WATER FOR RECOVERY OF THE CLIMATE

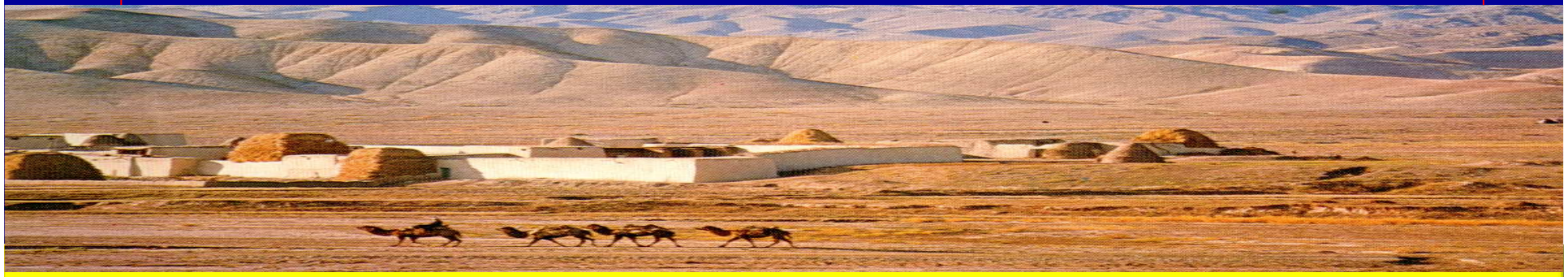
Presentation for Soul University from S. Korea

Michal Kravčík

NGO „People and Water“ Slovakia

BRATISLAVA, November 5th 2013

1. More heavy storms
2. More natural damages
3. Increasing of extremality of weather and heavyrain
4. More water erosion process
5. More fires
6. Time and space changes of rain distribution
7. Luck of water sources for nature
8. More drying up regions
9. Treat of safety of food
10. Treat of biodiversity
11. Groing of population



Bad perspective with drying up of landscape

What we inherited ?


Chaotic system
in the atmosphere produced
by drying of lands

Agricultural lands drying by roads !

Agricultural lands drying by bad managemenent !

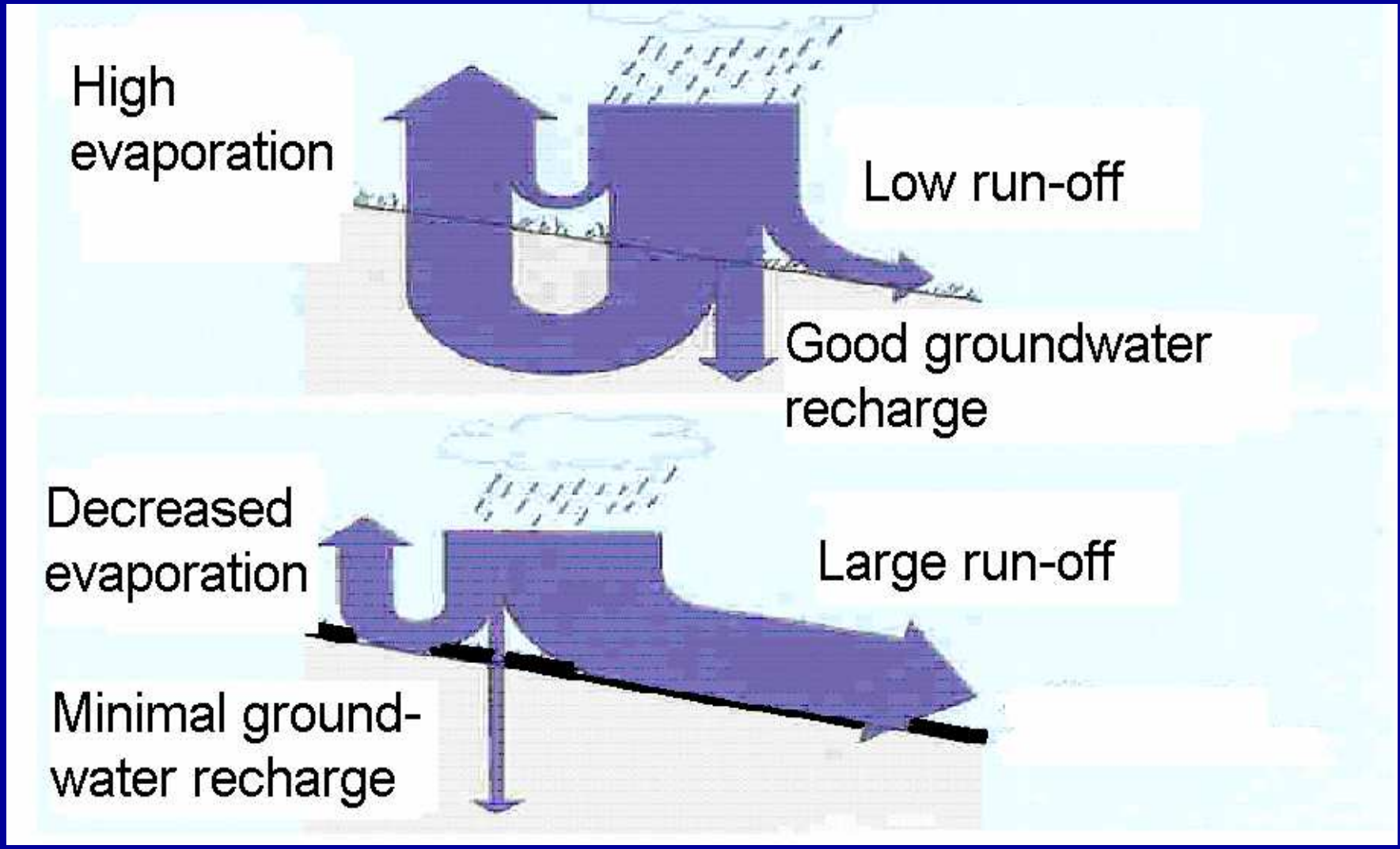
Forest lands drying by roads !

Lands drying in streams and rivers !

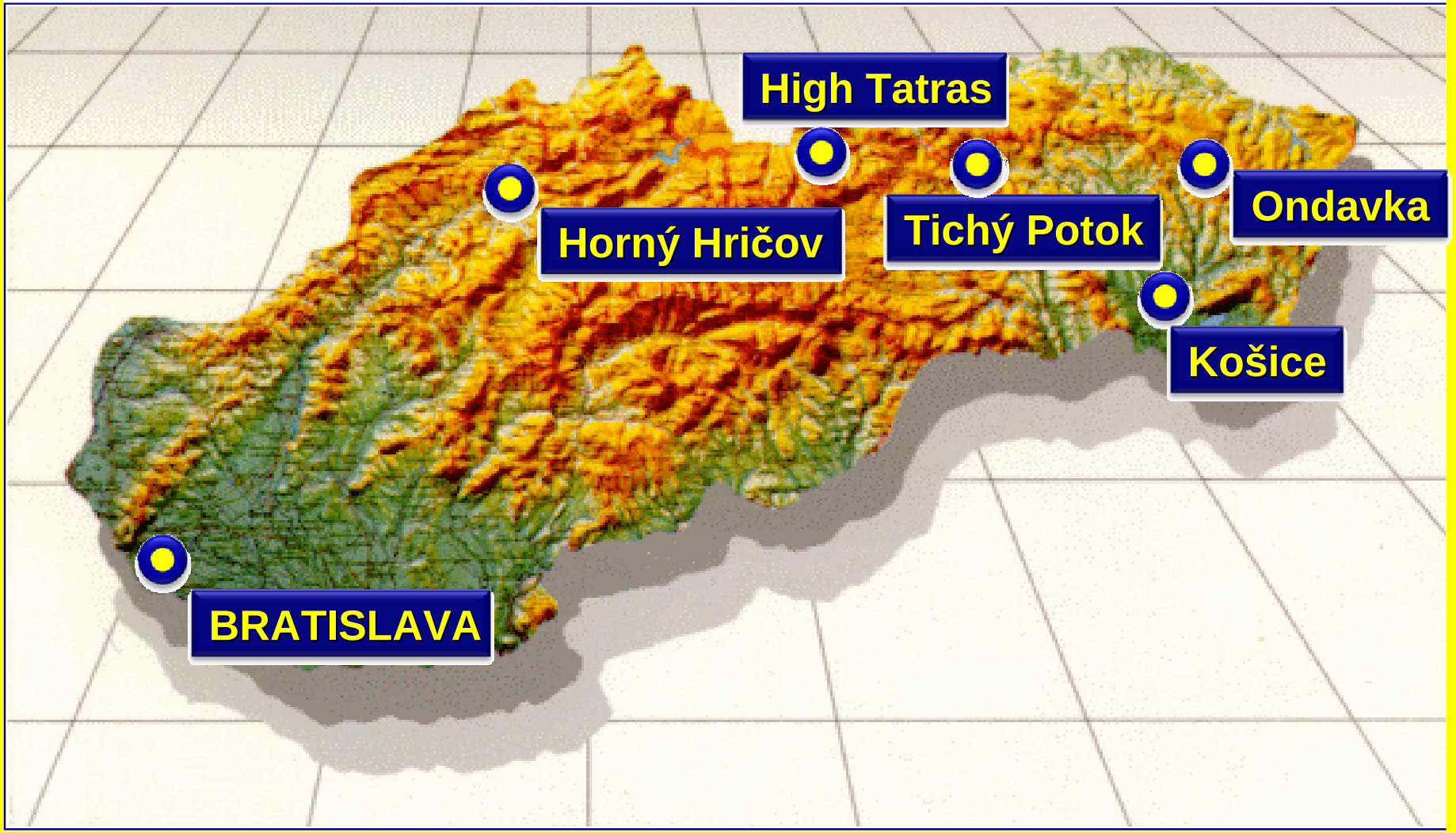
Draying of land by soil sealing in communities

Drying lands by roads

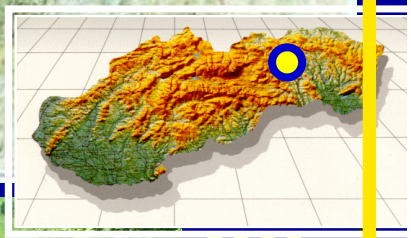
LAND MANAGEMENT AND SURFACE RUN-OFF



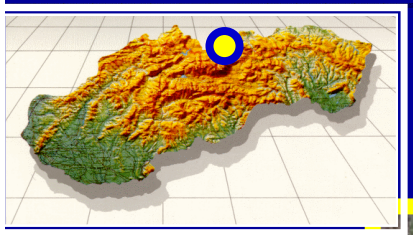
The cases for rehabilitation of devastated landscape by People and Water

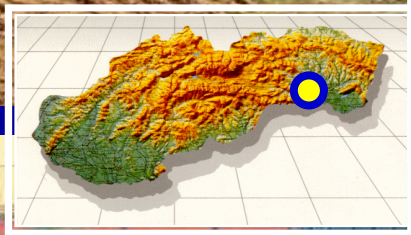


Blue Alternative (People and Water, 1995)



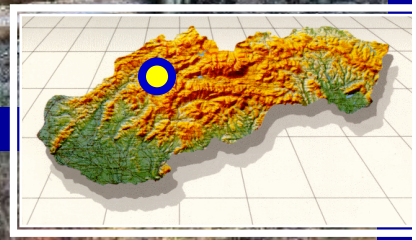
WATER FOREST, High Tatras, (People and Water, 2005)





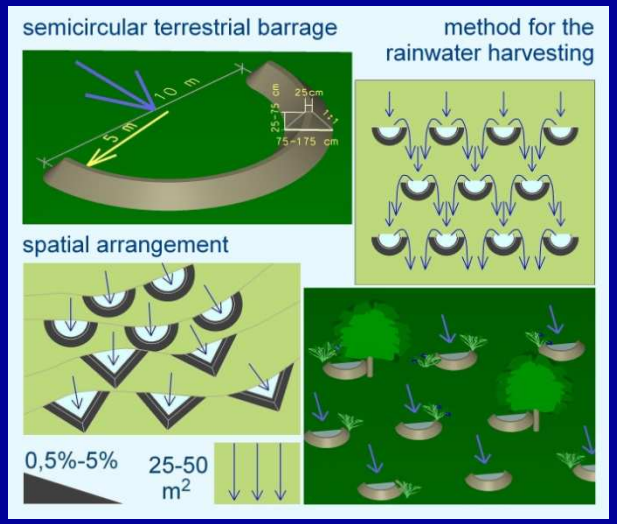
Restoration of water sources in urban zone Košice

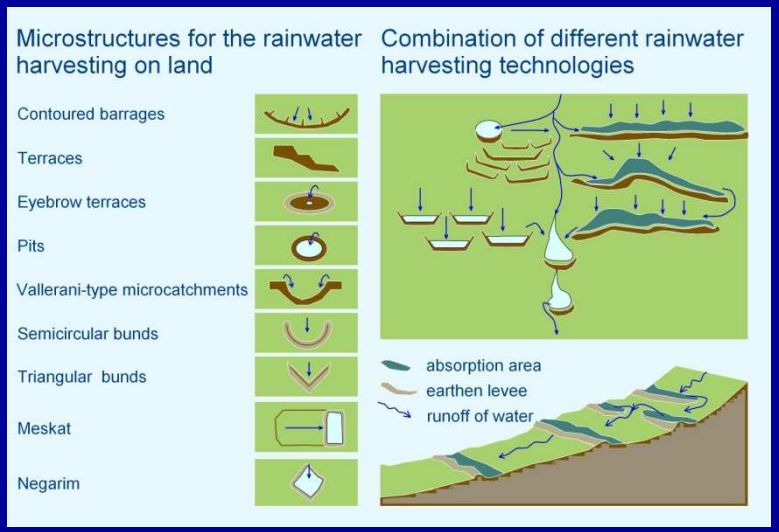
People and Water, 2005



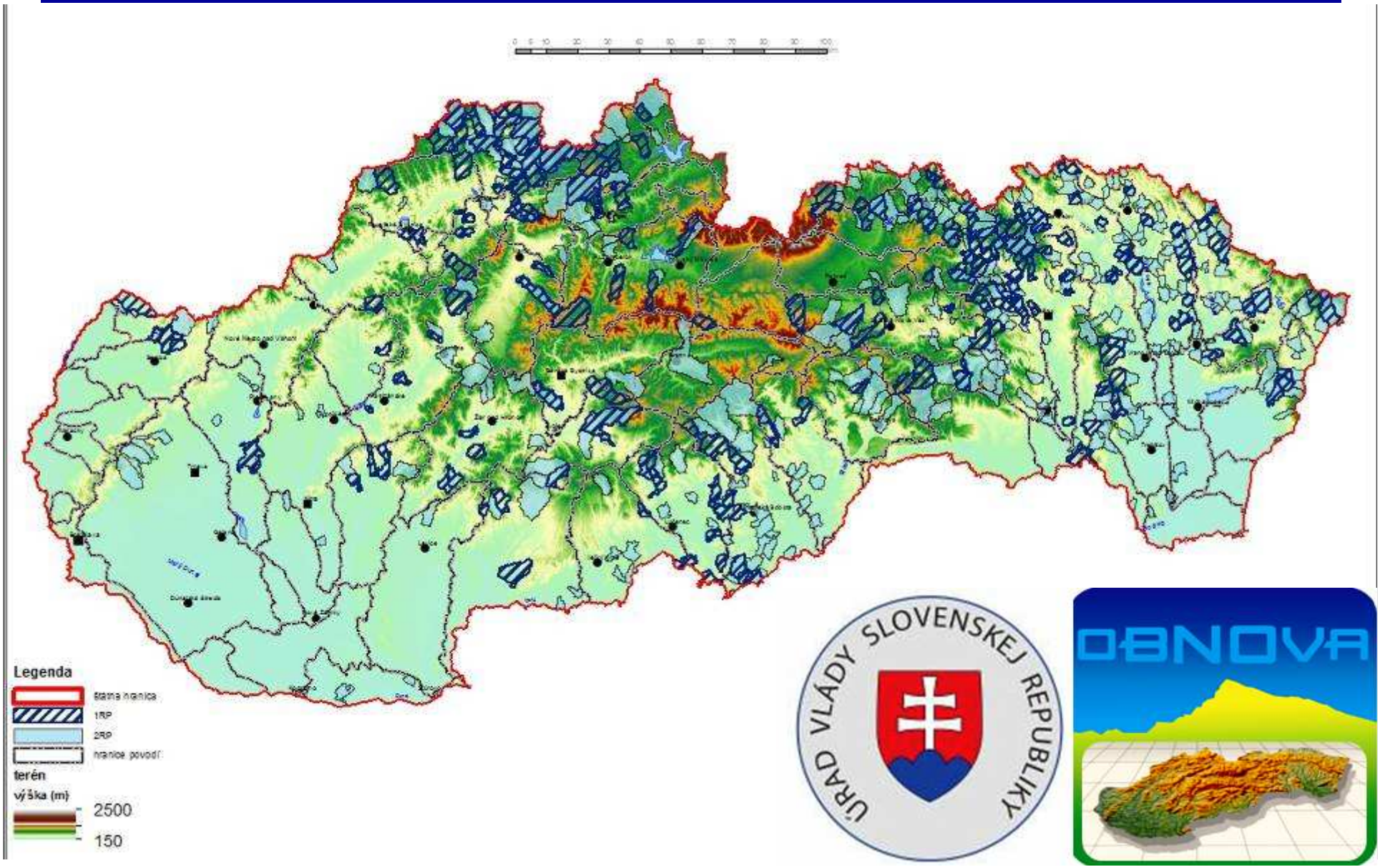
Hričov Water Ways, (People and Water, 2008)

Rainwater harvesting principles





488 communities involving to the Government Landscape restoration program in 2011




ŤAHANOVCE


Choňkovce


Liptovské Revúce


DRAVCE


NIŽNÝ SLAVKOV


NIŽNÉ REPÁŠE
11 07 2011 19:23


Svinia


Orlov


Poviná


Snežnica


Snežnica


Pčoliné


Čadca


Hlohovec


Hlohovec


Ždiar


Kyjov


Turcovce


Dúbrava


Krivany


Hervartov


Hričov


Dúbrava


Jakubany


Water forest High Tatras


Matysová


Orlov

Fričovce


Zázrivá


Krivany


Krivany


Nižný Slavkov


Brehy

Dunajov


Malý Šariš - Šťastná


Demjata


Bogliarka


Choňkovce

Hrnčiarske Zalužany


Ožďany

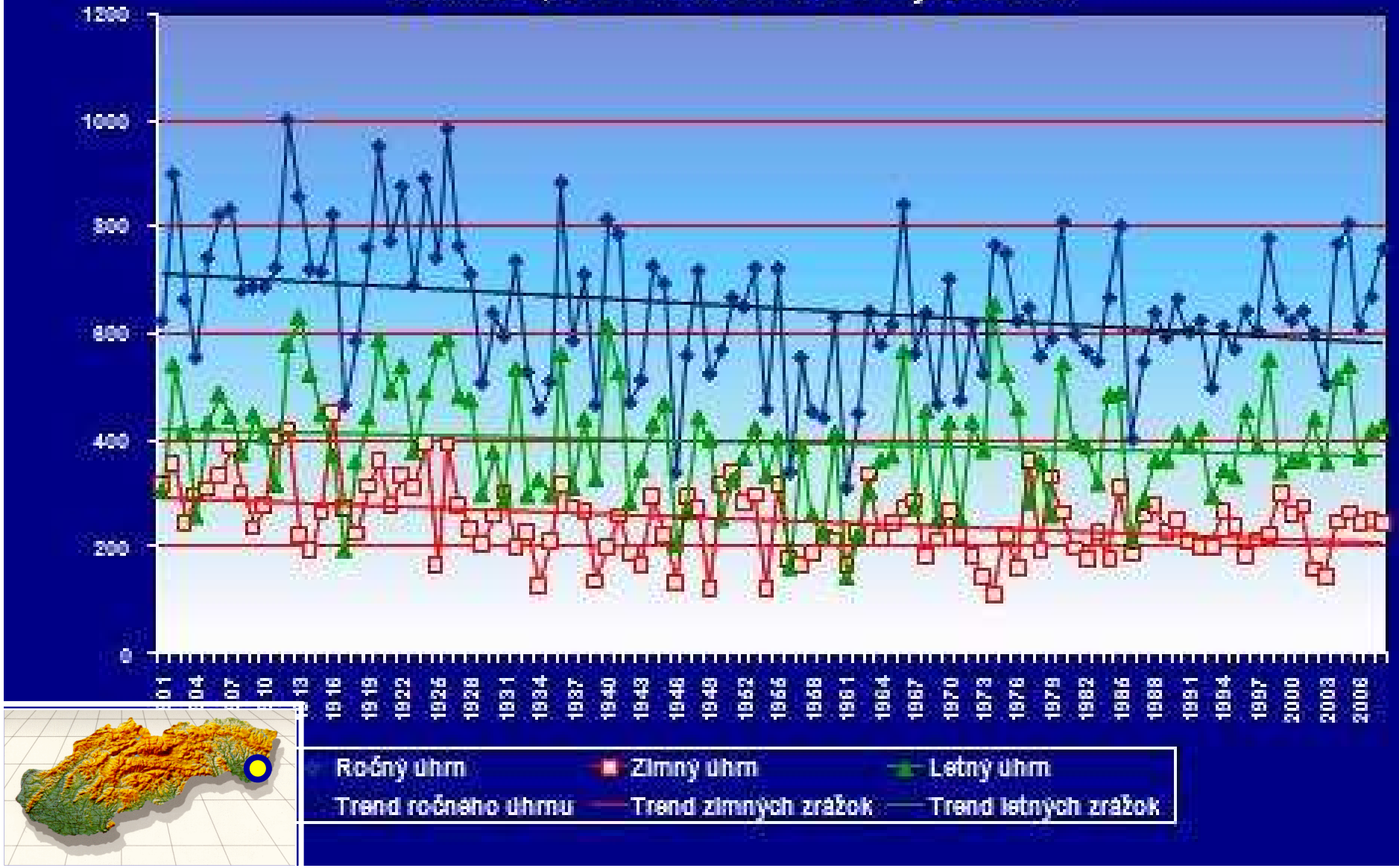
WATER CYCLE,

FLOWS OF ENERGY

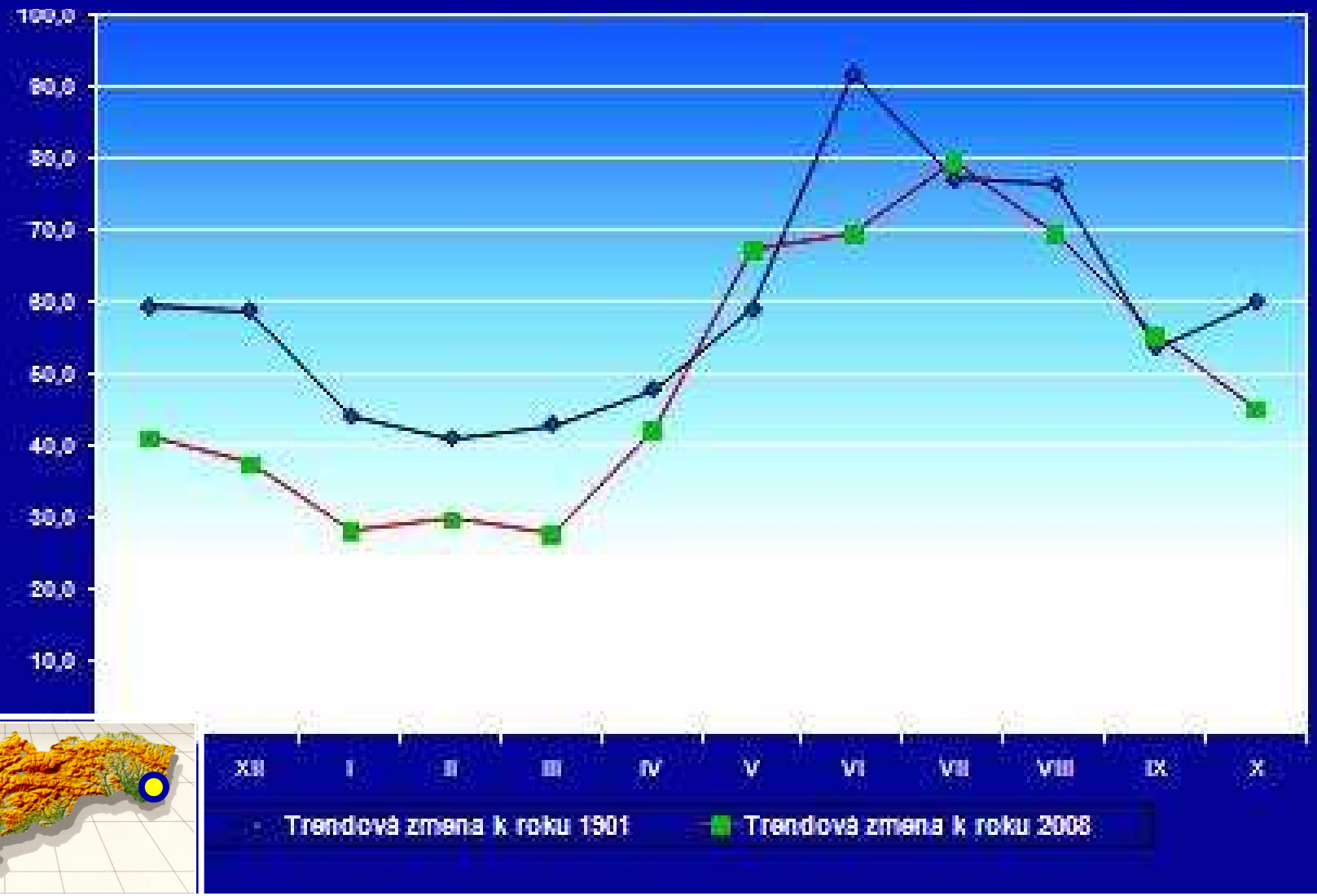
AND

CLIMATE CHANGE

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

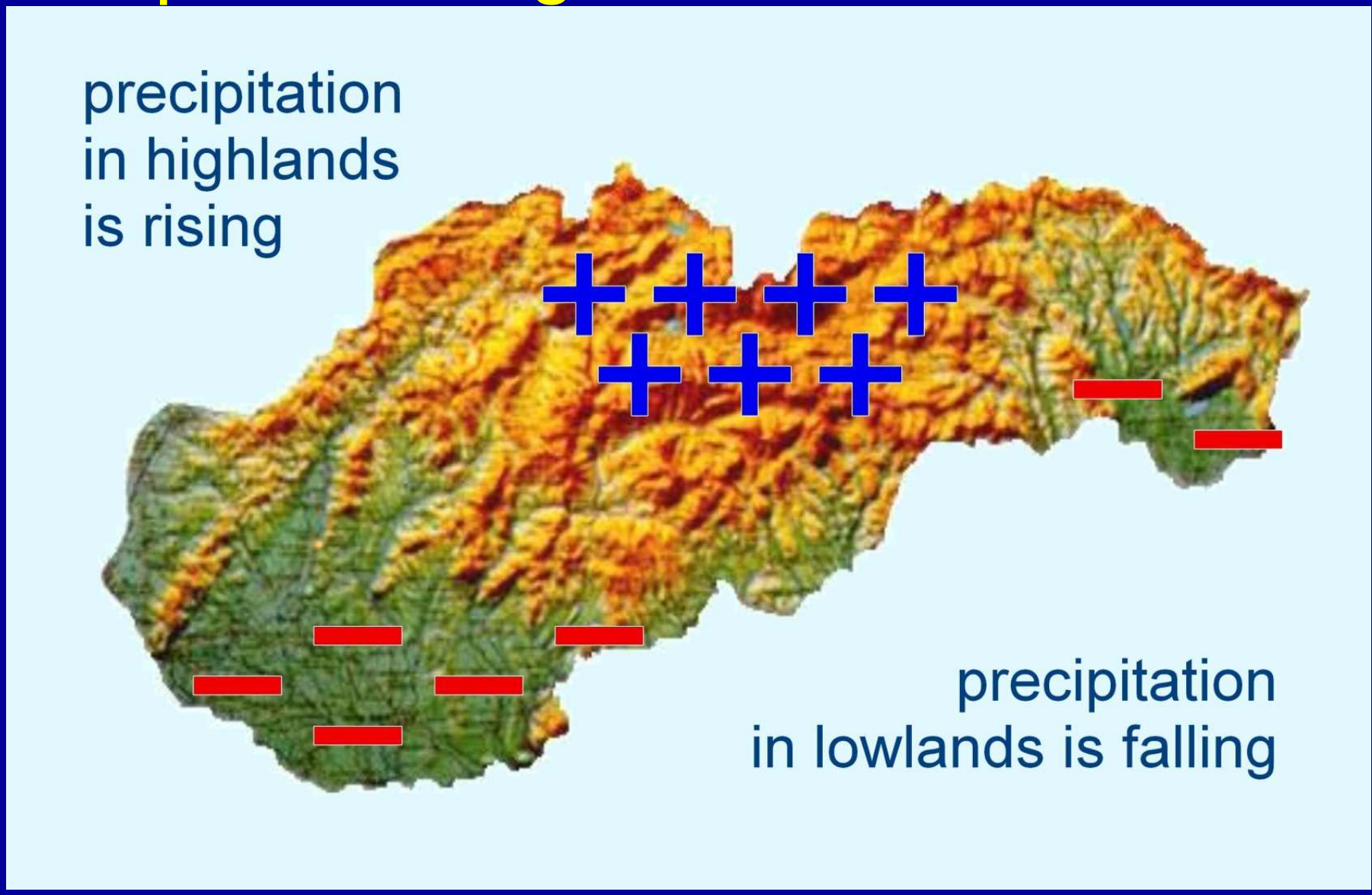


Monthly precipitation trend change In Michalovce (period 1901-2008)

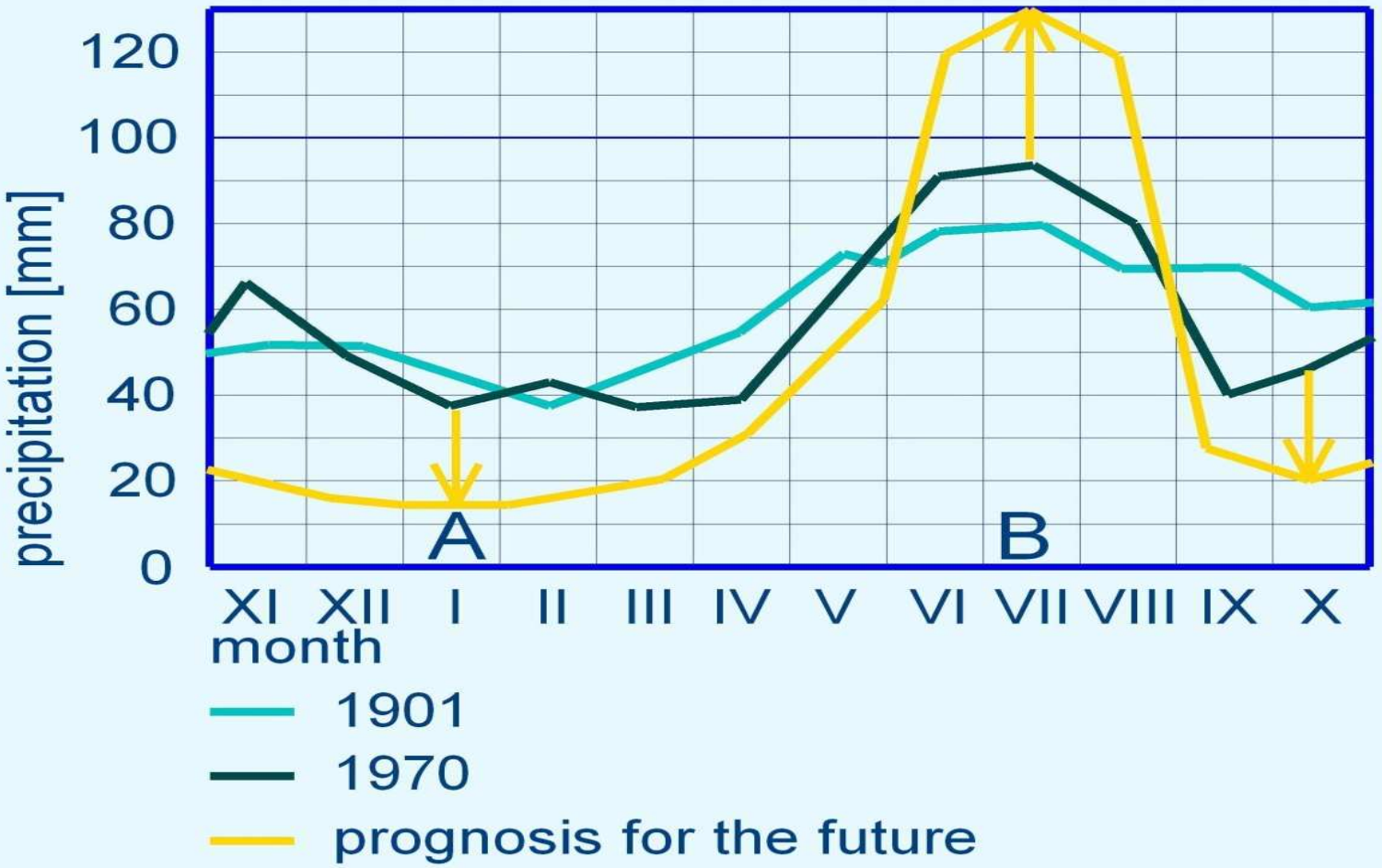



Žilina
Bardejov
Poprad
Prešov
Trenčín
Michalovce
Košice
Rožňava
Trnava
Nitra
Levice
Bratislava
Komárno
29. 6.2009 12:00 UTC
Zlúčená RL mapa - Z: CAPPI 2km
-20 -10 0 10 20 30 40 50 60 70 [dBZ]
0,02 0,1 0.3 1.3 5.6 24 100 400 [mm/h]
(c) 2009 SHMÚ

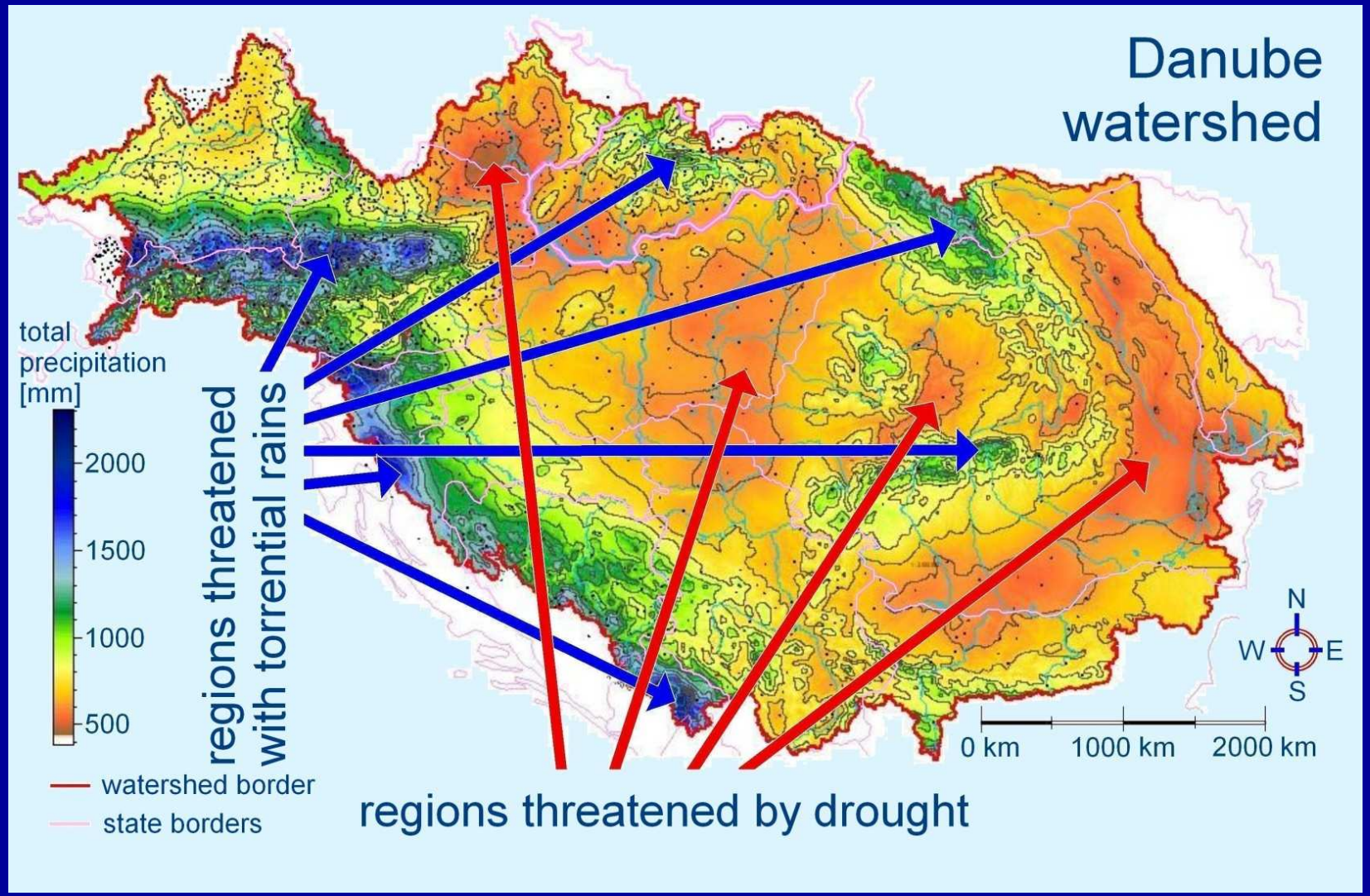
Space change the rain in Slovakia



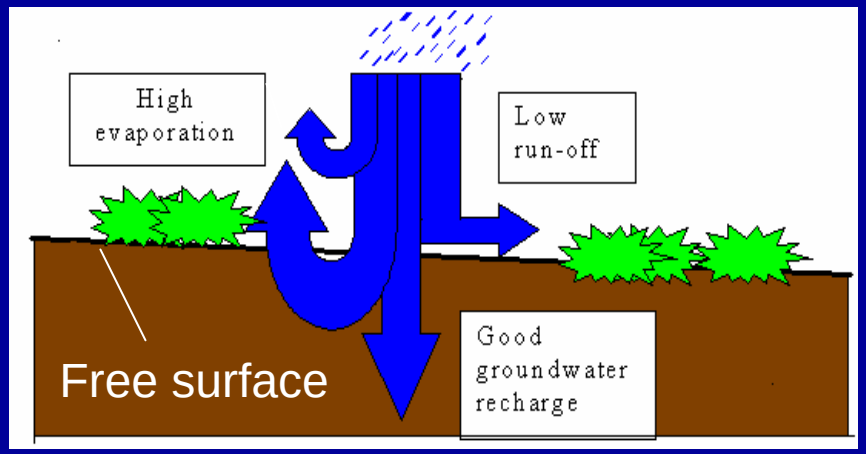
PRECIPITATION TRENDS IN SLOVAKIA

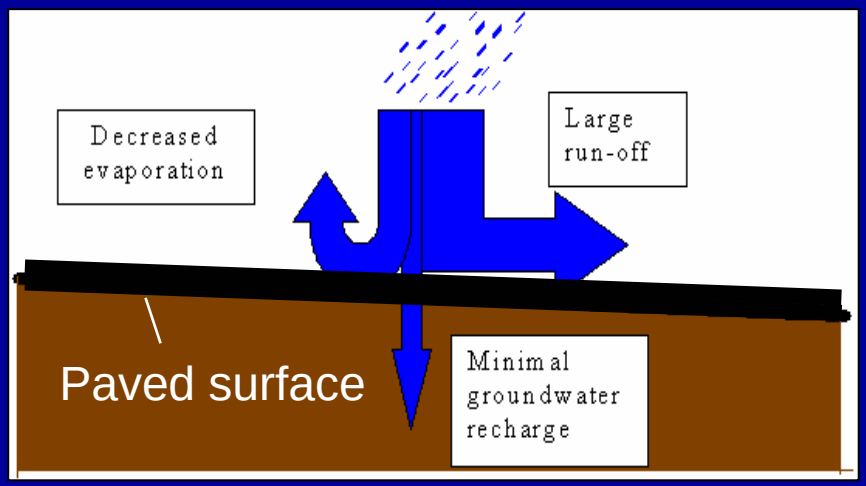


PRECIPITATION IN MOUNTAINS AND LOWLANDS – DANUBE WATERSHED



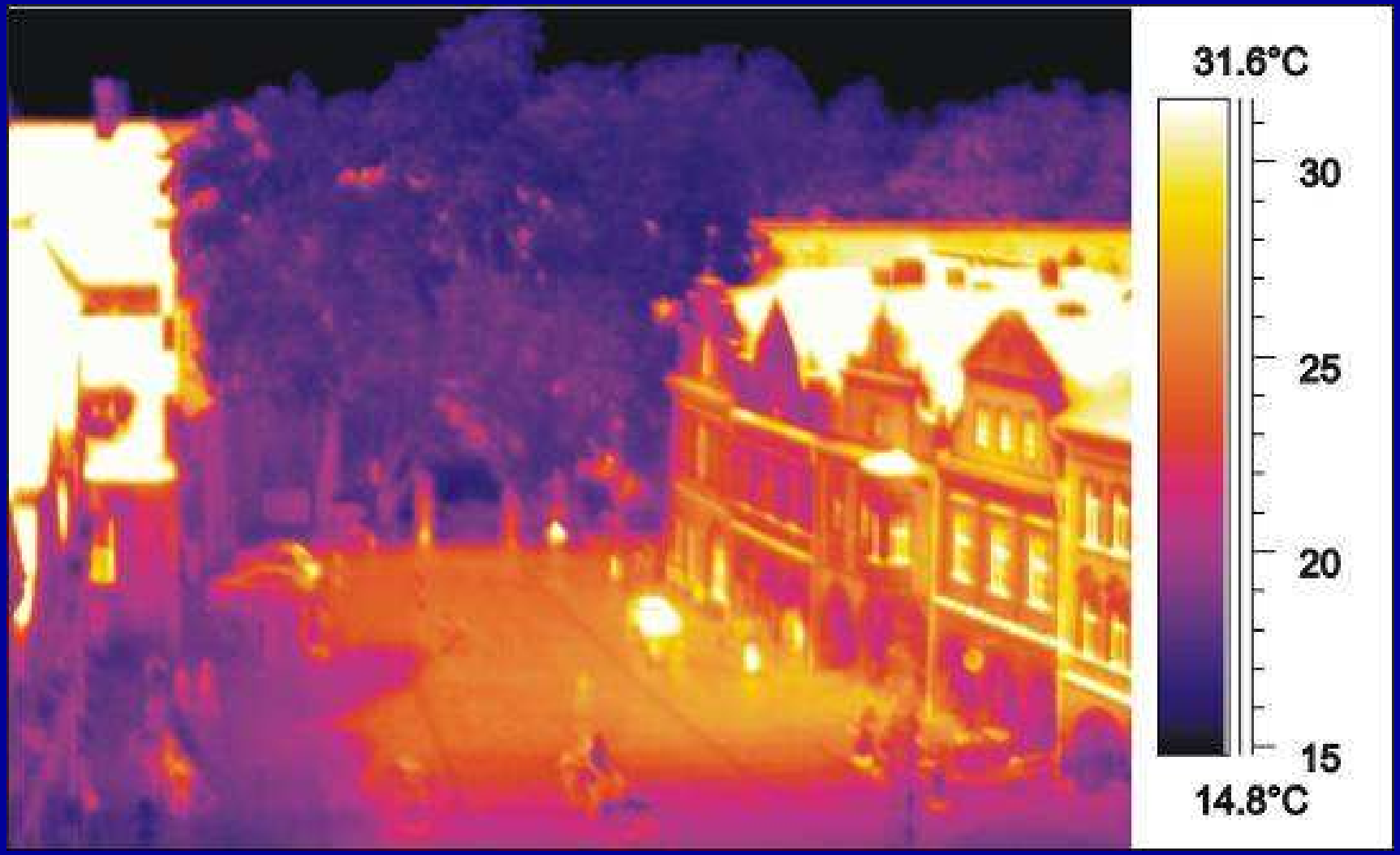
Impact of deforestation, agriculture and urbanization:





- 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

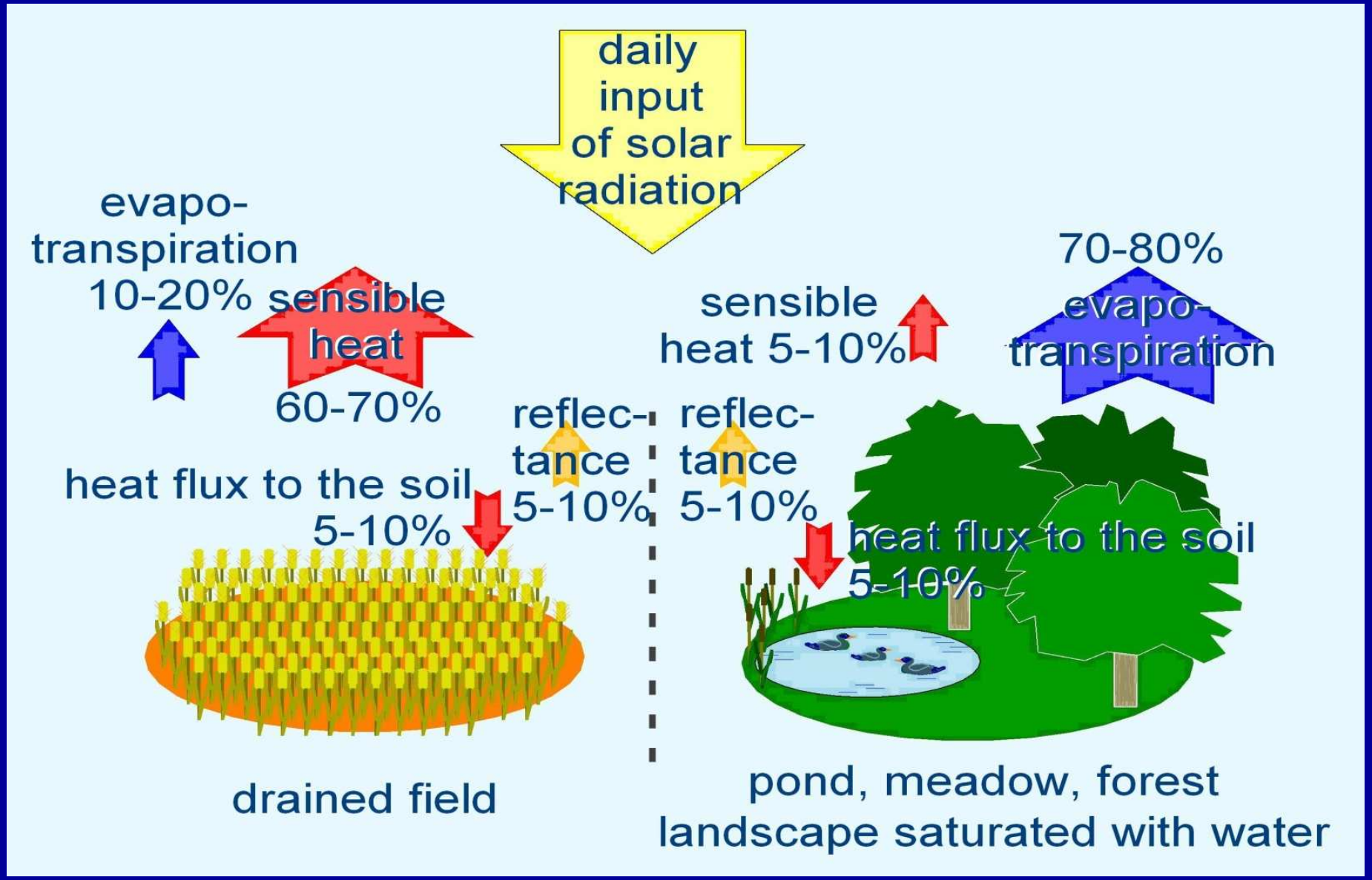
PHOTO OF A CITY TAKEN WITH A THERMAL CAMERA



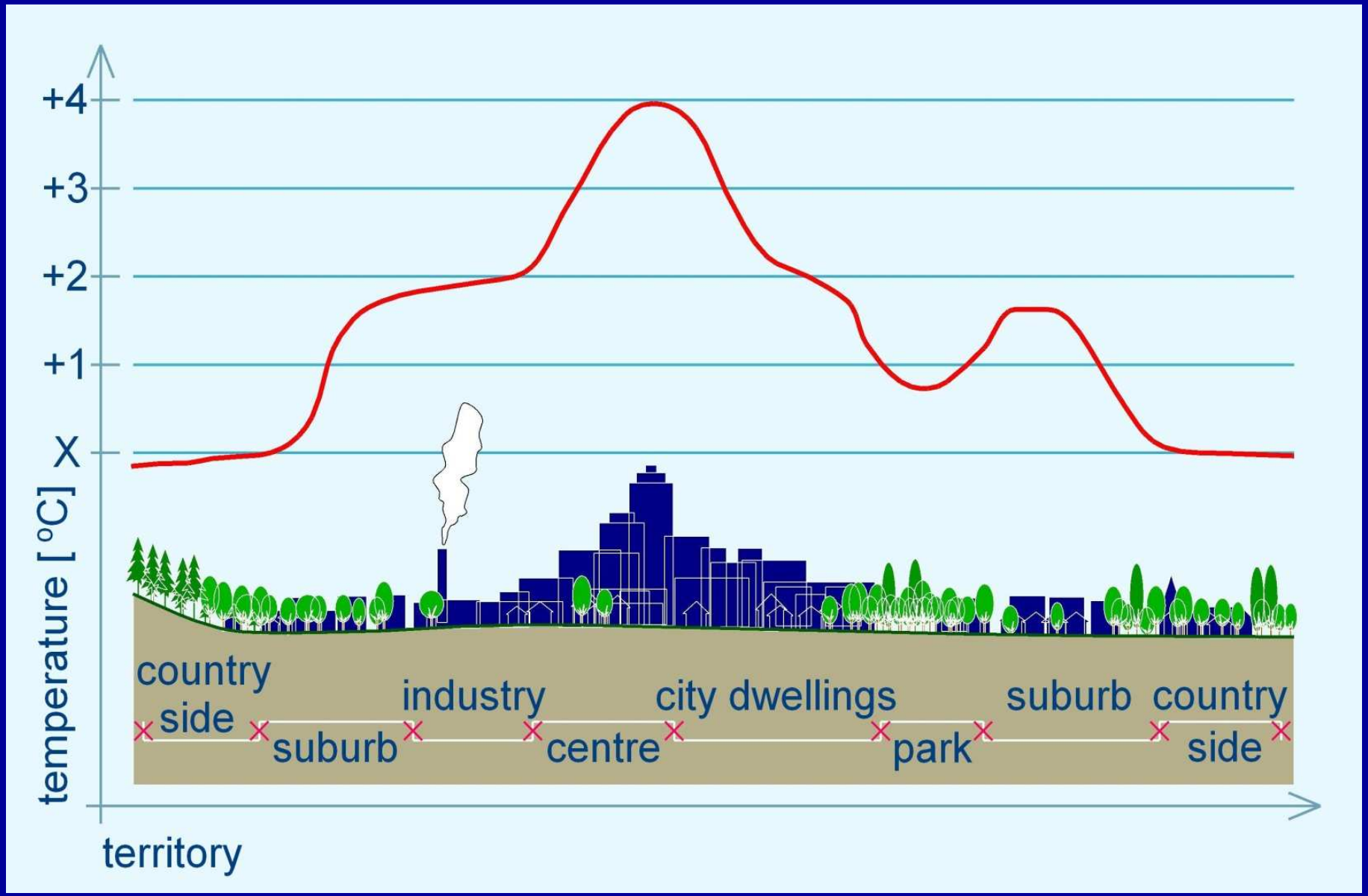
The tree as an air-conditioning unit

- 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

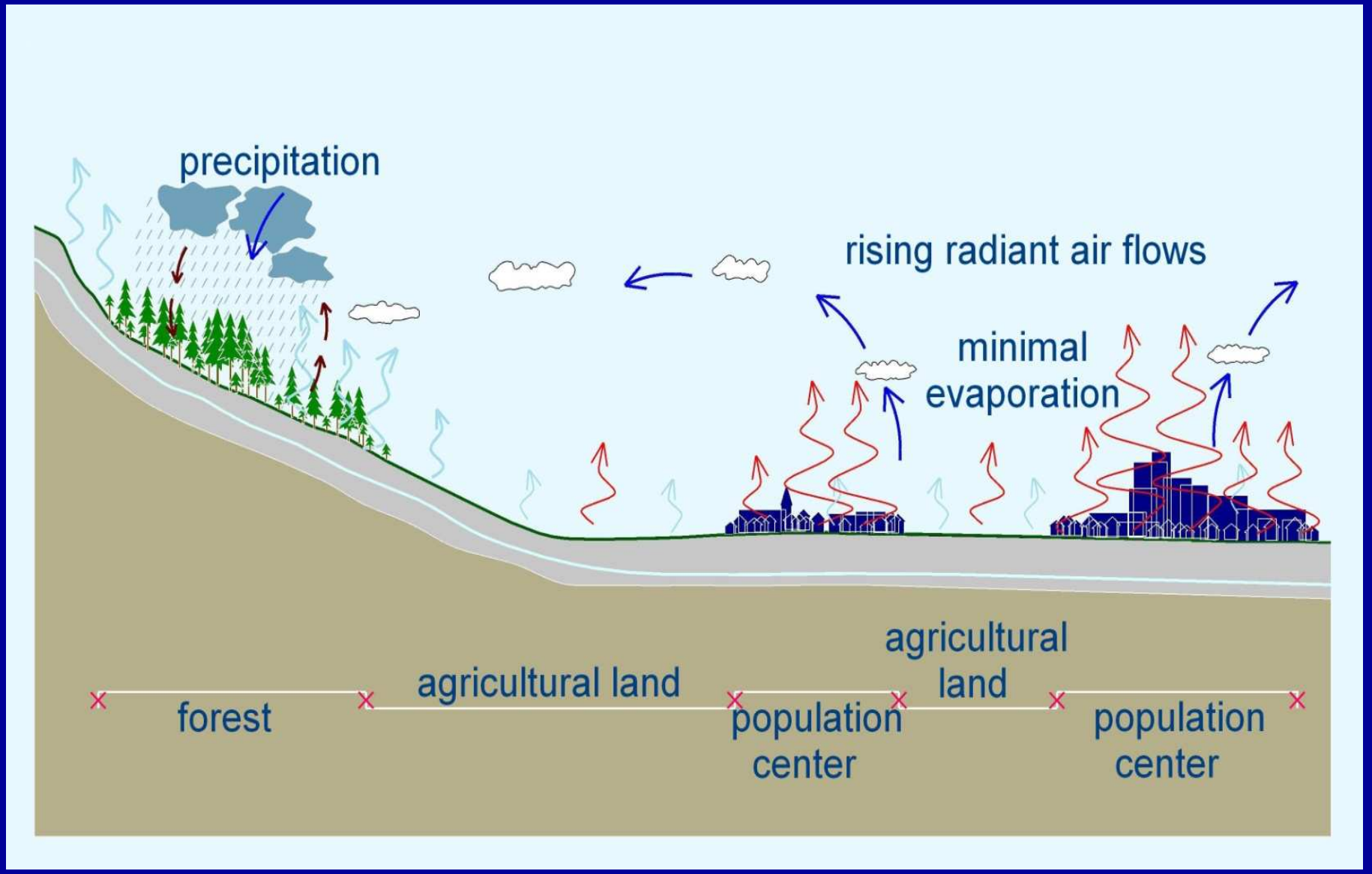
DISTRIBUTION OF SOLAR ENERGY



HOT CLIMATIC UMBRELLA OF A CITY

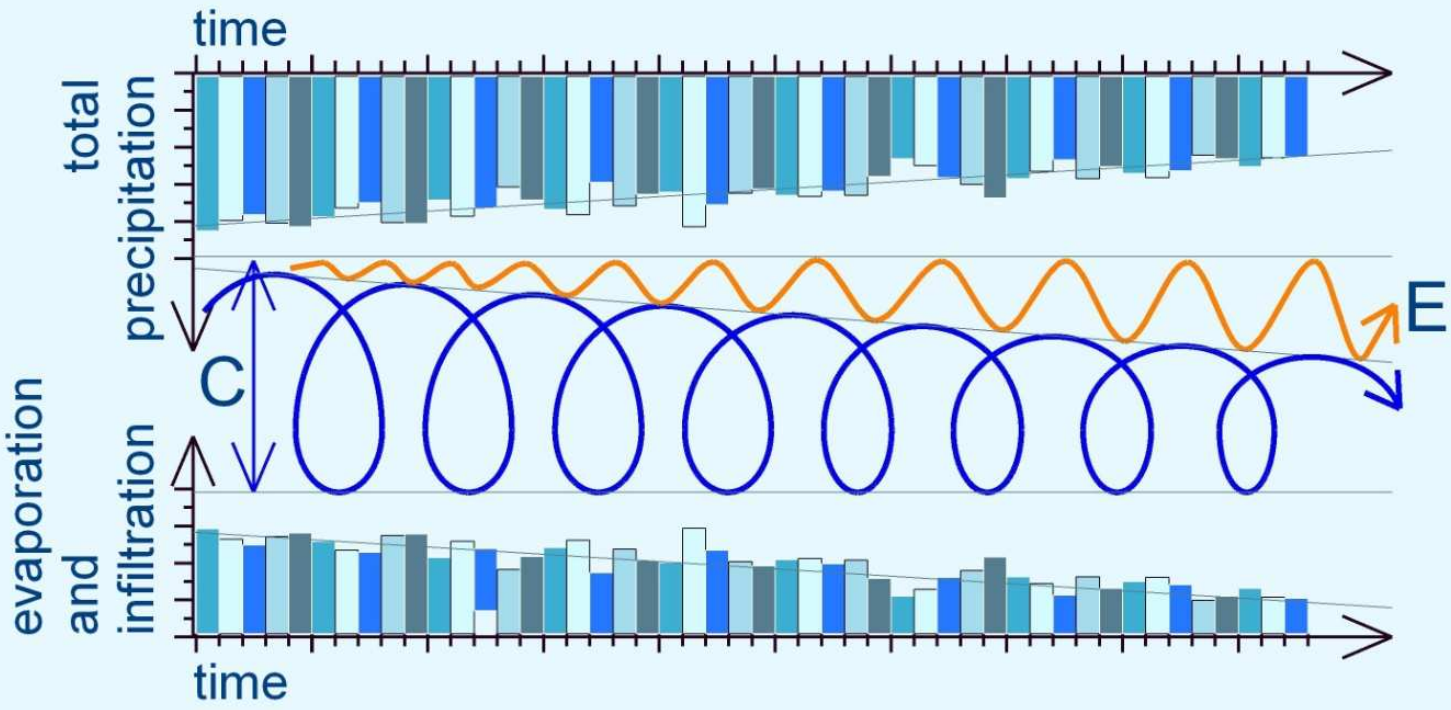


IMPACTS ON WEATHER /CLIMATE




July 28th 2002, Eastern Slovakia,

GROWTH OF EXTREME WEATHER WITH DECLINE OF SMALL WATER CYCLE



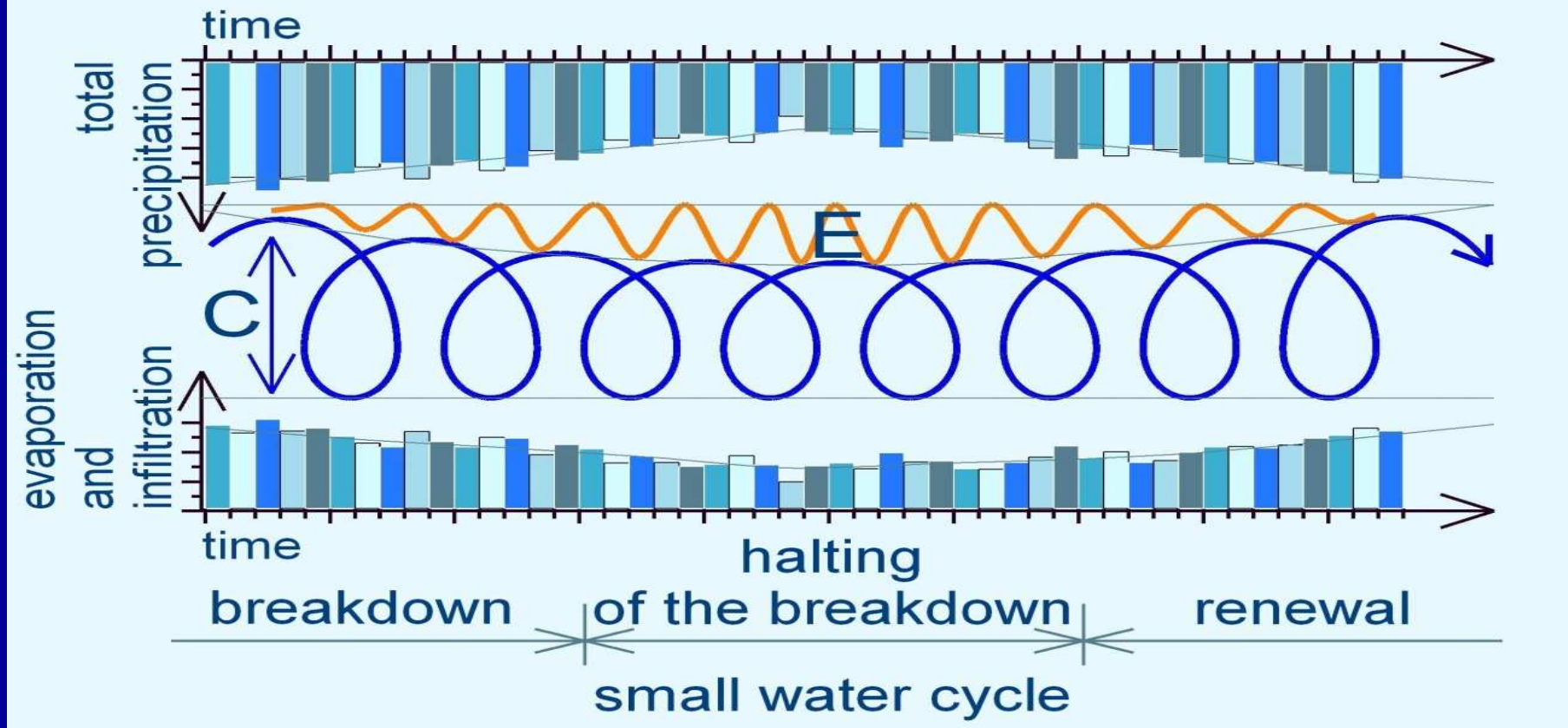
C - diagram of the circulation of water on land

E - diagram of extreme weather events

RECOVERY

OF THE CLIMATE

DESTRUCTION AND RENEWAL OF SMALL WATER CYCLE



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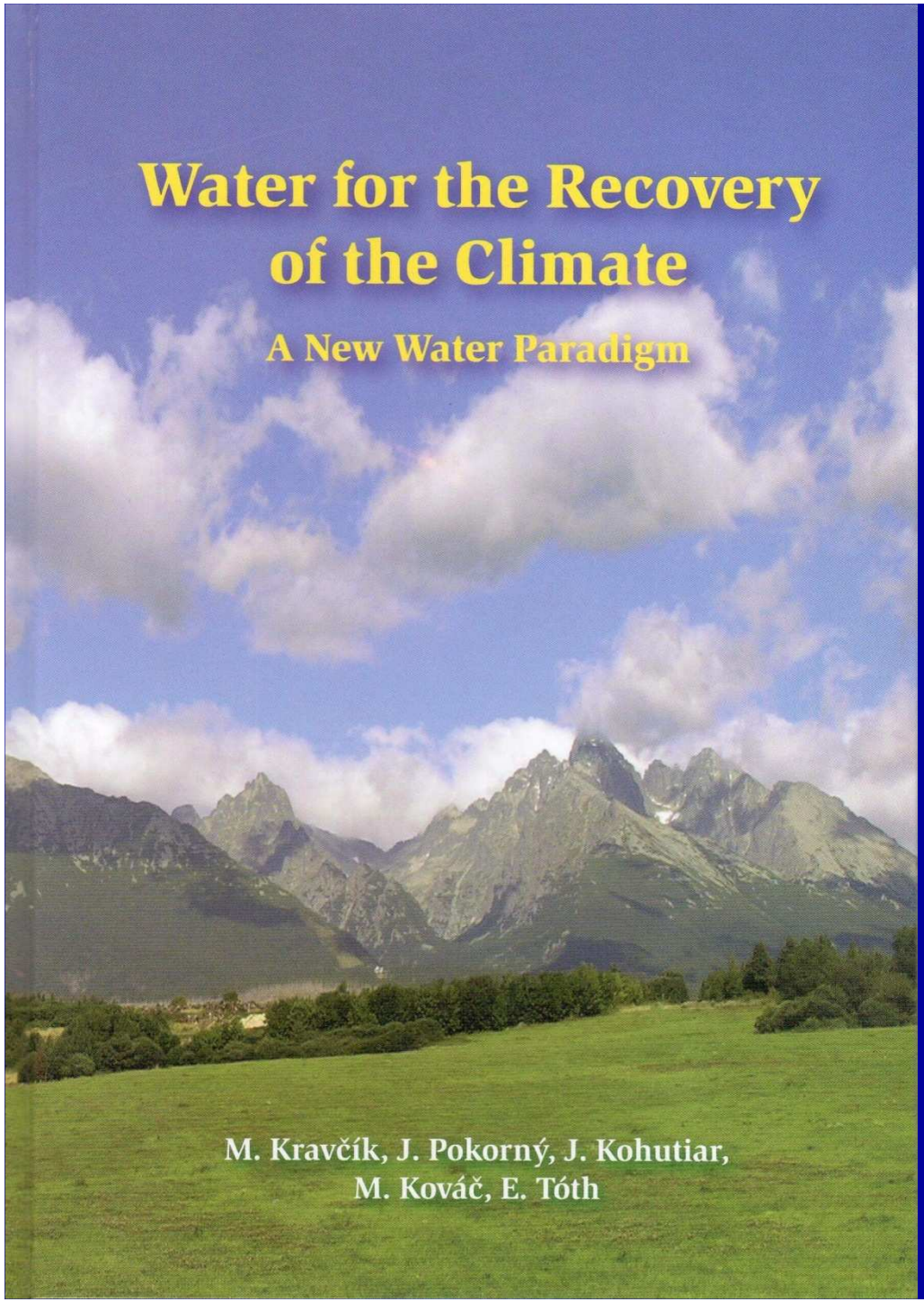


- humanity accelerates the runoff from land
- more solar energy is transformed into sensible heat
- draining of a land can be reversed through comprehensive conservation of rainwater
- renewal of small water cycle over land can temper extreme weather events and ensure a growth in water reserves

- 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 clouds

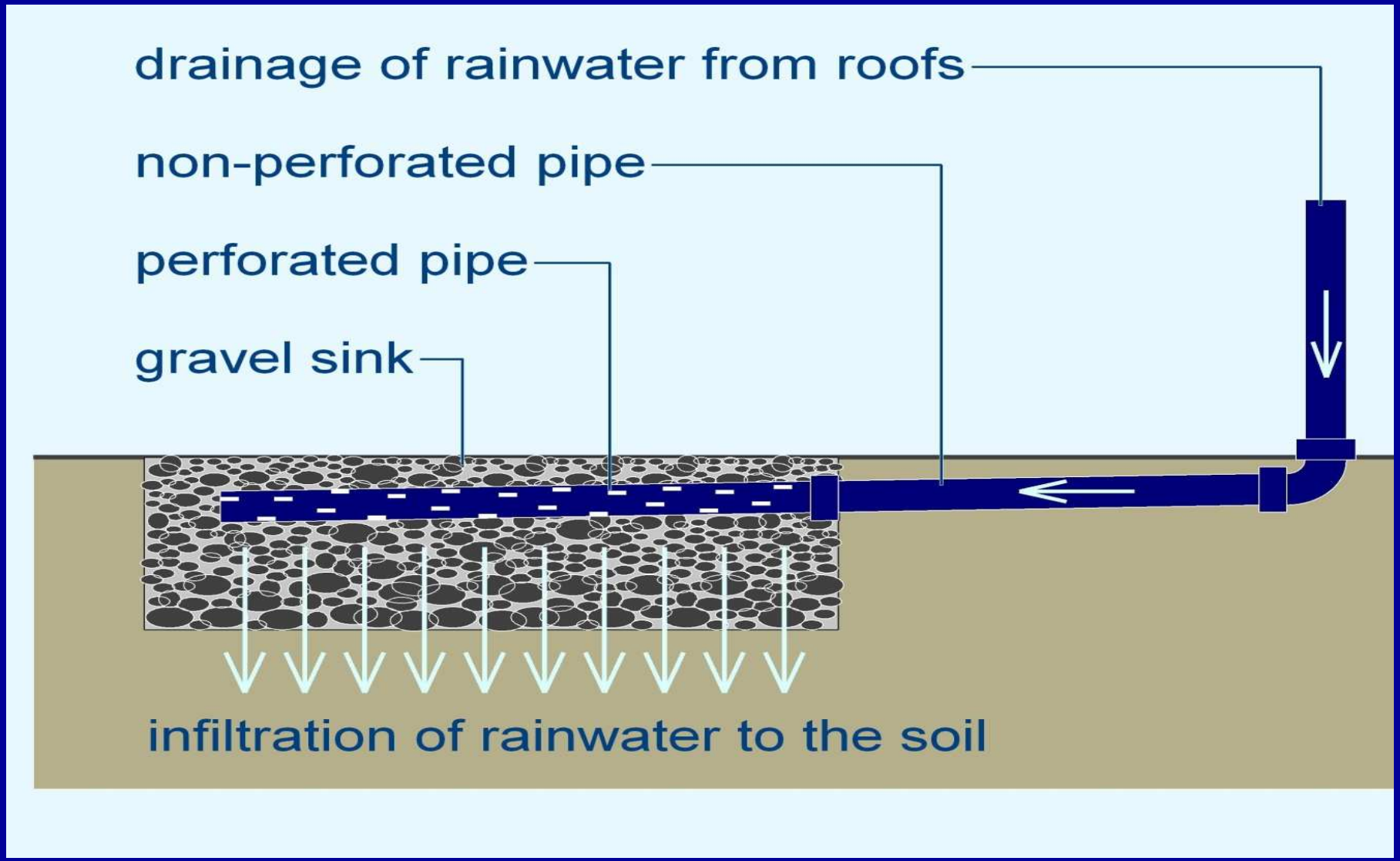
more soft rain

more air humidity

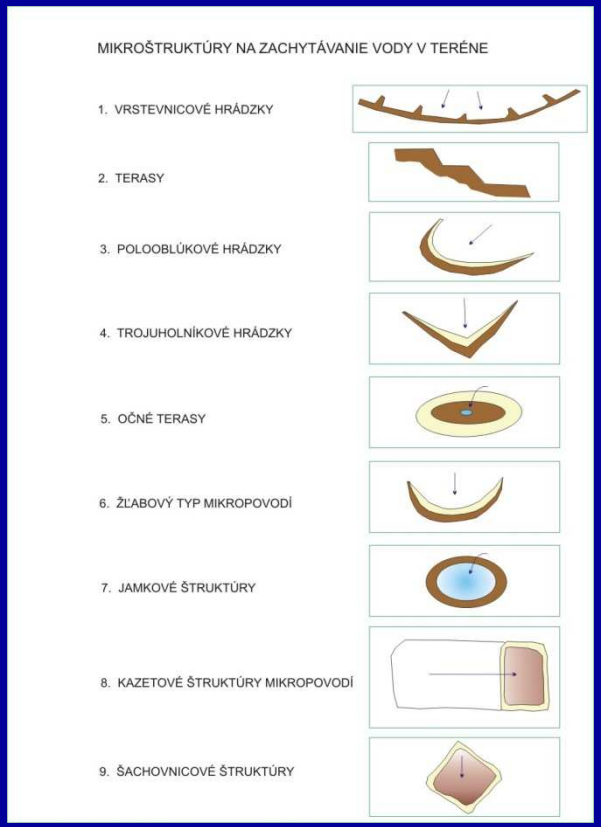
more evaporation from lands

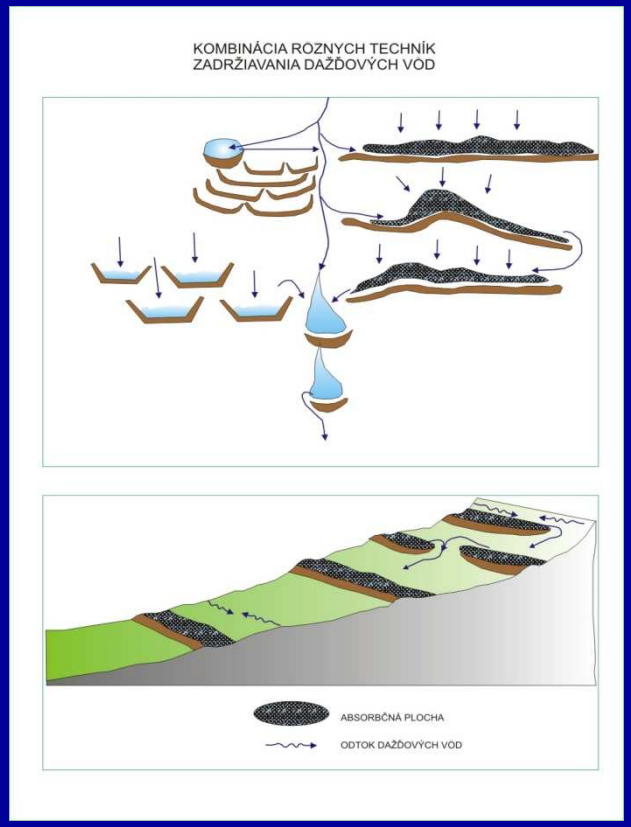
more vegetation and biodiversity
more groundwater recharge

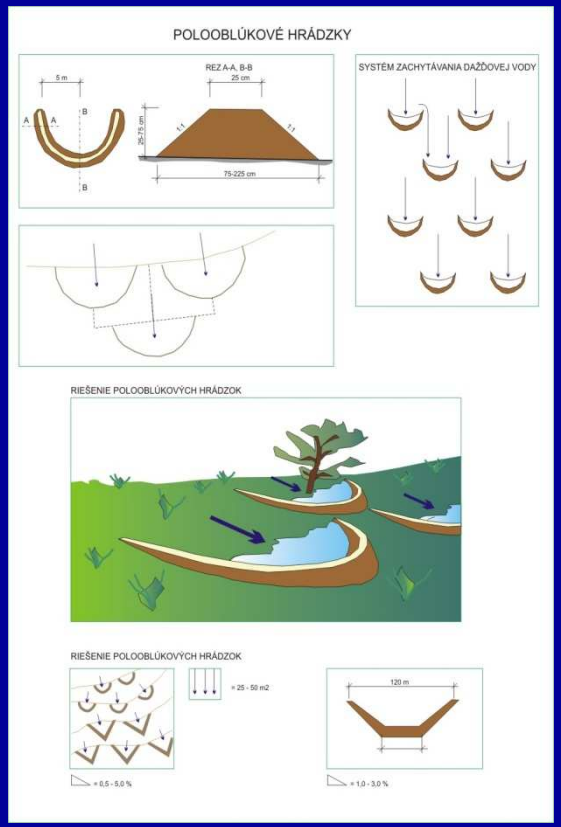
RAINWATER HARVESTING FROM ROOFS IN CITIES



Principle „Keep rainwater on the land“







RAINWATER HARVESTING ON SLOPES

Microstructures for the rainwater harvesting on land

Contoured barrages

Terraces

Eyebrow terraces

Pits

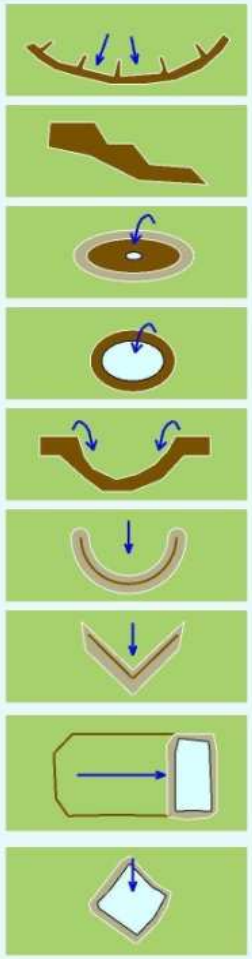
Vallerani-type microcatchments

Semicircular bunds

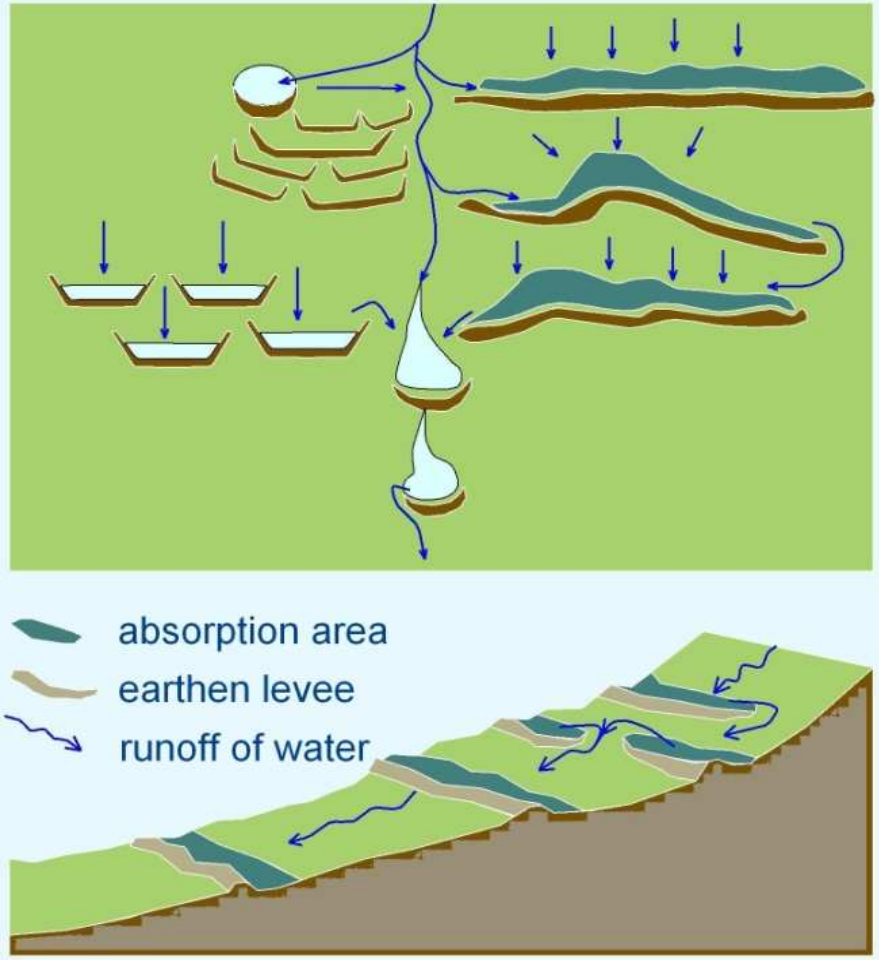
Triangular bunds

Meskat

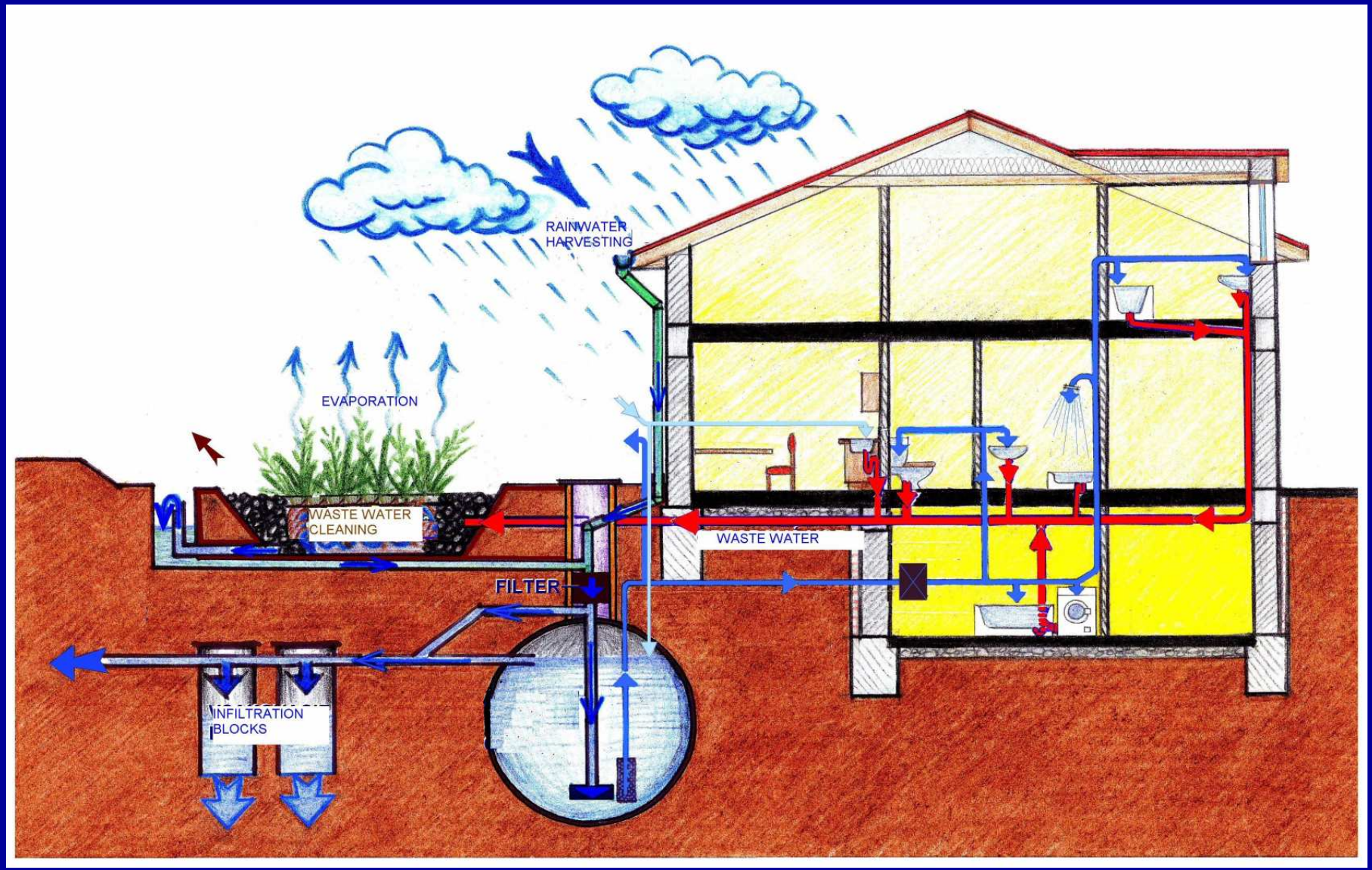
Negarim



Combination of different rainwater harvesting technologies



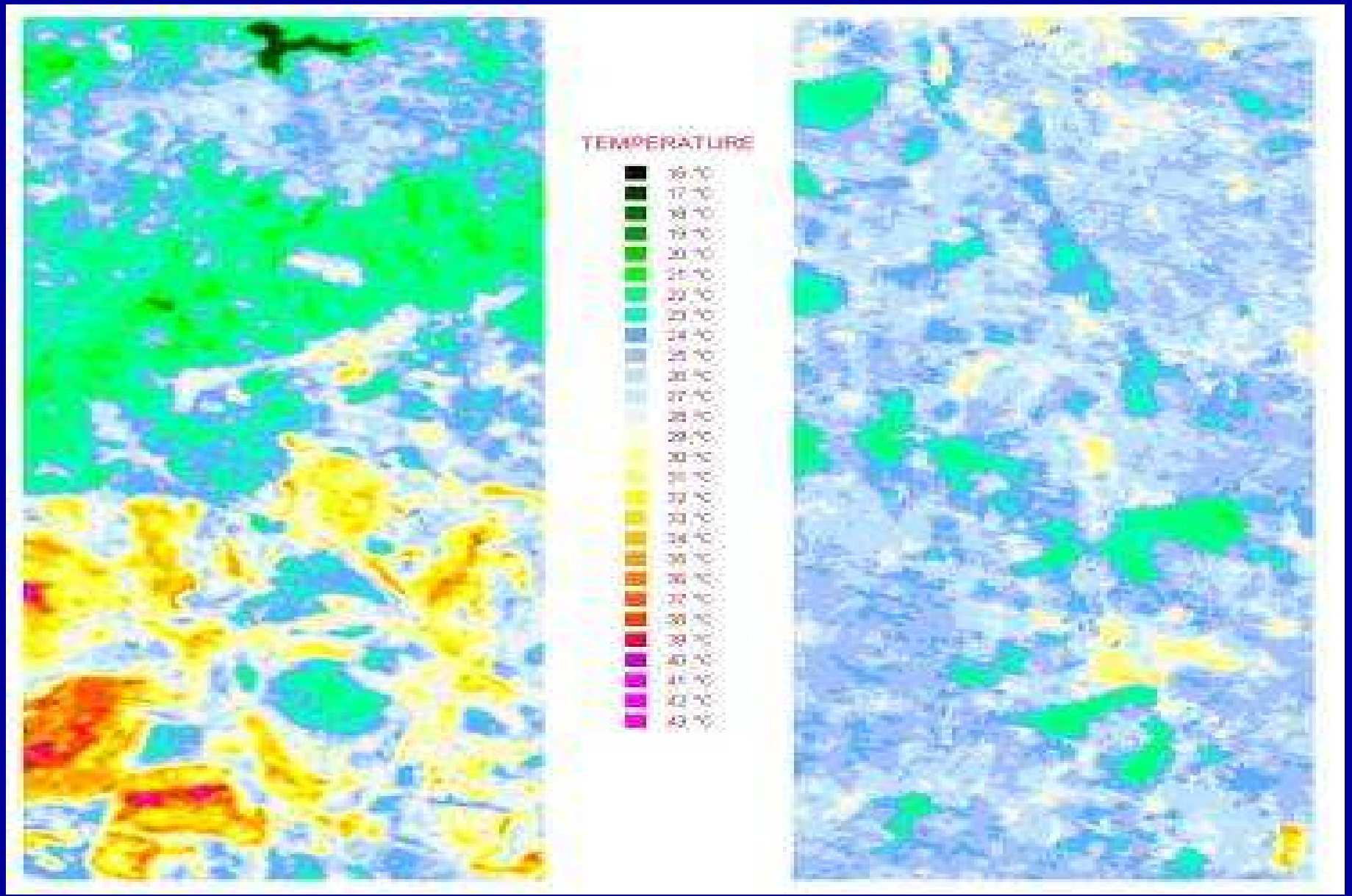
WATER CYCLE OF A FAMILY HOUSE



RAINWATER HARVESTING ON SLOPES

- TERRACES

SENSIBLE HEAT IN DIFFERENT TYPES OF LAND



MASSIVE CONSERVING OF RAINWATER

Advantages:

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

Hydro-Climate Recovery

Rainwater Storage in demaged landscape

LIFE11 ENV/SK/1019,

SLOVENSKÁ VOLOVÁ

Legenda

Využitie územia
- TTP a ostatné plochy
- les
- orná pôda

- miestna komunikácia
- ostatné komunikácie
- toky
- suché toky

Administratívne hranice
- hranica obce
- zastavané územie obce

0 0.25 0.5 0.75 1 km

N

Slovenská Volová

Legenda

Využitie územia

- TTP a ostatné plochy
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- miestna komunikácia
- ostatné komunikácie
- toky
- suché toky

Administratívne hranice

- hranica obce
- zastavané územie obce

Vodozdržné opatrenia

- poldre, valy
- dažďové záhrady
- kamenné hrádzky
- odrážky
- hrádzky
- zasakovacie pásy

0 0.25 0.5 0.75 1 km

N

One village - SLOVENSKÁ VOLOVÁ

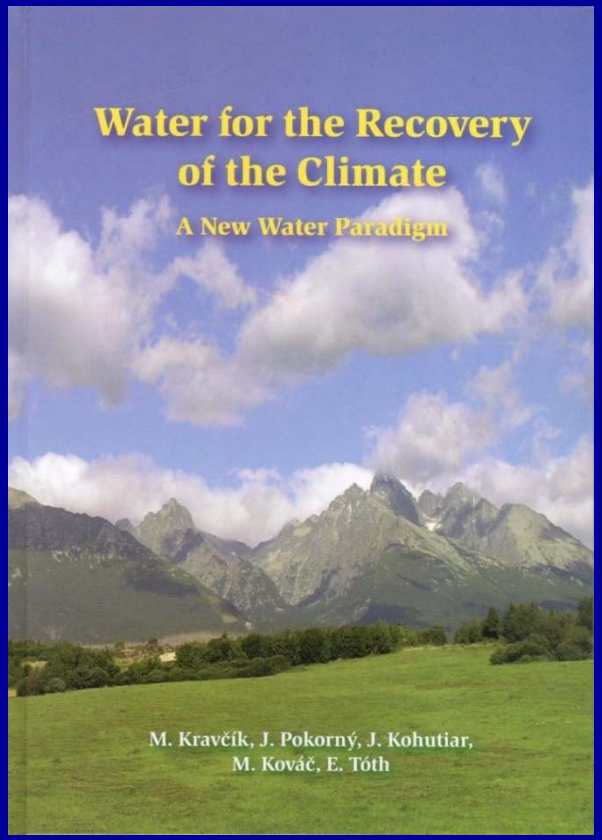
Types of measurements in landscape


Summary in 2013
1.Implemented 758 measurements,
2.58 jobs for poor people
3.In 8 villages of one catchment area

Solution for urban area

Rain gardens for urban zones

Initiative by group of Central European Activists



Discussion Contribution

"THE SUBSTANTIAL ROLE OF WATER IN THE CLIMATE SYSTEM OF THE EARTH"

(distributed to more than 7.000 institutions around the globe)

Ing. Michal [illegible]

OurClimate.eu

www.ourclimate.eu

Contact in Copenhagen:

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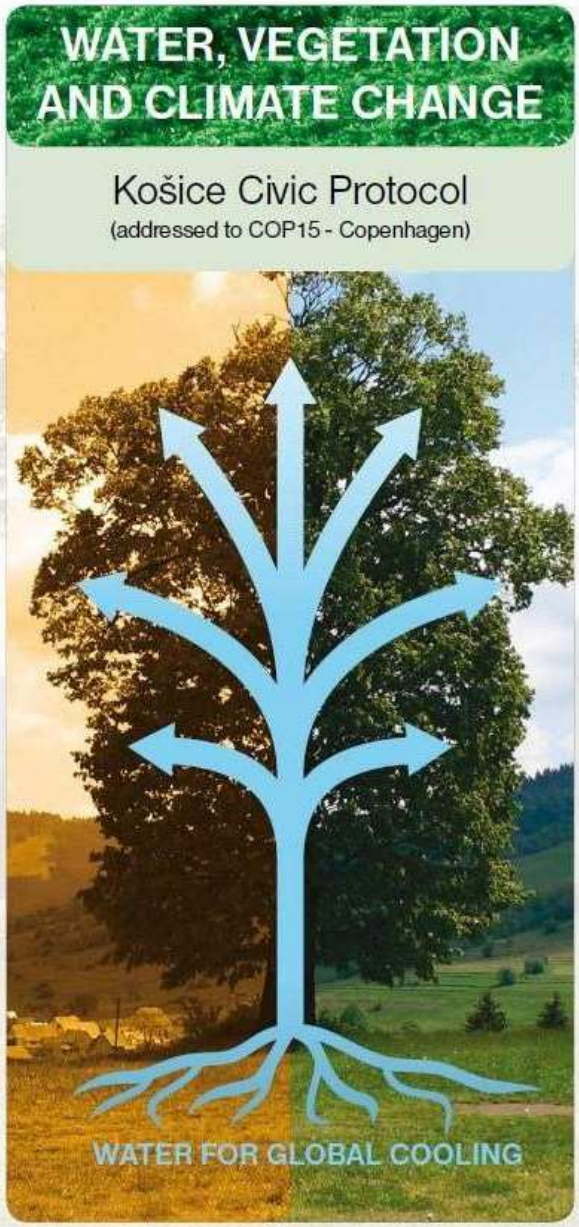

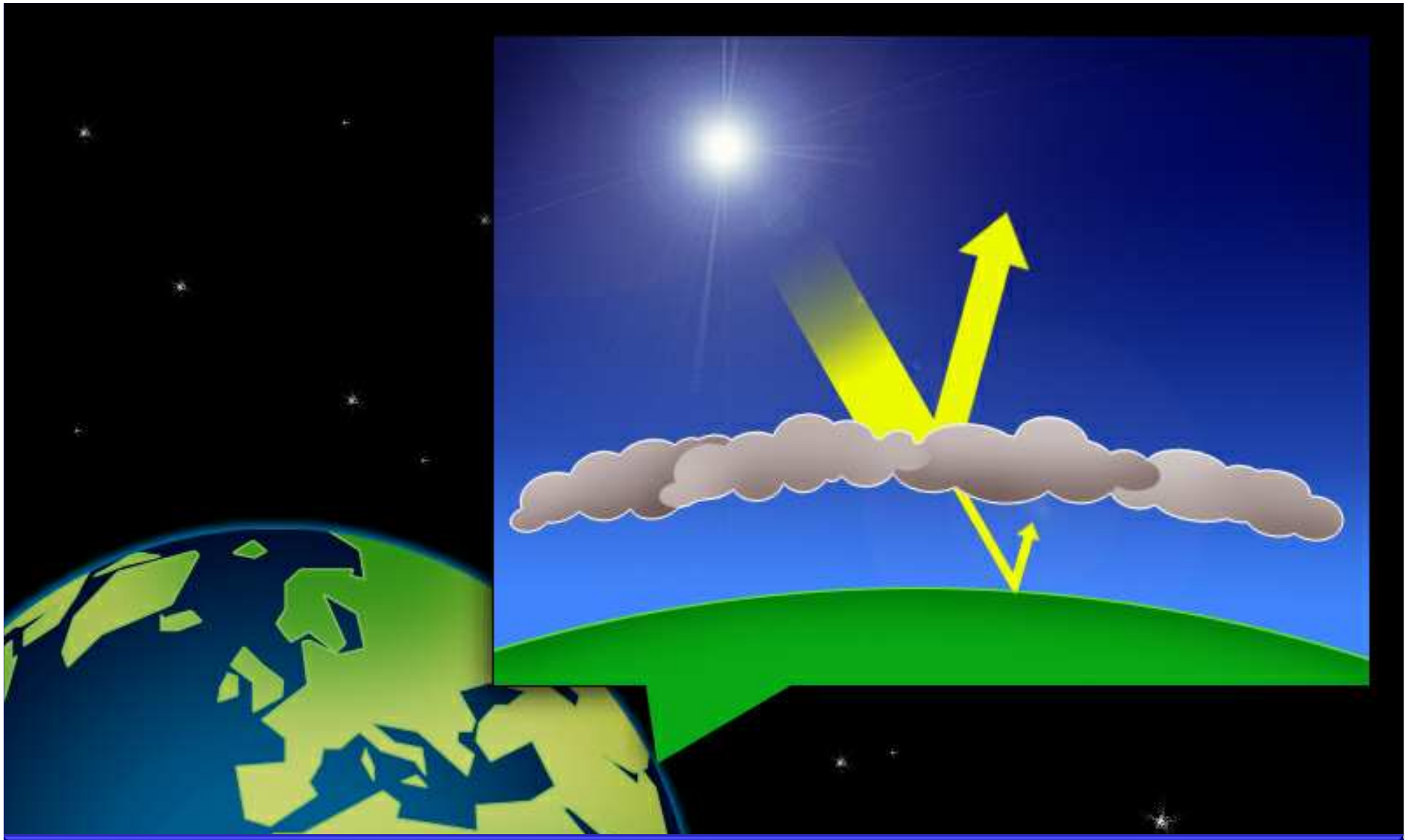

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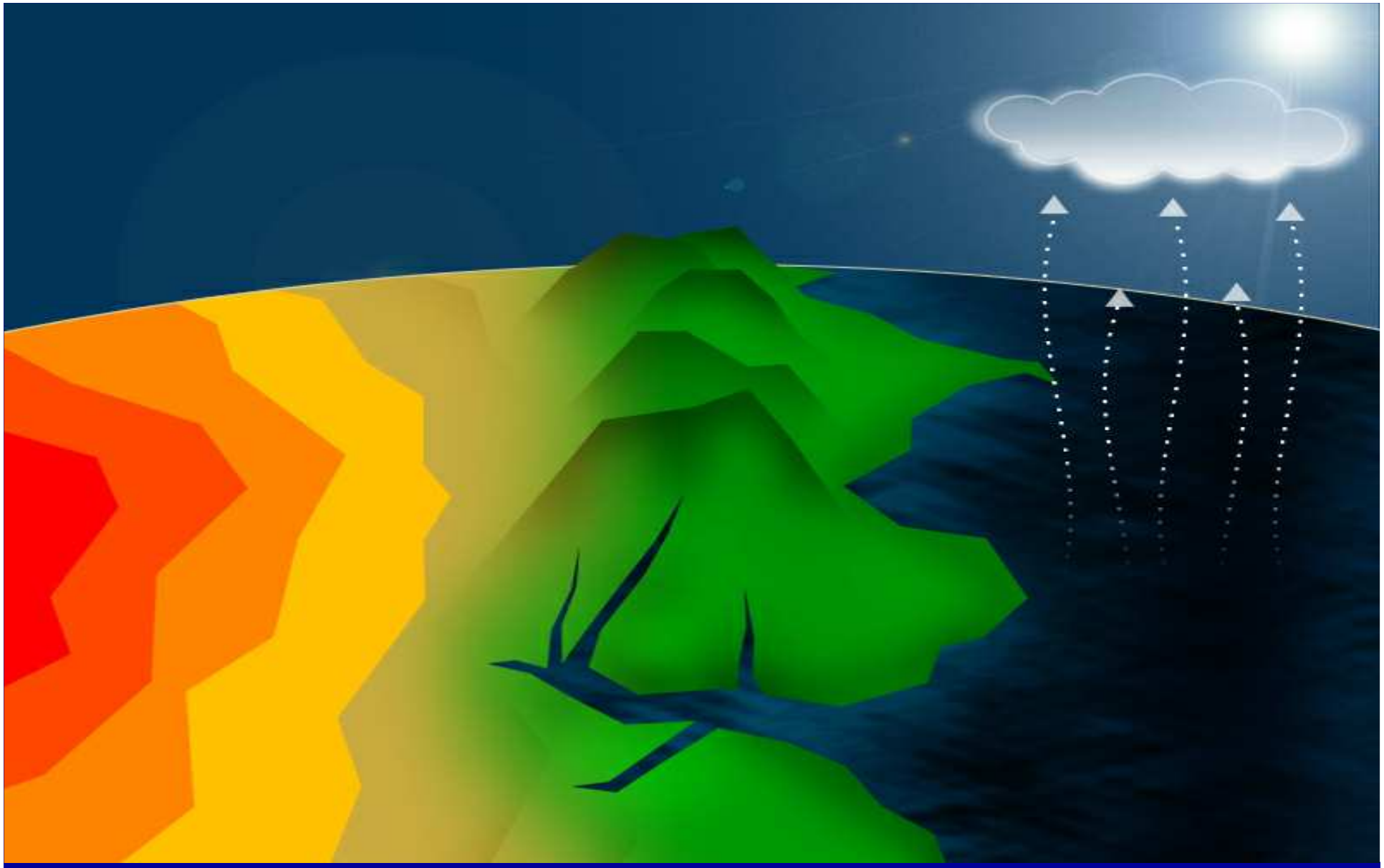
Čermelska road 24, 040 01 Kosice, Slovakia Tel.Fax: +421 55 799 88 06-7,
e-mail: ludiaavoda@ludiaavoda.sk, www.ludiaavoda.sk



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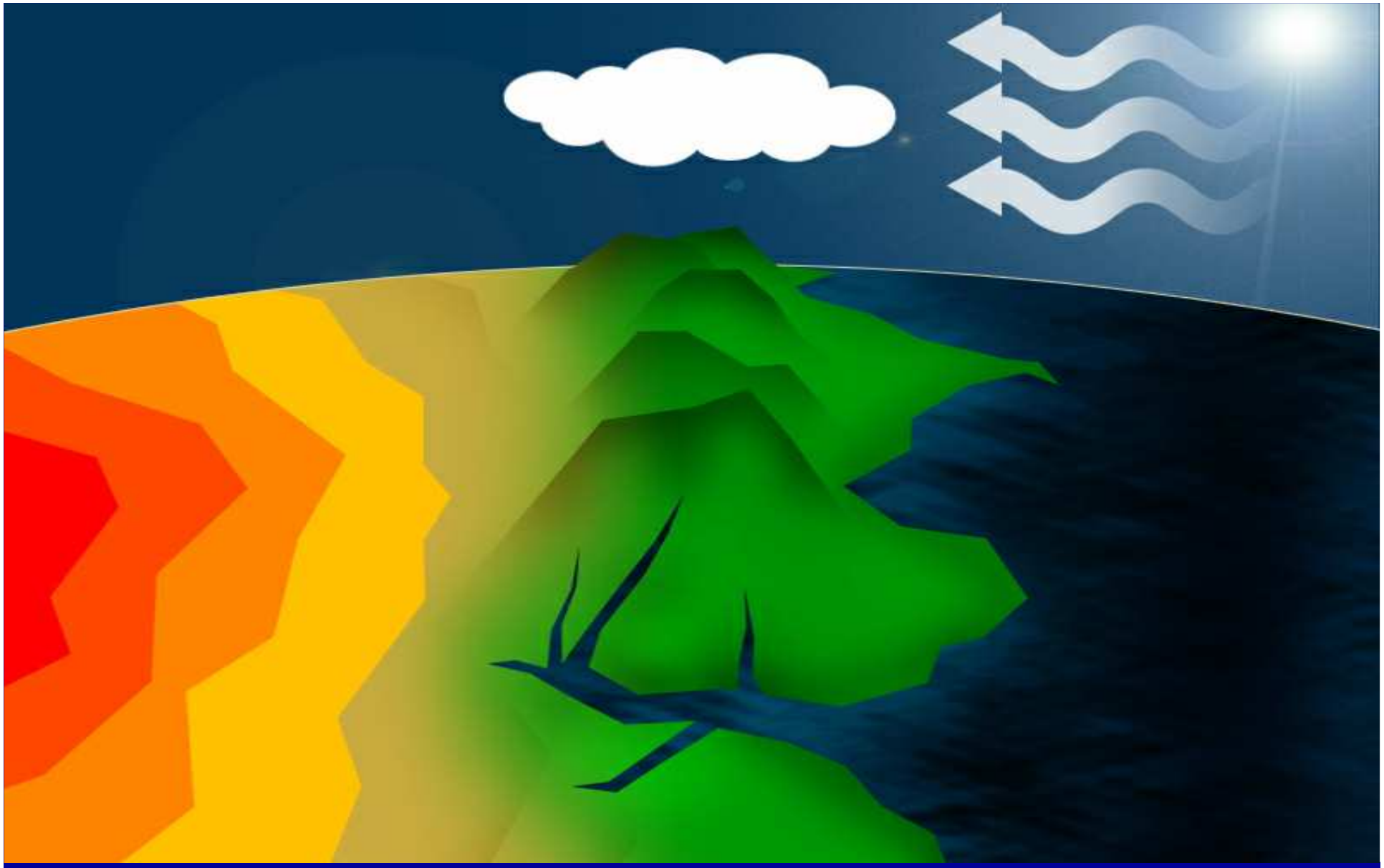

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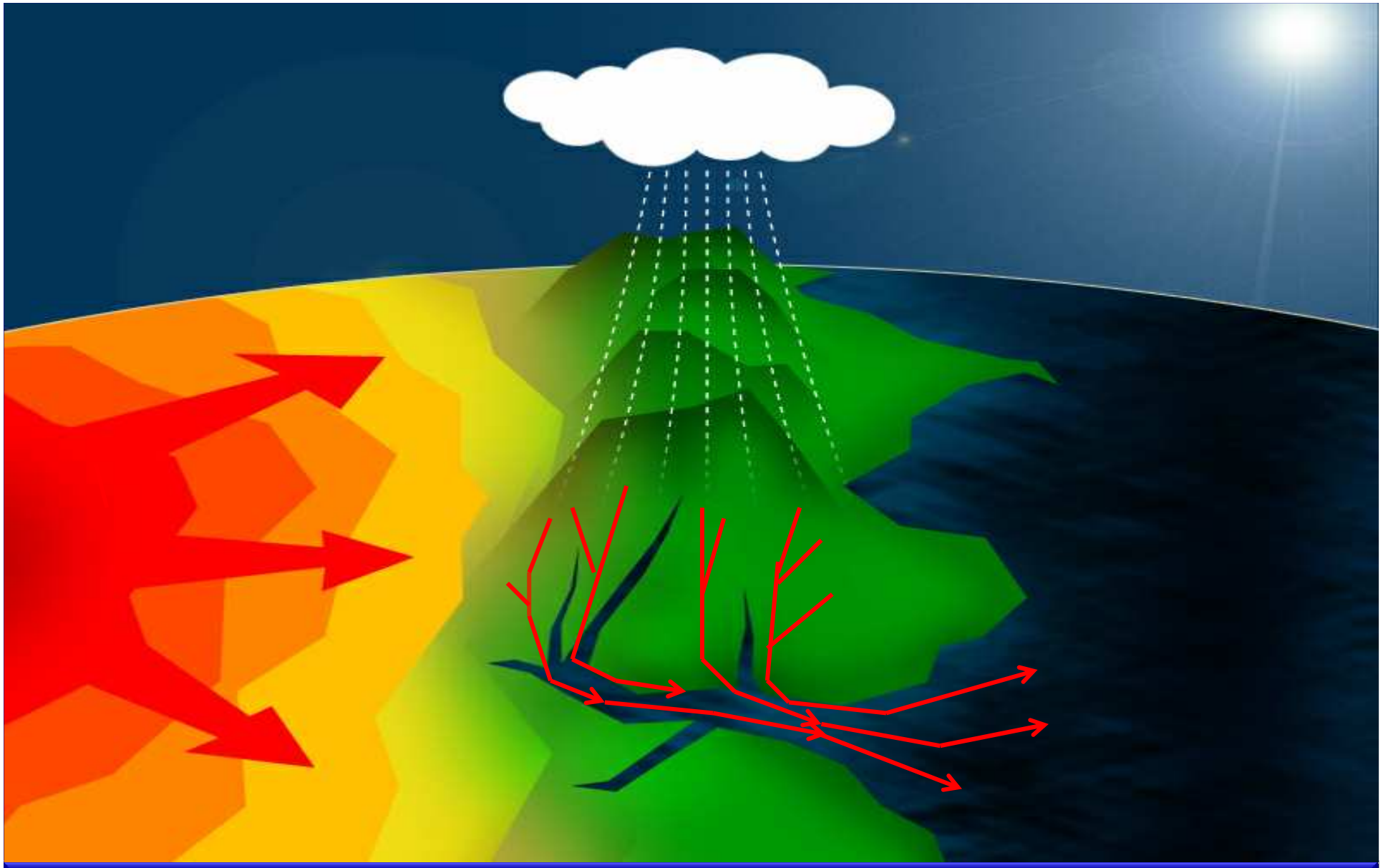

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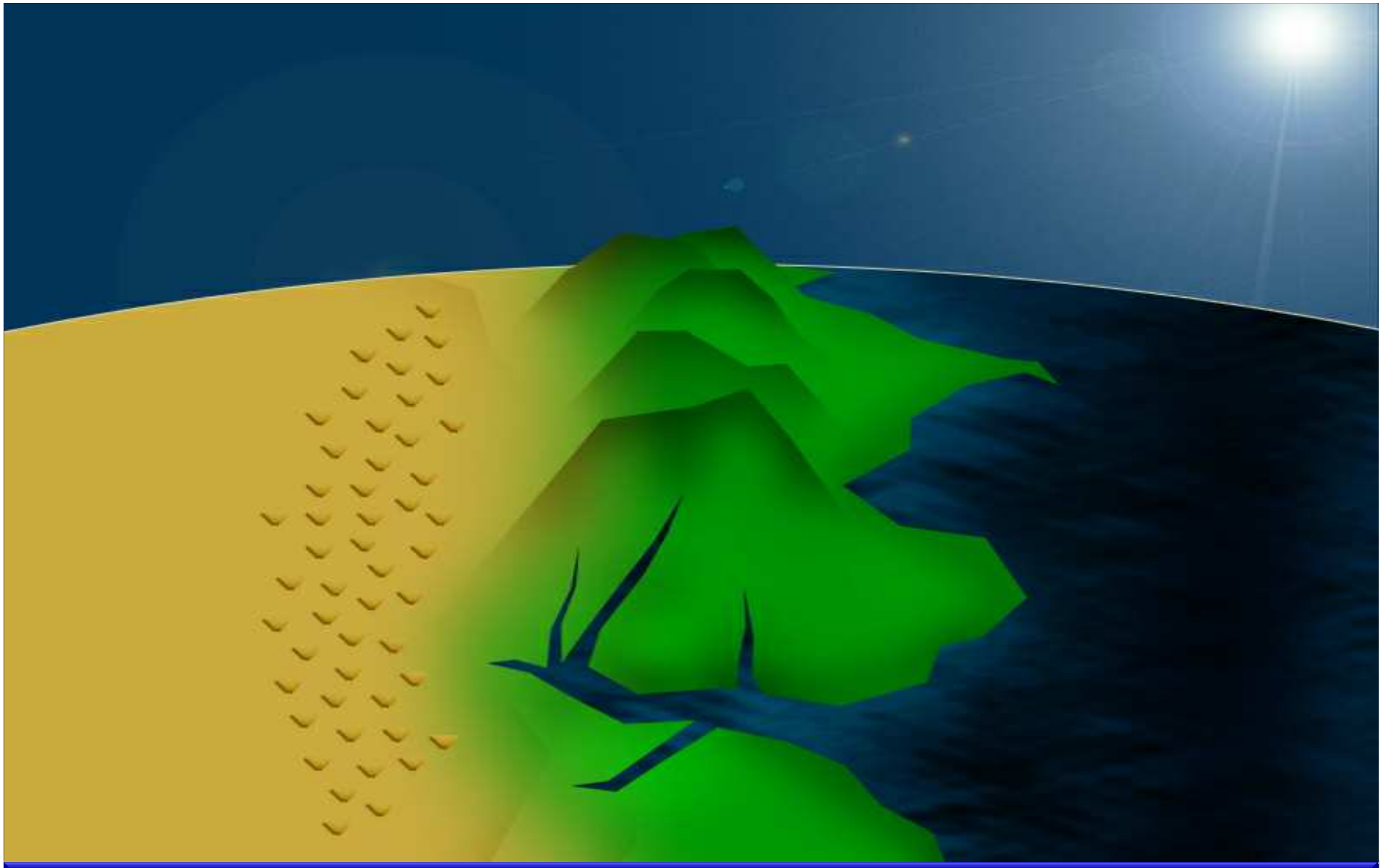

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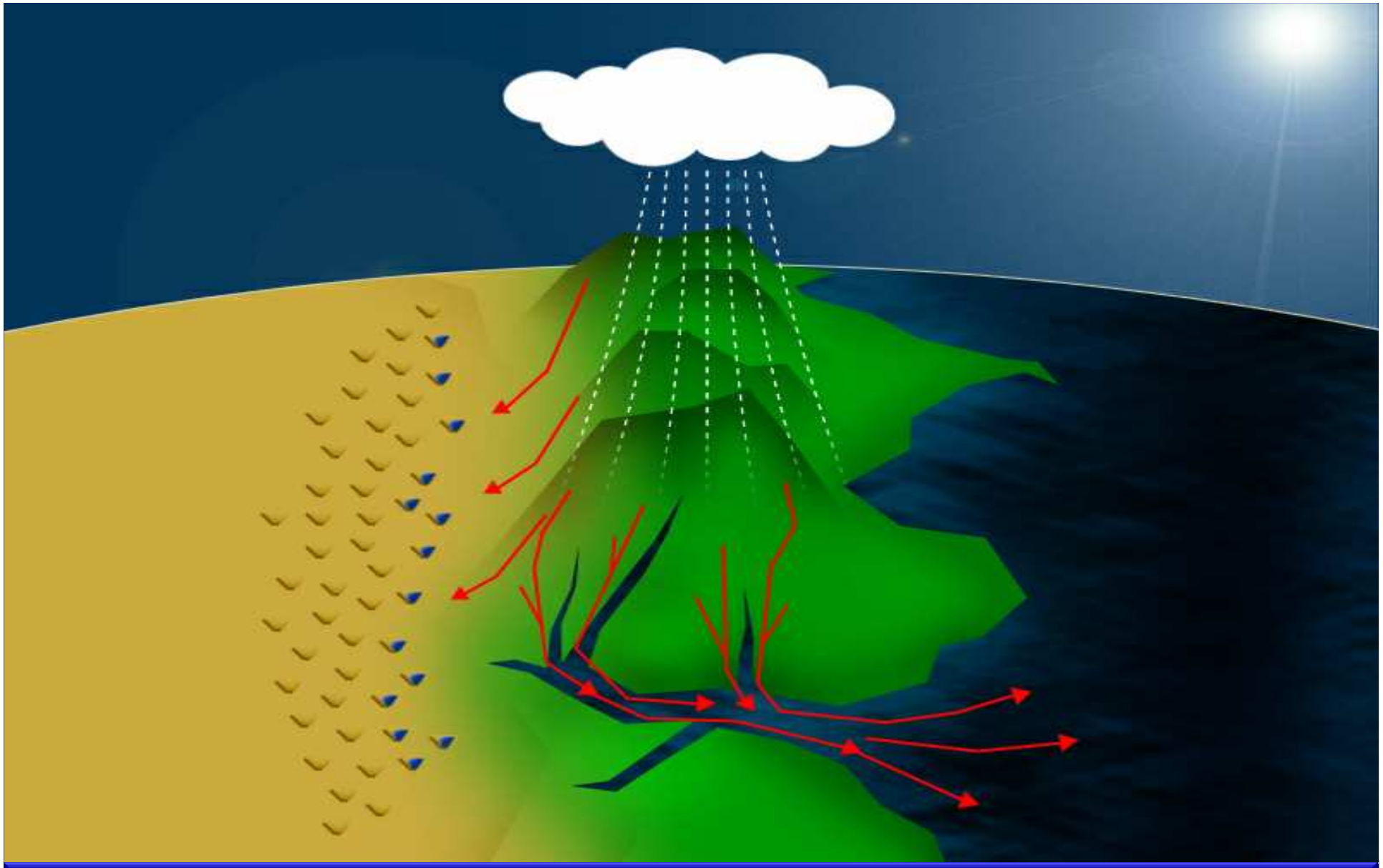

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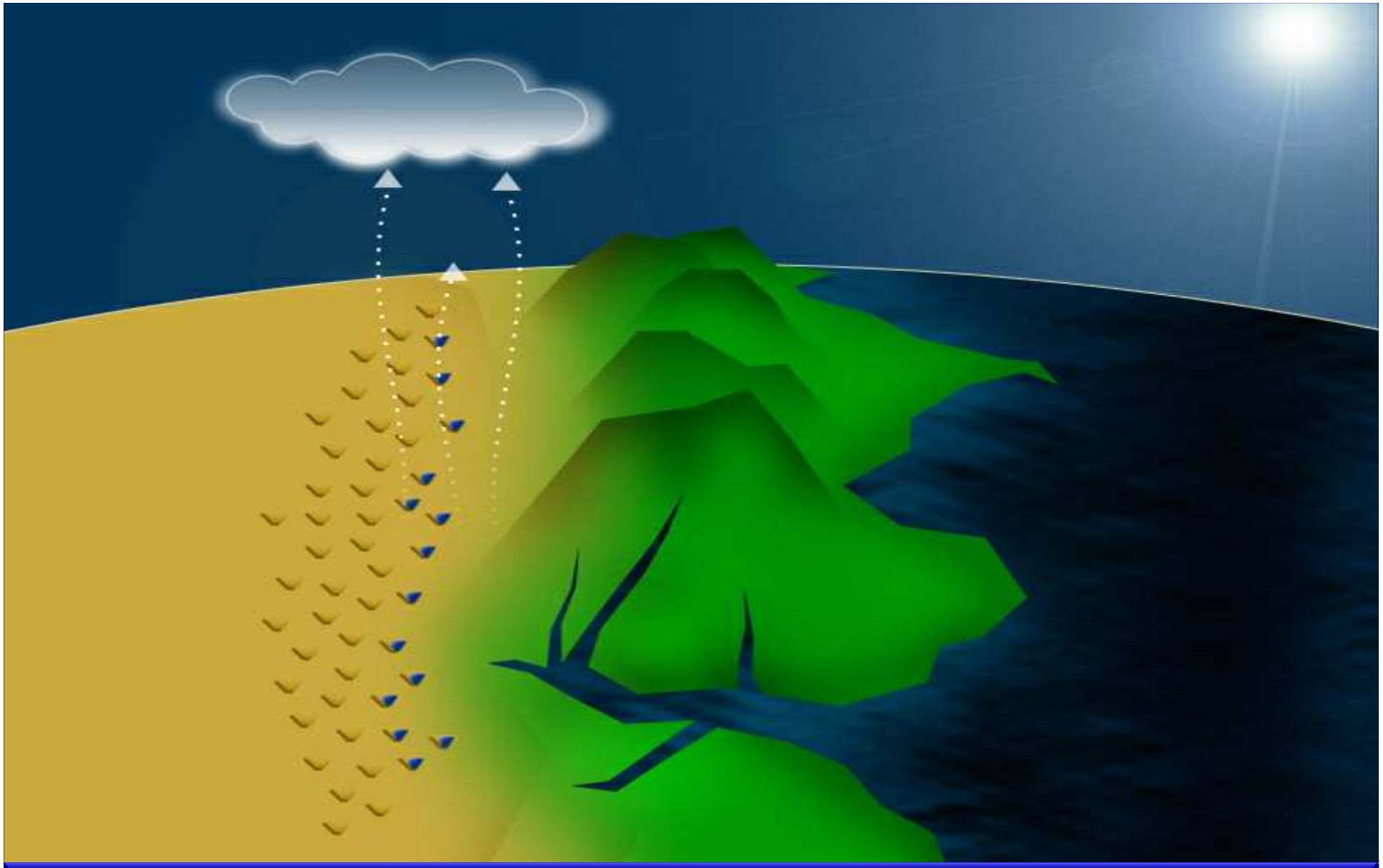

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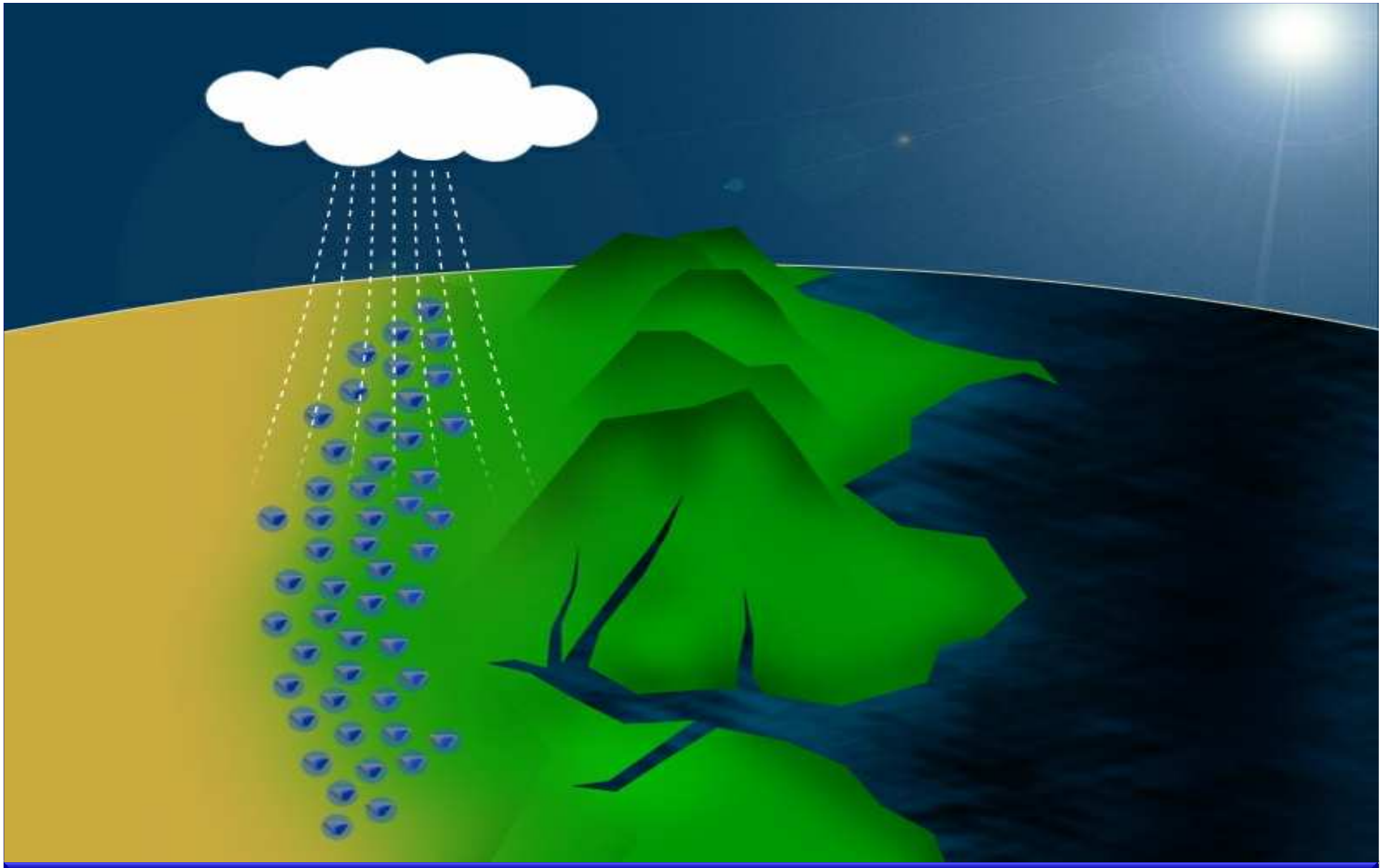

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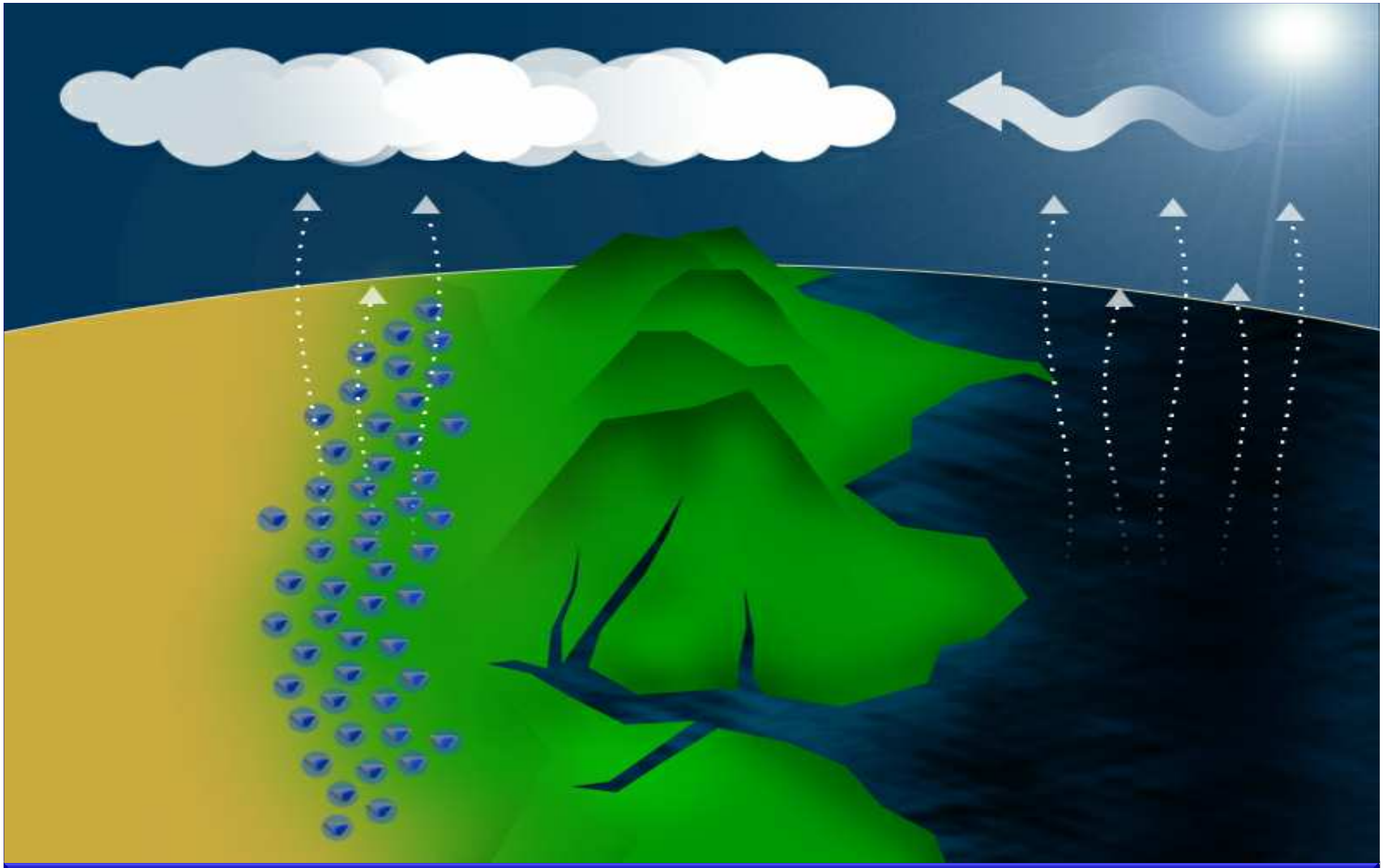

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GRAZIE MILLE !
THANKS !
ĎAKUJEM !