

Cooperation and difficulties in climate change scenario elaboration in South Caucasus

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Presentation outline

- Introduction
- Past experience of cooperation for developing climate scenarios between South Caucasus countries
- Climate scenarios of Caucasus countries
- Next Step: Developing Common Scenario
- Plans and projects



Introduction: Difficulties in developing climate scenarios

- Global climate models - too coarse a spatial resolution to understand local impacts
- Regional climate models provide highly resolved information, but are computatively very expensive



Combined efforts may include:

- downscaling of different global climate models
- validating obtained results against observed data
- mutual agreement on selection of models and greenhouse gas emission scenarios for whole region



Cooperation

- During the process of preparation of their Second National Communications to the UNFCCC Caucasus countries (Armenia, Azerbaijan, Georgia) performed several runs of PRECIS Regional Climate Model for different socio-economic scenarios and Global Climate Models in the Caucasus region.



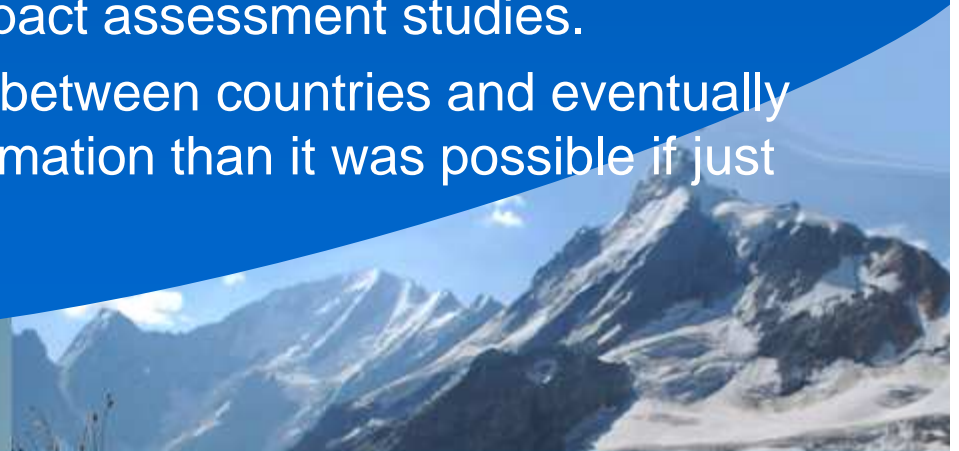
PRECIS Regional Climate Model

- PRECIS (Providing Regional Climates for Impacts Studies) is a portable RCM developed and distributed by Hadley Centre, UK that can be run on a personal computer and applied to any area of the globe to generate detailed climate change scenarios.
- The PRECIS RCM is an atmospheric and land surface model of limited area with maximum resolution of 25 km.
- A typical experiment, covering a 100-by-100 gridbox domain and including a representation of the atmospheric sulphur-cycle, run on a 2.8GHz machine, takes 4.5 months to complete a 30-year simulation.



Cooperation

- The work has been split between countries and each country has performed several runs of model:
 - Georgia – ERA Baseline and ECHAM4 B2 2020-2050 runs,
 - Azerbaijan - ECHAM4 Baseline, ECHAM4 A2 2020-2050 and ECHAM4 A2 2070-2100 runs
 - Armenia together with Hadley Center -HadAM3P Baseline and HadAM3P A2 2070-2100 runs.
- Each country performed the validation of obtained baseline data for their territory and used it to forecast climate scenarios and utilize parameters in climate change impact assessment studies.
- Obtained data was interchanged between countries and eventually each country obtained more information than it was possible if just one country applied the Model.



Resulting Climate Scenarios

Armenia:

- An increase of annual temperatures – 1°C by 2030, 2°C by 2070, 4°C by 2100,
- decrease in atmospheric precipitation – correspondingly 3%, 6% and 9%.

Projections based on HadAM3P PRECIS runs

- Source: SNC Draft Summary, <http://www.nature-ic.am/ccarmenia/en/>



Resulting Climate Scenarios

Azerbaijan:

- temperatures by 2070-2100 rise by 3°C - 6°C while in most parts of the country's area it rises by 5°C compared to temperatures in 1961-1990.,
- The level of rainfall in the country area increases from west to east by 20% to 80%
- Projections based on ECHAM4 PRECIS runs

- Source: Draft SNC



Resulting Climate Scenarios

- Georgia
 - an increase in the mean annual temperature of 3-5°C at the end of century,
 - decrease in precipitation by about 9-13%
- Projections based on averaged values obtained from HadAM3P and ECHAM4 PRECIS runs and forecasts of Selected GCMs within MAGICCC/SCENGEN statistical downscaling model.

- Source: SNC Georgia



Next Step: Developing Common Scenario

The three countries start new regional project:

“Regional Climate Change Study for the South Caucasus Region”

financed by the “Environment and Security” Initiative (ENVSEC)”.



Project tasks:

- Develop Regional climate change scenario
- Undertake vulnerability assessment of a selected sector/geographic area of common interest based on regional climate change scenario.



Activities to be performed for developing common scenario

- **Agreement of common methodology**
 - Review national climate scenarios prepared under SNC, identify methodological/technical issues and propose/agree on methodology and adjustments
- **Development of the regional level future climate scenarios using agreed approach**
 - Review existing cooperation and data exchange modalities and identify ways to improve them.



Activities that may be performed in vulnerability studies

- **Study on the vulnerability of transboundary rivers (Alazani and Iori basins): Azerbaijan – Georgia**
- **Study on the vulnerability of agriculture sector, particularly water deficit: Armenia – Azerbaijan – Georgia**
- **Forecast of extreme events: Armenia – Georgia**
- **Others....**



Wish us success...
THANK YOU!

