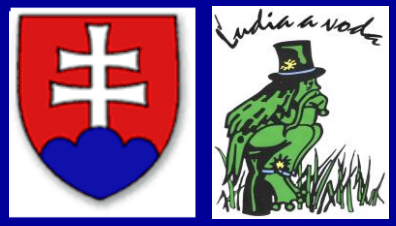
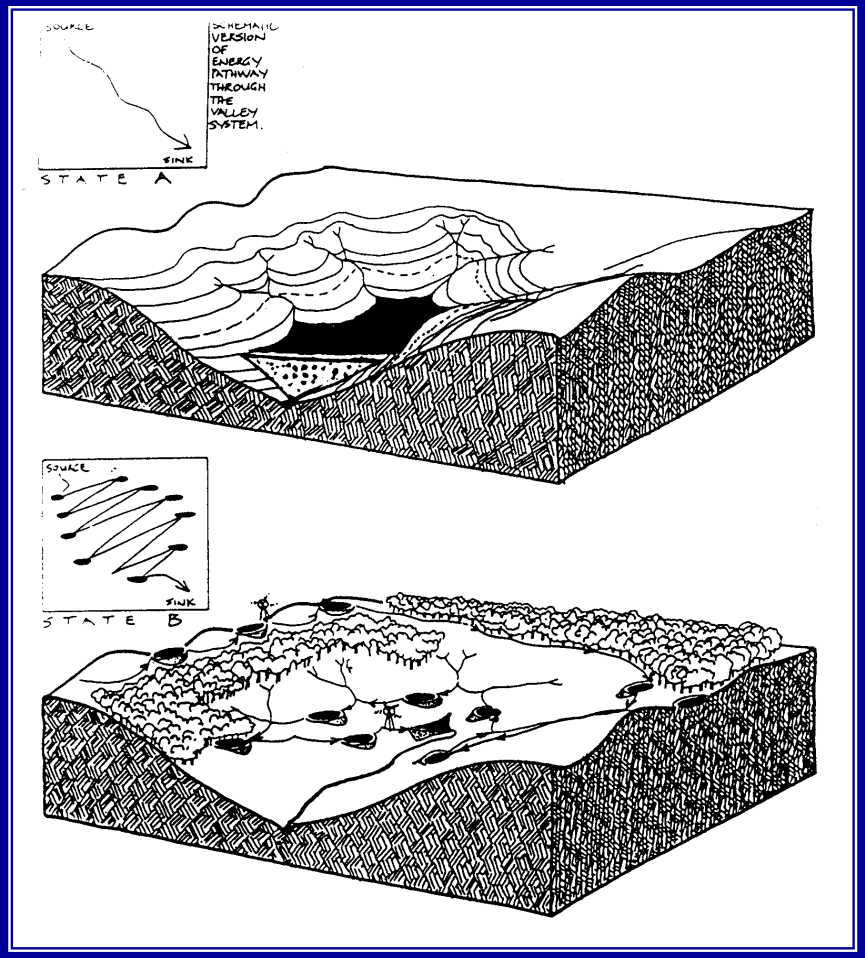
WATER FOR RECOVERY OF THE CLIMATE

Michal Kravčík
NGO „People and Water“ Slovakia



Bio4Climate, March 17th, 2021

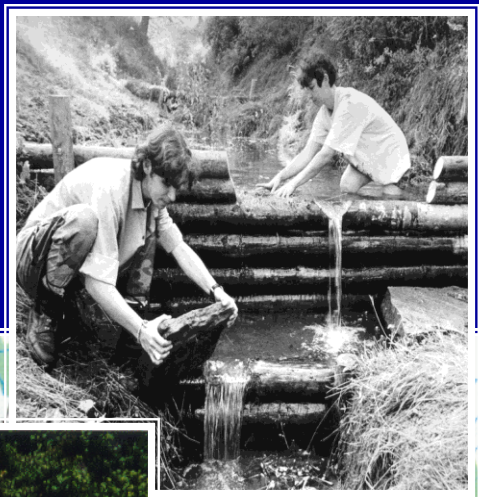
Central economic policy versus sustainable community solutions

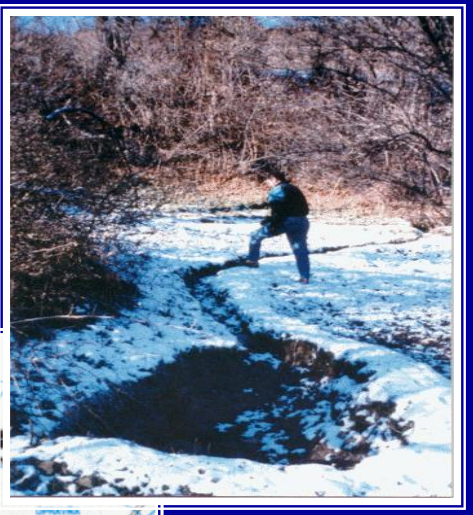


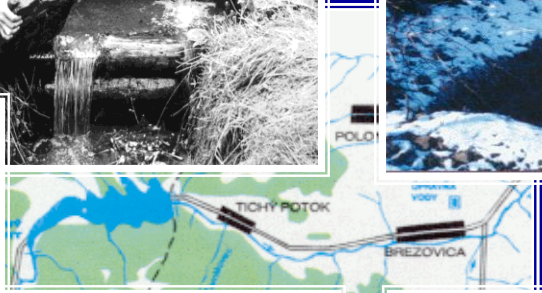
You must to accept,dear colleague,
that you can quench your thirst
better with one big glass than
with hundrerds of small glasses!

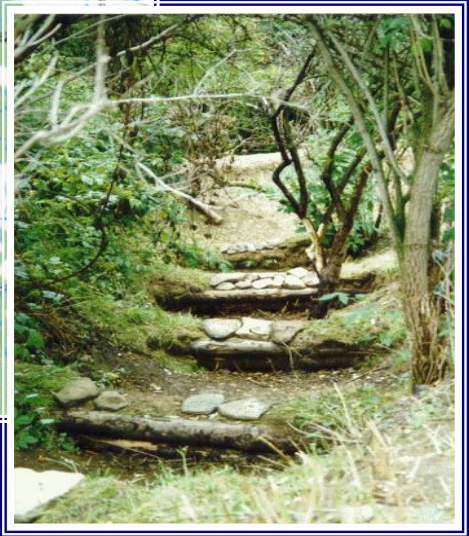
Community participation

Blue Alternative on Upper Torysa Region, how to save water in local Ecosystems with Community

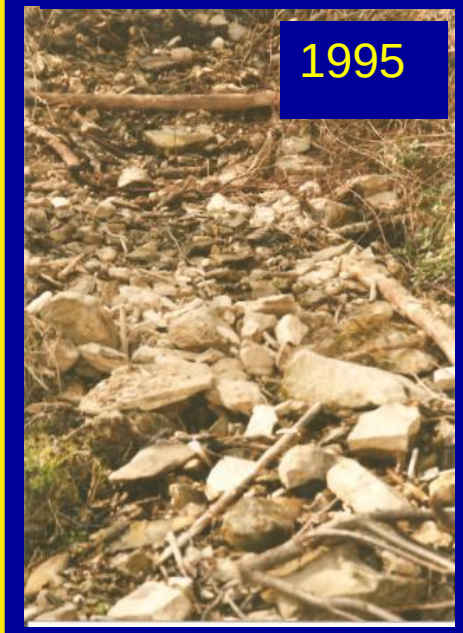


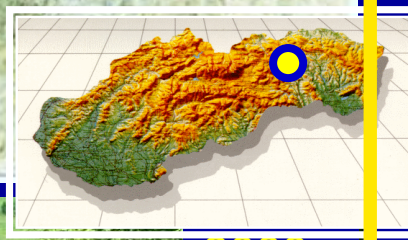






Blue Alternative (People and Water, 1995)





What we inherited ?


Chaotic system
in the atmosphere produced
by drying of lands

Agricultural lands drying by roads !

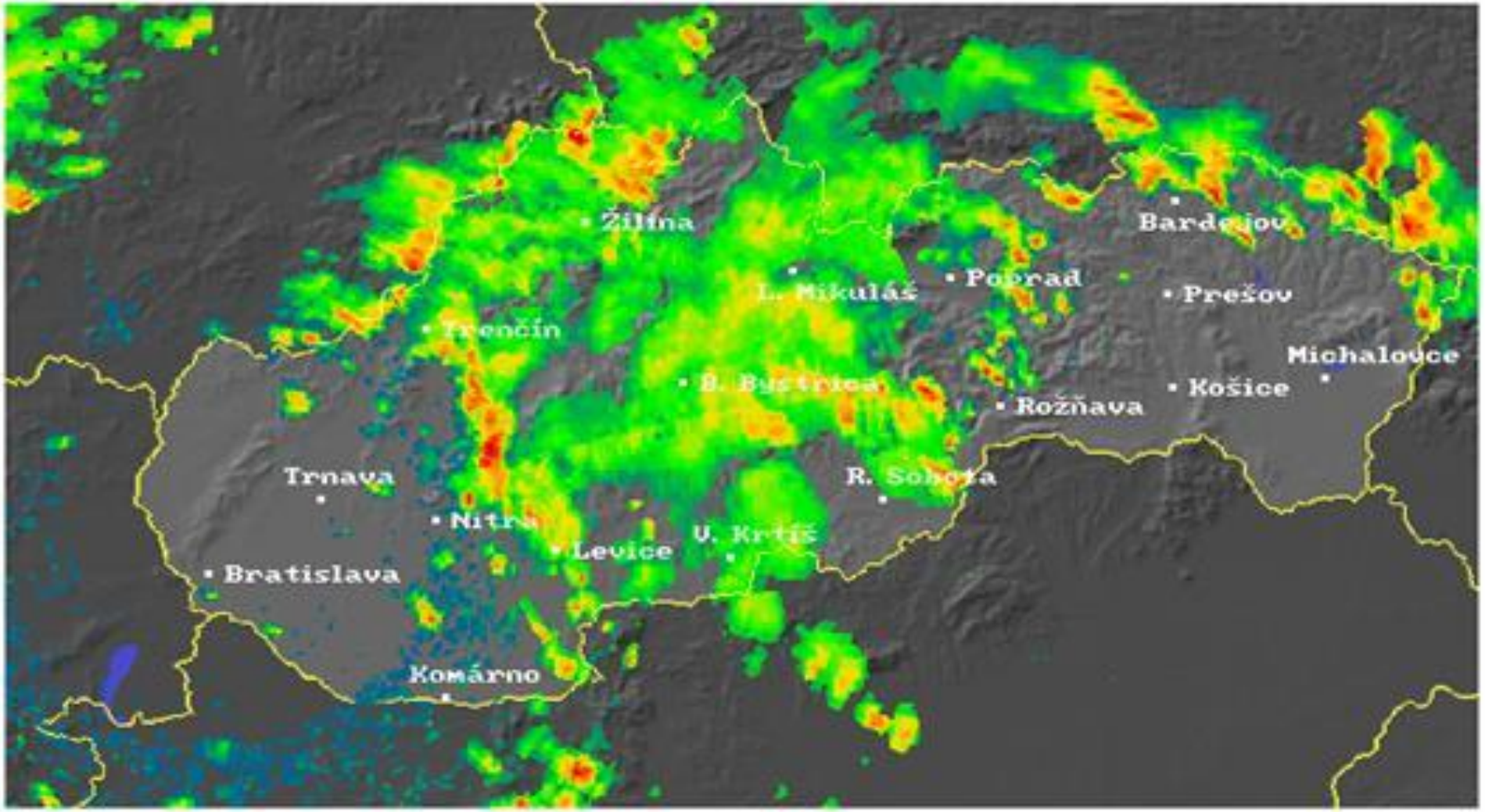

Agricultural lands drying by bad managemenent !


Forest lands drying by roads !

Lands drying in streams and rivers !

Draying of land by soil sealing in communities

Drying lands by roads



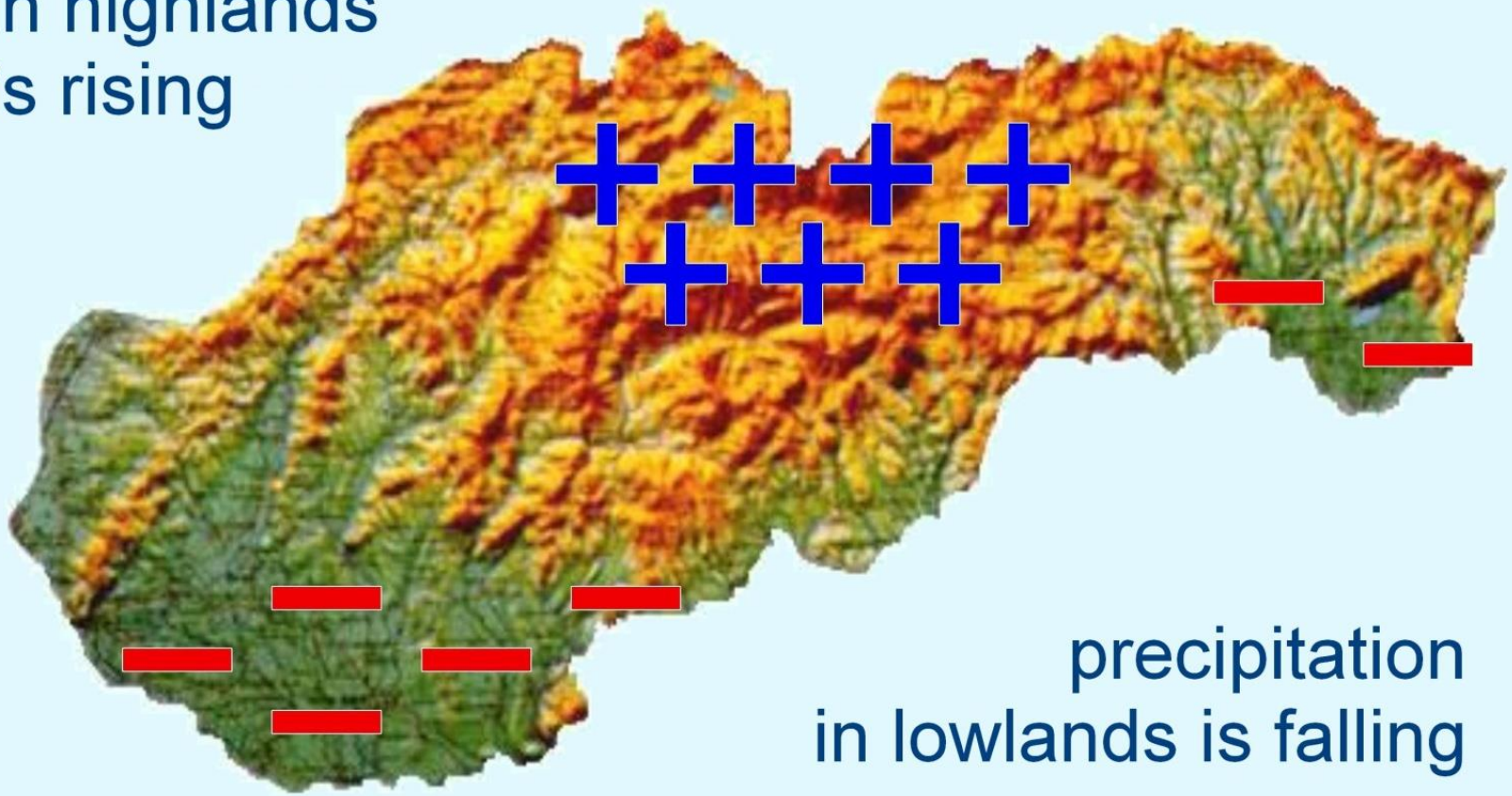
29. 6.2009 12:00 UTC

Zlúčená RL mapa - Z: CAPPI 2km

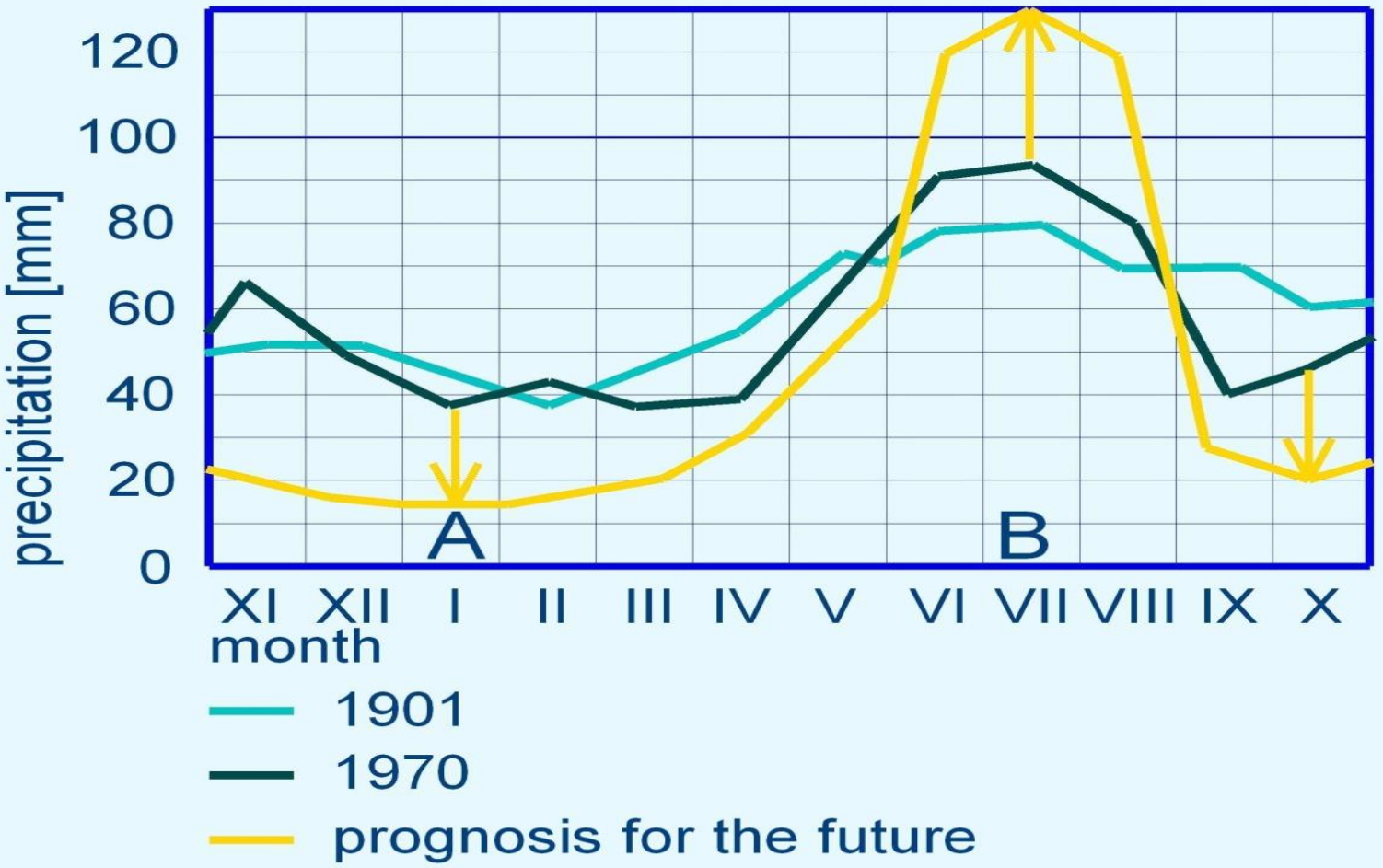
-20 -10 0 10 20 30 40 50 60 70 [dBZ]

0,02 0,1 0.3 1.3 5.6 24 100 400 [mm/h]

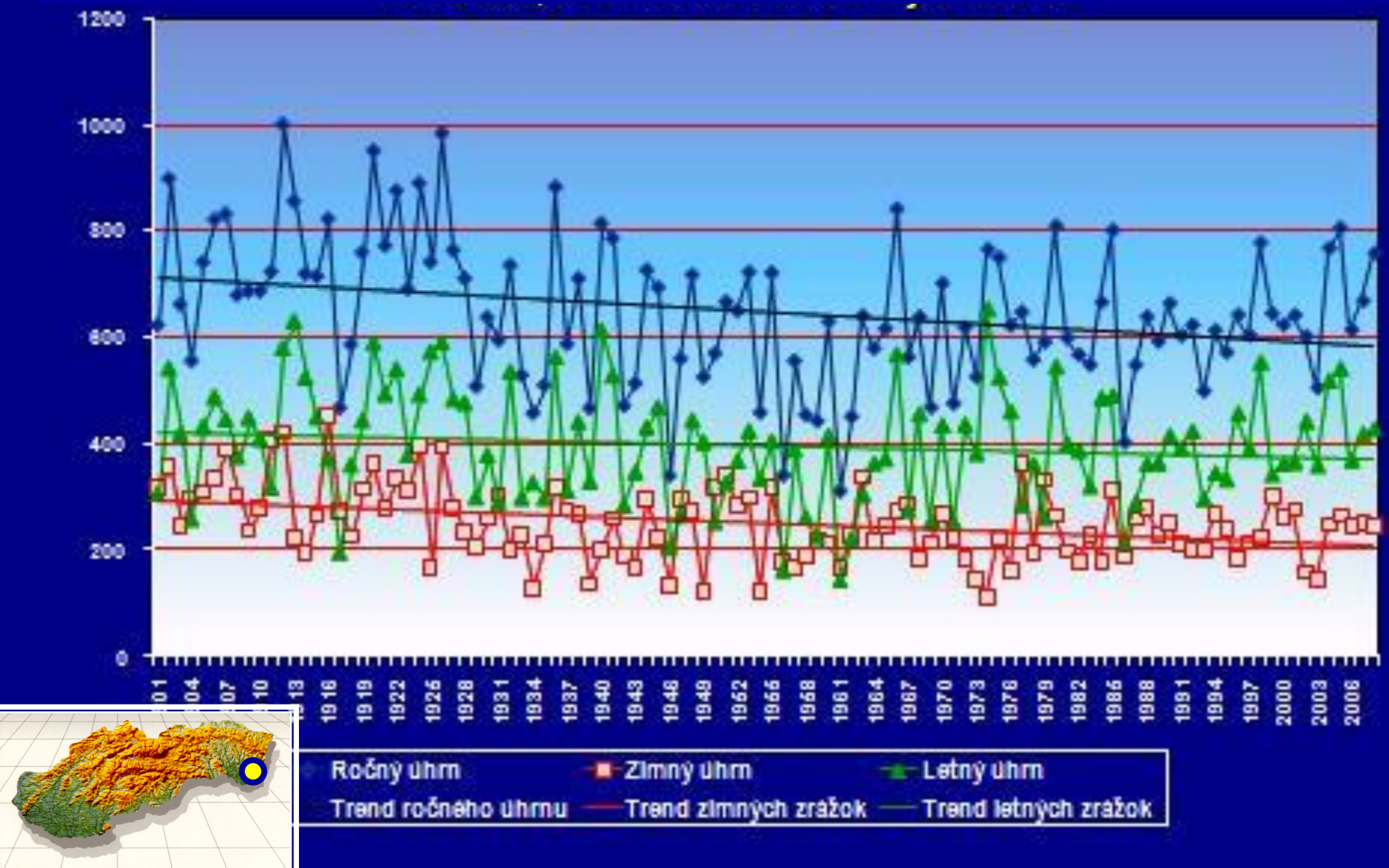
Space change the rain in Slovakia



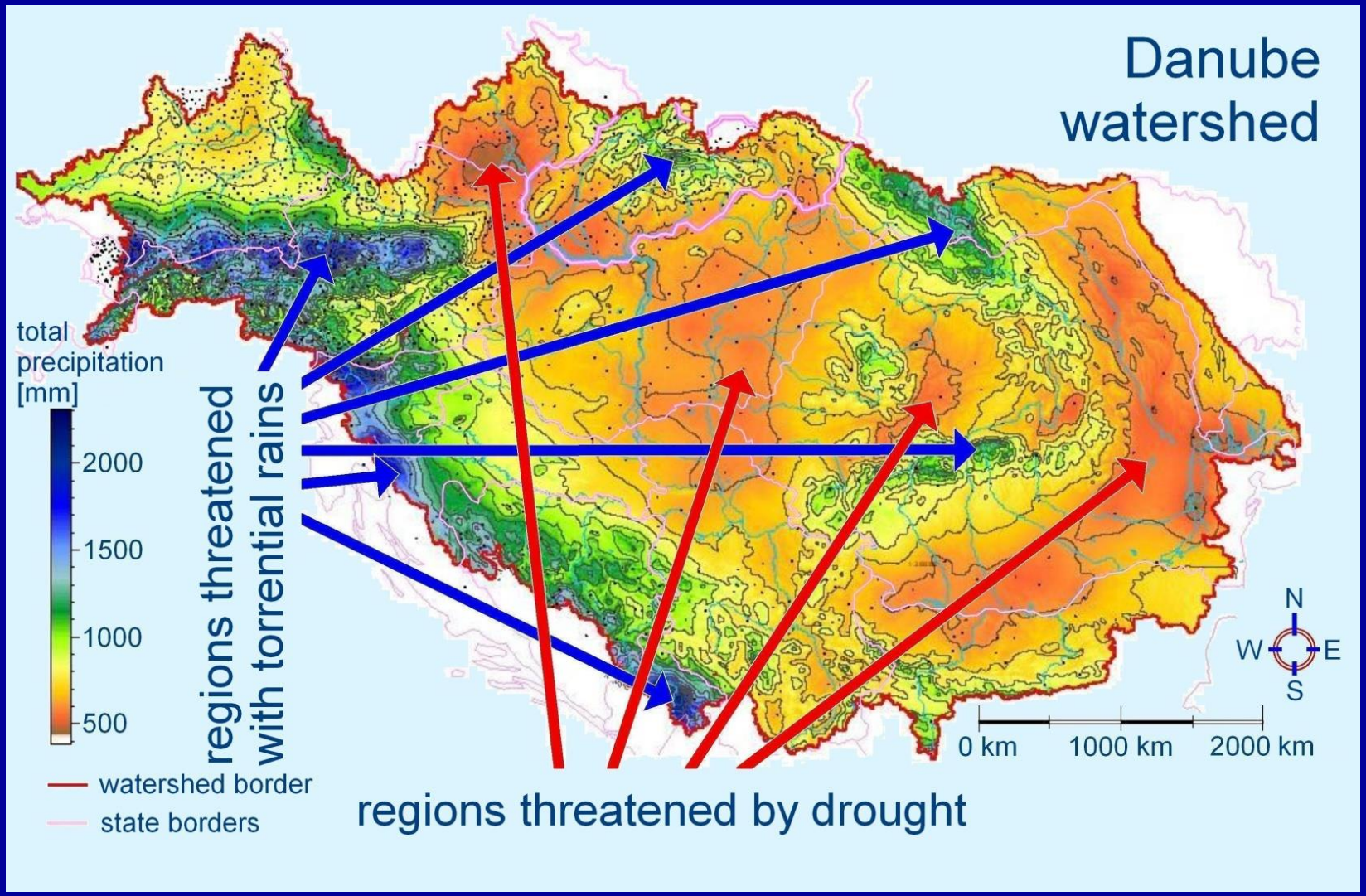
PRECIPITATION TRENDS IN SLOVAKIA



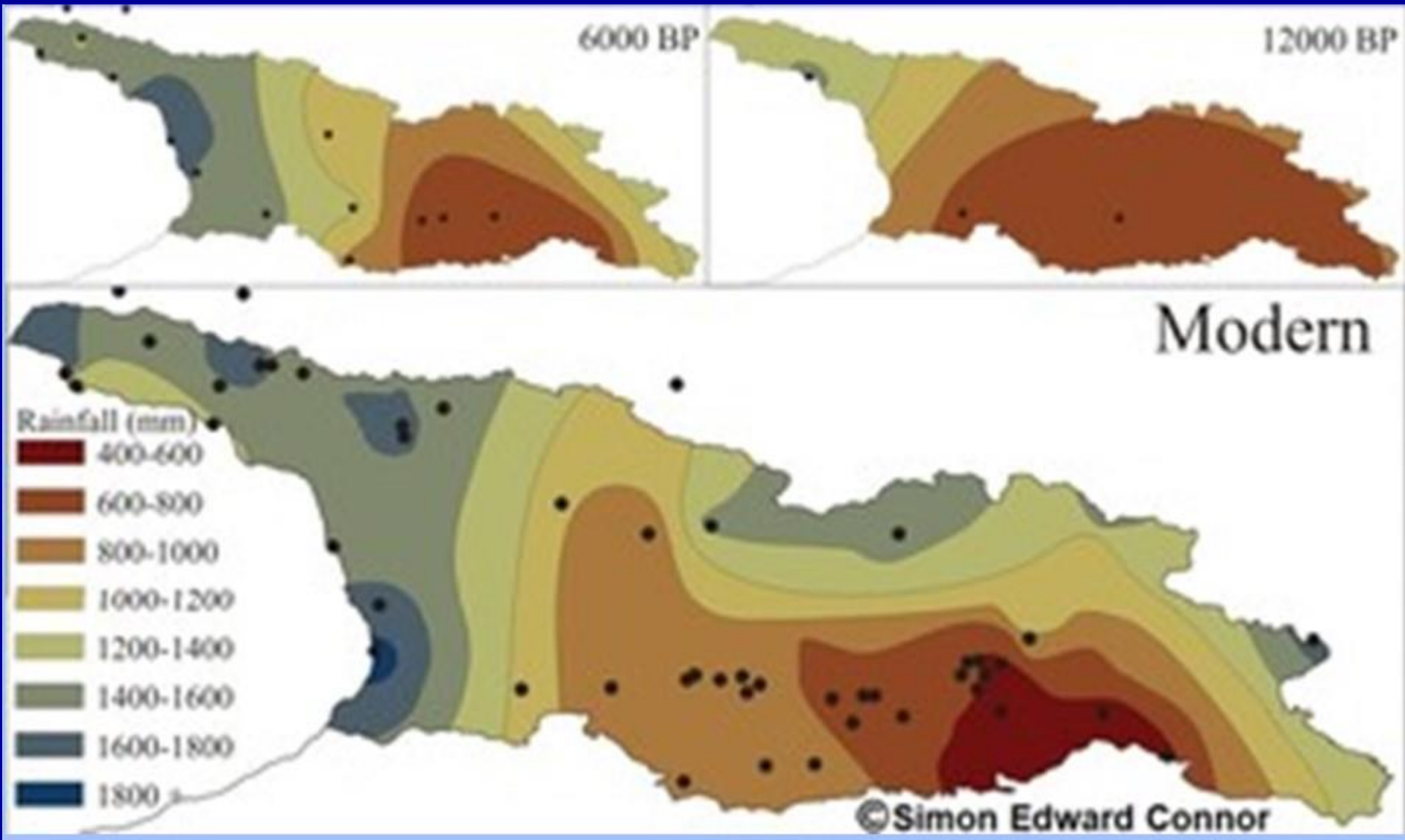
Precipitation trend in Michalovce 1901-2008
Yearly, winter and summer precipitation balance



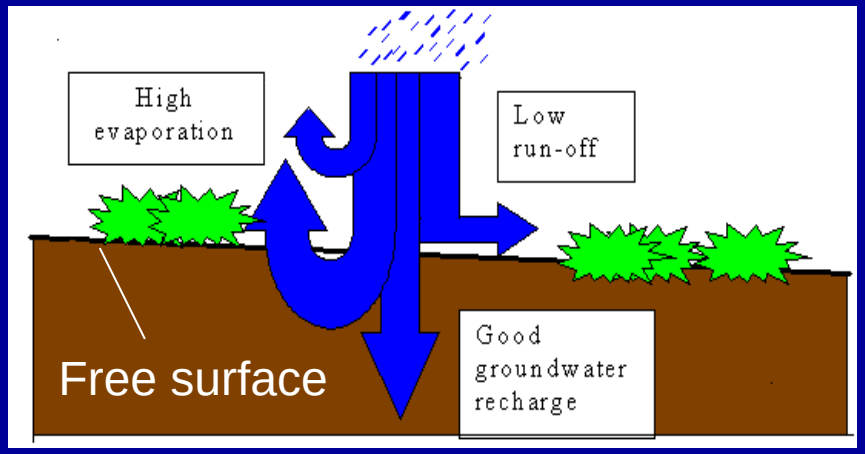
PRECIPITATION IN MOUNTAINS AND LOWLANDS – DANUBE WATERSHED

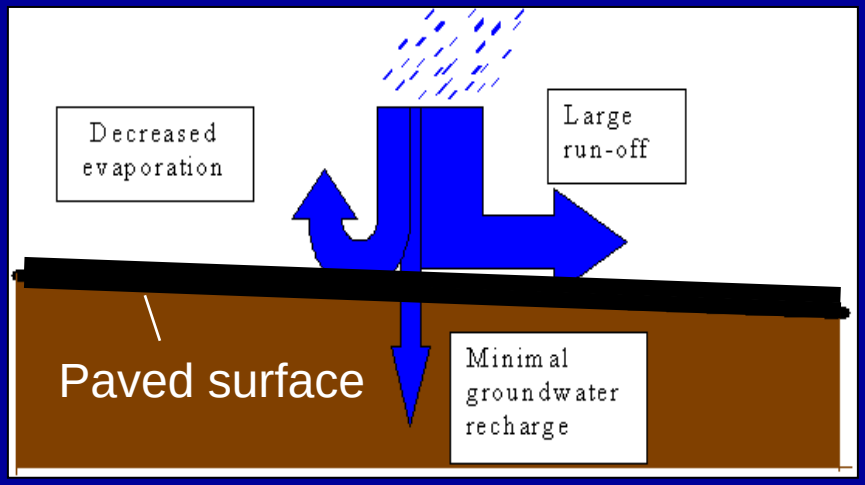


Space change of the rain in Georgia



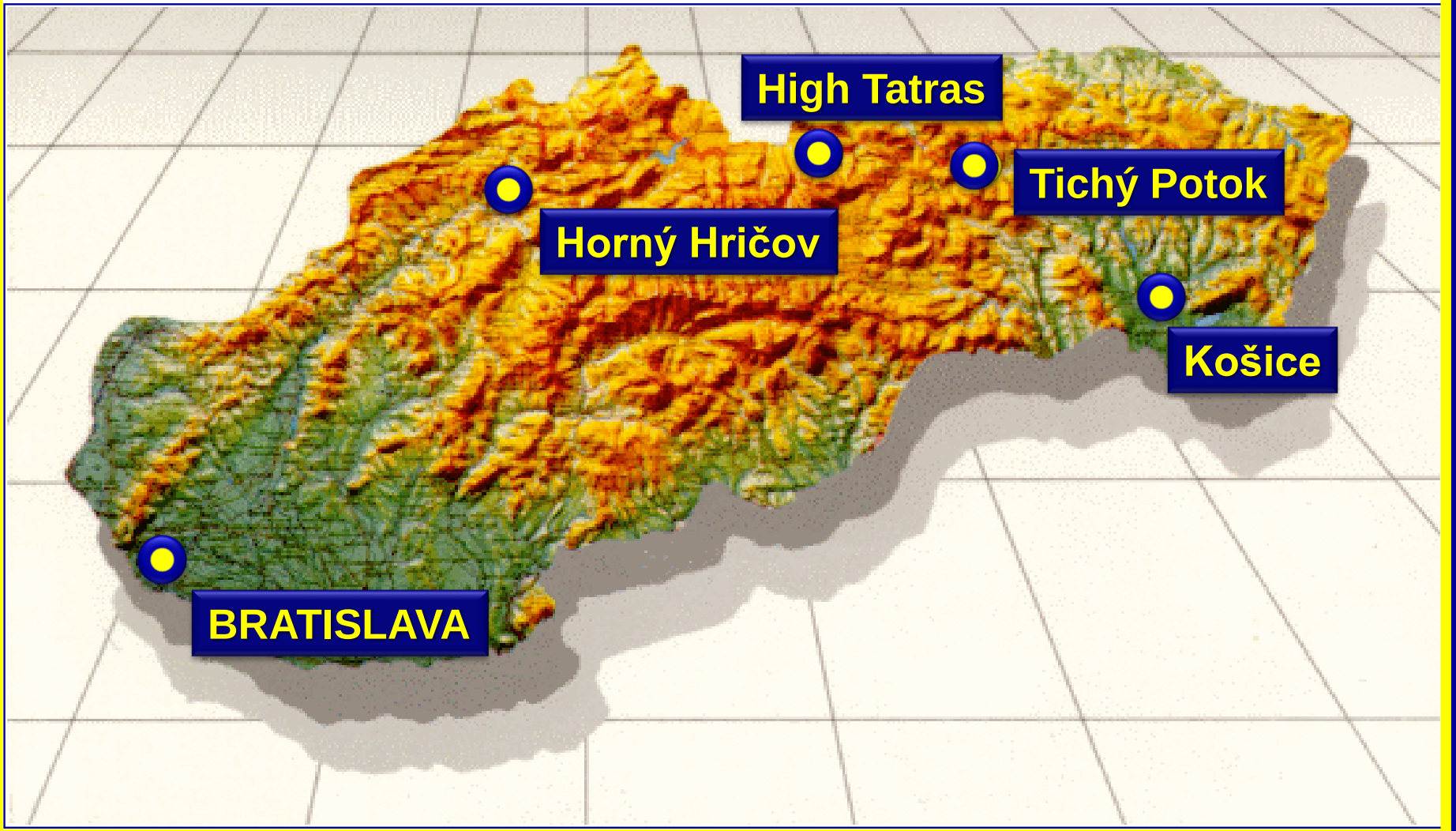
Impact of deforestation, agriculture and urbanization:



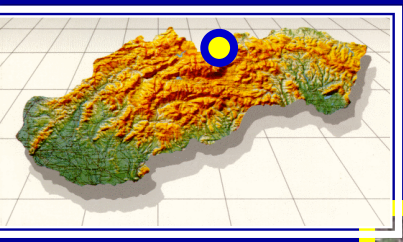


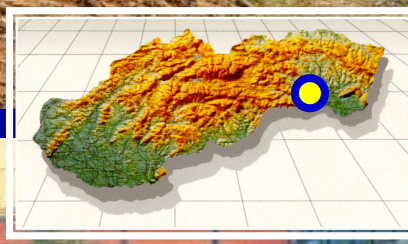
- infiltration and evaporation decrease
- runoff increases
- about 60 billion m3 of rainwater canalized from municipalities of Europe annually
- approx. 37.000 billion m3 water was lost from continents last century

The cases for rehabilitation of devastated landscape by People and Water



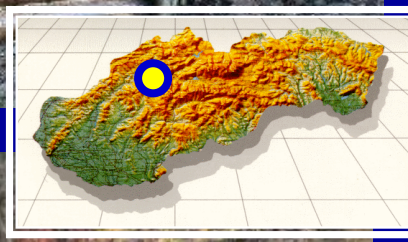
WATER FOREST, High Tatras, (People and Water, 2005)





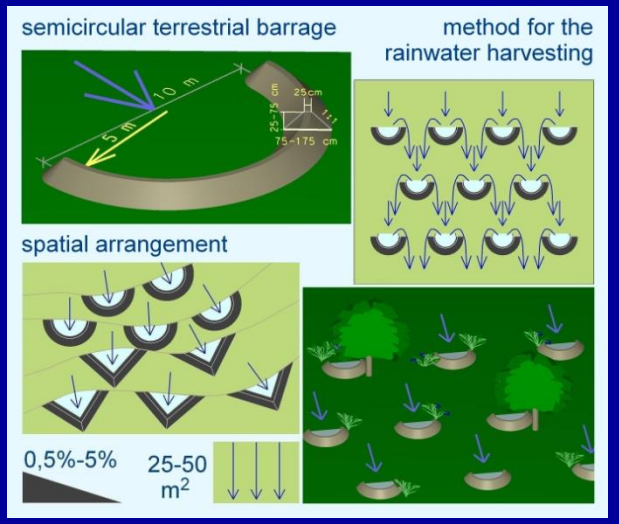
Restoration of water sources in urban zone Košice

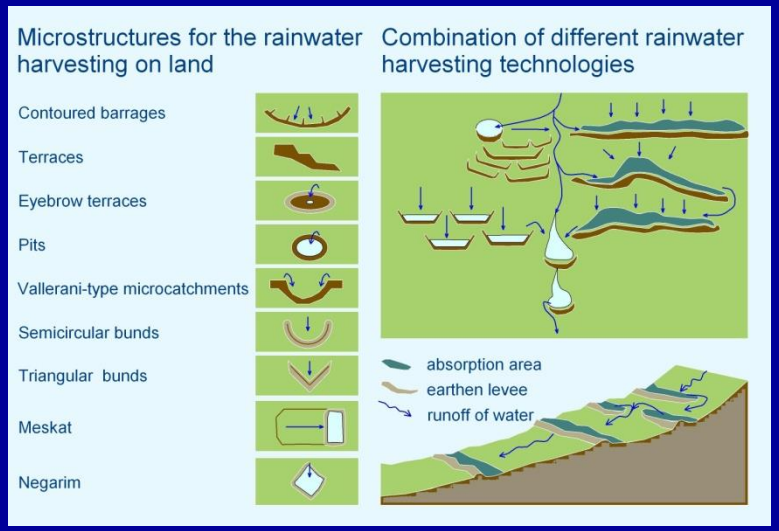
People and Water, 2005



Hričov Water Ways, (People and Water, 2008)

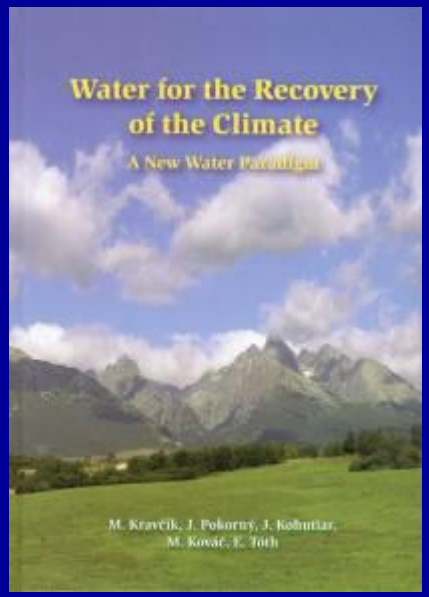
Rainwater harvesting principles

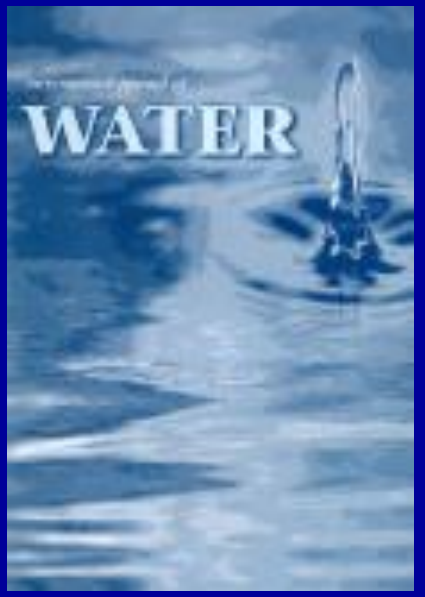




Water for the Recovery of the Climate

A New Water Paradigm

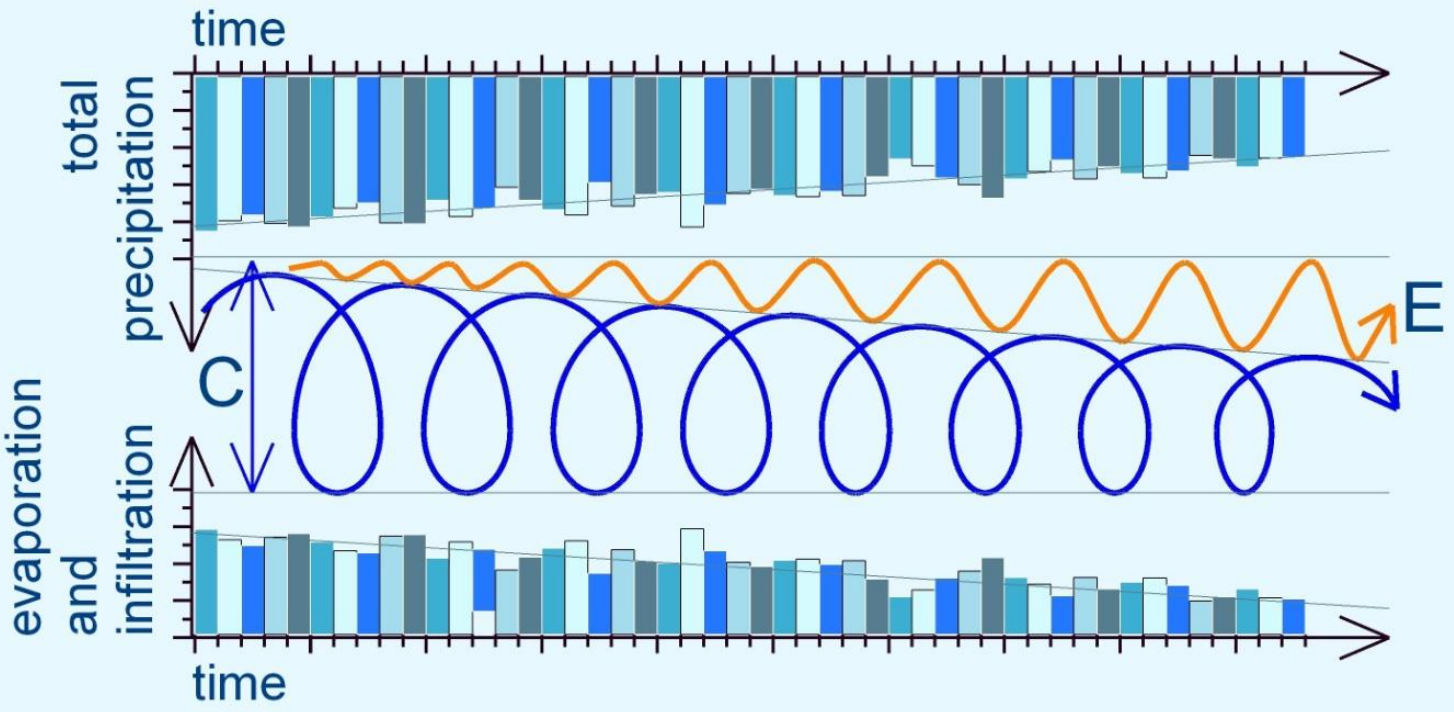




Scientific publishing

- 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

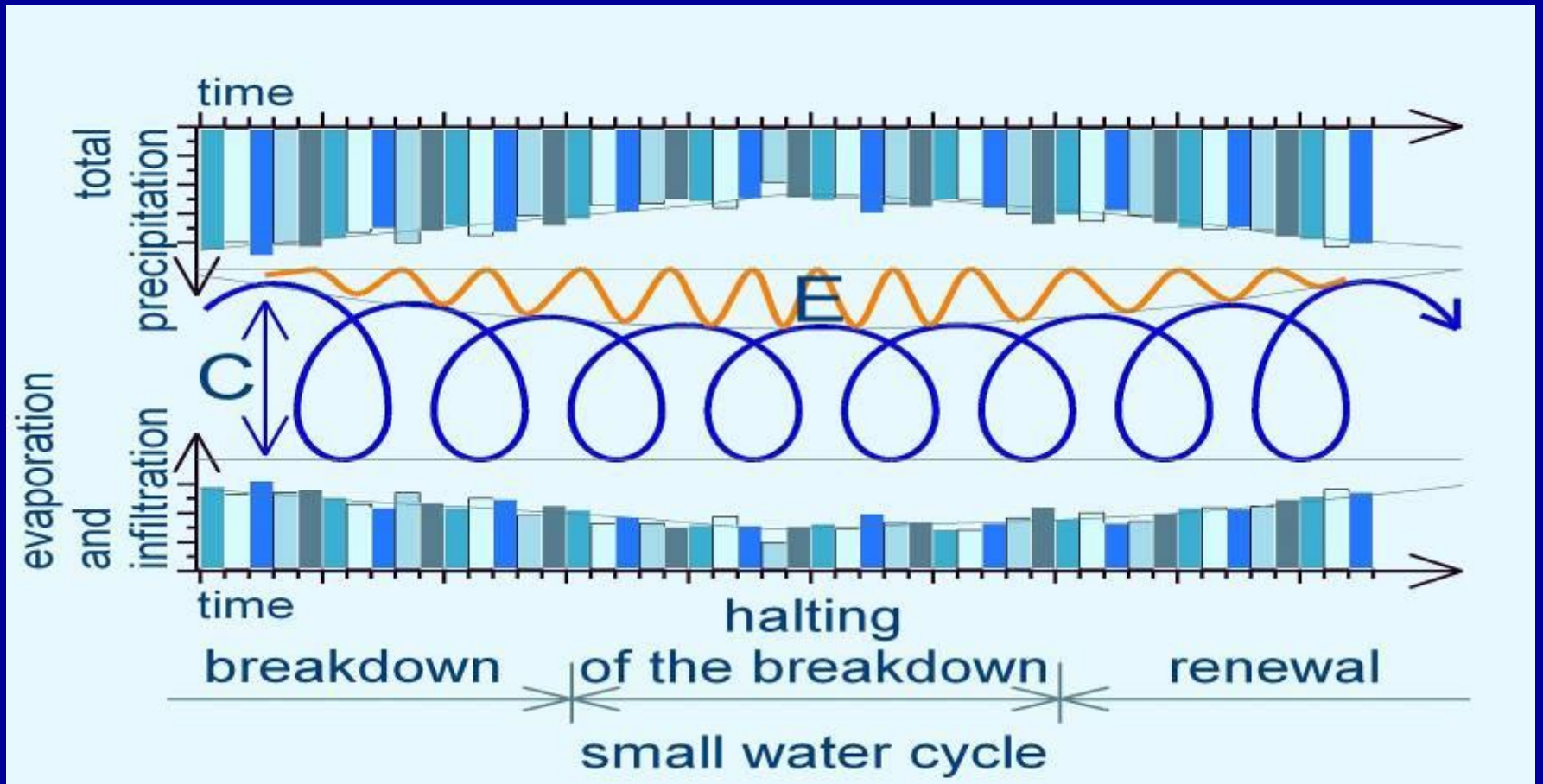
GROWTH OF EXTREME WEATHER WITH DECLINE OF SMALL WATER CYCLE



C - diagram of the circulation of water on land

E - diagram of extreme weather events

DESTRUCTION AND RENEWAL OF SHORT WATER CYCLE

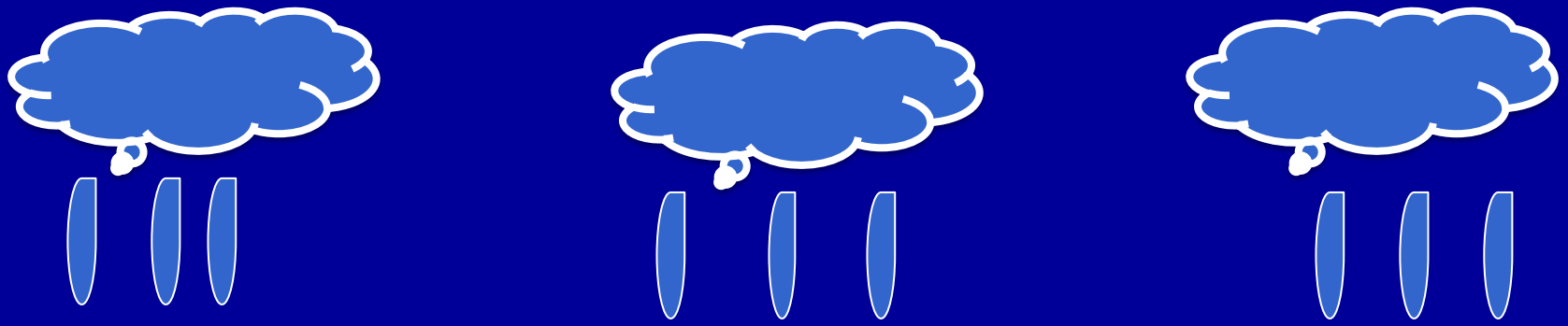


C - diagram of the circulation of water on land

E - diagram of extreme weather events

Impacts of the program

More soft clouds



More soft rain, less flood and drought risks

More vapor from landscapes

More vegetation, biodiversity and water

Water retention measures in landscapes

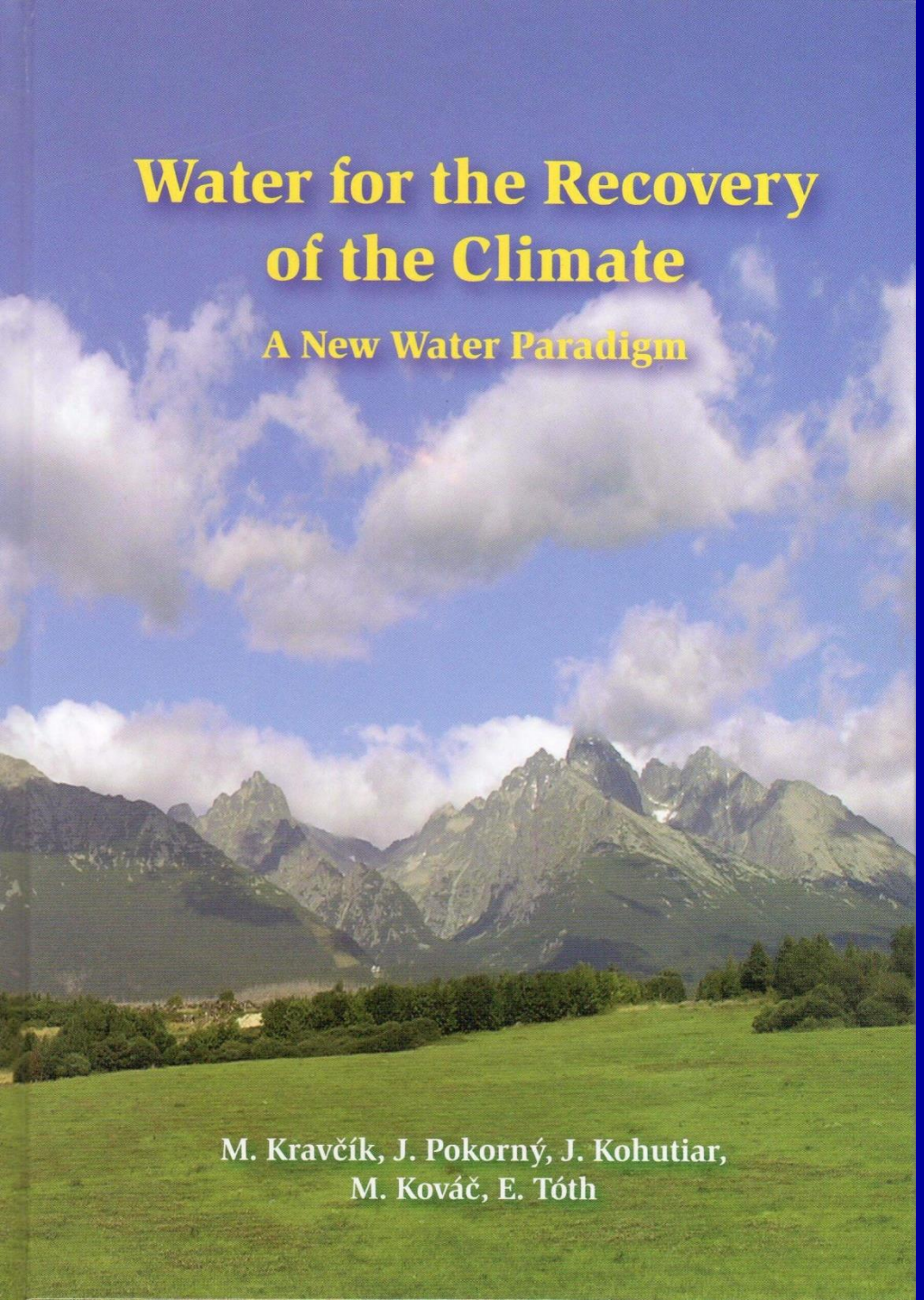
More water in soil

Implementation in a settlement

- Approximately 85 000 m^3 of water retention units, measures and system in cadastre of a settlement of medium size (1700 hectares)
- Implementation in a medium size settlement – 3 years with team of 10 local employees and team leader
- max. cost: 4€ per 1m^3 o water retention measure
- Cycle use of the capacity created (of water retention measures) for rain water retention and utilisation (evaporation, infiltration, cooling effect, biodiversity, flood and drought prevention)

RECOVERY

OF THE CLIMATE



- humanity accelerates the runoff from land
- more solar energy is transformed into sensible heat
- draining of a land can be reversed through comprehensive conservation of rainwater
- renewal of small water cycle over land can temper extreme weather events and ensure a growth in water reserves

- www.waterparadigm.org

Old water paradigm

- protects surface water as the main source and reserve of water

New water paradigm

- protects groundwater and soil water as the main treasure of water

www.waterparadigm.org

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

Old water paradigm

- **soil sealing has minimal impact on the water cycle**

New water paradigm

- **soil sealing has a fundamental impact on the water cycle**

www.waterparadigm.org

Old water paradigm

- **soil sealing has minimal influence on global warming**

New water paradigm

- **soil sealing may be important factor in global warming**

www.waterparadigm.org

NEW WATER DEAL

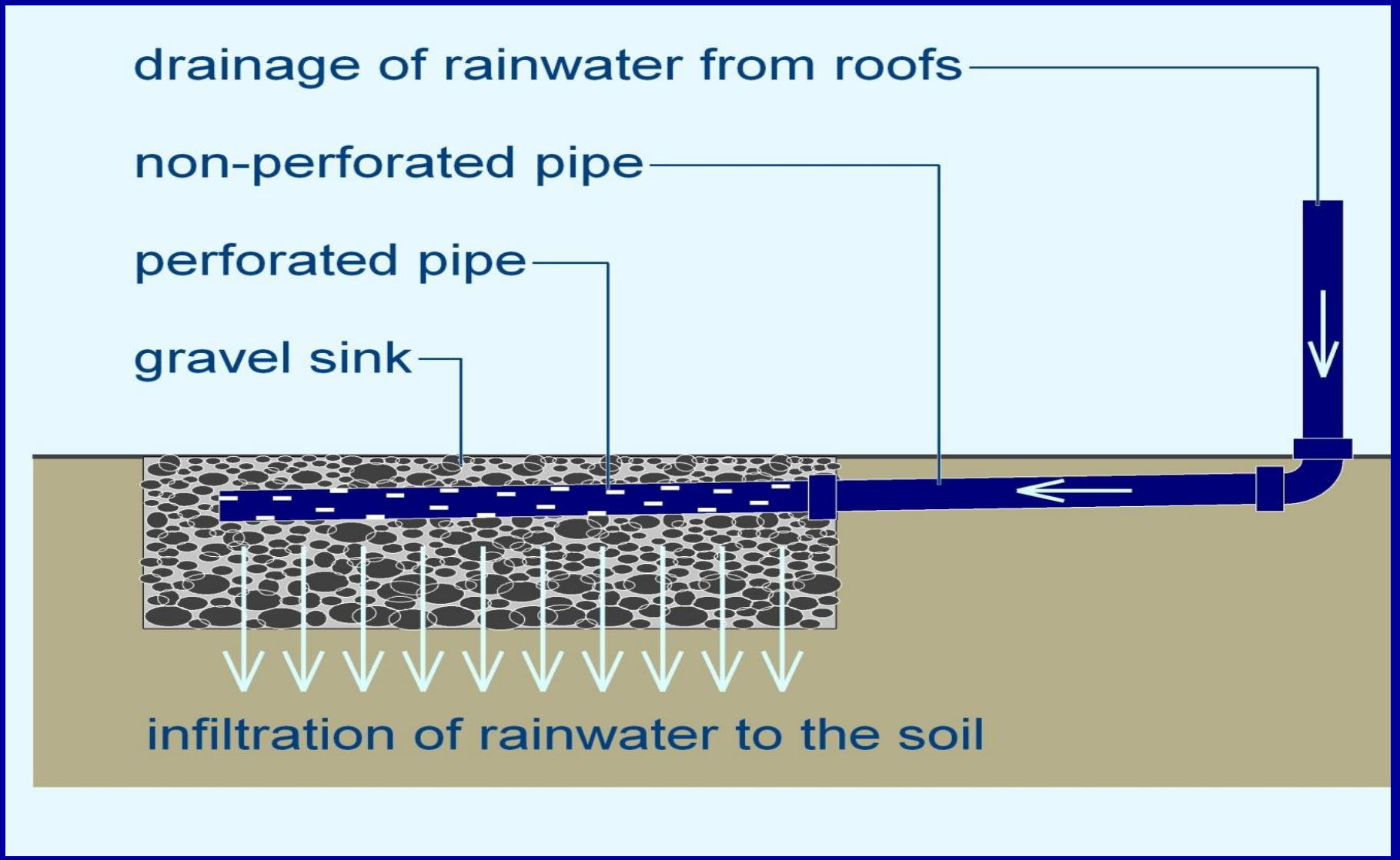
more soft rain

more air humidity

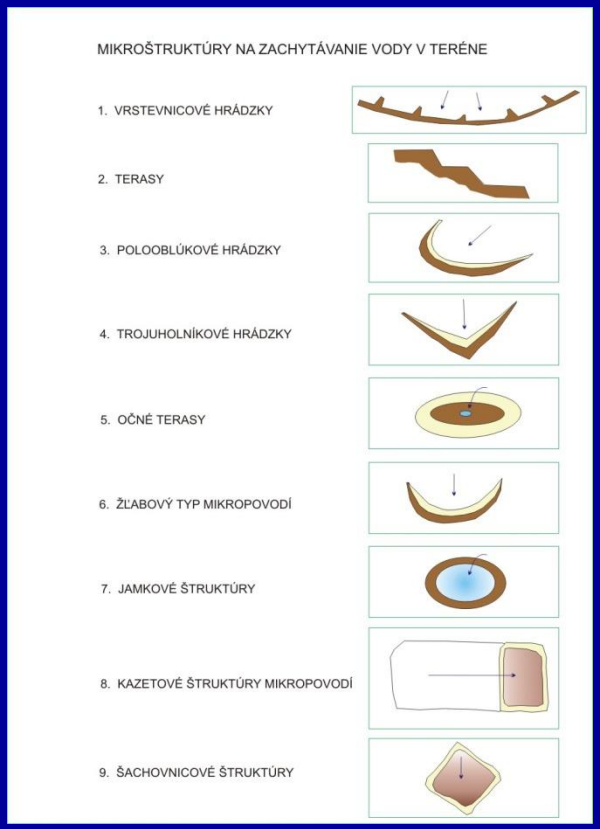
more vegetation and biodiversity

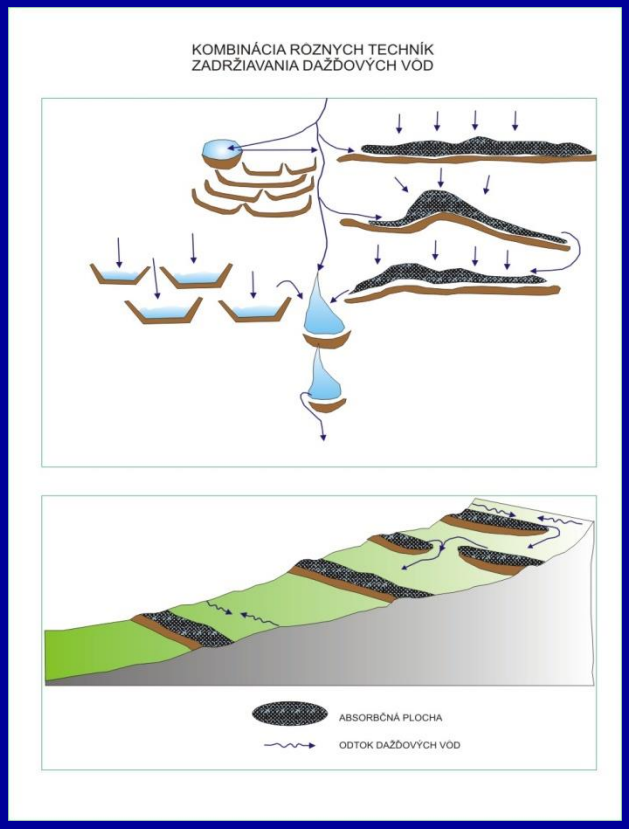
more groundwater recharge

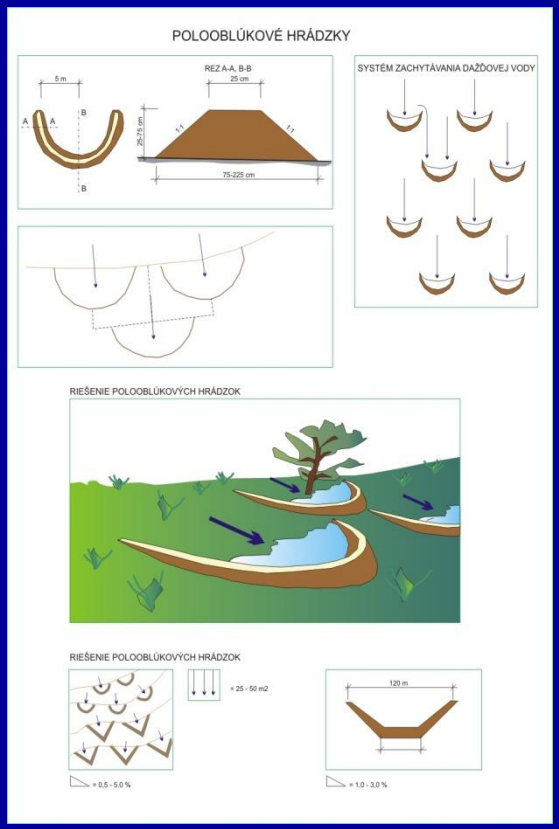
RAINWATER HARVESTING FROM ROOFS IN CITIES



Principle „Keep rainwater on the land“







RAINWATER HARVESTING ON SLOPES

Microstructures for the rainwater harvesting on land

Contoured barrages

Terraces

Eyebrow terraces

Pits

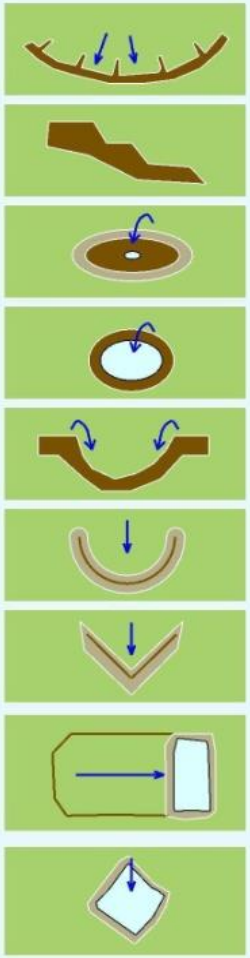
Vallerani-type microcatchments

Semicircular bunds

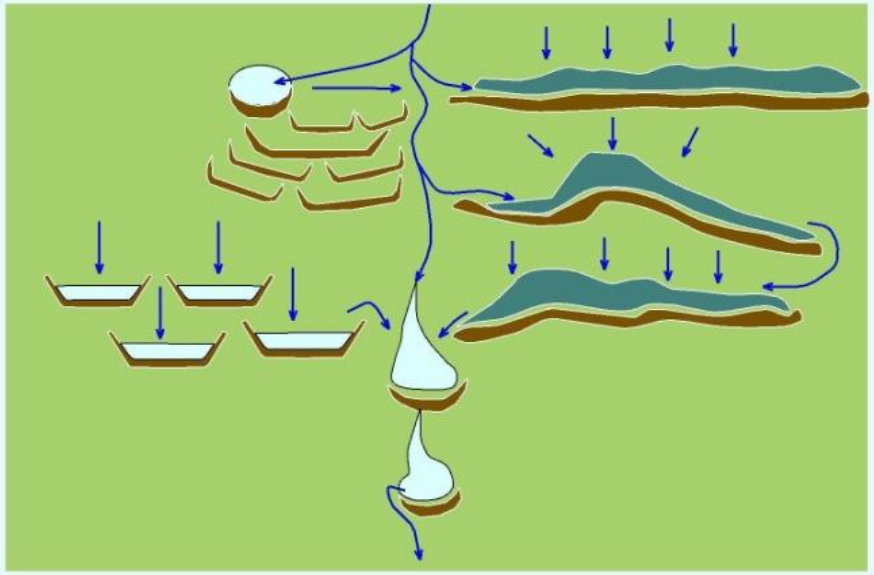
Triangular bunds

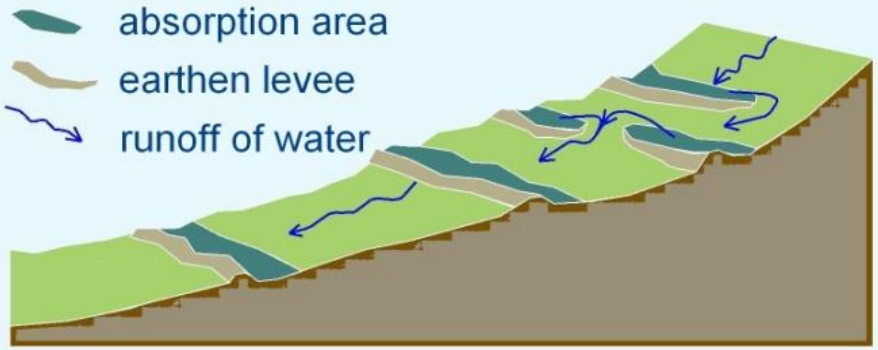
Meskat

Negarim



Combination of different rainwater harvesting technologies





Landscape Restoration and Integrated River Basin Management Program for the Slovak Republic

Approved by the Slovak Government on October 27th 2010

Opportunities of implementation depending on scale

Landscape Revitalisation Programme in Slovakia – first (start) year of implementation 2011

7 700 seasonal jobs / costs 43,5 million € / capacity 10 million m^3 of water retention measures created in year 2011

Estimation for:

- **Global program** – 50 million jobs / 500 billion € / year
- **European Program** – 2,6 million jobs / 38 billion € / year
- **Danube River Basin Program** – 0,2 million jobs / 2,9 billion € / year

First year of implementation 2011

Start implementation project 2010 - (23 settlements)

- 580 000 € – Office of the Government (prime minister)
- 341 jobs for 3 months period
- 140 500 m^3 of water retention measures / waterholdings

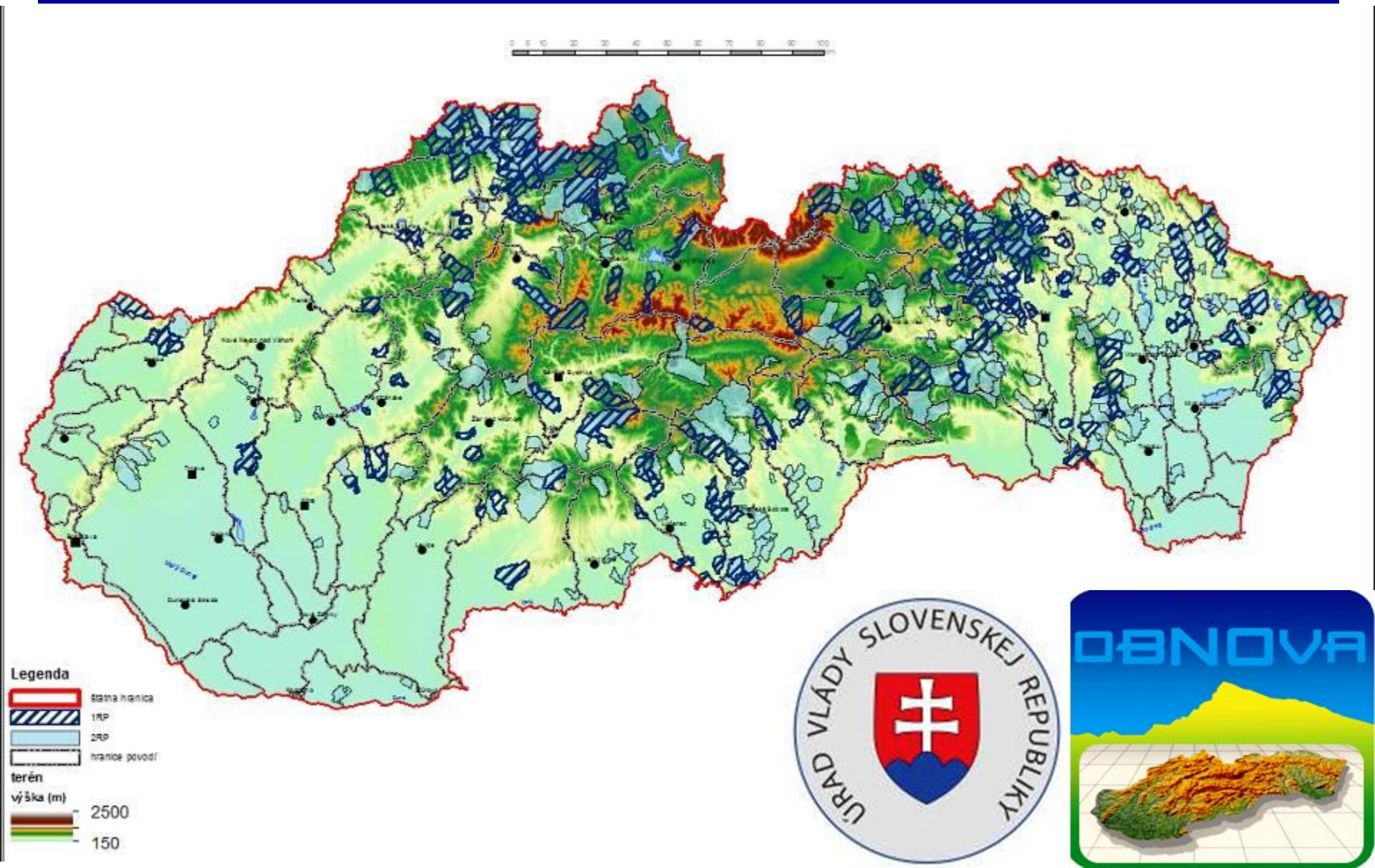
First implementation project 2011 (190 settlements)

- 24 mil. € – Office of the Government + ESF
- 3 500 jobs for 6 months period
- 6 million m^3 of water retention measures **/** waterholdings

Second implementation project 2011 (350 settlements)

- 18,5 mil. € – Office of the Government + ESF
- 4 200 jobs for 6 months period
- 3,9 million m^3 of water ret. measures / waterholdings

488 communities involving to the Government Landscape restoration program in 2011



Some facts

- CO2 - basic component of photosynthesis
- 700 kW of less sensible heat in the atmosphere per 1m^3 of evaporated water = temperature decrease of 80 000 m^3 air for 1°C
- High differences in temperatures between forest and urban areas
- these types of measures have highest and immediate impacts to reduce flood risks and droughts risks and economical damages from 10 % - 80% based on scale of measures implementation and size of the territory

Examples of measures

Stakeholders, meetings, presentations and teams


ŤAHANOVCE


NIŽNÝ SLAVKOV


Orlov


Pčoliné


Hlohovec


Turcovce


Dúbrava


Matysová


Brehy


Poviná


Snežnica

2012

Documentation of the Landscape Revitalisation Program Implementation

MICHAL KRAVČÍK A KOLEKTÍV

Po nás púšť a potopa?

After us, the desert and the deluge?

WATER CYCLE,

FLOWS OF ENERGY

AND

CLIMATE CHANGE

DISTRIBUTION OF SOLAR ENERGY

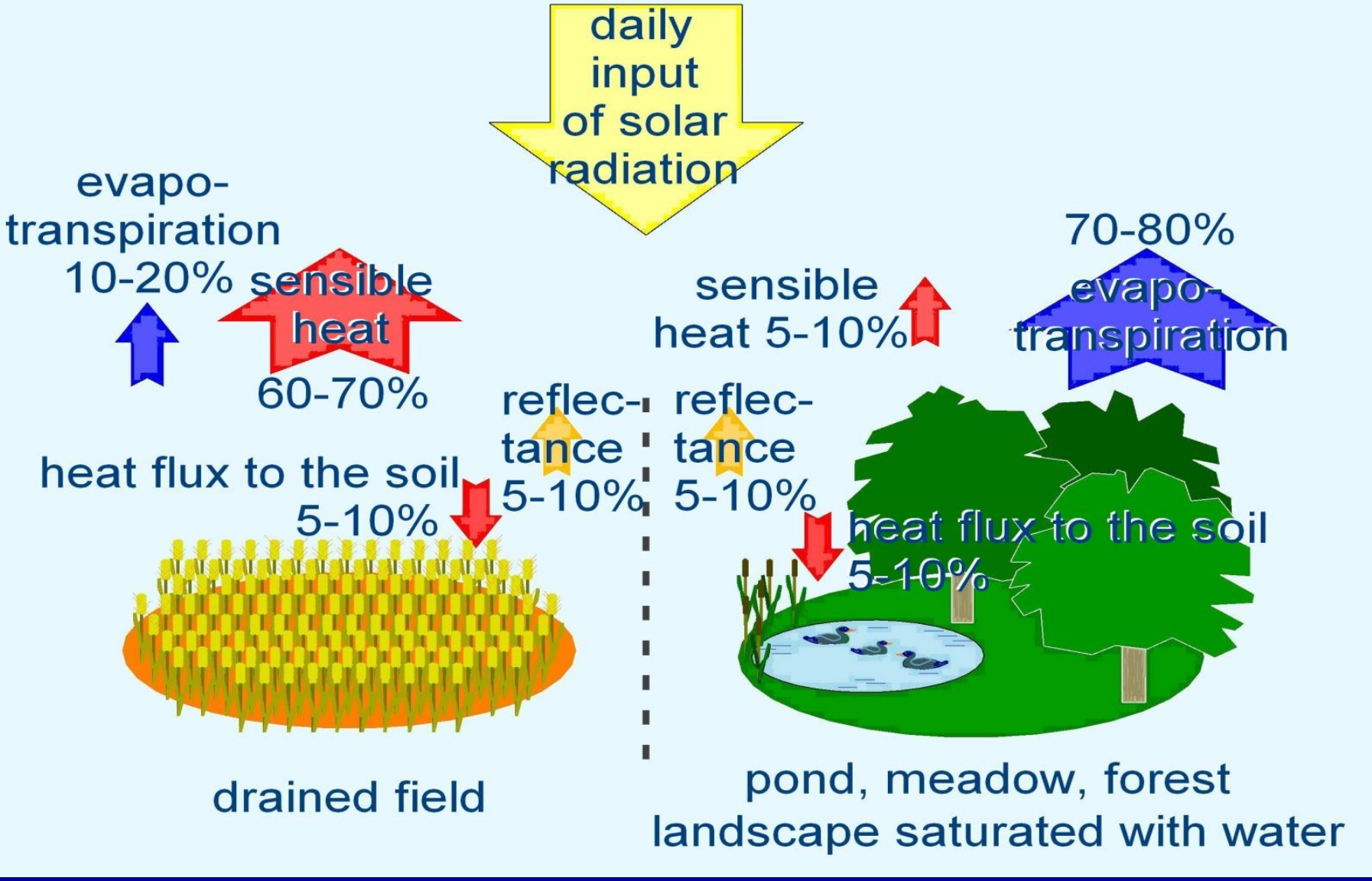
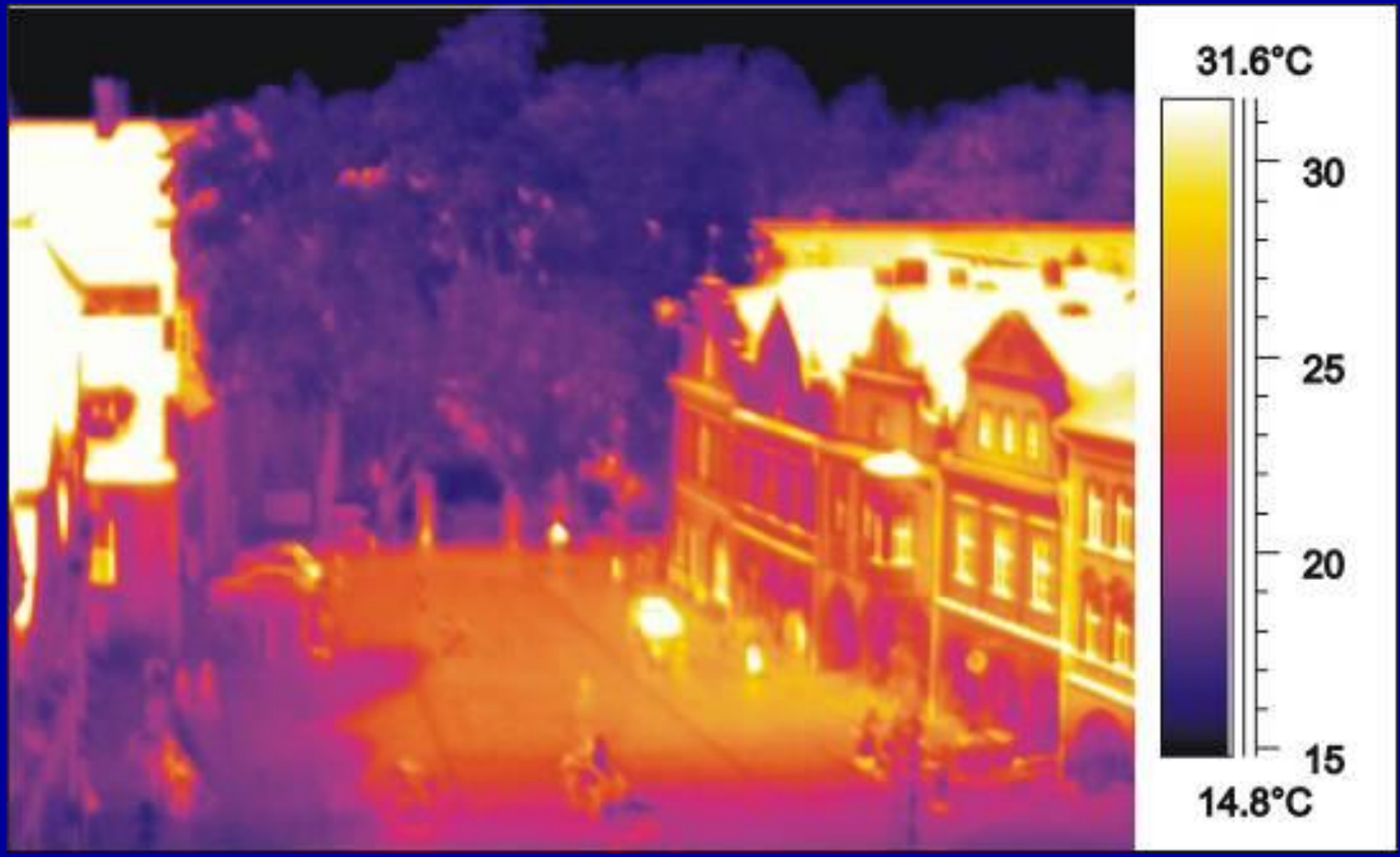


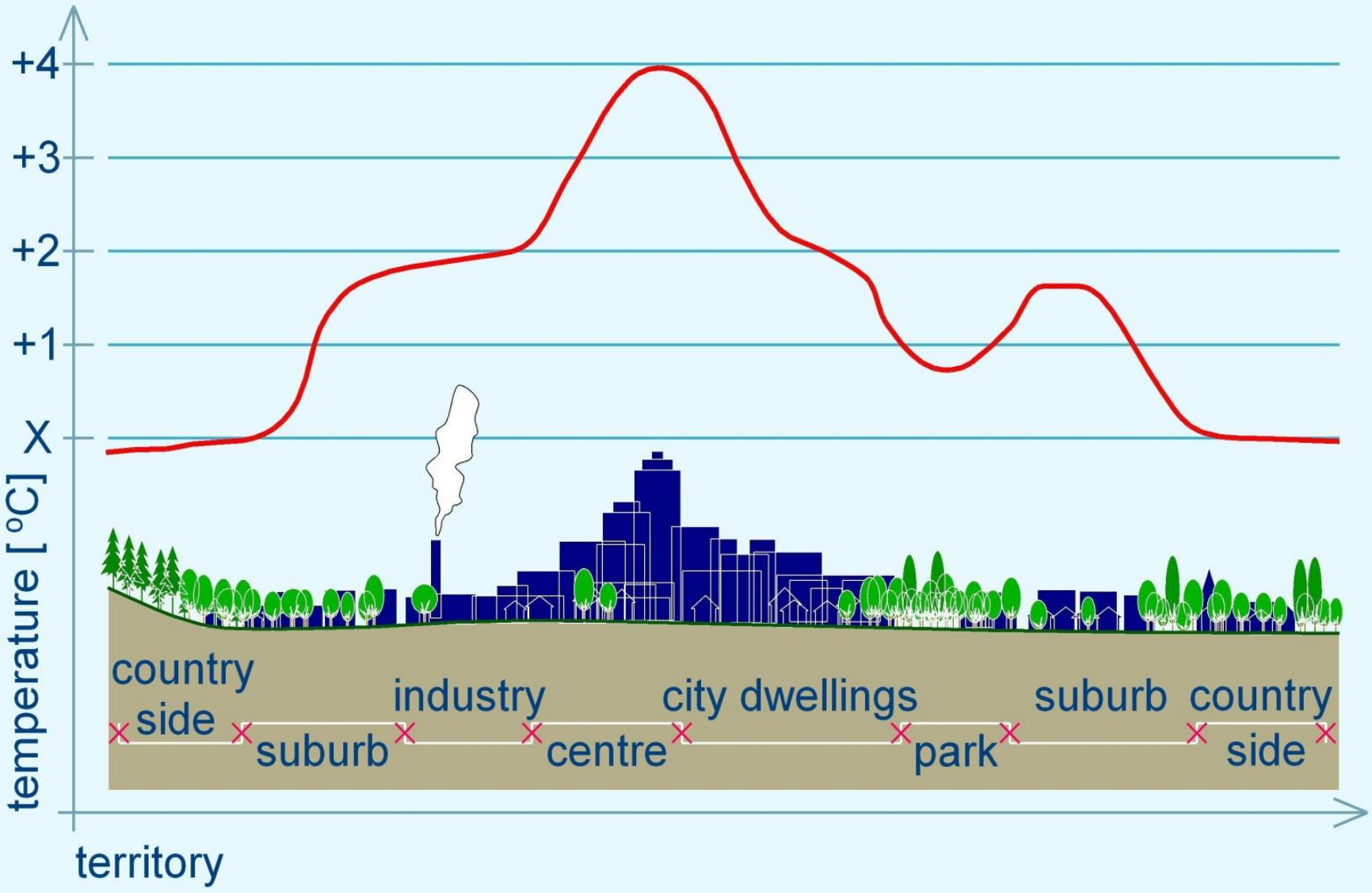
PHOTO OF A CITY TAKEN WITH A THERMAL CAMERA



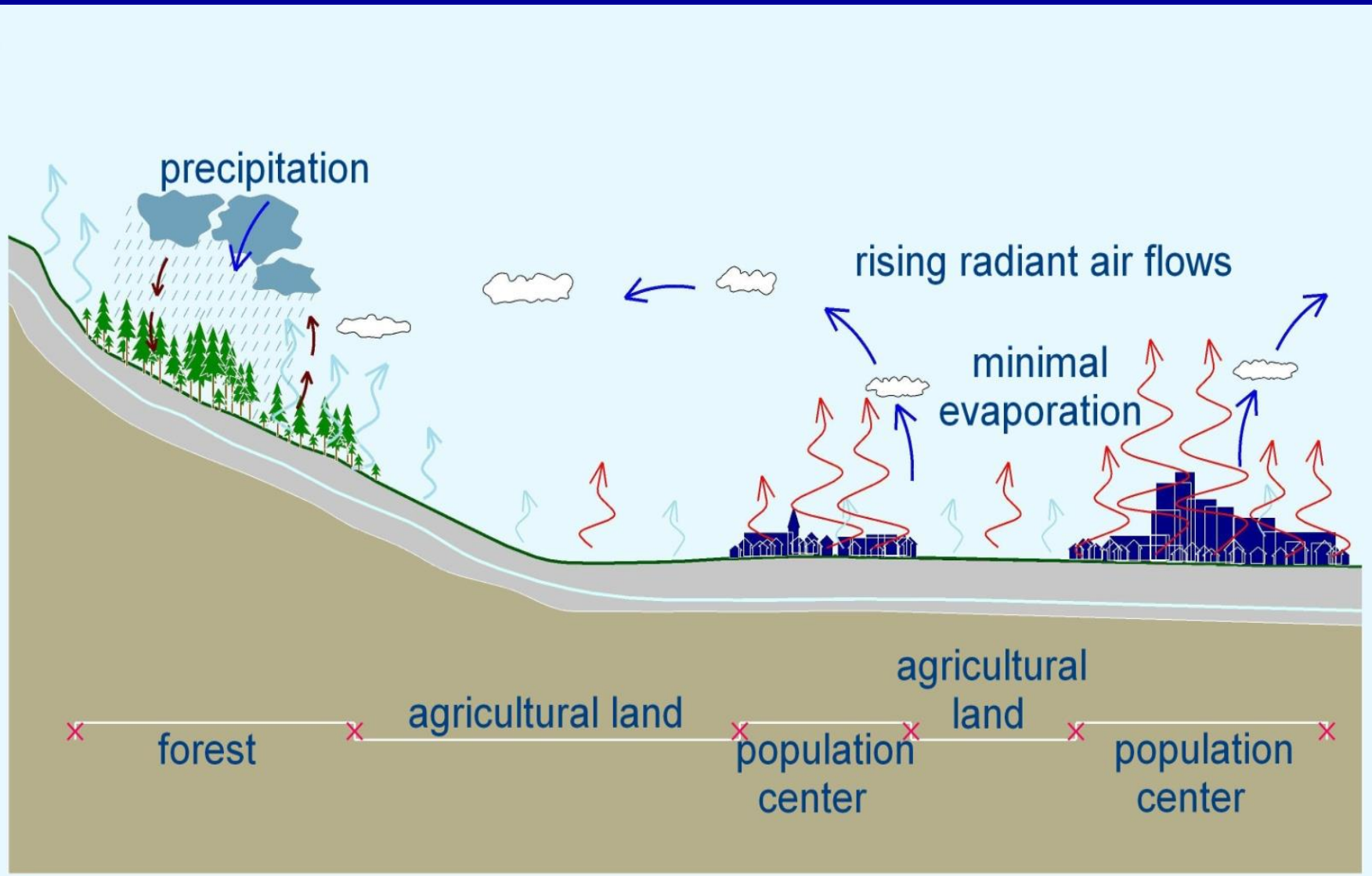
The tree as an air-conditioning unit

- a crown of 10 m in diameter
- evaporates 400 l/day
- consumes 280 kWh
- cools with a power comparable to that of more than 10 air-conditioning units

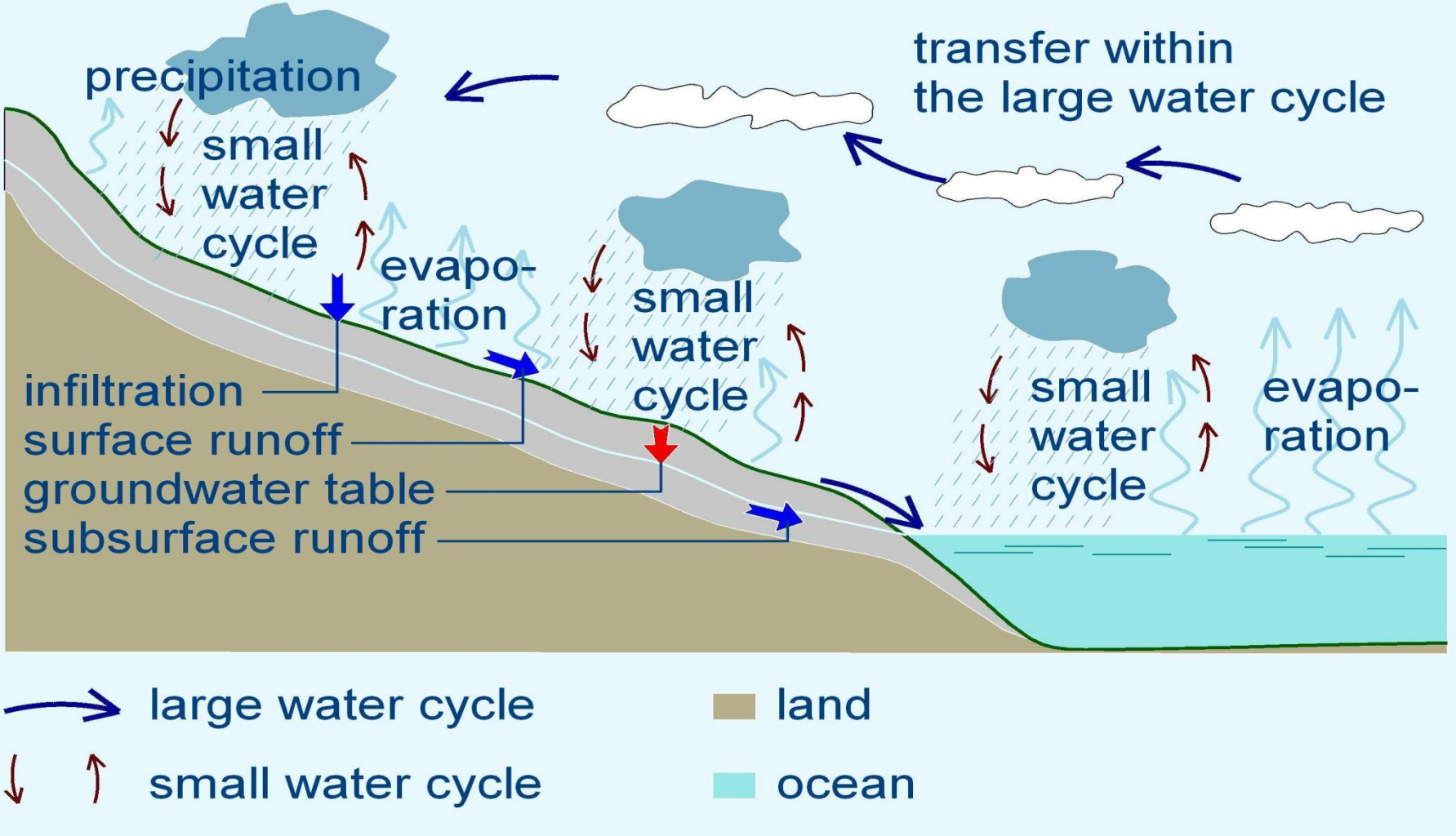
HOT CLIMATIC UMBRELLA OF A CITY



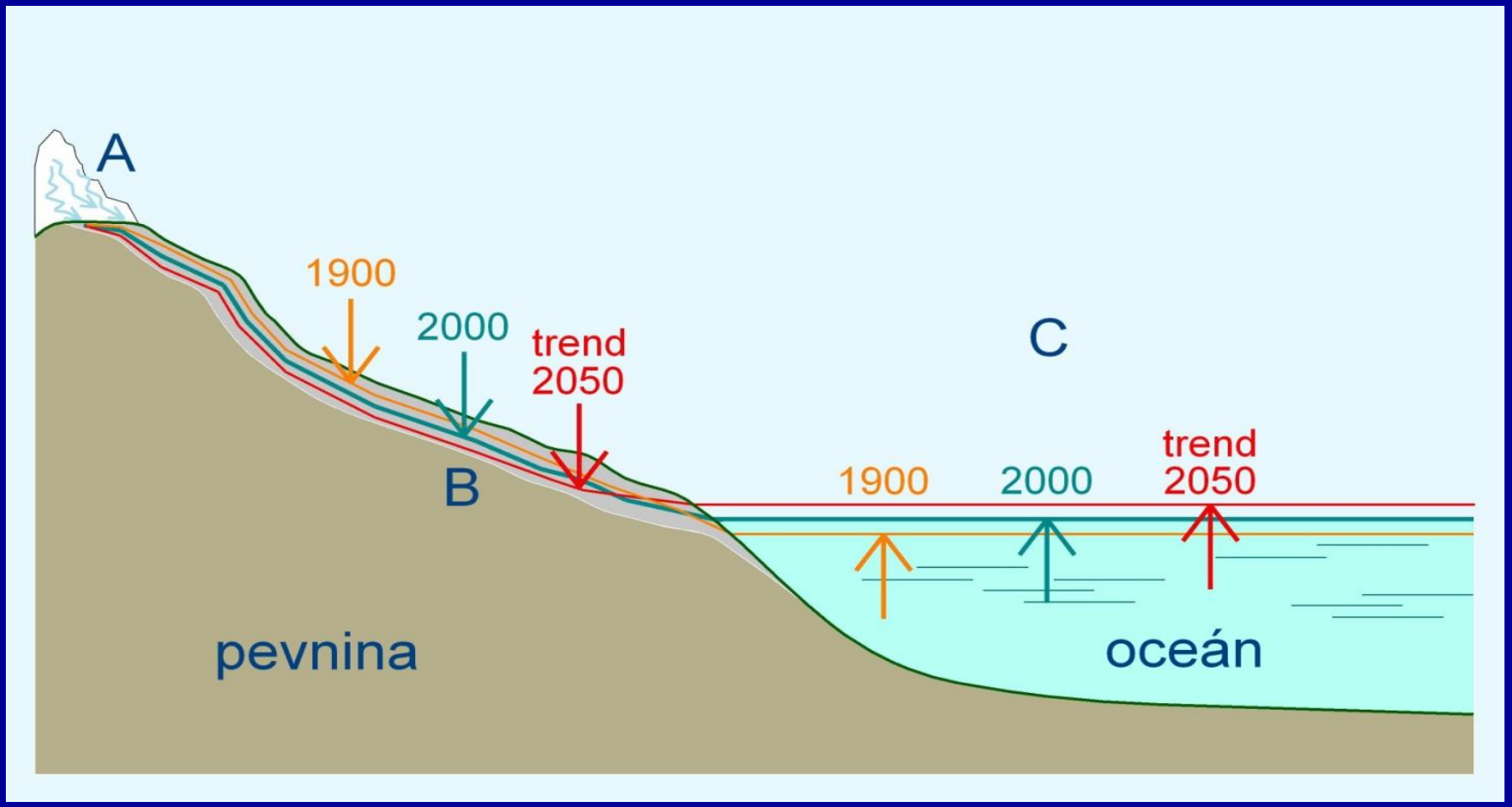
IMPACTS ON WEATHER /CLIMATE



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



SEA LEVEL RISE FROM DRYING OF CONTINENTS



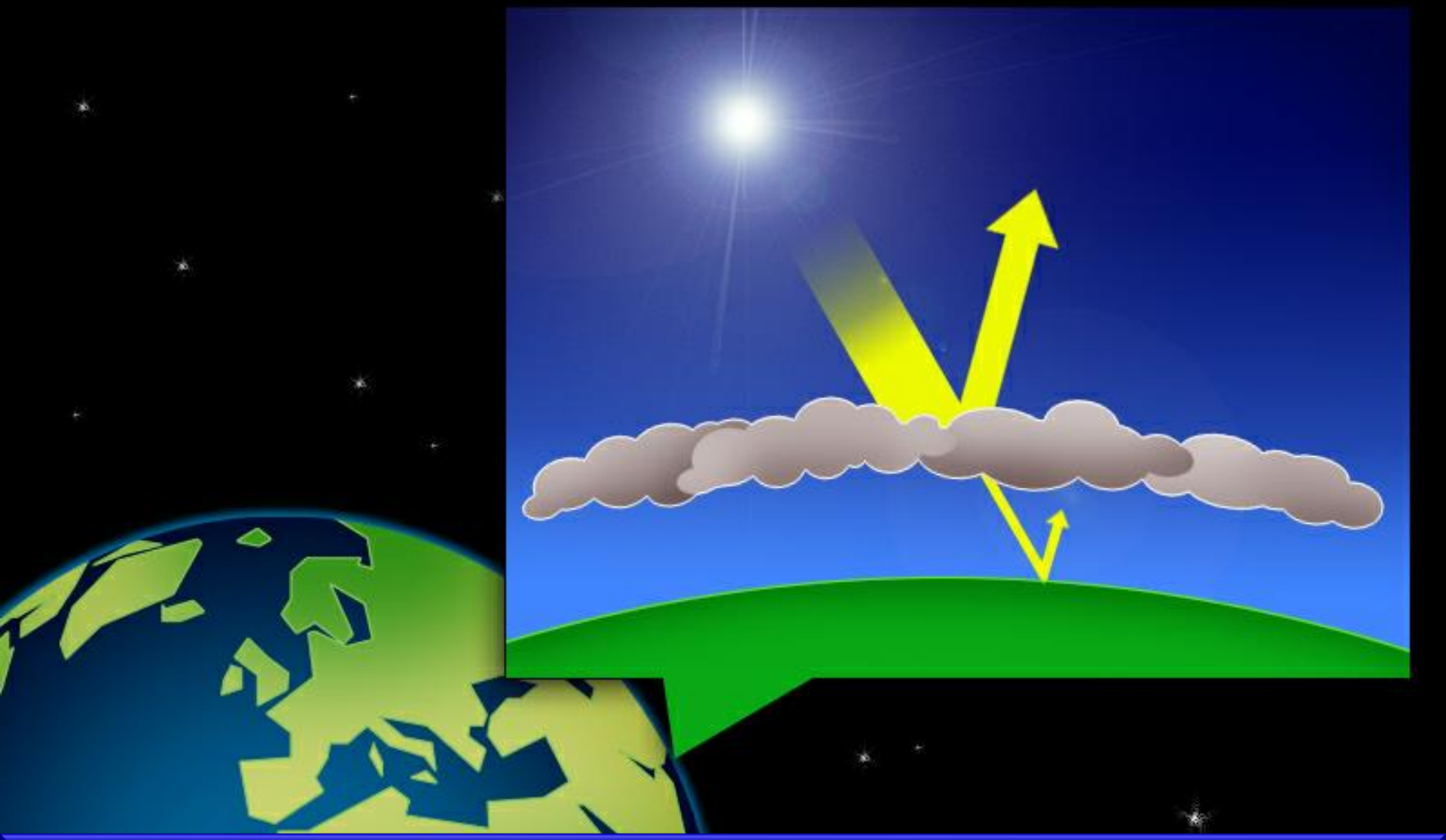
RECOVERY

OF THE CLIMATE

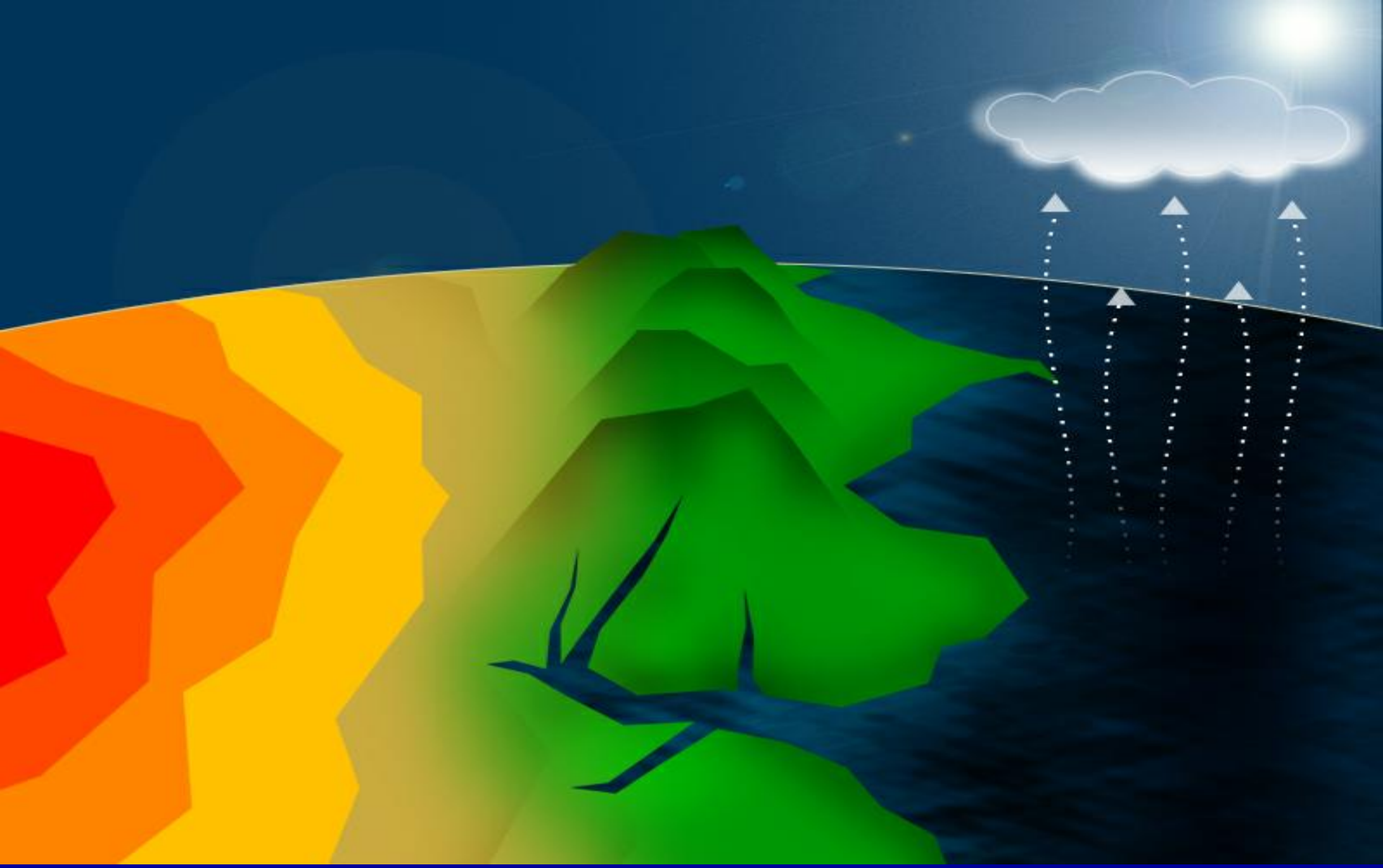
MASSIVE CONSERVING OF RAINWATER

Advantages:

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

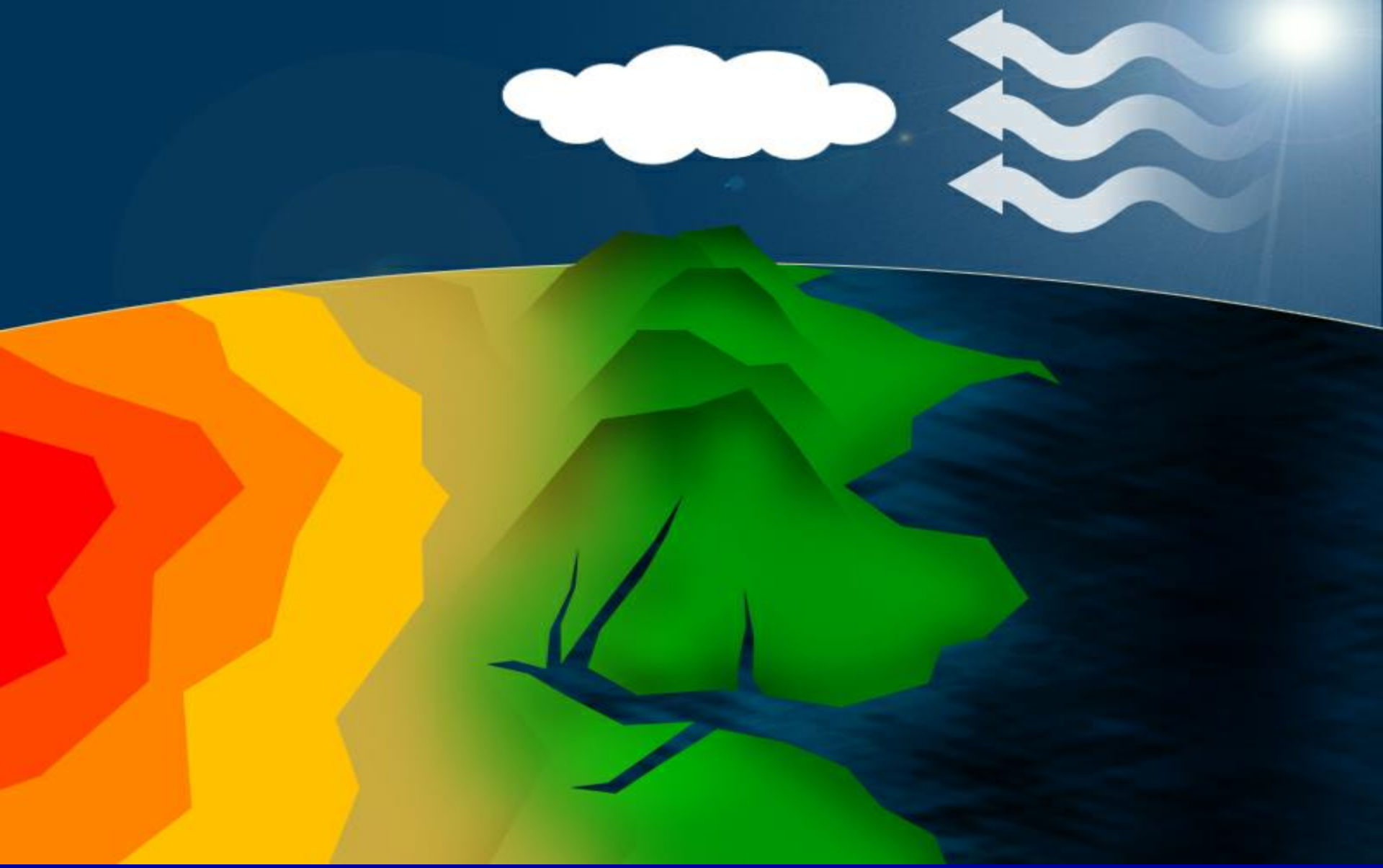


NGO People and Water
Čermelska road 24, 040 01 Kosice, Slovakia Tel.Fax: +421 55 799 88 06-7,
e-mail: ludiaavoda@ludiaavoda.sk, www.ludiaavoda.sk



NGO People and Water

www.ludiaavoda.sk



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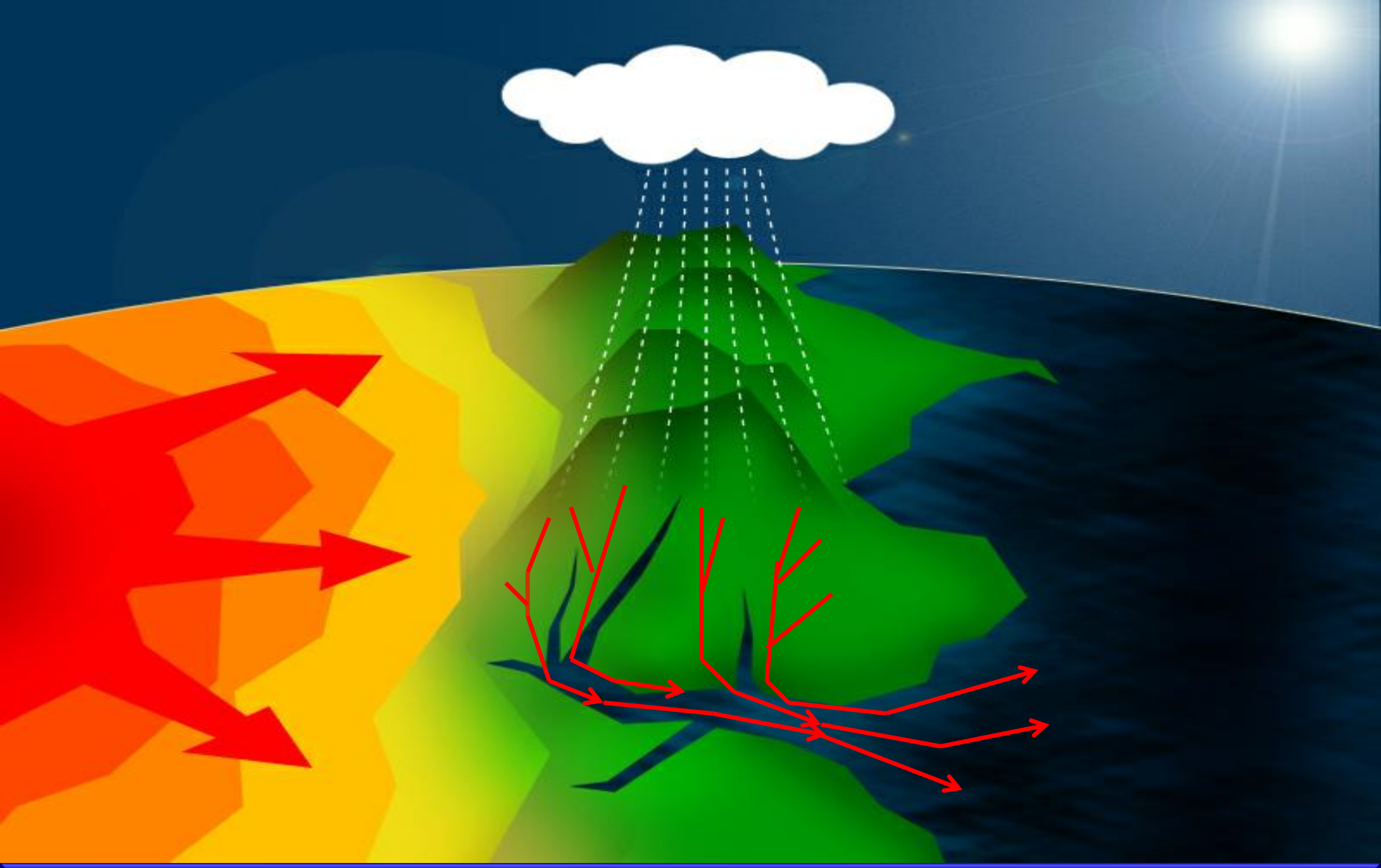

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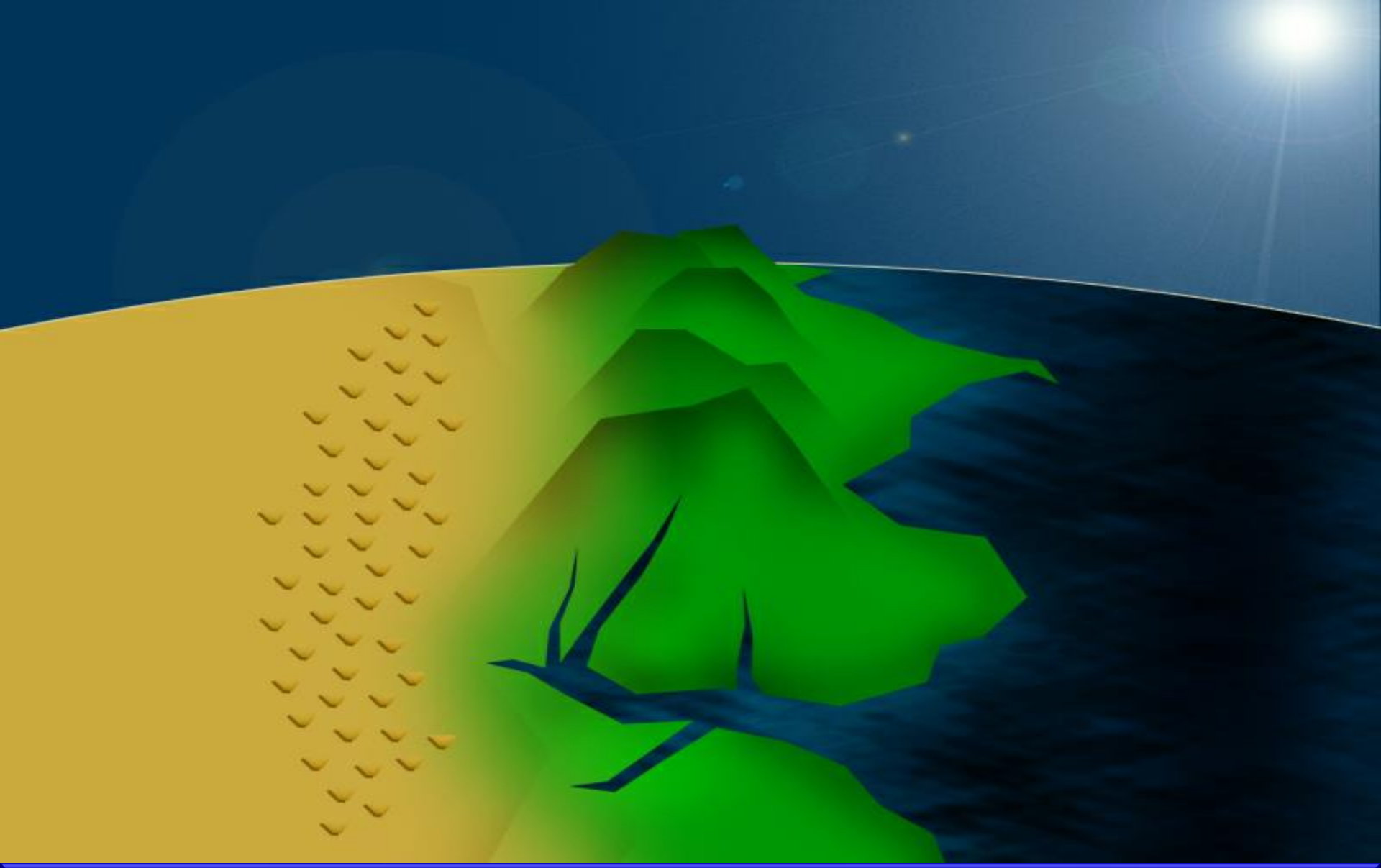

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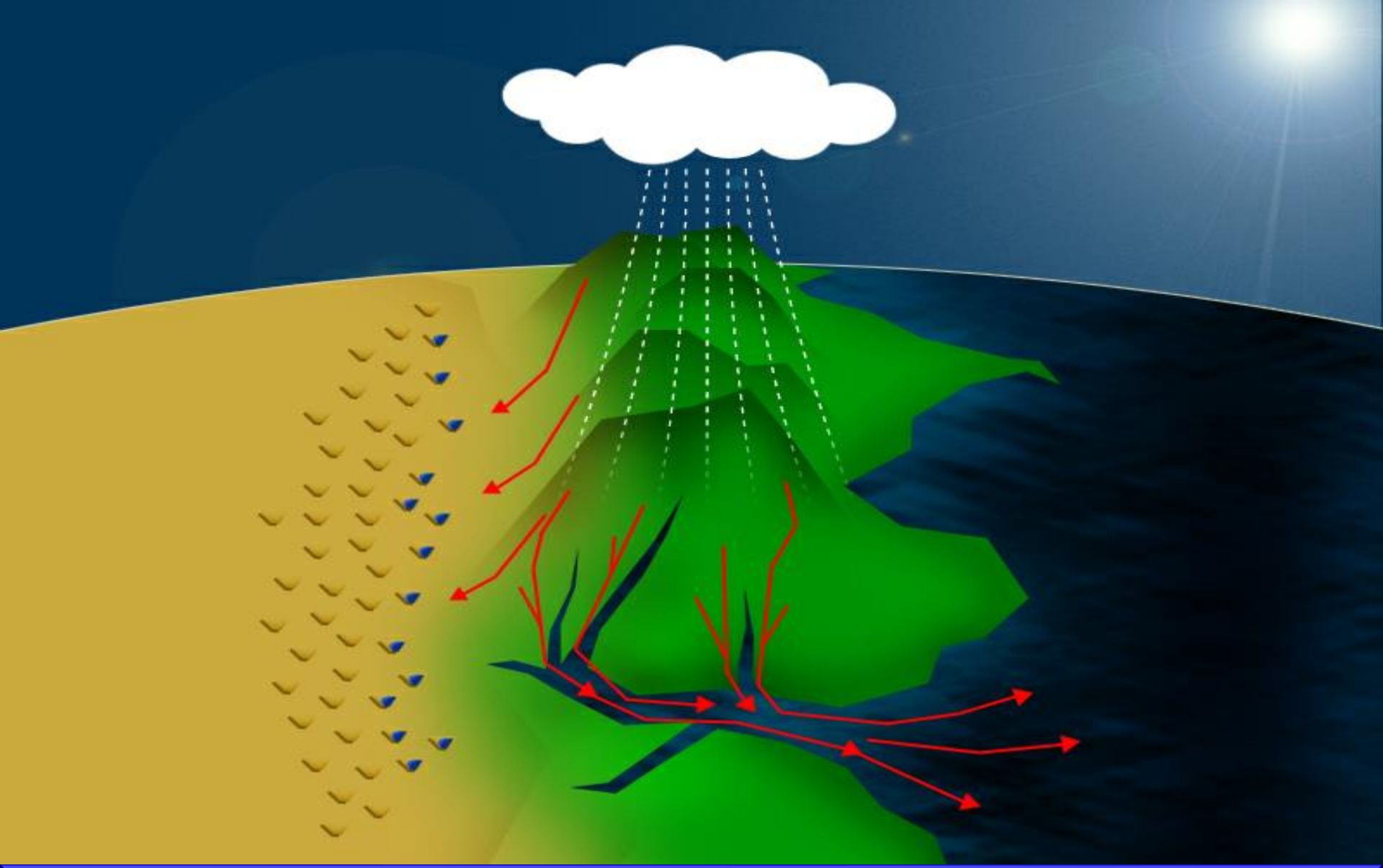

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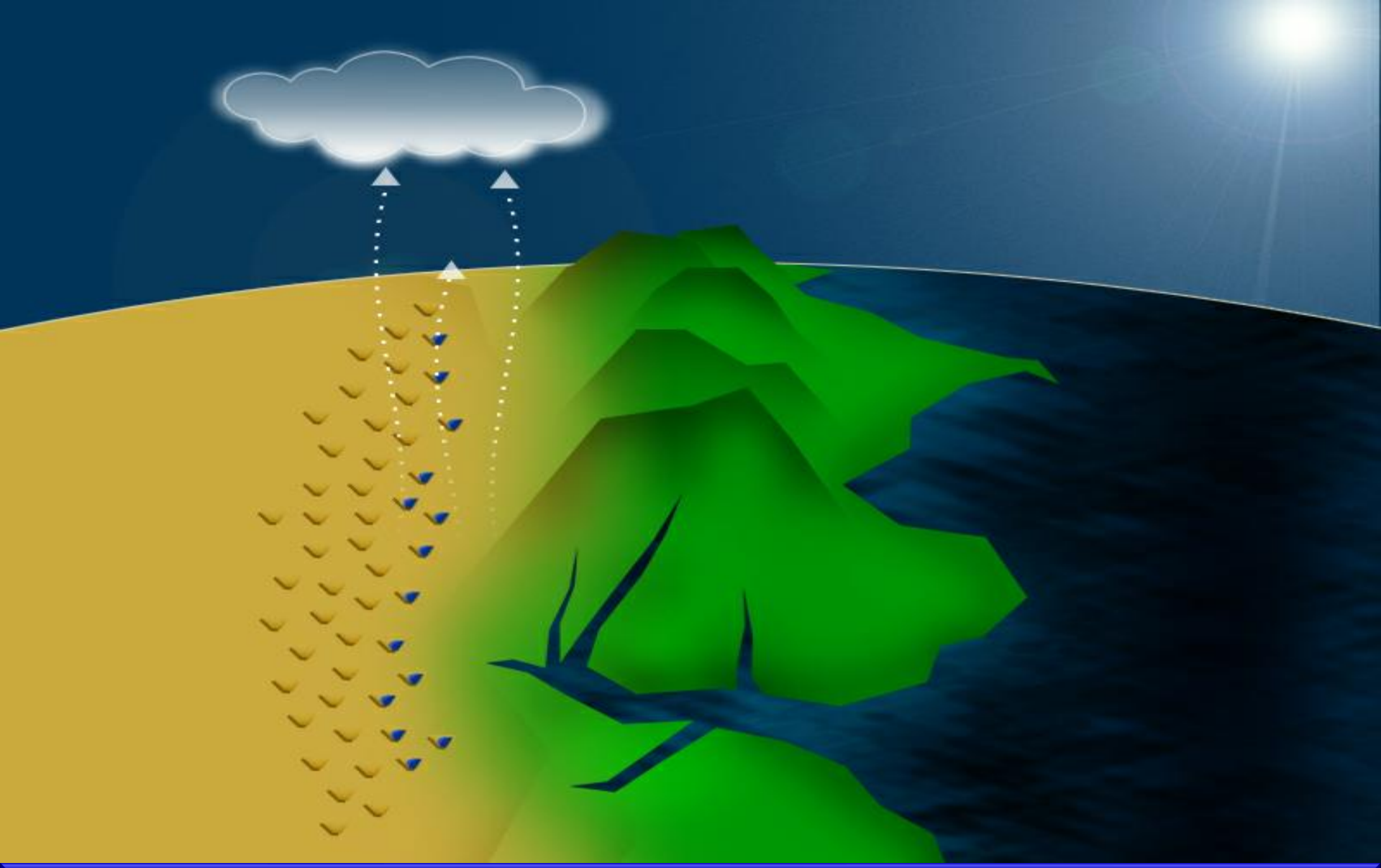

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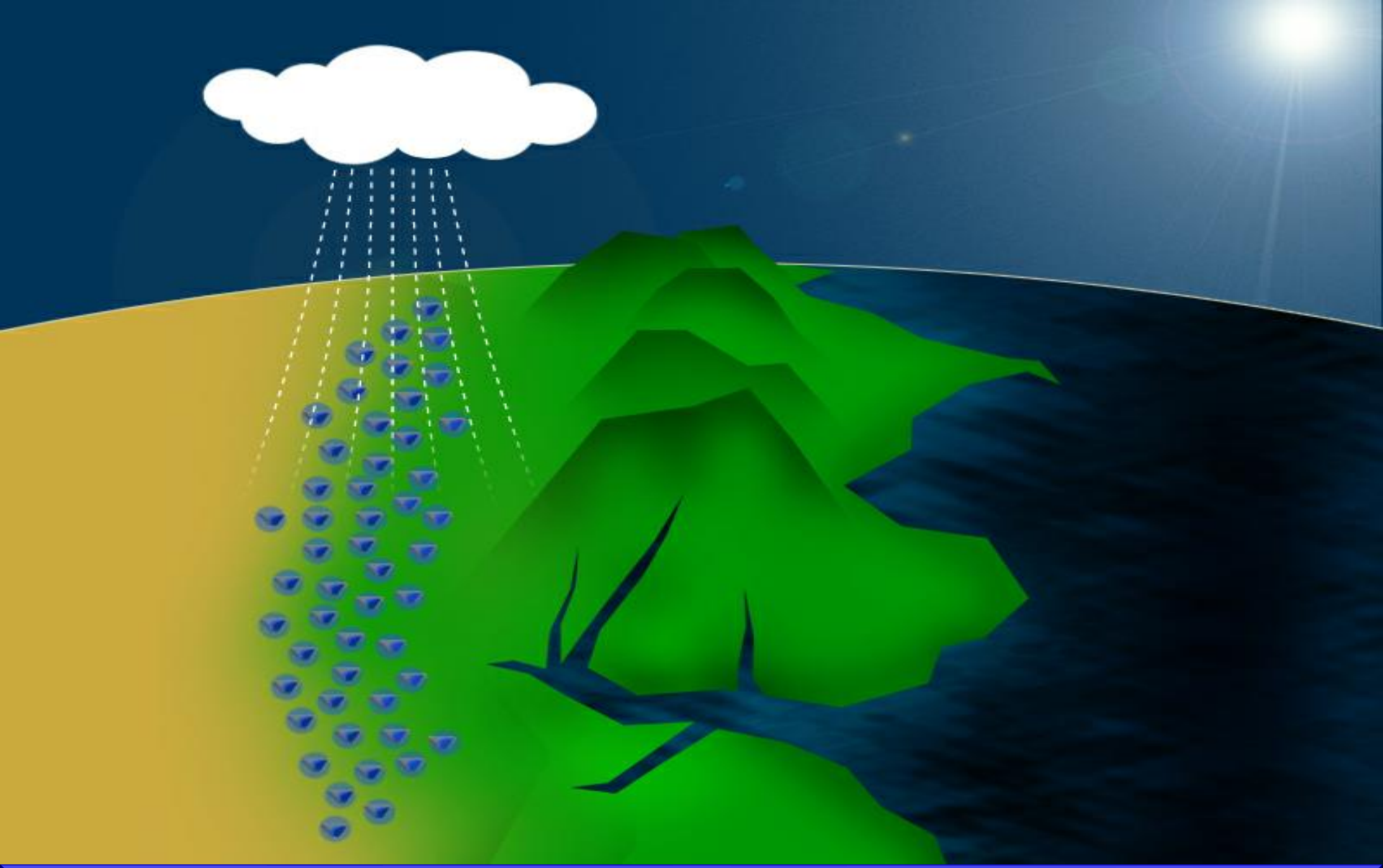

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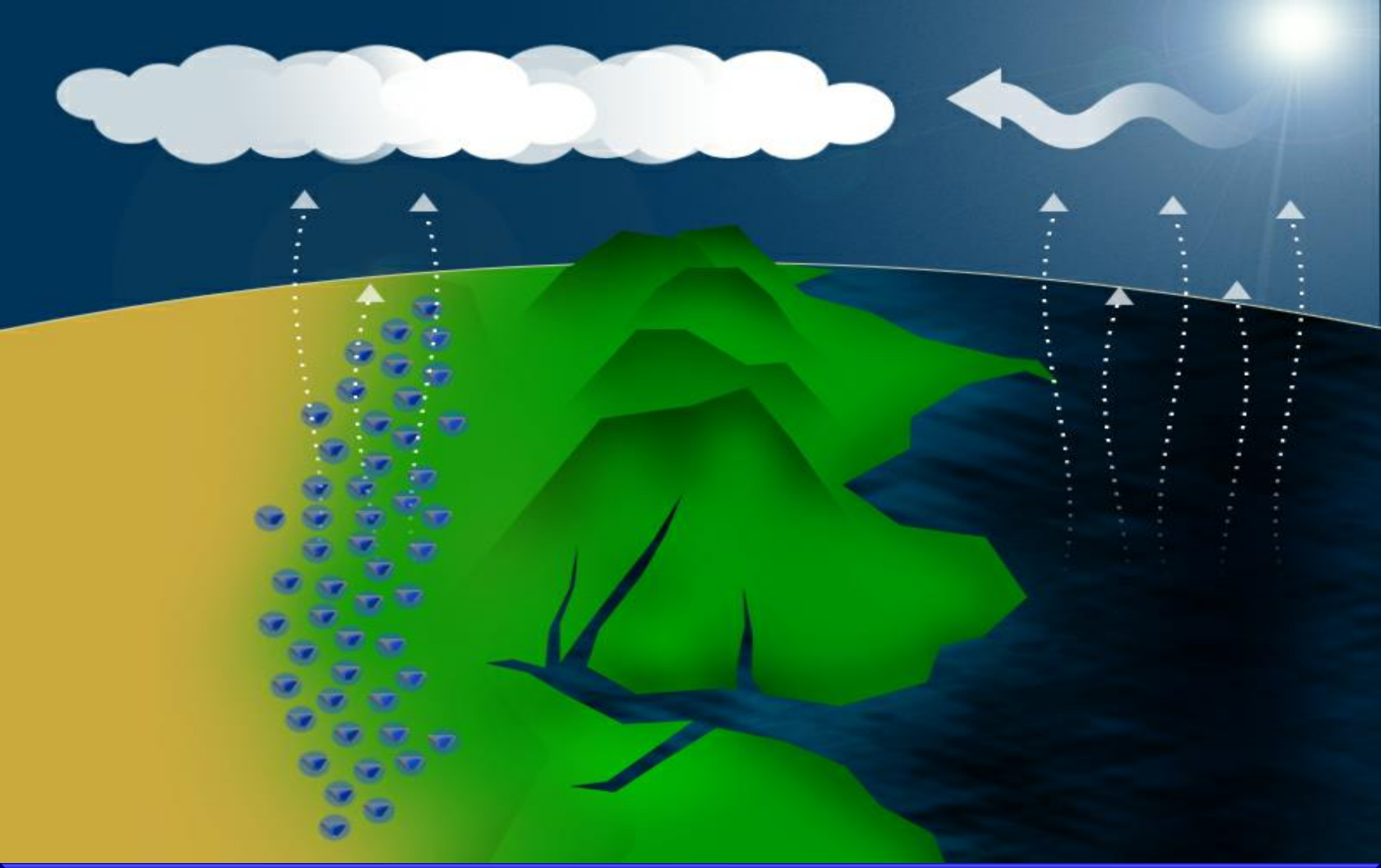

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Global Action Plan(GAP) is available online at

www.bio4climate.com

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

Author: Michal Kravčík
Editor: Jan Lambert

*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 mesures of rainwater retention suitable for all areas of human habitation and usage.*

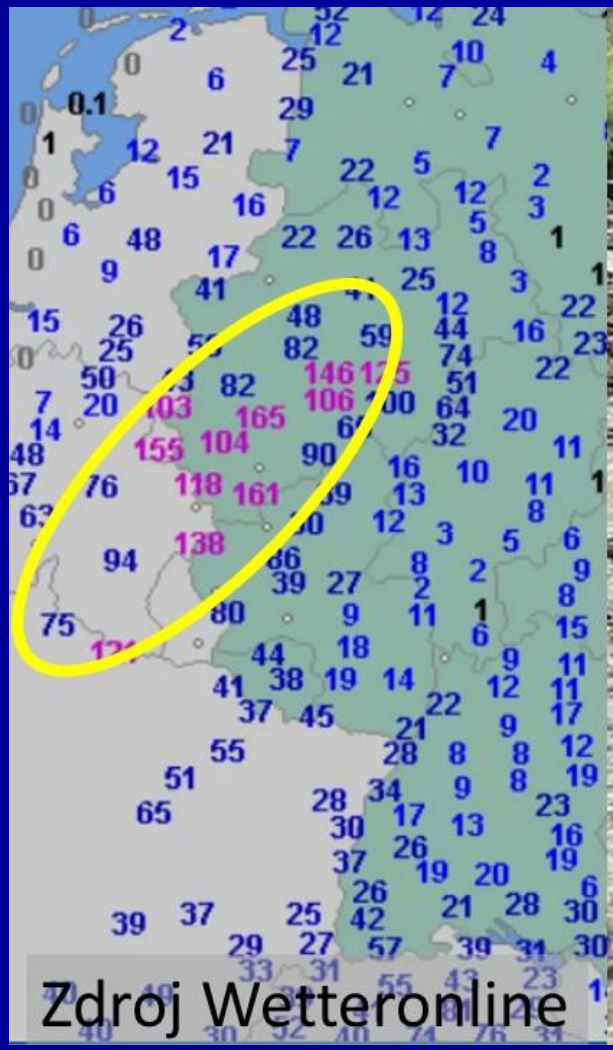
picture: Michal Kravčík

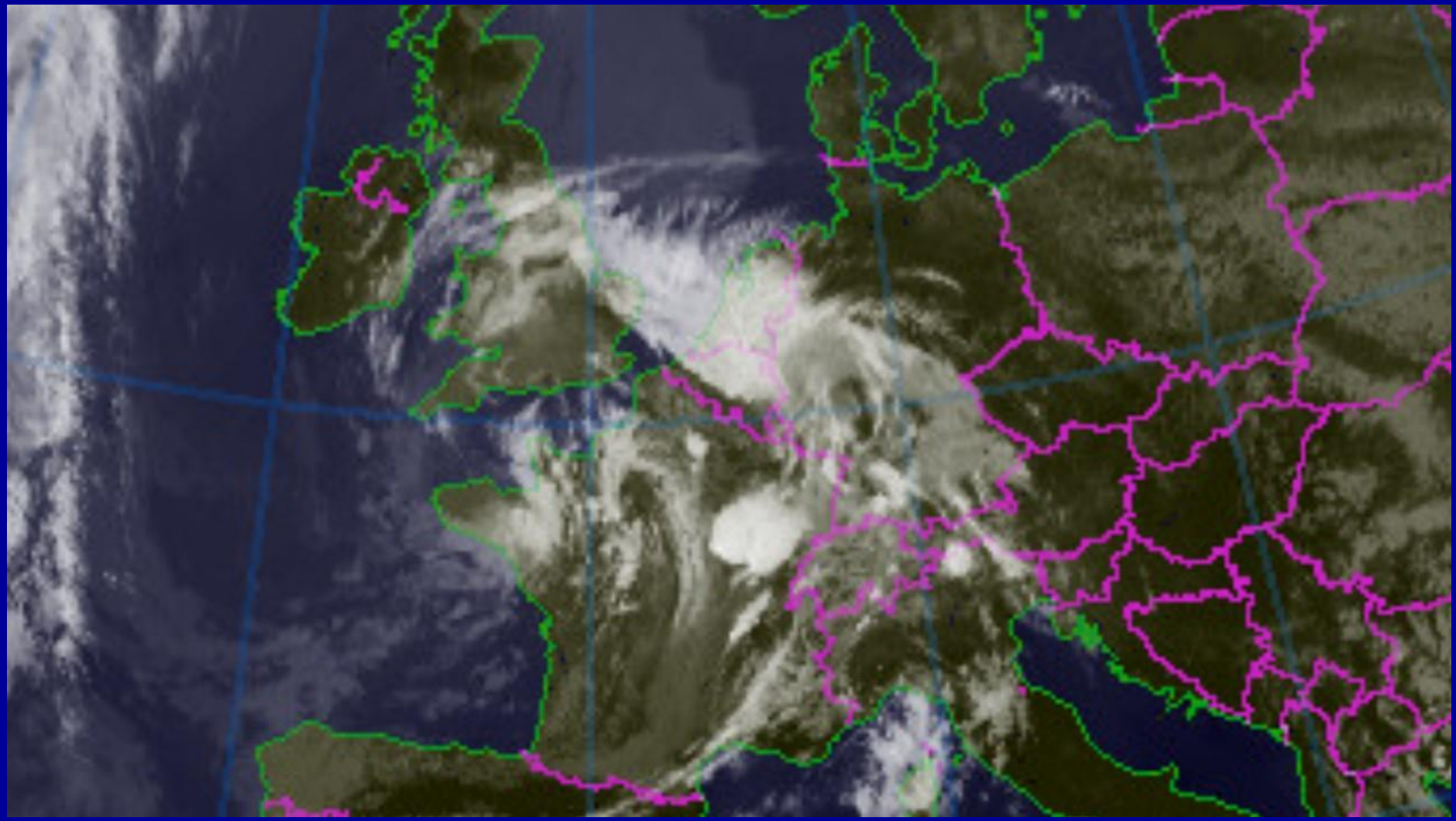
The Mulloon Institute in New South Wales, Australia is committed to developing the knowledge and practical experience required to advance regenerative land and water management techniques, including but not limited to permaculture techniques for soil hydration and natural sequence farming, and rural 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/.

Stop desertification and bring back water and vegetation:

- Air-conditioning via short water cycle
- More biomass, more food
- Biodiversity increase
- Carbon sequestration
- Recycling of nurients and water
- Employment
- **Any negative effect??**

RESTORATION PROGRAM OF KOŠICE REGION LANDSCAPE RECOVERY.


Zdroj Wetteronline



THANKS !
ĎAKUJEM !

30 years experiences brings global recognition