

# Selection of suitable location of the Pump intake for Al Bagair Thermal Power Plant

## Introduction :

The Sudanese Thermal Power Generating Co. (STPG) is planning to build a thermal power plant with an initial capacity of 750 Mega Watts, at Al Bagair area 42 km south of Khartoum. The water intake site of the proposed plant is located on the left bank of the Blue Nile River, South of Al-Bagair vilage.

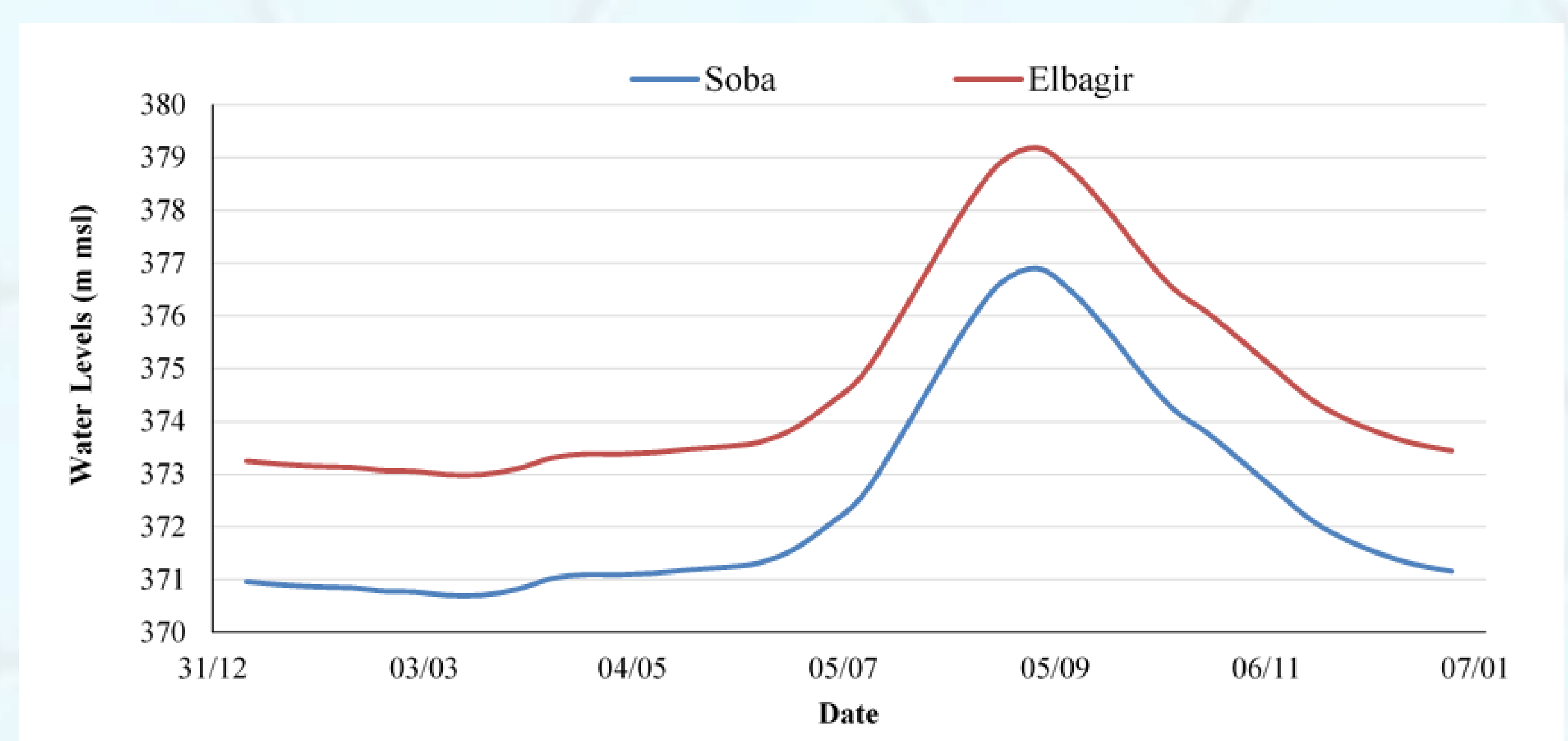


## Objective :

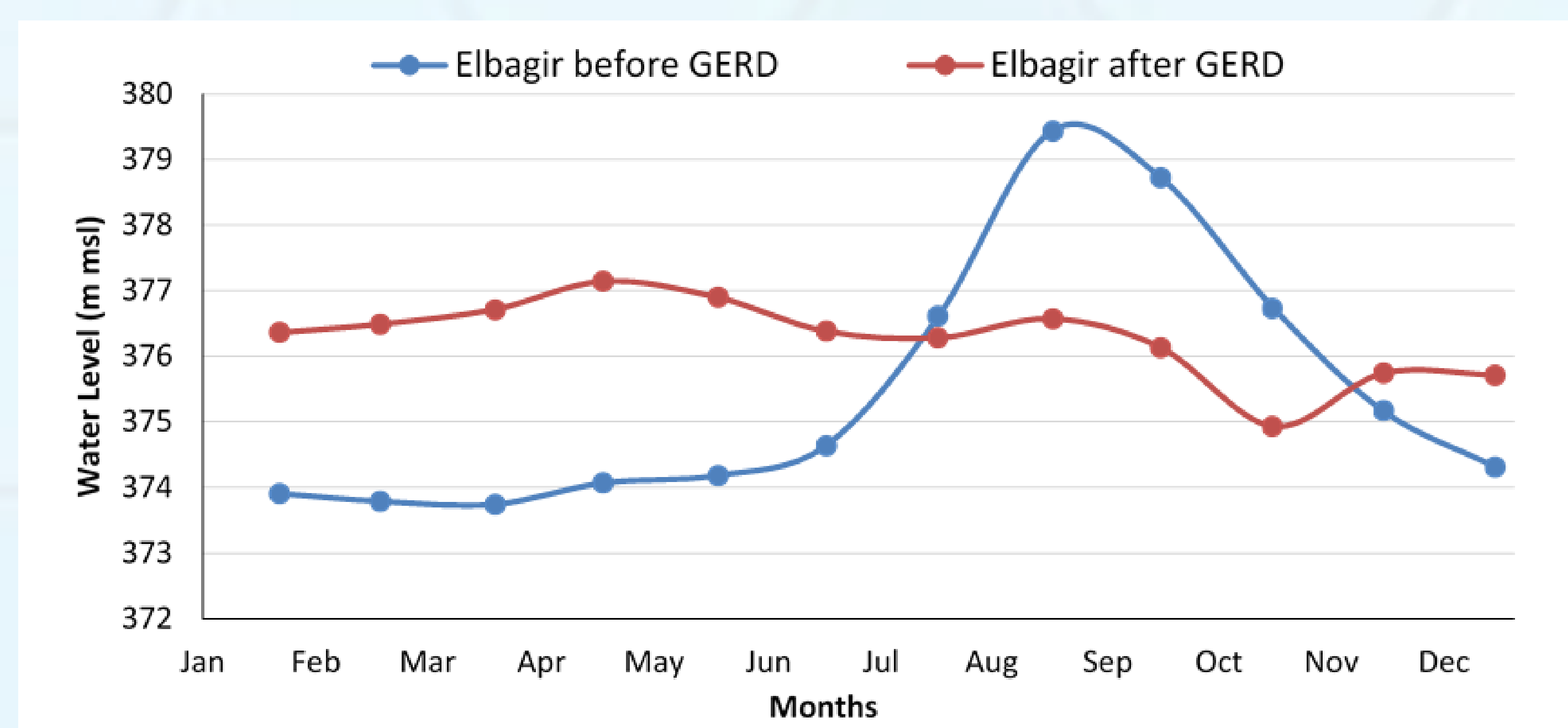
- ⇒ To give a technical advice to the STPG and recommend a suitable location for the water intake, which is subject to **minimum morphological changes**.
- ⇒ To make a conceptual design of the intake, including; assessment of water level variation, analysis of type of soil, and conceptual design of the pump house.

## Hydrological Analysis :

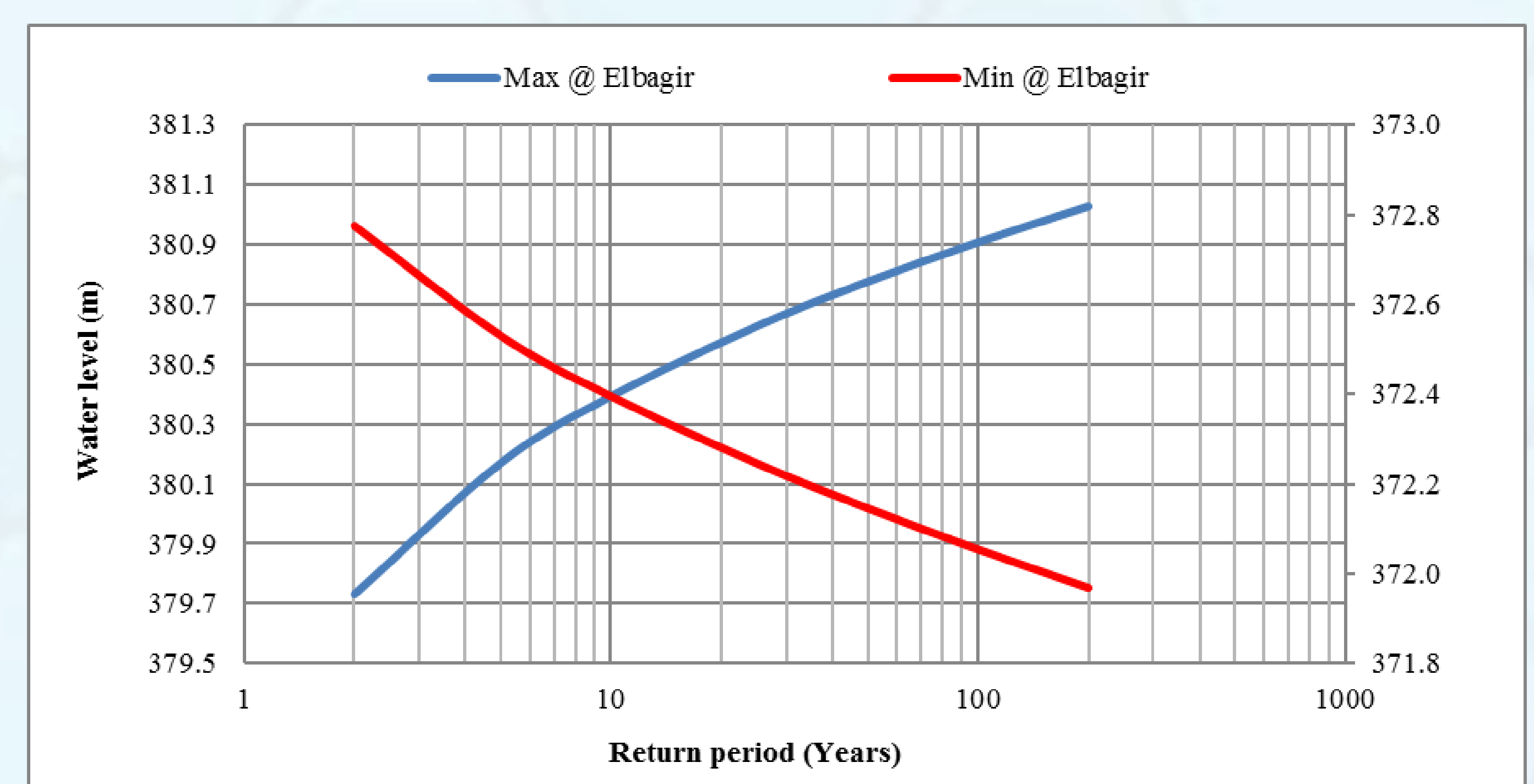
- Analyzing the variation of water level using neighboring station of Soba gauge station.
- Frequency analysis to estimate extreme values of water levels (maximum and minimum).
- Assessing the impact of GERD, using river basin simulation model and hydrodynamic modelling.



Mean water level at Soba station and Al bagair pumping location

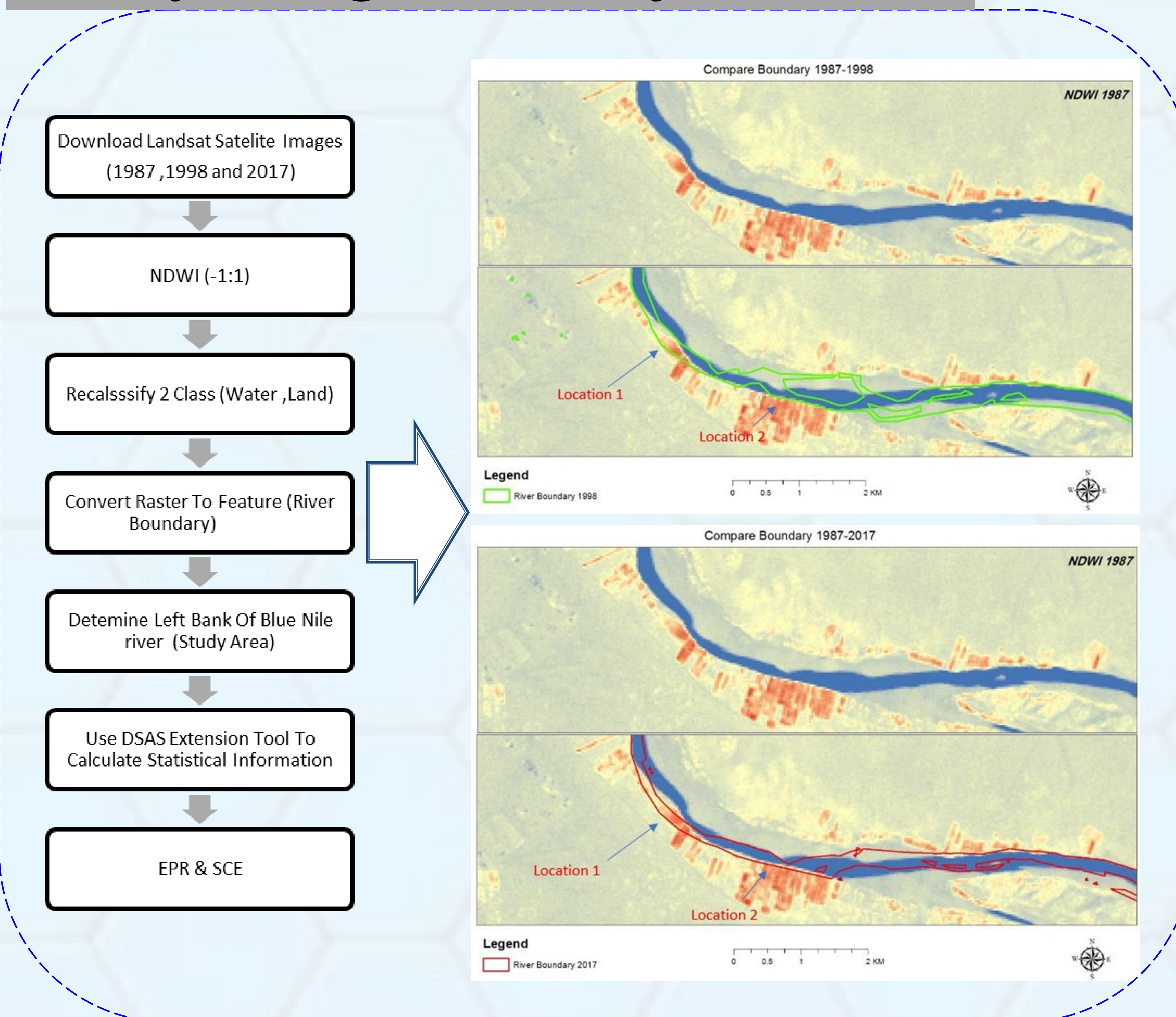


Water level at Al Bagair pumping location before and after the operation of the GERD

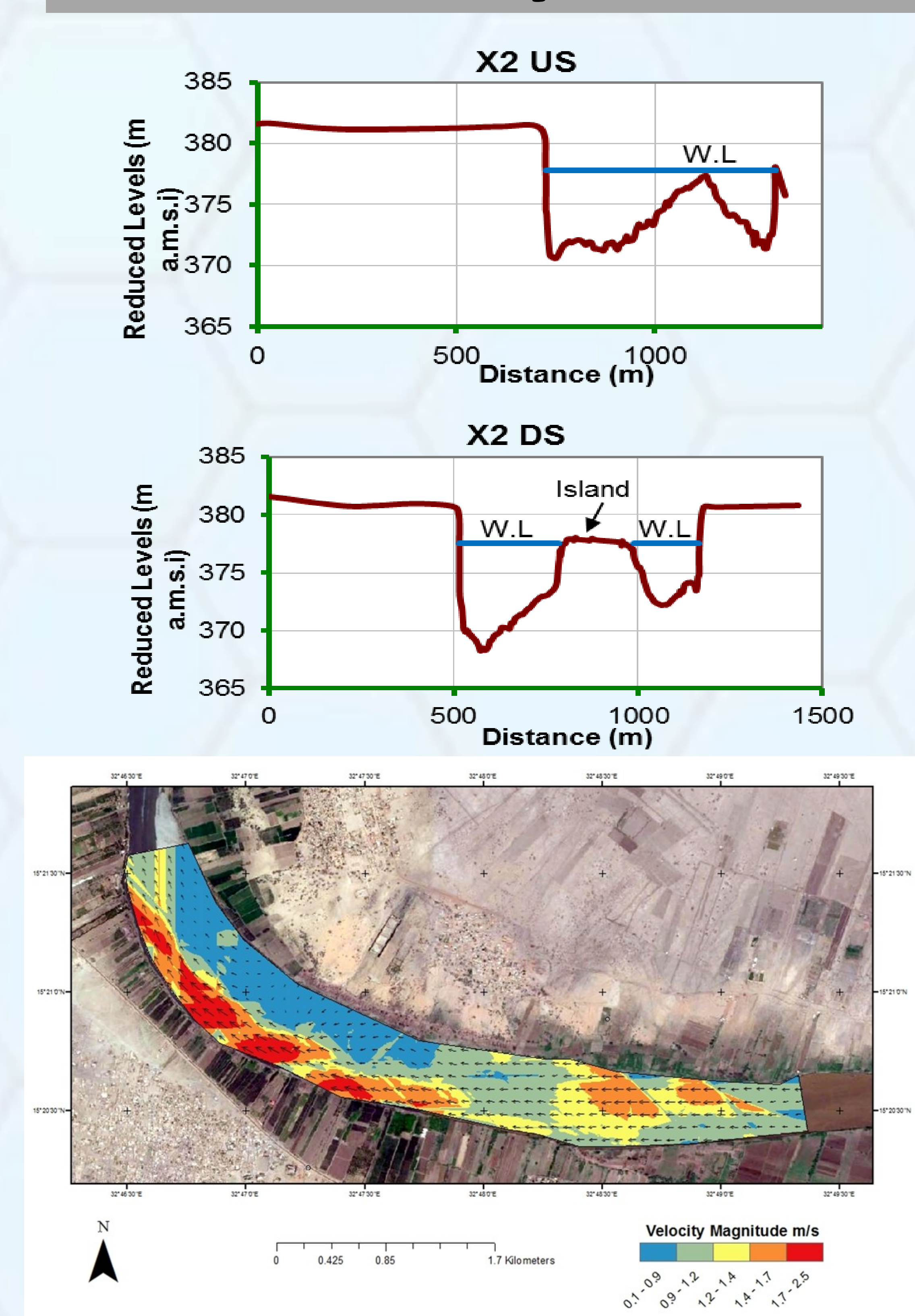


Frequency analysis of the max. and min water levels at the proposed pumping location

## Morphological Analysis :



## Field Survey :



## Conclusion:

- The long-term evaluation of the river morphology showed major changes of the river course during the last 30 years.
- The analysis of the daily water level data for 48 years long reveals that the maximum and minimum water levels for the pumping location are 380.9 and 372.3 m +msl respectively.
- It is expected the minimum water level will increase by an average of 2m, while the maximum water level will decrease by 1-3m after the operation of GERD.