CLIMATE CHANGE IMPACT ON WATER RESOURCES AND HYDROPOWER
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March 5, 2017
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- **Methods & Tools**
  - Climate Models
  - Weather Forecast Models
  - Historic Observations
  - **Climate Models**
  - **Weather Forecast Models**
  - **Historic Observations**

- **Climate Services**
  - **Overview regional CC projections**
    - Only climate variables, mean values or range
    - From reports and web portals
  - **Local CC projections & hydrological implications**
    - Downscaled / bias corrected climate variables, mean values, range, small ensemble
    - From reports and web portals
  - **Full CC impact / adaptation study**
    - Impact model chain: climate – hydrology – hydraulics/hydropower/water management
    - Ensembles of GCM or RCM data, downscaling / cias correction, analysis of uncertainty
    - Detailed impact / risk / adaptation assessment

- **Atmosphere**
  - Downscaling of Precipitation and Temperature

- **Basin**
  - Water Balance Modelling
  - Precipitation-Runoff Modelling
  - River flow routing

- **Reservoir**
  - Water Management Modelling
  - Reservoir and Hydropower Modelling

- **Overview**
  - Days
  - Weeks
  - Months
Experiences with different climates
Latest full impact studies applying CORDEX RCM data

- Future hydropower potential West Africa (www.ecowrex.org)

- 500,000 river reaches
- 15 CORDEX RCMs
- 2 RCP scenarios
Latest full impact studies applying CORDEX RCM data

- Future runoff regime of the Upper Danube River

- 16 CORDEX RCMs, 2 RCPs
- Comparison with 23 ENSEMBLES RCMs

Change in annual precipitation, 15-year moving average
RCP4.5 & RCP8.5, baseline: 1961-1990

Change in annual temperature, 15-year moving average
RCP4.5 & RCP8.5, baseline: 1961-1990

Donau bis Achleiten: 2021 - 2050
CORDEX RCP4.5 Klimadaten: Linear Scaling
Schattierung: ENSEMBLES

Donau bis Achleiten: 2071 - 2100
CORDEX RCP8.5 Klimadaten: Linear Scaling
Schattierung: ENSEMBLES
Online tool – Climate change impact & adaptation

• Web-based DSS
  ➢ Exploration of pre- or user-defined climate and development scenarios
  ➢ Facilitates stakeholder discussions
  ➢ Flow forecasting application

• Market place!
Thank you for your attention!

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