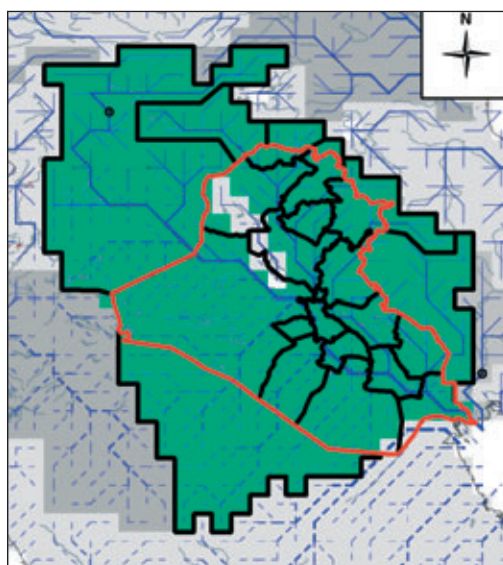


GIS Contributes to the Constitution of Iraq

Urgent Need for Information on Available Water Resources

The Ottoman Empire collapsed in the first decades of the twentieth century, leaving behind a hunting ground in the Middle East for the remaining imperialists. In their struggle for control the competing superpowers redrew the map several times with very little consideration of ethnic borders and natural units.

By Zoltán Vekerdy



Calculation units overlaid with the basic grid of the composite runoff fields. Sources: (Fekete et al. 2000) and UN.

Rainfall and Snowmelt

The dry climate makes control over water to be of primary importance for the survival of the population. The vast lowlands are deserts and almost all the water is brought to the people by the rivers collecting runoff from rainfall and snow melt in the mountains. Abundance of river water made the early emergence of civilizations in the Tigris-Euphrates valley possible, and maintained vast wetlands throughout history in one of the driest climates of the Earth.

It is understandable that for Iraq, the downstream country of the region, proper legislation over water rights is a cornerstone to peaceful development. A large part of the population lives in regions with very scarce water resources, so control of this commodity received careful attention during the formulation of the most significant law of Iraq: the constitution. Information on available resources in and around the country was

needed to ensure the correct wording in the document.

Quick Assessment

The United Nations approached the department of Water Resources of the International Institute for Geo-Information Science and Earth Observation (ITC), the Netherlands, requesting for a quick assessment of the situation, as the negotiating partners had asked for this information in the course of drafting the law. This meant an unbiased and consistent response was needed almost immediately.

Publicly available information on the World Wide Web and geo-information technology were the basic tools applied in this mini-project. Information on global water resources can be found on the website of the Water Systems Analysis Group of the Complex Systems Research Center of the University of New Hampshire. This data set is based on the combination of measured river discharges and con-

tinental scale runoff modelling. The underlying technology makes it possible to preserve the accuracy of the in-situ discharge measurements as well as the spatial and temporal distribution of simulated runoff. Thereby it provides the 'best estimate' of terrestrial runoff over large domains. The calculations are based on a global 30-minute grid (Fekete et al. 2000).

Small Database

ITC hydrologists used the Integrated Land and Water Information System (ILWIS) - software developed by the Institute itself - for analysing the data and calculating the spatial distribution of the water resources in Iraq and the neighbouring countries. The overlays, see image, were merged into a small database. The results were sent, both in quantitative map, and tabular forms to the United Nations within just a few hours of the initial request, enabling negotiations to proceed without interruption.

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. Without GIS technology, it would not have been possible to provide the requested information within a few hours. The constitution of Iraq was accepted on 15 October 2005 (Wikipedia 2005).

References

Fekete, B., C. J. Vörösmarty and W. Grabs (2000). Global, composite runoff fields based on observed river discharge and simulated water balances. New Hampshire, USA, Water Systems Analysis Group, Complex Systems Research Center (CSRC), University of New Hampshire: 115.

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