

# TOWARDS A SUSTAINABLE MANAGEMENT OF THE GROUNDWATER RESOURCES OF THE ALGERIAN SAHARA IN THE REGION OF ADRAR IN A CONTEXT OF INCREASING AGRICULTURAL PRESSURES

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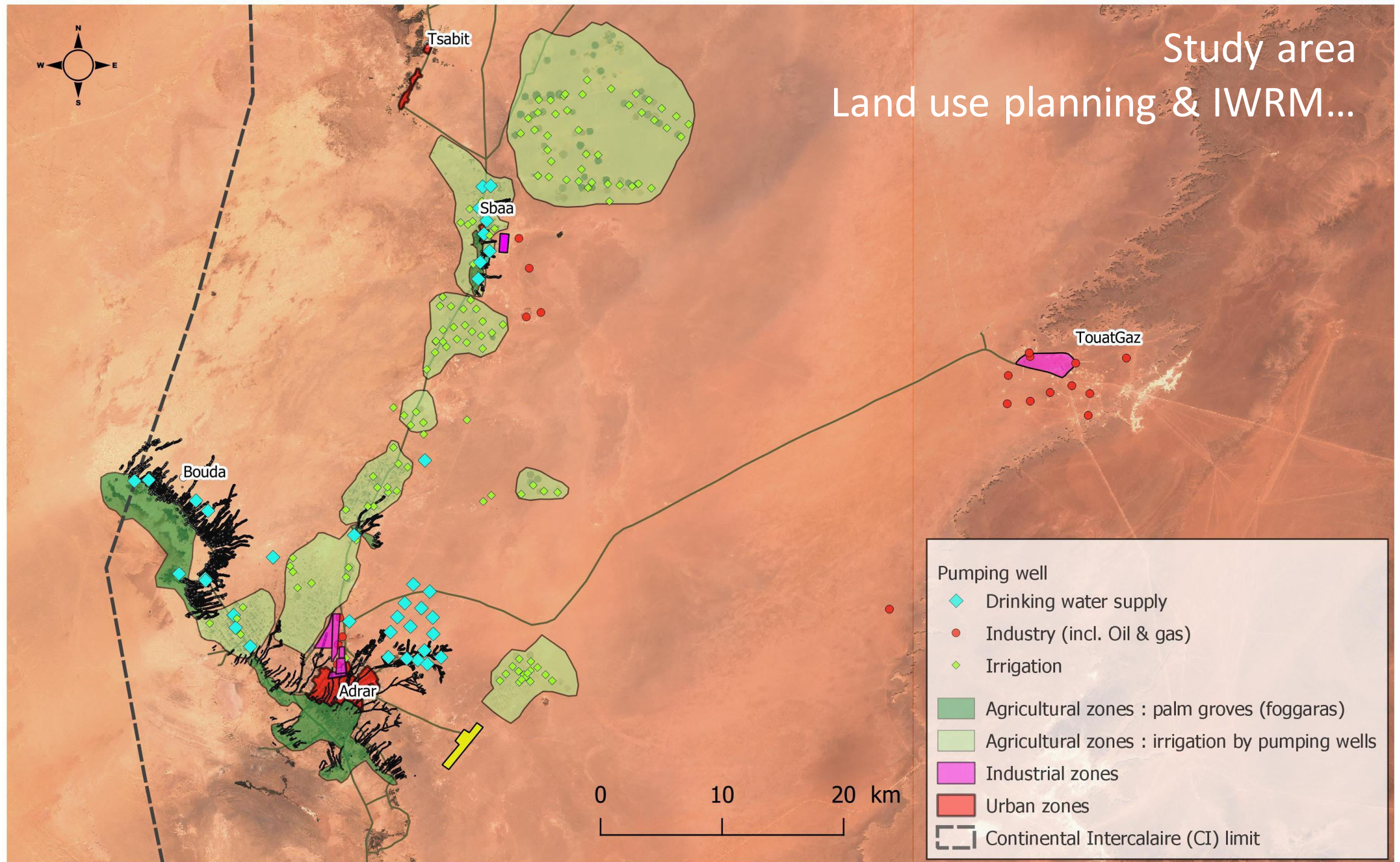
*Study performed within the framework of the twinning project between Algeria (AGIRE) and Belgium (SPW/SWDE/SPGE) "Governance and integrated water resources management in Algeria" (2017-2019), funded by the European Union.*



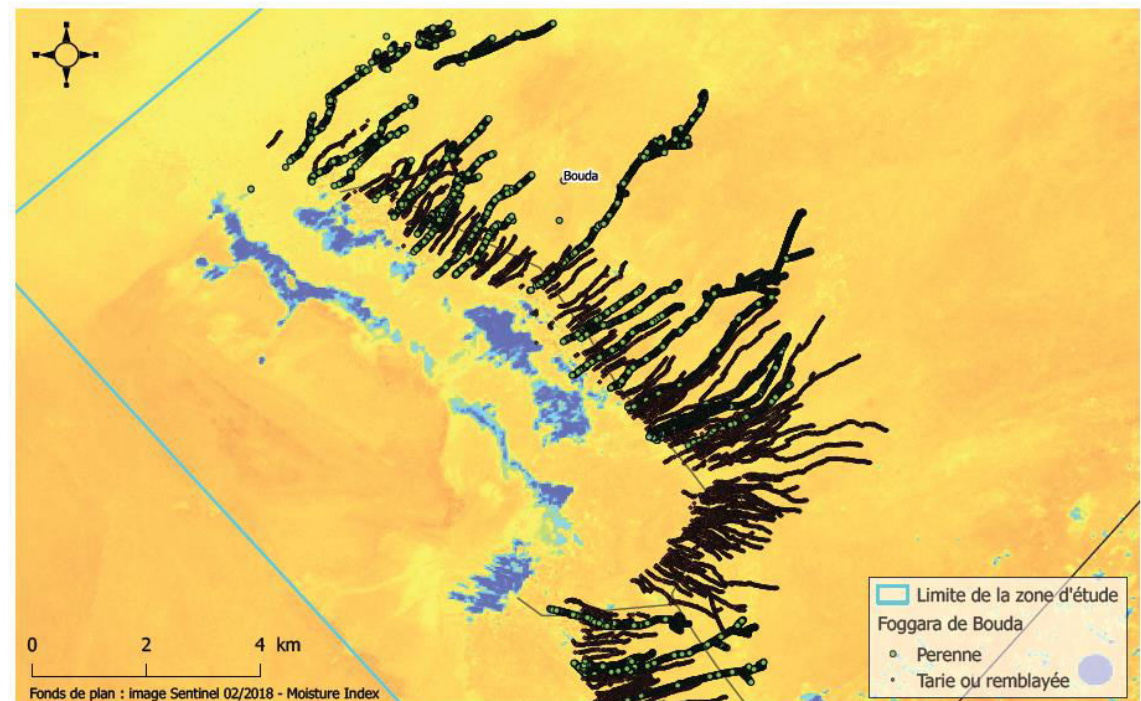
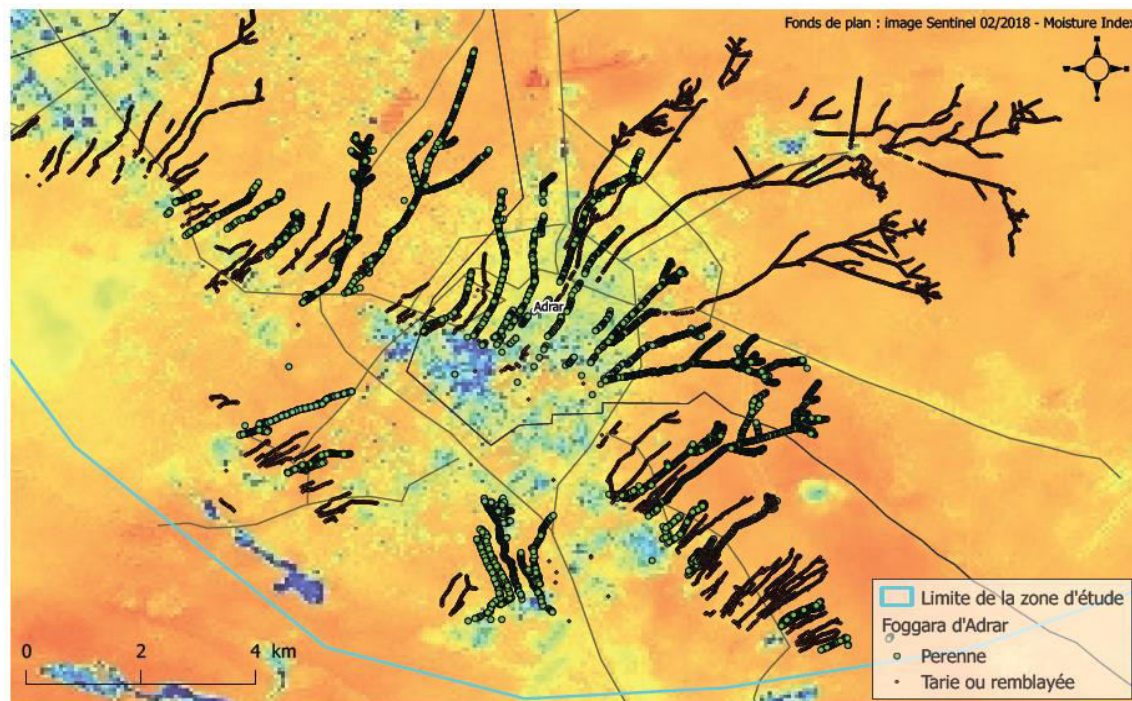
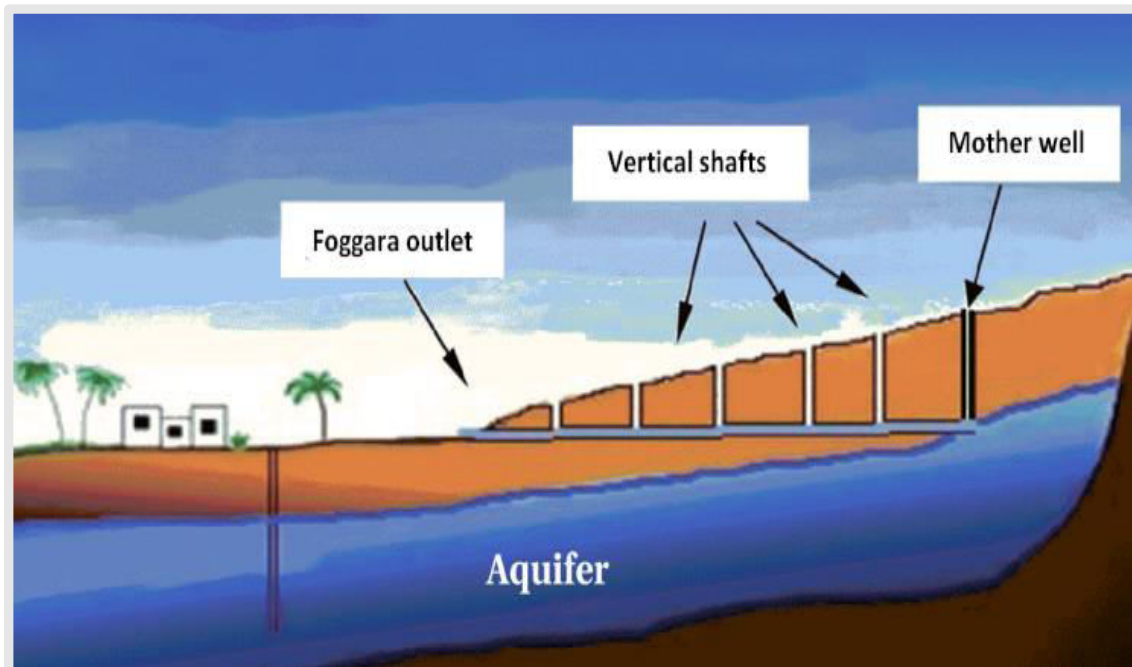


# Study area

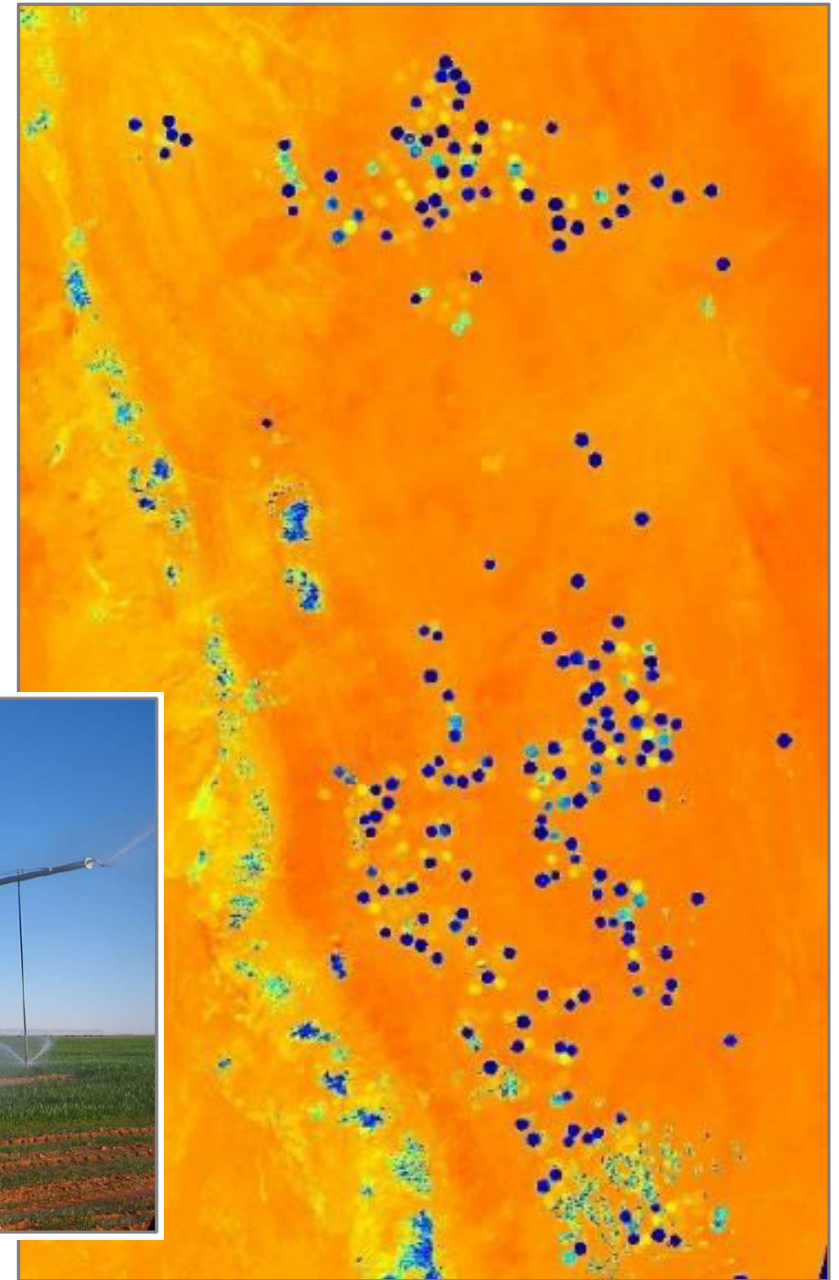
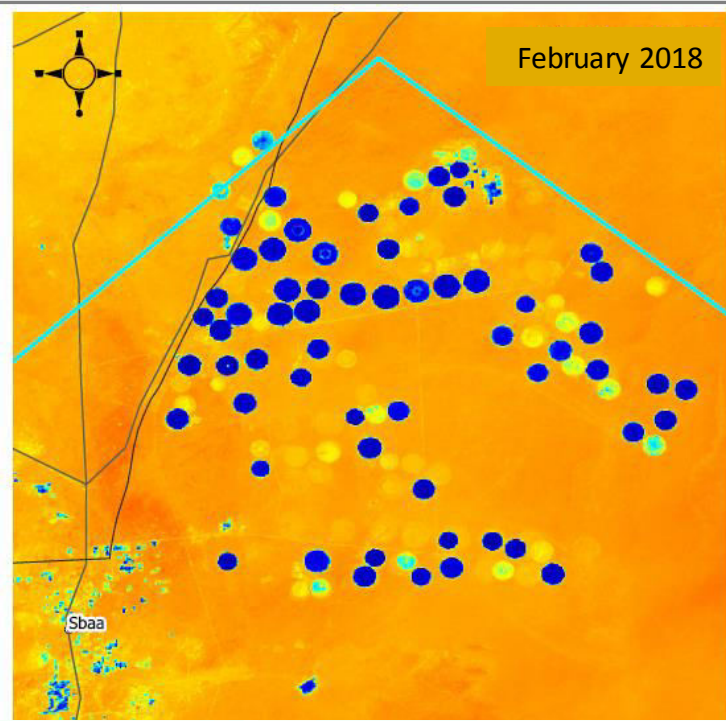
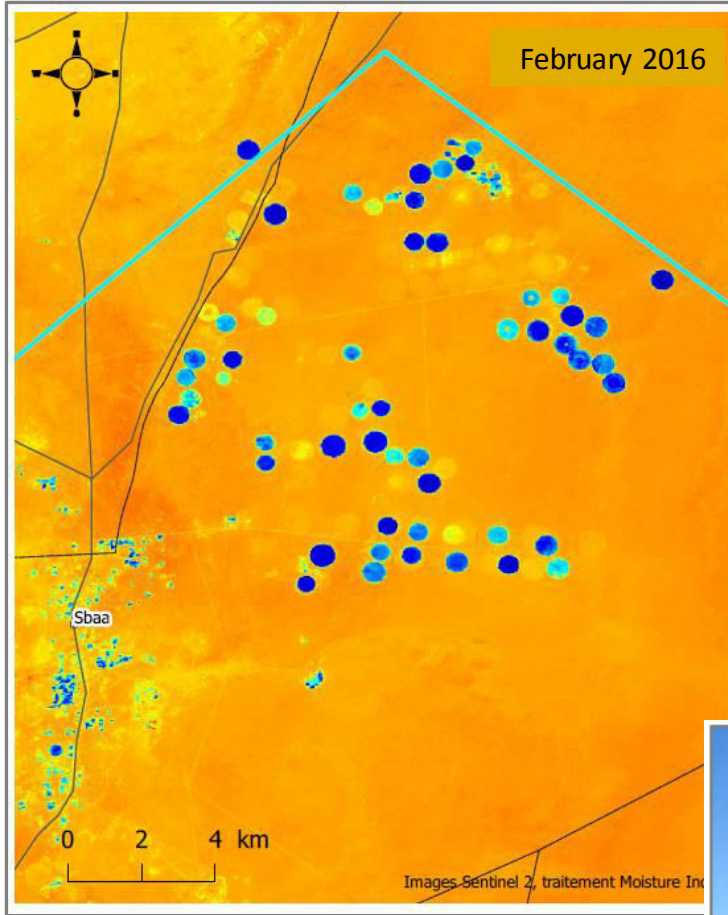
## Land use planning & IWRM...







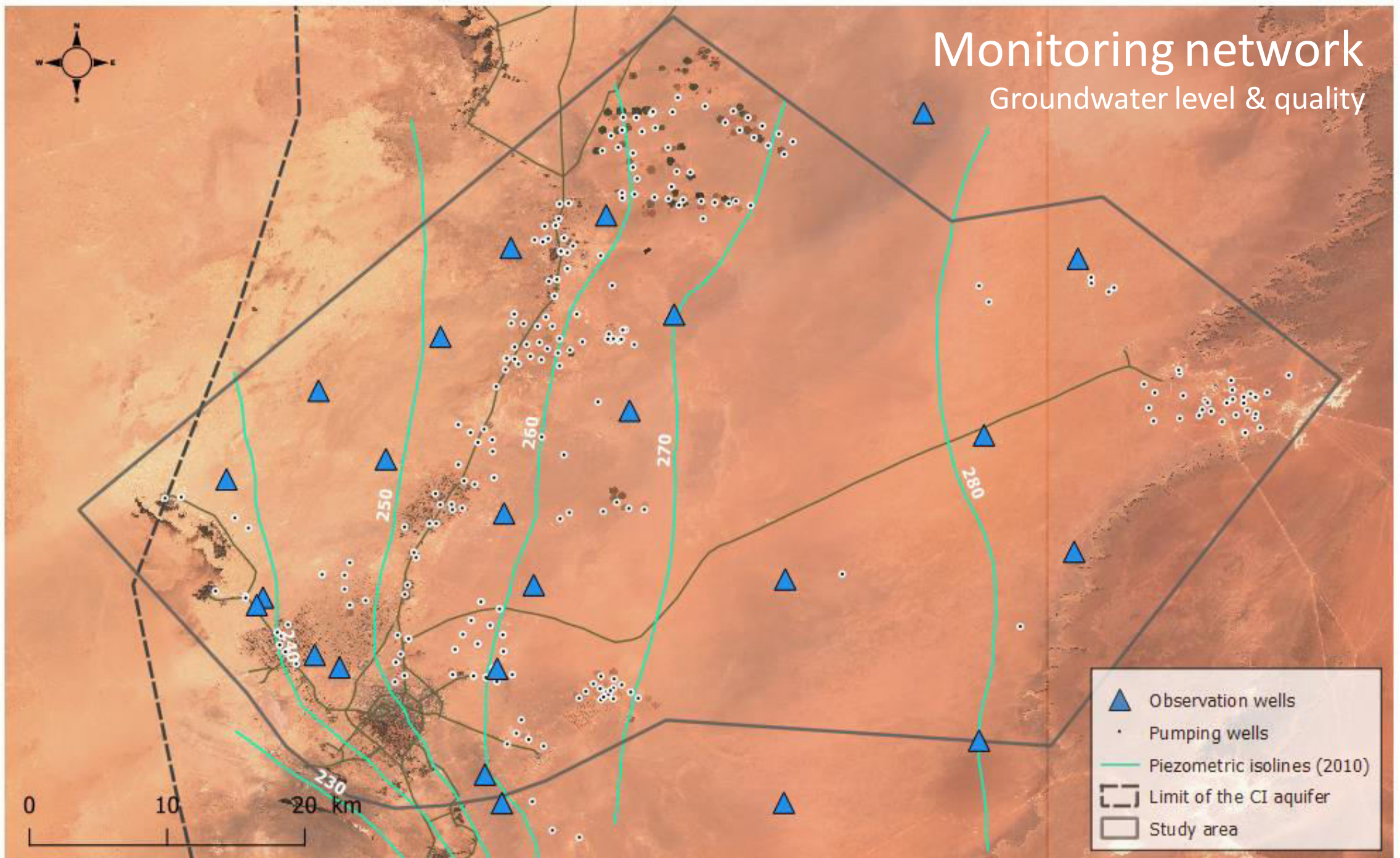


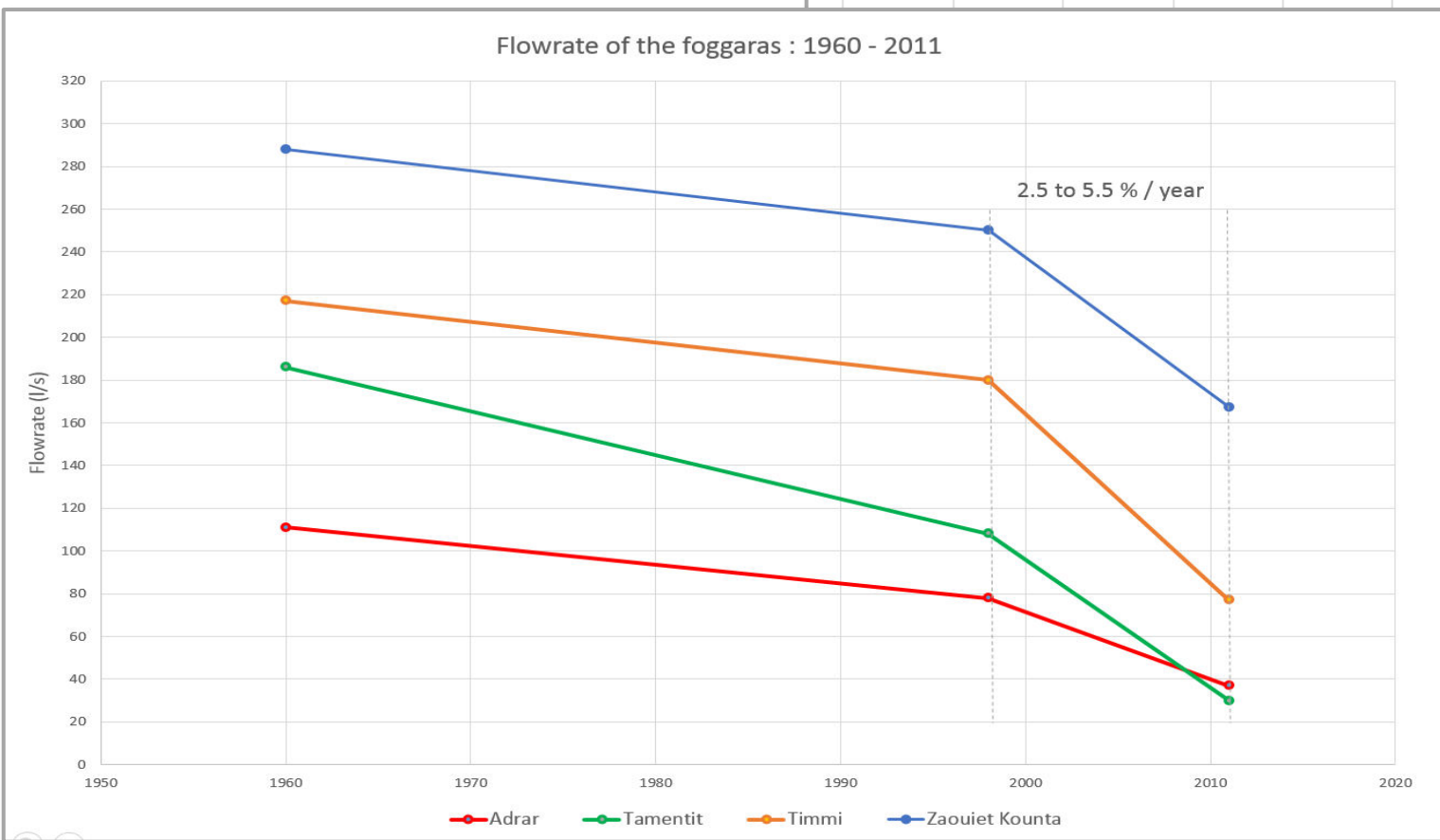
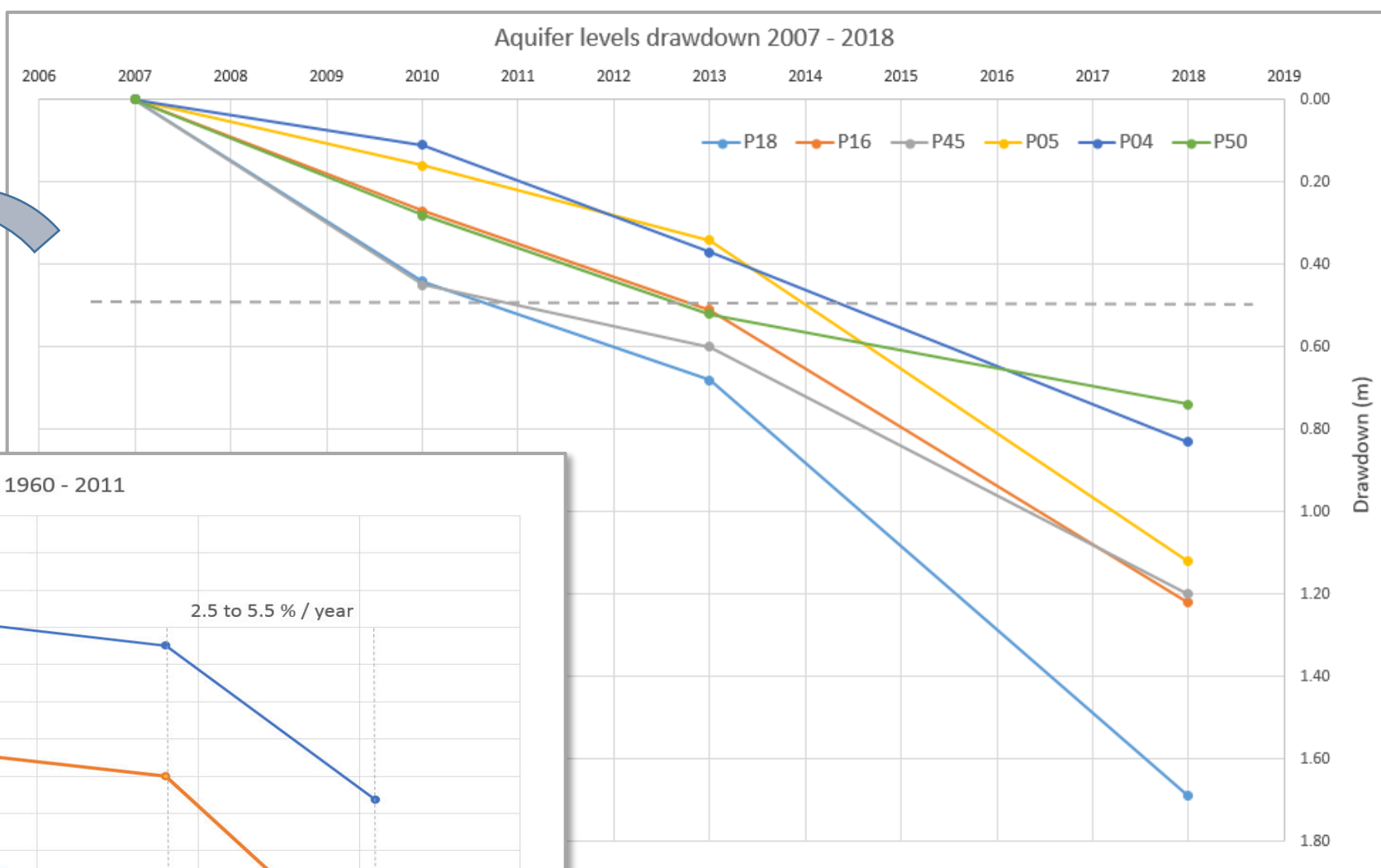
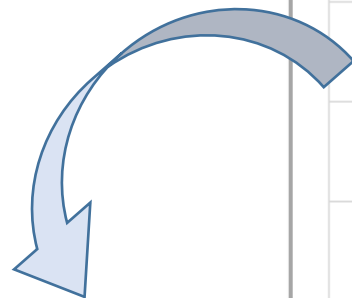




# Monitoring network

Groundwater level & quality

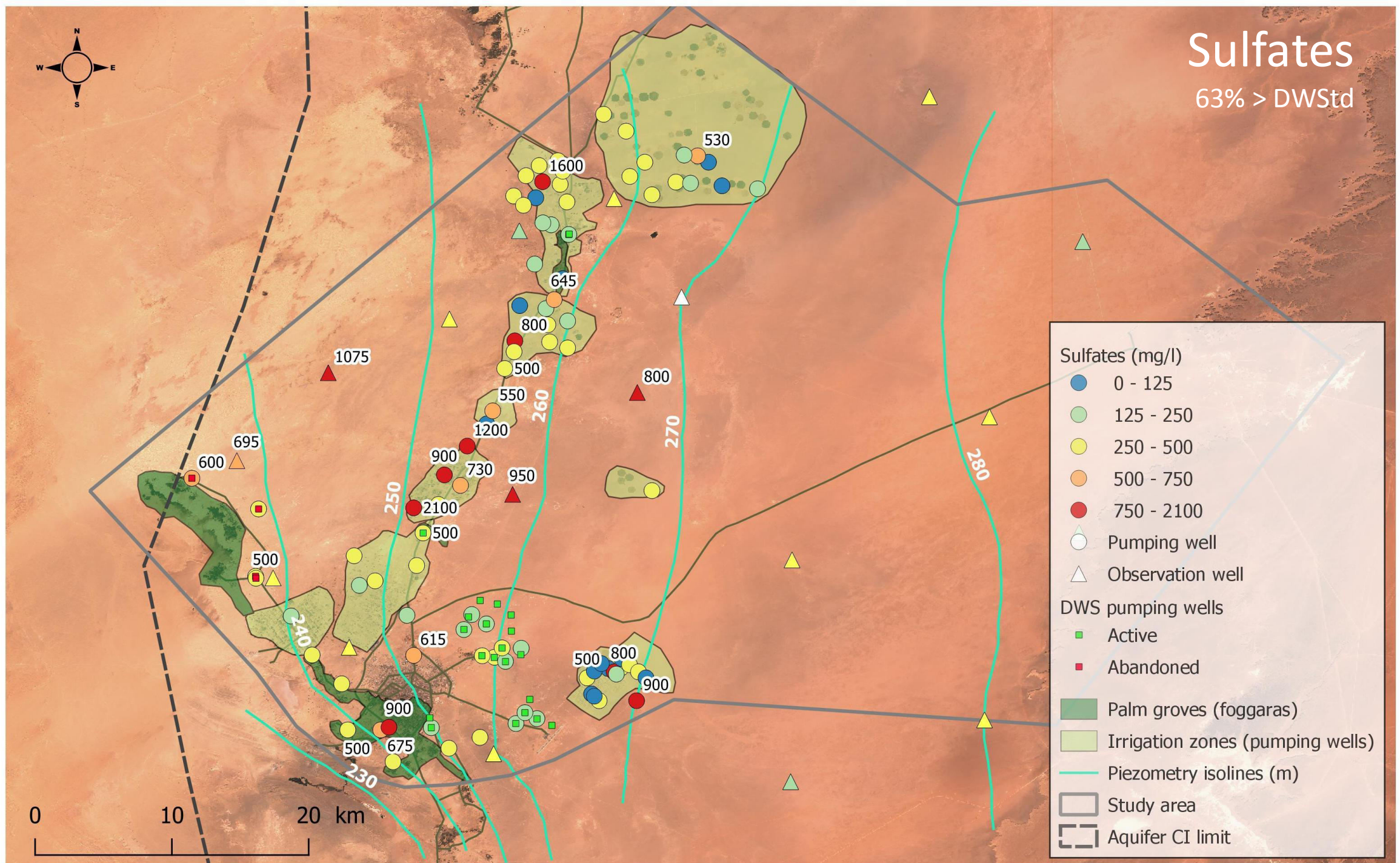






# Sulfates

63% > DWStd

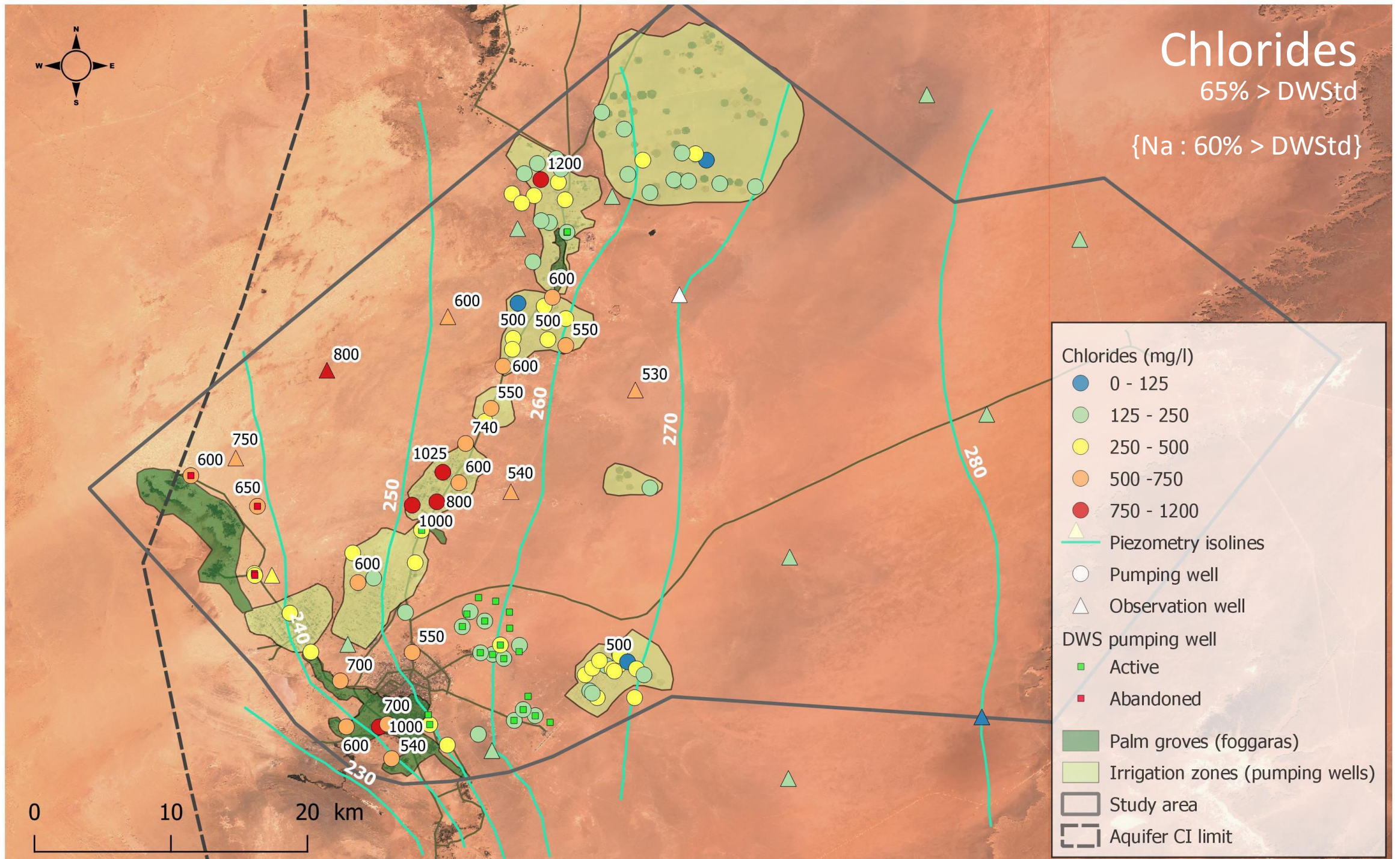




# Chlorides

65% > DWStd

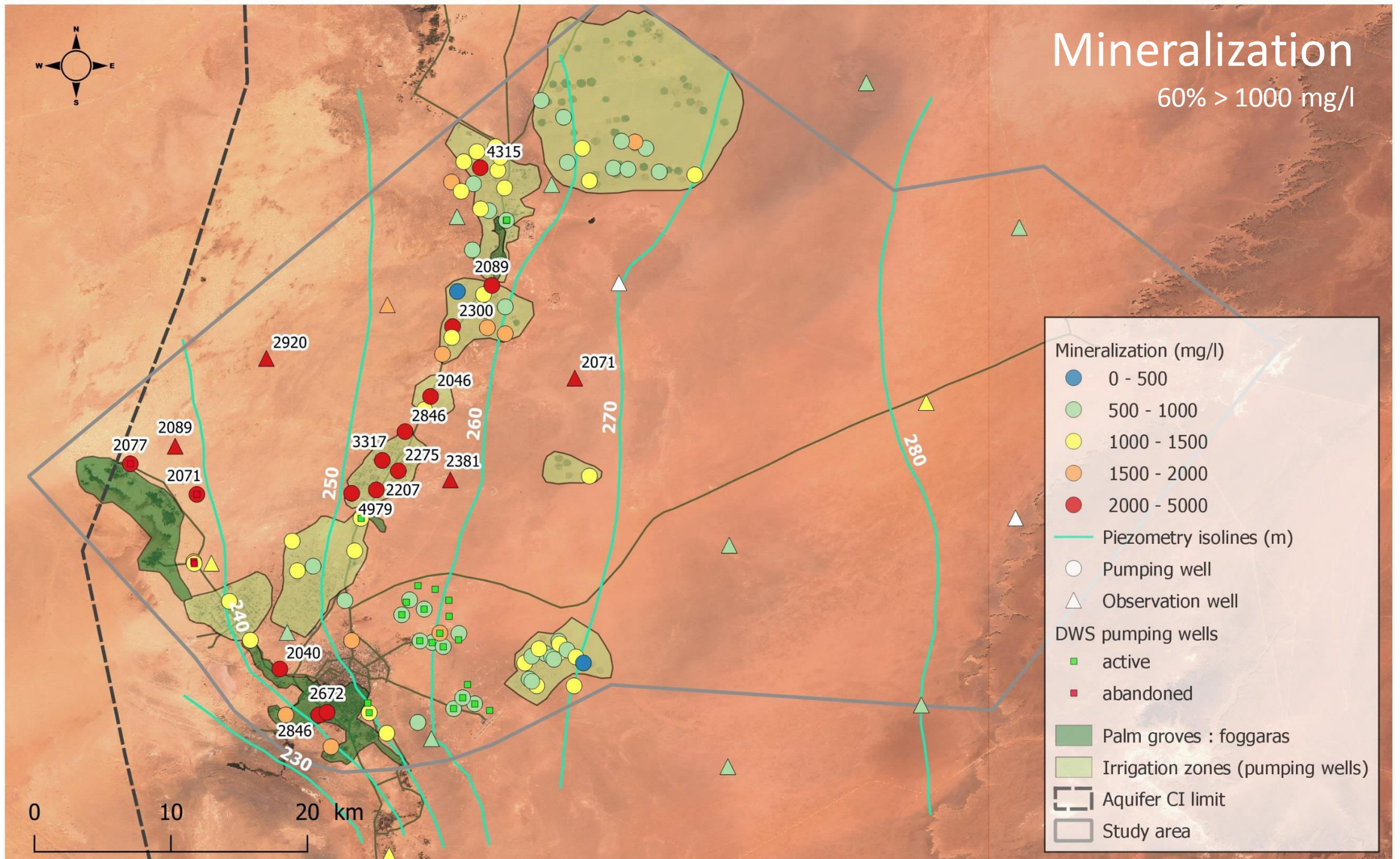
{Na : 60% > DWStd}





# Mineralization

60% > 1000 mg/l

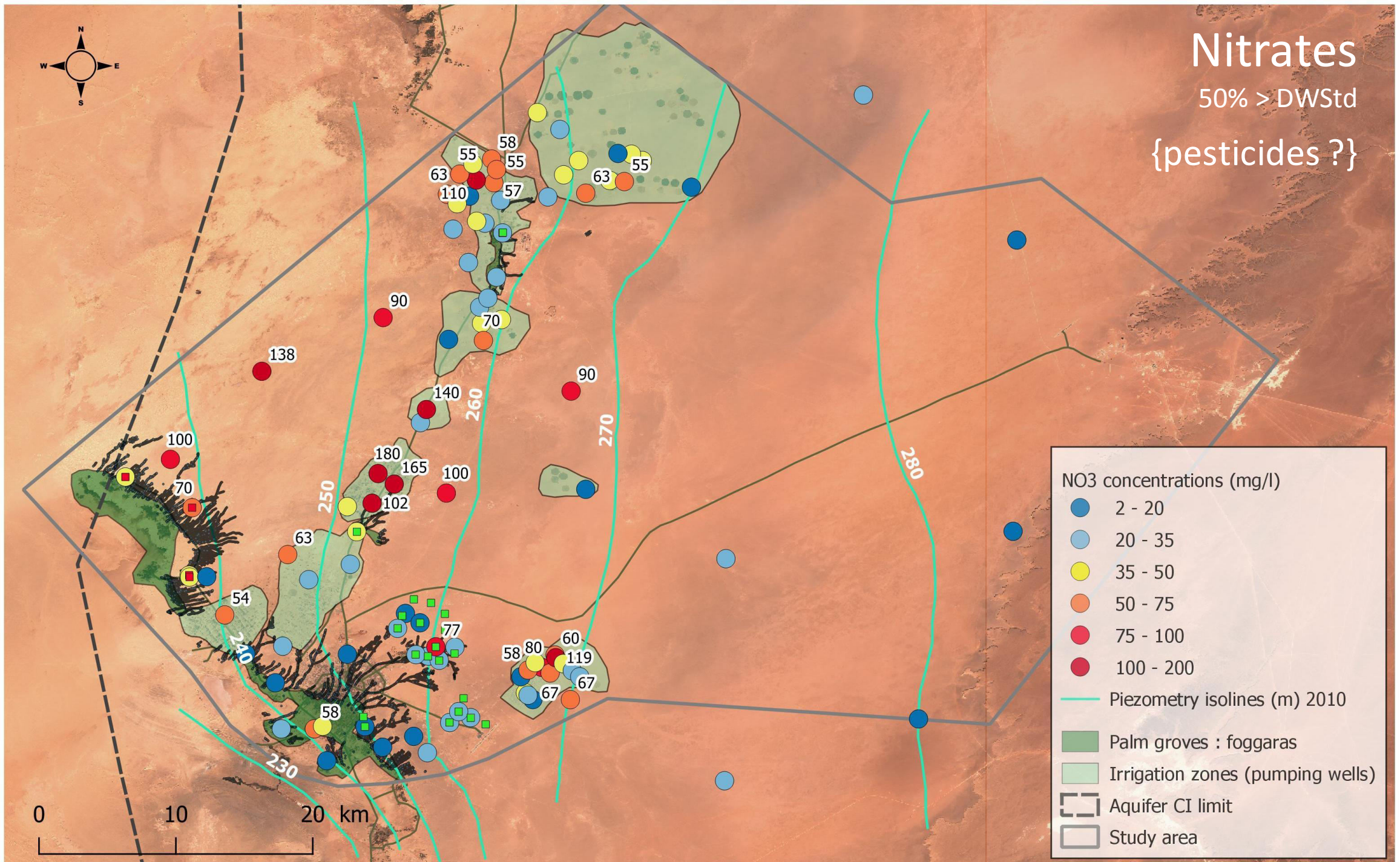




# Nitrates

50% > DWStd

{pesticides ?}





## From a shared observation...

- ⊖ Negative effects of modern irrigated agriculture on the **quantitative state of the aquifer**, leading to the decline of traditional oasis agriculture
- ⊖ Deterioration in the **quality of the aquifer** resulting from current agricultural practices, leading to significant exceedances of drinking water standards
- ⊖ Weaknesses in current water resources **monitoring & management**
- ⊕ Willingness of the inhabitants of the Sahara to preserve their **cultural and environmental heritage**



## ... to a collective and voluntary response

First « **Aquifer Agreement** » in Algeria, as an **innovative IWRM tool** :

Improve the sustainable management of the only water resource available in favour of the preservation of the Saharan heritage and environment, in line with the necessary socio-economical development of the region.

### → **Collective Action Plan** :

- 1 Knowledge improvement : agricultural practices, diagnostic of the impacts of agriculture on the aquifer, aquifer vulnerability, etc.
- 2 Monitoring of the water resources (quantity / quality), water uses (abstraction) and land use (irrigated zones)
- 3 Optimization of the agricultural practices
- 4 Land use planning
- 5 Communication and awareness raising





**Thanks for your kind attention**

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