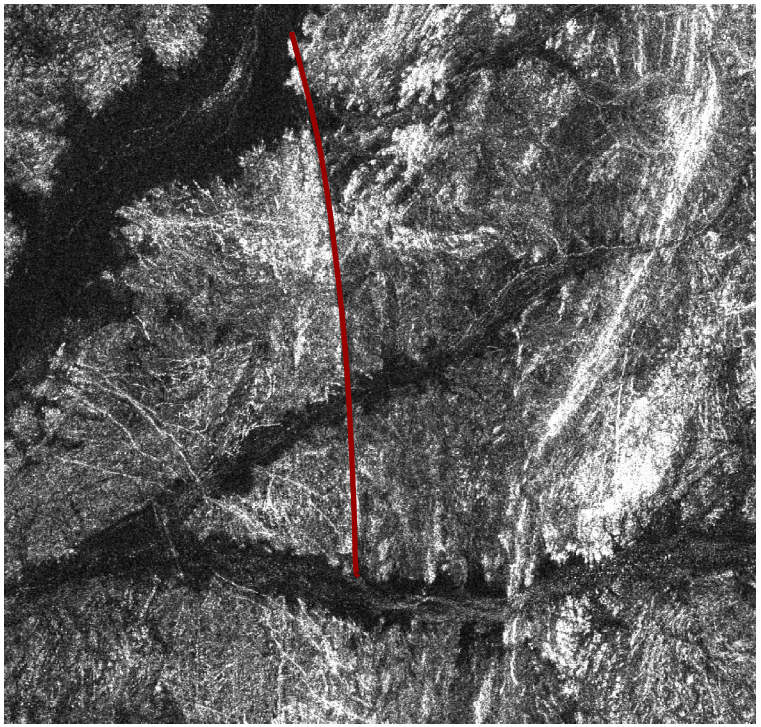
Groundwater Exploration in Support of UN Field Operations

MINUSMA Case Study

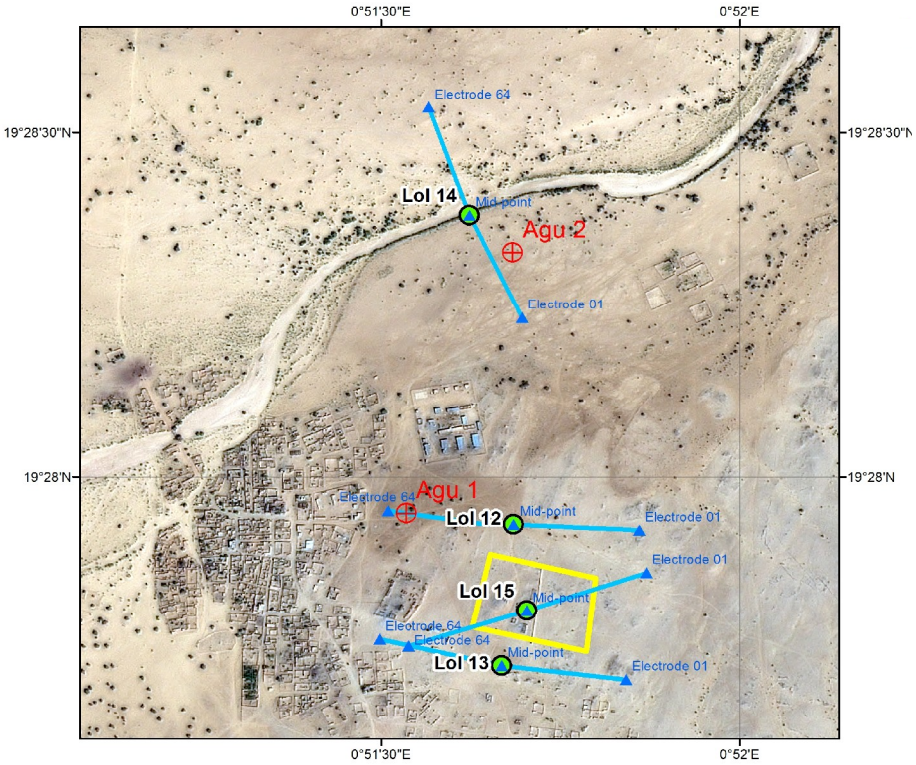
Groundwater: A Vital Resource for Living

- **"The lack of plentiful and clean water for the people will have grave geopolitical consequences." (UNESCO, 2008).**
- **"By 2025, 1,800 million people will be living in countries or regions with absolute water scarcity" (FAO, 2007)**
- **Satellite imagery and telecommunication mapping systems increase the ability to discover new water reserves. (OCHA, 2010)**

Technical Approach: Desk Study



- Extraction of geological features from satellite imagery



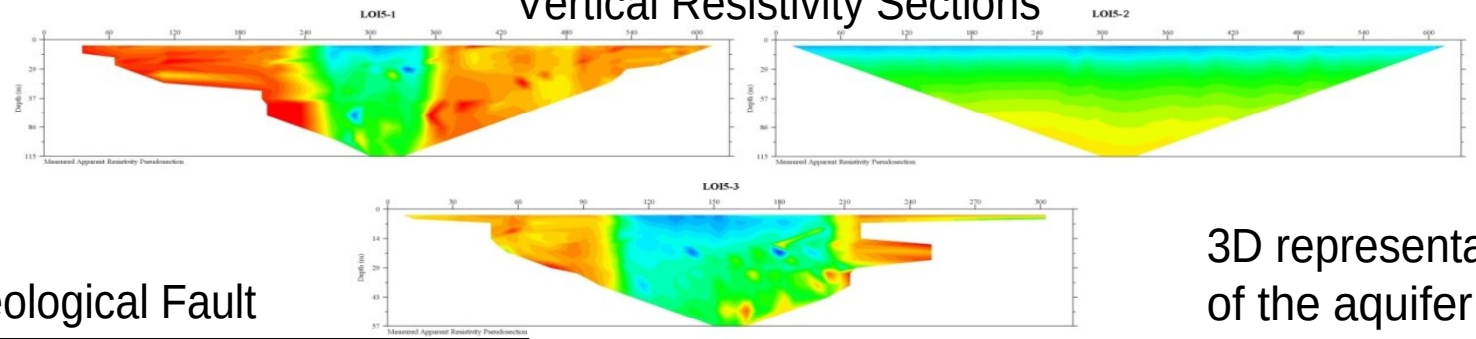
- Initial selection of suitable locations for drilling

Technical Approach: Fieldwork

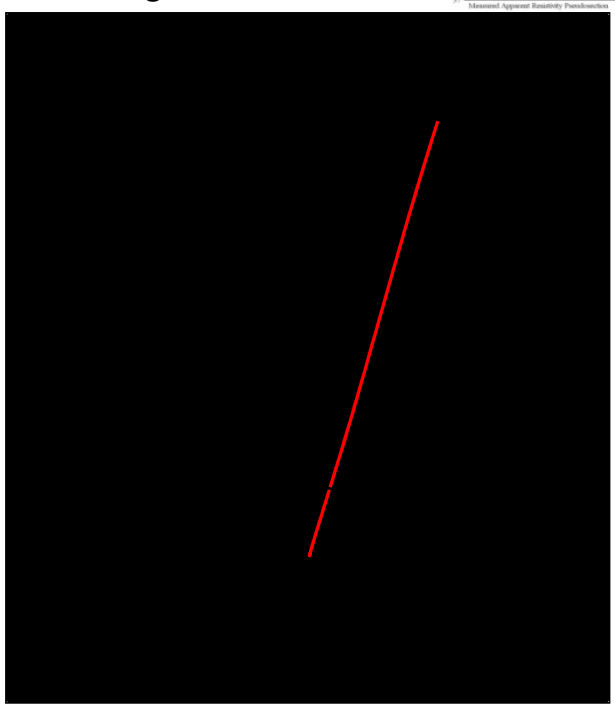
- AGI Supersting Georesitivimeter
- 630m cable alignments to reach a max depth of 120m
- Imaging of the subsurface through distribution of electrical resistivity

Technical Approach: Analysis of Data

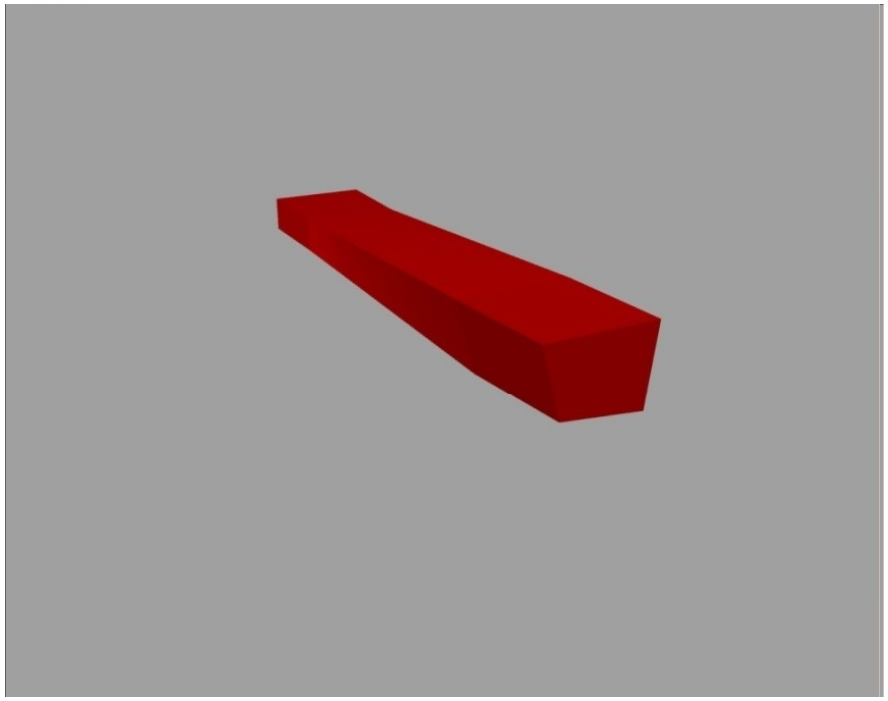
Vertical Resistivity Sections



Geological Fault

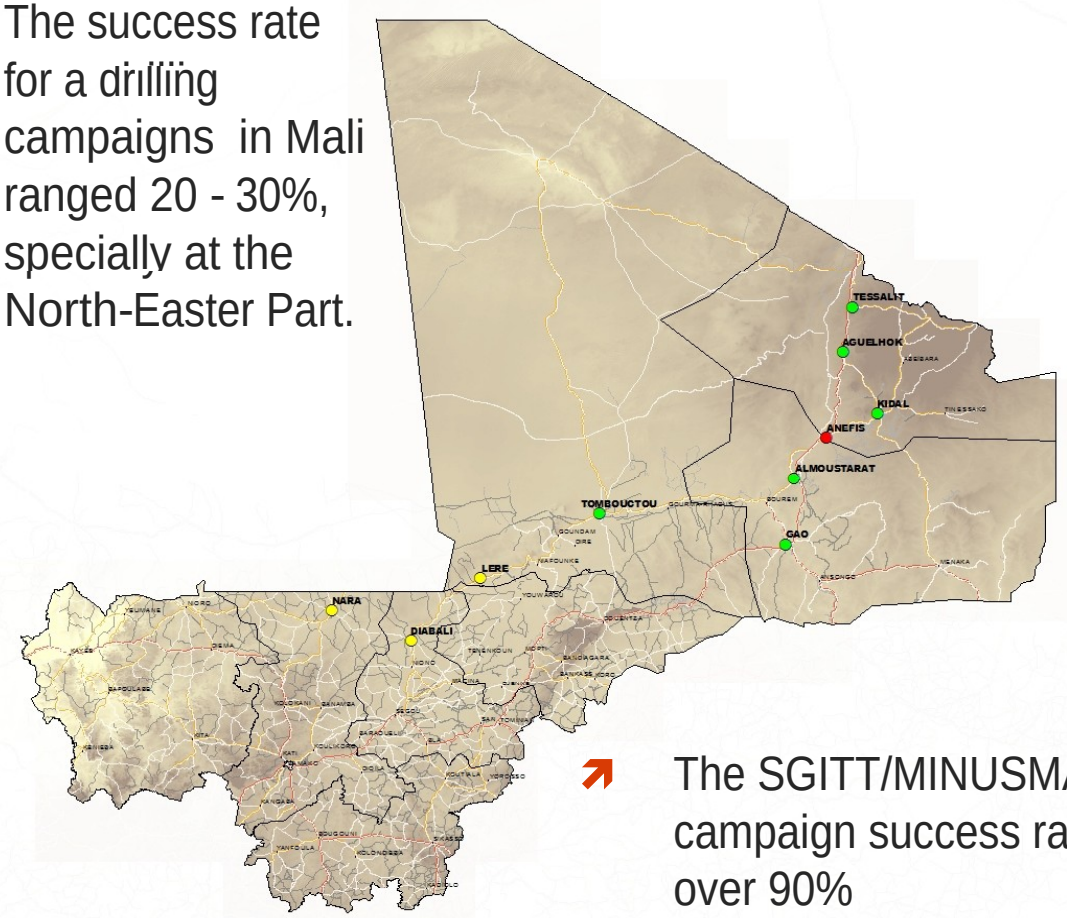


3D representation of the aquifer



Groundwater Exploration: Drilling in MINUSMA

- The success rate for a drilling campaigns in Mali ranged 20 - 30%, specially at the North-Easter Part.



- The SGITT/MINUSMA campaign success rate is over 90%

Legend

Drilling site

- Active (Wet Boreholes)
- Active (Dry Boreholes)
- Future (Awaiting Force HQ Decision)

Roads

- Primary road
- Secondary road
- Primary track
- Secondary track
- Trail

Groundwater Exploration: Drilling in MINUSMA

The borehole with the highest yield in the history of Kidal area

Summary of Project's Results

Site Name	Number of Boreholes	Identification of Drilling Points	Status of Drilling	Rate of Success
Tombouctou	4	Completed	Completed	100%
Gao	4	Completed	Completed	100%
Kidal	4	Completed	Completed	100%
Almoustarat	2	Completed	Completed	100%
Aguelhoc	2	Completed	Completed	100%
Tessalit	3	Completed	Completed	100%
Anefis	2	Completed	Completed	0%
Lere	1	Completed	On Hold	No data yet
Diabali	1	Completed	No Drilling	N/A
Nara	2	Completed	No Drilling	N/A

Conclusions

- Groundwater is crucial to UN field operations and should be taken into the highest account in planning and deployment
- SGITT GIS' success stories proved the utility of modern geospatial technologies for groundwater exploration and management services
- Demand for this service is continuously increasing as evidenced by the several requests from Field Missions and inquiries from UN Agencies and NGOs.
- SGITT GIS envision the extension of this service to other UN Agencies, Funds and Programmes in the near future

Questions?