

# THE NEW WATER DEAL for THE BLUE PLANET

- A program to *harvest*  
*1.000 billion m<sup>3</sup> of rainwater*  
*to small water cycles on the continents*

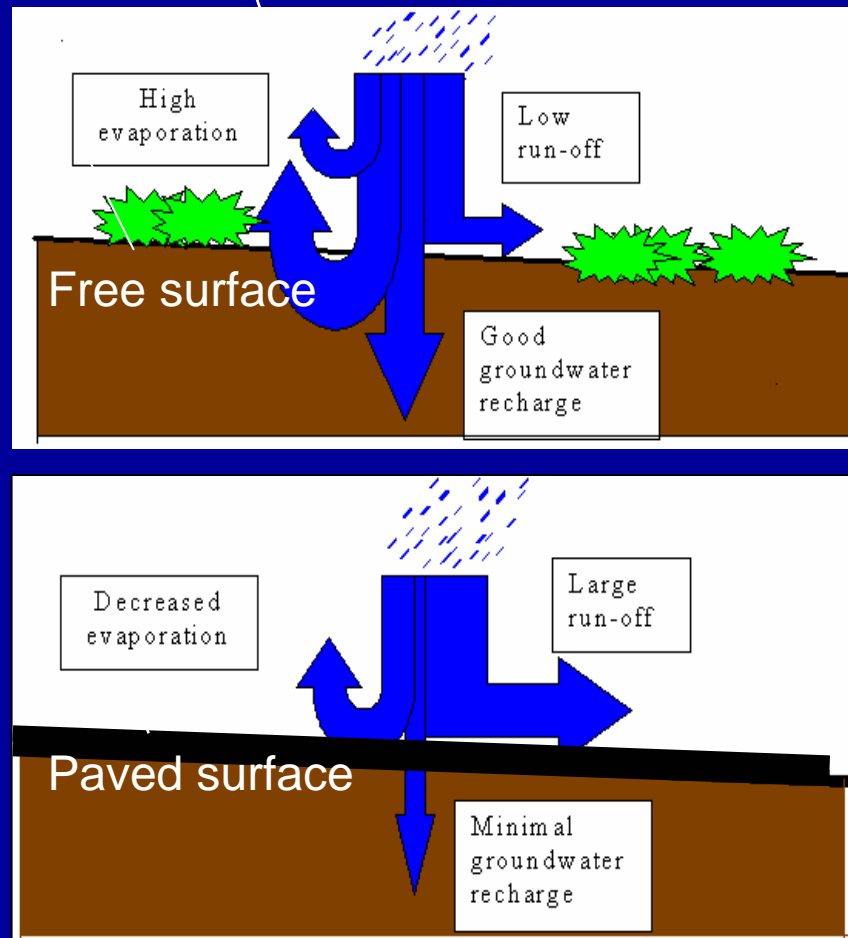
Michal Kravčík  
NGO „People and Water“  
Slovakia



Budapest Water Summit – Civic Society Forum, October 10th 2012



# Impact of deforestation, agriculture and urbanization on state of water in small water cycles:



- runoff increases, infiltration and evaporation decrease
- More than 30.000 billion m<sup>3</sup> of rainwater was lost from landscape of continents over last 70 years



**Water runoff on forestry road network!**





# DEFORESTATION & AGRICULTURE



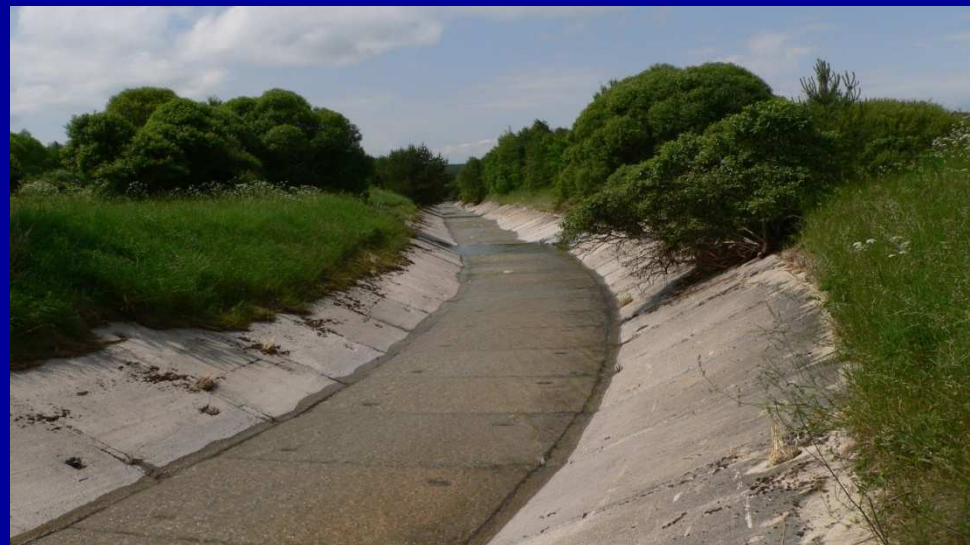
Deforestation / some forms of farming cause:

- increase of runoff (and erosion)
- lower infiltration (groundwater recharge)
- lower evaporation (change of regional climate)



# ALTERATION OF RIVERS

- natural meanders removed
- adjacent swamps drained
- shortening length increases slope
- acceleration of runoff
- lowering land's ability to retain water





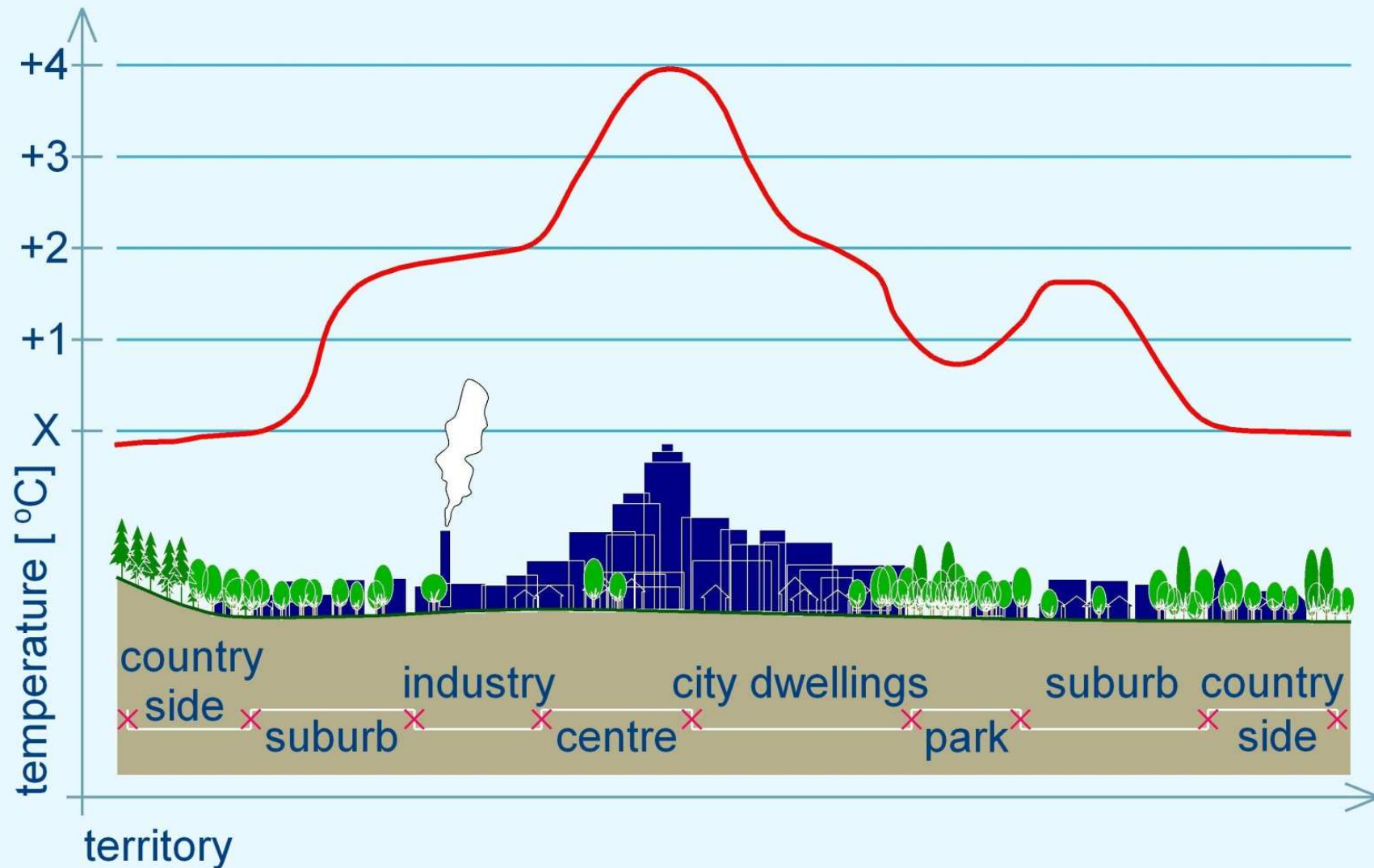
# SOIL SEALING IN CITIES

about 20 billion m<sup>3</sup> of rainwater sluiced from municipalities of Europe annually, and about 760 bil m<sup>3</sup> sluiced from all continents annually.



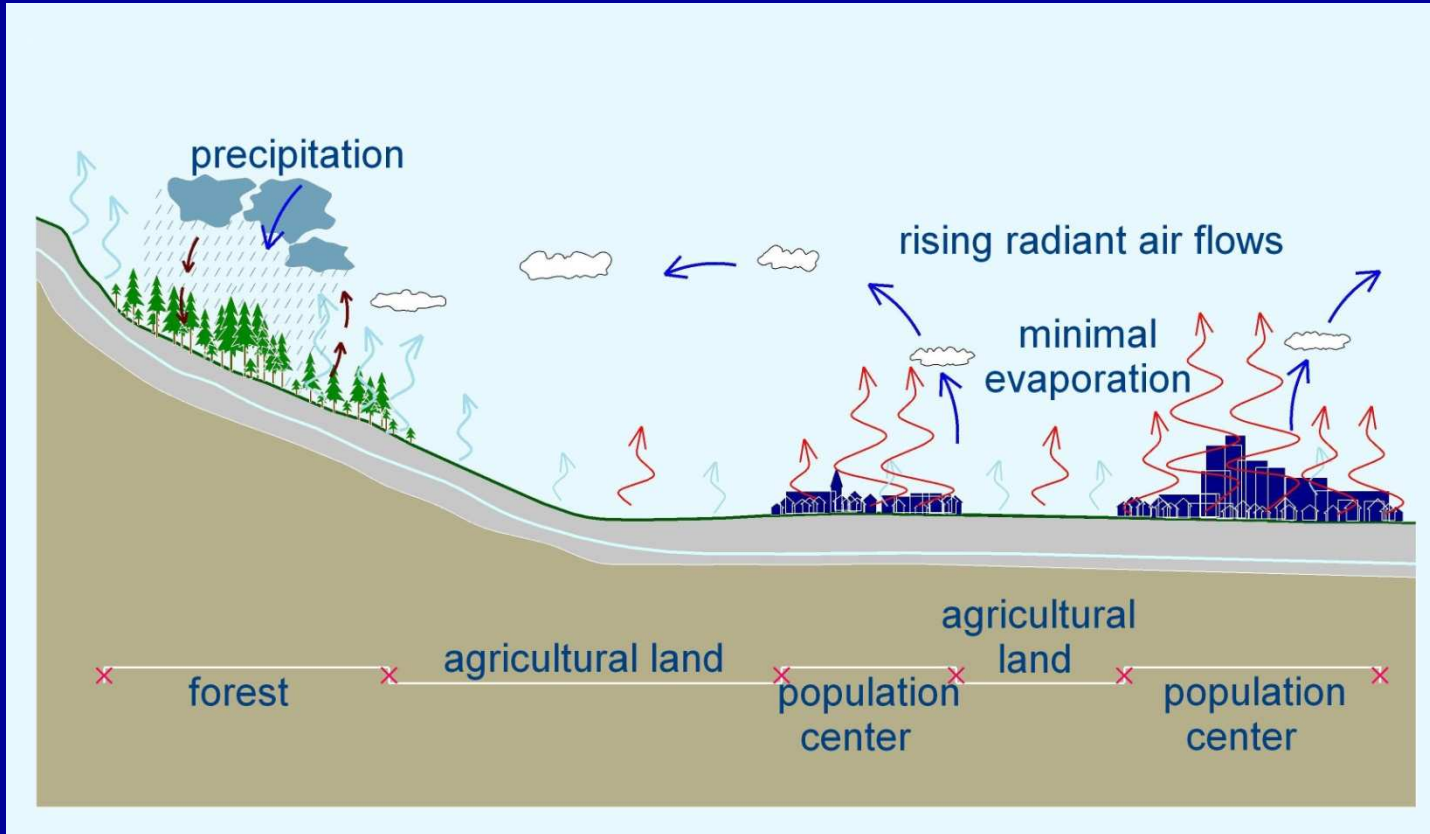


# HEAT ISLANDS OVER DRY and HOT LANDSCAPE





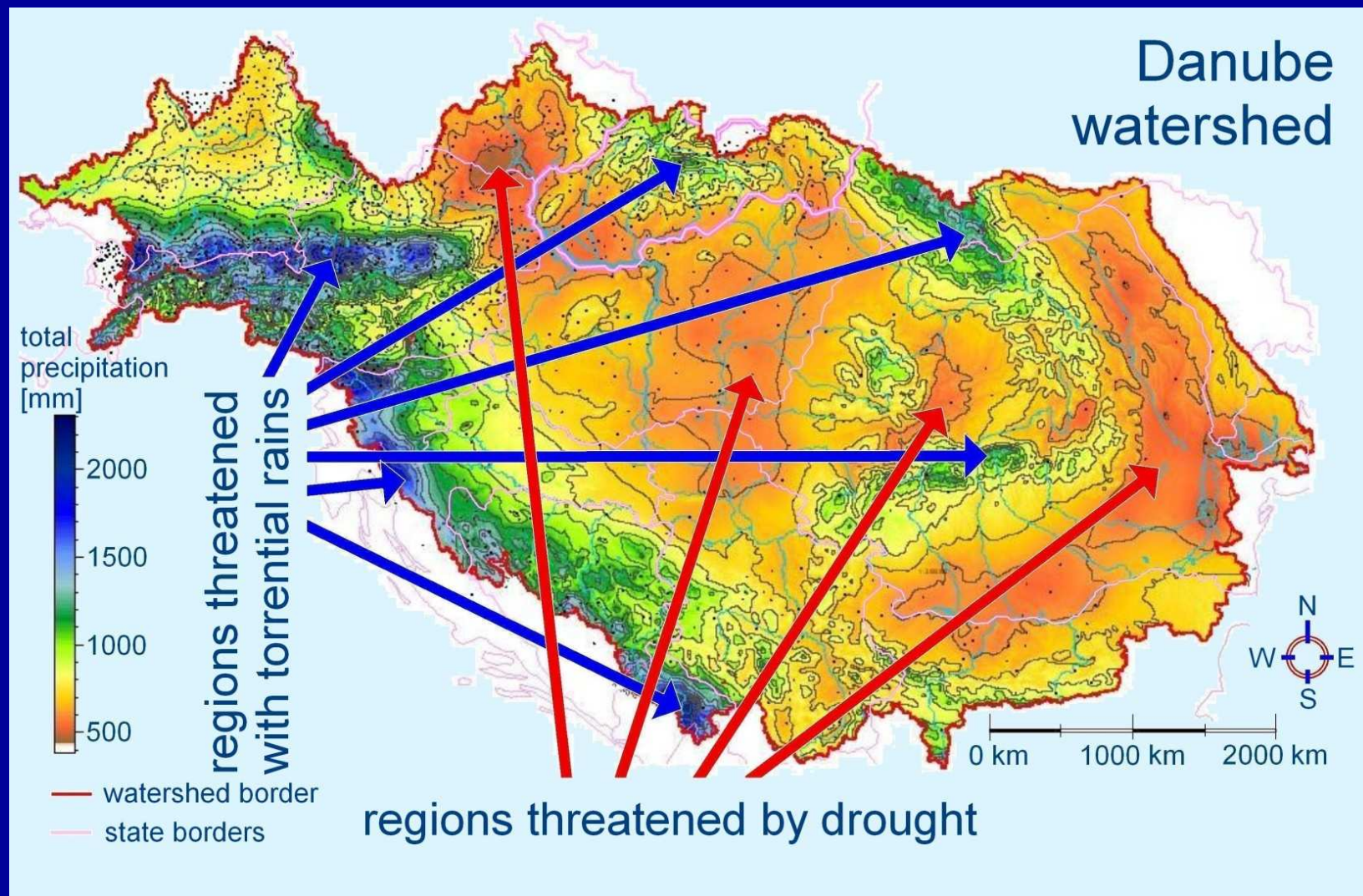
# IMPACTS ON WEATHER / CLIMATE



Frequency of droughts and  
floods increasing

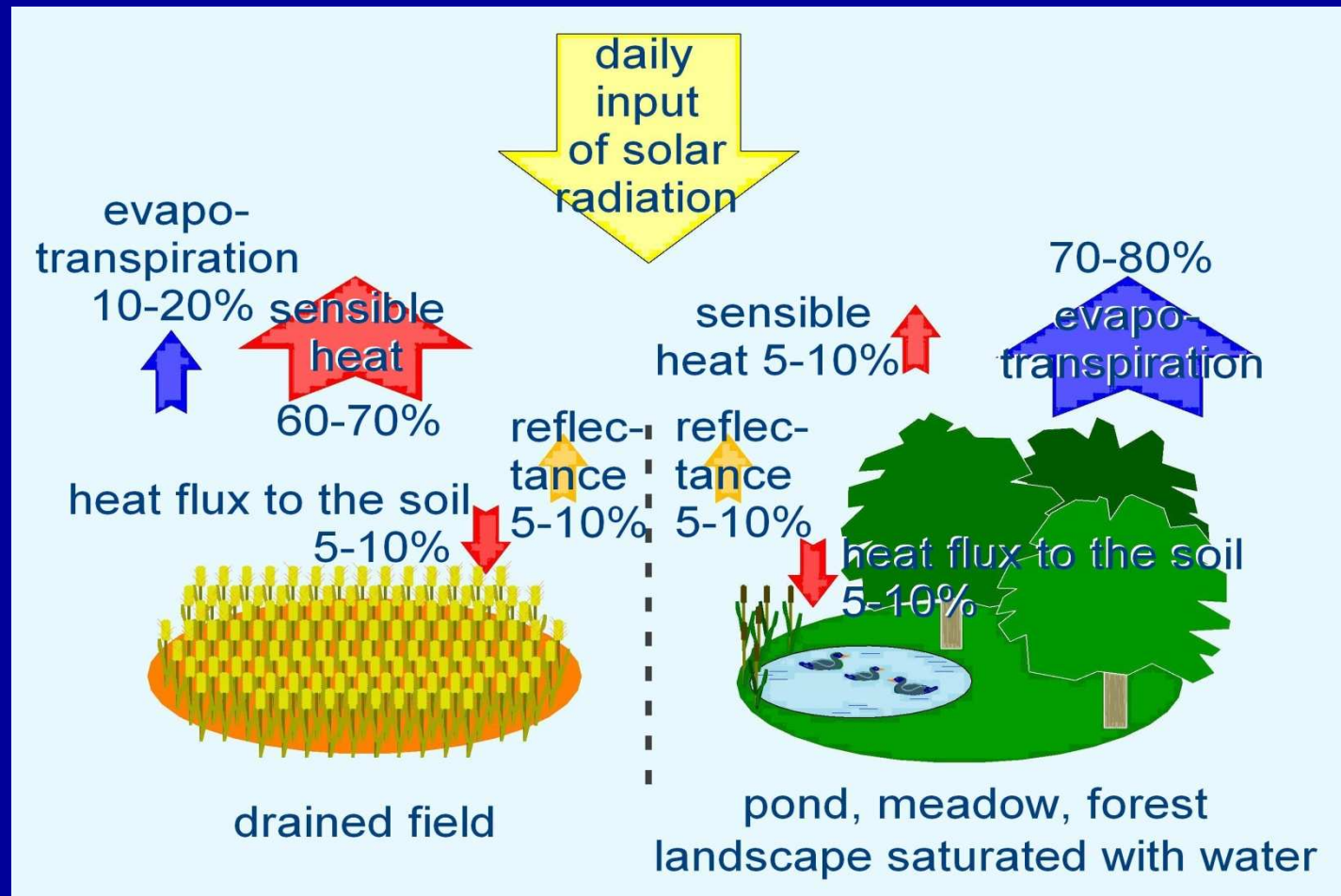


# PRECIPITATION IN MOUNTAINS AND LOWLANDS – DANUBE WATERSHED





# DISTRIBUTION OF SOLAR ENERGY

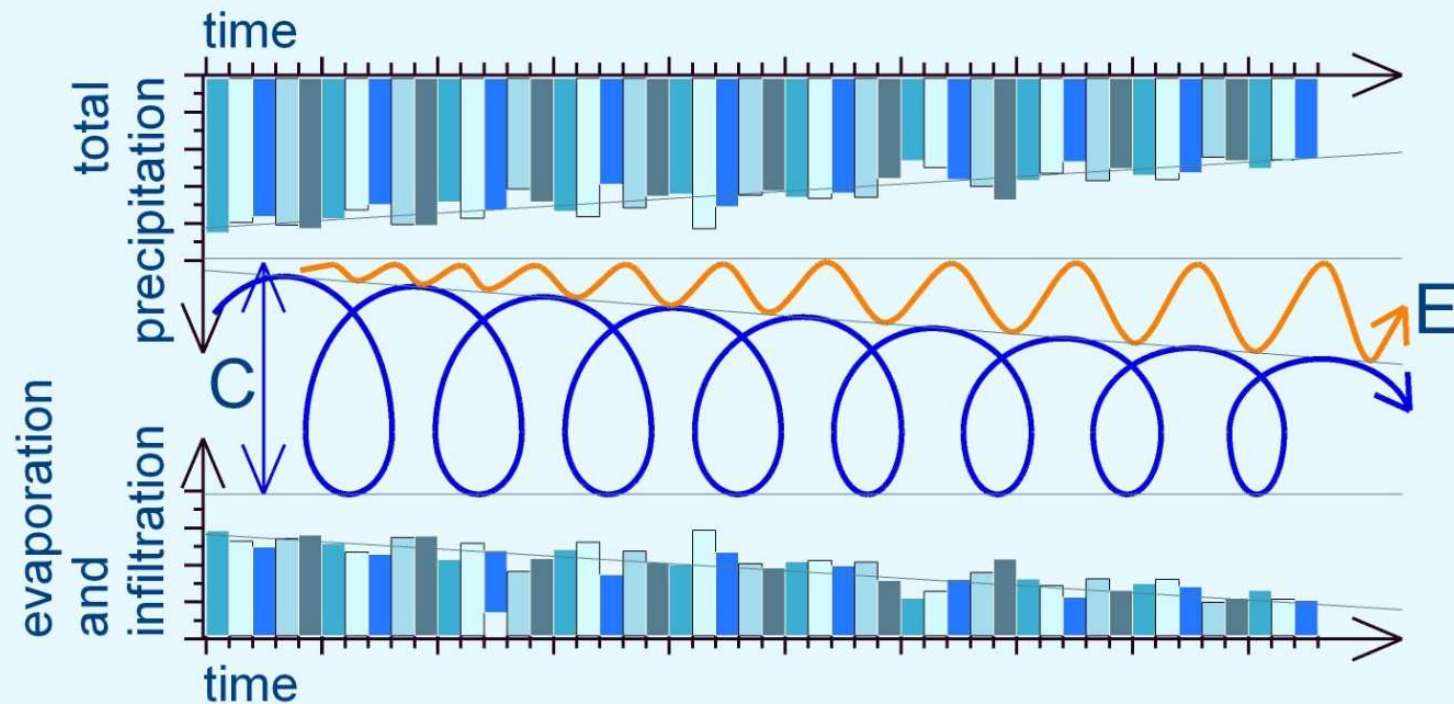


**Dry land:** Most solar energy is changed into *sensible heat*,

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



# GROWTH OF EXTREME WEATHER WITH DECLINE OF SMALL WATER CYCLES

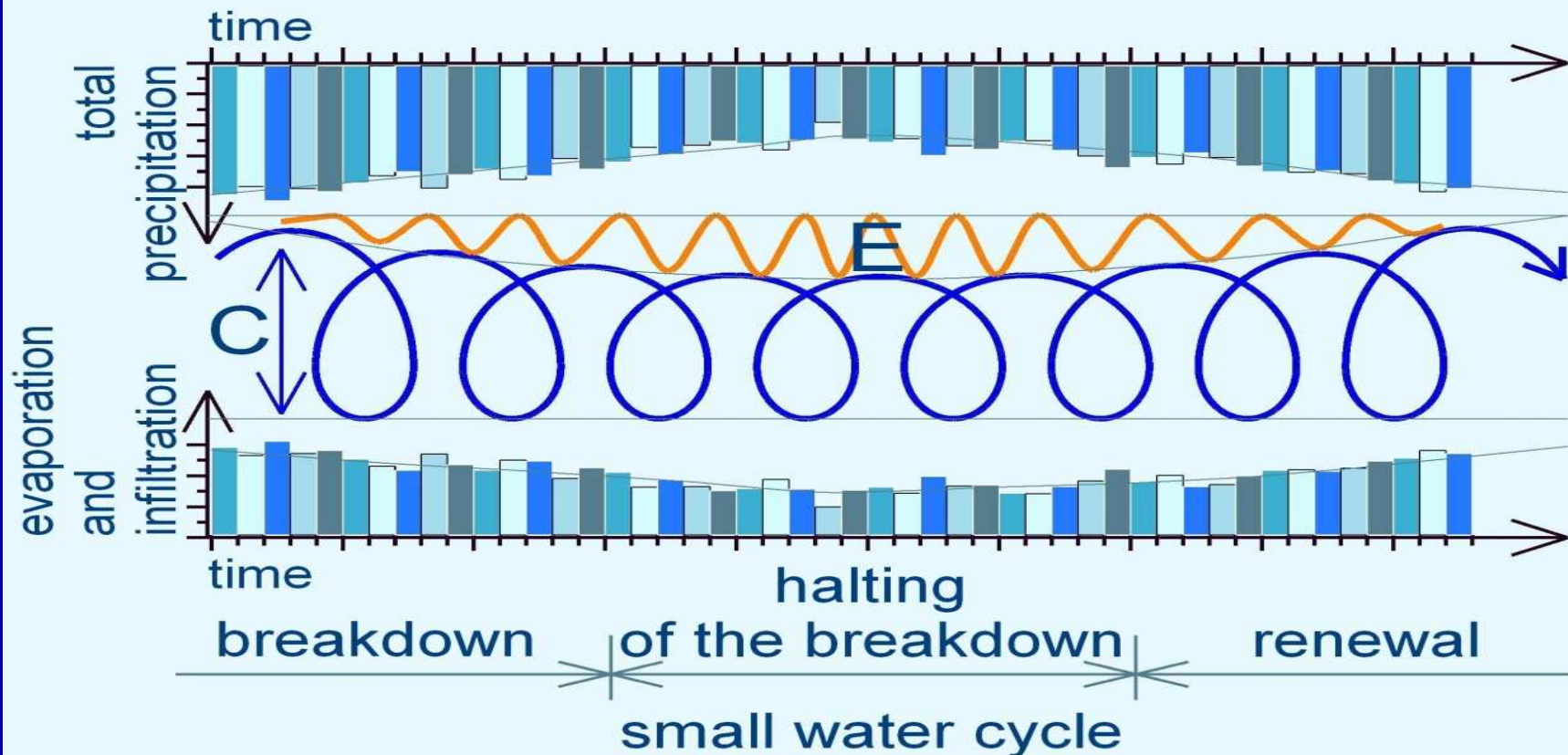


C - diagram of the circulation of water on land

E - diagram of extreme weather events



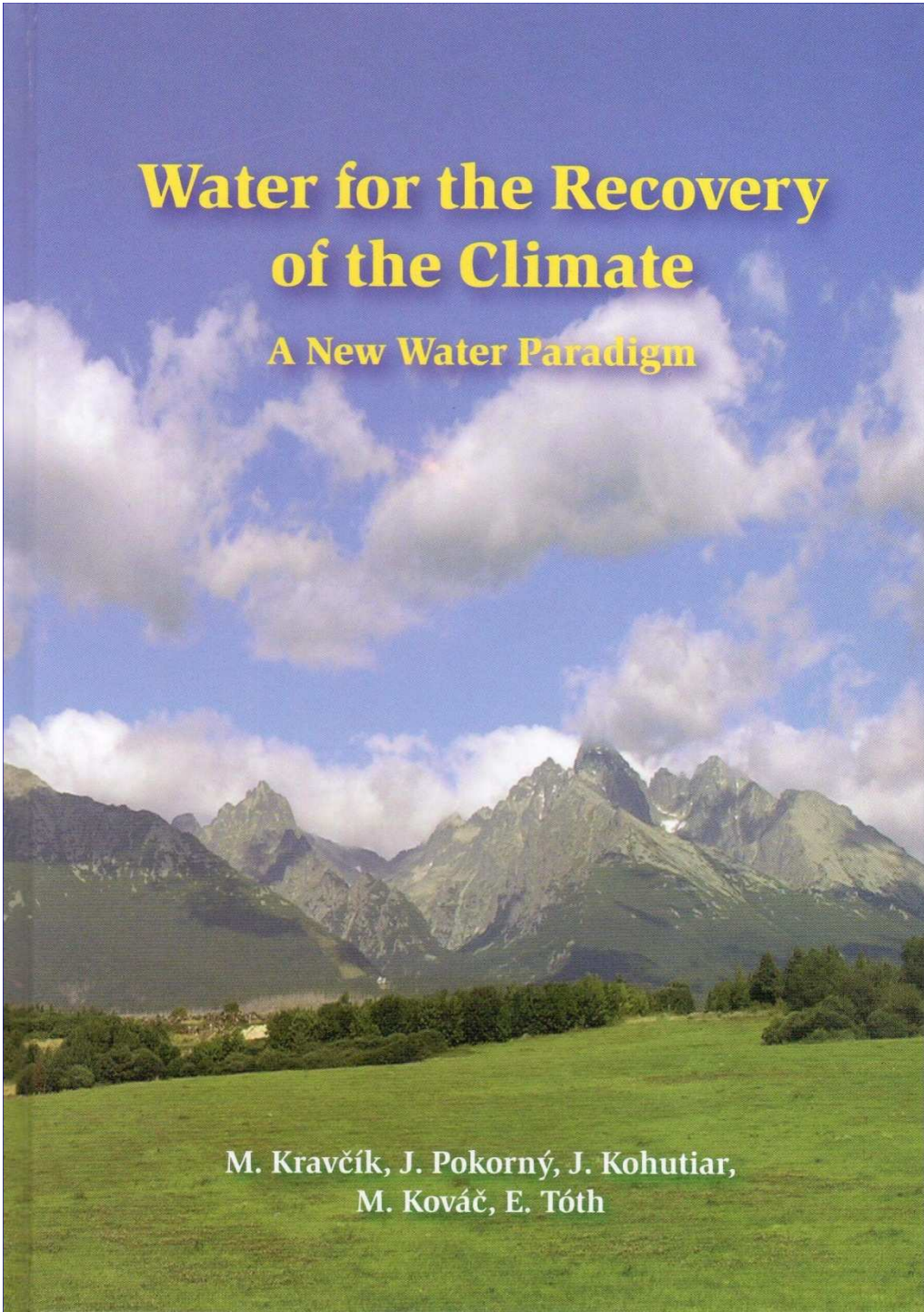
# DESTRUCTION AND RENEWAL OF SMALL WATER CYCLE



**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

M. Kravčík, J. Pokorný, J. Kohutiar,  
M. Kováč, E. Tóth

- humanity accelerates runoff from land
- more solar energy is transformed into sensible heat
- draining of land can be reversed through comprehensive rainwater conservation
- renewal of small water cycle over land can temper extreme weather events and ensure a growth in water reserves
- [www.waterparadigm.org](http://www.waterparadigm.org)



## **OLD WATER PARADIGM**

protects surface water  
as the main source  
and reserve of water

## **NEW WATER PARADIGM**

protects rainwater as  
the main treasure of  
water

[www.waterparadigm.org](http://www.waterparadigm.org)



## **OLD WATER PARADIGM**

soil sealing has  
minimal influence on  
global warming

## **NEW WATER PARADIGM**

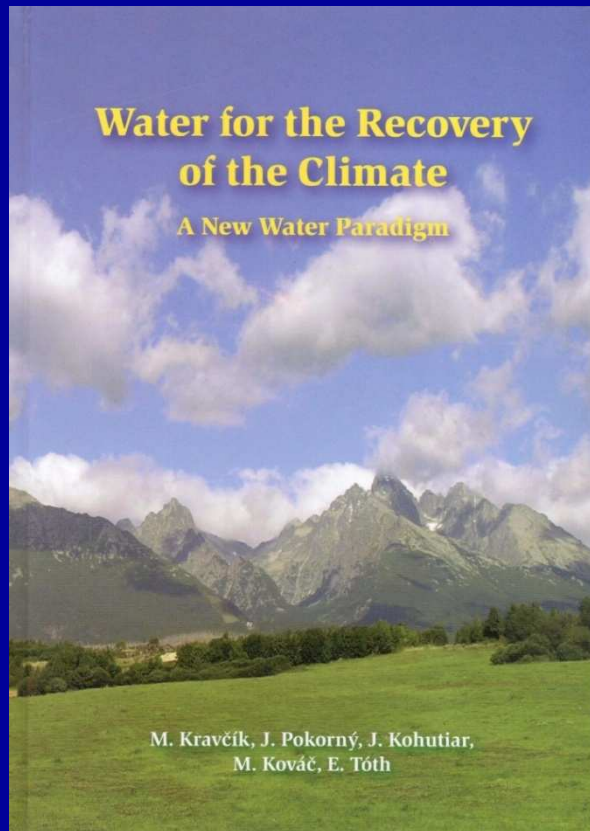
soil sealing may be  
important factor in  
global warming

[www.waterparadigm.org](http://www.waterparadigm.org)



## Initiative by group of Central European Activists

Water for the Recovery  
of the Climate  
A New Water Paradigm



M. Kravčík, J. Pokorný, J. Kohutiar,  
M. Kováč, E. Tóth

## Discussion Contribution

**“THE SUBSTANTIAL  
ROLE OF WATER  
IN THE CLIMATE  
SYSTEM OF THE  
EARTH”**

**(distributed to more  
than 7.000  
institutions around  
the globe)**



OurClimate.eu

[www.ourclimate.eu](http://www.ourclimate.eu)

### Contact in Copenhagen:

Michal Kravčík

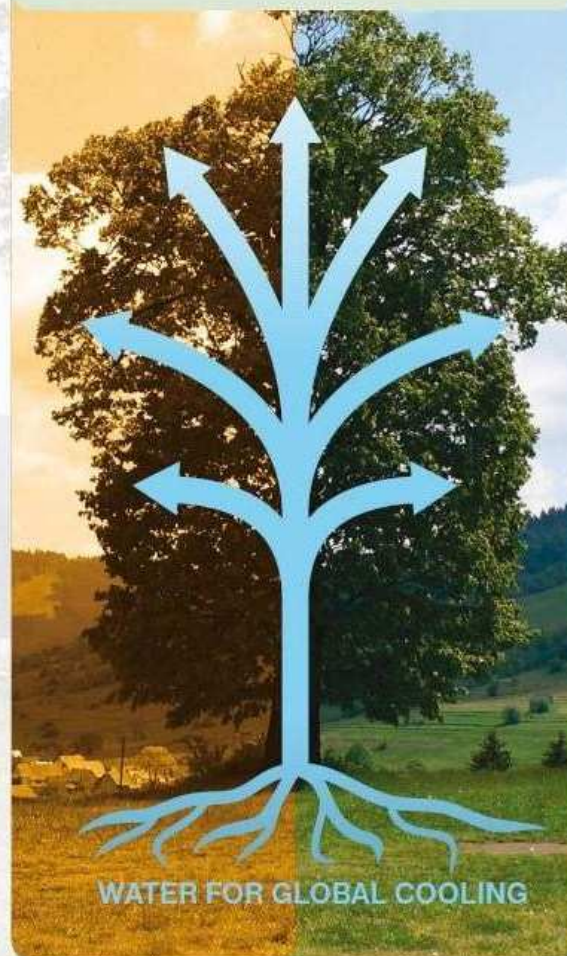
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## WATER, VEGETATION AND CLIMATE CHANGE

Košice Civic Protocol  
(addressed to COP15 - Copenhagen)



WATER FOR GLOBAL COOLING



# **THE NEW WATER DEAL**

**program for comprehensive  
rainwater conservation  
secures renewal of small  
water cycle over land and  
growth of water reserves**



# NEW WATER DEAL

more clouds



more soft rain

higher air humidity



more evaporation from lands

more vegetation and biodiversity

more groundwater recharge



# **RAINWATER HARVESTING ON MASSIVE SCALE**

1. enhances water sources
2. anti-flood protection
3. anti-erosion protection
4. moderates climate
5. enhances biodiversity
6. cheap, simple, effective



# RAINWATER HARVESTING

## Microstructures for the rainwater harvesting on land

Contoured barrages



Terraces



Eye-brow terraces



Pits



Vallerani-type microcatchments



Semicircular bunds



Triangular bunds



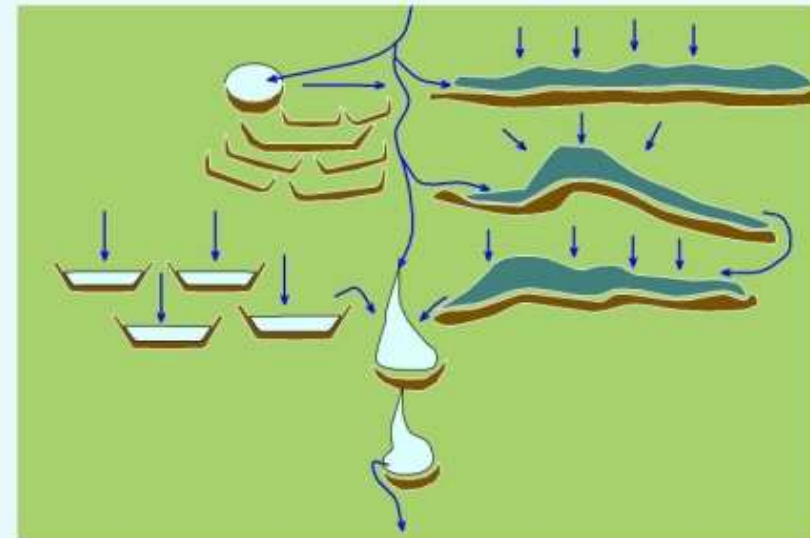
Meskat



Negarim

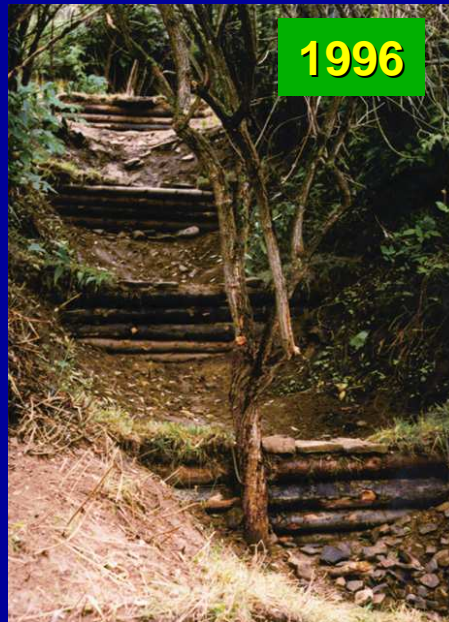
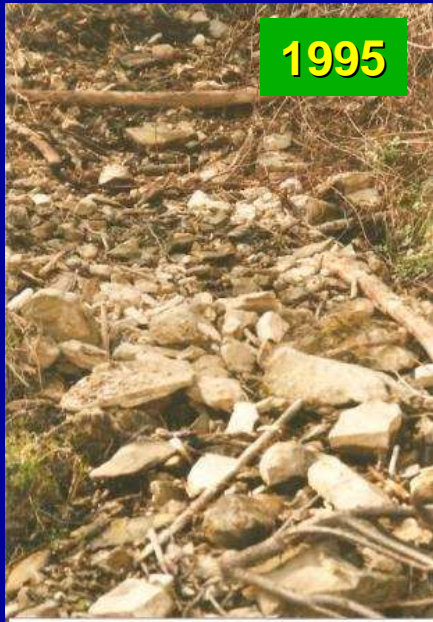


## Combination of different rainwater harvesting technologies





# BLUE ALTERNATIVE





# Flood protection Waterholding, High Tatras, Slovakia



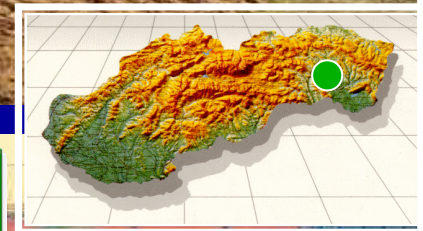




**November, 28<sup>th</sup> 2005**



**June, 6<sup>th</sup> 2006**



**June, 30<sup>th</sup> 2006**



**September, 16<sup>th</sup> 2006**

**Restoration of water sources in urban zone Košice  
People and Water, September 2006**



# PRECIPITATION, RUNOFF, EVAPORATION COOLING RATE OF GREEN ROOF PLOTS





# RAINWATER GARDENS

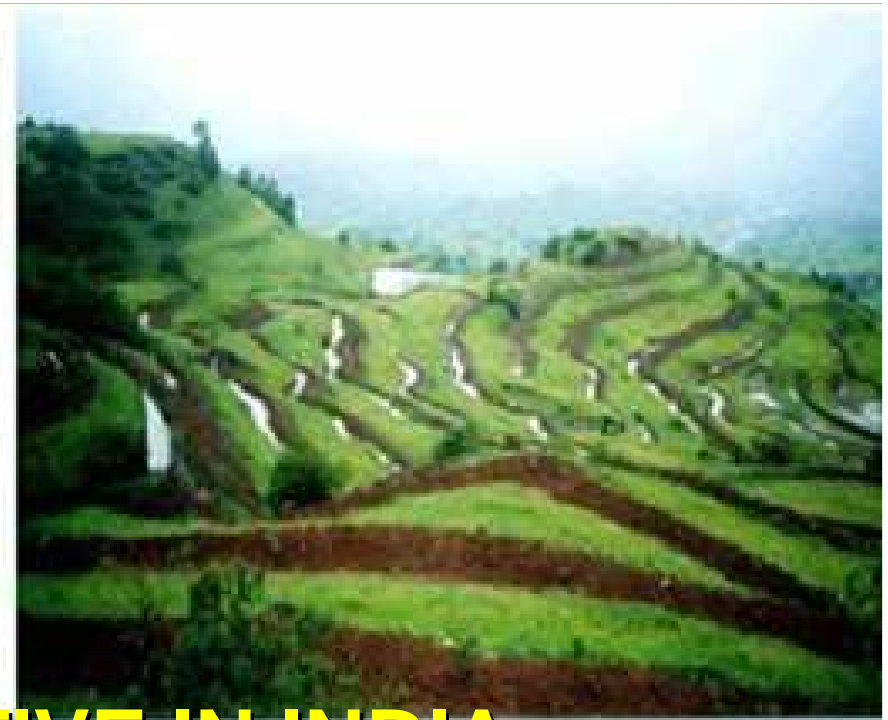




# RAINWATER HARVESTING ON SLOPES







## WOTR INITIATIVE IN INDIA





# TAMERA INITIATIVE (PORTUGAL)



Tamera, Portugal 2007

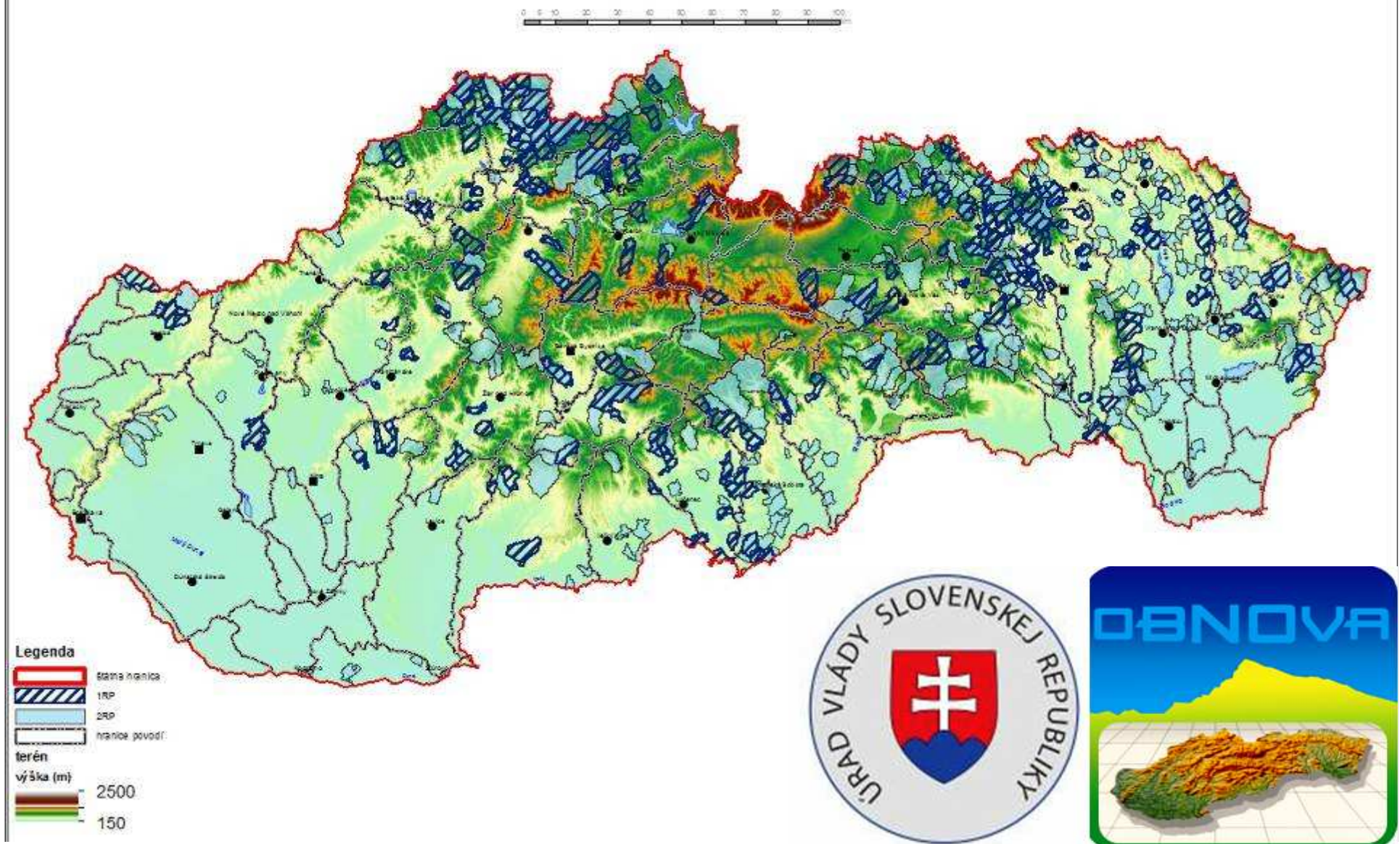


Water Retention Landscape, Tamera 2011





# 488 communities involved in the Government Landscape Restoration Program in 2011





**ŤAHANOVCE**





# NIŽNÝ SLAVKOV









**Snežnica**









**Hlohovec**





**Hlohovec**

















**Orlov**





# THE SLOVAK NEW WATER DEAL



MICHAL KRAVČÍK A KOLEKTÍV

**Po nás púšť a potopa?**

After us, the desert and the deluge?

1. More than 100.000 measures in 488 communities
2. More than 10 mil. m<sup>3</sup> of waterholdings
3. More than 8.000 jobs for poor people



# **THE NEW WATER DEAL for BLUE PLANET**

- **Creation more than 50 million jobs for poor people**
- **waterholding measures can returne 1000 km<sup>3</sup> rainwater a year to small water cycles**
- **duration ten years**
- **0,008 EUR/m<sup>3</sup>, while current technologies require cca 0,3 eur/m<sup>3</sup>**
- **costs about 400 billion EUR annually**



# Hydro-Climate Recovery

Rainwater Storage in damaged 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

### Vodozdržné opatrenia

poldre, valy

dažďové záhrady

kamenné hrádzky

odrážky

hrádzky

zasakovacie pásy

0 0.25 0.5 0.75 1 km





# One village - SLOVENSKÁ VOLOVÁ

- 142 soft measurements
- 8 uneployments
- 5 months

Image © 2014 CNES / Astrium  
© 2014 Google

Google earth



# 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

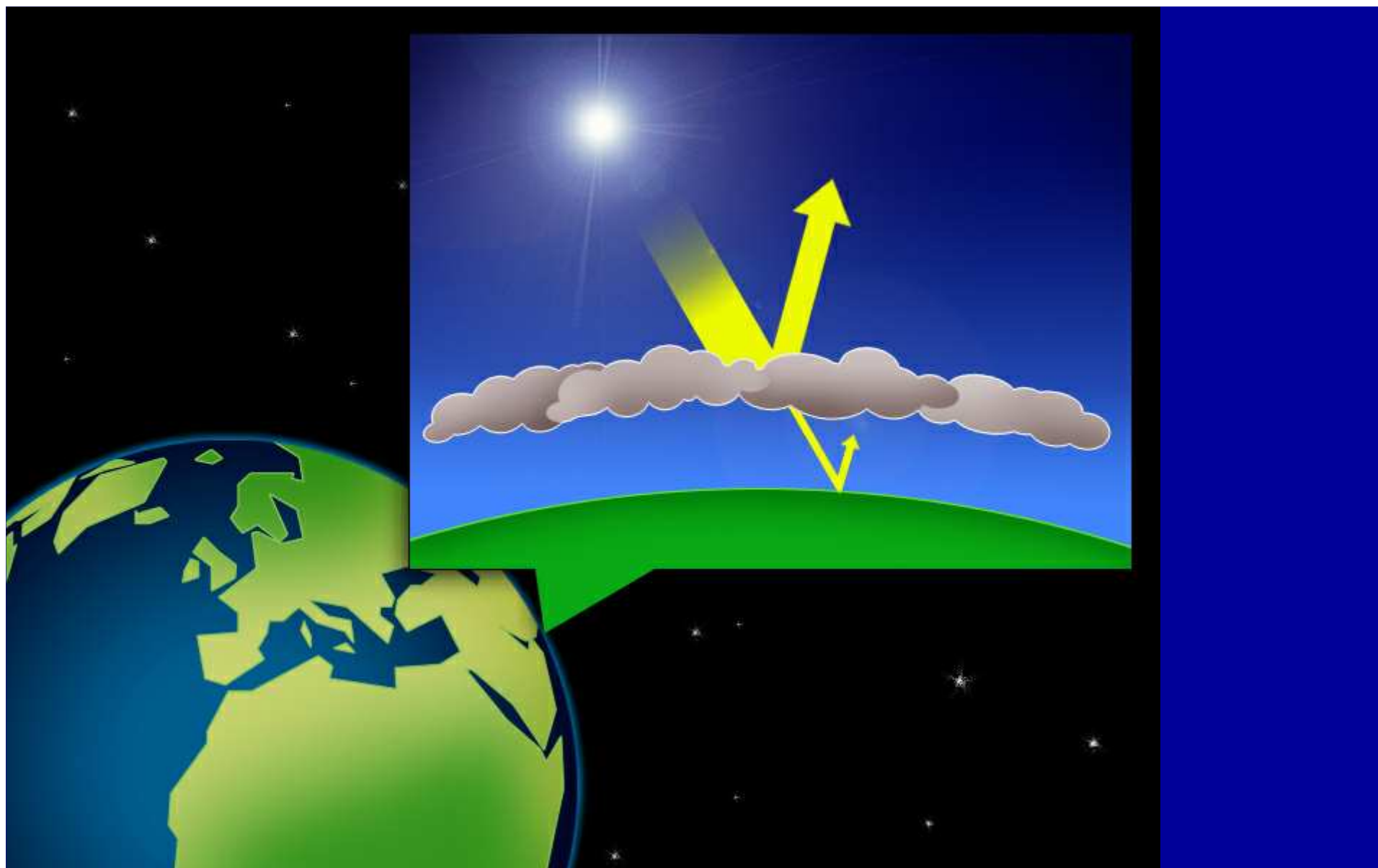




# Rain gardens for urban zones



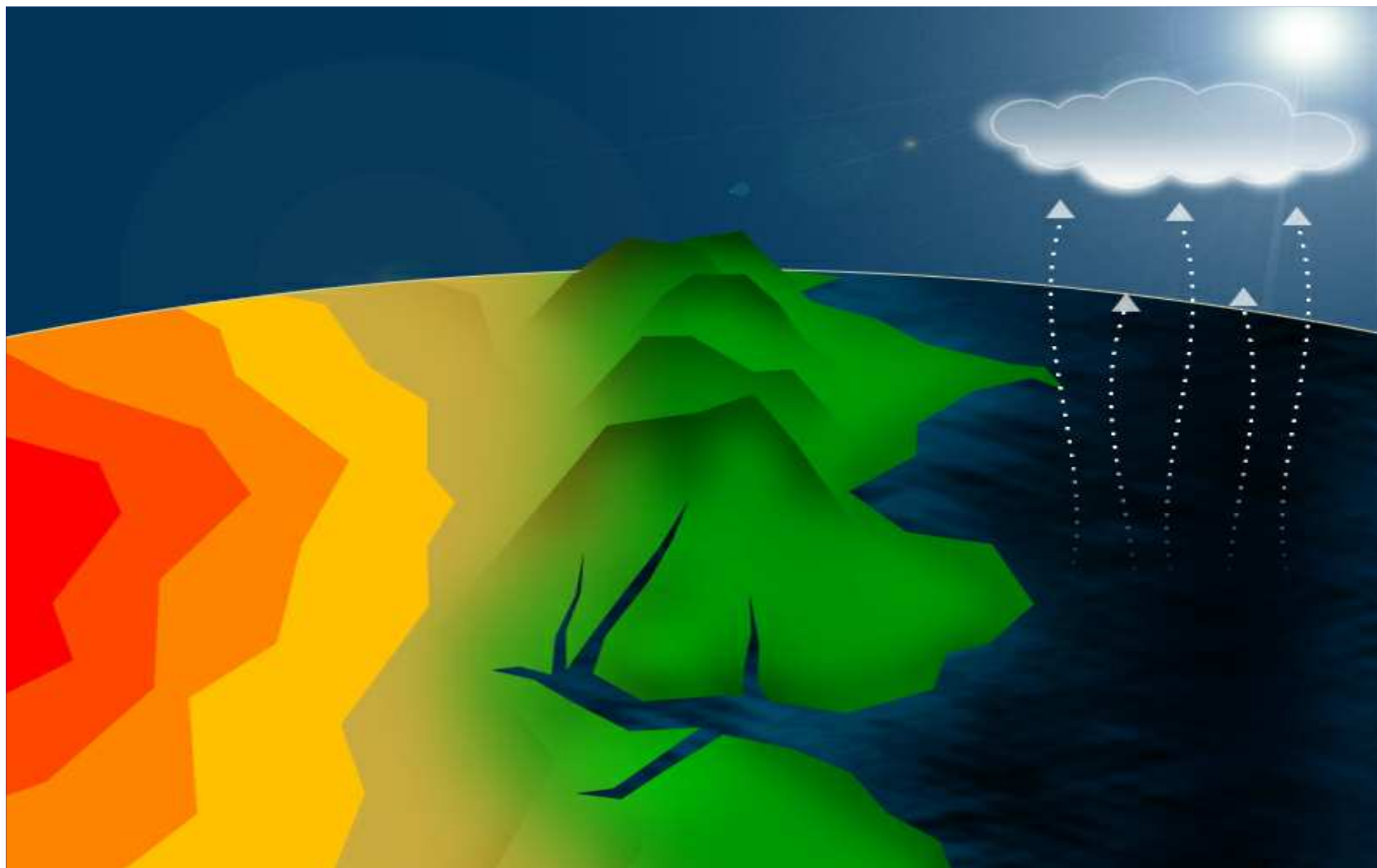




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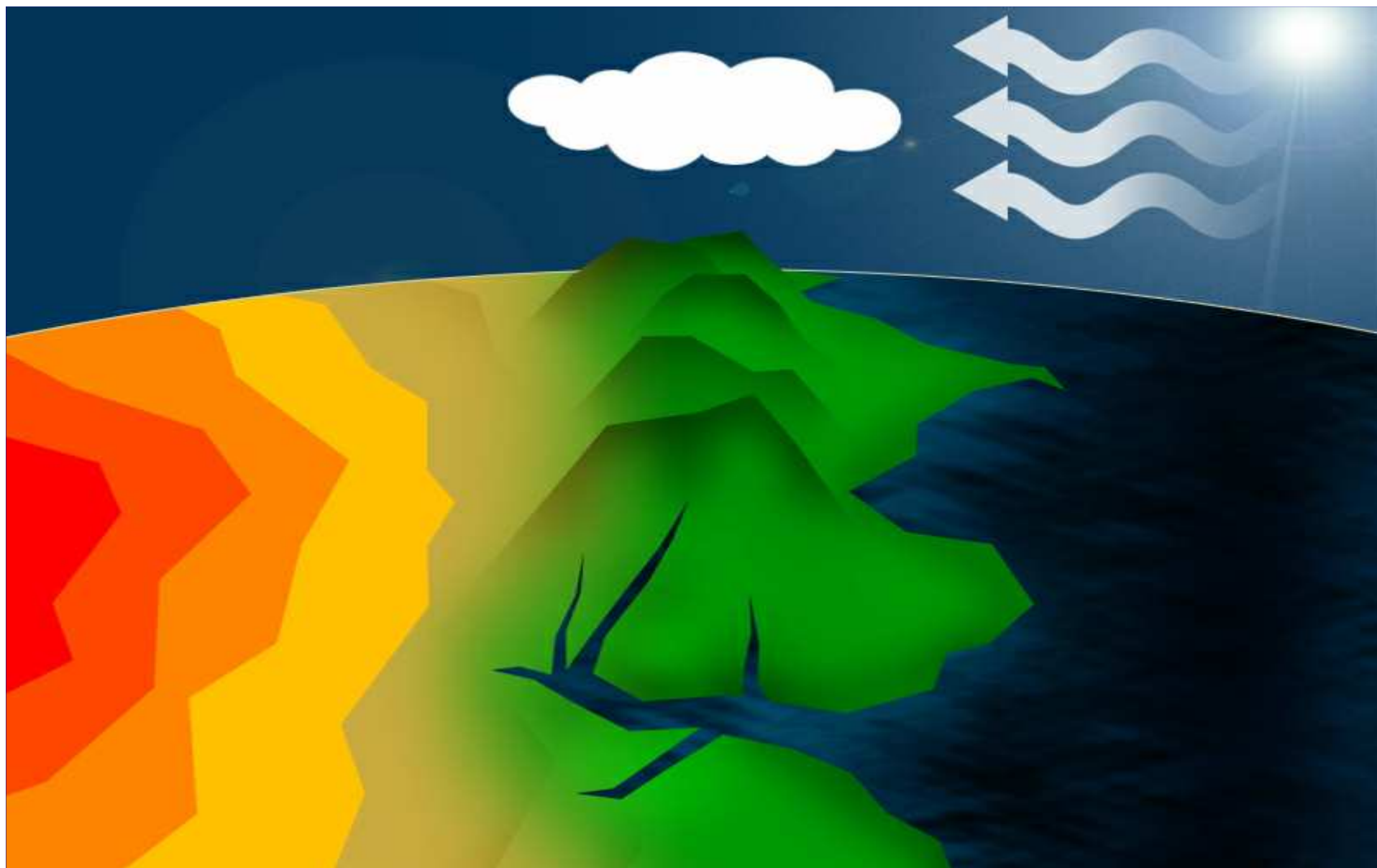


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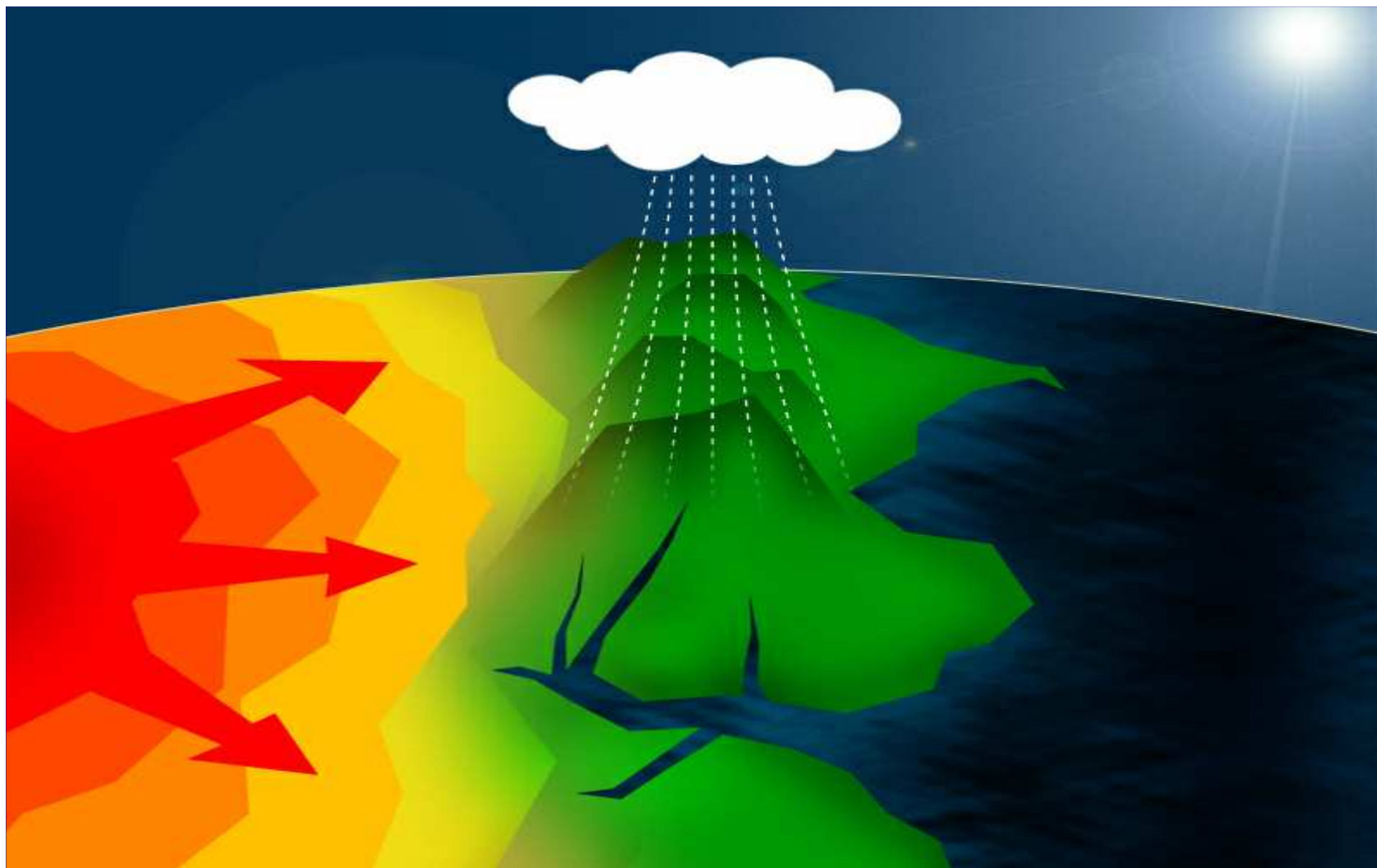


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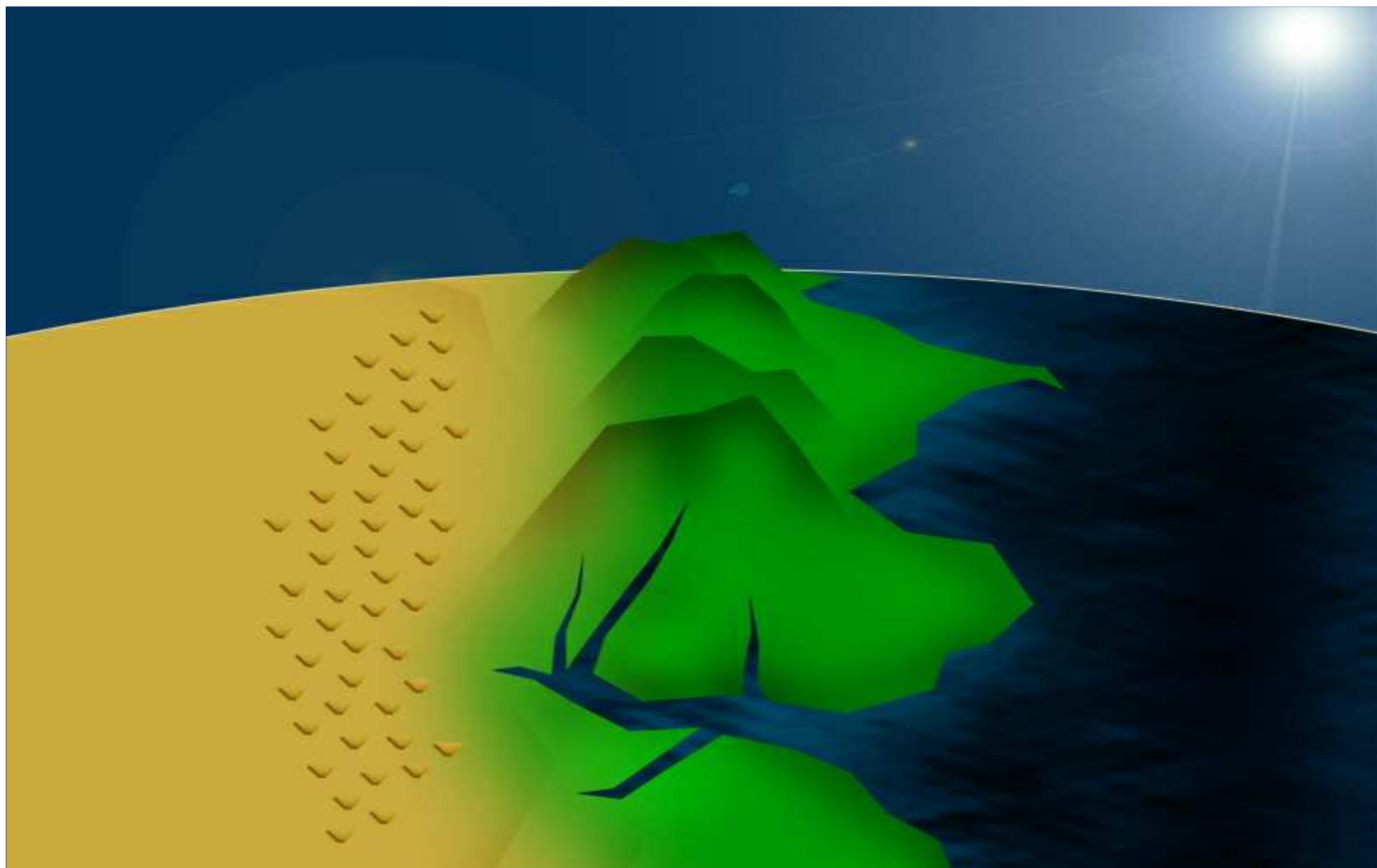


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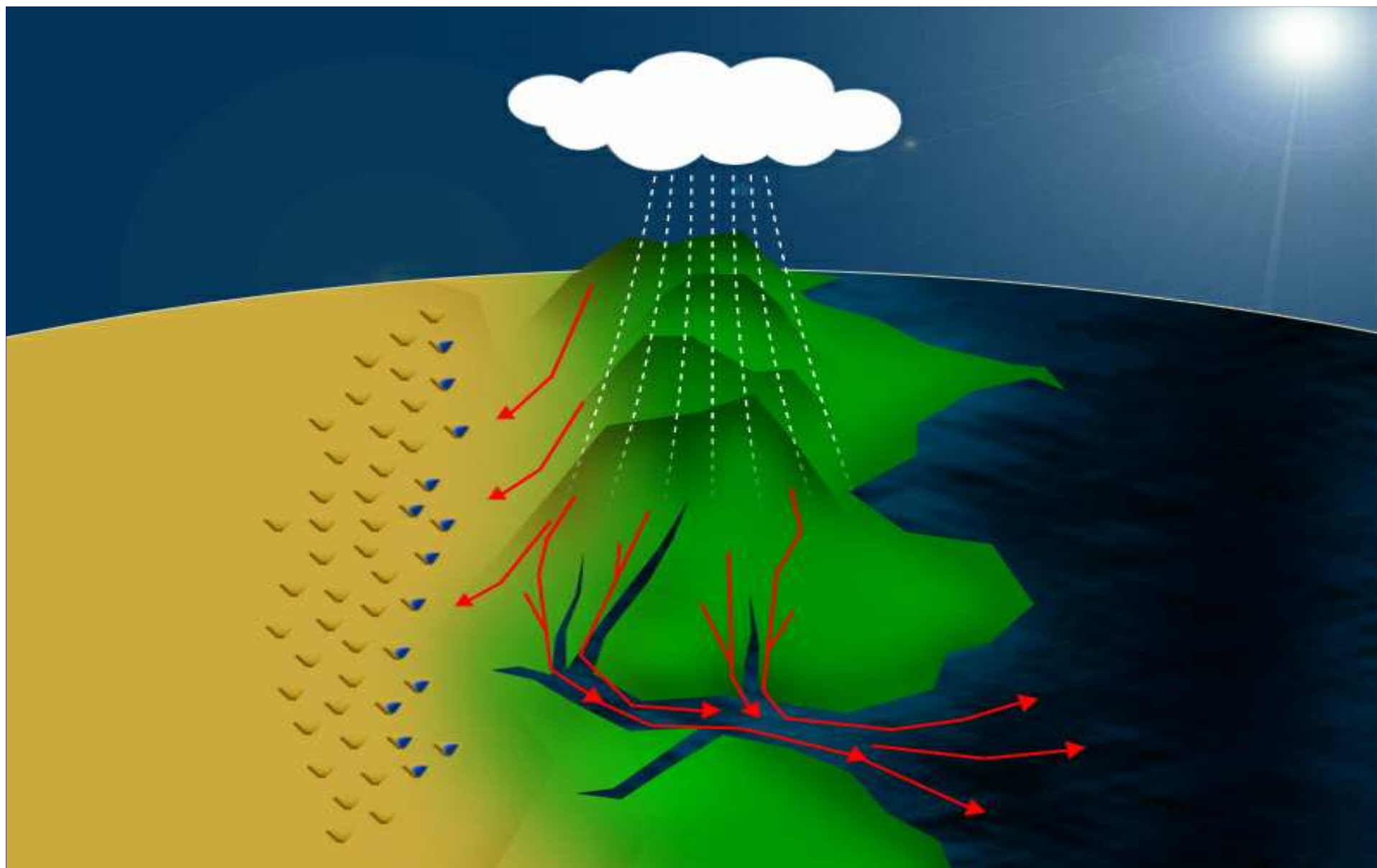


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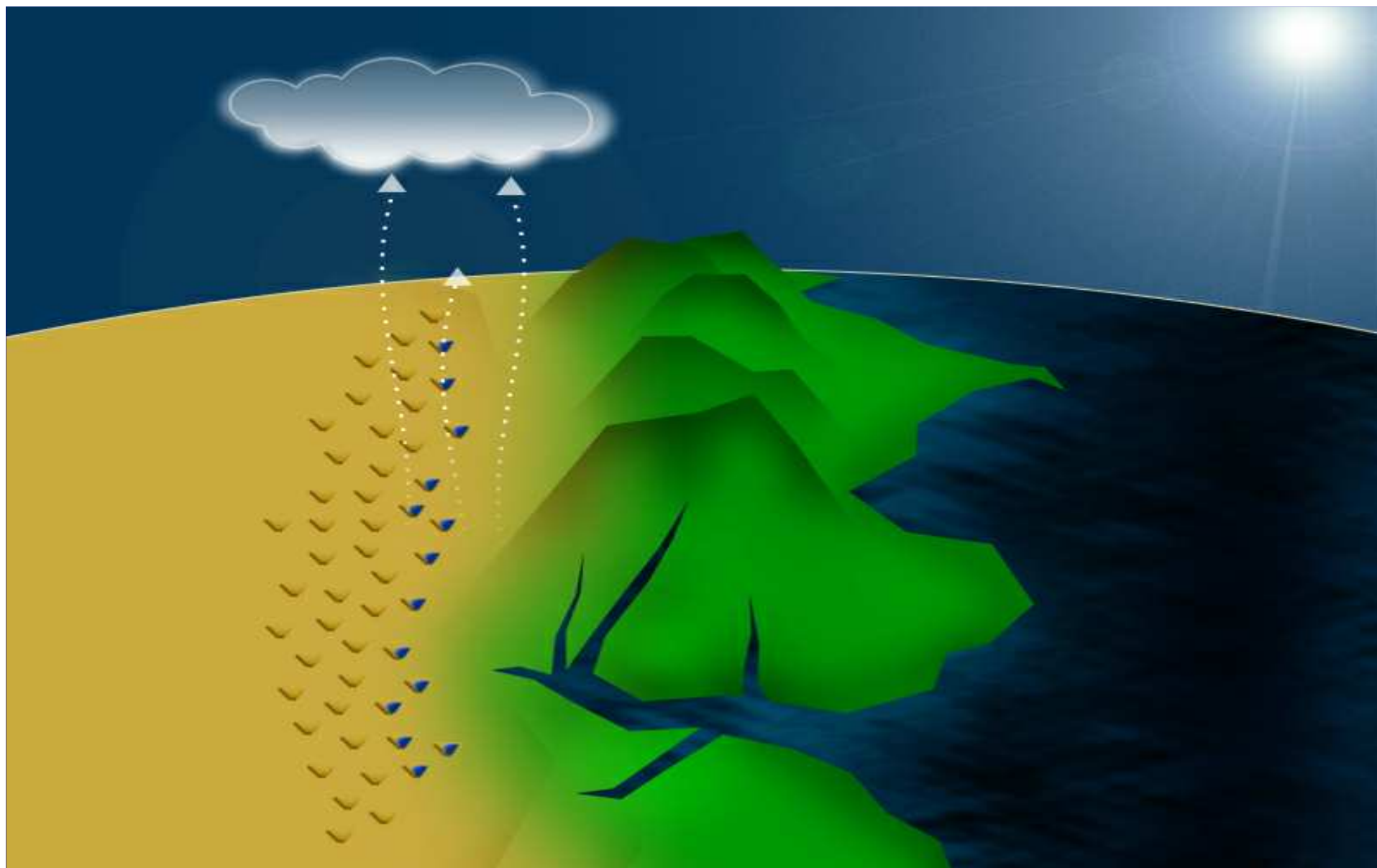


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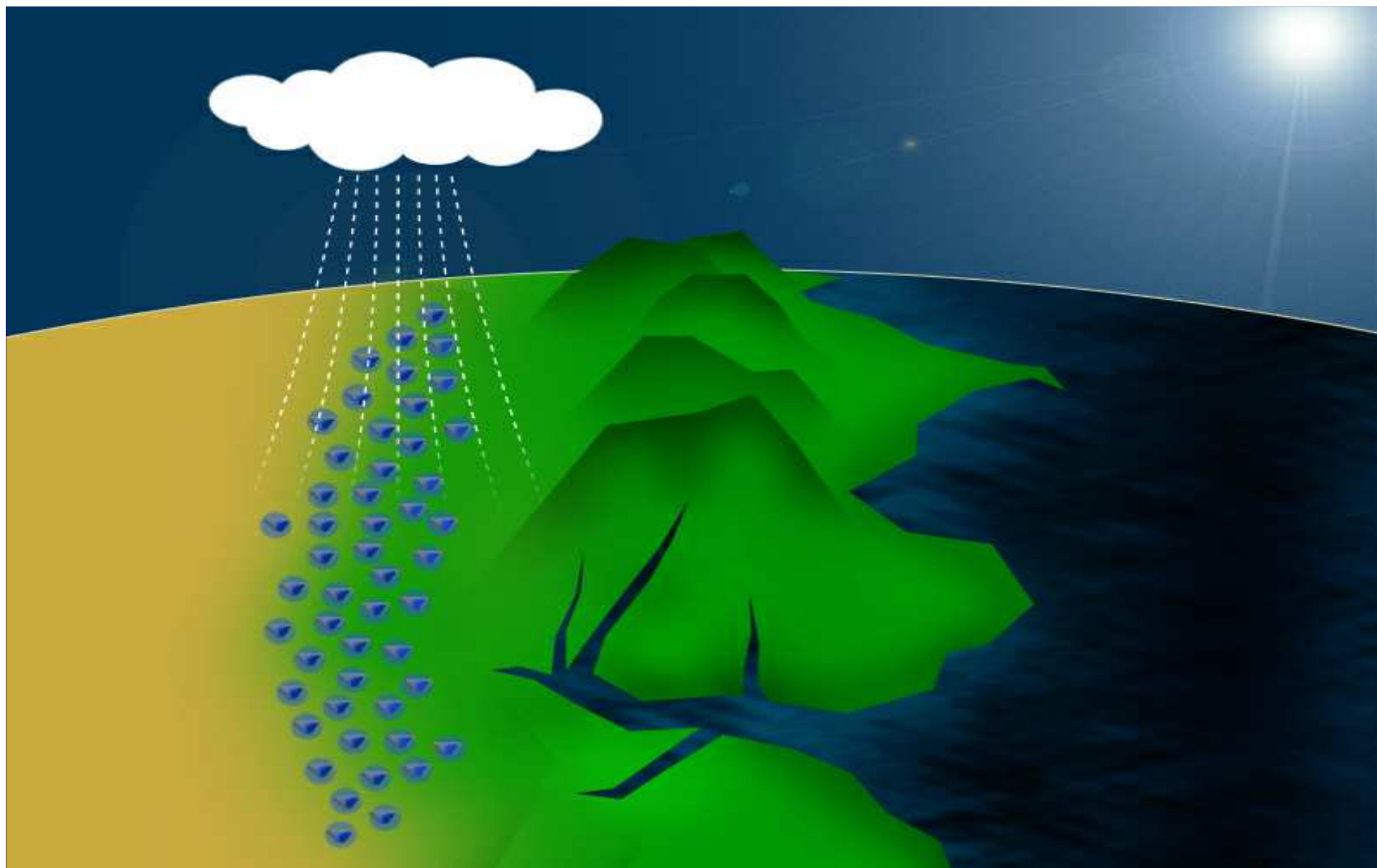


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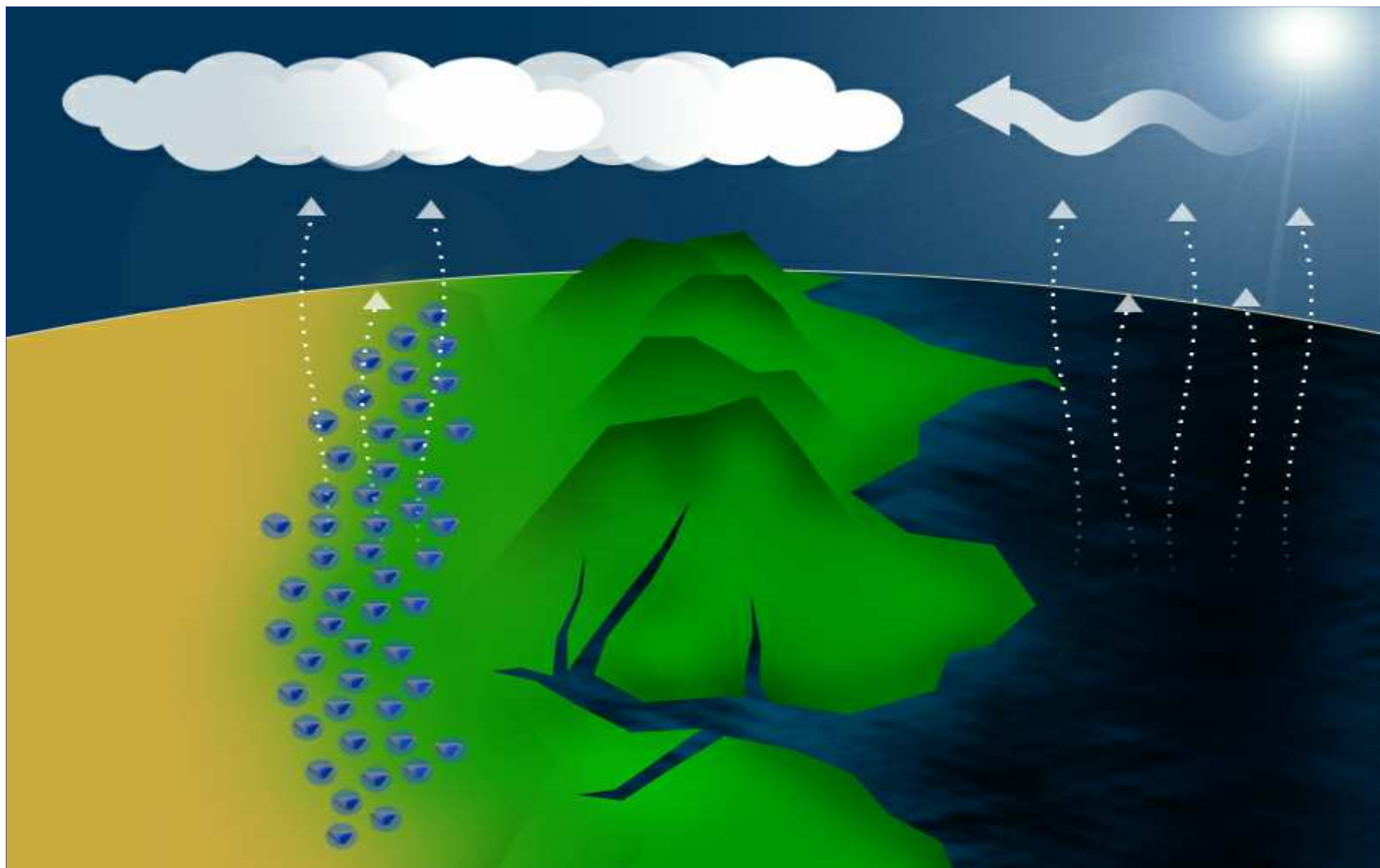


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# **Recommendation for BWS Statement**

## **At global level**

- to prepare and ratify the World Convention of stopping of dry up of continents on the Blue Planet, all countries would ratify this convention and they would promise to restore native hydrological regime in their river basins.**



# Recommendation for BWS Statement

- At level of the United Organization and in further international world organizations – to work out international support programs for those regions of the world, where economics is not able to cover financial claims of native hydrological regime restoration.



# Recommendation for BWS Statement

- At level of international financial institutions (World Bank, European Bank for Restoration and Development and further continental banks) – to work out investment support programs for obtaining of water resources, for solving of flood drouth and climate change prevention on the principles of ecological restoration of the river basins and whole – area protection of water resources.



# Recommendation for BWS Statement

- At global and continental level – to introduce the institute of permanent conferences for Exchange of experience with river basin hydrological regime restoration and stopping of landscape dry up.



# Recommendation for BWS Statement

- At level of states – to work out and introduce quickly legislative standards for stop of dry up of river basin so that everybody who sealing of landscape might be obligated to leave adequate balance volume of rainfall waters in his area.



# Recommendation for BWS Statement

- At the level of the state - to accept laws for stop landscape dry up and to introduce stimulating tax models for all economic subjects, legal and physical entities so that they might contribute with their activities in the river basins to increase of rainwater resource supplies in the river basins.



# Recommendation for BWS Statement

- At the level of individual state governments – to work out a complex strategy of whole-area increase of water retention capacity of the river basins for the needs of problem solving with water resources, of floods and drouths prevention, of moderate of negative consequences of climatic changes, support of biodiversity and food production.



# Recommendation for BWS Statement

- For individual branches of the economy (forest economy, agriculture, water economy, urbanization, infrastructure, industry)- to work out instructions of use and manuals for effective and systematic strengthening of water-retention capacity in ecosystems and river basins.



# Recommendation for BWS Statement

- To create conditions and pro-active supporting mechanism so that a new effective model of river basin management might originate at the level of the river basins, by means of forming of coalition and partnership of those who enter the river basis.



# Recommendation for BWS Statement

- For individual river basins – to create supporting funds for restoration of native hydrological regime by means of subsidiary water ecosystem which would eliminate so far built elements causing dry up (road, pavements, car-parks, roofed, canalized and drained earth's surface and so on)



# Recommendation for BWS Statement

- To elaborate and introduce complex educational program at all stages of education about inevitability of whole-area protection for water resources, flood and drouth prevention, moderation of negative consequences of climate changes, support biodiversity and natural production potential.



# Recommendation for BWS Statement

- At the level of scientific and research institutions – immediately to start research programs for the solution of these important problems (preparation of methods, manuals and simplified educational brochures) for the needs of areal increase of water resource supplies.



# Recommendation for BWS Statement

- It will necessary to remove the interferences caused by economical activity of man in any part of planet, the former causing quick runoff of rain water (eg by means of suitable artificial bog ecosystems). If not, the drainage will continue because we created arel conditions for quick runoff of water from individual parts of river basins in the past.



# Recommendation for BWS Statement

- At the levels of towns and villages – to work out and immediately put into practice general laws that would strengthen the whole-area protection and creation of water resources. To concentrate on strengthening of public interest in areal protection and creation of water resources.



# Recommendation for BWS Statement

- At the level of citizens, citizen's initiative and foundation – to orientate activities to creation of such conditions so that the citizens, citizen's associations, clubs and citizens organizations might concentrate their activities preferentially to areal increase of water resources because of strengthening of water-retention capacity of the territories and so that they might be an example for the others of how to solve water-retention capacity of the territories in an effective and financially – unpretentious way.





**THANKS!**  
**ĎAKUJEM**



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