Gewässer – bedeutende Elemente der Landschaft Nordost-Deutschlands

Mark Gessner
Leibniz-Institut für Gewässerökologie und Binnenfischerei (IGB)
www.igb-berlin.de

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NO-Deutschland – reich an Gewässern

1.000 km² Wasserfläche

3.000 Seen

33.000 km Fliessgewässer

Photo: M. Feierabend

Kleinstgewässer

Photo: J. Augustin

Photo G. Verch

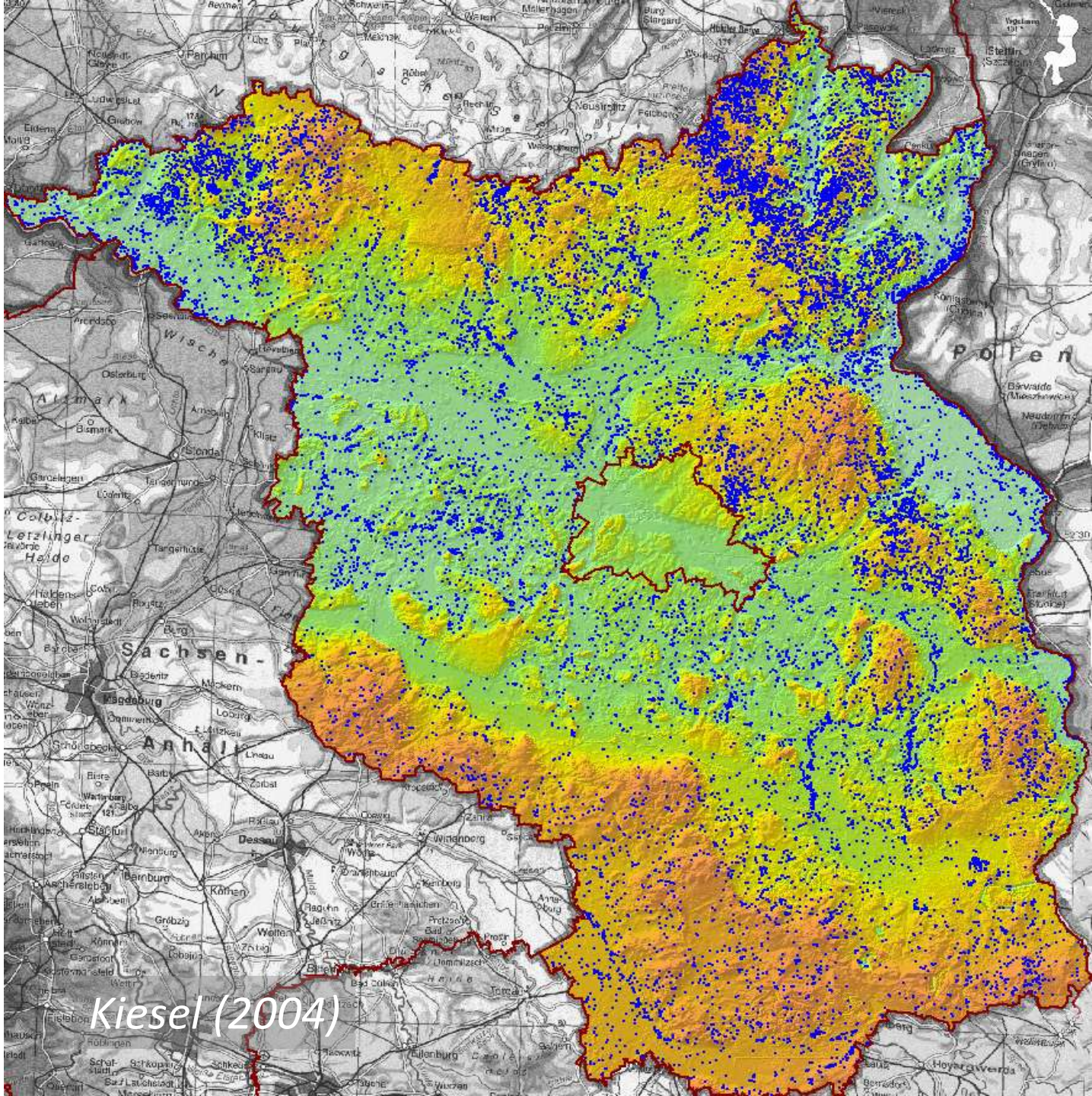
Sölle

Fläche < 1 ha

Sehr flach

Eng vernetzt

> 80.000 in Brandenburg



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IGB Goals

Science – advance the fundamental, mechanistic understanding of the ecology, evolution and long-term dynamics of **freshwater biodiversity** and **ecosystems**

Application – provide scientific knowledge for the **sustainable management** of freshwater ecosystems

Education – train a **new generation** of freshwater scientists capable of developing solutions for achieving environmental sustainability

Information – strengthen **public awareness** about the pivotal role of fresh waters for human well-being

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Research Thrusts

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Aquatic Biodiversity

Photos M. Feierabend

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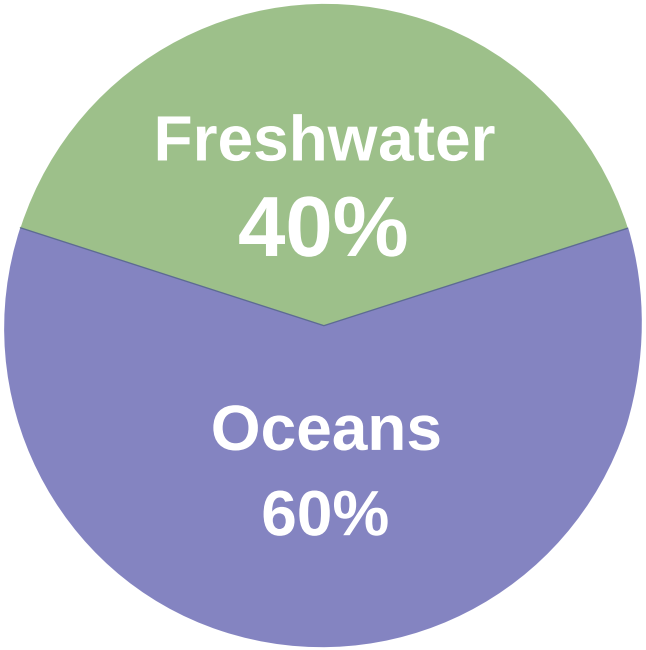
Aquatic Bioresources

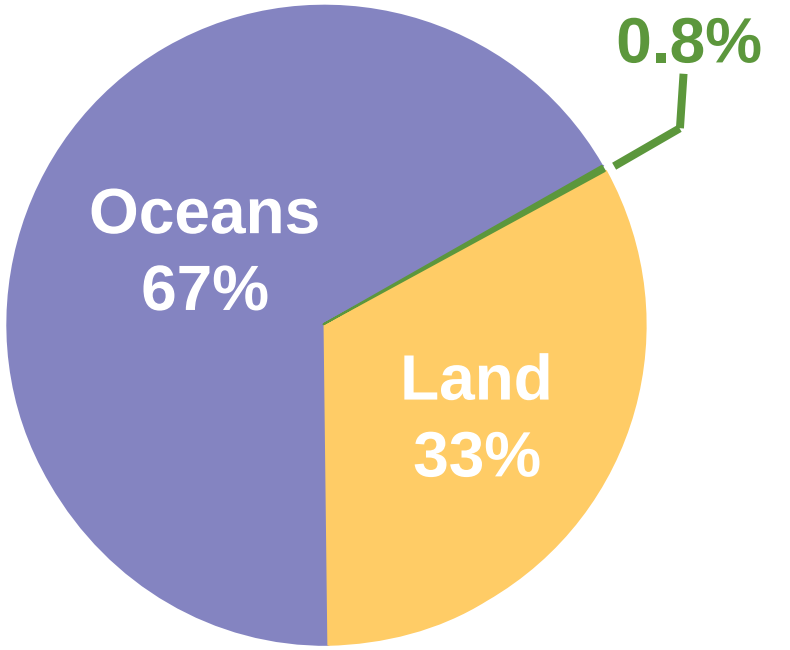
Photos M. Feierabend

Fresh waters – hotspots of biodiversity

Fish species



Area



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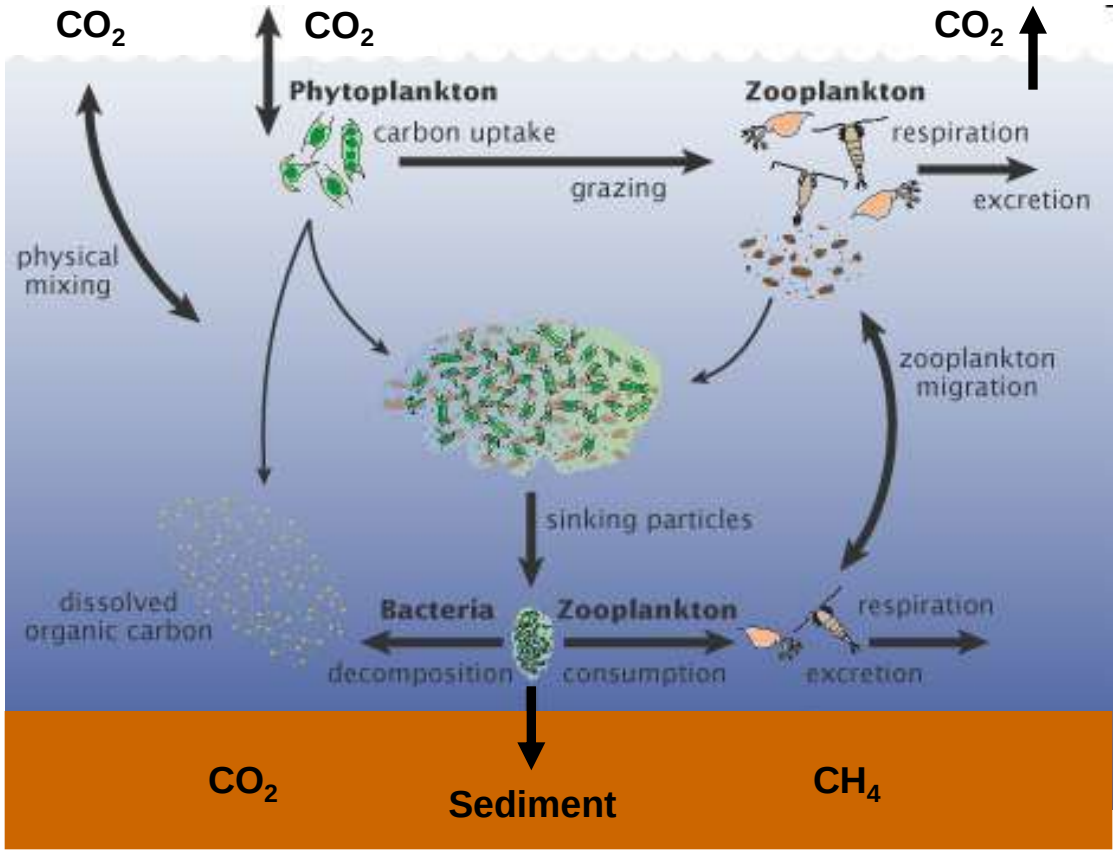
Fresh waters – hotspots of organic matter turnover



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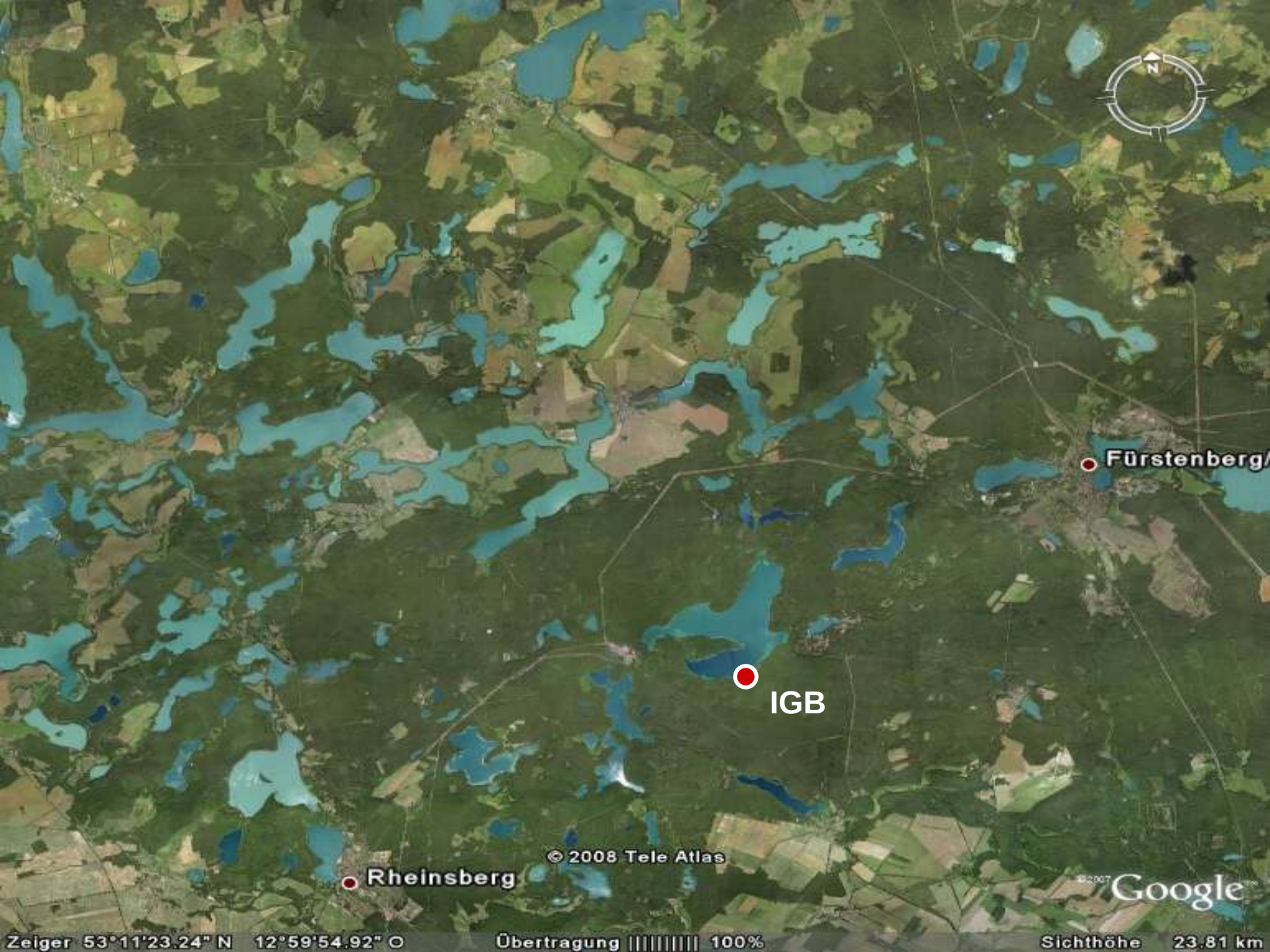
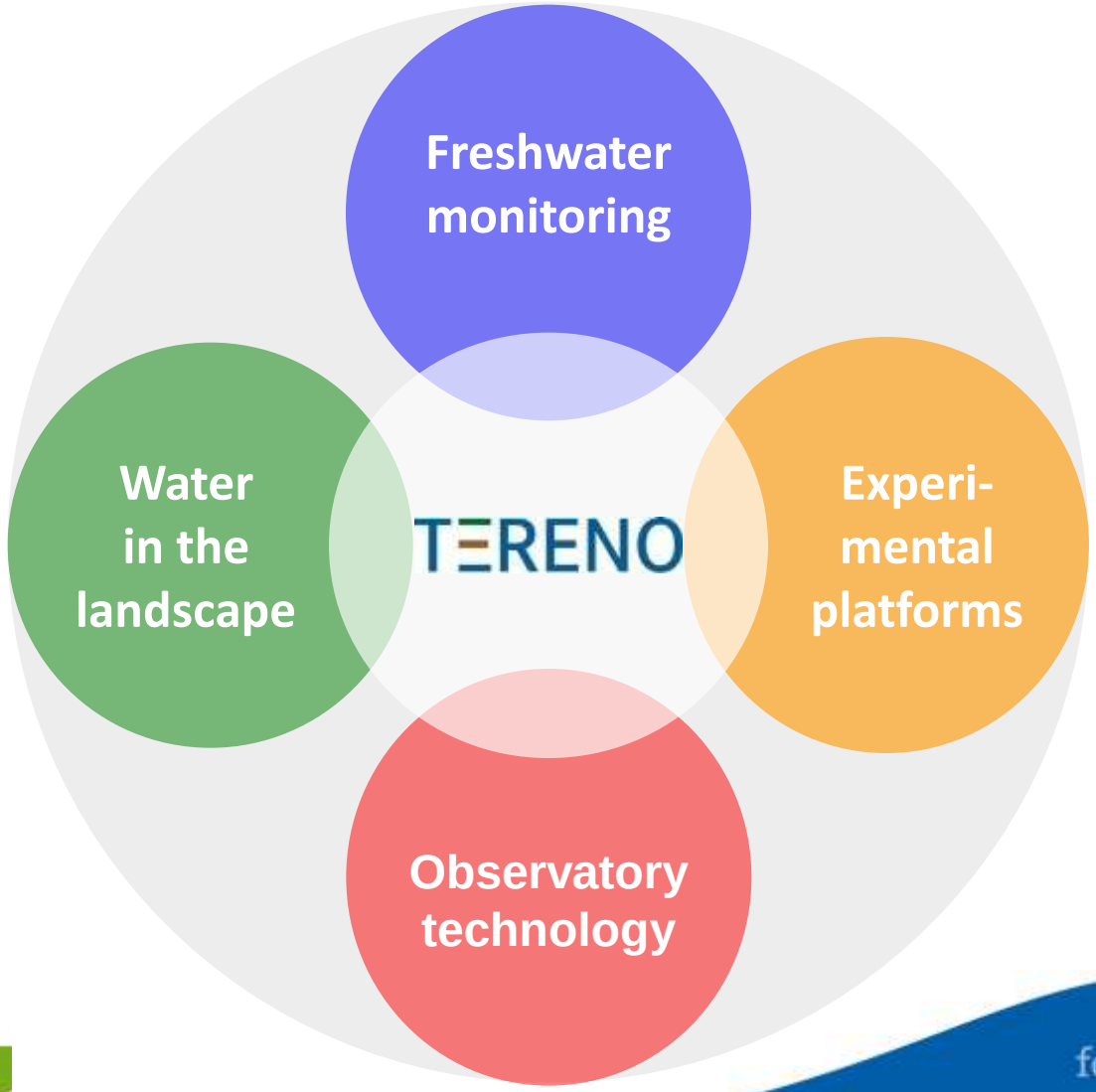

N
Fürstenberg/
IGB
Rheinsberg
© 2008 Tele Atlas
Google
Zeiger 53°11'23.24" N 12°59'54.92" O
Übertragung 100%
Sichthöhe 23.81 km

Anknüpfungspunkte TERENO–IGB



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Rolle der Kleingewässer für den Kohlen-stoff-Haushalt auf Landschaftsebene?

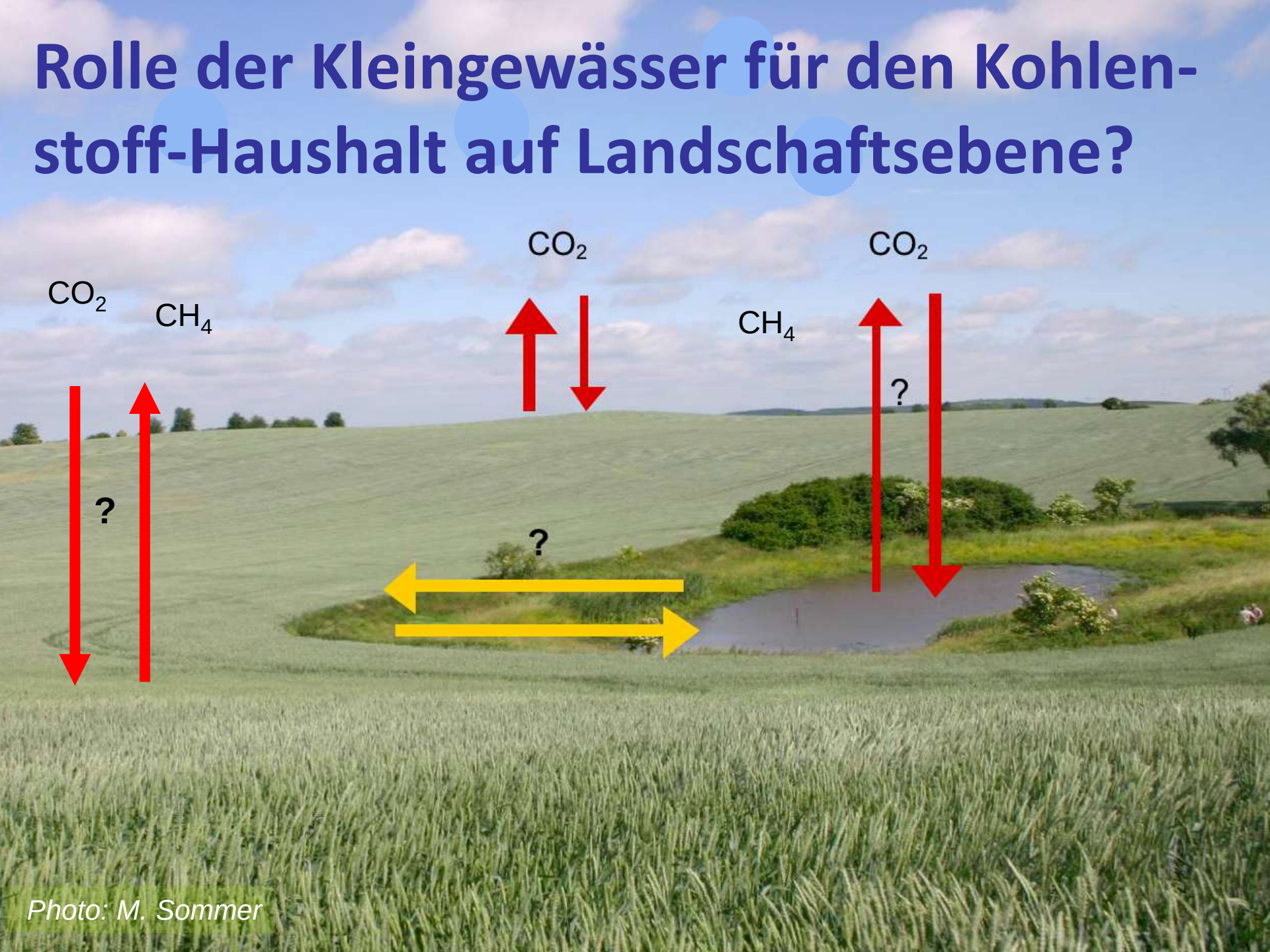
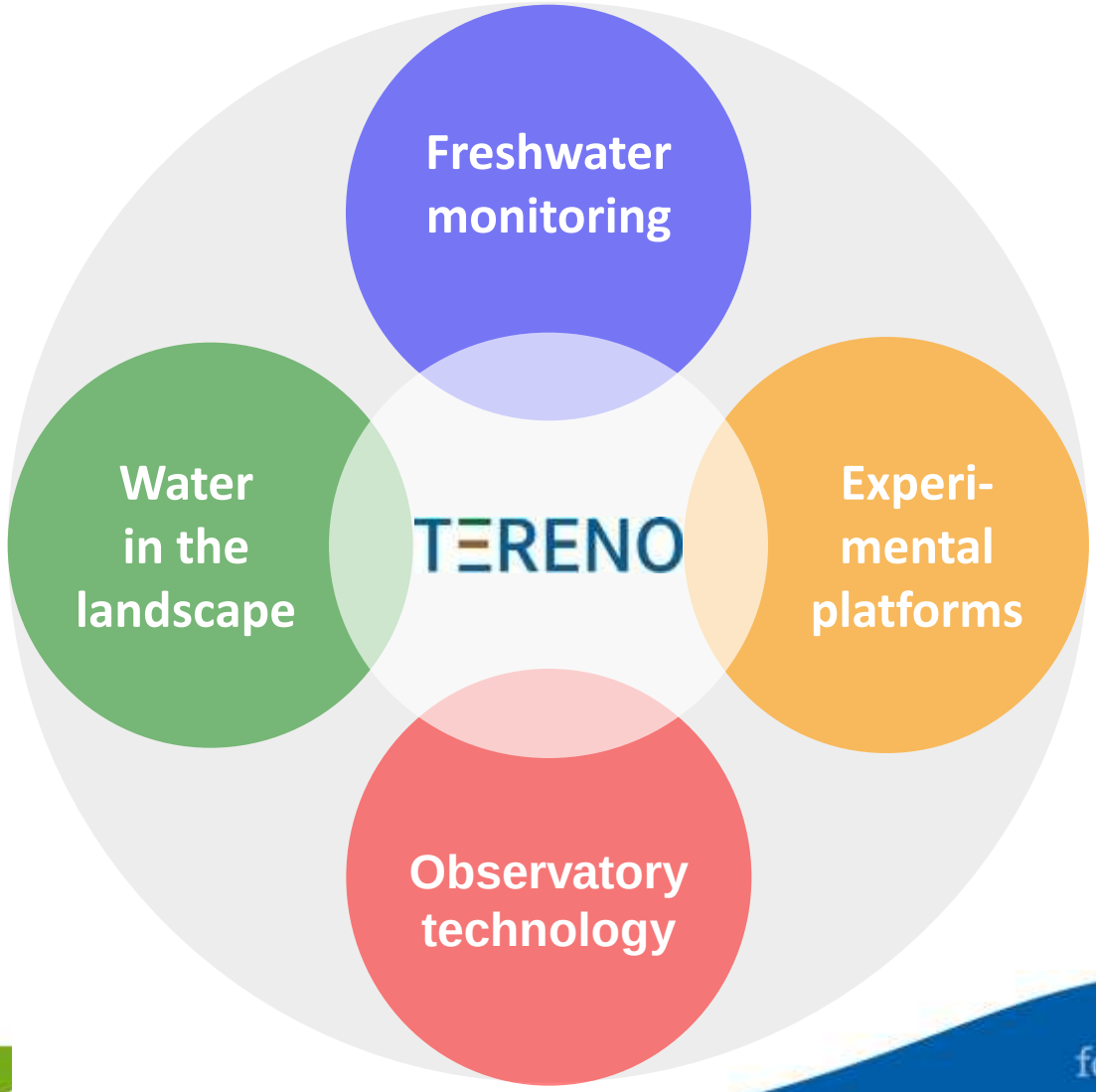


Photo: M. Sommer

Anknüpfungspunkte TERENO–IGB



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Lake Monitoring at IGB

Müggelsee
shallow, polymictic, eutrophic

Lake Stechlin
deep, dimictic, oligothrophic

Global Lake Ecological Observatory Network

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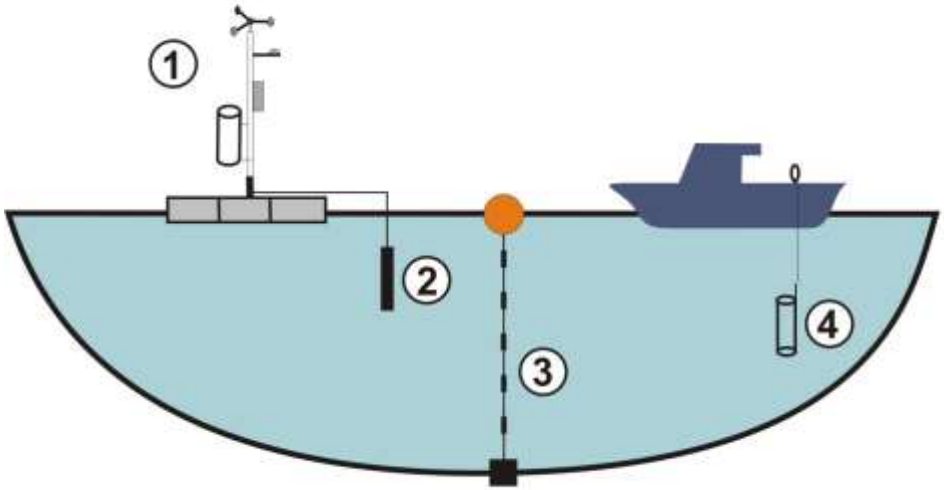
Neustrelitz
Tollensesee
Breiter Luzin
Haussee
Schmaler Luzin
Fürstenseersee
Stechlinsee
Fuchskuhle
Image © 2012 GeoBasis-DE/BKG

Seenmonitoring



① **Wetterstation (10 min):**
Lufttemperatur, Niederschlag, Luftfeuchte, Globalstrahlung

② **Multiparametersonde (5 min):**
Wassertemperatur, pH, LF, O_2, Trübung, Chl, Phycocyanin

③ **Thermistor/Optodenkette (10 s):**
Wassertemperatur, O_2

④ **Routine-Probenahmen (1-4 Wo):**
Nährstoffe, Chl, Plankton u.a.

Lake Monitoring at IGB

Several decades of observational data

Physical, chemical and biological variables

Temporal scales from minutes to weeks

Scientific interests:

- Identify drivers of system dynamics
- Assess impacts of climate change
- Identify thresholds and critical time windows
- Separate overlapping drivers
- Develop scenarios for experiments and models

Policy relevance:

- National and regional agencies
- IPPC

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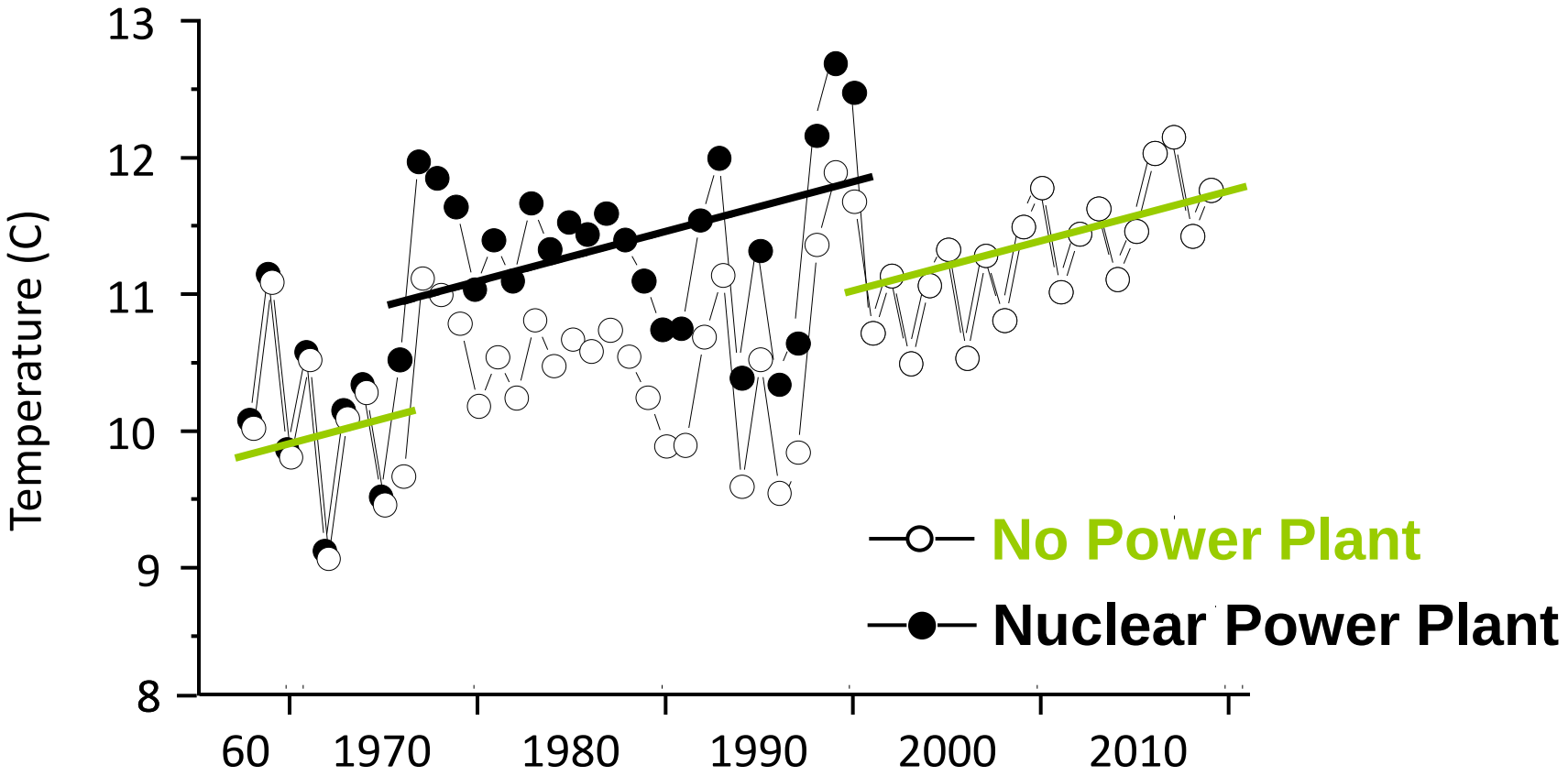
Temperature trend in surface water



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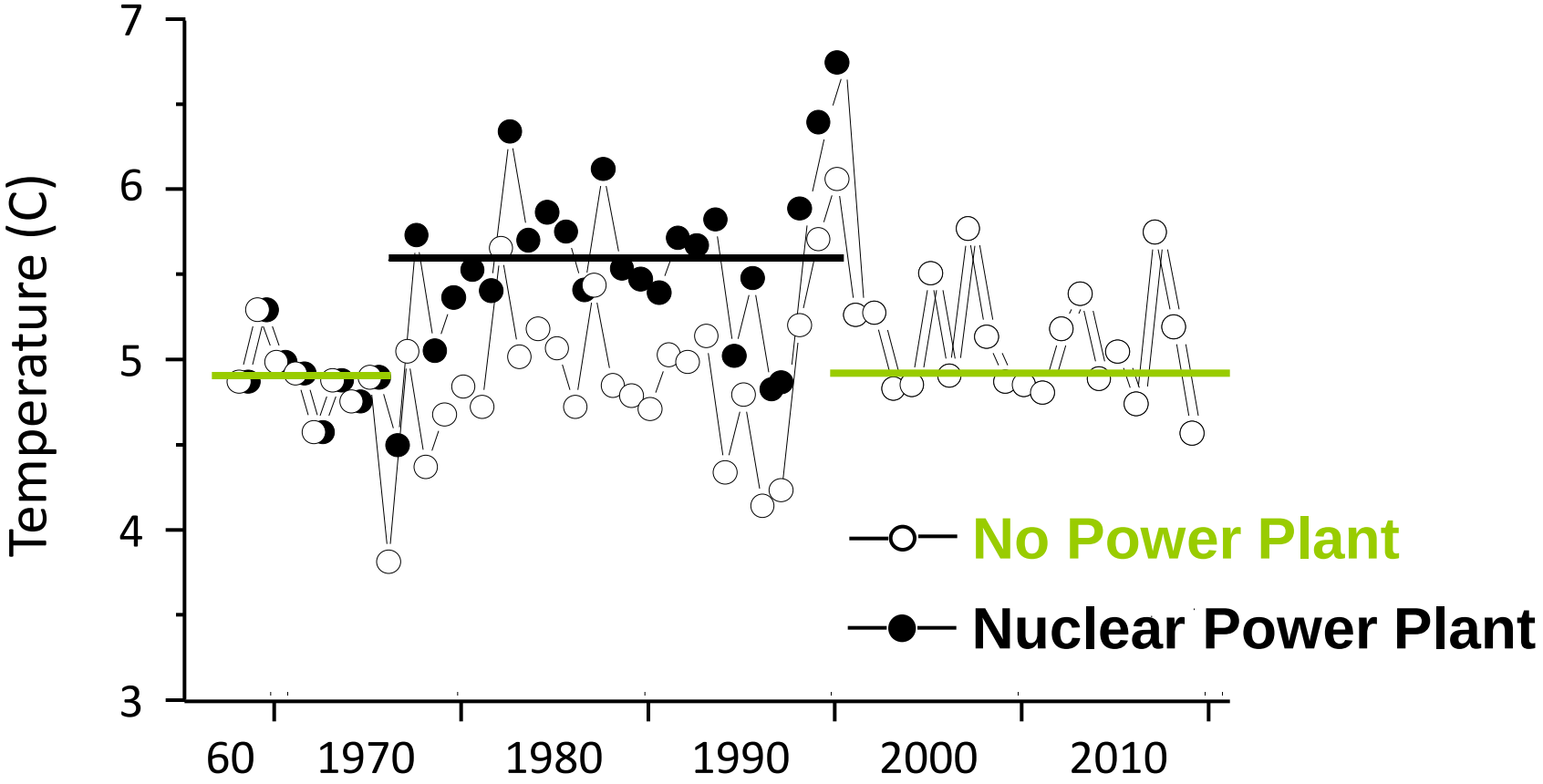
Temperature trend in deep water



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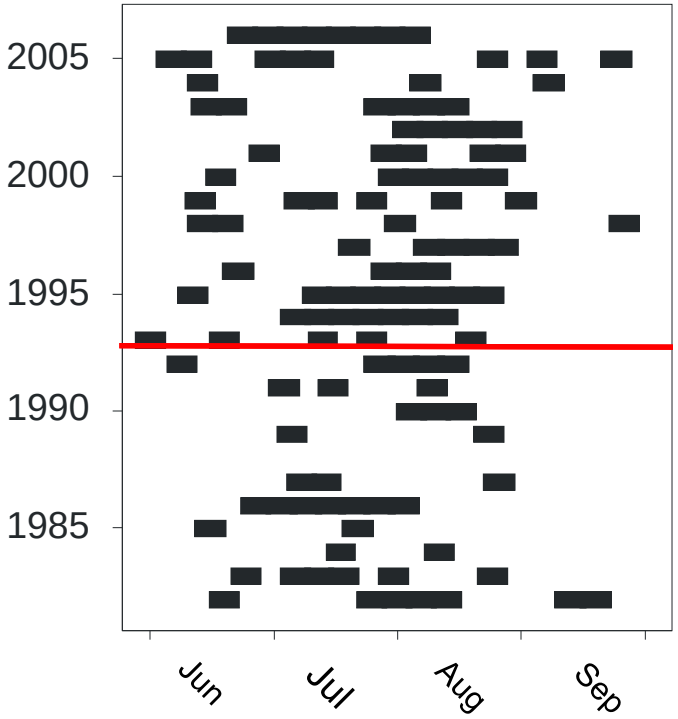
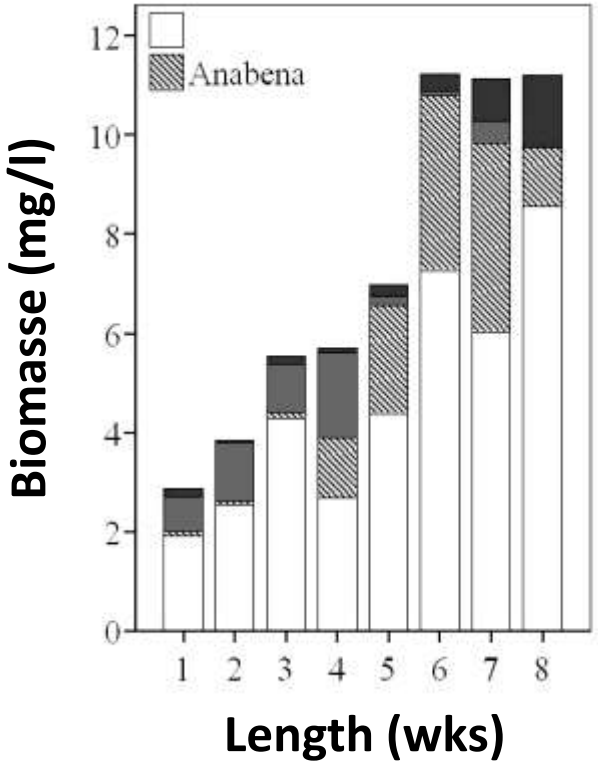
Climate-induced changes in lake thermal structure

Periods of stable summer stratification in Müggelsee



Rise in

Cyano-bacteria



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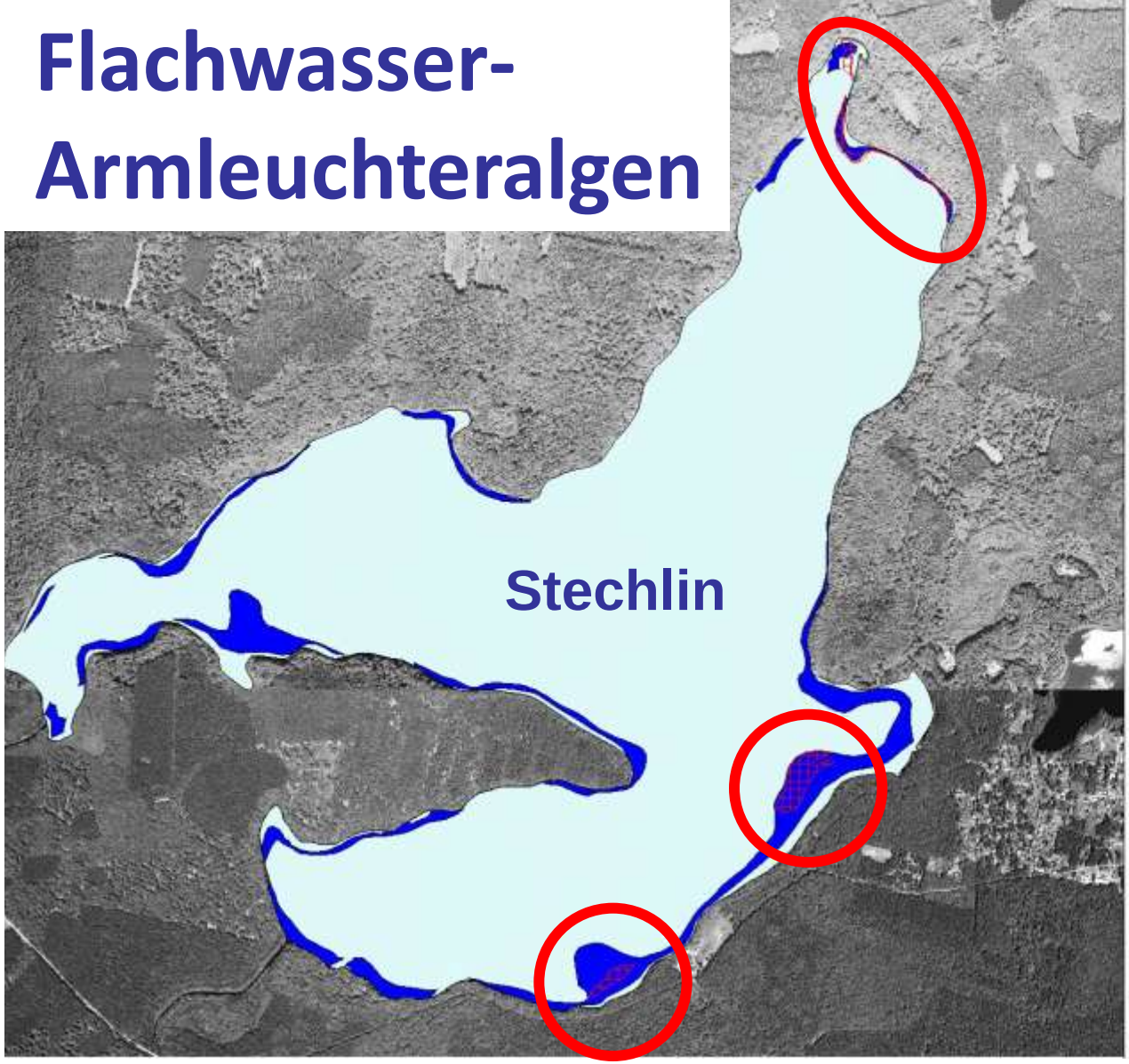
Flachwasser-Armleuchteralgen



1962

2008

Karte 3: Flachwasser-Armleuchteralgen-Rasen 1962 und 2008	
Auftraggeber:	LUA Brandenburg
Auftragnehmer:	lana • plan Lobbericher Straße 5 41334 Nettetal Tel. 02153-97 1920 Fax 02153-971921 www.lanaplan.de
Bearbeitung:	Dr. Klaus van de Weyer Dipl.-Ing. Patrick Tigges Dipl. Geogr. Christina Raape
GIS-Bearb.:	Dipl.-Ing. Patrick Tigges Dipl. Biol. Elke Becker
Stand: Nettetal 31.10.2008	

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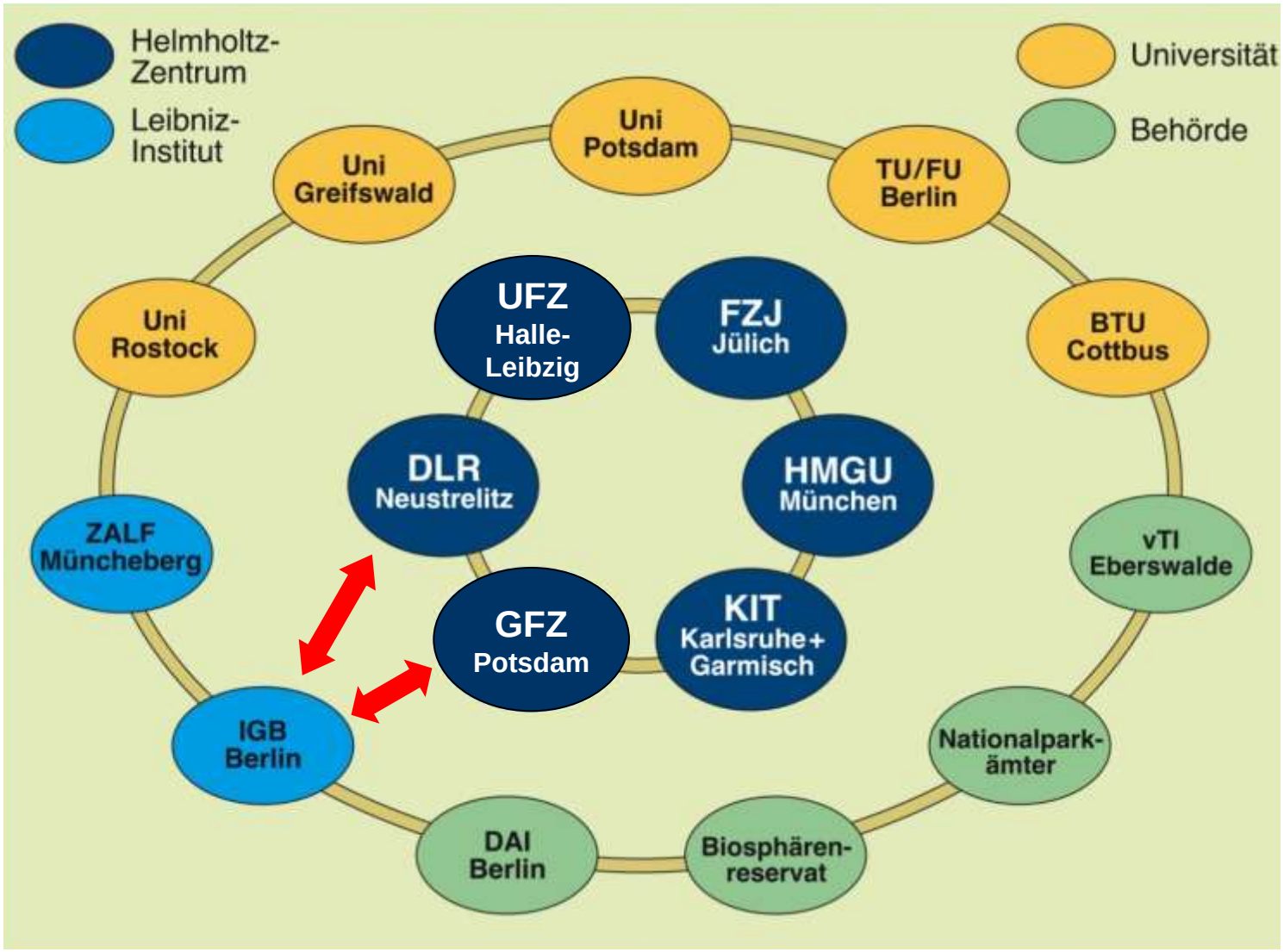
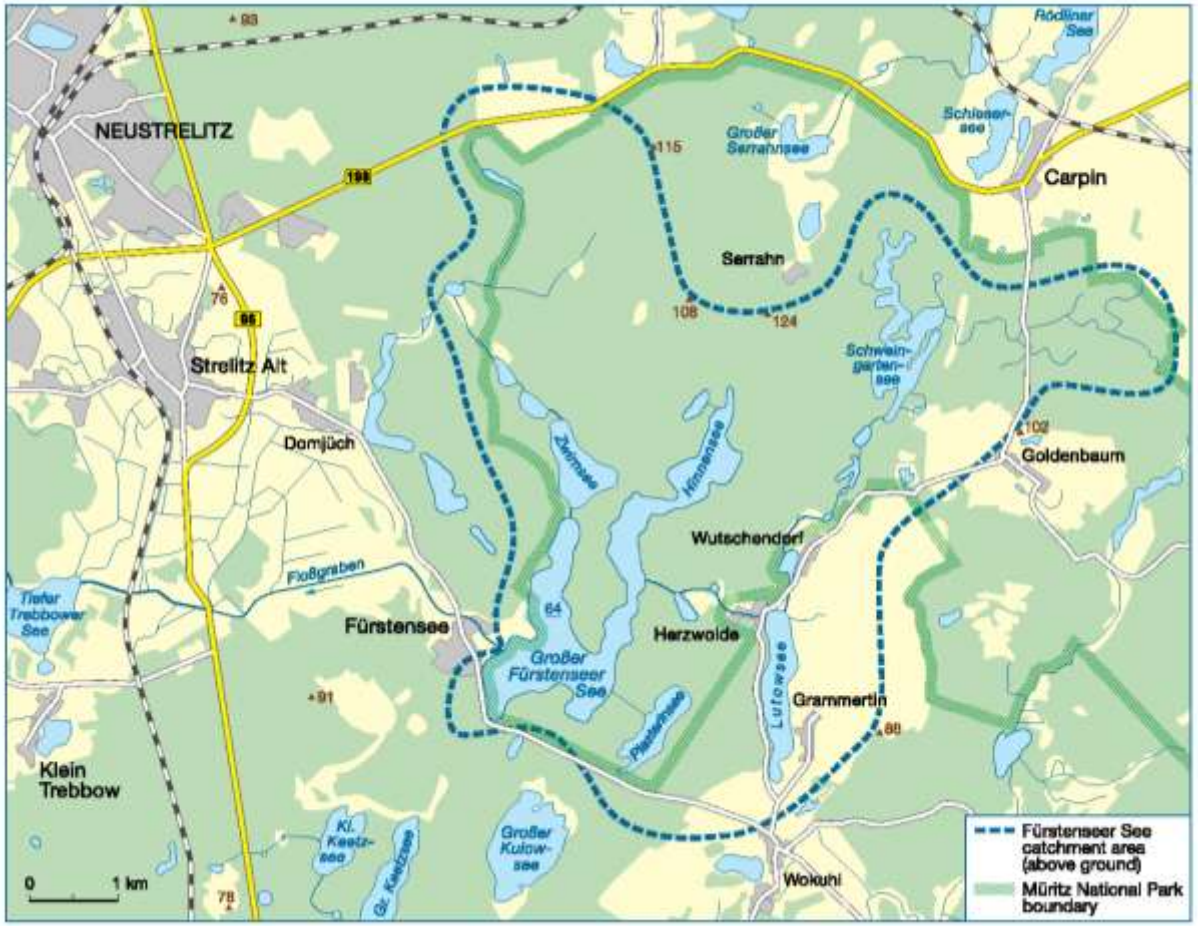
Regionales TERENO-Netzwerk Nordost

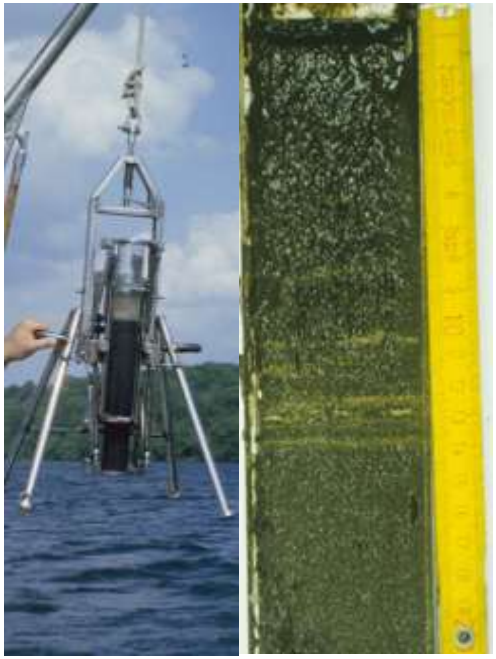


Focus TERENO-Nordost | Cooperation GFZ - IGB

Groundwater–Surface Water Interactions



Past



Sediment cores

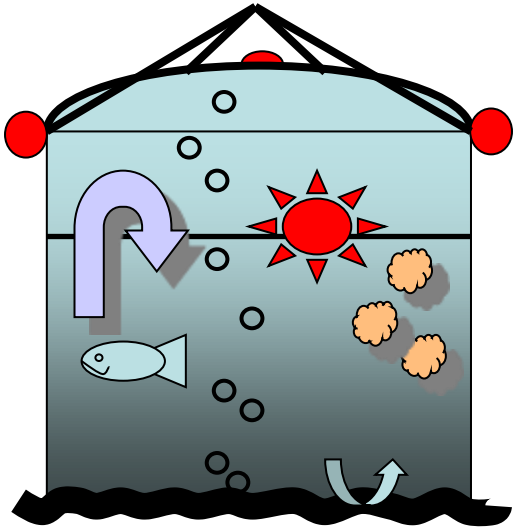
Reconstruction

Present

Sampling

Current state

Future



Enclosures in Lake Stechlin

Experimentation

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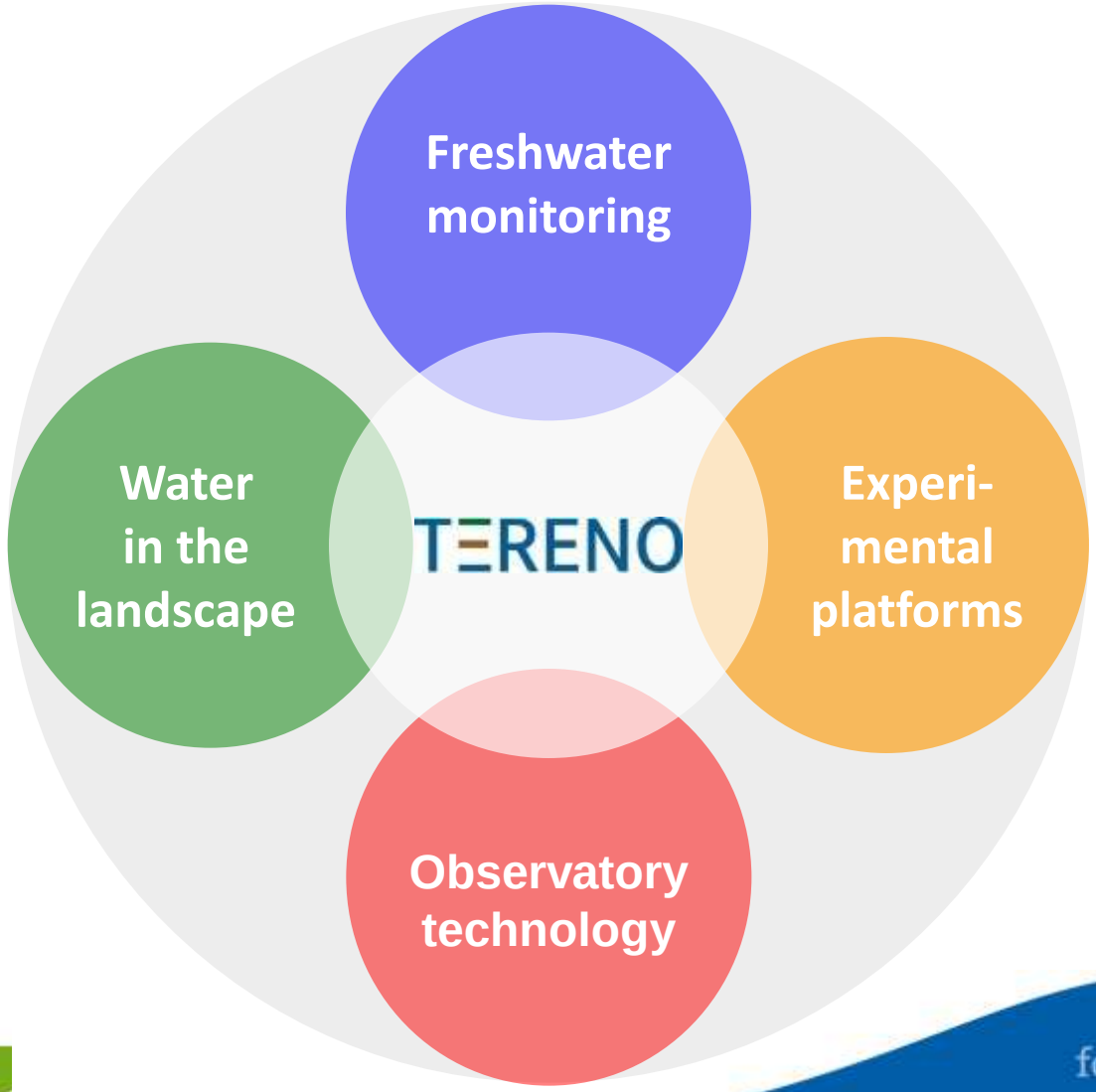

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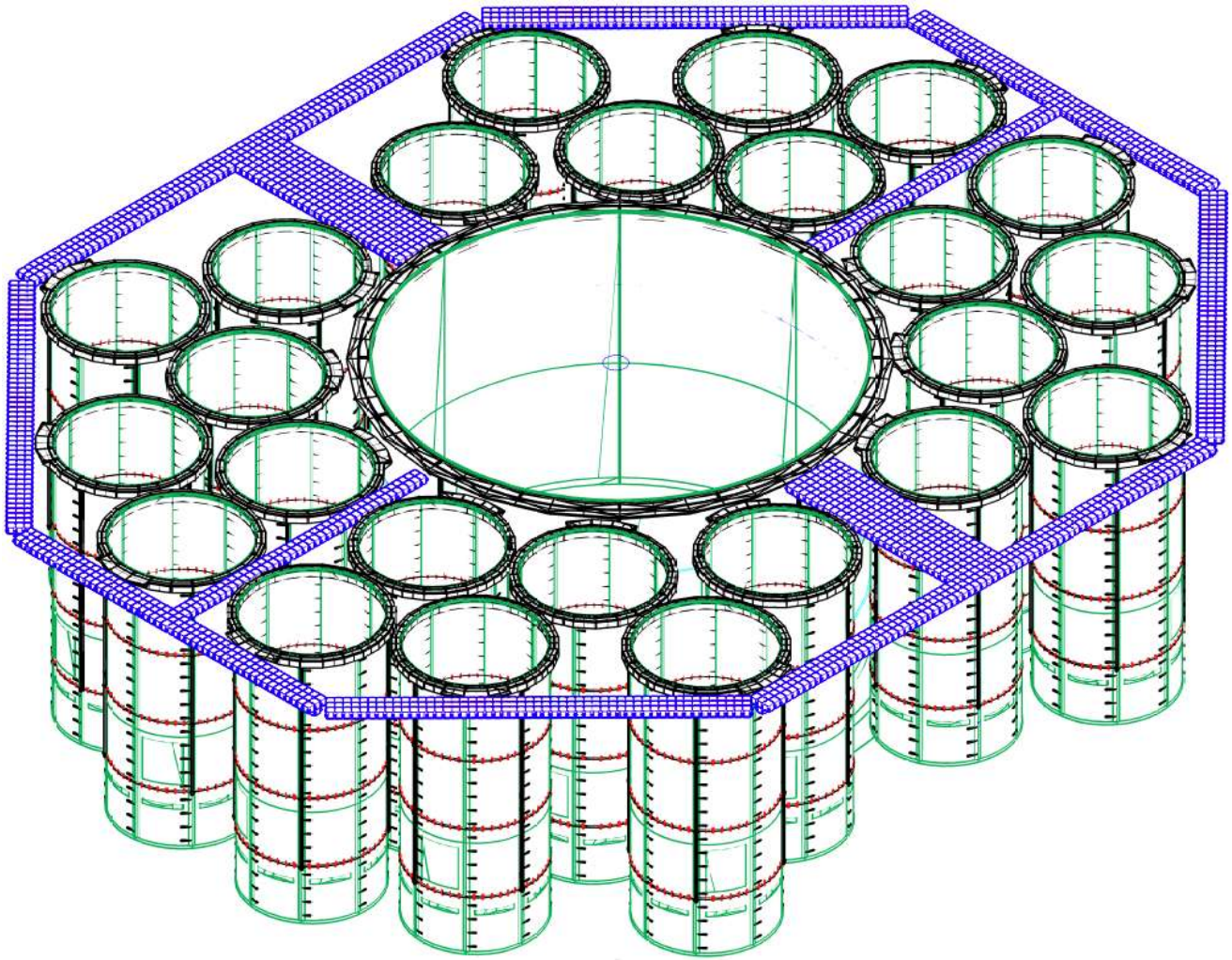
SeeLabor im Stechlin



Durchmesser:
1 × 30 m
24 × 9 m

Tiefe:
20 m

Fläche:
2.233 m^2

Volumen:
44.660 m^3

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LakeLab
in the making…

Profiler and Instruments

Profiler

Li-Cor
Licht-Sonde

YSI-
Multiparameter-
Sonde

Moldaenke
Fluoreszenz-
Sonde

Sediment
trap

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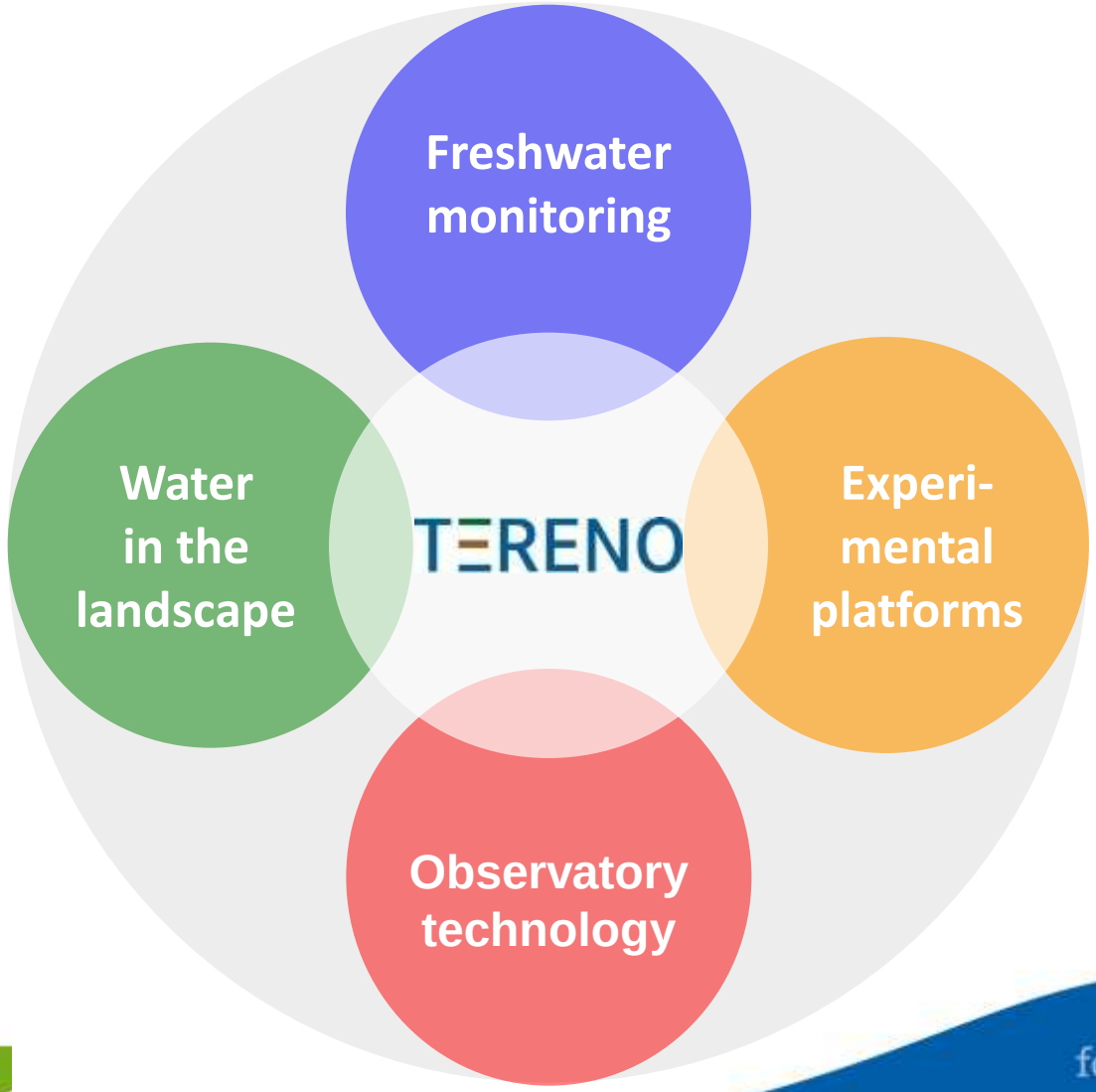

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IGB‘s unmanned aerial vehicles

Cover intermediate spatial scales
Flexibility and enhanced temporal resolution
Couple with new sensor technology?

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Für Diskussionen, Grafiken, Informationen

IGB Berlin

Rita Adrian
Peter Casper
Christof Engelhardt
Hans-Peter Grossart
Michael Hupfer
Peter Kasprzak
Georgiy Kirillin
Jörg Lewandowski
Katrin Premke
Klement Tockner

GFZ Potsdam

Oliver Bens
Achim Brauer
Theresa Blume
Andreas Günther
Mike Schwank

Danke

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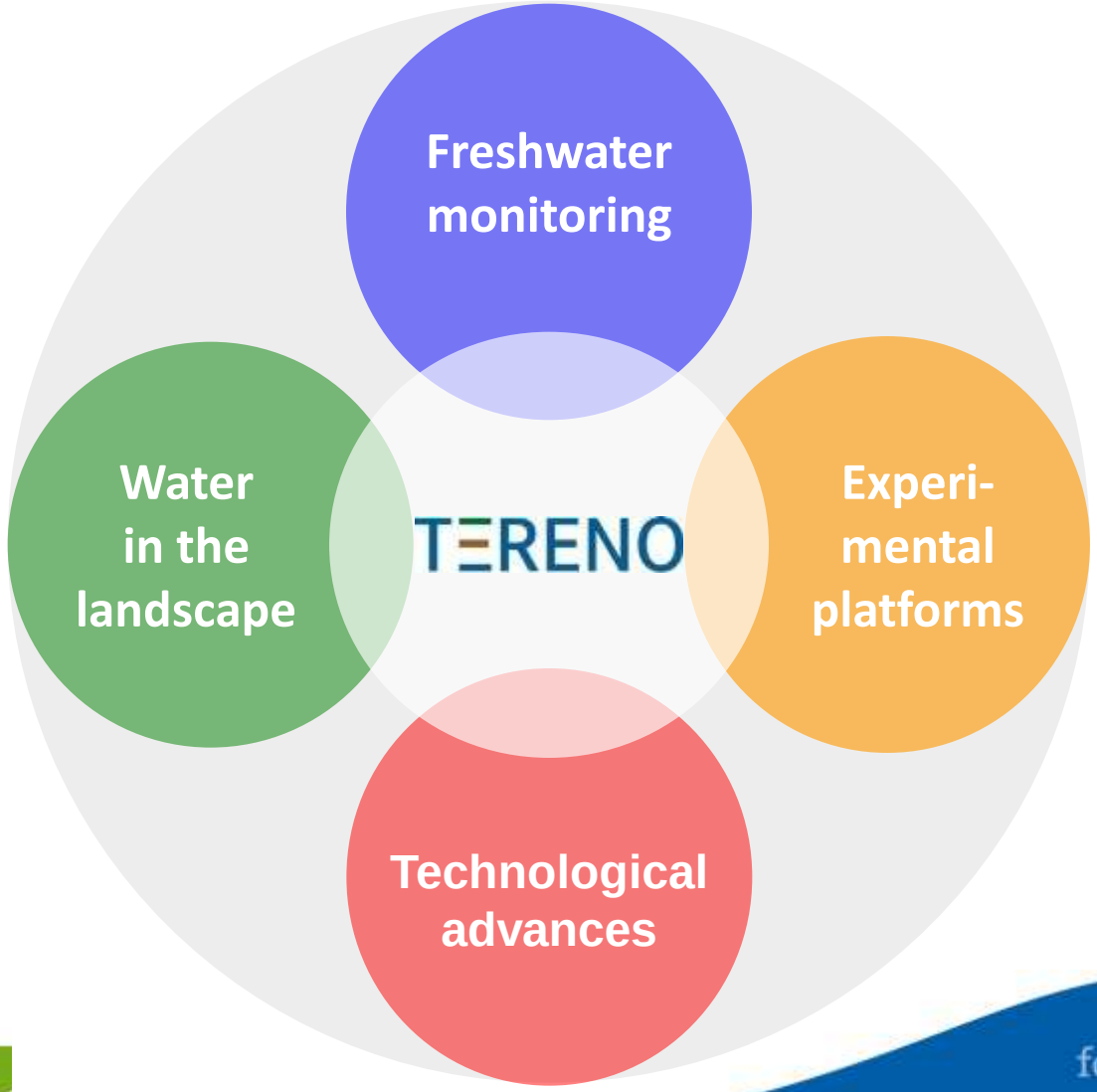
Zusammenfassung



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