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DANUBE RECTORS' CONFERENCE

CMEP

World heritage of the Danubian region and its connection to climate change through centuries

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Novi Sad, Serbia

Presentation designed by Ana Firanj

Novi Sad, February 5, 2010.


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DANUBE RECTORS' CONFERENCE
Germanic people
GERMANY
Regensburg
Slavic people
UKRAINE
SLOVAKIA
Bratislava
Linz
Vienna
AUSTRIA
Budapest
HUNGARY
MOLDOVA
Finno Ugric
Romanian people
Vukovar
Novi Sad
CROATIA
ROMANIA
Belgrade
SERBIA
Slavic people
BULGARIA

György Lukács

(1885 – 1971)

Tradition

"In the past
in the present
in the future ..."
Only tradition

The Snow Lady Church (1881)

Whether this church was a messenger of

1) today's Europe
2) religious and tolerance of any kind in this region
3) close ties of heritage and climate change

LEGEND or NOT

"The legend is a reality that will come" (D.T. Mihailović)

HERETIGE

Chatolic church – masque (1526)

Mosque – chatolic church with altar for chatolic, protestant and ortodox ceremony (1881)

HISTORIC EVENT

Waradin war (August 5, 1716):
Austrian Kingdom vs Turkish Empire
(The Duke Eugen Savoy)
Place: Tekija (in arabic: Place for rest)

WEATHER EVENT (CLIMATE CHANGE)

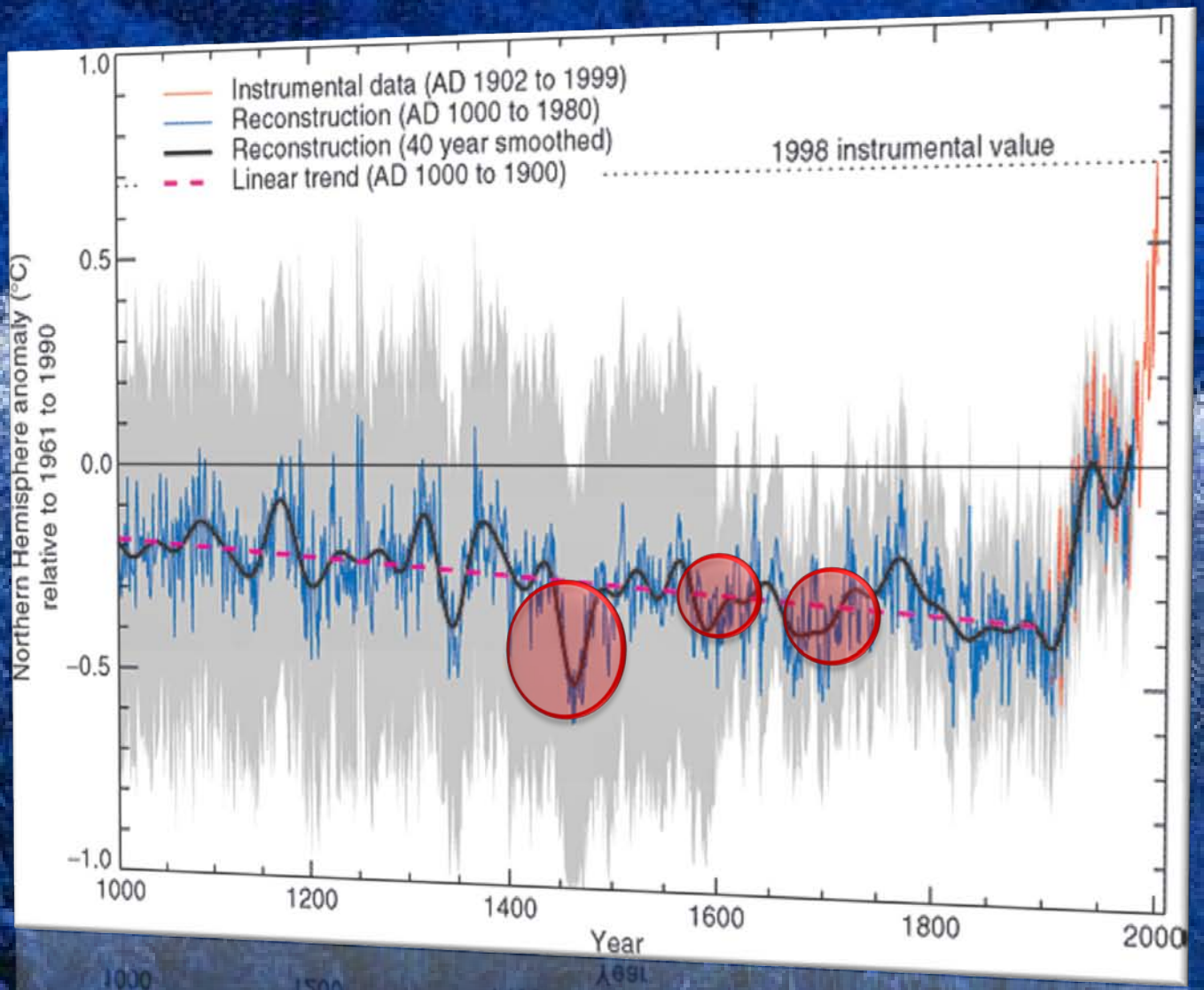
Snow storm and temperature below zero in August 5.

Turkish soldiers were frozen and they undestood that as a "Sign from the God"

CONSEQUENCES

Eugen Savoy took an advantage so after that Turkish military forces never crossed the Danube

Reconstructions of the climate through centuries that include Danubian region.



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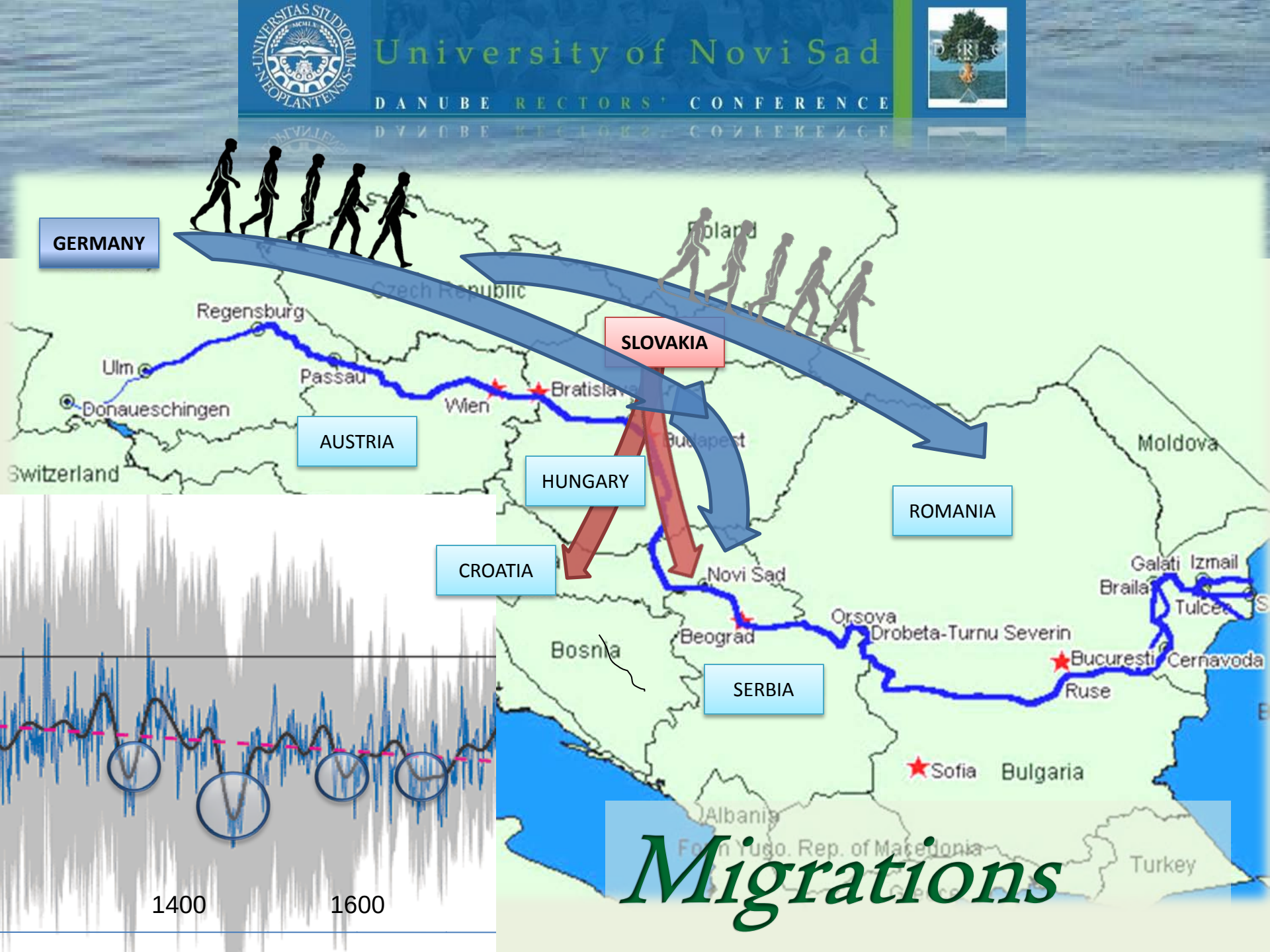

Migrations

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GERMANY

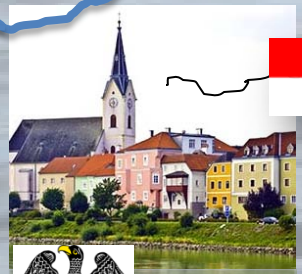
Regensburg

SLOVAKIA

Bratislava

UKRAINE

MOLDOVA



Linz

Vienna

AUSTRIA

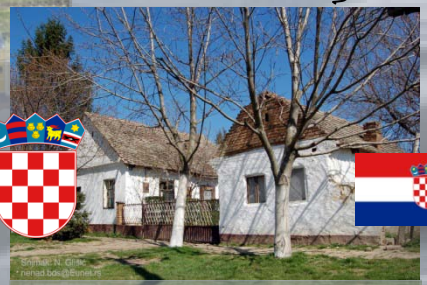
Budapest

HUNGARY

ROMANIA

Vukovar

Novi Sad



CROATIA

Belgrade

SERBIA

BULGARIA

ARCHITECTURE

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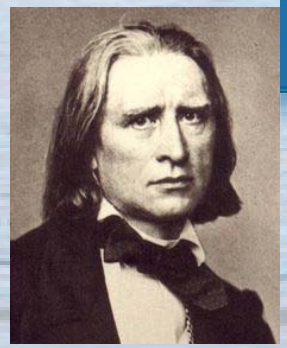
Johann Sebastian Bach,
(1685 -1750)


Wolfgang Amadeus Mozart
(1756 –1791)


Franz Liszt
(1811 -1886)


Sergei Sergeyevich Prokofiev
(1891 –1953)

GERMANY

UKRAINE

SLOVAKIA

Regensburg

Bratislava

Vienna

AUSTRIA

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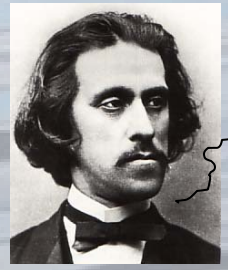
Ludwig van Beethoven
(1712–1773)


Josef Strauss
(1827 - 1870)


Bartók Béla
(1881-1945)

CULTURE (music)

Vukovar

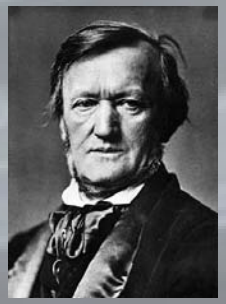
Novi Sad

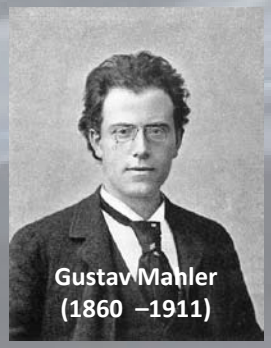
CROATIA

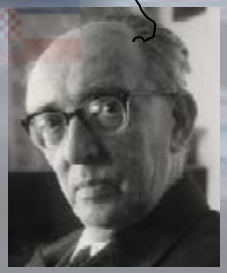
ROMANIA

Belgrade

SERBIA


Wilhelm Richard Wagner
(1813 –1883)


Gustav Mahler
(1860 –1911)


Jakov Gotovac
(1895 - 1982)


Stevan Stojanović Mokranjac
(1856 - 1914)

BULGARIA

EDUCATION

Universities from Danubian countries
in the world top 500
(among 6000)

- Germany, 46
- Austria, 6
- Hungary, 3
- Serbia, 1.

University of Novi Sad is one 800 place on that list

8th in Europe
Universität Wien

16th in Europe
Freie Universität Berlin

Number of Nobel Prize winners in the Danube region.

Austria			
Sciences	18	Peace and Literature	3
Germany			
Sciences	85	Peace and Literature	18
Slovakia			
Sciences	1	Peace and Literature	-
Hungary			
Sciences	8	Peace and Literature	2
Former Yugoslav countries			
Sciences	2	Peace and Literature	1
Romania			
Sciences	1	Peace and Literature	1
Ukraine			
Sciences	3	Peace and Literature	-
IN DANUBIAN REGION			
Sciences	118	Peace and Literature	25

CONTRIBUTION TO WORLD CIVILISATION

Present time

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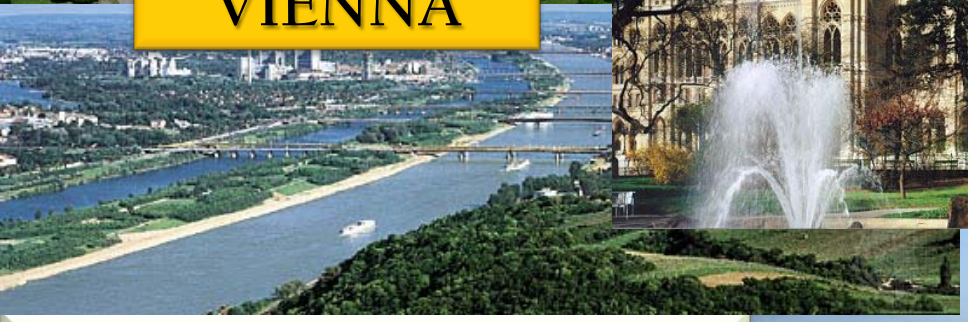
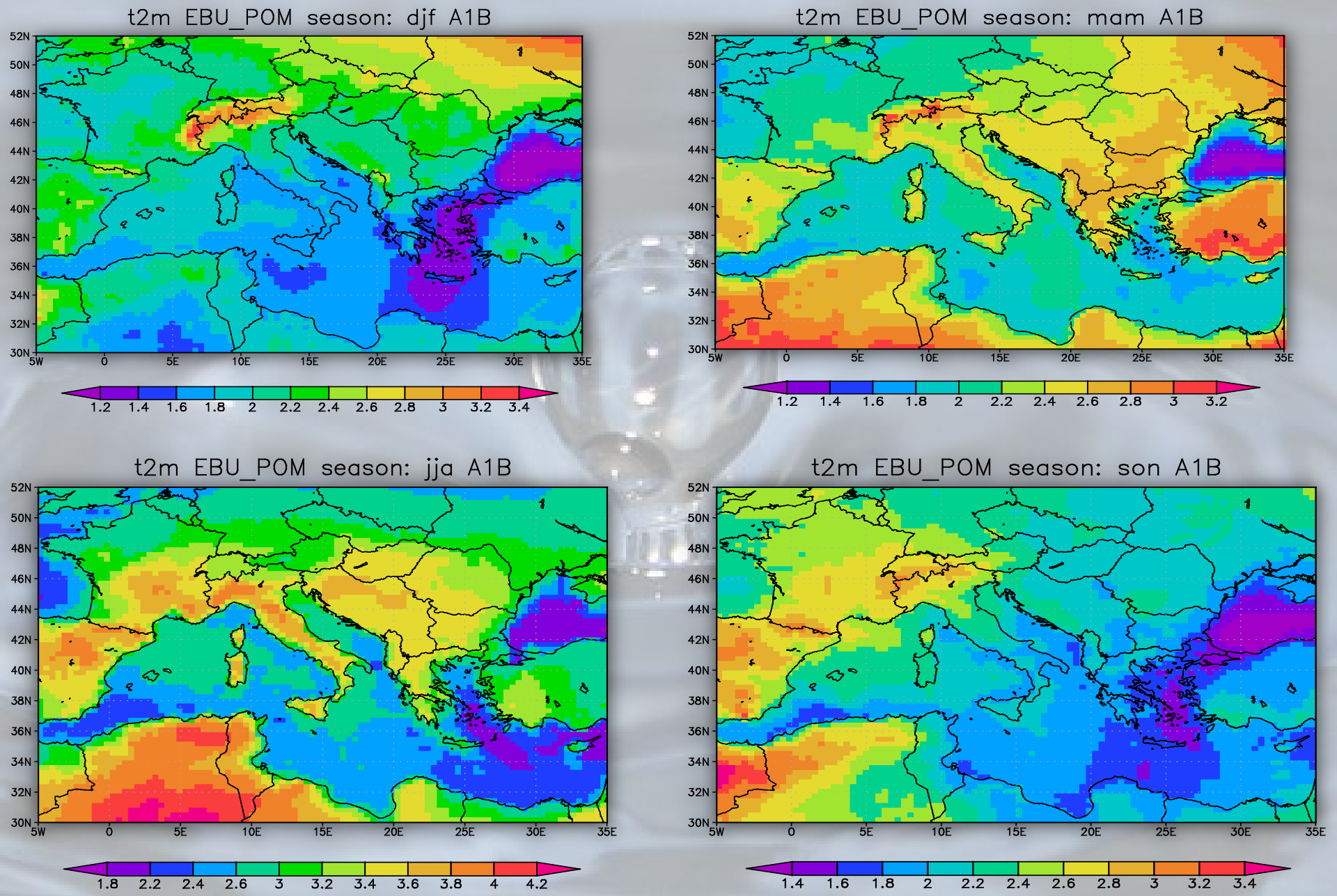
VIENNA



NOVI SAD

King of the Danube

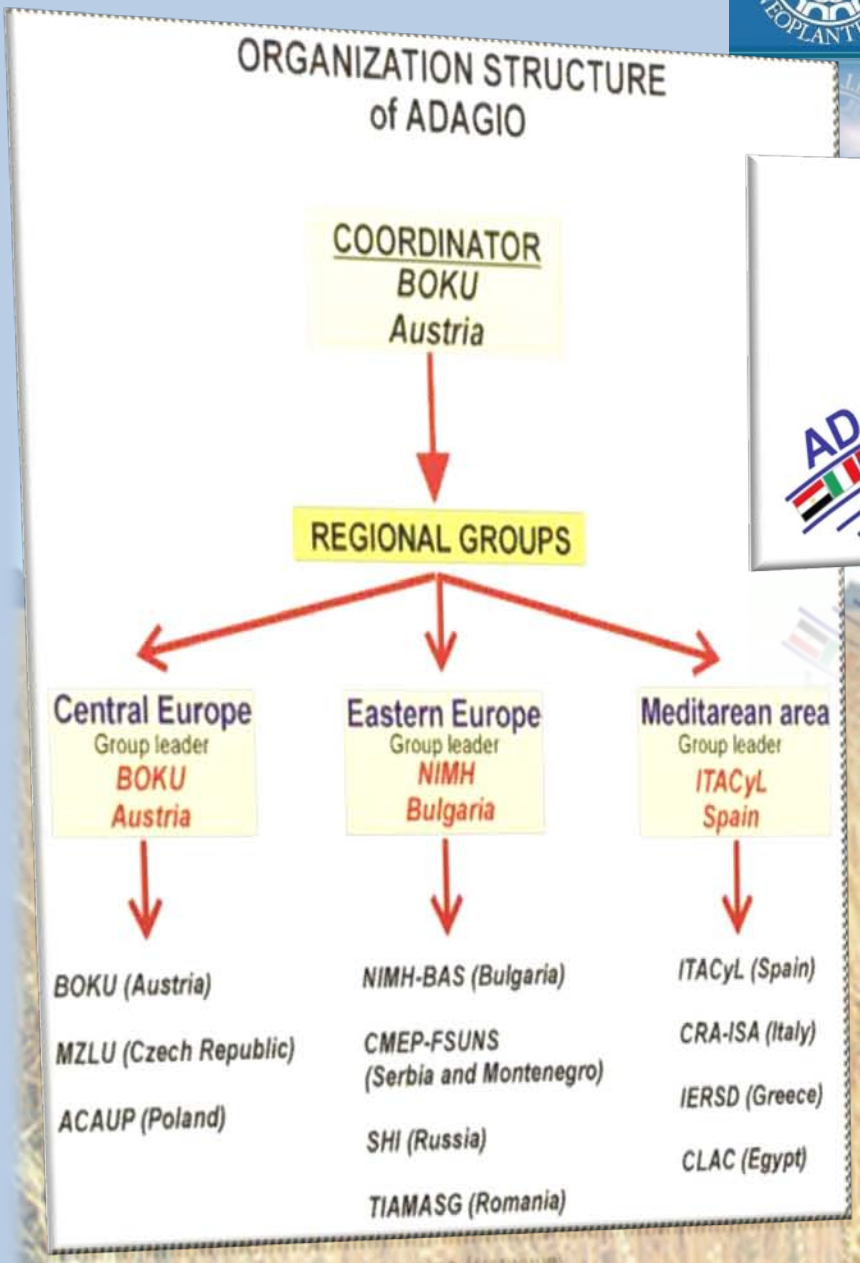
Queen of the Danub



Temperature increase by the seasons (1961-1990)+++(2001-2030)

AGRICULTURE

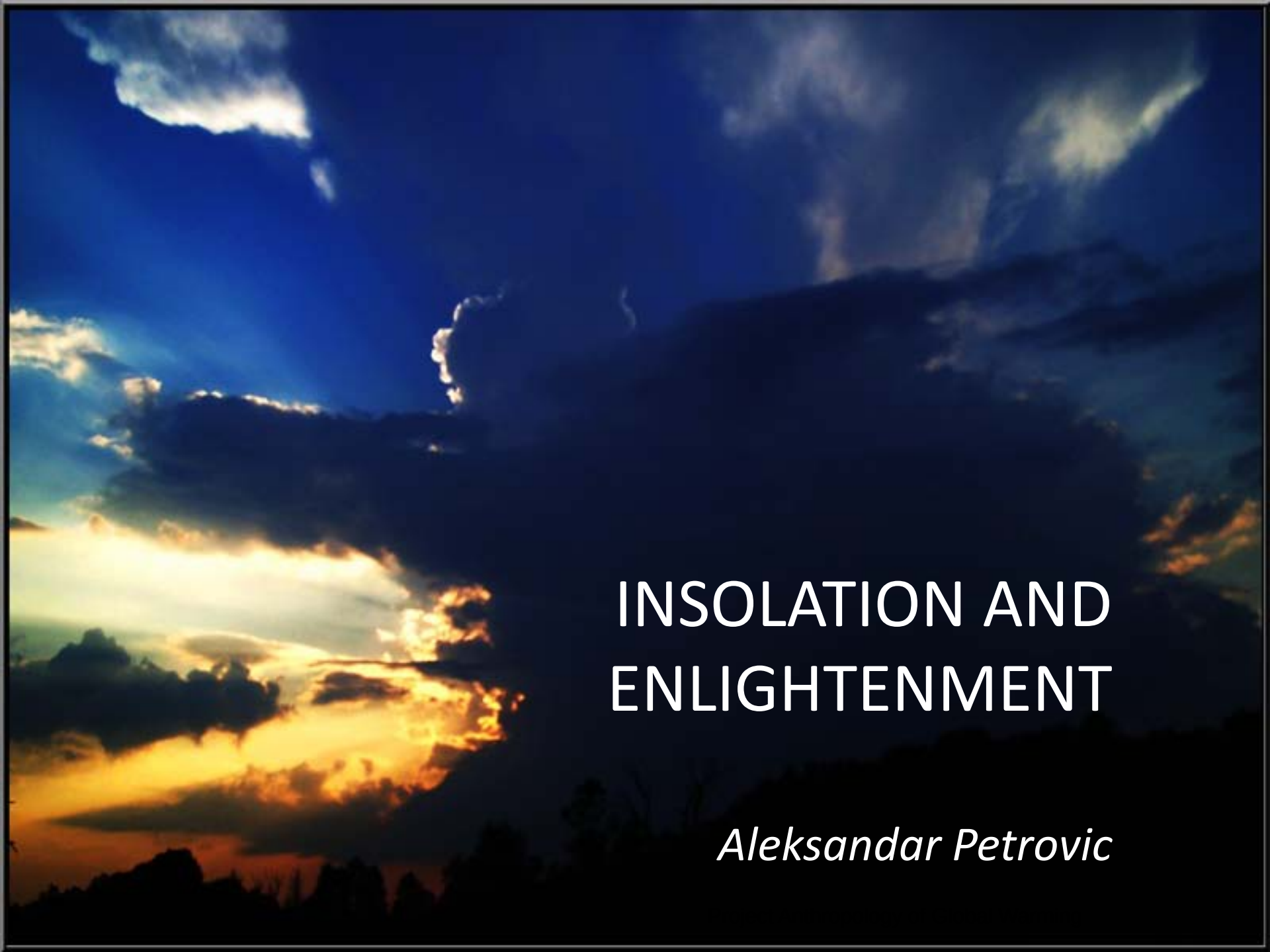
This region is since 14th century as agricultural area that supplied other parts of Europe with the food until this time.

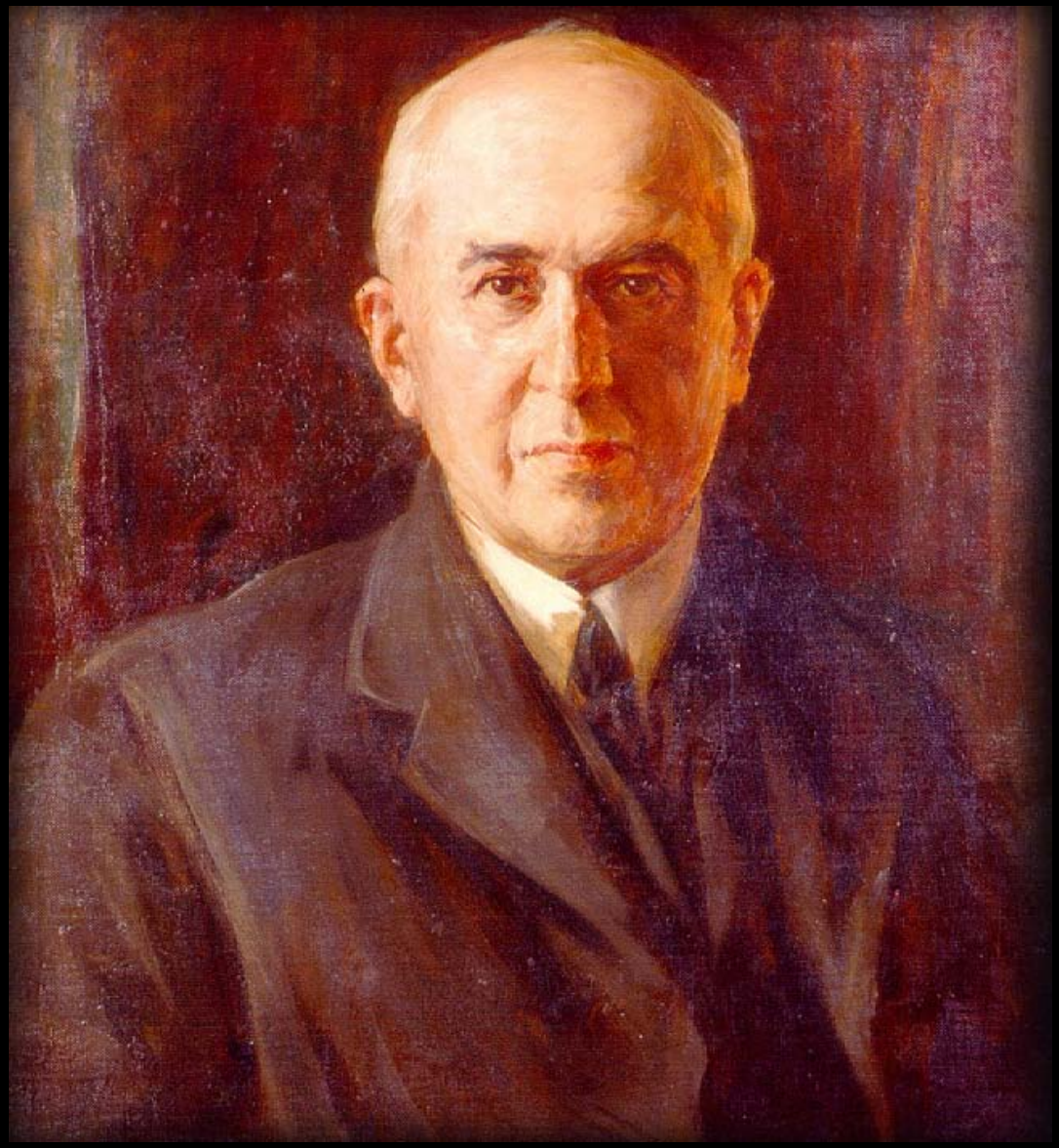


FP6 project

This region is seen as the area where climate change impact on agriculture will be strongly pronounced.
This area is also detected as the area with a high level of vulnerability in agriculture.

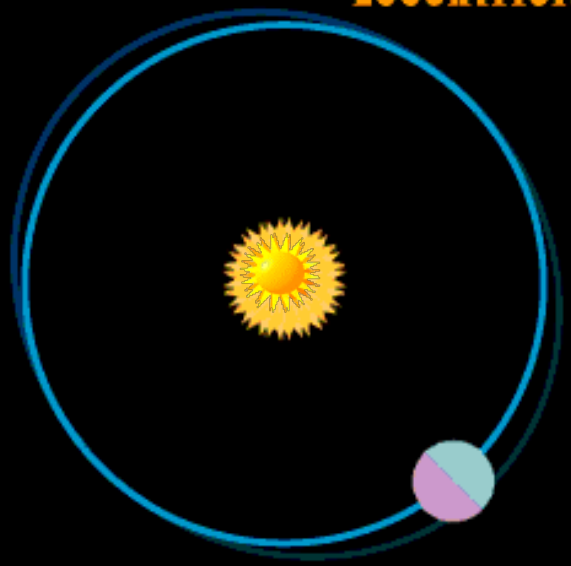
FP7 project PROADAPT
FP7 project PROPER

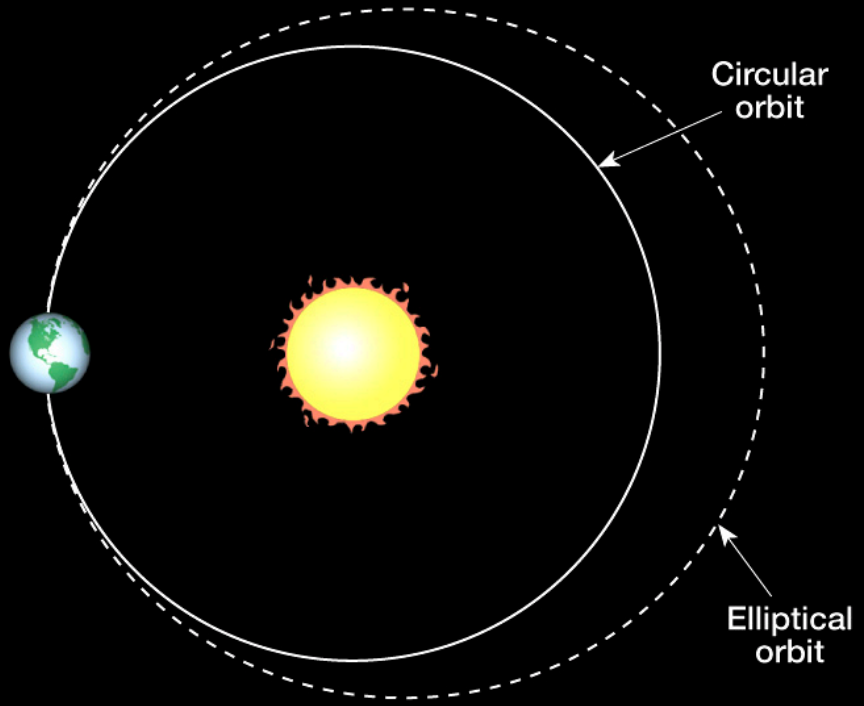

INSOLATION AND
ENLIGHTENMENT
Aleksandar Petrovic



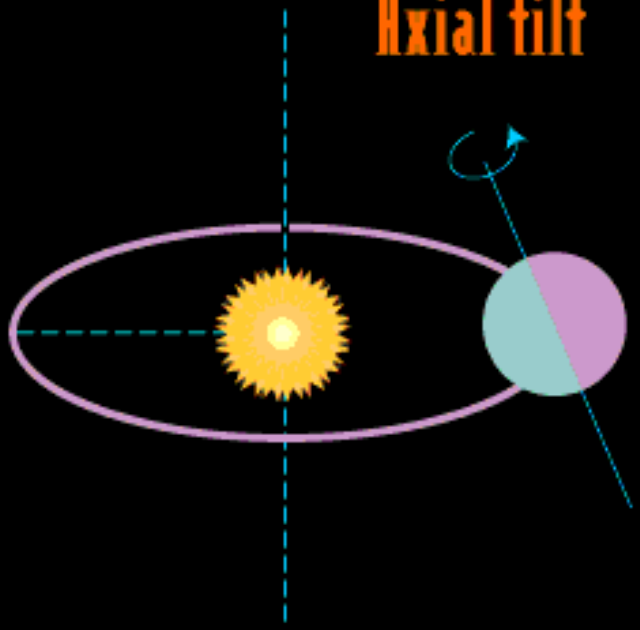
Milutin Milanković (1879-1958)

Eccentricity

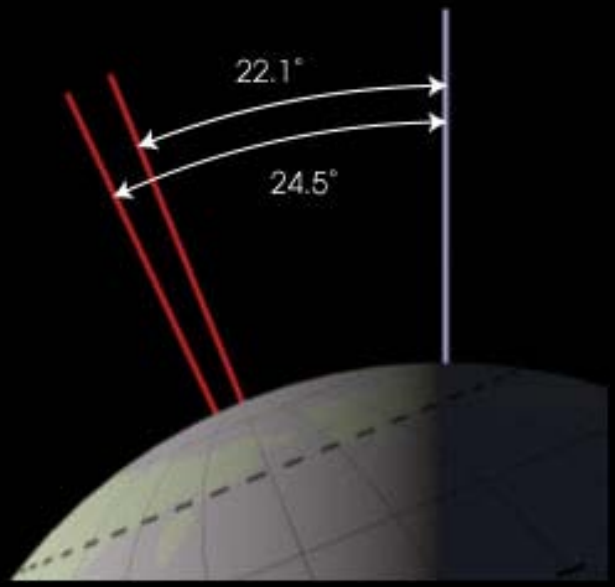


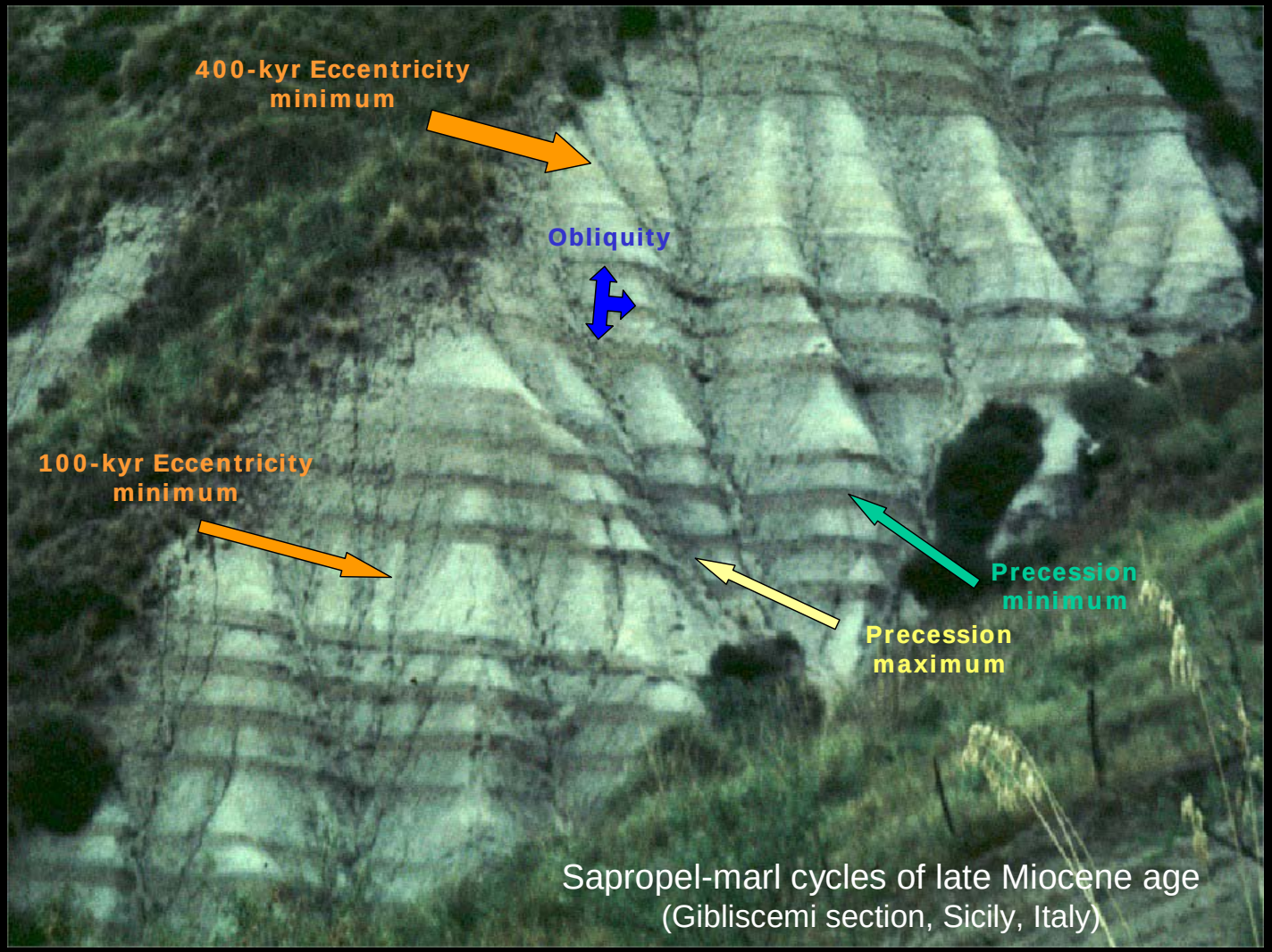


Axial tilt



Variation in Axial Obliquity




400-kyr Eccentricity minimum
Obliquity
100-kyr Eccentricity minimum
Precession minimum
Precession maximum
Sapropel-marl cycles of late Miocene age
(Gibliscemi section, Sicily, Italy)

- Political revolution

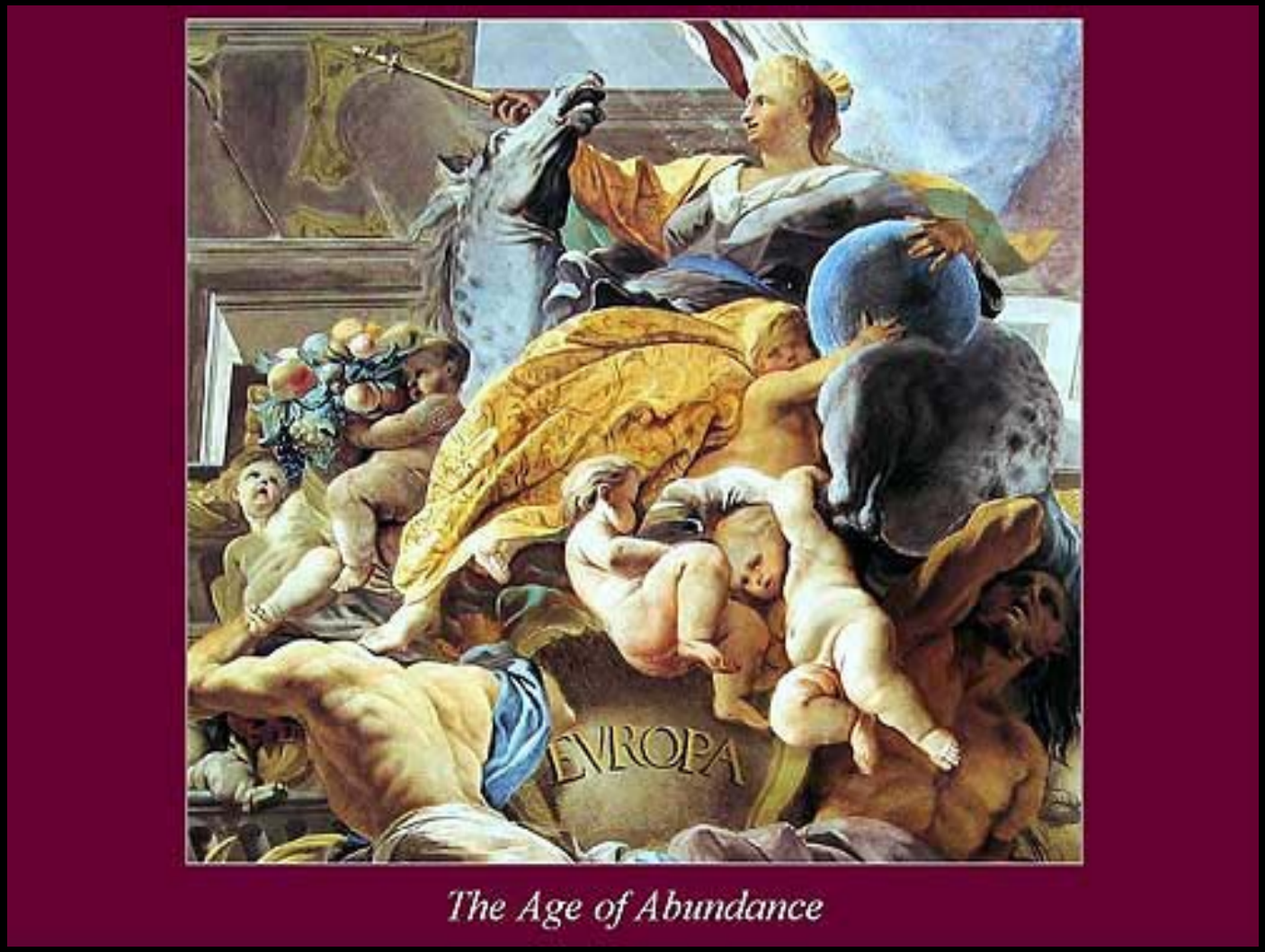
Eugène **Delacroix**, Liberty leads citizens across the barricades

"Man was born free, and everywhere he is in chains"
(Jean-Jacques Rousseau, *Du contract social*, 1762, bk. 1, ch. 1: « *L'homme est né libre, et partout il es dans les fers* »).

- Technological revolution

(Joseph Wright, *Experiment with the Air-pump*, oil, 1768 , Tate Gallery, London)

"If we don't find anything pleasant, at least we shall find something new" (Voltaire, *Candide*, 1759, ch. 17: « *Si nous ne trouvons pas des choses agréables, nous trouverons du moins des choses nouvelles* »).



(Fra Andrea Pozzo, *Europe*, fresco, Sant' Ignazio di Loyola, Rome, early eighteenth century)

"Everything degenerates in the hands of man. He forces one soil to nourish the products of another, one tree to bear the fruit of another. He mixes and confuses the climates, the elements, the seasons. He mutilates his dog, his horse, his slave. He turns everything upside down: he disfigures everything; he loves deformity, monsters. He wants nothing as nature made it, not even man." – Rousseau, *Émile ou de l'éducation*, 1762, bk. 1)

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Use your CCCP Card to buy Carbon Credits at the nearest ATM and feel smug today!

"Whether ordering endangered species for my daughter's wedding menu, or Lear Jetting to pick up my Oscar, Nobel, and other progressive awards, I always take my CCCP card with me. Don't leave your 20-times-the-national-average-energy-consuming home without it!" ~ *Al Gore*

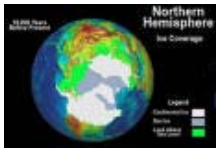
CARBON CREDIT UNION:
Redistributing America's wealth since 2005

ThePeoplesCube.com

DRC / Novi Sad / Serbia 4 – 5 February 2010

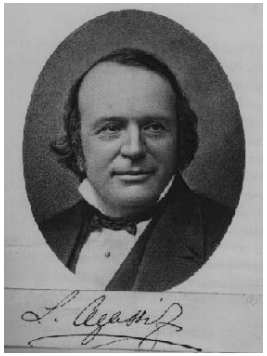
This is the Danube loess multidisciplinary story
Writen by many researchers from many countries

Ice Age Discovery

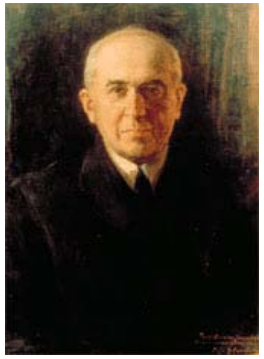


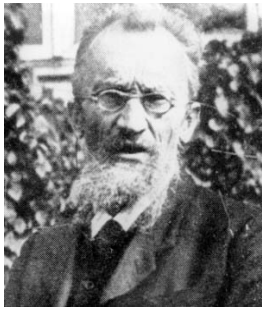

Backland


Layel


Agasiz


Kroll

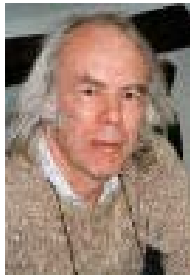

Milankovitch


Koeppen

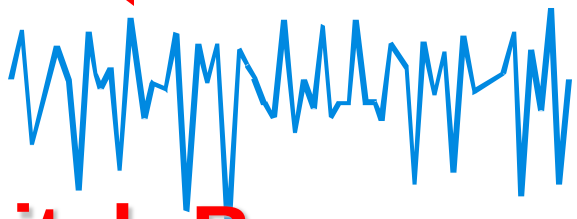

Wegener


Emiliani

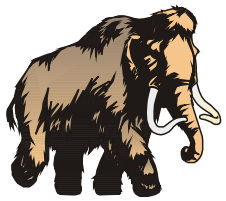

Berger

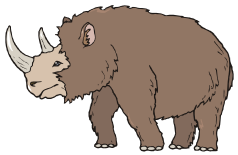

Shackleton

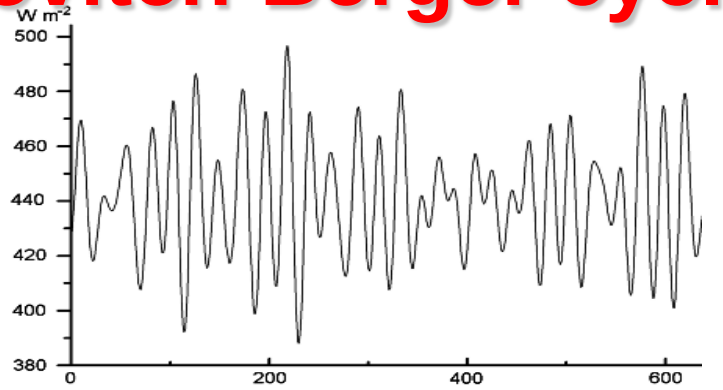

Kukla



Milankovitch-Berger cycles



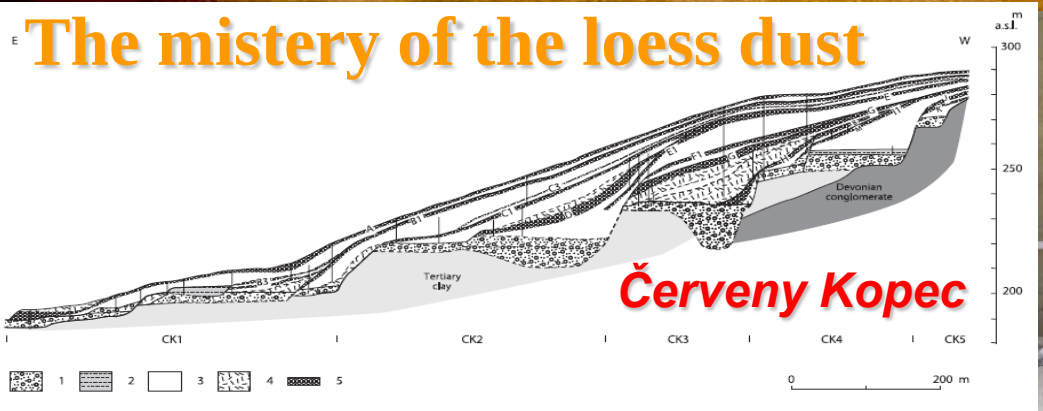




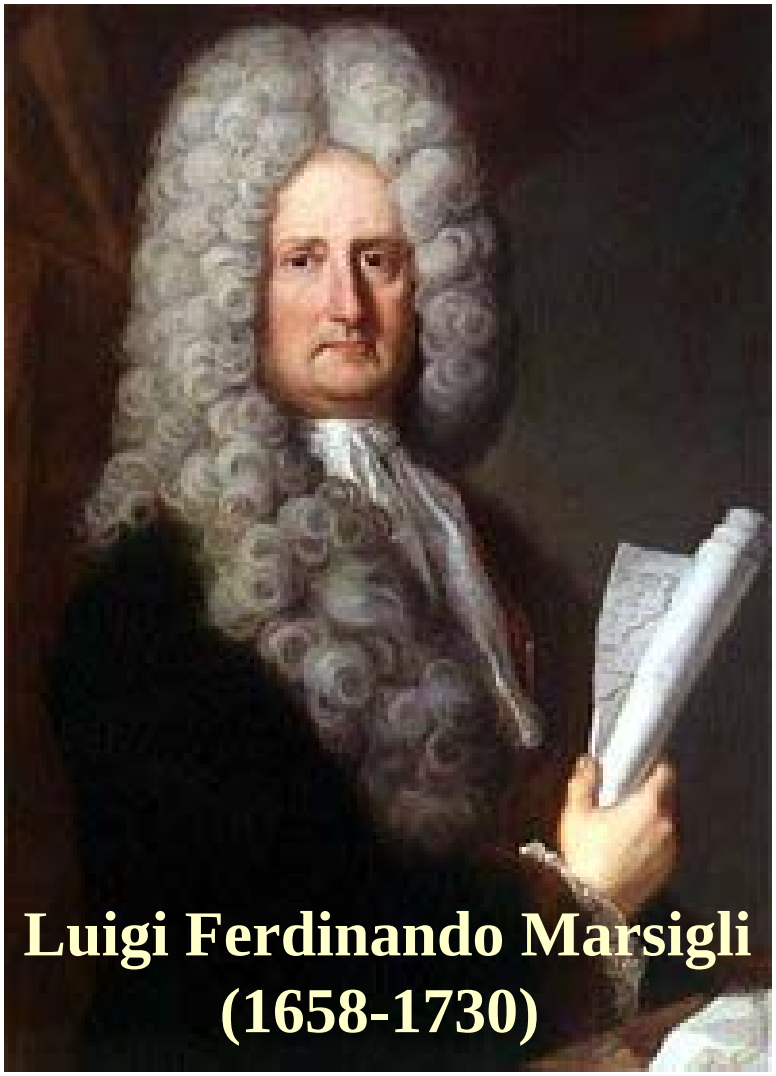
George J. Kukla

Climatic and Human evolution history

The mistery of the loess dust



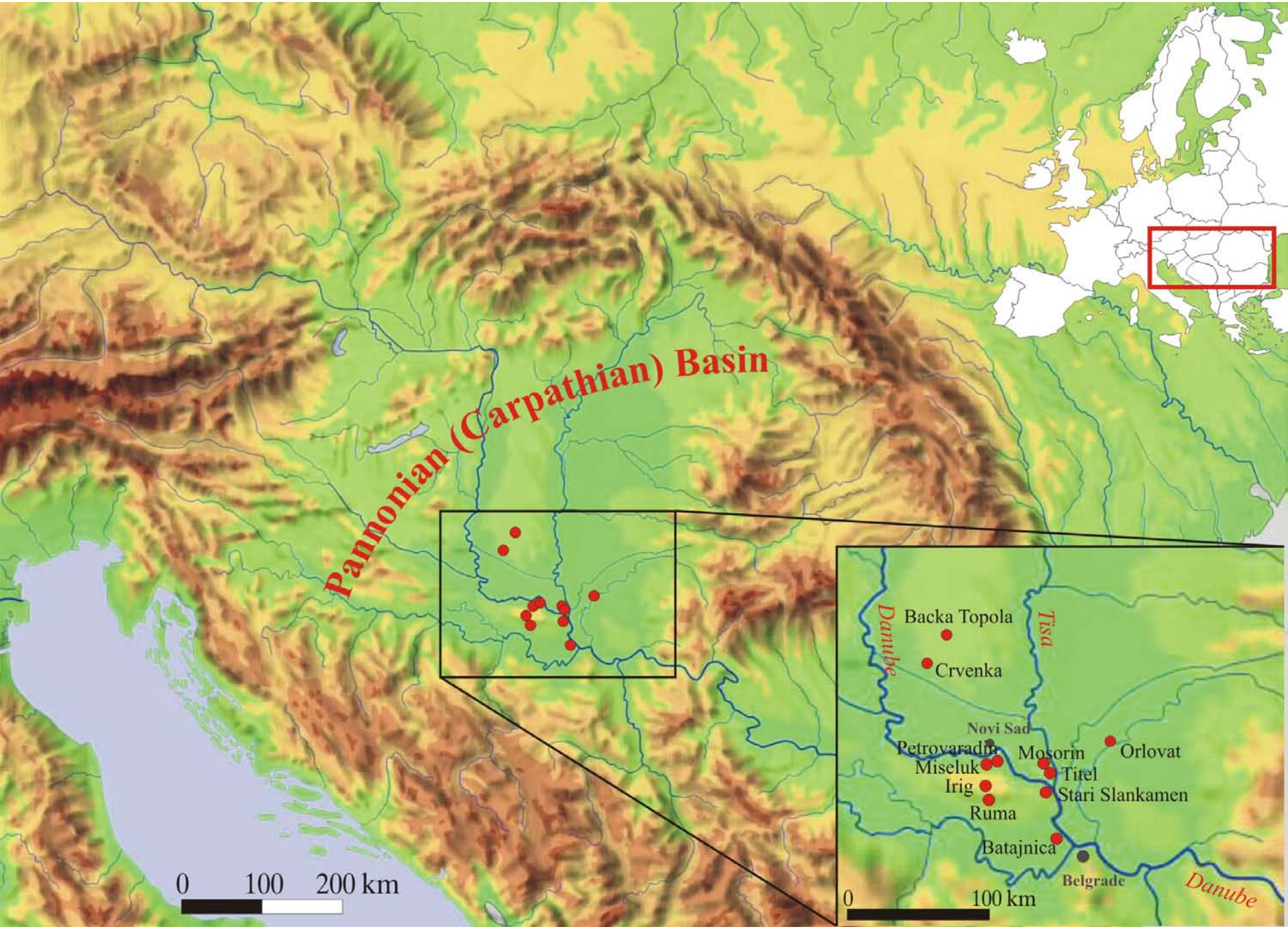
Krems



Luigi Ferdinando Marsigli (1658-1730)

European Loess Research Started in 1726

Marsigli, L.F., 1726, Danubius Pannonico Mysicus; Observationibis Geographicis, Astronomicis, Hydrographicis, Physicis; perlustratus: The Hague and Amsterdam, Grosse, P., Alberts, Chr., de Hoodt P., Herm. Uytwert and Franc Changuion.


Pannonian (Carpathian) Basin
0 100 200 km
Backa Topola
Crvenka
Danube
Tisa
Novi Sad
Petrovaradin
Miseluk
Irig
Ruma
Mosorin
Orlovat
Titel
Stari Slankamen
Batajnica
Belgrade
Danube
0 100 km

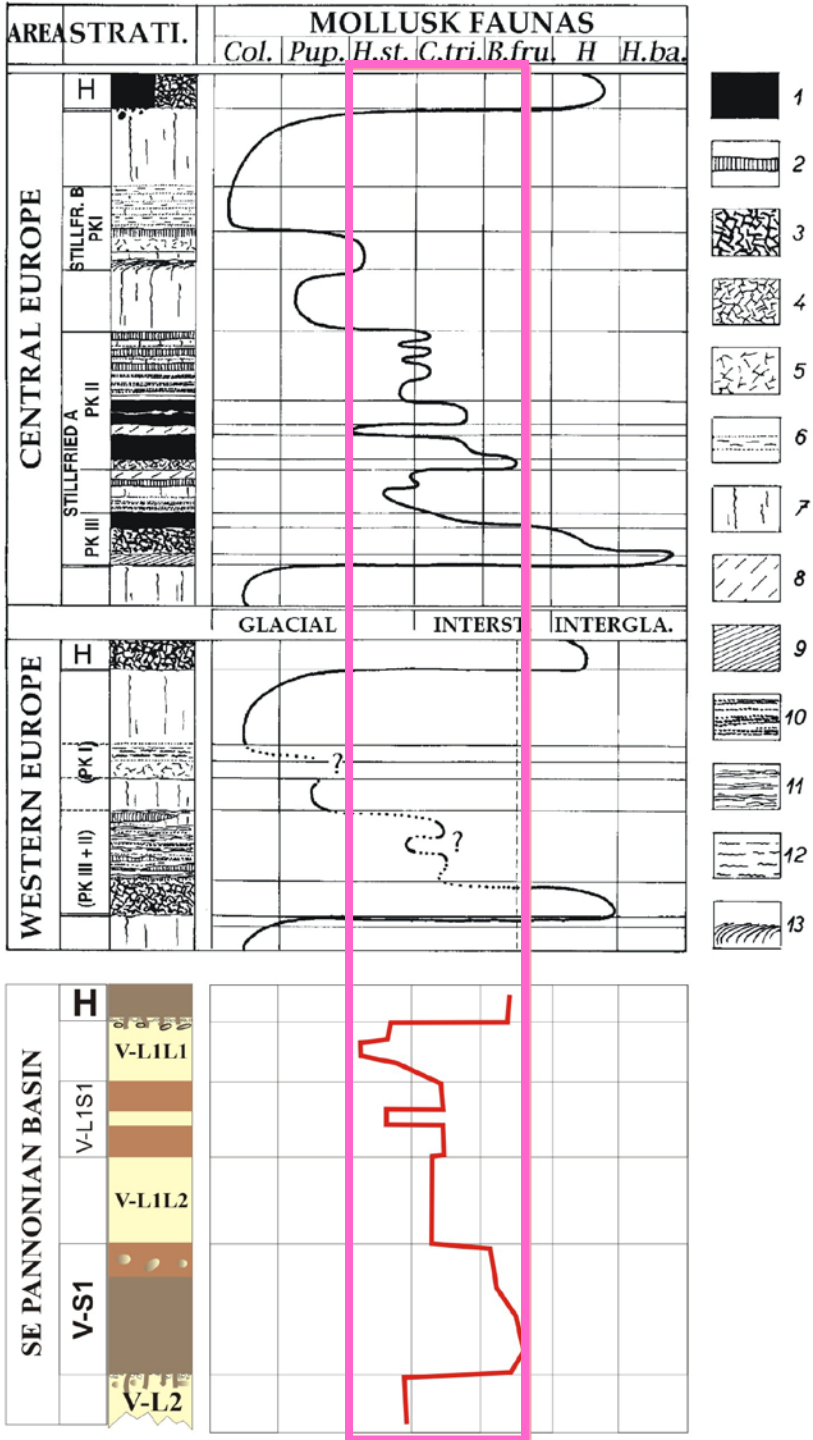
Loess in the Vojvodina region, Serbia

60% of the Vojvodina region is covered by Loess and loess like sediments

Maximal thickness ~ 55 m

An unique European Middle and Late Pleistocene paleoclimatic Archive

Absence of any criogenic features, identified land snail fauna and pedogenetic evidence observed at loess-paleosol sequences in the Vojvodina region indicate dry the Late Pleistocene climatic conditions and reduced environmental diversity



Serbian Loess Antiquity

High resolution the most complete continental the European Middle Pleistocene record

CONCLUSION

... Danubian loess is an important link between Pleistocene paleoenvironments of Europe and Asia

PRESENTED RESULTS OPEN QUESTION:

CAN WE EXPEXT PROGRESSIVE FUTURE ARIDIZATION OF THE EUROPEAN CONTINENT?

CENTER FOR METEOROLOGY AND ENVIRONMENTAL PREDICTIONS

DEPARTMENT OF PHYSICS, FACULTY OF SCIENCES, UNIVERSITY OF NOVI SAD, SERBIA

SEE VCCC

CENTRO EURO-MEDITERRANEO PER I CAMBIAMENTI CLIMATICI

GLOBAL AND REGIONAL CLIMATE SIMULATIONS

DYNAMICAL DOWNSCALING AS A TOOL FOR FOCUSING GLOBAL RESULTS TO A REGION OR SUB-REGION

Dynamical downscaling

- **Climate projections**

  Coupled Regional Climate Model **EBU-POM**
  (developed at UB and SEE-VCCC)

  → **model results:**
  air temperature and precipitation

  → calculation of **climate indices**

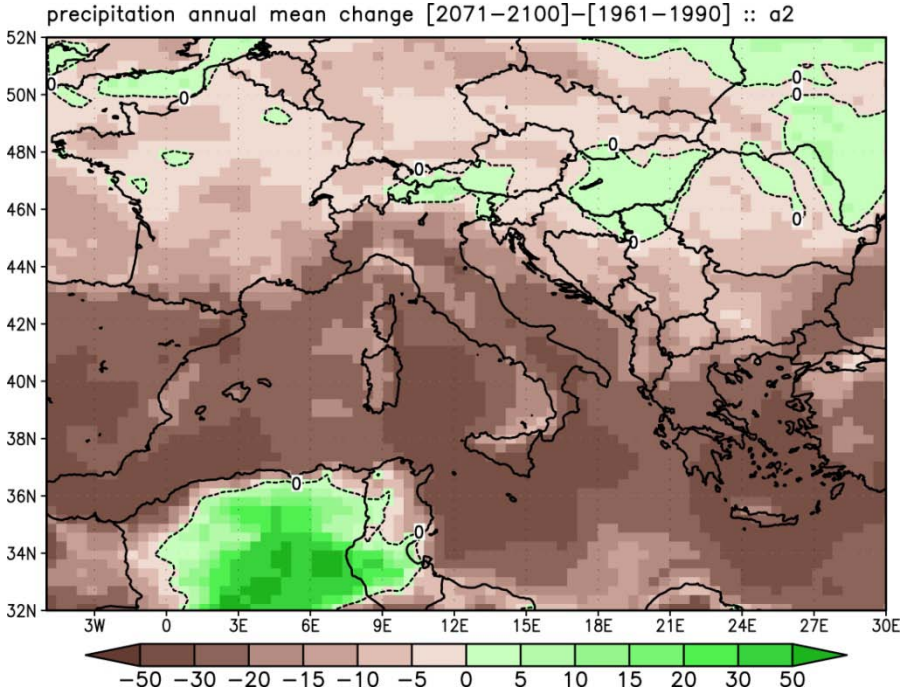
- **Application** of climate indices in agronomy (**viticulture**)

present climate (1961-1990) ⟷ climate at the end of 21st century (2071-2100)

Results for Europe

precipitation

A2 (2071-2100) vs. (1961-1990)



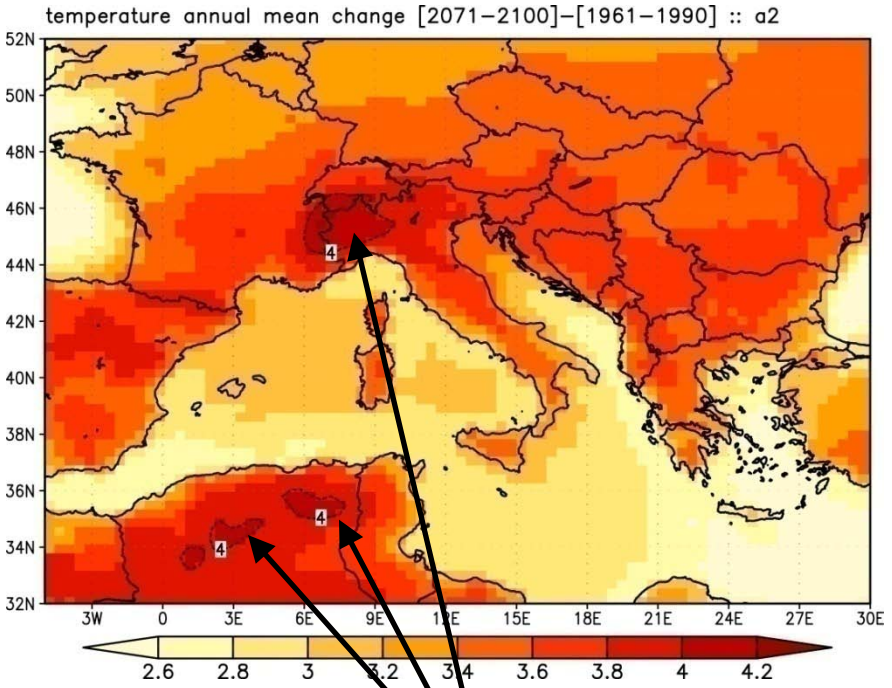
brown: decrease

green: increase

in % comparing to present climate

2m air temperature

A2 (2071-2100) vs. (1961-1990)

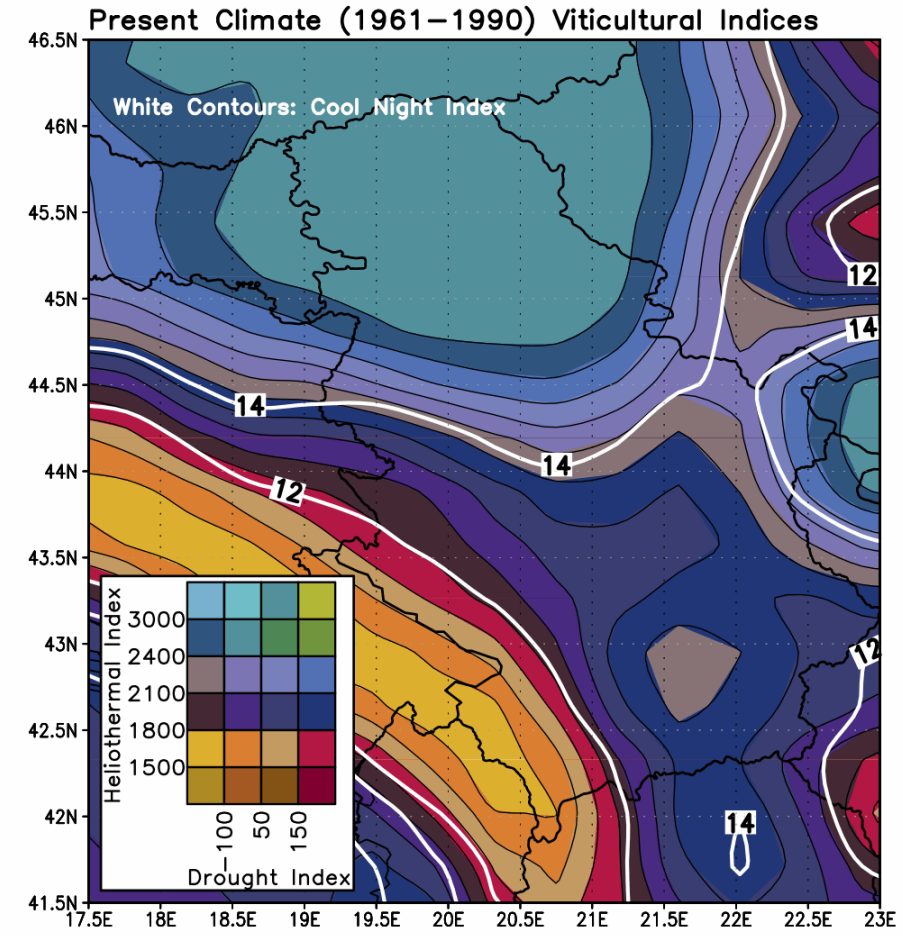


over 4 degrees

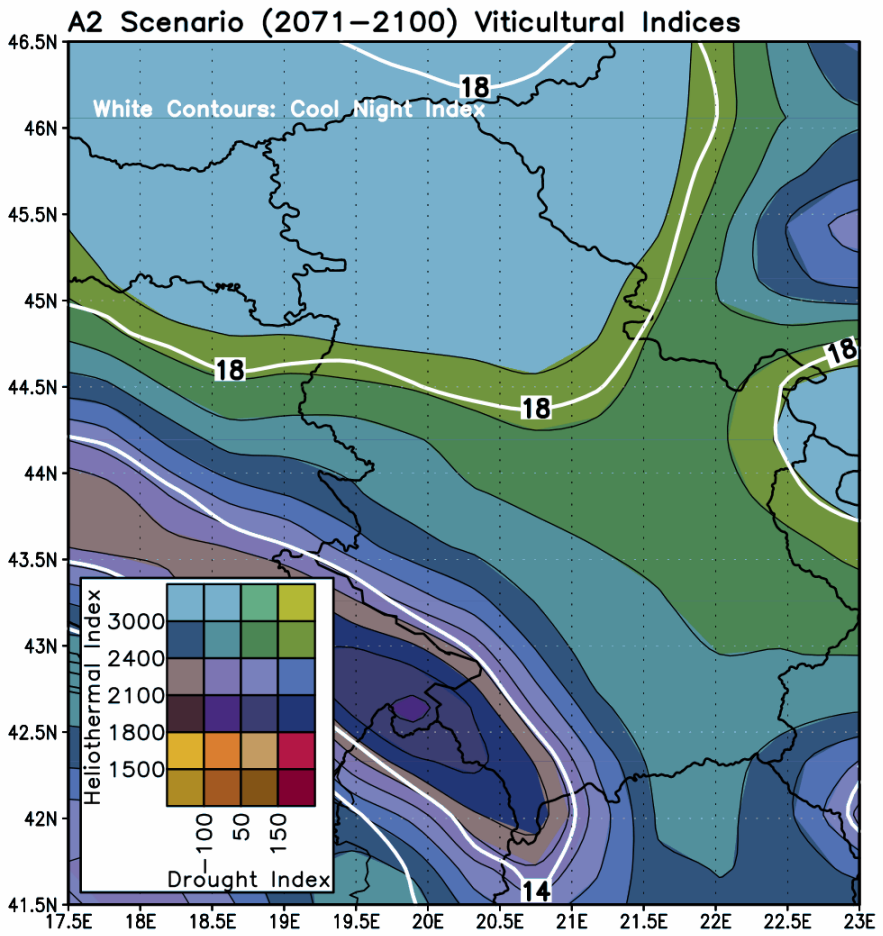
Application in viticulture

Heliothermal Index (HI) /Drought Index (DI) /Cold Night Index (CI)

→ define climate characteristics of vineyard regions (Tonnietto, 2004.)



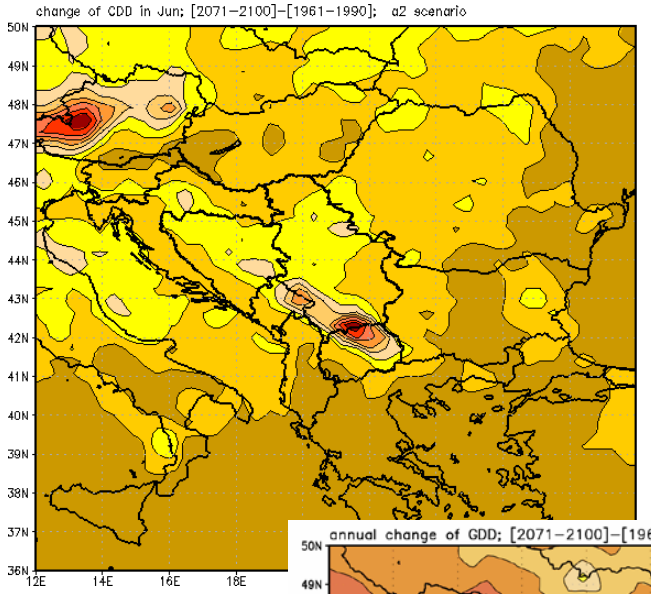
1961 – 1990.



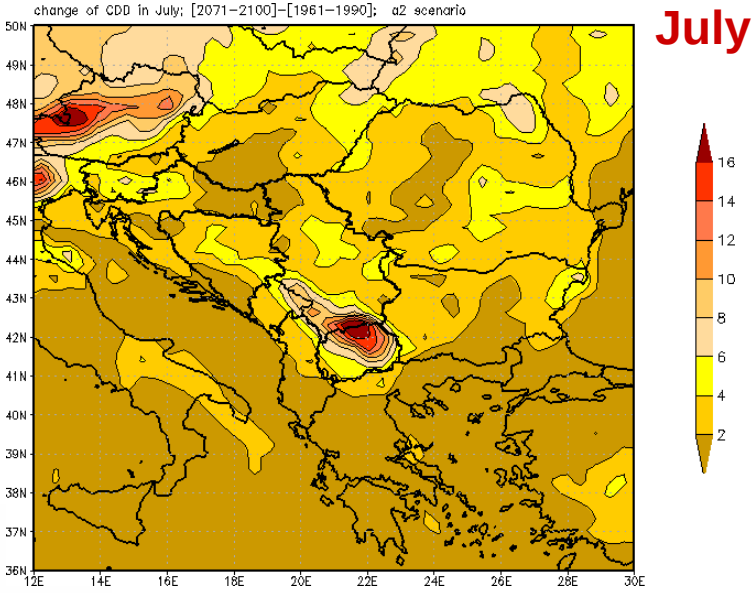
2071 – 2100.

Growing season (base temperature = 10°C)

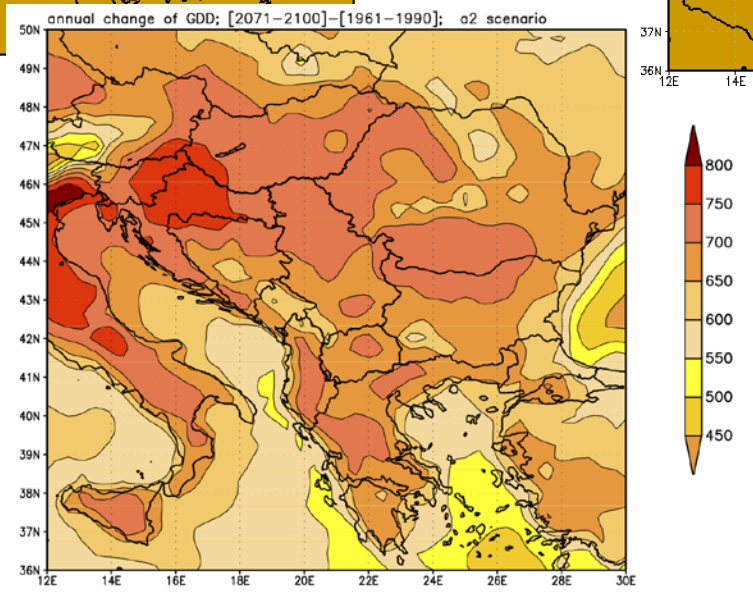
- **maximum number of Consecutive Dry Days (CDD)**
  - **maximum number of consecutive days with daily prec.< 1mm**



June



July

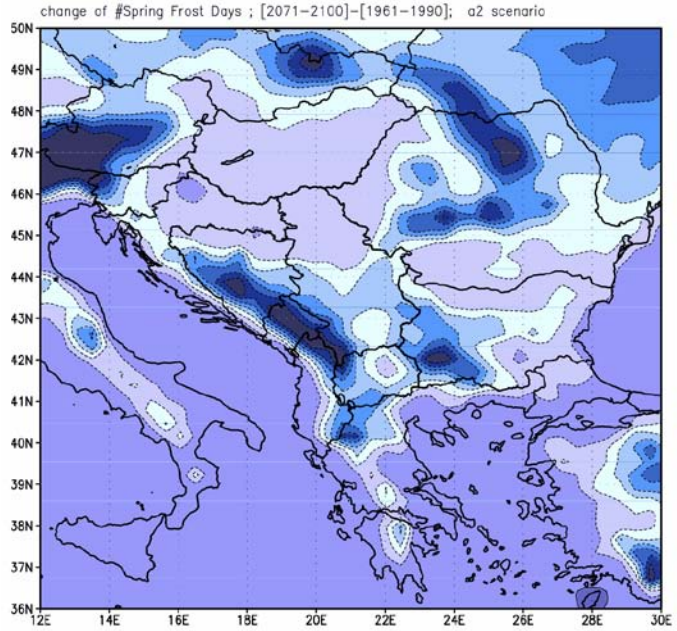


- **growing degree days (GDD)**
  - **sum of daily averaged temperatures above 10°C**

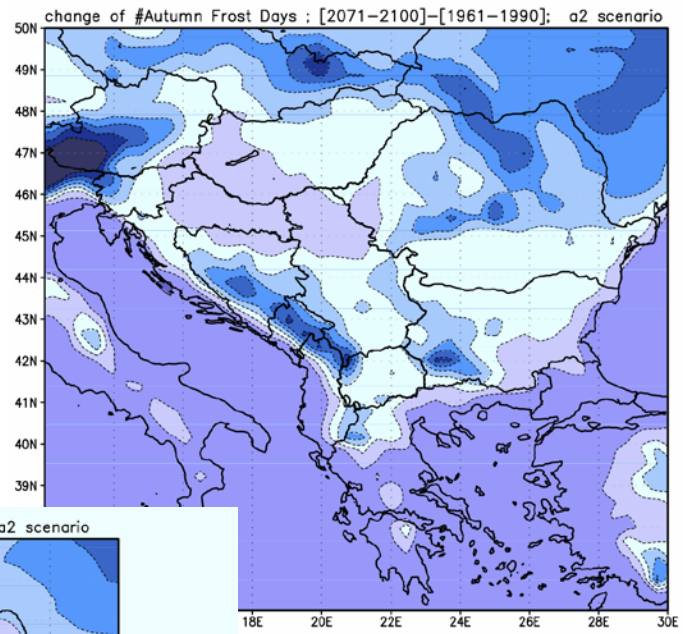
A2 (2071-2100) vs. (1961-1990)

Rest period

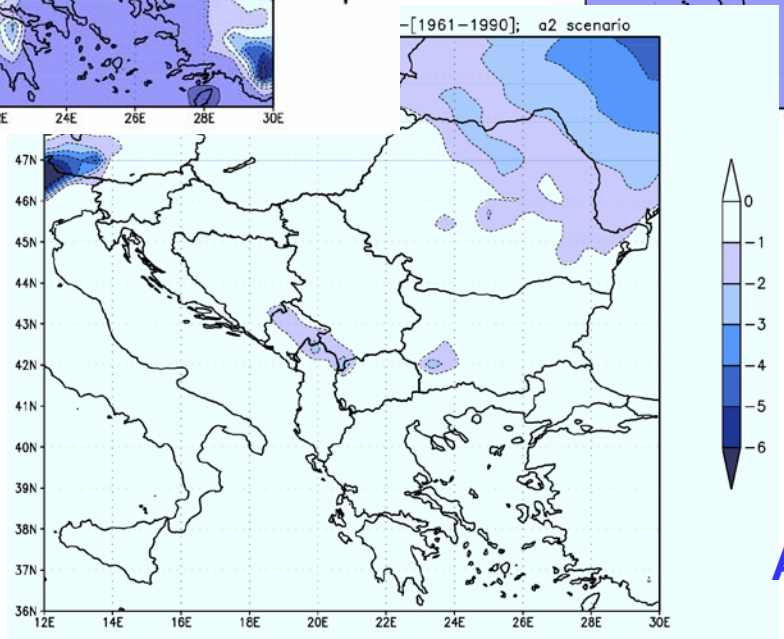
- total number of frost days



spring (MAM)



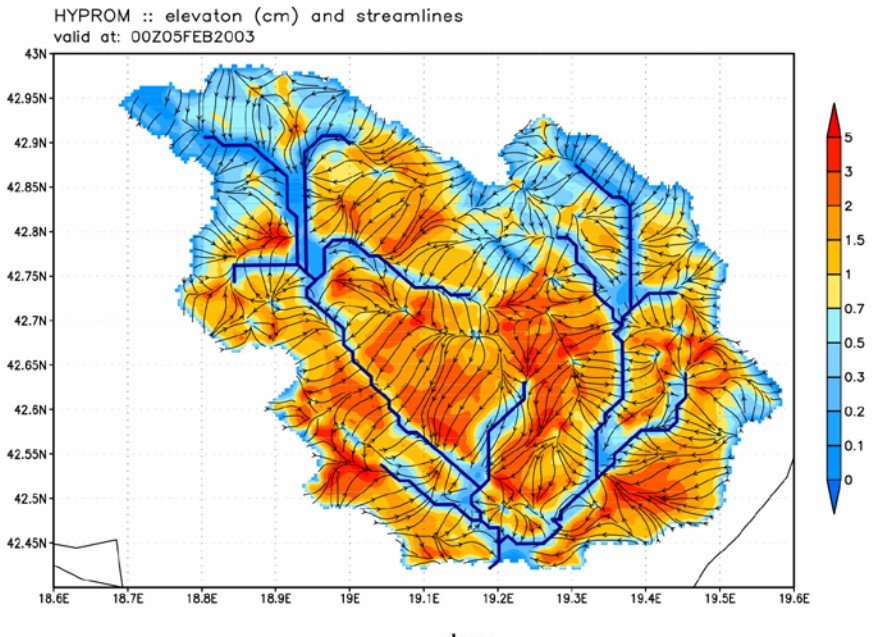
autumn (SON)

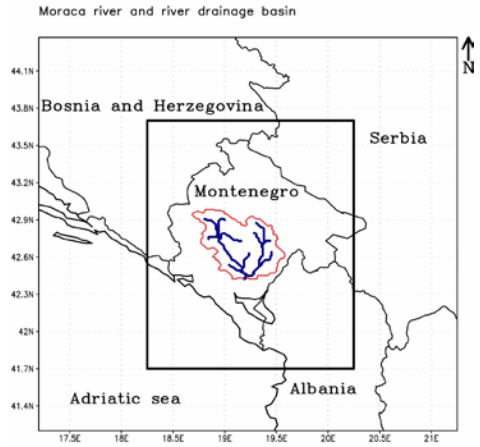


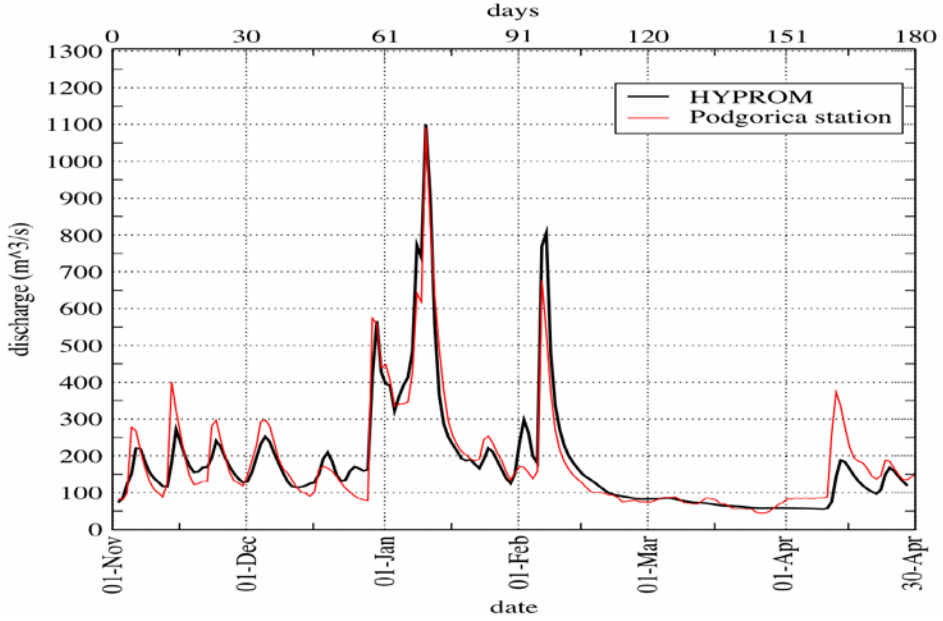
- number of days with tmin less than -15°C

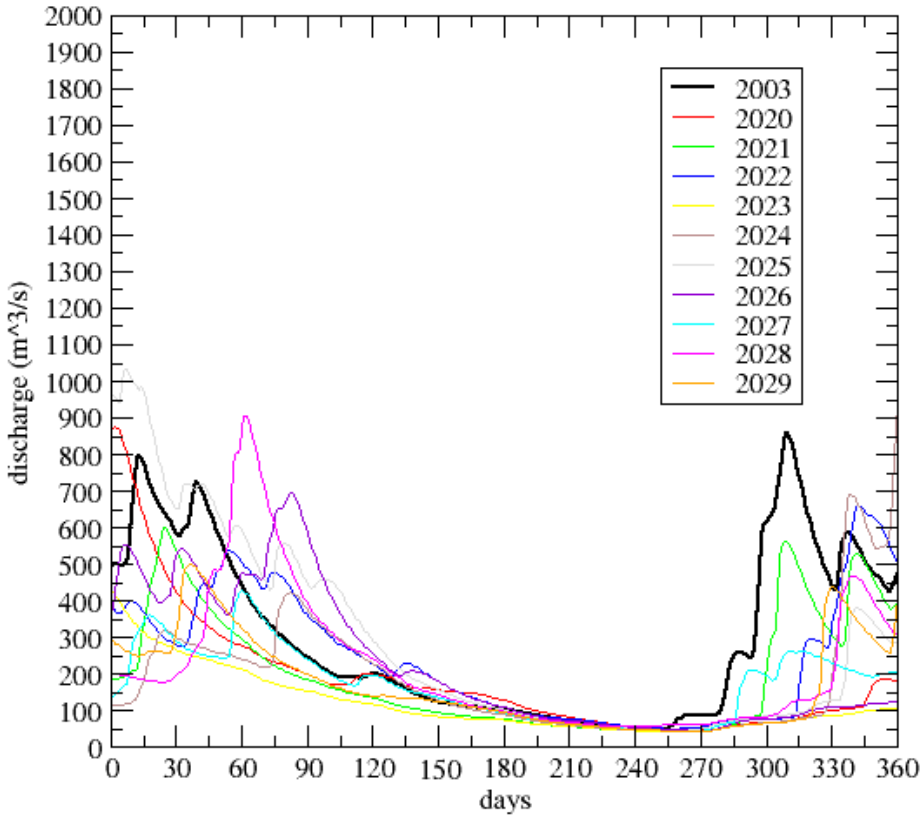
A2 (2071-2100) vs. (1961-1990)

A hydrological application









Conclusions

- Starting point is a global climate simulation
- It is possible to focus on a region or even very local sub-region using a regional climate model
- Analysis of climate observations and projections can be applied in agricultural as well as in other economy sectors

Geopolitical aspects of climate change

Prof. I.Radovic, PhD, State Secretary
J. Cvetkovic, Assistant Minister
D. Bozanic, Head of Climate Change Unit
The Ministry of Environment and Spatial Planning
Republic of Serbia

Danube Rectors' Conference
5 February 2010, Novi Sad

International climate change policy (2)

3) The post-Kyoto period - when the Kyoto Protocol runs out

- Most scientists agree the climate is in a state of flux;
- The IPCC: The global average temperature increase, in the past century, a 90 percent likelihood is due to greenhouse gas emissions produced by human activity, such as deforestation and the fossil fuel combustion;
- A slight spike in temperature has already been linked to drought, heat waves, and storms around the world;
- Result: Need for continuity of actions.

- Scientific background - base for political decision;
- Need to keep the process on the line - an urgent need for a comprehensive, ambitious, legally binding new climate protocol.

- Copenhagen Conference: “the moment in history in which humanity had the opportunity to rise to the challenge" .

Copenhagen Conference
- expectations -

- Make clear how much developed countries, such as the U.S., Australia, and Japan, will limit their greenhouse gas emissions;
- Determine how, and to what degree, developing countries, such as China, India, and Brazil, can limit their emissions without limiting economic growth;
- Explore options for "stable and predictable financing" from developed countries that can help the developing world reduce greenhouse gas emissions and adapt to climate change;
- Identify ways to ensure developing countries are treated as equal partners in decision-making, particularly when it comes to technology and finance;
- The result : COP takes note of the Copenhagen Accord – inviting Parties wishing to associate themselves with it until 31 January.

Copenhagen Conference
- results -

- Three key things that Copenhagen produced:

  1) It raised climate change to the highest level of government;

  2) The document that reflects a political consensus on the long-term, global response to climate change;

  3) The negotiations brought an almost full set of decisions to implement rapid climate action near to completion.

- A political accord that does not force countries to reduce emissions and has no legal standing anyway;

- COP takes note of the Copenhagen Accord – invites a Parties wishing to associate themselves with it until 31 January.

The Copenhagen Accord - content (1) -

- Emphasizes "strong political will" to urgently combat climate change in accordance with the principle of common but differentiated responsibilities and respective capabilities;
- Deep cuts in global emissions are required, according to science, in order to limit the increase in global temperature to below 2°C;
- Parties should cooperate in achieving the peaking of global and national emissions as soon as possible, recognizing that the time frame for peaking will be longer in developing countries;
- Adaptation to the adverse effects of climate change and the potential impacts of response measures is a challenge faced by all countries. Developed countries shall provide adequate, predictable and sustainable financial resources, technology and capacity building to support adaptation actions;

The Copenhagen Accord - content (2) -

- Annex I parties commit to implement, individually or jointly, quantified economy-wide emission targets for 2020, to be submitted by 31 January 2010 for compilation in an INF document. Protocol Annex I parties will thereby further strengthen the emission reductions initiated by the Protocol;
- Non-Annex I parties will implement mitigation actions, including those to be submitted by 31 January 2010, for compilation in an INF document. Mitigation actions shall be communicated through national communications every two years. Unsupported actions will be subject to domestic MRV. Supported NAMAs will be subject to international MRV;
- Collective commitment by developed countries is to provide new and additional resources, including forestry and investments through international institutions, approaching US$30 billion for the period 2010-2012 with balanced allocation between adaptation and mitigation. Developed countries also commit to a goal of jointly mobilizing US$100 billion a year by 2020 to address the needs of developing countries, with funding coming from a wide variety of sources…

At the end, **mr Milan Dacic, director of Republic Hydrometeorological Service of Serbia**, make an condensed overview of activities of national weather service and South East European Virtual Climate Change Centre (hosted by Republic Hydro meteorological Service of Serbia).

A huge number of documents, projects and initiatives was turned on in order to:

a) make a better understanding and cooperation between scientists in Serbia and people operationally dealing with weather/climate problems;

b) reinforce technical (in sense of equipment) potential of Republic Hydrometeorological Service of Serbia;

c) establish an effective formal framework (formulating a numerous documents and MOU) for cooperation and integration of Serbia in EU from the climate change policy point of view;

d) provide understandable and executive information for politicians and design makers related to field of meteorology and climate change