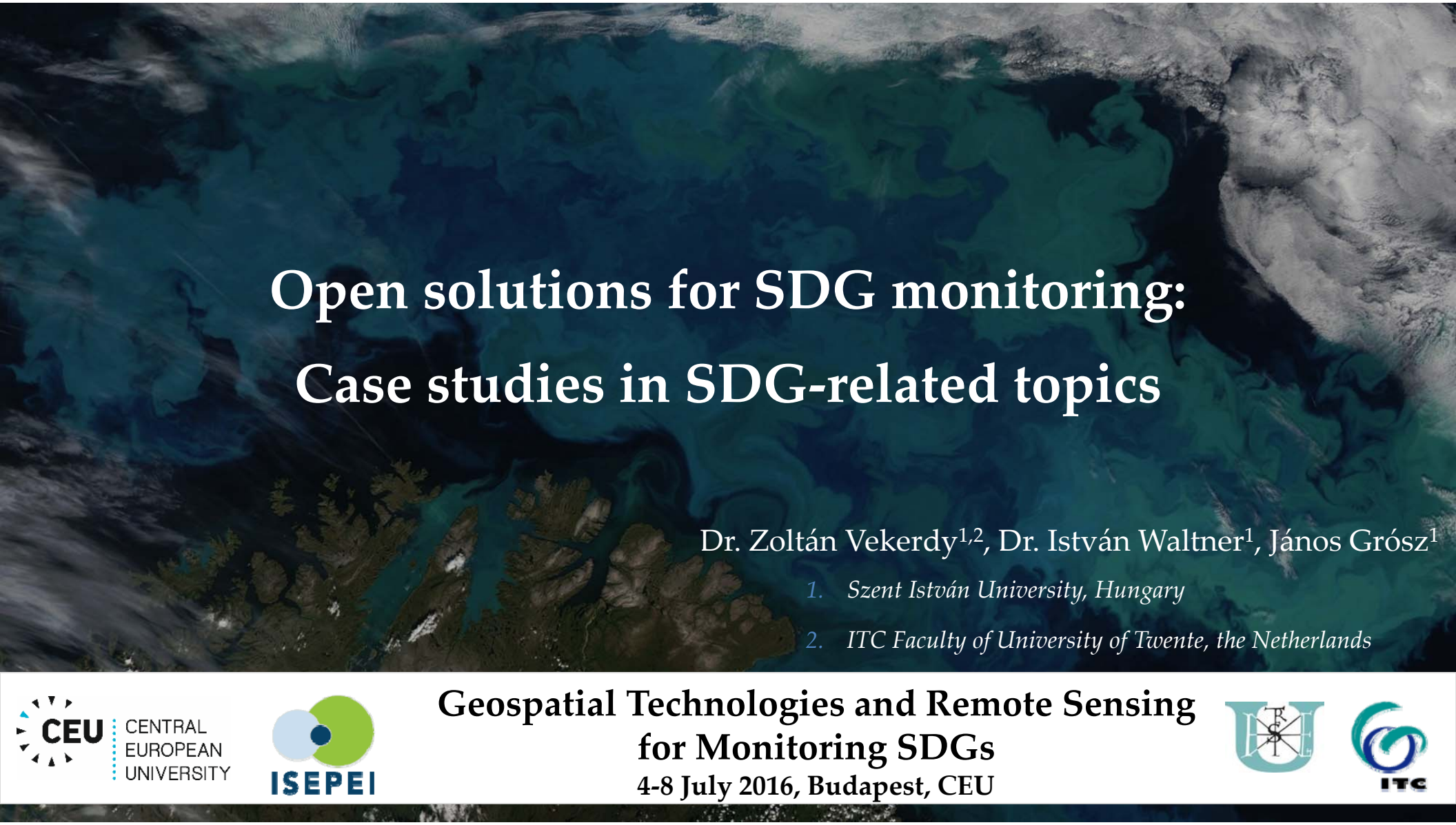

Open solutions for SDG monitoring: Case studies in SDG-related topics

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CEU CENTRAL EUROPEAN UNIVERSITY

ISEPEI

Geospatial Technologies and Remote Sensing for Monitoring SDGs

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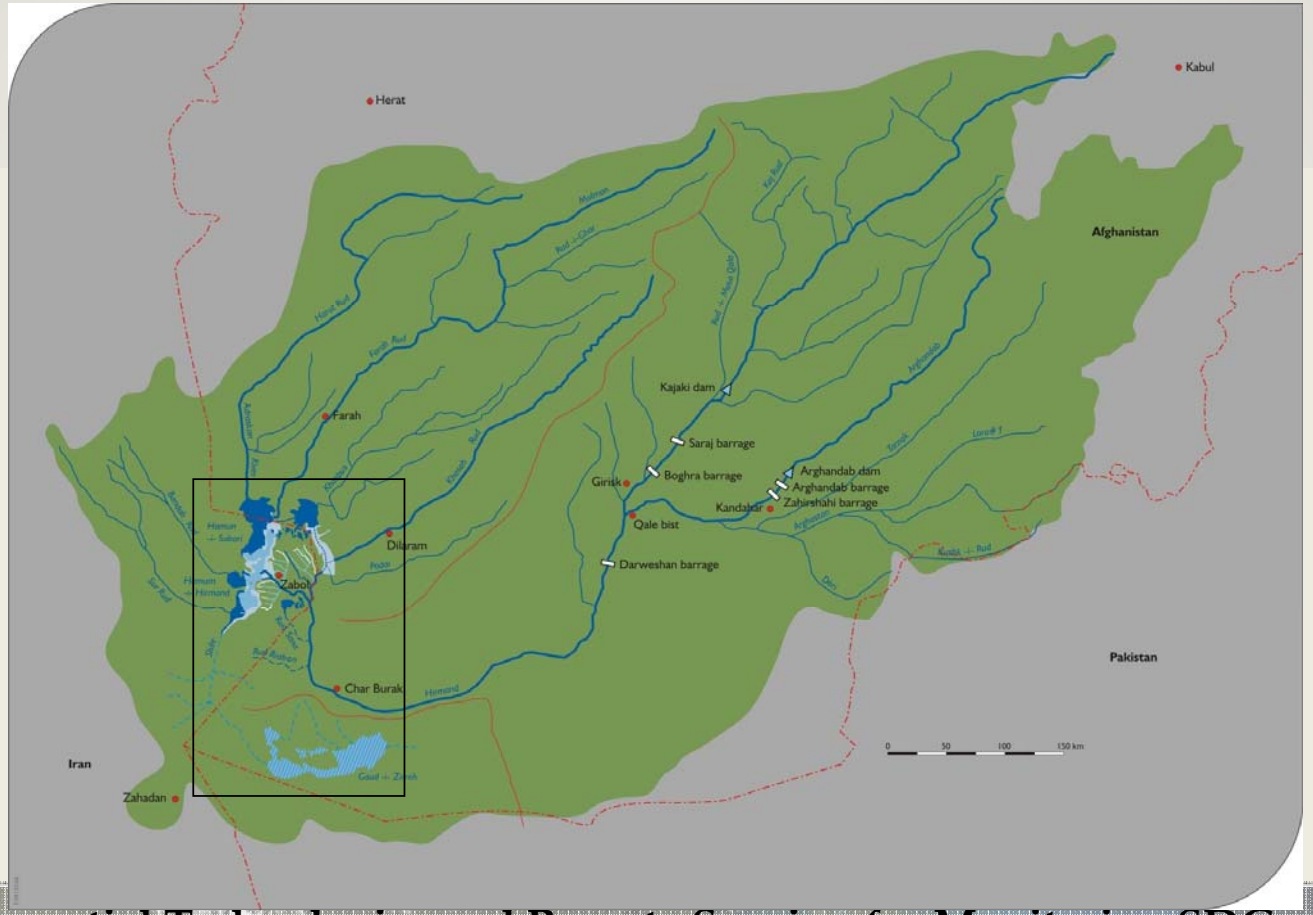
ITC

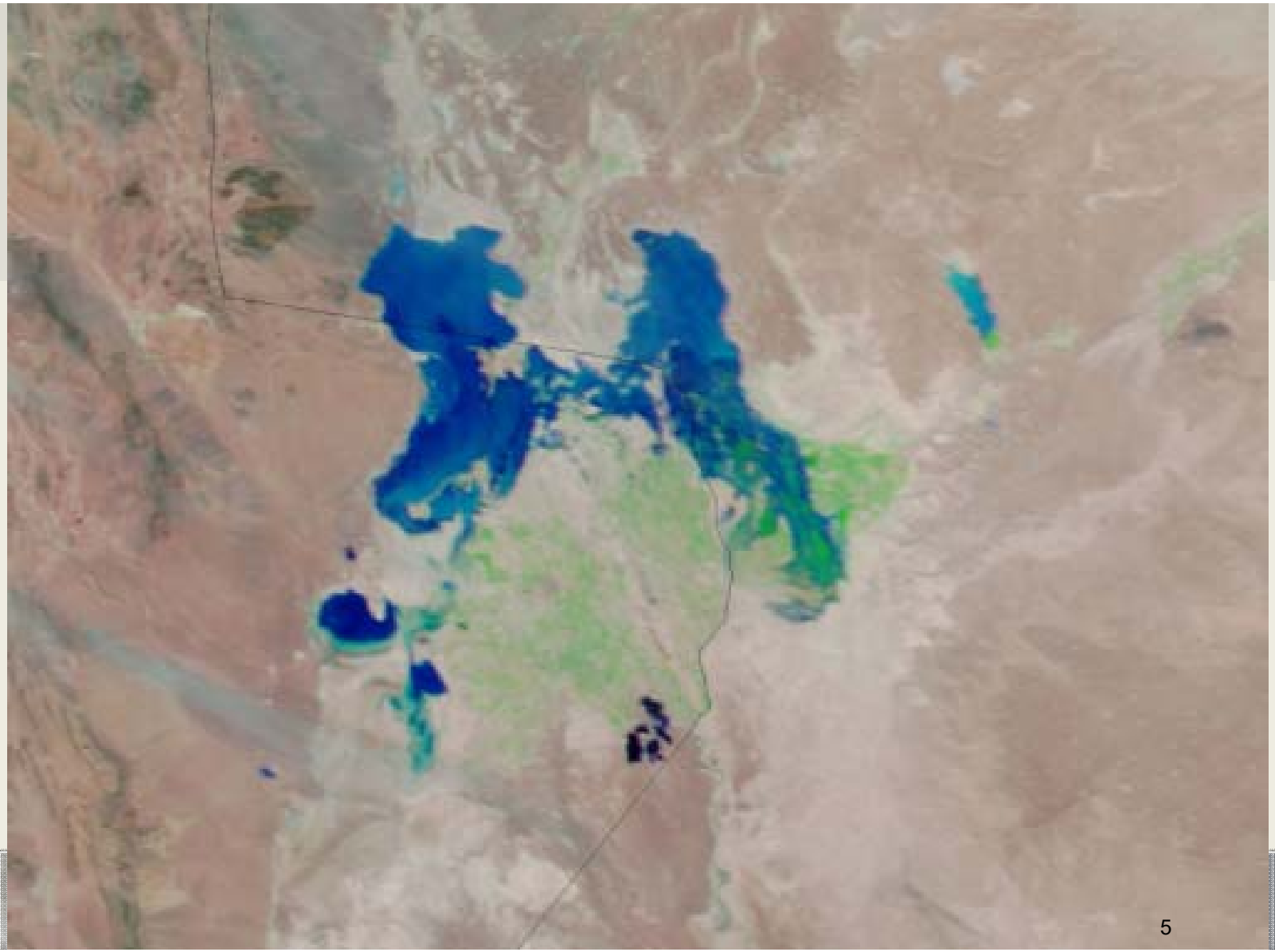
What shell we discuss?

- Sistan wetlands – Iran (SDGs 3, 6, 14 and 15)

CASE STUDY 1:
SISTAN WETLANDS (HAMOONS, IRAN & AFGHANISTAN)

Sistan Catchment and Sistsan Area



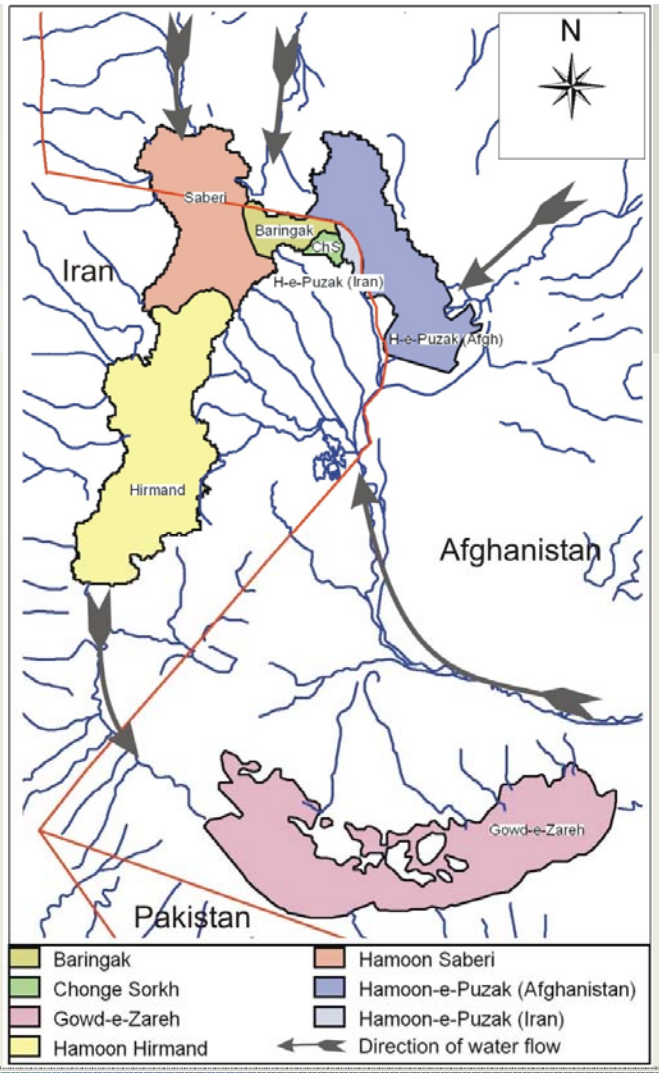


The Hamoon System

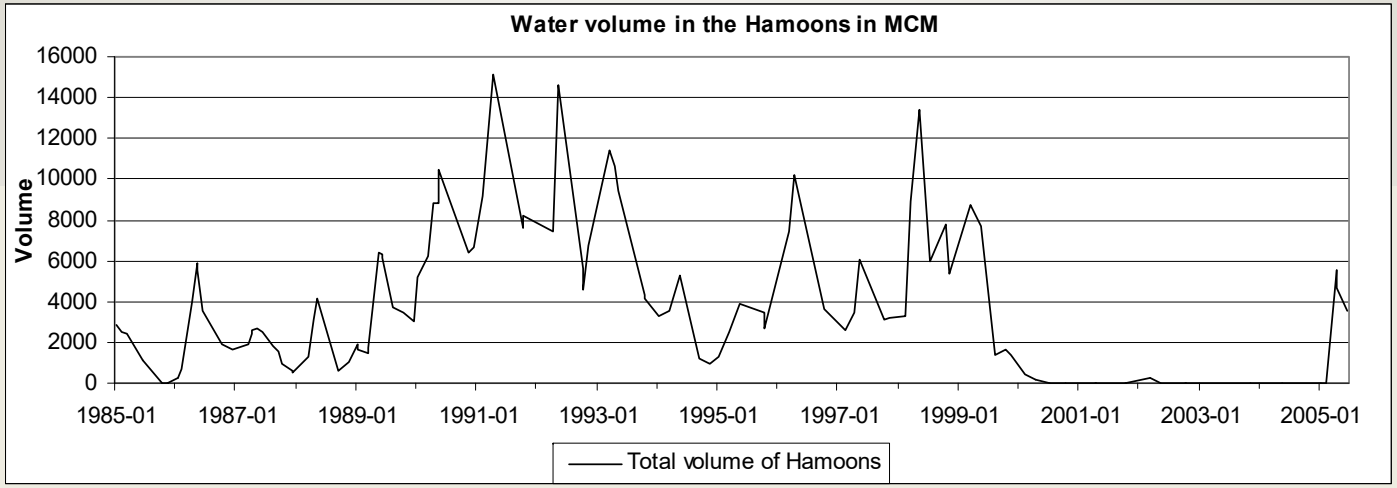
- Freshwater (brackish water)
- Interlinked system
- Main water source is the Helmand
- Overflow to Gowd-e-Zareh

	Average depth* (m)	Area** (km^2)	Volume (million m^3)
Baringak	1	221.6	221.6
Chonge Sorkh	1	59.8	59.8
Hamoon Hirmand	2	2388.8	4777.5
Hamoon-e-Puzak (Afgh)	3	1453.4	4360.3
Hamoon-e-Puzak (Iran)	2	61.0	122.0
Hamoon Saberi	3	1161.5	3484.5
Total		**5346.0**	**13025.6**
Gowd-e-Zareh	10	2417.5	24174.9

* Estimated by local experts for the highest water stages
** Largest water cover observed in satellite images

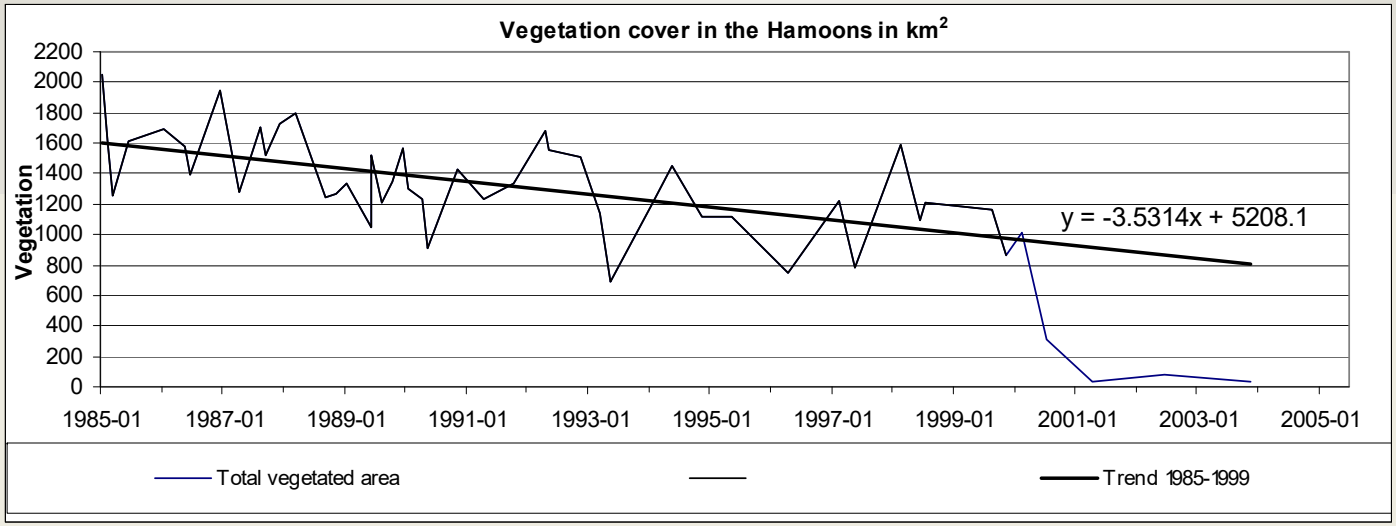


Water cover in the Hamoons



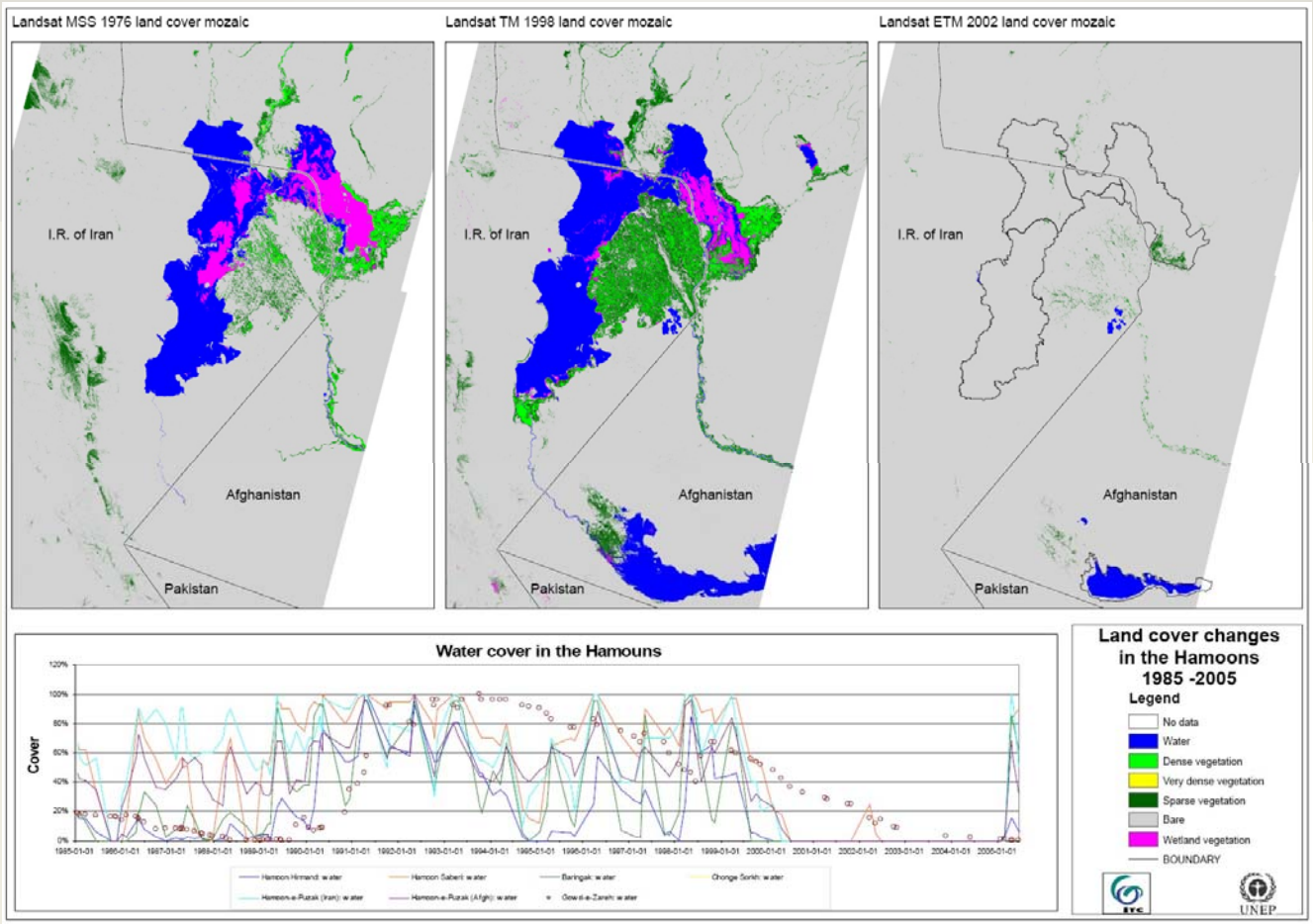
- Low-water period in 1985-1988.
- High-water period in 1989-1993.
- Medium-water period in 1994-1999.
- A dry period in 2000-2004.
- Some refill 2005-

Vegetation cover in the Hamoons



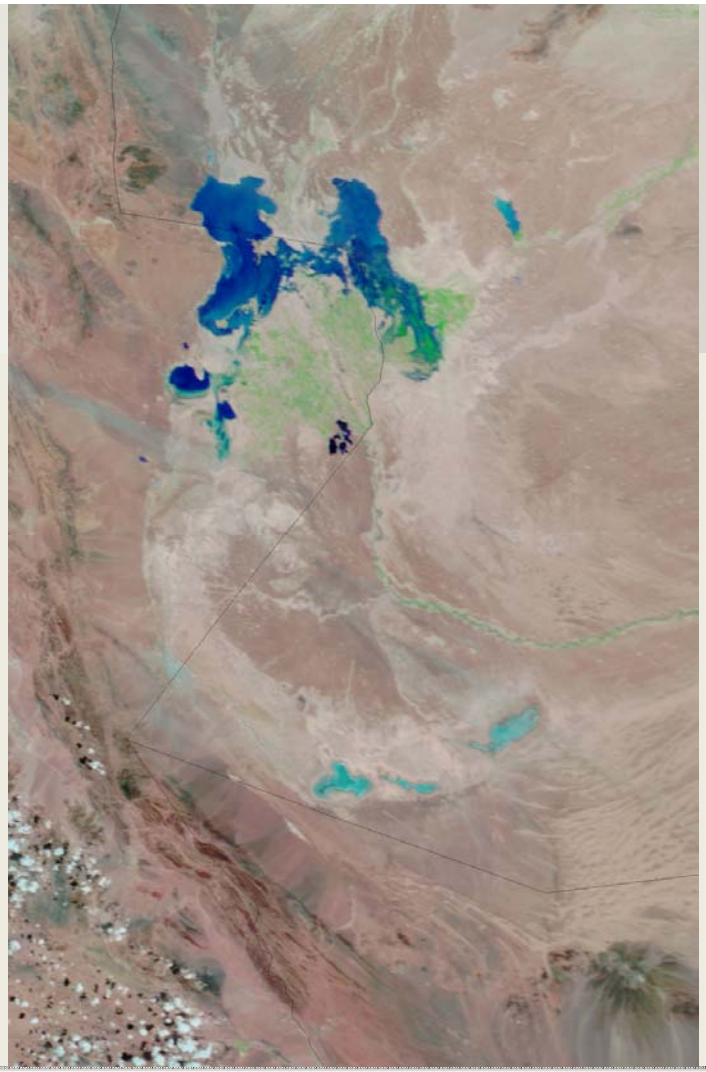
- Annual dynamics
- Periodicity is not observable
- **Overall declining trend!**

Results of Landsat image classification

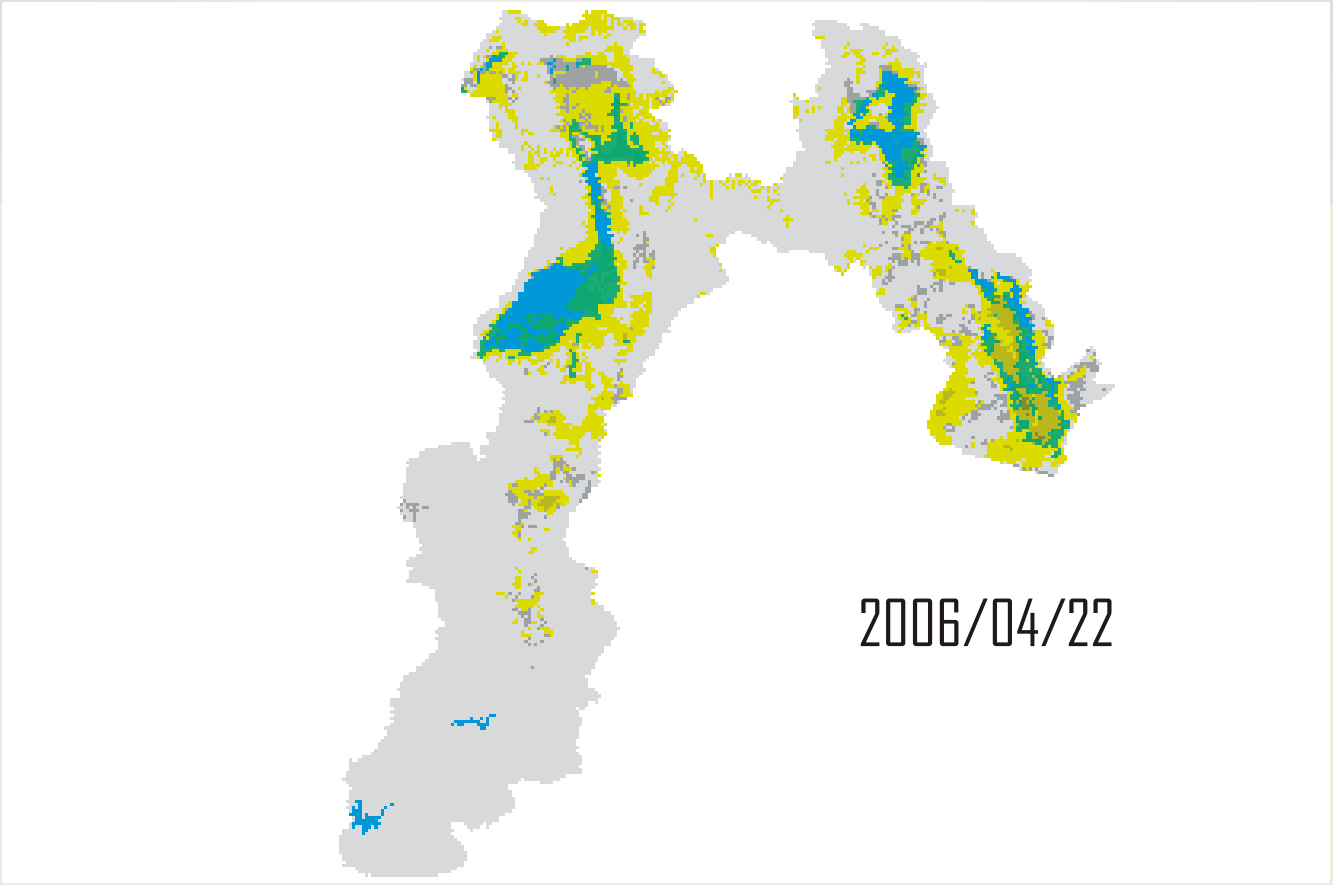


Frequent monitoring with MODIS images

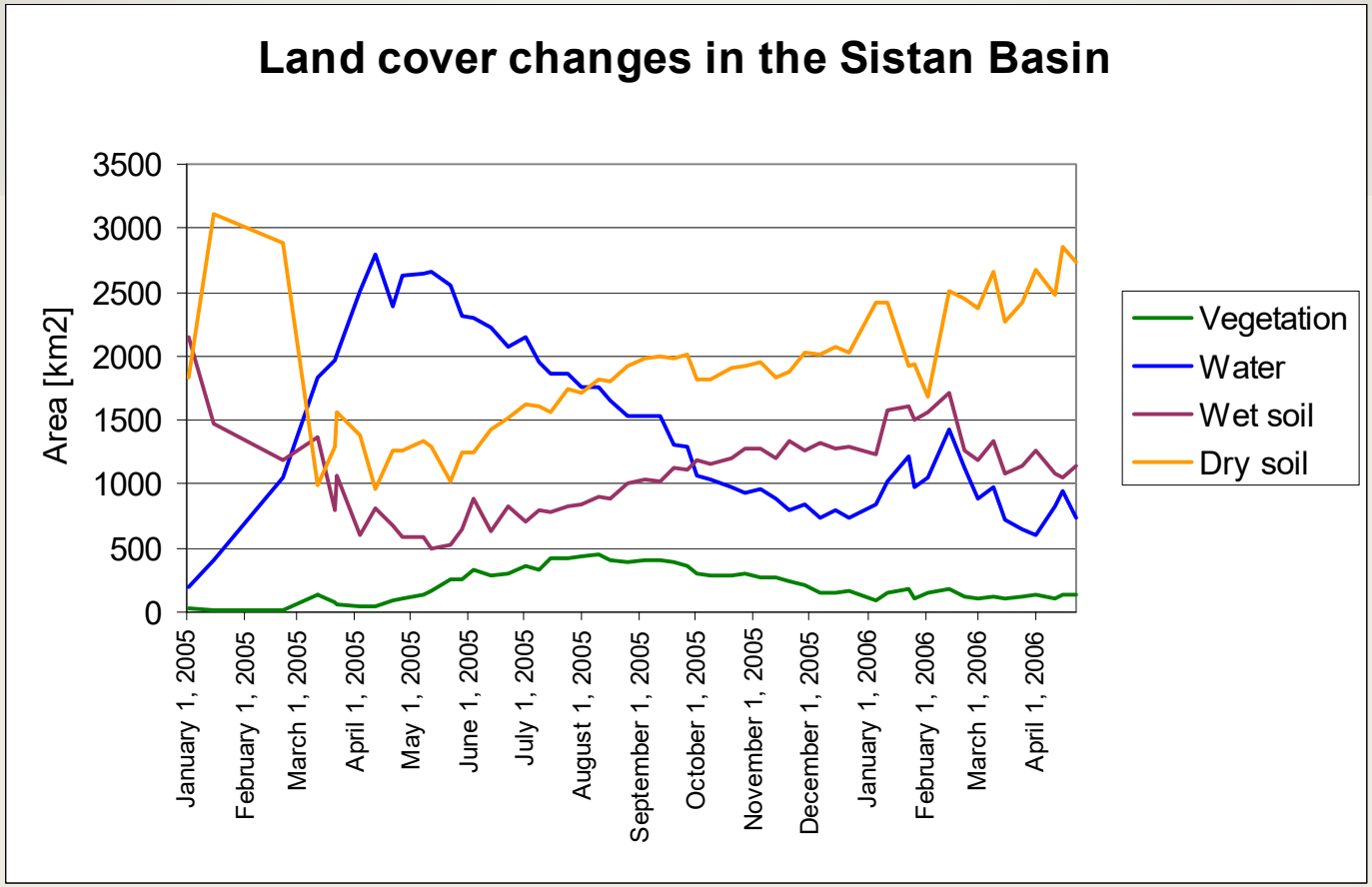
- 250 m and 500 m resolution
- 6 bands (originally 7, but one is very noisy)
- Satellites: Terra & Aqua
- Applied analysis method:
  - Linear unmixing
- 1 image / 8 days
  - Single day image (preferably), or
  - 8-days optimized (maximum) image



Land cover changes in 2005-2006



Land cover categories



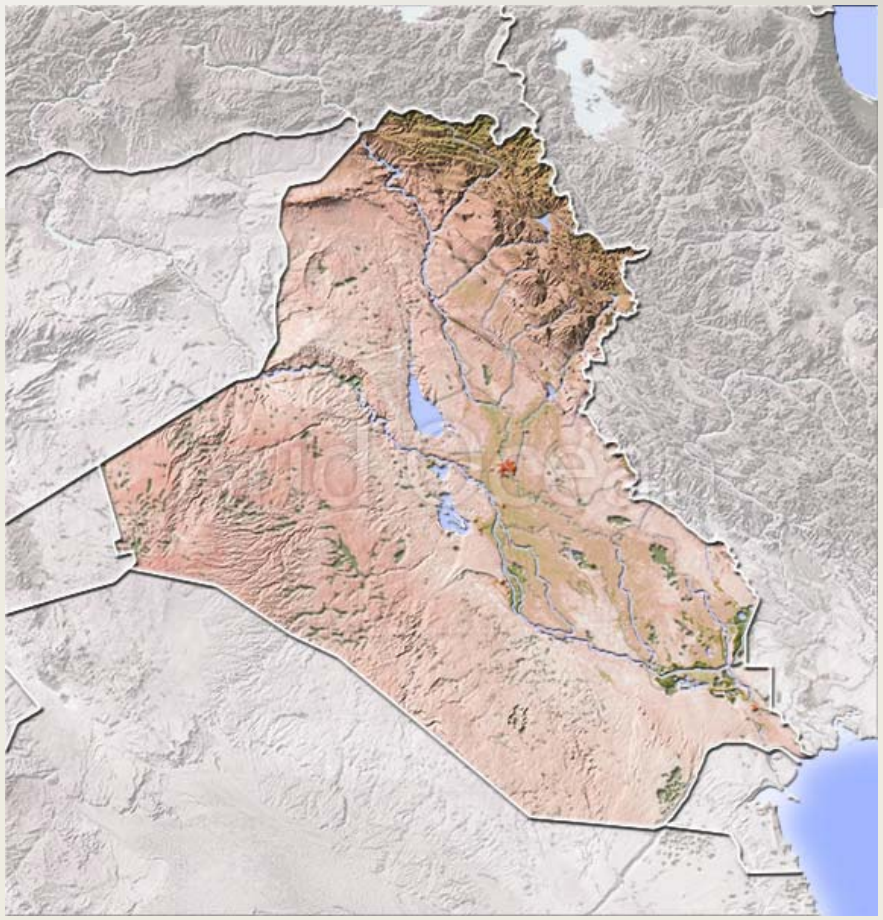
Political efforts

- Inter-governmental discussions between Iran and Afghanistan in Geneva
- …
- No real results:
  - deteriorating security in the region,
  - increasing smuggling,
  - Internal environmental refugees.

BONUS TRACK: GEO-INFORMATION FOR THE CONSTITUTION OF IRAQ

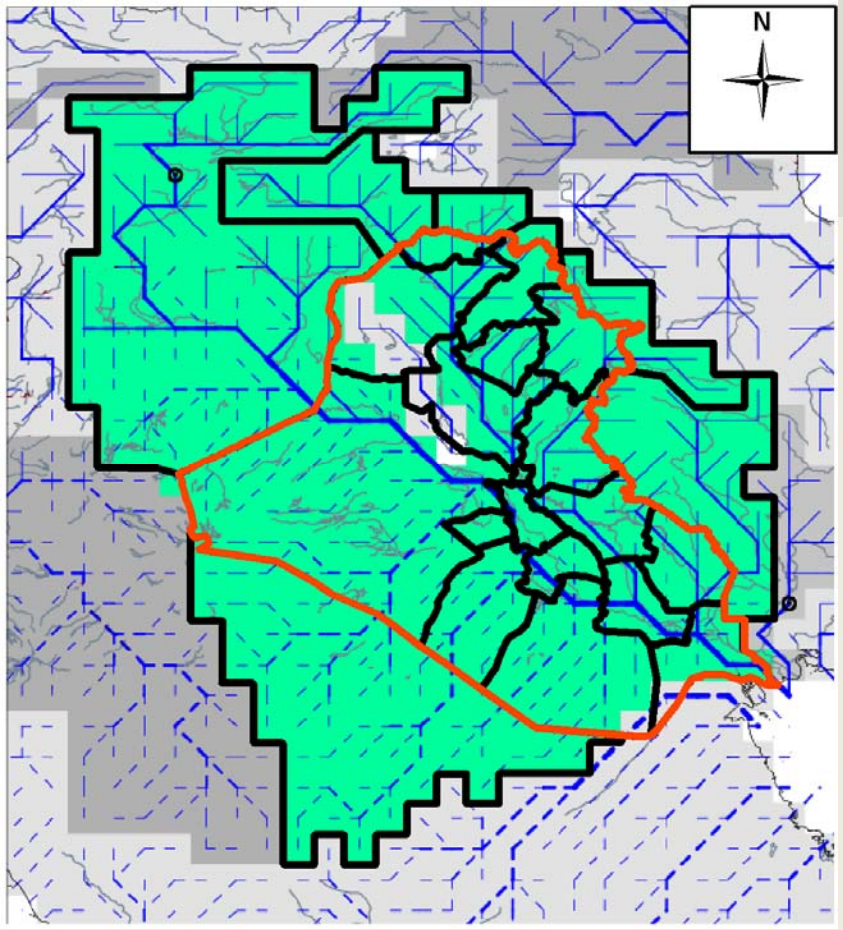
Upstream – downstream conflict over water resources

Request from the United Nations for the assessment of the water resources of Iraq



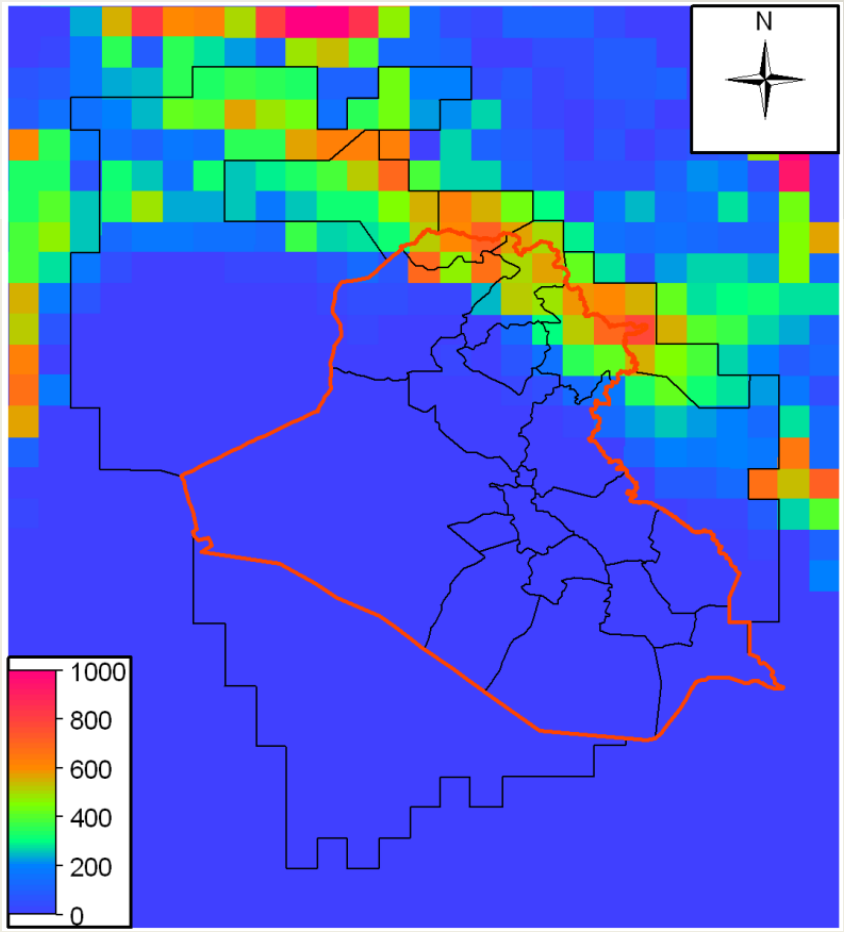
Provinces and catchments

Based on the composite runoff fields of the University of New Hampshire, US and the Iraq map of the UN



Water resources (modelling results)

Based on the composite runoff fields of the University of New Hampshire, US



… and the constitution

"A constitution never contains technical details. The result map and the table formed the basis of formulating the sections about the **need for fair distribution of water resources**."

Without this technical information, the negotiators would not had a clear view about the issue of water in the region, and without GIS technology, it would not have been possible to provide the requested information within a few ours.

The constitution of Iraq was accepted on 15 October 2005.

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