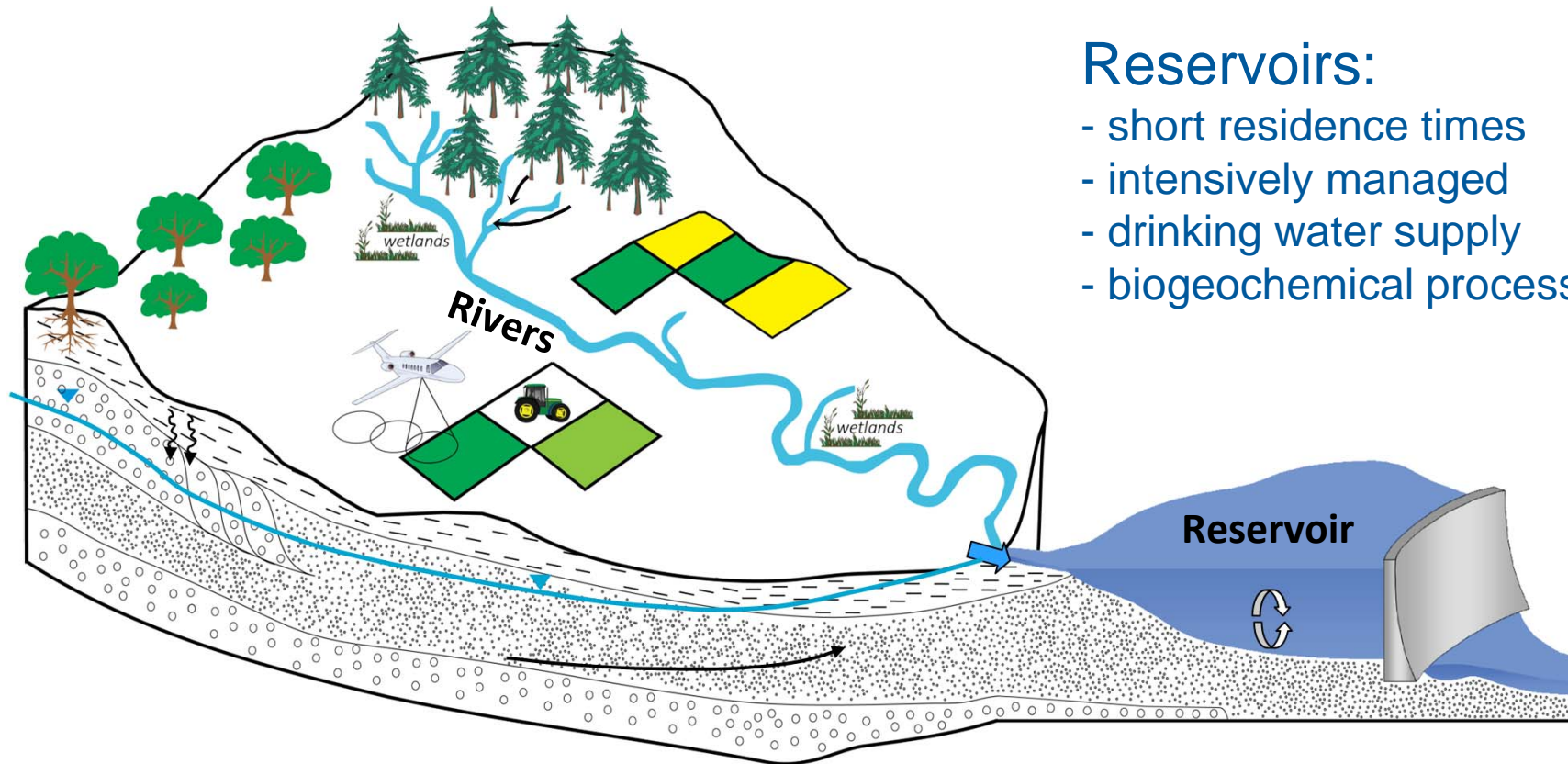




Reservoirs as Sentinels of catchments: The Rappbode Reservoir Observatory

Karsten Rinke

Reservoirs as integrated samplers of catchments

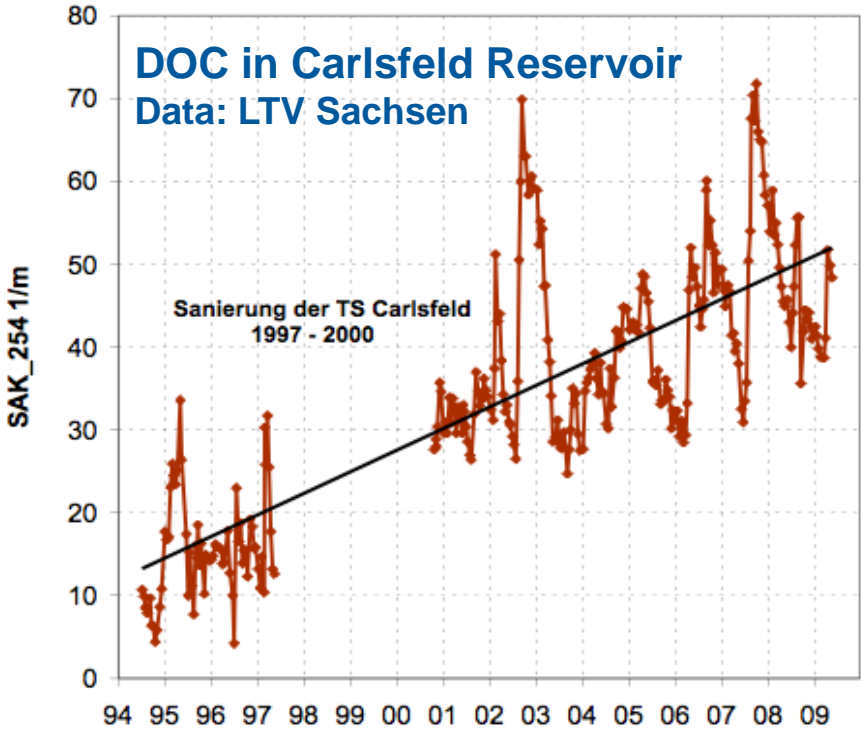


Reservoirs:

- short residence times
- intensively managed
- drinking water supply
- biogeochemical processing

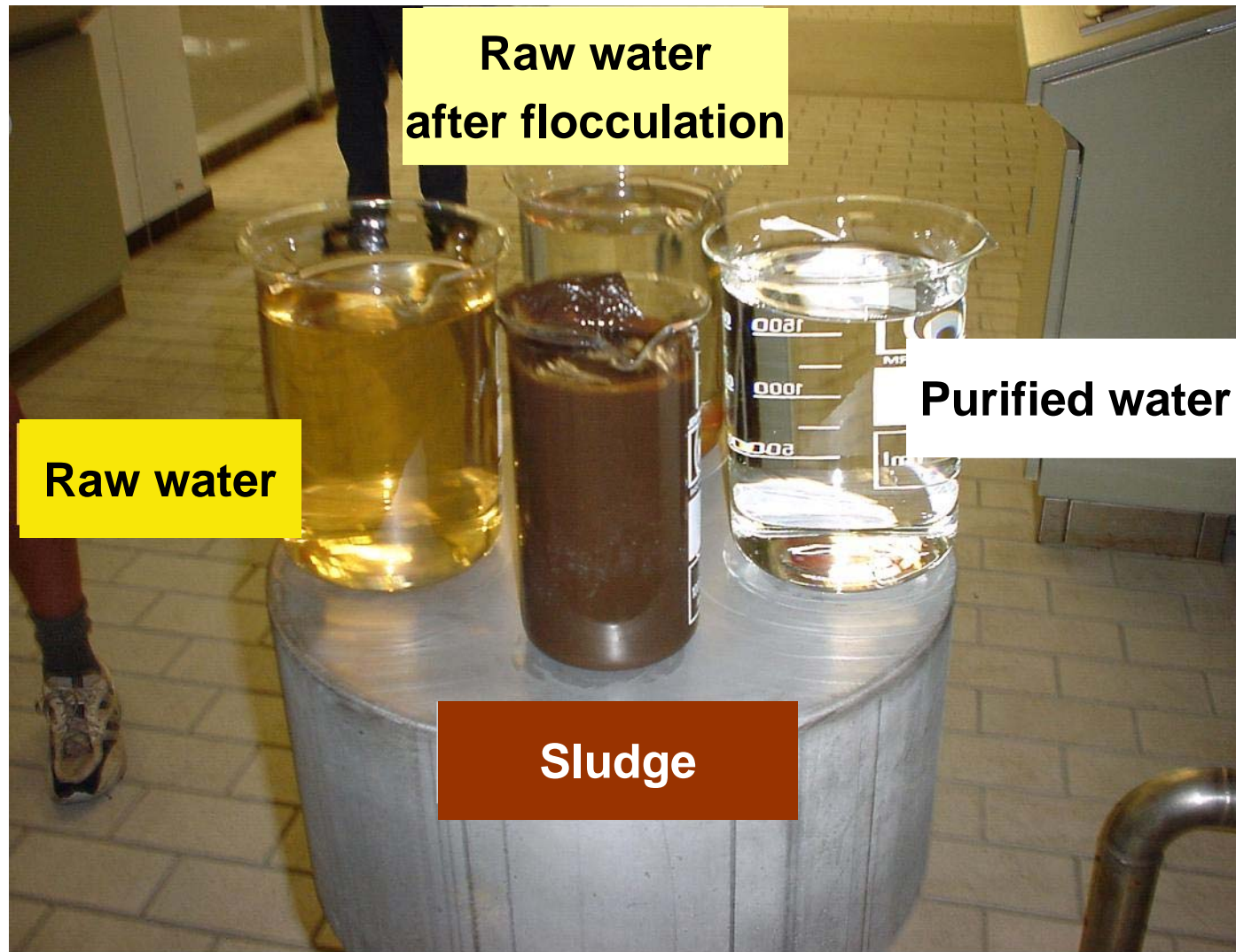
Figure: Jan Fleckenstein

Drinking Water Reservoirs & DOC



Problems in the waterworks:

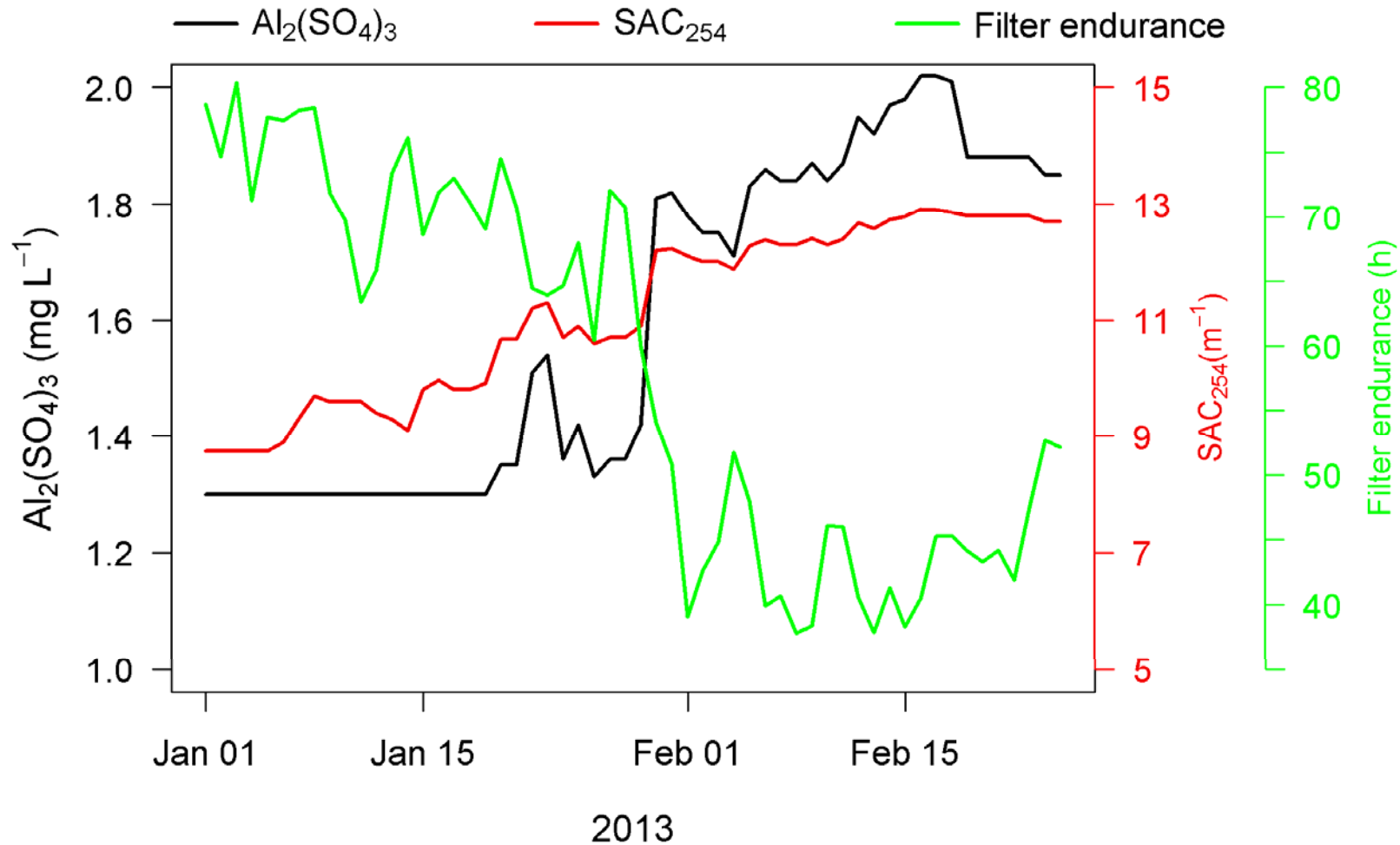
stability of flocculation, sludge production & disinfection byproducts, ...



Source:
LTV Sachsen

HELMHOLTZ
CENTRE FOR
ENVIRONMENTAL
RESEARCH - UFZ

Consequences of rising DOC concentration for drinking water production



The Rappbode Reservoir Observatory

- located at Rappbode reservoir (Harz Mountains, Germany)
- monitoring of matter fluxes from the catchment into the reservoir
- monitoring of ecosystem dynamics and data basis for modelling
- current focus: dynamics of organic carbon

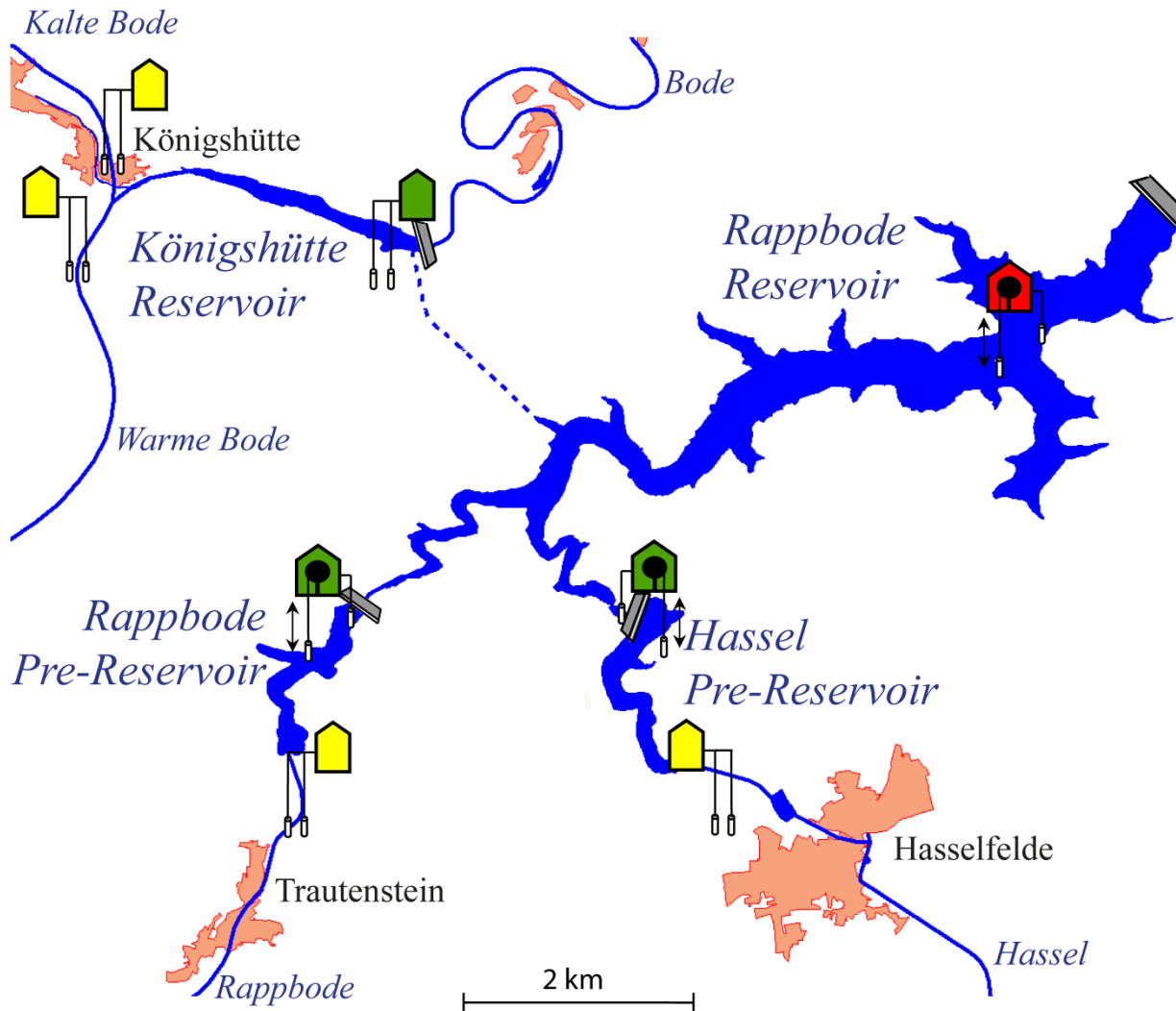


Photo: André Künzelmann (UFZ)

Rappbode Reservoir

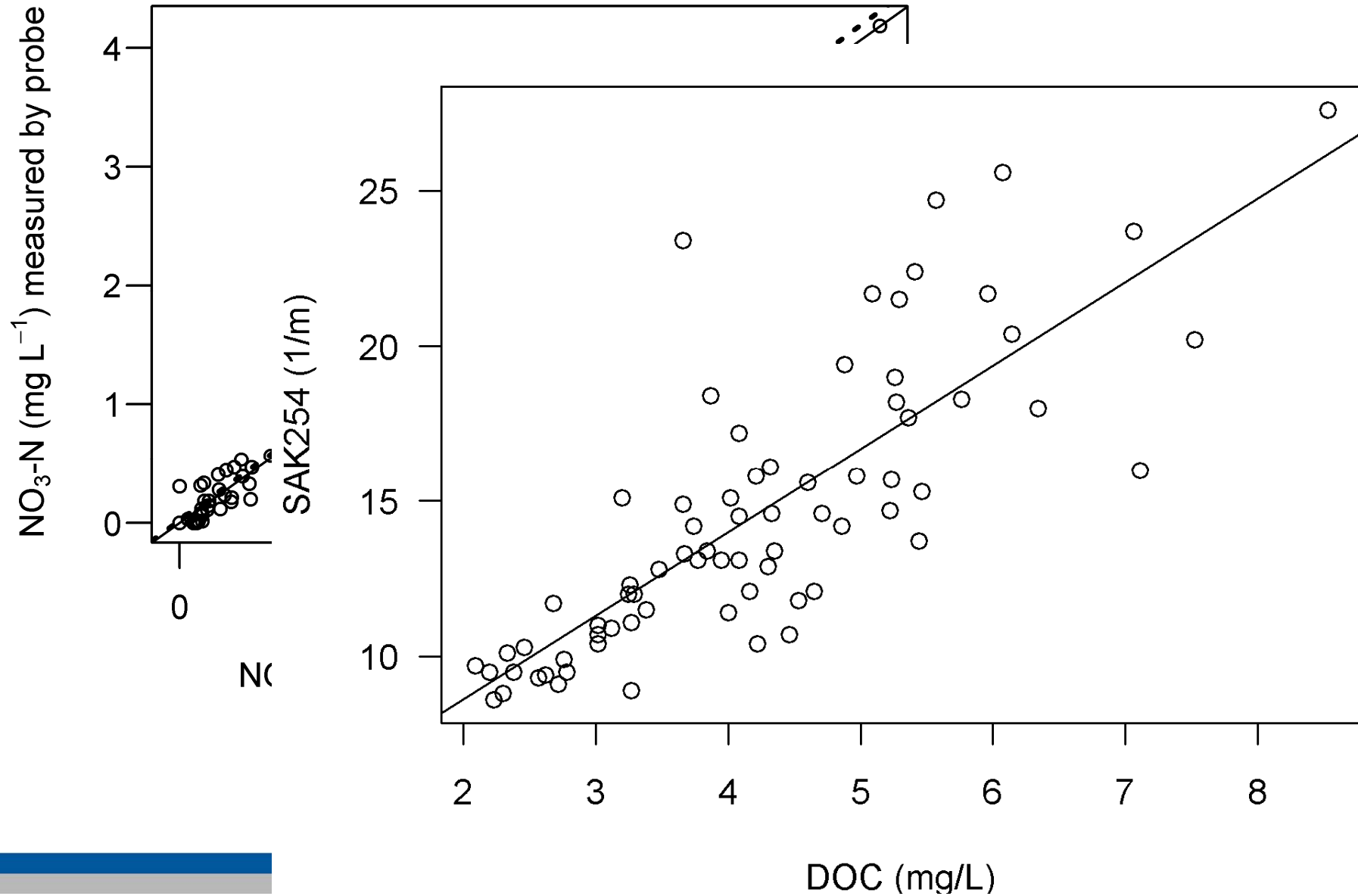
- One main reservoir and 3 pre-dams
- Drinking water supply for over 1 Mio people
- Surface area: 395 ha
- Volume: 113 Mio m³
- Max. depth: 89 m
- mesotrophic

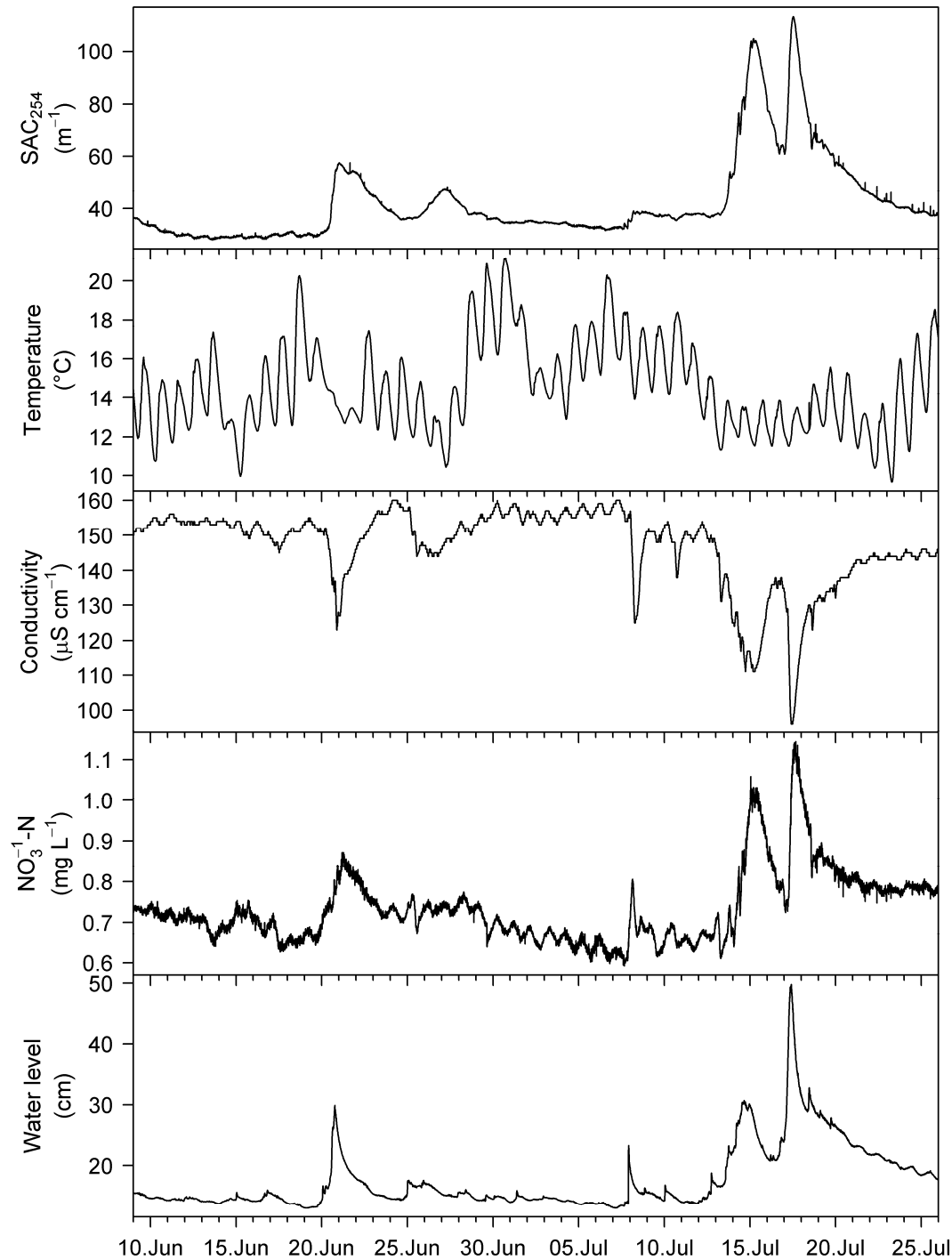
Station map



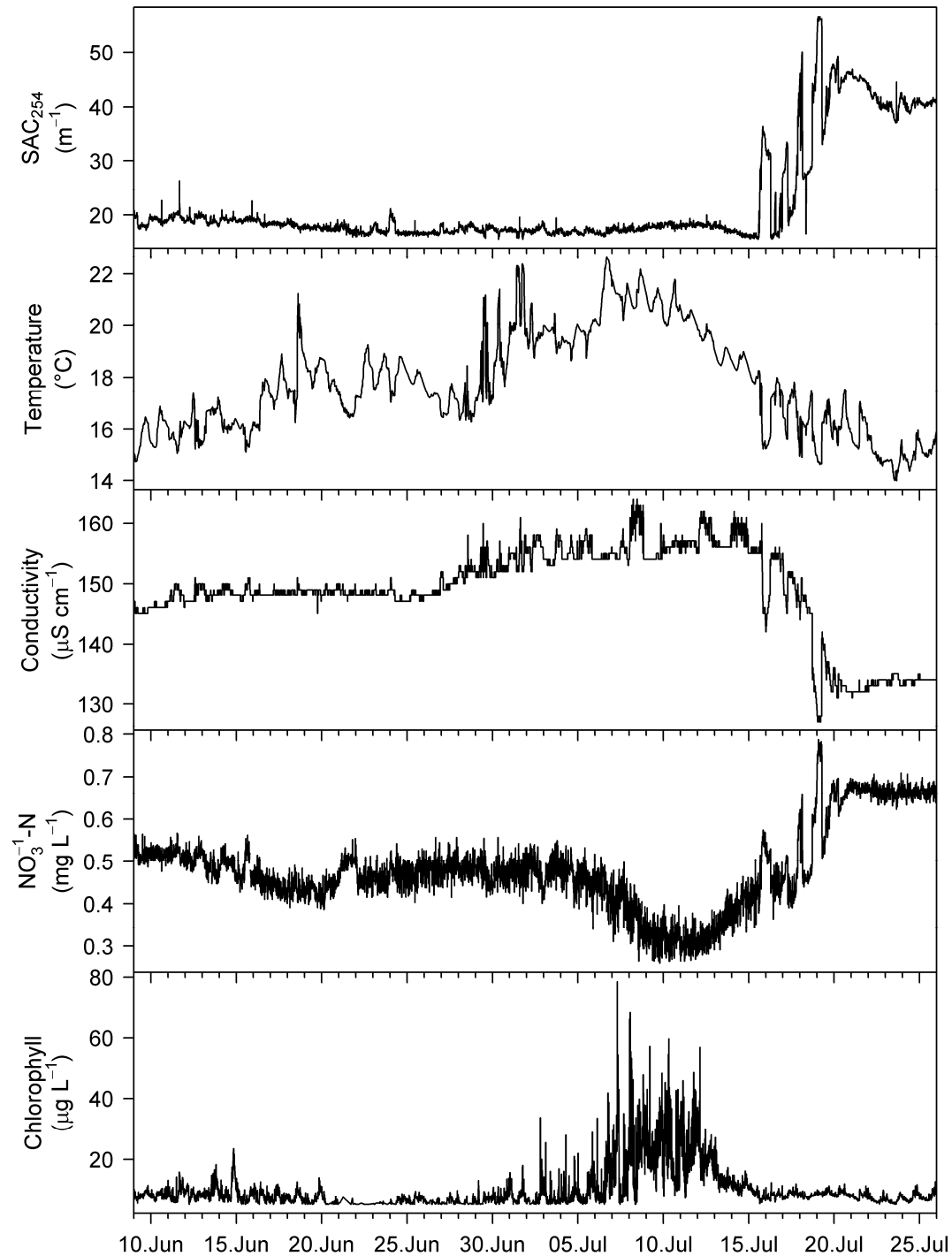
Legend	
	Town
	Standing water body
	River
	Water transfer gallery
	Dam
Stations	
	Main reservoir station
	Connecting station
	Inflow station
Technical Details	
	Profiling sensors (T, O ₂ , C, Chl, pH)
	Stationary sensors

Quality of measurements

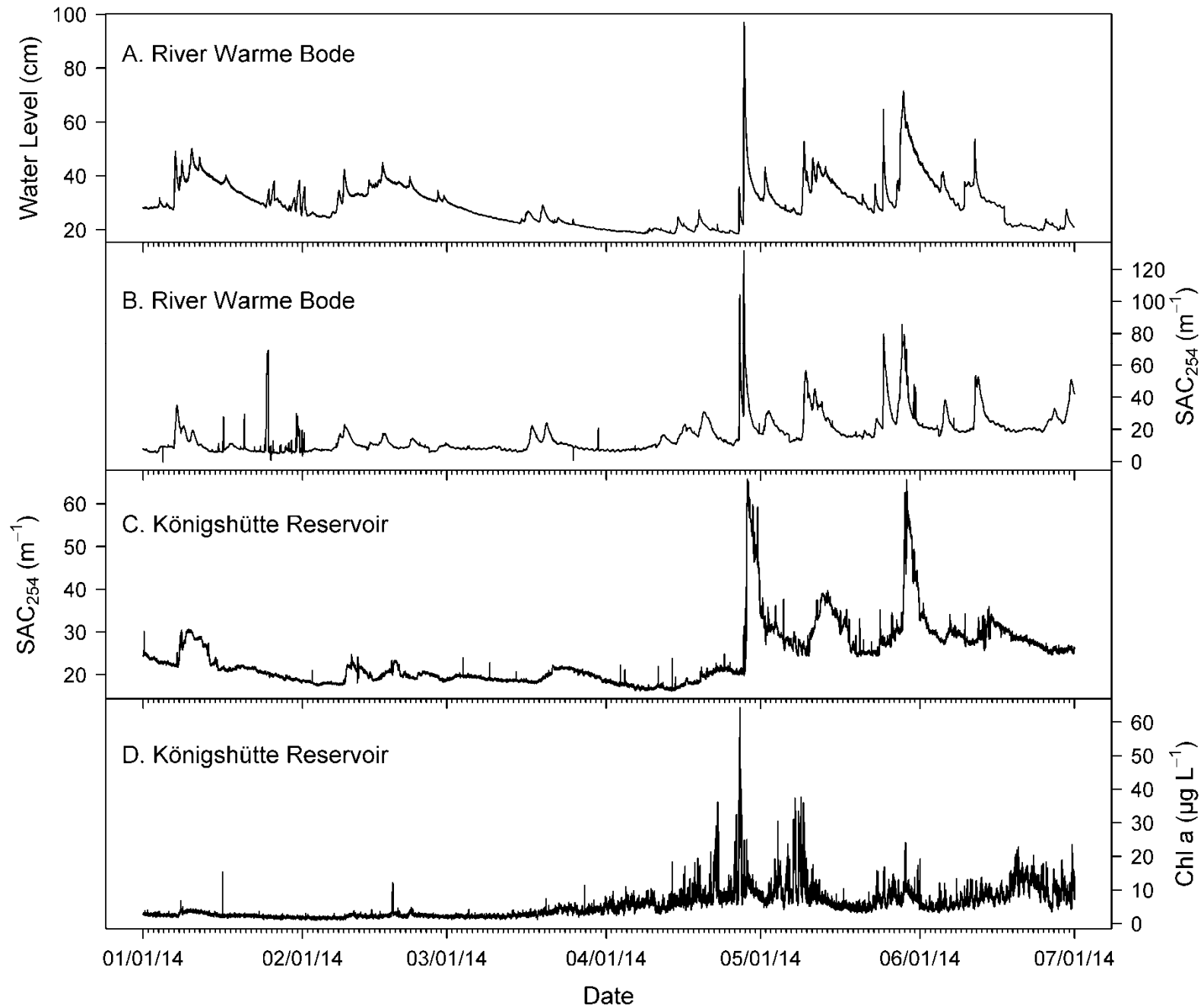




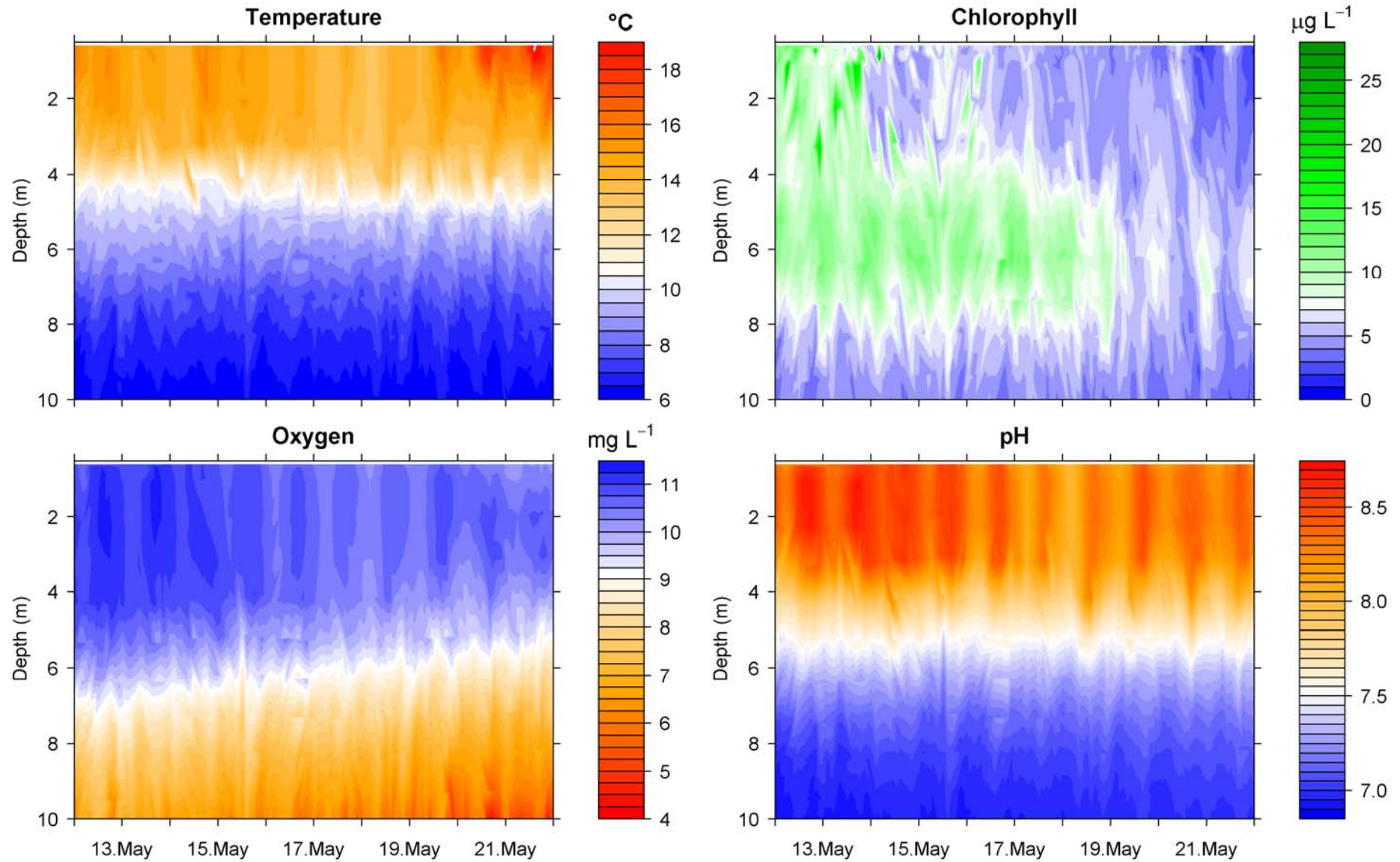
Warme Bode June/Juli 2012



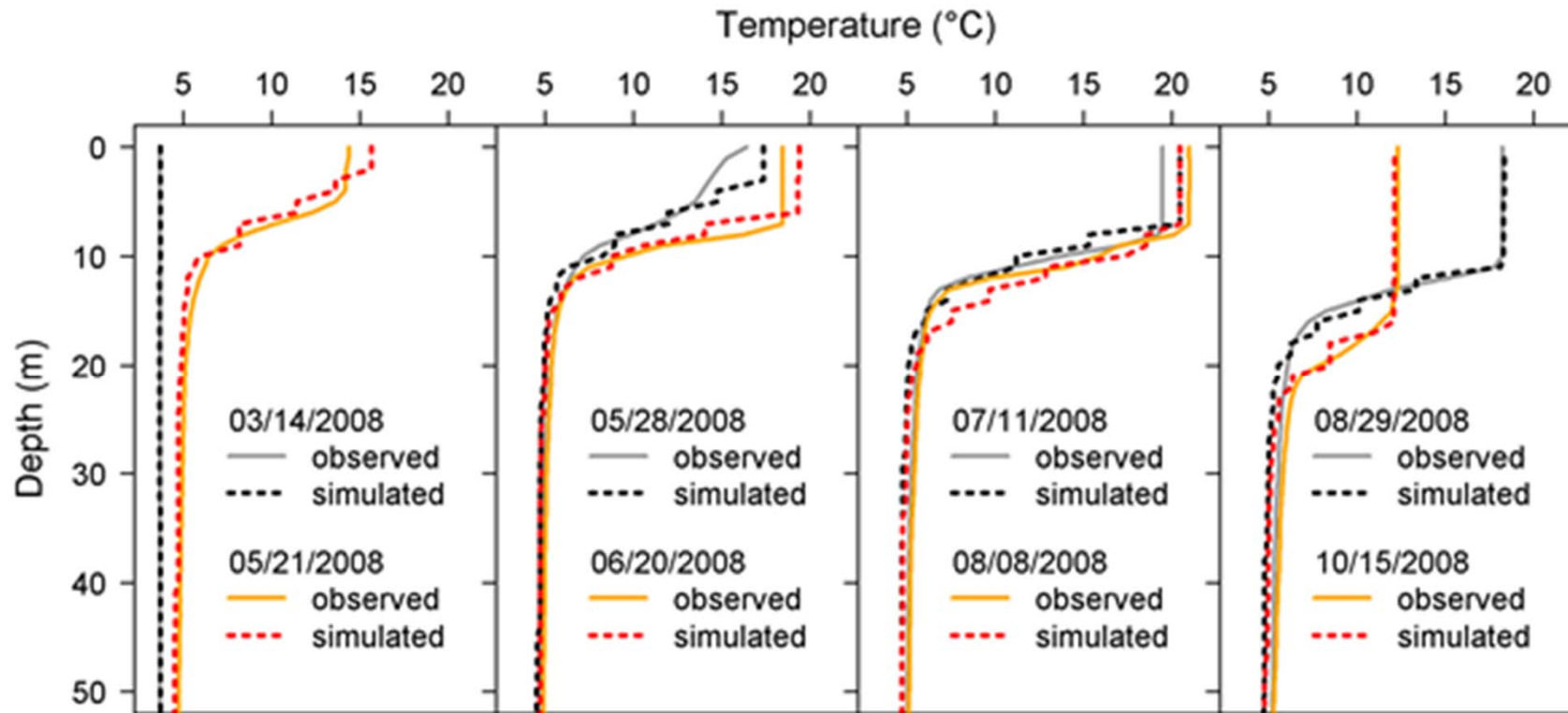
Königshütte Reservoir June/July 2012



Profiler Data

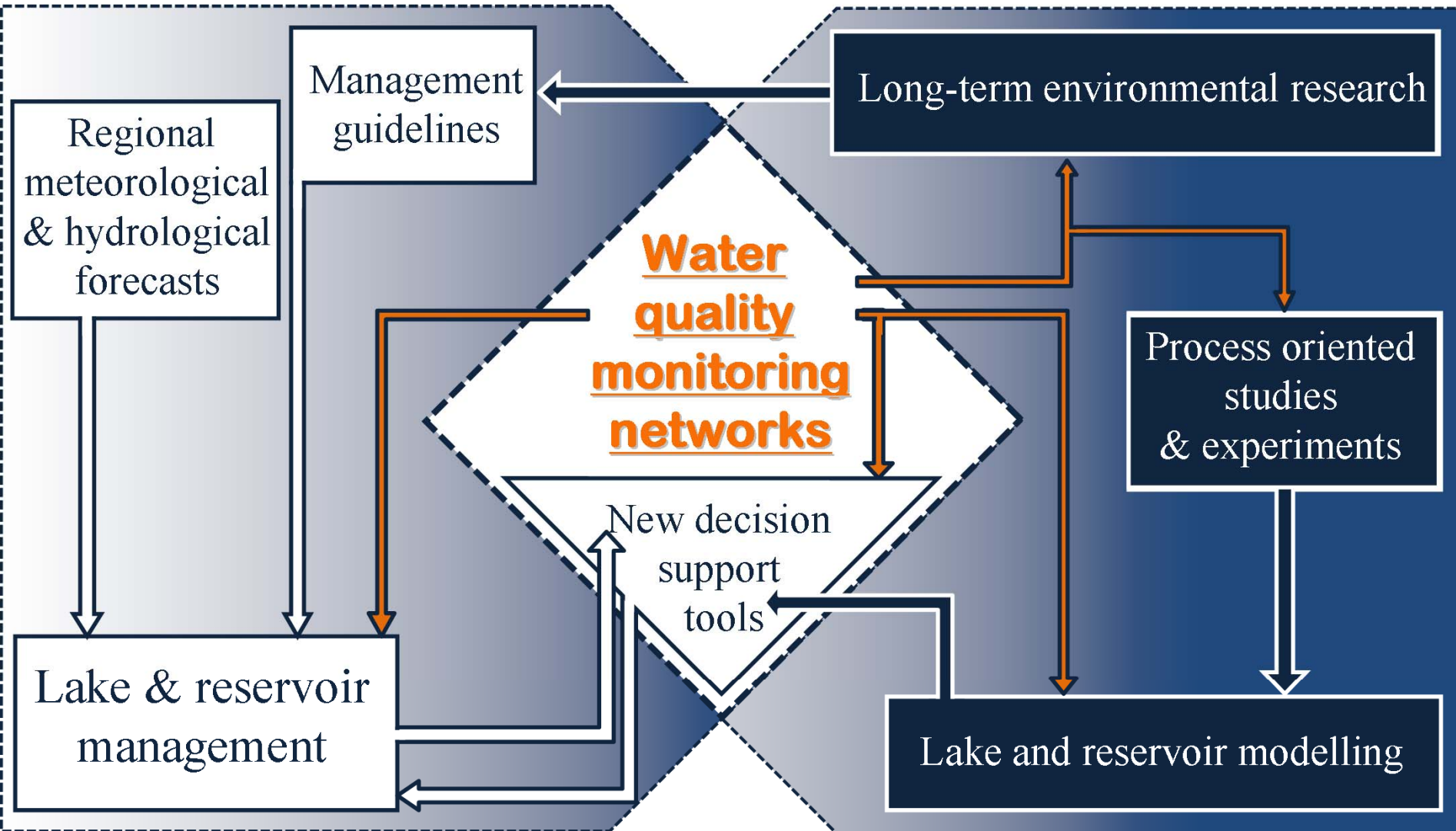


Reservoir Modelling



Management & Application Side

Scientific Side



Achievements

- stable data flow at most stations
- antifouling treatment with compressed air
- good communications to reservoir operators
- maintenance requirements are relatively low (2-3 weeks)

Problems

- correction of SAC_{254} measurements by turbidity
- baseline drift due to scratched glass surfaces
- long-term stability of profilers