CLIMATE CHANGE AT CENTRAL AND EASTERN EUROPE: THE CLAVIER PROJECT

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Conference on Adaptation of Water Management to Effects of Climate Change in the Danube River Basin

3rd of December, 2007
CLAVIER – CLIMATE CHANGE AND VARIABILITY: IMPACT ON CENTRAL AND EASTERN EUROPE – FACT SHEET

- Specific Targeted Research Project under “Global Change and Ecosystems” supported by the European Commission
- Project duration: 1st of September, 2006 – 30th of August, 2009
- Participants: 13 institutes from 6 countries
- Total expected amount of work: 521 mm
- Total expected EU contribution: 2 meuro
PROJECT PARTNERS

Partners outside the target region (leading partners)

Hungary

Romania

Bulgaria
CLAVIER: MAIN OBJECTIVES

• Investigation of ongoing and future **climate changes** and their associated **uncertainties** in Central and Eastern European Countries (CEEC)

• Analyses of possible **impact of climate changes** in CEEC on weather patterns and extremes, air pollution, human health, natural ecosystems, forestry, agriculture, infrastructure and water resources.

• Evaluation of the **economic impacts** of climate changes in CEEC economies concentrating on four economic sectors (agriculture, tourism, energy supply and public sector)
5

Climate Conference

CLAVIER project

3 December, 2007

TARGET AND STUDY REGIONS

hydrological/water management
agricultural impact
energy impact
tourism impact
WP0: Coordination, project management and outreach
   Workpackage Leader: 1, Partners: 2,3,6,7,8,11,12,13

WP1: Climate change simulations and assessment of uncertainties
   Workpackage Leader: 4, Partners: 1,2,9

WP2: Optimized input data for climate impact studies from RCMs (INTERFACE)
   Workpackage Leader: 3, Partners: 1,2,4,5,6,8,9,11

WP3a: Impact on weather regimes and application to air pollution levels
   WP Leader: 2
   Partners: 4,8

WP3b: Impact on Extreme events
   WP Leader: 1
   Partners: 2,3,4,6,8,9,13

WP3c: Impact on hydrological and agricultural regimes
   WP Leader: 6
   Partners: 3,7,11

WP3d: Impact on natural ecosystems, human health and infrastructure
   WP Leader: 8
   Partners: 5,6

WP4: Economic vulnerability of CEE societies and economic impact assessment
   Workpackage Leader: 5, Partners: 3,8,10,12,13
WP0: COORDINATION, PROJECT MANAGEMENT AND OUTREACH

- Coordination: Max Planck Institute for Meteorology

- Co-coordination: Hungarian Meteorological Service

- Homepage of the project: www.clavier-eu.org

- Newsletters are issued at every half year (second edition to be published soon, subscription possible through the webpage)

- Establishment of the list of stakeholders (for the target regions)

- Intensive communication with the stakeholders (e.g. stakeholder workshops)
WP1: CLIMATE CHANGE SIMULATIONS AND ASSESSMENT OF UNCERTAINTIES

- Existing climate change scenarios for the region: results of the PRUDENCE (finished) and ENSEMBLES (ongoing) projects (see the presentation of Susanne Pfeifer in the morning)

- Validation and adjustment of regional climate models (REMO, LMDZ): ERA40 simulations (25 km), 1961-2000 (summer drying problem)

- Climate change simulations: A1B scenario, 1951-2050, 25 km resolution (ongoing), 10 km resolution (planned)
Relative frequency of the event when the precipitation exceeded 40 mm/day in the gridpoints (%)  
Area: Northwestern-Hungary

- **1961-1990**
- **2071-2100**

Difference of seasonal mean temperature (REMO - CRU) [°C]
Period: MAM, 1961-2000; model resolution: 0.22 deg.

Difference of seasonal mean temperature (REMO - CRU) [°C]
Period: JJA, 1961-2000; model resolution: 0.22 deg.

Difference of seasonal mean temperature (REMO - CRU) [°C]
Period: SON, 1961-2000; model resolution: 0.22 deg.

Difference of seasonal mean temperature (REMO - CRU) [°C]
Period: DJF, 1961-2000; model resolution: 0.22 deg.
WP1: FIRST, PRELIMINARY RESULTS FOR THE FUTURE (1951-2050)
APPLICATION OF THE REGIONAL CLIMATE MODELS’ OUTPUTS FOR IMPACT ASSESSMENTS

Model outputs:
Simulated mean 3D meteorological fields

Special (statistical and dynamical) downscaling (post-processing)

Impact studies
(using objective methods)

Final users:
economy, society, health, politics ….
WP3a (IMPACT ON WEATHER REGIMES) : RELATIVE FREQUENCY OF MACRO-CIRCULATION TYPES

- Cyclonal
- Anticyclonal
- Linear trend (C)
- Linear trend (AC)
WP3c (IMPACT ON HYDROLOGICAL REGIMES): EVAPORATION FOR LAKE BALATON (DERIVED FROM WATER BALANCE AND MODELLED)

Water-balance derived (E = 884 mm/yr) and modeled (E = 874 mm/yr) evaporation of Lake Balaton (1960-2000)

- Water balance
- Modeled
FINAL REMARKS

• The CLAVIER EU project plans not only to explore the climate change over Central and Eastern Europe, but also to give a first assessment of its impact (including economical vulnerability).

• Primary vehicle of the project is the close relationships with the “users”, stakeholders.

• Please don’t hesitate to contact us if we can provide valuable information for you!
Thank you very much for your attention and for the invitation!