Impact Assessment of Reservoir Operation for Potential Adaptation in the Upper Chao Phraya River Basin

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**Background**

- **Floods**: Natural disasters caused by heavy precipitation.
- **Floods**: Heavy precipitation leads to increased wet season discharge.
- **Drought**: Decreased dry season discharge.
- **Reservoir Operation**: Control of climate change impacts.

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**Reservoir Operation**

- **Filling water during dry season**
- **Draining flood storage during wet season**

Hydrological Model

- **HOB Global Hydrological Model**
- **Land surface hydrology module**
- **River routing module**
- **Reservoir operation module**

**Objectives of the Study**

1. Analyze the effect of two largest existing reservoirs of Bhumibol (113.5 BCM) and Sirikit (85.8 BCM) on Nakhon Sawan (catchment area: 35973 km²).
2. Analyze the effect of a hypothetical dam (1.18 BCM) at Ratiboon (catchment area: 17679 km²) and Nakhon Sawan.

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**Results and Discussions**

**Climate change and two existing dams**

- How do the existing dams control the impacts of climate change?

**Climate change adaptation by building a new dam**

- How does a new dam mitigate the impacts of climate change?

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**Conclusions**

- The proposed hypothetical dam could reduce flood storage at the lower reaches of Von River where flooding is regular due to gentle slope, but not at Nakhon Sawan.
- The change in discharge due to climate change are larger than those achieved by the reservoir operations for the future scenario even though the simulated discharge highly depends on which general circulation model was used as input.

**References**


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