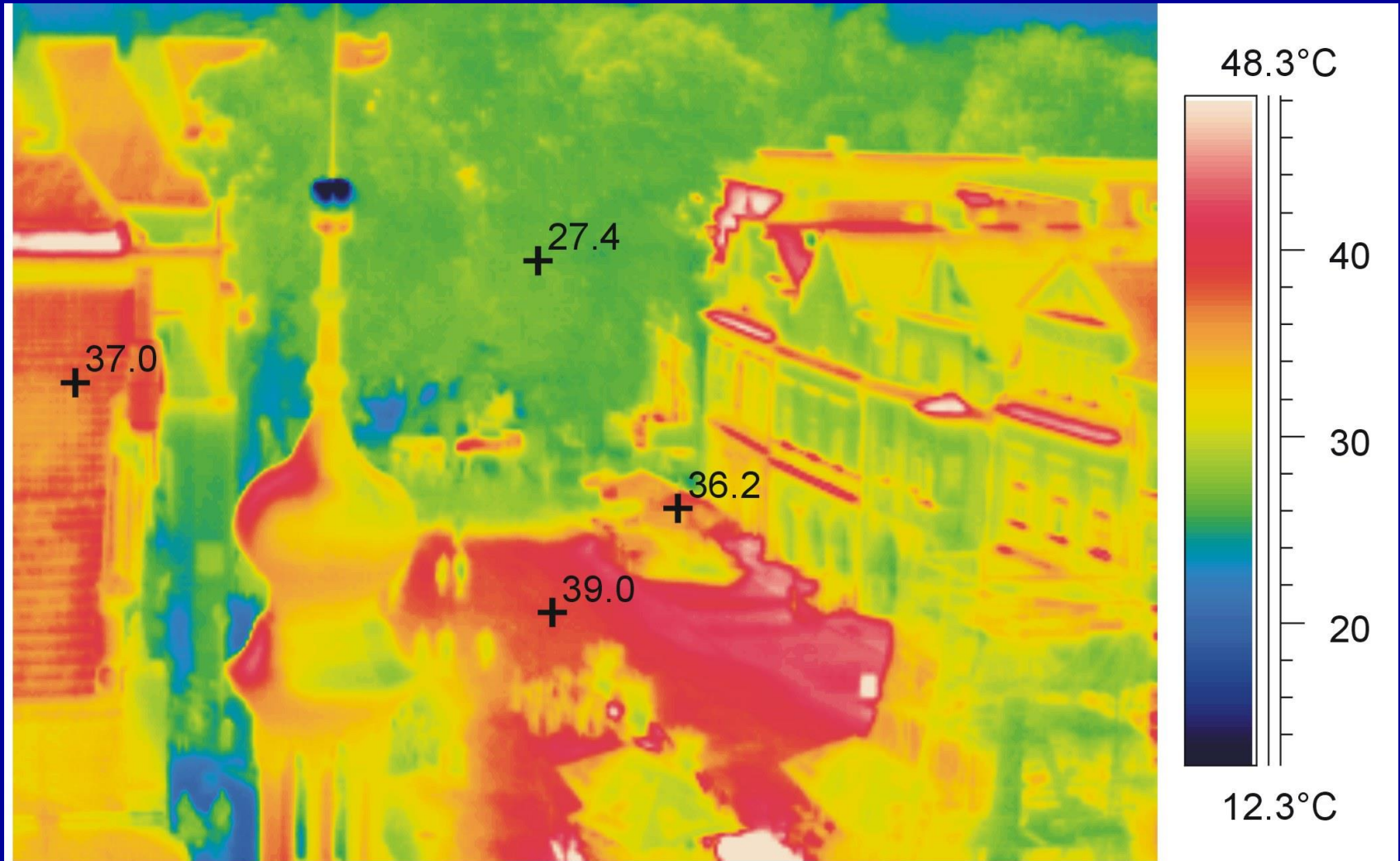
DISTRIBUTION OF SOLAR ENERGY



Dry land: Most solar energy is changed into *sensible heat*,

Wet land: Most solar energy is consumed on vapor water from landscape

INFRARED PHOTO-Sunny day – high surface temperature of roofs, pavements, low temperature of trees

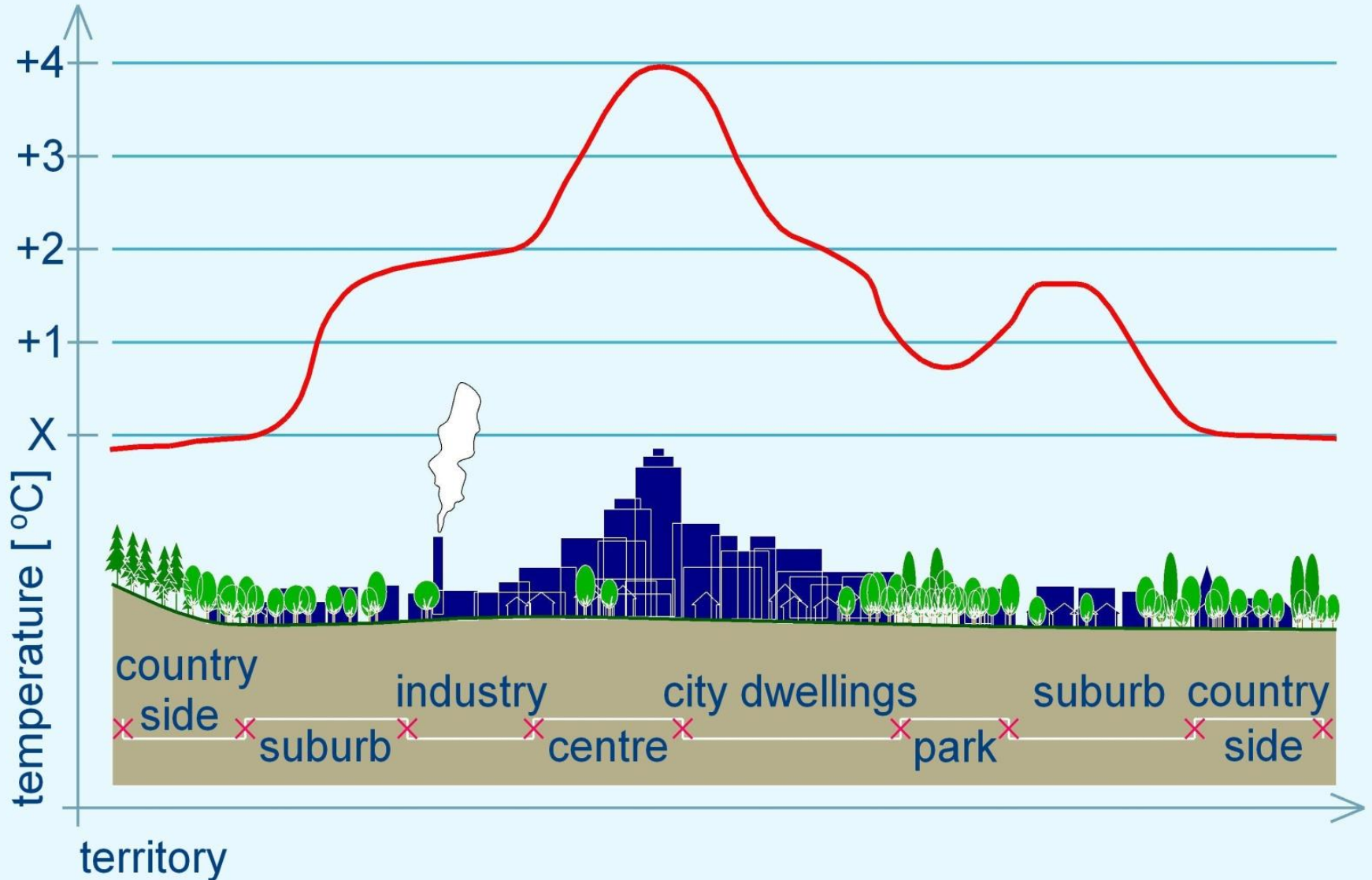




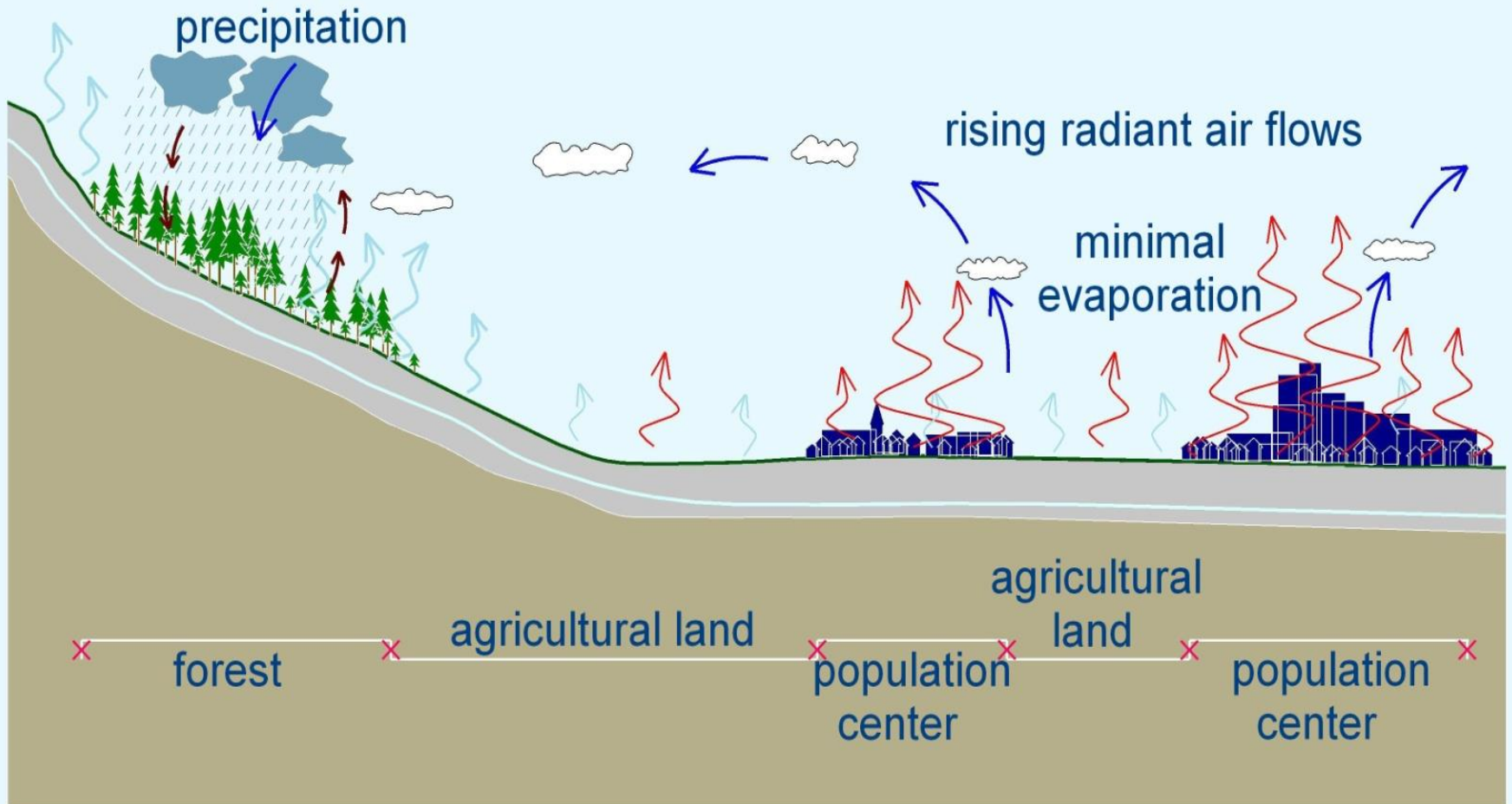
SOME FACTS

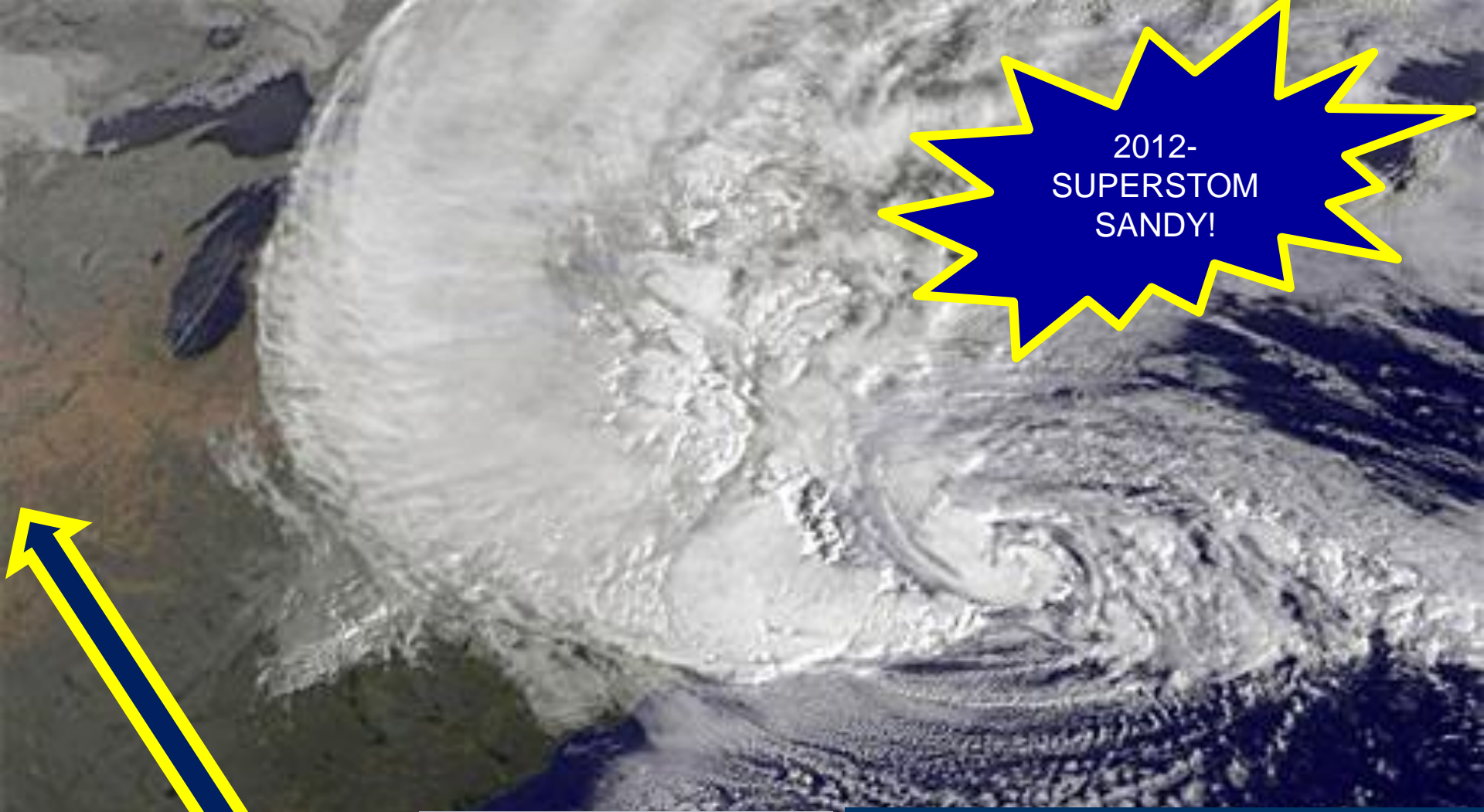
- **CO₂ - basic component of photosynthesis**
- **Decrease of 700 kW of sensible heat in the atmosphere per 1m³ of evaporated water = temperature decrease of 80 000 m³ air for 1°C**
- **High differences in temperatures between forest and urban areas**

HOT CLIMATIC UMBRELLA OF A CITY



IMPACTS ON WEATHER / CLIMATE





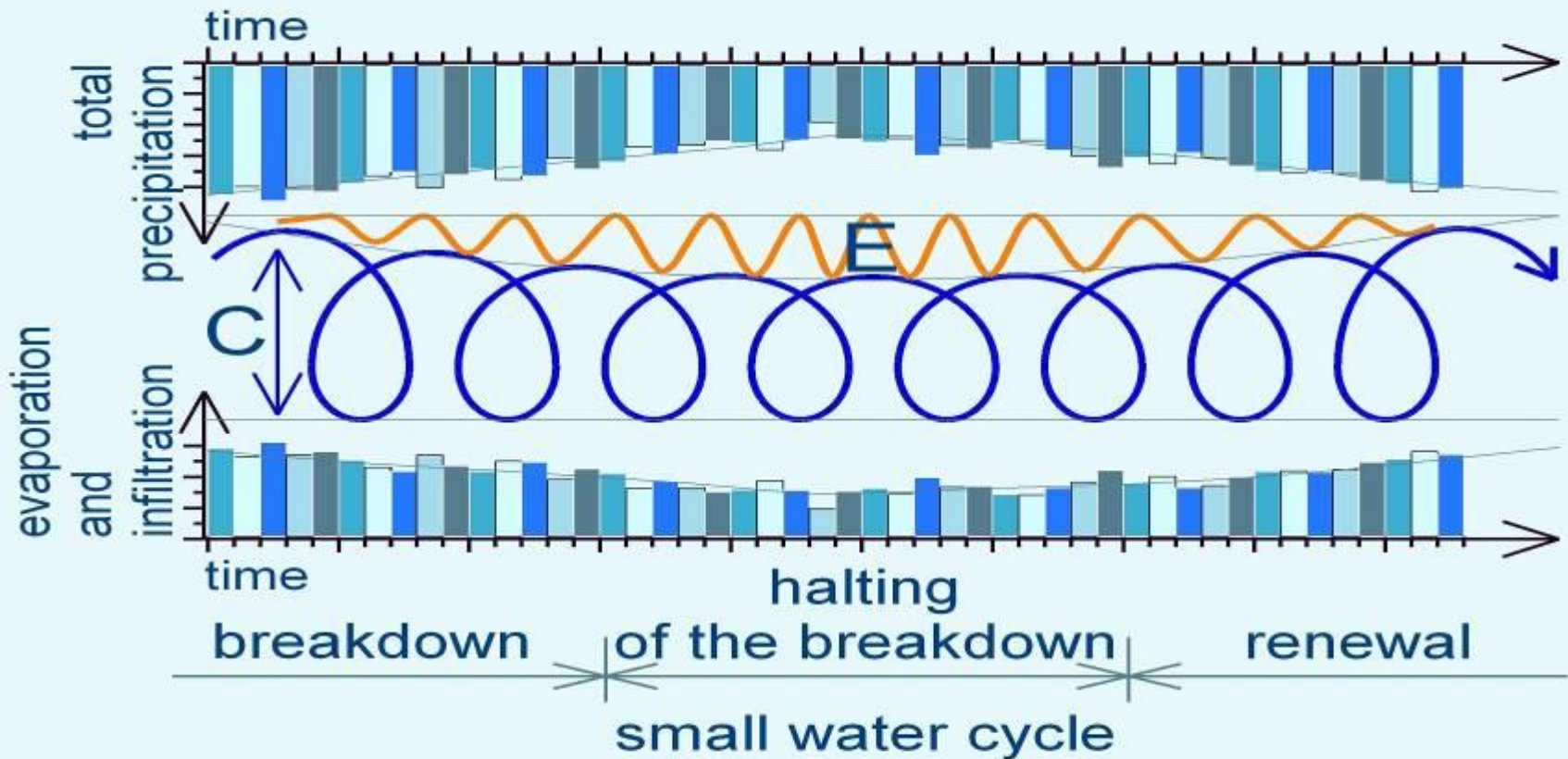
2012-
SUPERSTOM
SANDY!

South Dakota
July, 2012



Superstorms...can be traced to the production of sensible heat in dried out areas of the country's interior

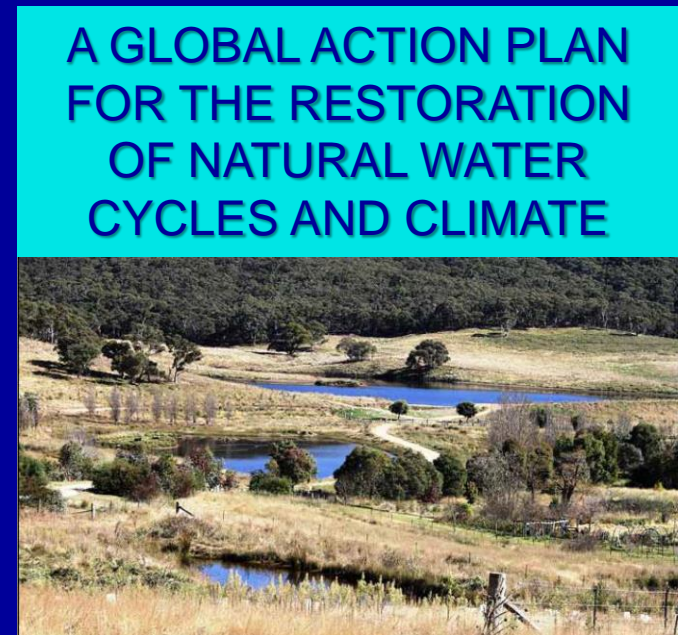
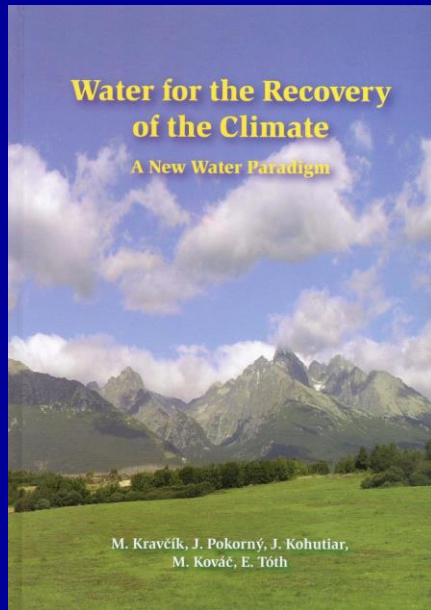
DESTRUCTION AND RENEWAL OF SHORT WATER CYCLE



- C** - diagram of the circulation of water on land
- E** - diagram of extreme weather events

Water for the Recovery of the Climate

A New Water Paradigm



Scientific publishing

- A substantial role of water in the climate system of the earth (to the UN Climate Change Conference in Copenhagen on 7 - 18 December 2009)
- Košice Civic Protocol on Water, Vegetation and Climate Change (2009)
- International Journal of Water (IJW, vol. 5, issue 4, 2010), Special Issue on Water and the Complexities of Climate

Old water paradigm

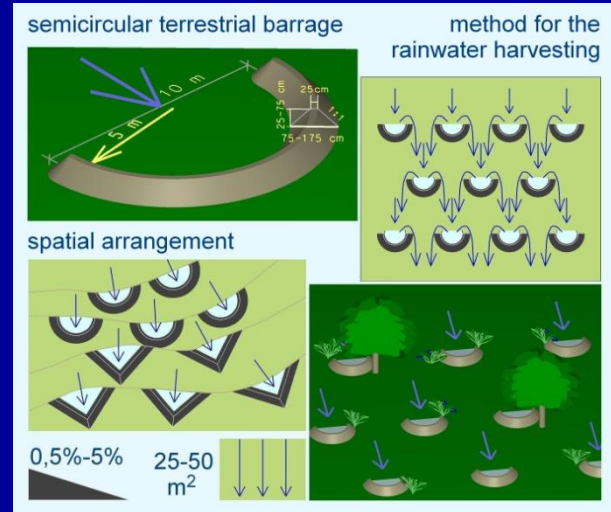
- **rainwater is an inconvenience, needs to be quickly removed**

New water paradigm

- **rainwater is an asset that needs to be retained (especially in soil/plants)**

www.waterparadigm.org

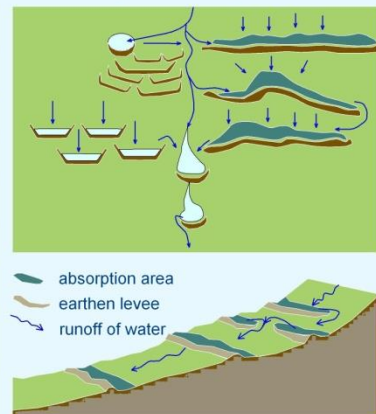
Rainwater harvesting principles



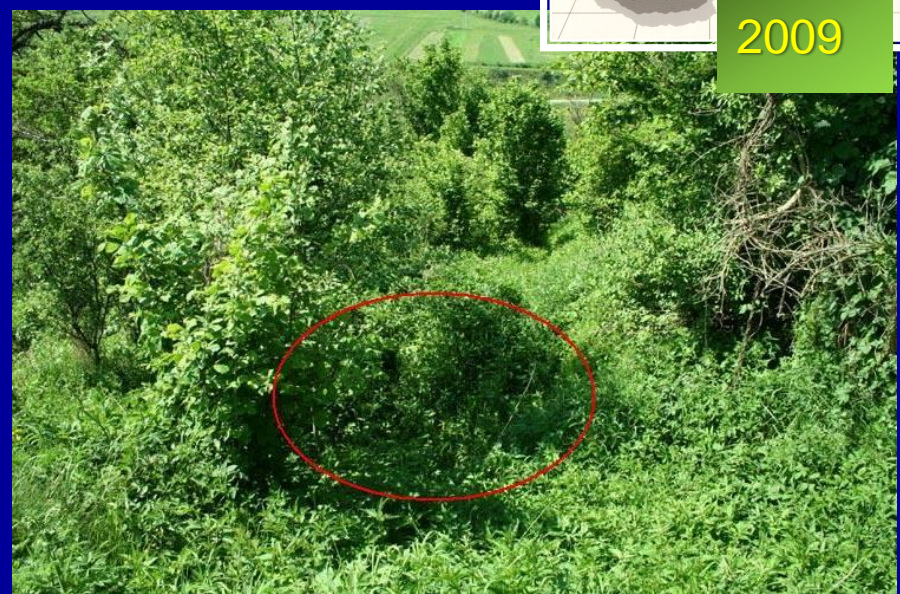
Microstructures for the rainwater harvesting on land

- Contoured barrages
- Terraces
- Eyebrow terraces
- Pits
- Vallerani-type microcatchments
- Semicircular bunds
- Triangular bunds
- Meskat
- Negarim

Combination of different rainwater harvesting technologies

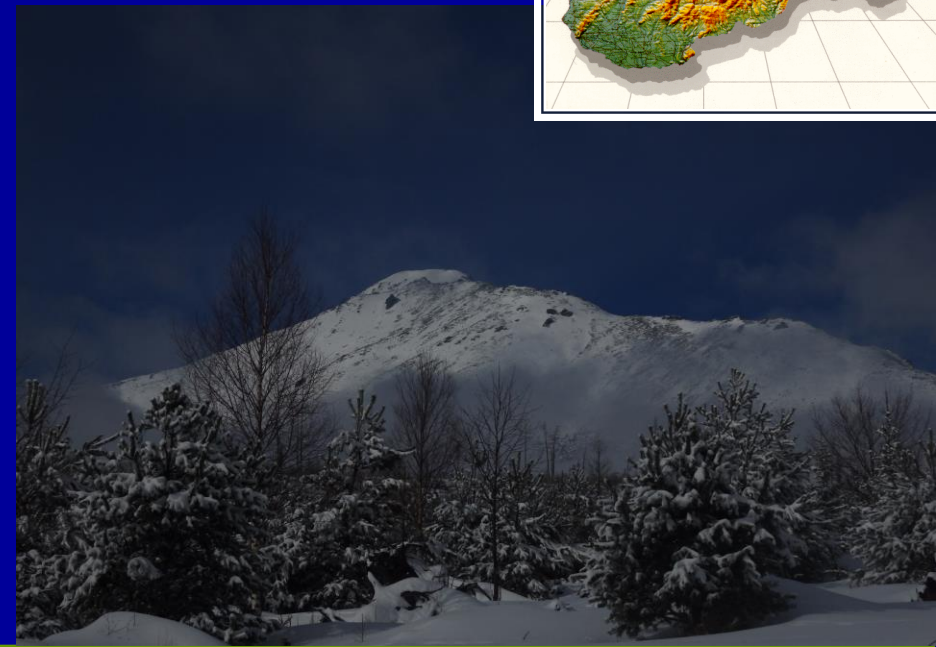
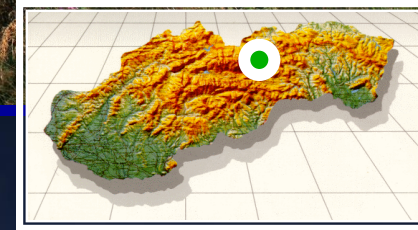


BLUE ALTERNATIVE Tichý Potok, 1995



RESTORATION OF WATER SOURCES IN URBAN ZONE KOSICE





WATER FOREST IN HIGH NATIONAL PARK 2005-2009-2015-2017

2012

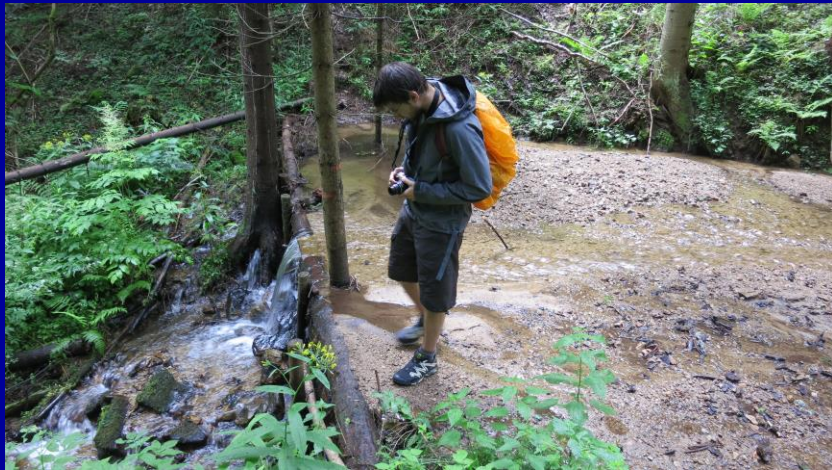
Documentation of the
Landscape Revitalisation
Program Implementation

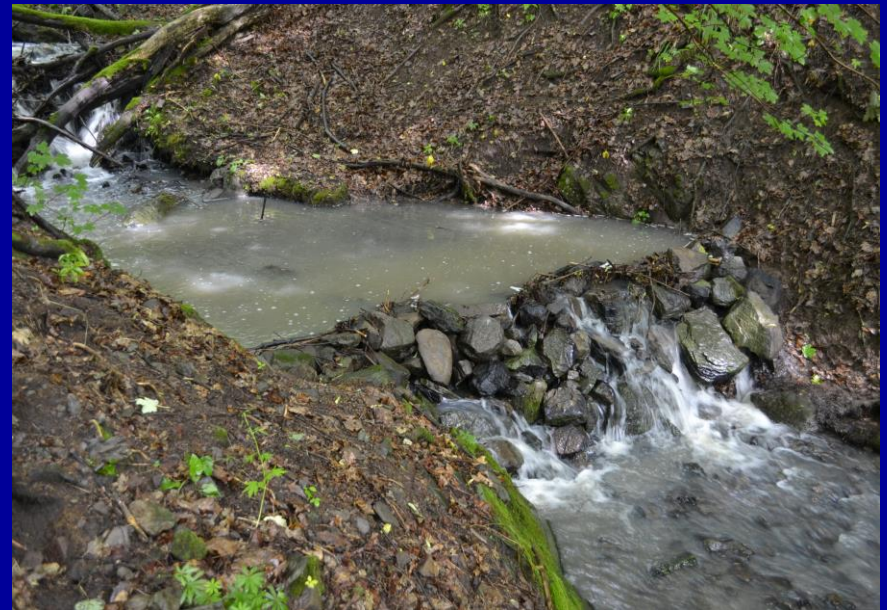
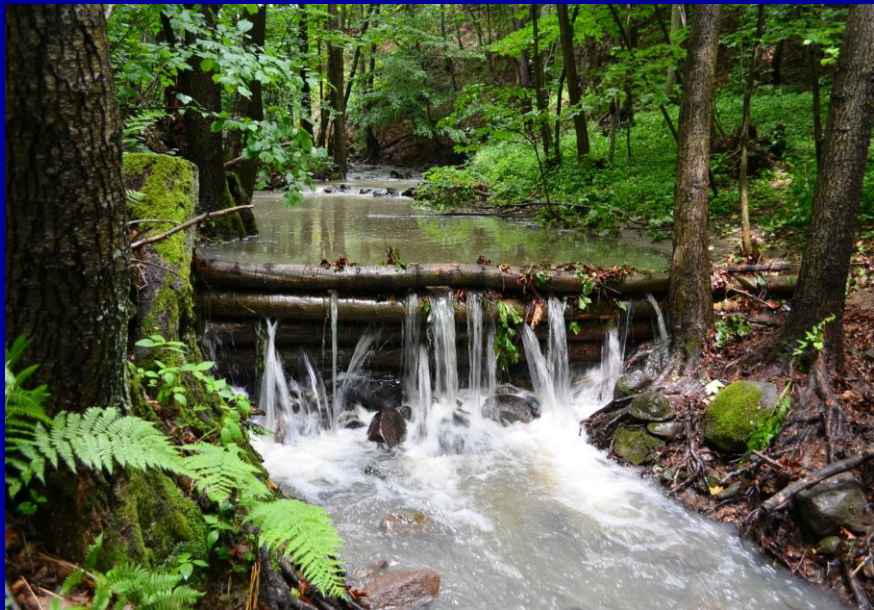


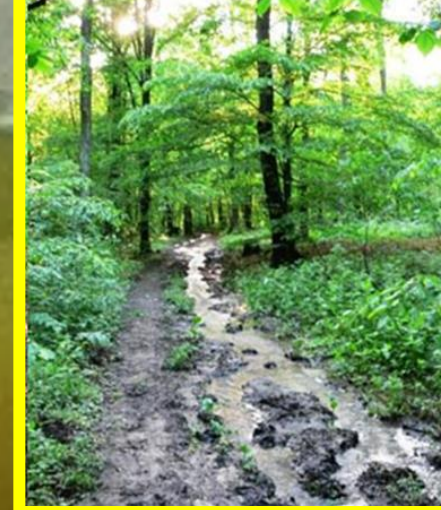
MICHAL KRAVČÍK A KOLEKTÍV

Po nás púšť a potopa?

After us, the desert and the deluge?







**What
do we
need?**

**What
do we
need?**

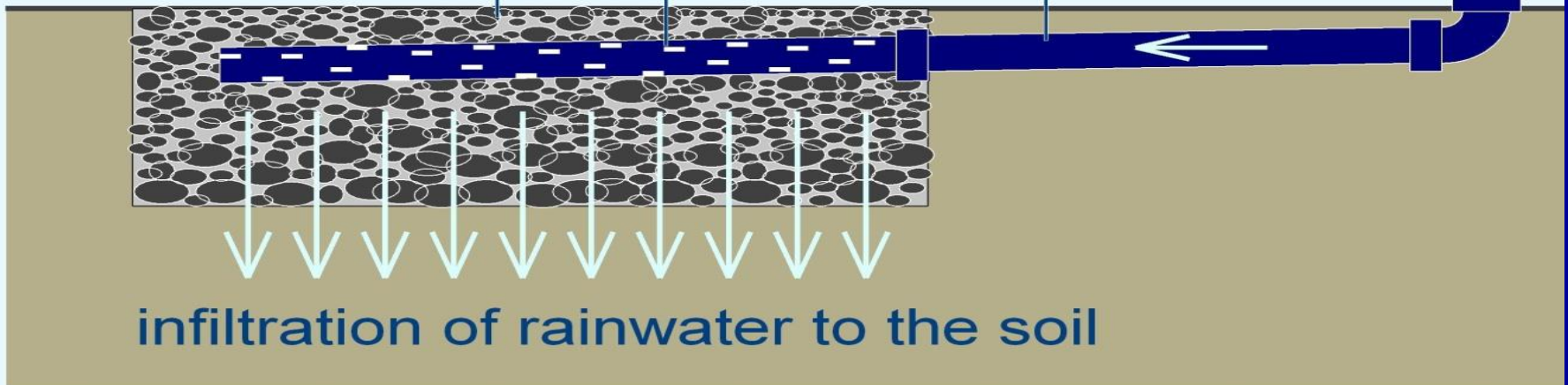
RAINWATER HARVESTING FROM ROOFS IN CITIES

drainage of rainwater from roofs

non-perforated pipe

perforated pipe

gravel sink



infiltration of rainwater to the soil



MASSIVE CONSERVING OF RAINWATER

Advantages:

- **enhances water sources**
- **anti-flood & anti-erosion protection**
- **moderates climate**
- **biodiversity**
- **cheap, simple, effective**

Global Action Plan(GAP) is available online at bio4climate. org

A GLOBAL ACTION PLAN FOR THE RESTORATION OF NATURAL WATER CYCLES AND CLIMATE

Michal Kravčík and Jan Lambert
Slovakia and U.S.A.

*A global plan of climate restoration of the **small water cycle**¹ of regional landscapes, with a goal of decreasing floods, drought, natural disasters, and other undesirable climate changes, and increasing the biodiversity and production potential of all continents, through the introduction of various measures of rainwater retention suitable for all areas of human habitation and usage.*



The Mulloon Institute in New South Wales, Australia is committed to developing the knowledge and practical experience required to advance regenerative land and water management techniques, including but not limited to permaculture techniques for soil hydration and natural sequence farming, and rural landscape management techniques aimed at restoring natural water cycles that allow the land to flourish despite drought conditions. See <http://themullooninstitute.org/> and <http://www.nsfarming.com/>.

¹ see Definition of Terms, Appendix

Water, Land and Climate --The Critical Connection

How We Can Rehydrate Landscapes Locally To Renew Climates Globally

Water plays a critical role in restoring a livable climate.

A New Water Paradigm is emerging to help us restore landscapes naturally, so we no longer wastefully "drain the rain" but instead "retain the rain" with water catchments, soil, plants and animals.

The result?

We can renew our climates through local action, by allowing rainwater to soak into the soil to restore local land-based water cycles. We can also expect reduced flooding and pollution, renewed springs and streams, more drinking water, more food, less poverty and conflict, and improved wildlife habitat.

There is nothing to lose and everything to gain!



Jan Lambert

With contributors from around the world

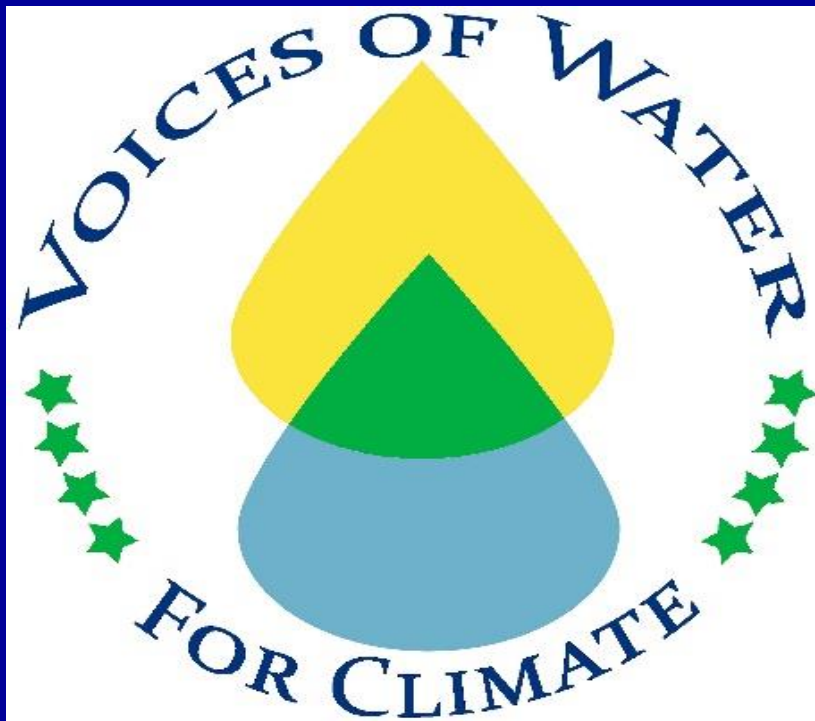


A GLOBAL ACTION PLAN FOR THE RESTORATION OF NATURAL WATER CYCLES AND CLIMATE

is included in:

***Water and Climate
-The Critical Connection:
Edited by Jan
Lambert***

www.valleygreenjournal.com



**UNITED STATES
ACTION PLAN
(USAP) FOR THE
RESTORATION
OF NATURAL
WATER CYCLES
AND CLIMATE**

www.vow4climate.org