

Introducing



Date

April 19, 2017



16 Employees
+ 5 freelancers

- Civil Engineers
- Hydrologists
- Geo-Ecologists
- Information Scientists
- Biologists
- Economists



2 Locations

- Darmstadt
- Kassel



Fields of Work

- Water resources management and modelling
- Rural and urban hydrology, 1D/2D/3D hydraulics
- Safety and operation of water Infrastructure (dams)
- Non-structural measures (Early Warning Systems, ...)



What we do

- Technical studies and assessments
- Modelling and software development
- Field surveys and monitoring
- GIS, data management and data modelling
- Training, capacity building and knowledge transfer

Country Experience



SYDRO Portfolio

- ❑ Integrated water resources management (IWRM) and cause-effect analyses
- ❑ Modelling of hydrology, water allocation, 1D/2D/3D hydraulics, erosion and sedimentation
- ❑ Risk assessment of dams, reservoir operation including real-time operation
- ❑ Risk assessment of floods and droughts
- ❑ Non-structural measures like early warning systems, emergency preparedness plans
- ❑ River basin and flood-control management
- ❑ Water related ecosystem-based solutions and adaptation measures
- ❑ Risk and impact assessment of effects of climate change, mining, land use management
- ❑ GIS, data management and data modelling
- ❑ Consulting and capacity building for river basin committees, water authorities and operators

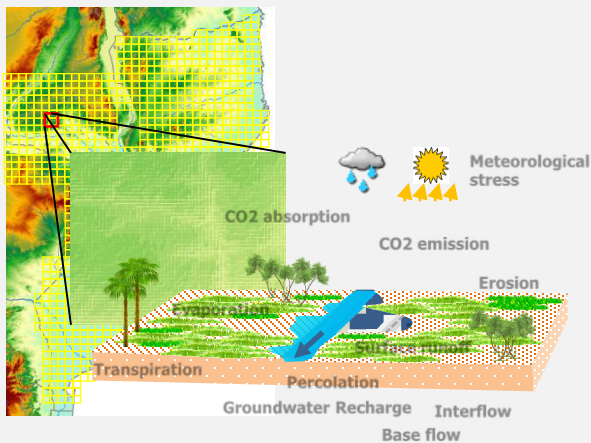
Data and modelling services

Satellite data and modelling

- Processing
- Implementation

Applications

- Water resources monitoring
- Operation rules
- Data acquisition and validation



Ecosystem services

Assessment

- Processing
- Design
- Economic evaluation

Implementation

- Supplementing „grey“ measures
- Rural/Urban integrated concepts



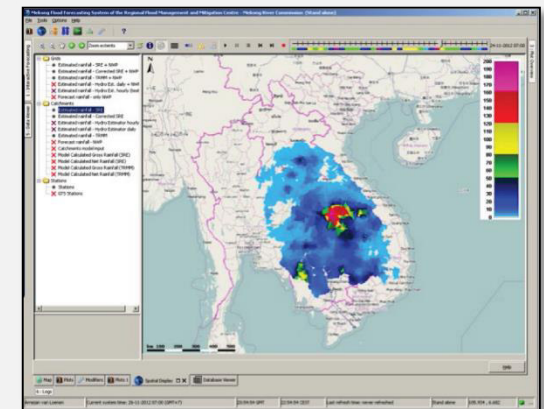
Integrated Concepts

Assessment and studies

- Cause-Effect analysis
- Vulnerability studies

Applications

- Early Warning Systems
- Water resources monitoring
- Urban DRR



Examples

IWRM



IWRM

- ECOSWat Thailand
- Yom & Nan Thailand
- Various other projects in Thailand, Germany

Urban Hydrology



Urban Hydrology

- Water quality assessments
- Sewer system optimisation

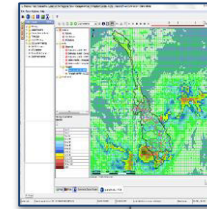
Operation



Operation of Water Infrastructure

- Mining Industries
- Drought Contingency Planning
- Eastern Nile
- EPP Swaziland
- Climate change

Non-structural



Non-Structural Measures

- Near-real time operation
- EPP, Myanmar
- Mekong Long-range forecast

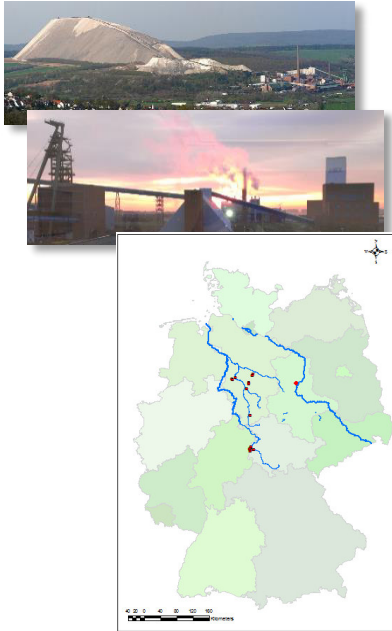
Data services



GIS, Data Management and Modelling

- Satellite Data
- Hydraulic Expert Software (DWA)
- TalsimNG Software

Impact assessment from salt and potash mining



Country: Germany

Client: K+S KALI GmbH, River Basin Commission Weser, 7 Federal States

Start-End: since 2008, ongoing

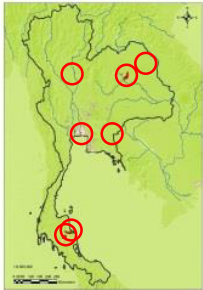
Partner: Fugro Consult; Jestaedt & Partner; De la Motte & Partner; CMS; Gifke; DHI-WASY; Veenker

The river basin covers 65000 km² and the river length affected comprises more than 1000 km. 9 discharge points of potash mining are interlinked and need to be controlled interactively. In addition, drainage from 5 large mine dams must be included in the operational scheme. 7 Federal states are directly involved in the project. The water management must balance environmental requirements with socio-economics needs to make mining possible providing about 15000 jobs directly and about 20000 jobs indirectly.

Activities performed:

- Hydrological and water quality modelling
- design of complex operational schemes
- advice on implementation and real-time operation for the mining company
- design of wastewater infrastructure and retention ponds to cope with extreme flood events and drought conditions
- evaluation of monitoring concepts
- support of the mining company in the process of applying for water rights

ECOSWat – EbA measures to mitigate extreme events



Country: Thailand

Client: GIZ, Department of Water Resources, Royal Irrigation Department

Start-End: 2014 - 2015

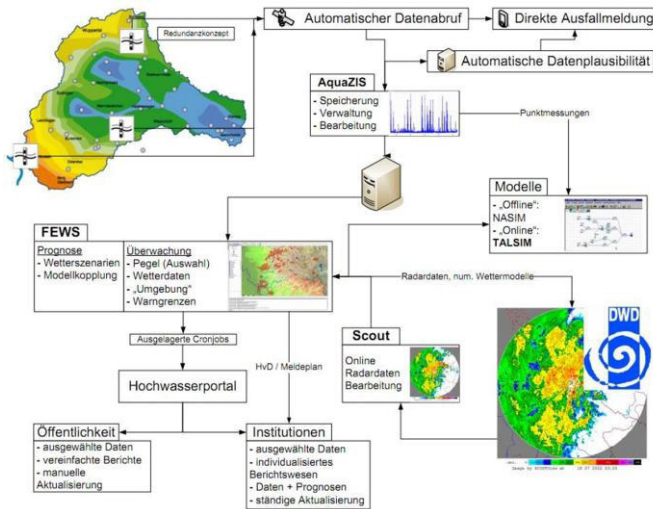
Partner: Walailak University, Khon Kaen University, Kasetsart University

A cross-sectoral vulnerability analysis of two river basin, one in South-Thailand, one in North-East Thailand was conducted aiming at identifying possible ecosystem-based adaptation measures to mitigate extreme hydrological events. Different techniques and models were applied. Results are used to implement ecosystem-based measures in collaboration with the Department of Water Resources.

Activities performed:

- data acquisition and data management
- cross-sectoral vulnerability assessment in two river basins
- identification and implementation of non-structural flood and drought mitigation measures
- interviews of technical and non-technical staff (engineers, policy makers, decision makers)
- hydrological, water quality and erosion/sedimentation modelling
- planning, design and implementation of ecosystem-based measures
- training on vulnerability assessments

Early Warning System and reservoir operation



Country: Germany

Client: Wupperverband, WVER

Start-End: 2010 - ongoing

Partner: -

The Wupperverband runs a precipitation-runoff and reservoir operation model based on Talsim-NG under the platform of FEWS (Deltares). The objective of the early warning system is to enhance foresighted reservoir operation and to prepare for extreme events for both flood and drought. The system uses forecasts of precipitation to increase lead time for warning procedures and to adapt release rules accordingly. The WVER has been applying web-based SYDRO Services for operating the Olef-Reservoir. Based on current hydro-meteorological conditions, the service determines releases according to operating rules. The engine behind the service is Talsim-NG.

Activities performed:

- review of existing operation rules and adaption to higher dynamics of floods
- advising water associations and reservoir operators on the implementation of release strategies into real-time operation
- set up precipitation-runoff models in real-time mode
- establishment of long-range predictions using stochastic methods
- implementation of the hydrological model TalsimNG within the framework of FEWS and with the web-based SYDRO Services solution

TASK – Adaption of reservoir operation to climate change

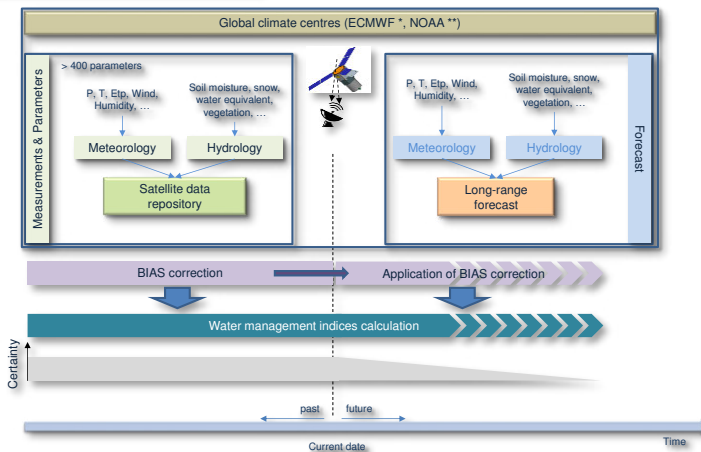


Country: Germany

Client: BMUB

Start-End: 2017 - 2019

Partner: various German operators of large reservoirs (WVER, Wupperverband, Aabachtalsperrenverband, Wahnachtalsperrenverband, LTV Sachsen, Aggerverband)



The aim of this project is to develop adaptation strategies for dams and reservoirs that take into account shifting precipitation regimes and their resulting discharge conditions, as well as their effects on reservoir operation and water quality. The adaptation of reservoir operation towards a dynamisation will be developed using a modelling approach, while taking into account competing uses and requirements such as water supply security, dam safety, flood protection, low flow augmentation, hydropower and recreational use, minimum environmental flow and requirements of the Water Framework Directive.

Activities performed:

- retrieving and processing satellite and global weather model data
- bias correction and derivation of spatiotemporal relationships
- calculation and application of hydro-meteorological indices
- guideline on how to cope with changing precipitation patterns for dam operators
- recommendations for implementing the process-chain

Client	Country and Project Title	Short description
GIZ, RID	Thailand Huai Ta Poe Water Resources Development, Mukdahan Province	Evaluation of complementary Ecosystem Services, inventory and conservation plan of ecosystems
GIZ, UNDP, RID	Thailand Yom Nan Operation and Maintenance Project	Assessment of Ecosystem Services for GCF Proposal
Great Hor Kham Ltd.	Myanmar Nam Paw Hydro Power Project	Emergency Preparedness Plan Flood Mapping Review of Hydrological Design
GIZ	Thailand IWRM and Capacity Building, Sae-Or Reservoir	Compensatory ecosystem-based measures to supplement Sae-Or dam development.
Nile Basin Initiative	Egypt, Ethiopia, South Sudan, Sudan Road map for Coordinated Operation of Transboundary Cascade Dams in Eastern Nile	Development of a step-by step approach for the four countries to launch coordinated operation of reservoirs.
Mekong River Commission, GIZ	Cambodia, Lao PDR, Thailand, Vietnam Mid to long-term forecast for the Lower Mekong River Basin, methodology and implementation plan	Long-range forecast implementation plan for the Regional Flood Management and Mitigation Centre in Phnom Penh

Client	Country and Project Title	Short description
K+S KALI GmbH FGG Weser 7 Federal States of Germany	Germany, Impact assessment of the salt and potash mining	River basin modelling, impact assessment in a catchment of 65000km ² . Coordination of various consultants from other sectors. Impact assessment of waste water from mine dumps.
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety	Germany, TASK – Adaption of Reservoir Operation to Climate Change	Early Warning System for Droughts based on satellite data and global weather models.
European Union Project	Germany, Belgium, Netherlands, DROP – Governance in Drought Adaptation	Drought contingency planning
For more than >20 dams	Dam safety assessments and optimisation of reservoir operation	<ul style="list-style-type: none"> • Probable Maximum Precipitation (PMP) and Flood (PMF) analysis, • Evaluation of design floods, spillways and flood operation, • Optimisation and implementation of operating rules into day-to-day operation