The Global Map of Irrigation

Introduction

Agriculture accounts for about 70% of all water withdrawn worldwide from rivers and aquifers. In developing countries, up to 90% of water withdrawn is used for irrigation.

Although globally only 18% of the cultivated area is irrigated, 40% of the global food production comes from irrigated agriculture.

Data and Methods

The global map of irrigated areas was developed by combining irrigation statistics for 10,825 sub-national units (figure 1) and geospatial information regarding the location and extent of irrigation schemes. It shows the percentage of each 5 arc-minute cell that was equipped for irrigation around the year 2000.

Compilation of sub-national irrigation database:

- Geospatial information on position and extent of irrigated areas was derived by digitizing hundreds of irrigation maps available in reports of FAO, World Bank, irrigation associations or national ministries of agriculture or water.
- Several atlases and inventories based on remote sensing, in digital format were utilized.
- As the relevance and reliability of the maps vary, it was necessary to decide which geospatial record should be used for each specific sub-national unit. A priority level (figure 2) was created and applied to each record.

Distribution over sub-national unit:

- If the extent of all digitized irrigated areas of the highest priority level was smaller than the total irrigated area reported for the specific sub-national unit, records with the second highest priority were considered.
- This distribution process was repeated down to the next lower priority level until the sum of irrigated area in the map was equal to the irrigated area in the sub-national statistics.
- In many sub-national units, lack of geospatial information made it necessary to use indirect information to infer areas where irrigation was probable. (Includes areas where the main irrigated crops are grown, or cultivated areas in very and regions.)
- For and regions remote sensing data were additionally used to verify the available maps.

Conclusions

- The main advantage of the Digital Global Map of Irrigated Areas is that the irrigated area summarized in the sub-national statistical units is equal to the irrigated area as reported by census-based statistics.
- The methodology allows to easily incorporate new information and benefit from advancements made by national census and mapping authorities.
- The map is based on local maps and data sources.
- In our plans to improve the dataset any comments, information or data that might contribute to the effort would be appreciated.


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