REMOTE SENSING AND LOCATING NEW WATER RESOURCES

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SUMMARY

All disaster displace people, whose first need is for safe drinking water. New water sources are also essential for hygiene in refugee camps. Yet, adequate, clean water supplies remain a problem throughout Africa, even under normal conditions. The lead time for developing water resources is at least several weeks, because of the need for exploration. Random drilling can result in inadequate yields, further delaying emergency supplies.

Reconnaissance techniques for new water sources, using remotely sensed images, are now well advanced for the four geological targets:

- Surface water and springs;
- Unconsolidated sediments;
- Sedimentary rock aquifers;
- Fractures and marbles in crystalline basement rocks.

Many of the rock types that contaminate surface and groundwater can also be identified, to screen sources that may pose hazards.

Cloud-free Landsat-7 ETM data are available at low cost for most of Africa. They have the spectral coverage to identify most rock types and sufficient resolution to show structures involved in trapping groundwater. ASTER data with better spectral coverage and stereoscopic potential can be downloaded from USGS, free of cost. DEMs from ASTER and SRTM will soon complete a comprehensive tool-kit for efficient geological and hydrological reconnaissance.

Rapid and systematic assessment of new water sources is realistic possibility for Africa. This vital information can not only improve water supplies for peoples normal lives, but will provide a framework for provision in emergencies. The main needs are local knowledge, geoscientists trained in image interpretation and field evaluation of targets, and suitable computers and software.