

20th AfWA International Congress and Exhibition 2020
Breaking new grounds to accelerate access to water and sanitation for all in Africa

Search Model For Deep Aquifers Along Passive Margins - Somalia

23rd – 24th February 2020, Kampala, Uganda

HELENE REE RUDEN/FRIDTJOV RUDEN



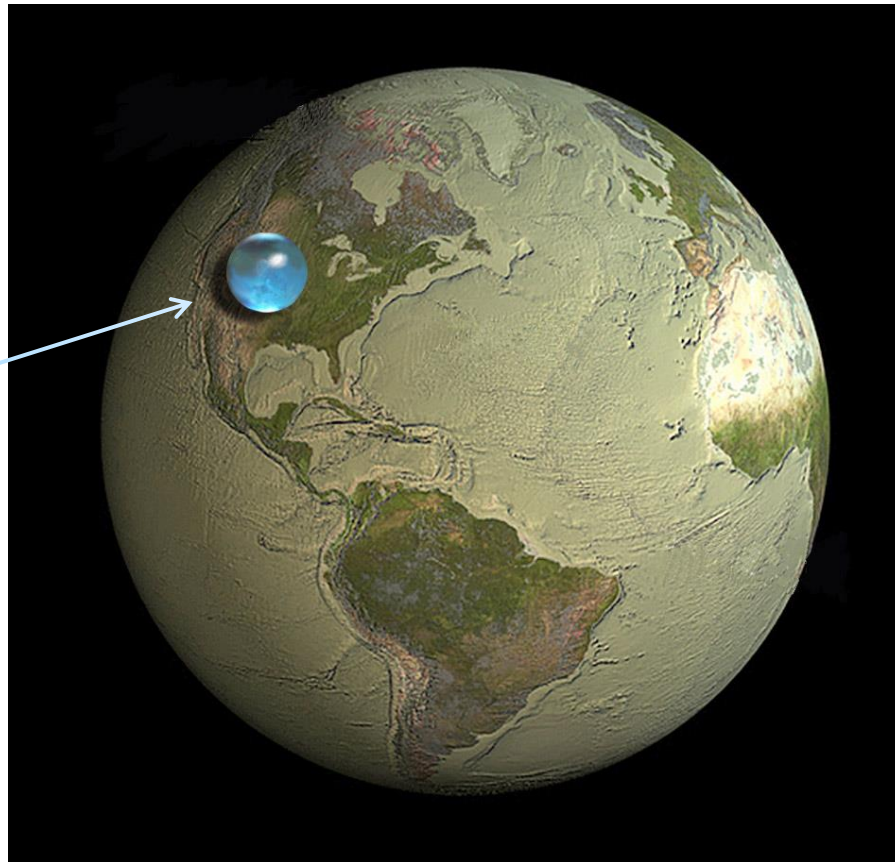
RUDEN AS GEO SOLUTIONS



-Innovative oil technology combined with applied hydrogeology can mitigate current and future water crisis around the world and help alleviate major water related problems.



GLOBAL WATER RESERVES (USGS)

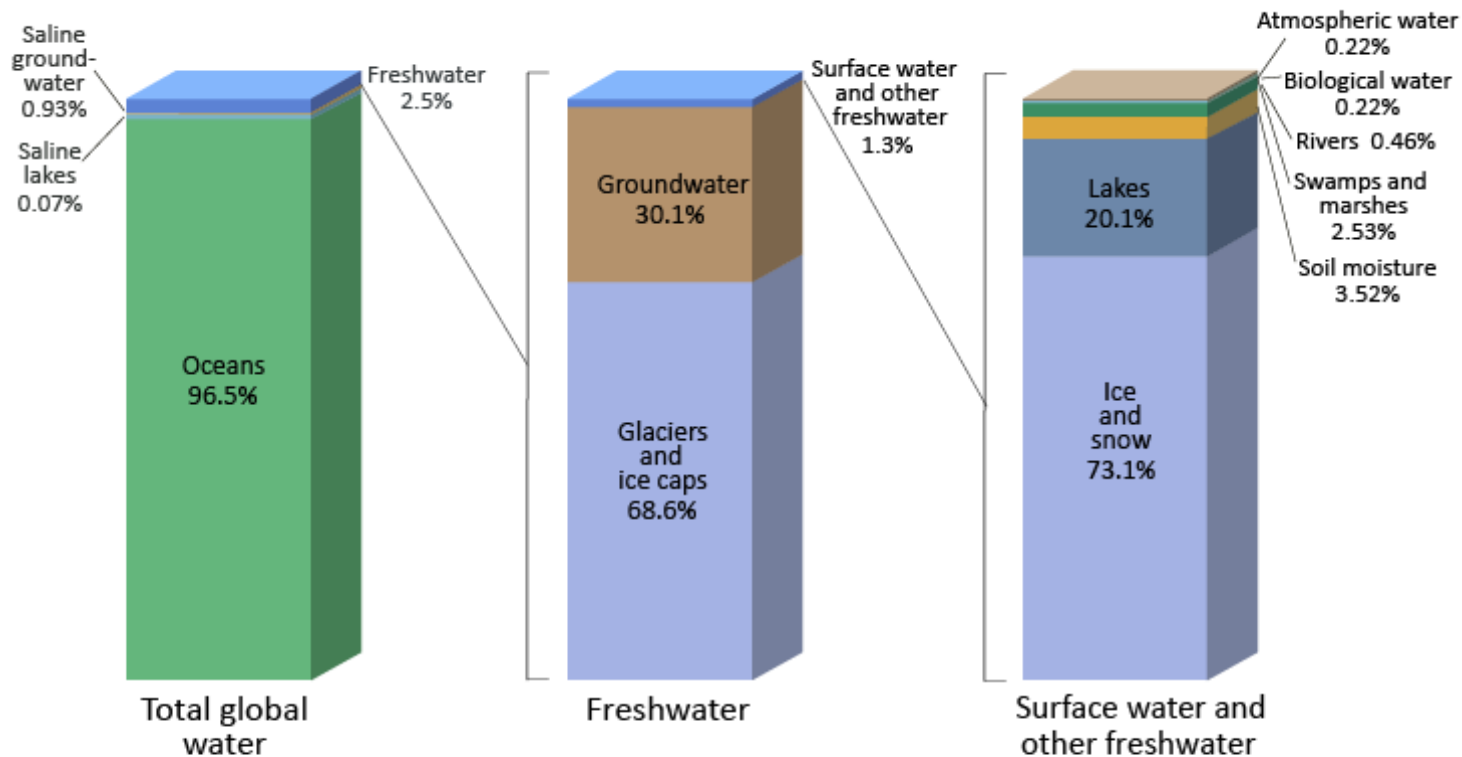


$D=1385\text{km}$

$\text{Volume}= 1\,390\,013\,860\text{ km}^3$

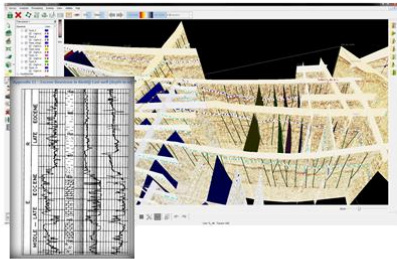
Taken from: Illustration by Jack Cook, Woods Hole Oceanographic Institution;
USGS. <https://water.usgs.gov/edu/gallery/global-water-volume.html>

DISTRIBUTION OF EARTH'S WATER

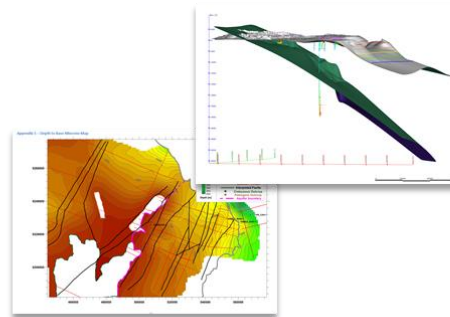


Source: Igor Shiklomanov's chapter "World fresh water resources" in Peter H. Gleick (editor), 1993, *Water in Crisis: A Guide to the World's Fresh Water Resources*.

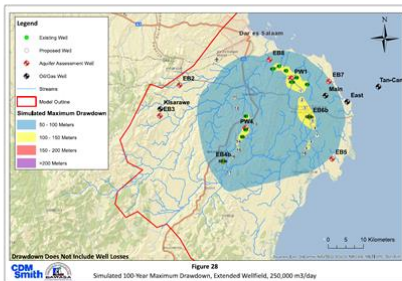
THE SEARCH MODEL FOR DEEP GROUNDWATER



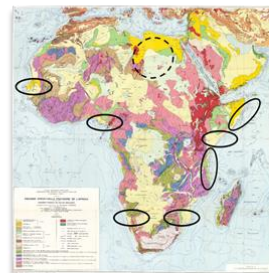
Based Upon Information
From Oil Sector



Using Oil Sector Technology



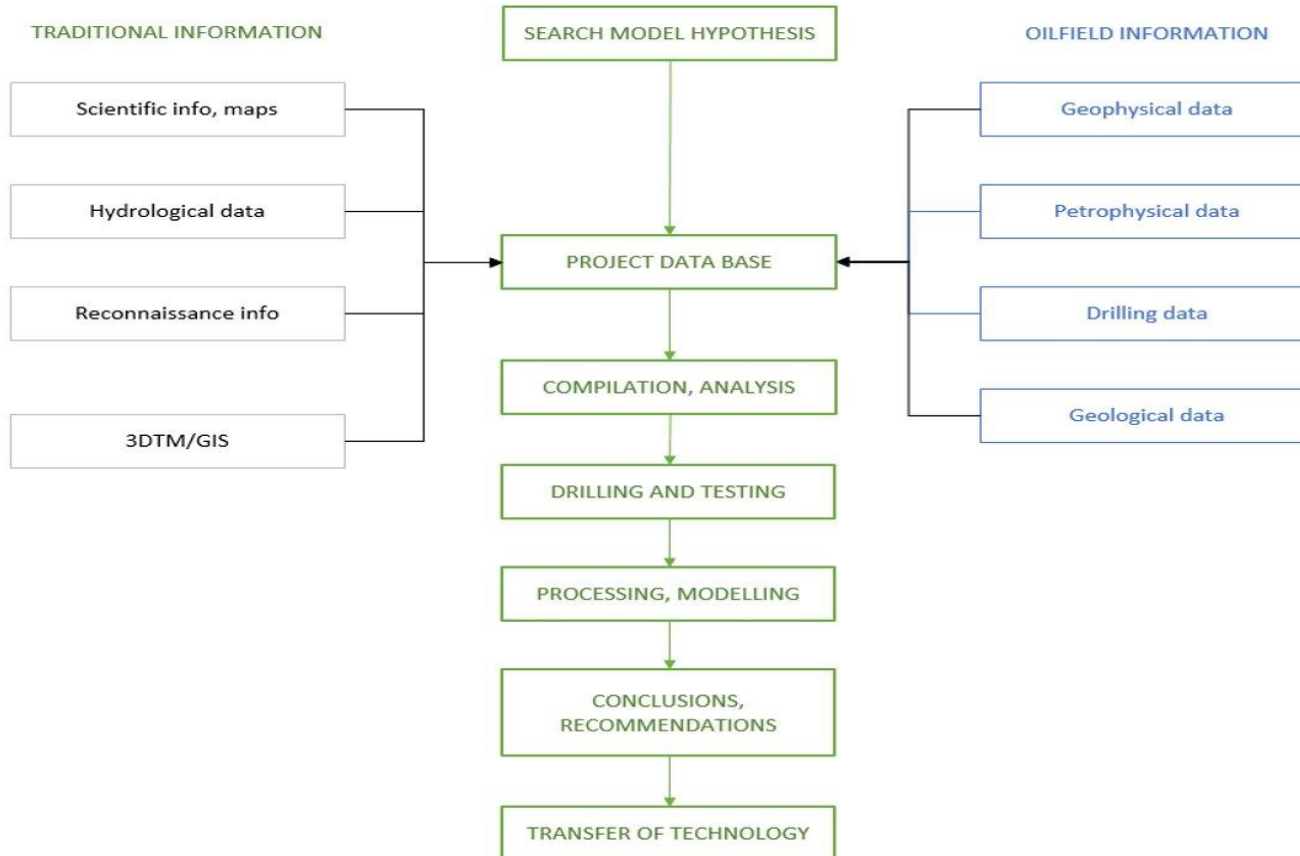
Blending With Traditional
Groundwater Technology



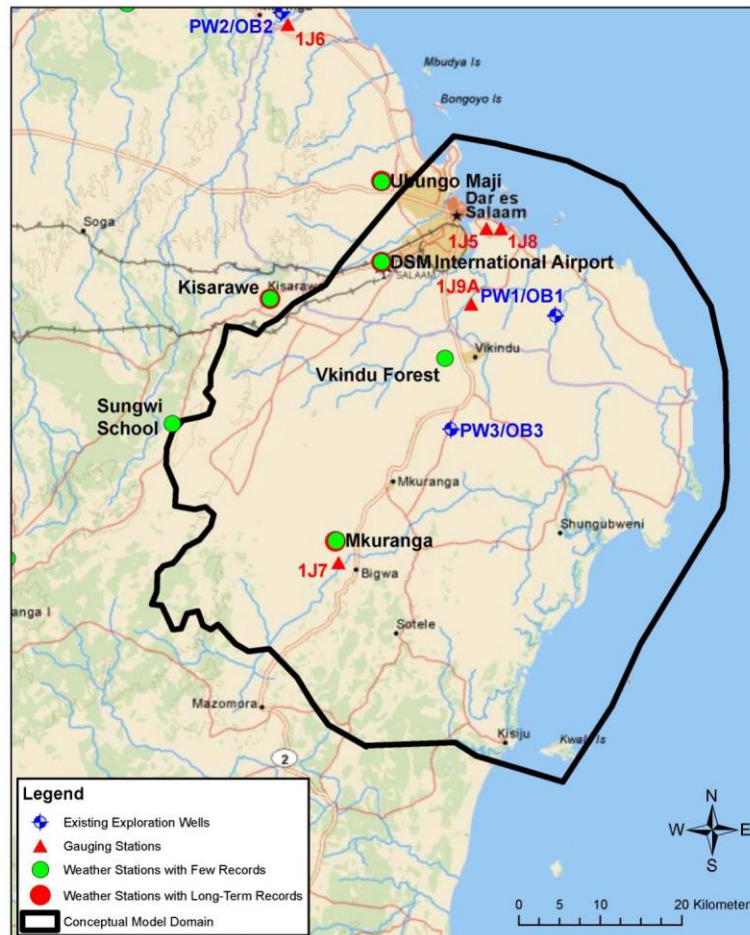
Applied Along Passive
Margins



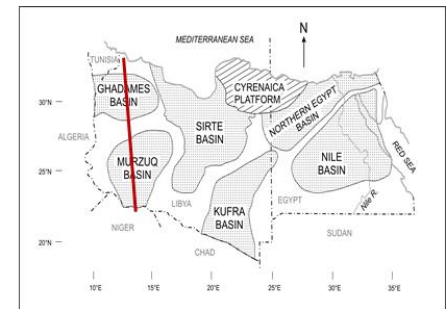
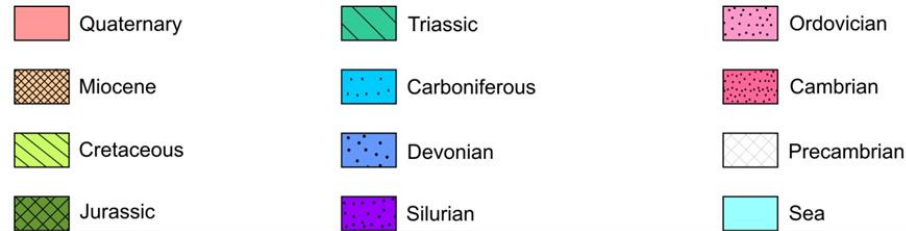
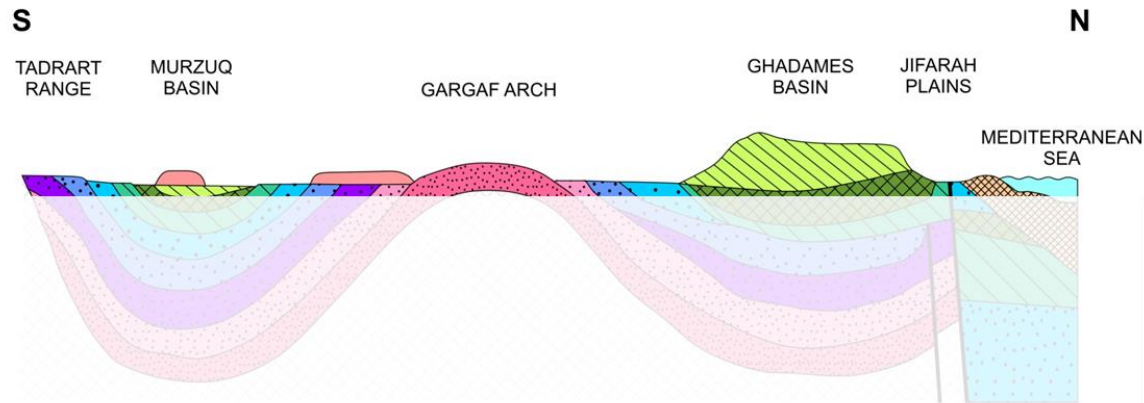
SEARCH MODEL FOR DEEP AQUIFERS ALONG PASSIVE MARGINS



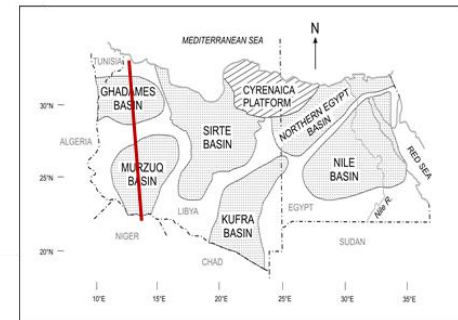
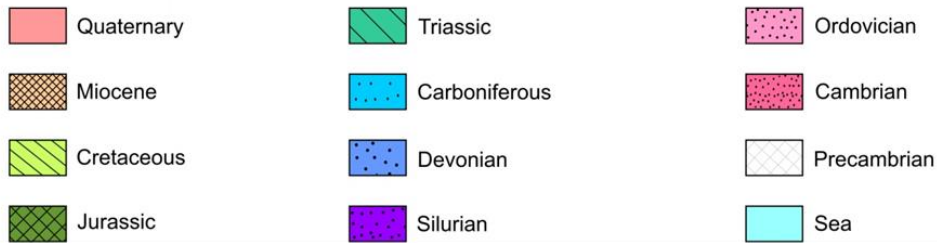
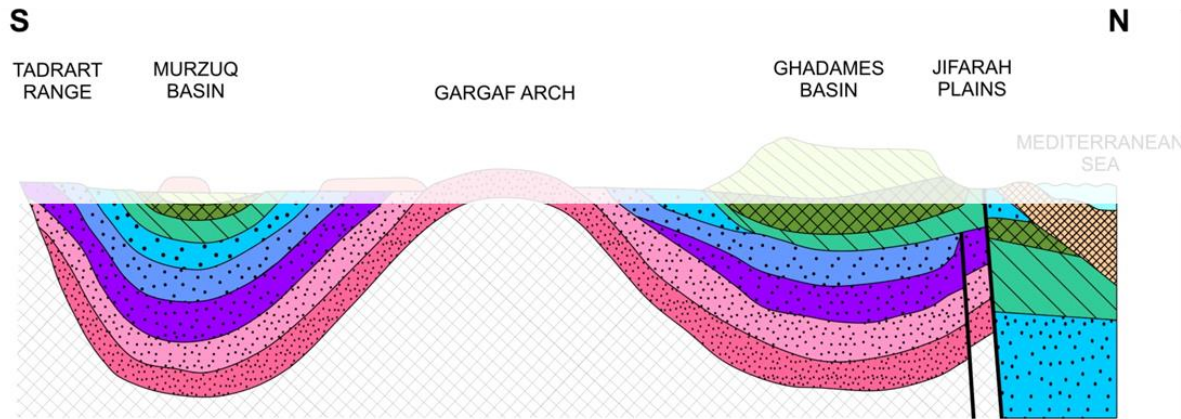
THE KIMBIJI AQUIFER - TANZANIA



HYDROGEOLOGICAL PERSPECTIVE



OIL FIELD PERSPECTIVE



KIMBIJI RESULTS



Sustainable Kimbiji Aquifer output 200-260.000 m³/day
Water capacity for a population of 1.200.000 pe!

The Kimbiji Aquifer concept was originally viewed with raised eyebrows by national and regional stakeholders. **Like so many other trend-breaking activities** (including offshore oil and gas activities), the Search Model is built on sound scientific and technical analyses. Nothing similar had been attempted in Tanzania or East Africa before. However, results of the KAA project has validated the concept, **and initial scepticism has been replaced by expectation**. Importantly, the deep aquifer concept and Kimbiji experience **can be exported and applied** to other passive margin regions of Africa, **including the African Horn/Somalia**.

SOMALIA



Somalia has a **total area of 637,657 km²** and an estimated **population of 14.7 million**. It is considered an arid and **semi-arid country** and its population faces a **critical water situation**.

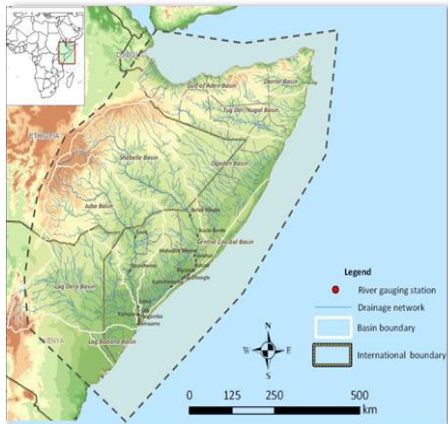


Approximately, **95 % of the Somali population rely on shallow alluvial groundwater** for human consumption and for irrigation; and **less than 45% have access to safe drinking water**. However, the alluvial aquifers are under stress and cannot meet growing demands.

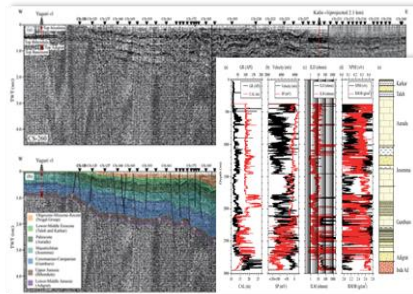
This project focuses solely upon deep aquifers, of various categories.

Shallow aquifers will not be addressed by this project.

COMPREHENSIVE ASSESSMENT OF DEEP GROUNDWATER RESOURCES IN SOMALIA

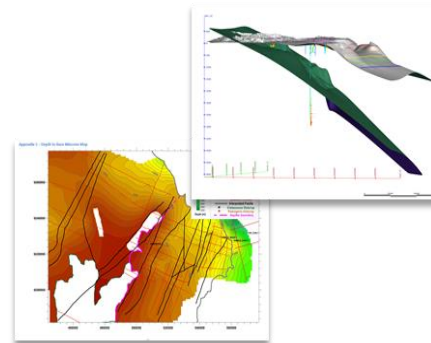


Area of Study

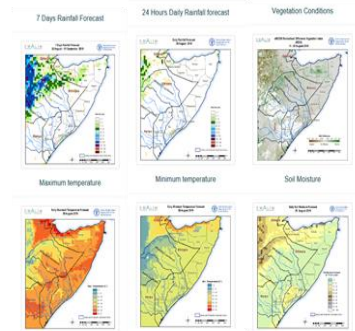


Example of onshore seismic lines in Somalia. Taken from "Petroleum Geology of the Nogal Basin and Surrounding Area, Northern Somalia, Part 2: Hydrocarbon Potential" M. Y. Ali and J. H. Lee. July 2019

Based Upon Information From Oil Sector



Using Oil Sector Technology



SWALIM Somalia Water and Land Information Management

Blending With Traditional Groundwater Technology

COMPREHENSIVE ASSESSMENT OF DEEP GROUNDWATER RESOURCES IN SOMALIA



Project leader/contract holder



Extended project team

UiO : Universitetet i Oslo



Funding





20th AfWA CONGRESS

— YOU ARE WELCOME —