Water Finder information

http://www.worldbank.org/projects/search?lang=en&searchTerm=improved%20water%20access shows world bank projects on map based on search terms.

http://www.wssinfo.org/ WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation

*****Good info for setting up water monitoring program from WHO---**
http://www.who.int/water_sanitation_health/resourcesquality/wqmonitor/en/

The problem

On average, women and children travel 10-15 kilometers per day collecting water and carrying up to 20 kilos or 15 liters per trip. Some 30% of women in Egypt walk over 1 hour a day to meet water needs. In some parts of Africa, women and children spend 8 hours a day collecting water. In some mountainous regions of East Africa, women spend up to 27% of their caloric intake in collecting water.
Source:
http://ithirst.org/women-in-south-africa-collectively-walk-the-equivalent-distance-of-16-times-to-the-moon-and-back-per-day-gathering-water-for-families/

1 billion people lack access to clean water

200 MILLION HOURS PER DAY, Every Day, Are Spent By Women Searching For Any Type Of Water.

3.6 MILLION PEOPLE DIED Last Year

A child dies every 20 seconds due To The Lack Of Clean Water.

443 MILLION SCHOOL DAYS ARE LOST Each School Year Due To Children Searching For Any Type Of Water.

HALF OF THE WORLD's HOSPITAL BEDS Are Filled With People SUFFERING FROM WATER RELATED DISEASES.

Source: http://ithirst.org/why-water/

17 million kids will die this year from dirty water—more than those who will die from AIDs, Malaria, or war combined.
http://ithirst.org/about-us/founders-story/

Common water attributes

- Meteorology: wind direction, flow and speed, precipitation, stage height (height of the water's surface in relation to the riverbed), as well as air temperature and barometric pressure
- Direction and flow rate of water
- Conductivity (salinity), Temperature and Depth (CTD)
- Particle types and size using Laser In-Situ Scattering and Transmissometery (LISST)
- Biological, physical and chemical using Three-Channel Fluorimeter (FL3)
    - **Chlorophyll A** (biological) presence of algae
    - **Fluorescein** (physical) to track water flow
    - **Color Dissolved Organic Matter** (CDOM) (chemical) to determine water mass and particulates
- Optical Oxygen Sensor

source: http://www.bire.org/instrumentation

Types of water contamination

Fecal: Typically it takes two days for fecal coliform to come and go

source: http://watermarkblog.org/?p=292

Agriculture

Pesticides

Pollutants from extraction like oil, gas, mining

Others

What are the problems in the developing world?

Water quantity

Water quality:

Giardia

Chelera

Others...

Sensors that can measure the attributes we care about

A New Water Sensor That Facilitates Bacterial Testing in Drinking Water

http://www.venturecup.dk/events/sbtaquatech/

SBT Aquatech has developed a **bacteria sensor** that water treatment plants can use to detect an increase in the bacteria concentration in the drinking water. The sensor sends an hourly update to the water distributer, which enables quick and effective action to be taken

when the drinking water is contaminated with e.g. the dangerous E. coli bacteria. The sensor creates a much faster and easier way to test the water, where other testing methods take days and rely on manual sample extraction.