

Potsdam Institute for Climate Impact Research

Modelling of climate change impacts on river flow regime and discharge of Danube River considering water management effects

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Motivation

- Investigate the impacts of climate change on the water regime of the Danube river
- Highly managed watershed
 -> Include water management
- Climate change impacts vs. impounding effects of reservoirs
- Application of eco-hydrological Indicators to bridge the gap to biodiveristy







Observed Trends

Danube at Ceatal Izmail



Daily mean runoff



Potsdam Institute for Climate Impact Research Climate Impacts & Vulnerability

Climate Projections for Danube basin



РІК

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Climate Projections for Danube basin





Multimodel mean 2021–2050 relative to 1971–2000





The Danube River – different regimes

Runoff regime (Pardé) for selected gauges in the Danube basin



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Water management – Iron Gates I and II

- total volume of 3.2 billion m³
- total length of 270 km
- for hydropower generation but also used for the flow regulation
- Volume < 3% of the average annual flow -> impounding effects minor significant
- -> provide a daily and weekly flow regulation





Monthly discharge from 1992-1999



Danube – outlet Ceatal Izmail

Preliminary results



Danube - Selected subbasins







Tisza



Mures



Scenarios (ENSEMBLES) – for Mures



Outlook

- Parametrisation/Calibration for different sub-catchements
- Improvement of storages and routing (adjustment of curve numbers)
- Integration of largest reservoirs
- Evaluation of different climate scenarios ENSEMBLES and also new ones (CORDEX)
- For nature conservation: application of specific eco-hydrological indicators







Thank you for your attention

Danube Canyon Iron Gate