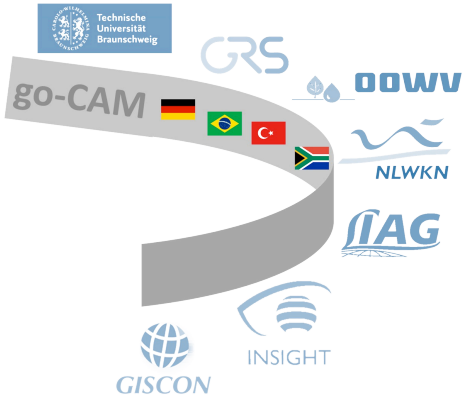
GRoW
WATER AS A GLOBAL RESOURCE

SPONSORED BY THE
Federal Ministry of Education and Research

go-CAM

Implementing strategic development goals in Coastal Aquifer Management



Michael Sander & Hans Matthias Schöniger

Final Conference of the Funding Measure „Water as a Global Resource (GRoW)“
20 - 21 October 2020, Umweltforum Berlin

Content

- **Context and Project Goal**
- **Catalog of CAM Water Indicators**
- **Application Example of CAM**

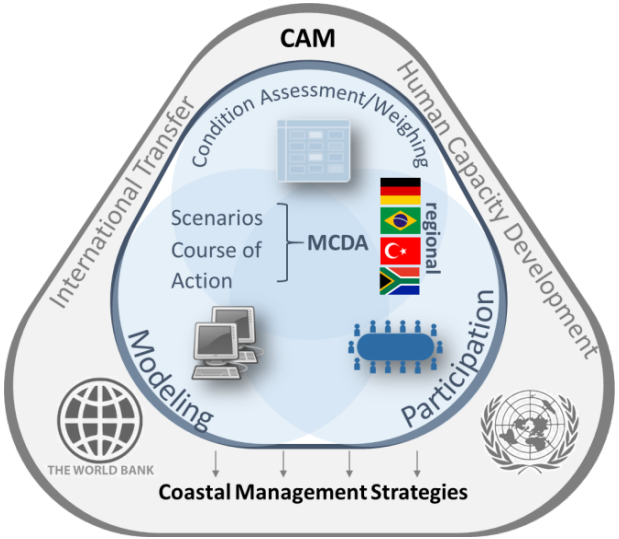
Fotoquelle: Schöniger, rechts unten OOWV

SPONSORED BY THE Federal Ministry of Education and Research

Context

Keys and challenges for the successful implementation of an IWRM:

- More **accurate assessment** of the state of water resources (quality and quantity) of coastal regions.
- Development of the basis for an **improved forecast** of the availability of water for future economic and ecological purposes.
- **Harmonization of conflicting stakeholder positions** to gain transparency and objectivity in decision making process.

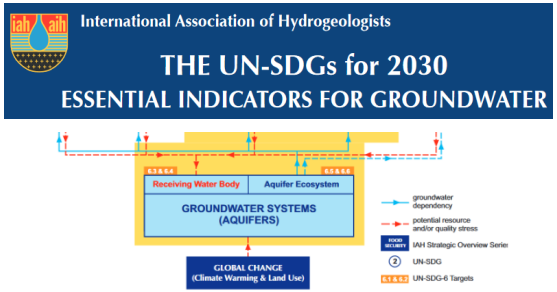


Project Goal

The main goal of the project is the development of an online dialogue platform (Coastal Aquifer Management, CAM) that enables a user-oriented evaluation of complex numerical modelling and research results.

Therefore, the go-CAM project includes and addresses water agencies, water supply companies and local universities.

Computed water indicators, target function and a MCDA form the components.



SPONSORED BY THE
Federal Ministry of Education and Research

Application Example

Example case:
Company wants to obtain groundwater production rights

3 Stakeholders:

- Environmental Protection Department
- Agriculture and Irrigation Department
- Applying water supply company

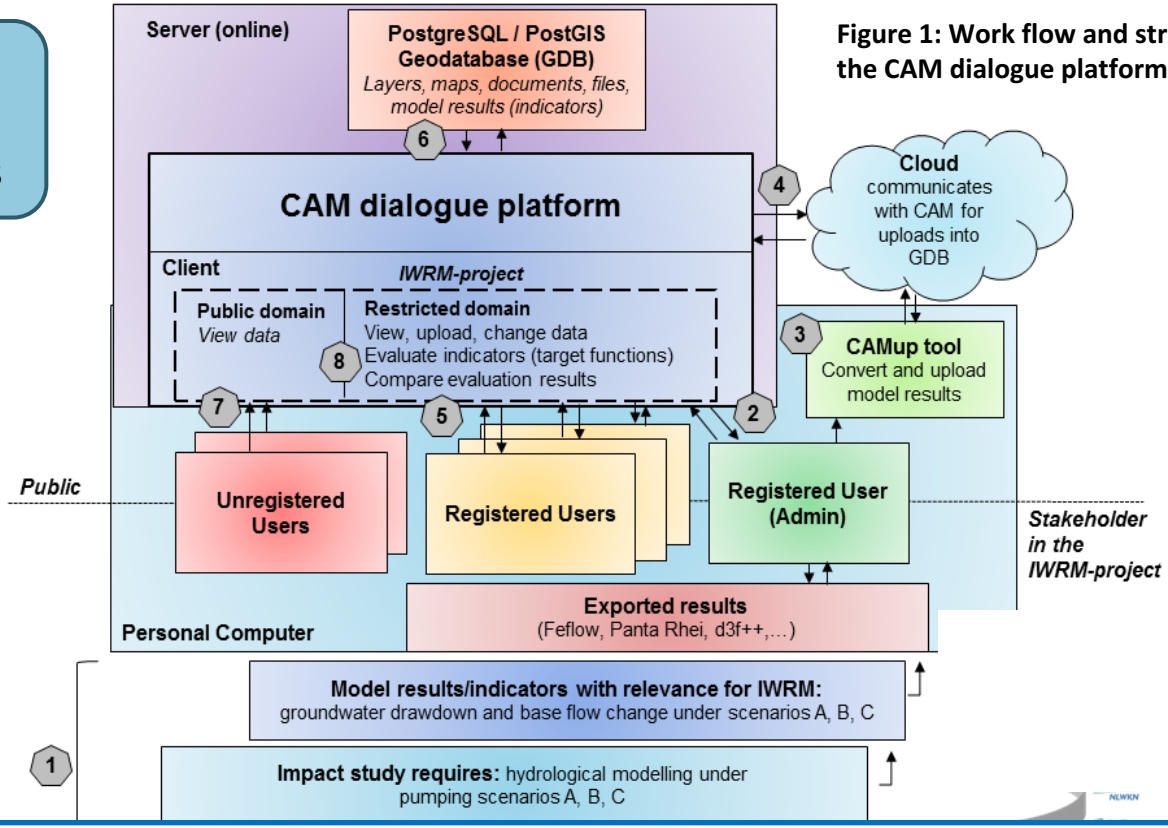


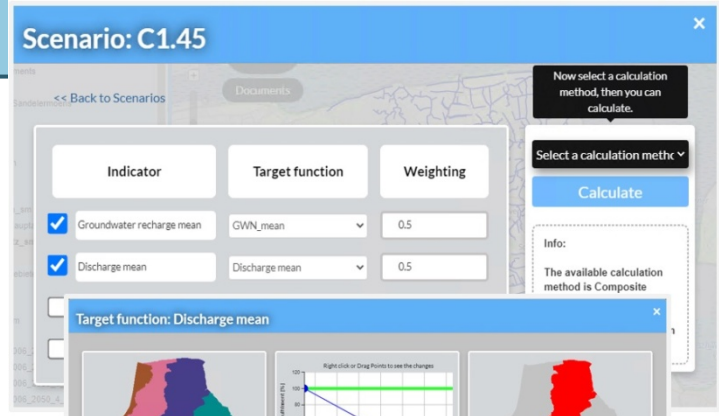
Figure 1: Work flow and structure of the CAM dialogue platform.

Application Example

Example case:
Company wants to obtain groundwater production rights

Stakeholder thresholds:

- Environmental Protection Department
  1: 0% base flow change
  0: 10% base flow decrease
- Agriculture and Irrigation Department
  1: 0% base flow change
  0: 30% base flow decrease



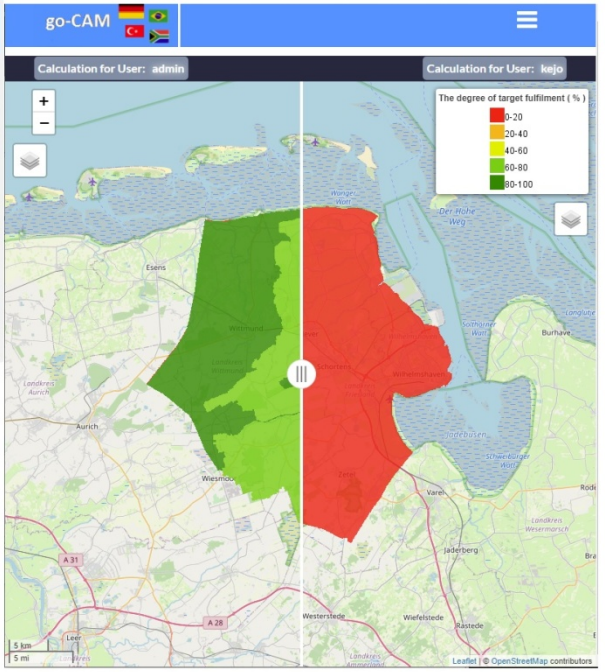


Figure 2: Example window for selecting scenarios, indicators and defining target functions in the CAM-tool (left) and GIS-view in the CAM dialogue platform in the swipe mode for comparing results of different target functions as defined by different stakeholders (right).

Catalog of CAM Water Indicators

6 CLEAN WATER AND SANITATION

Ensure availability and sustainable management of water and sanitation for all

CAM
COASTAL AQUIFER MANAGEMENT

… to evaluate the climate impacts on fresh water resources we need proper physical indicators

Table 1: Evaluation parameters and related indicators of the CAM as developed in the go-CAM project to address the SDG targets 6.2., 6.4. and 6.6.

Evaluation parameter	CAM-Indicator
Chloride concentration [mg/l]	Chloride concentration in aquifers of the geest and marsh landscape, degree of salination: d³f++ calculation
Groundwater recharge [mm/yr]	Trend of groundwater recharge differentiated in geest and marsh landscape: PANTA RHEI calculation
Groundwater head [m a.s.l.]	Trend of the groundwater table and head in the geest and marsh landscape: d³f++ calculation
Freshwater volume [Mio. m³]	Available fresh water volume, differentiated according to groundwater and dam systems: d³f++ and PANTA RHEI calculation
Drought Index [-]	Changing number of dry days based on a drought index
Water budget [mm/yr]	Positive or negative amount balance in the model area and groundwater abstraction area: PANTA RHEI and d³f++ calculation
Discharge [m³/s]	Increasing or decreasing discharge at the sluices and pumping stations at the coast: PANTA RHEI calculation
Nitrate concentration [mg/l]	Trend of Nitrate concentration in groundwater

SPONSORED BY THE Federal Ministry of Education and Research

Thank you!

SPONSORED BY THE
Federal Ministry of Education and Research

Project Partners

Leichtweiss Institute for Hydraulic Research and Water Resources, University of Braunschweig, Germany
Prof. Dr. Hans Matthias Schöniger
EMail: m.schoeniger@tu-bs.de

Repository Safety Research Department, Global Research for Safety, gGmbH (GRS), Braunschweig, Germany
Anke Schneider
Email: anke.schneider@grs.de

OOWV Oldenburg-East-Frisian Water Board, Brake, Germany
Egon Harms / Dr. Konstantin Scheihing
Email: harms@oowv.de

LIAG Leibniz Institute for Applied Geophysics, Hannover, Germany
Dr. Helga Wiederhold
Email: helga.wiederhold@liag-hannover.de

NLWKN Lower Saxony Water Management, Coastal Defense and Nature Conservation Agency, Aurich
Dieter de Vries
Email: dieter.devries@nlwkn-aur.niedersachsen.de

INSIGHT Geologische Softwaresysteme GmbH
Dr. Hans-Georg Sobisch
Email: insight@subsurfaceviewer.com

GISCON Geoinformatik GmbH
Michael Sander
Email: michael.sander@giscon.de

SPONSORED BY THE Federal Ministry of Education and Research

Associated Partners and External Experts

Wasserverbandstag e.V. Bremen, Niedersachsen und Sachsen-Anhalt *Godehard Hennies*
Buffalo City Municipality East London, South Africa *Darby Gounden*
Akdeniz University, Dep. of Environmental Engineering, Antalya, Turkey *Prof. Dr. Bülent Topkaya*
Yildiz Techn. Univ., Dep. of Civil Engineering, Istanbul, Turkey *Prof. Dr Ahmet Dogan*
General Directorate of Water and Wastewater of Antalya Municipality (ASAT), Turkey *Cem Cakmak*
Groundwater Management Advisory Team, (GW-MATE), World Bank Group, Washington, USA *Jennifer Sara*
University College London, Department of Earth Science, United Kingdom *Prof. Dr. Stephen Foster (2018)*
IWUD Ingenieure für Wasser, Umwelt und Datenverarbeitung GmbH *Dr. Andreas Koch*
ARSU
KuR