3 Keys to Data for All

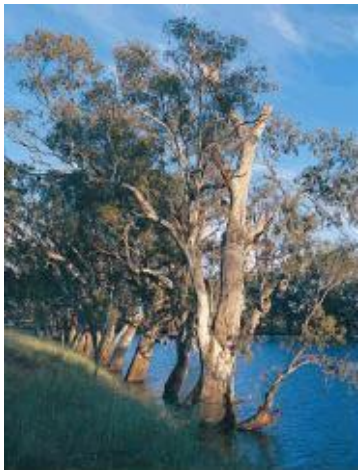
World Water Forum-5
Istanbul, March 20, 2009

UNEP

GEMS Water

Overview

1. What does GEMS/Water do?
2. 3 keys to data access
3. Plans for the future



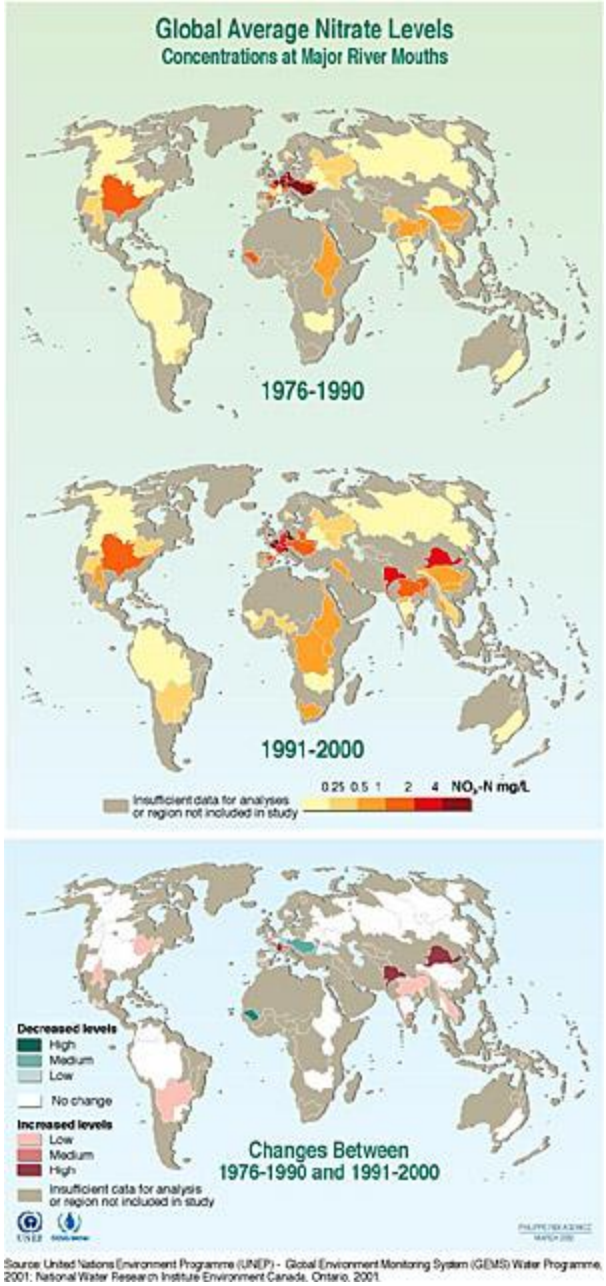
4 Core Activities

1. Expanding GEMStat, the global inland water quality **database** and international network.

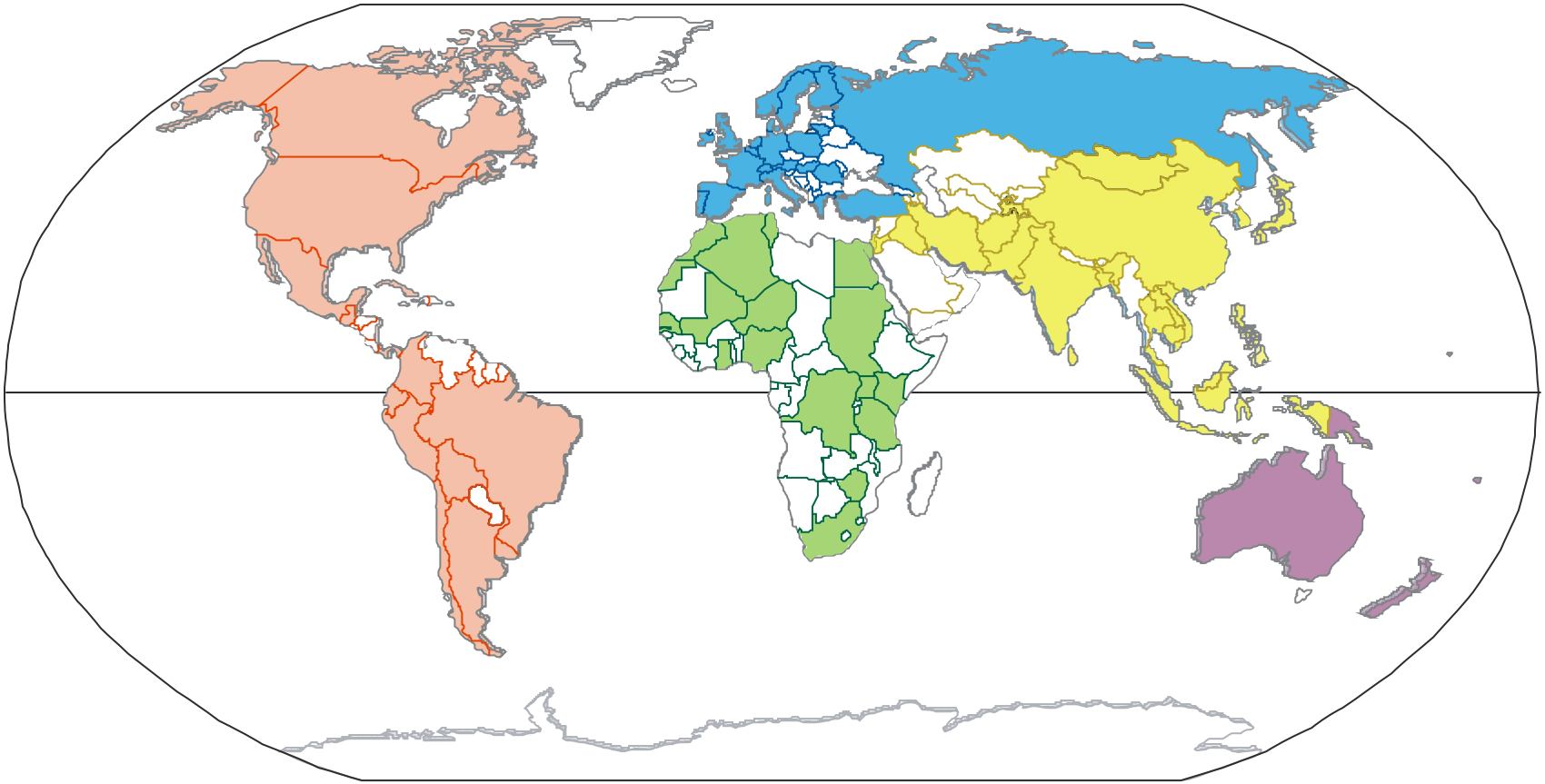
2. Undertaking research, indicator development, and modelling for global environmental **assessment** processes.

3. Promoting data integrity (**QA/QC**) tools and resources.

4. Building the **capacity** of developing countries to collect and manage water quality information.

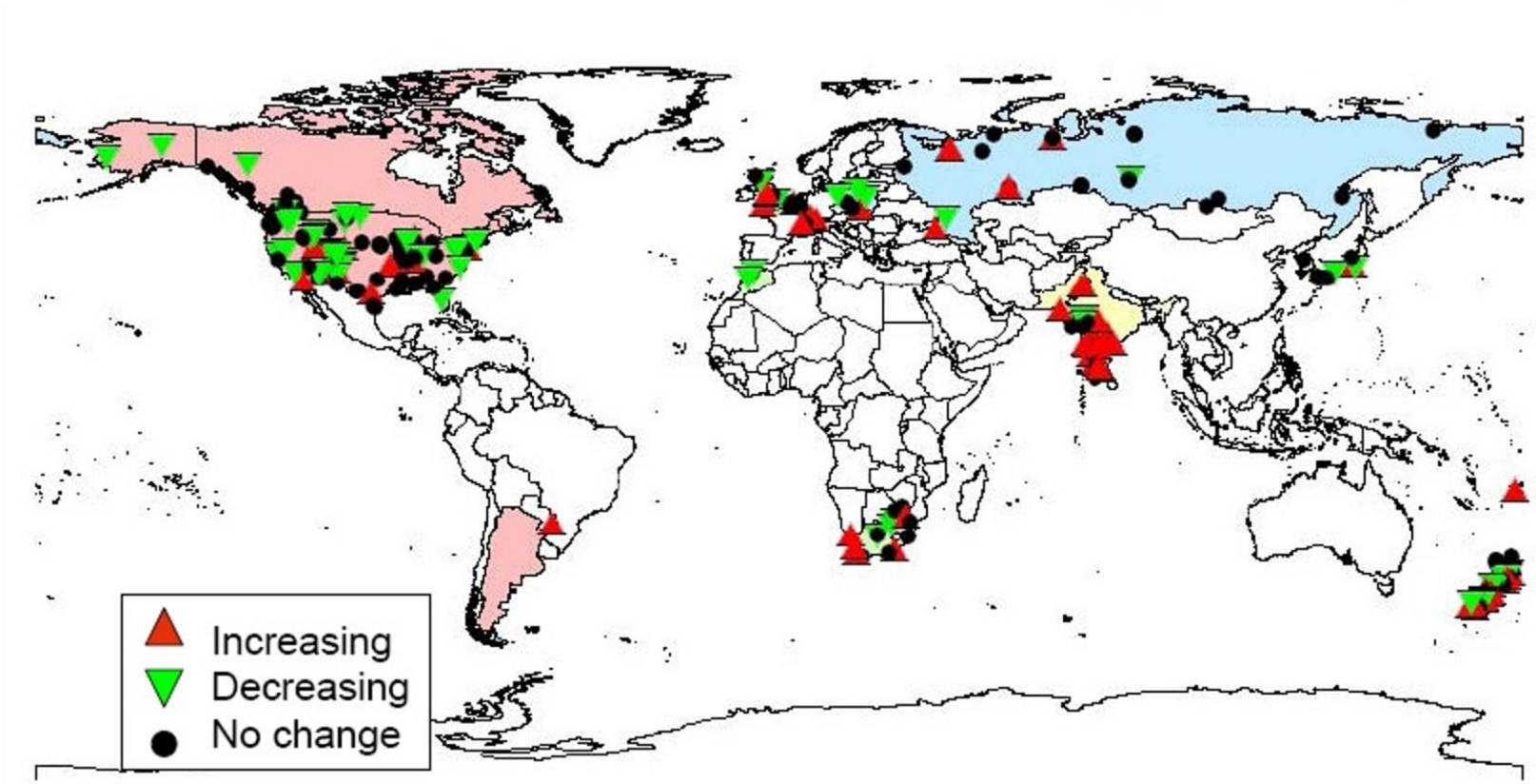


Status of GEMS/Water Global Network



Region	Africa	Americas	Asia	Europe	Oceania	Totals
# of Stations	285	2051	441	343	95	3215
# of Values	276428	1742281	684455	943631	355061	4001856
Date Range	1977-2008	1965-2006	1971-2008	1978-2007	1979-2008	1965-2008

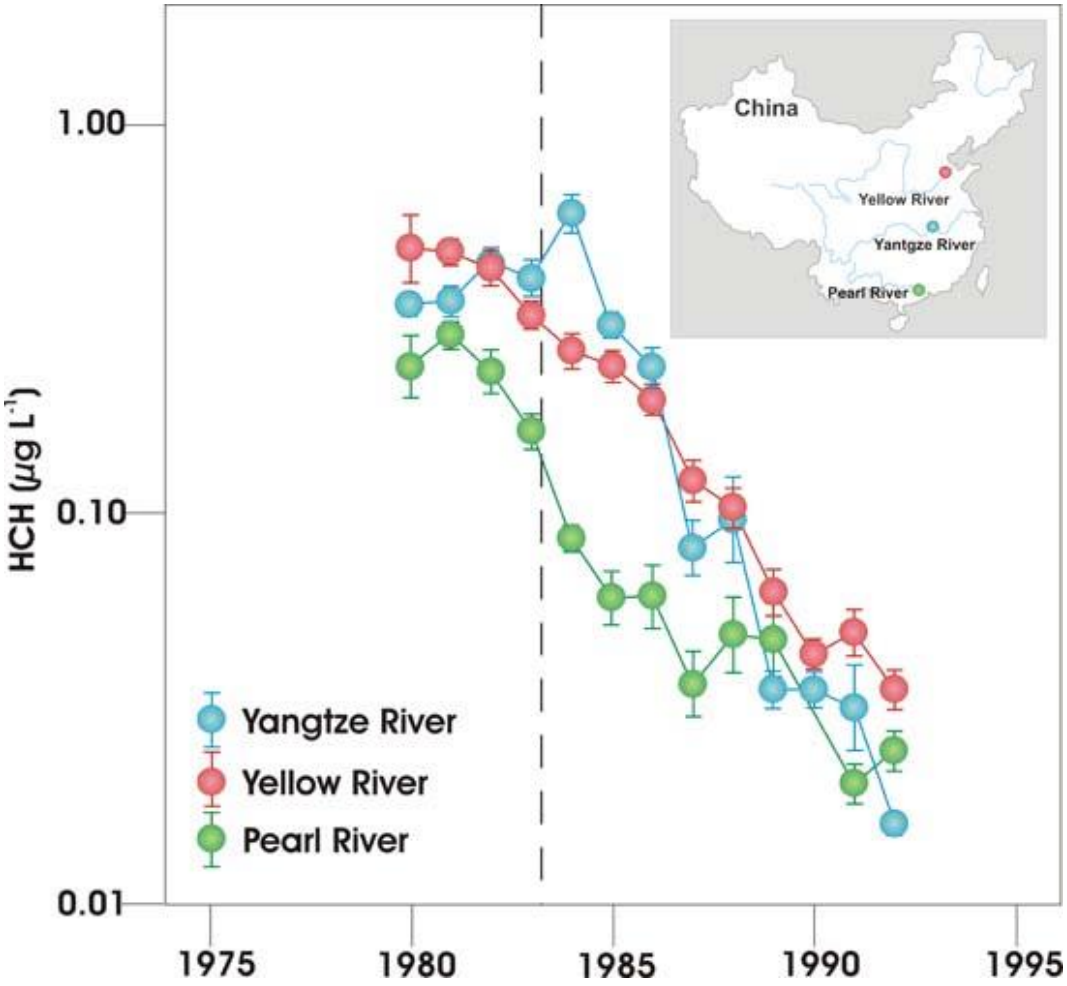
Snap Shot of Global Nitrogen Data



Note the decreases in many parts of the world, likely due to effective policy responses. A comprehensive global assessment would benefit since N affects drinking water, fisheries, and agriculture.

Declining Pesticides

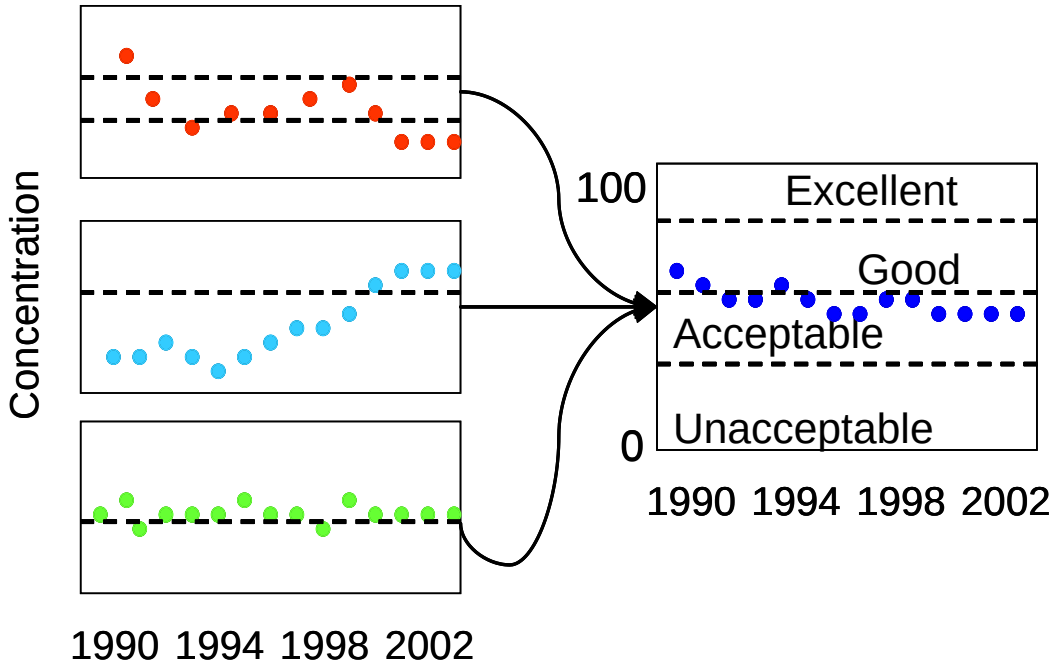
Three Chinese rivers following implementation of a ban on HCH use.



Index Calculation

- Important WQ variables compared to appropriate guidelines; results combined to produce a single number categorizing WQ as **excellent, good, fair, marginal, poor.**

$$\textit{WQ Index} = 100 - \frac{\sqrt{(F_1^{\,2} + F_2^{\,2} + F_3^{\,2})}}{1.732}$$



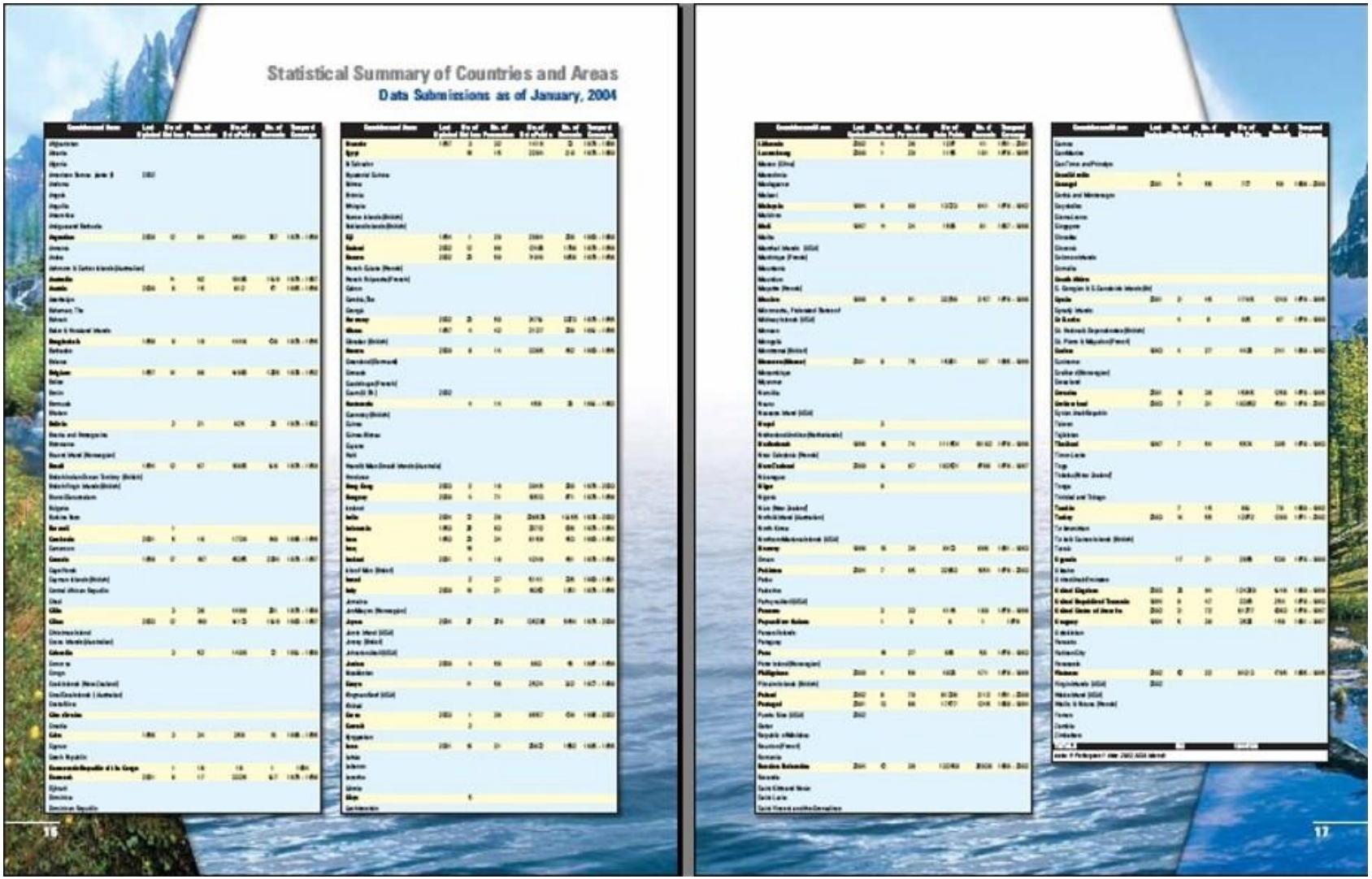
Where:

F1 = percentage of failed variables (scope)

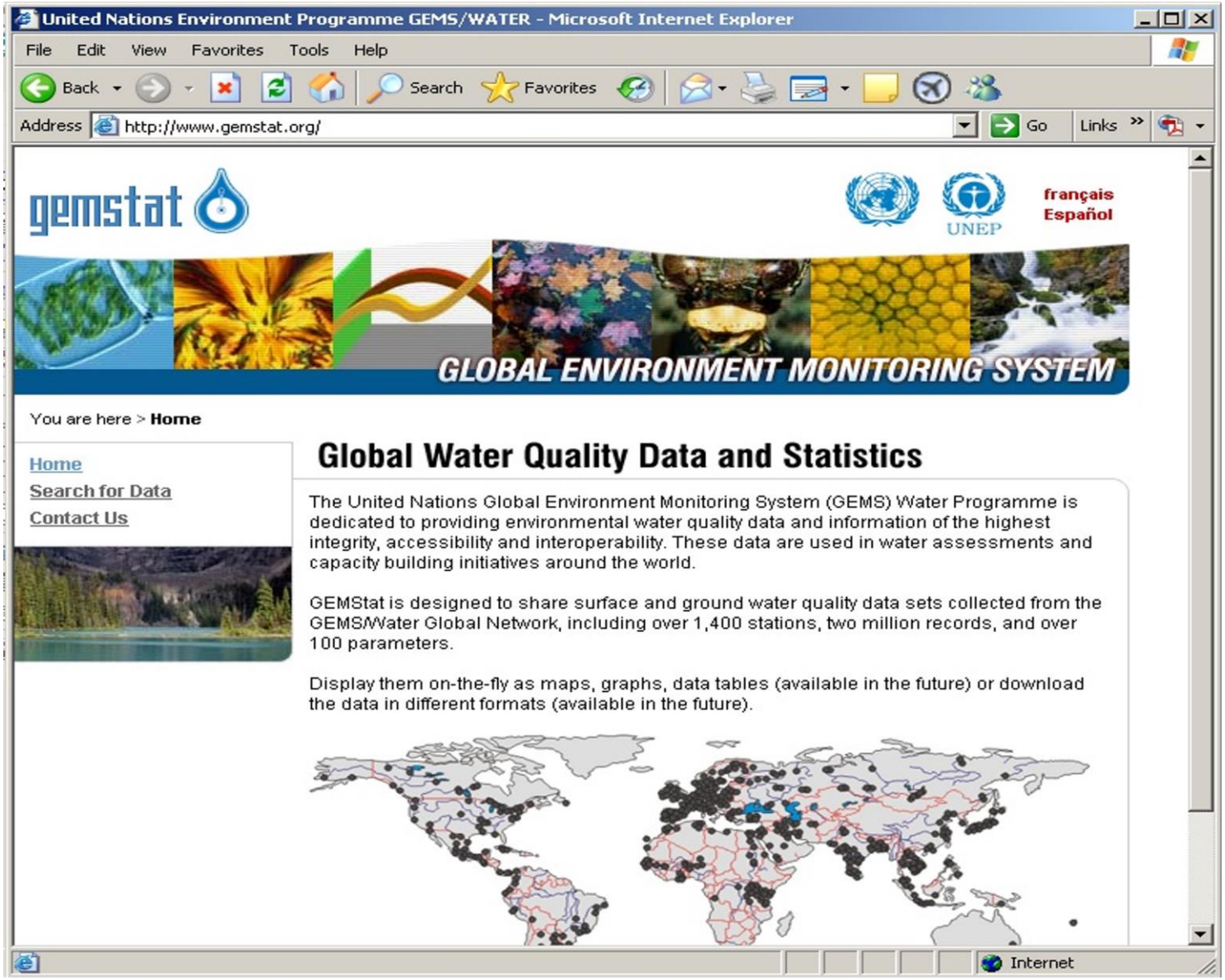
F2 = percentage of failed tests (frequency)

F3 = amount by which failed tests exceed guidelines (magnitude)

There are no technical barriers to sharing data, only institutional ones



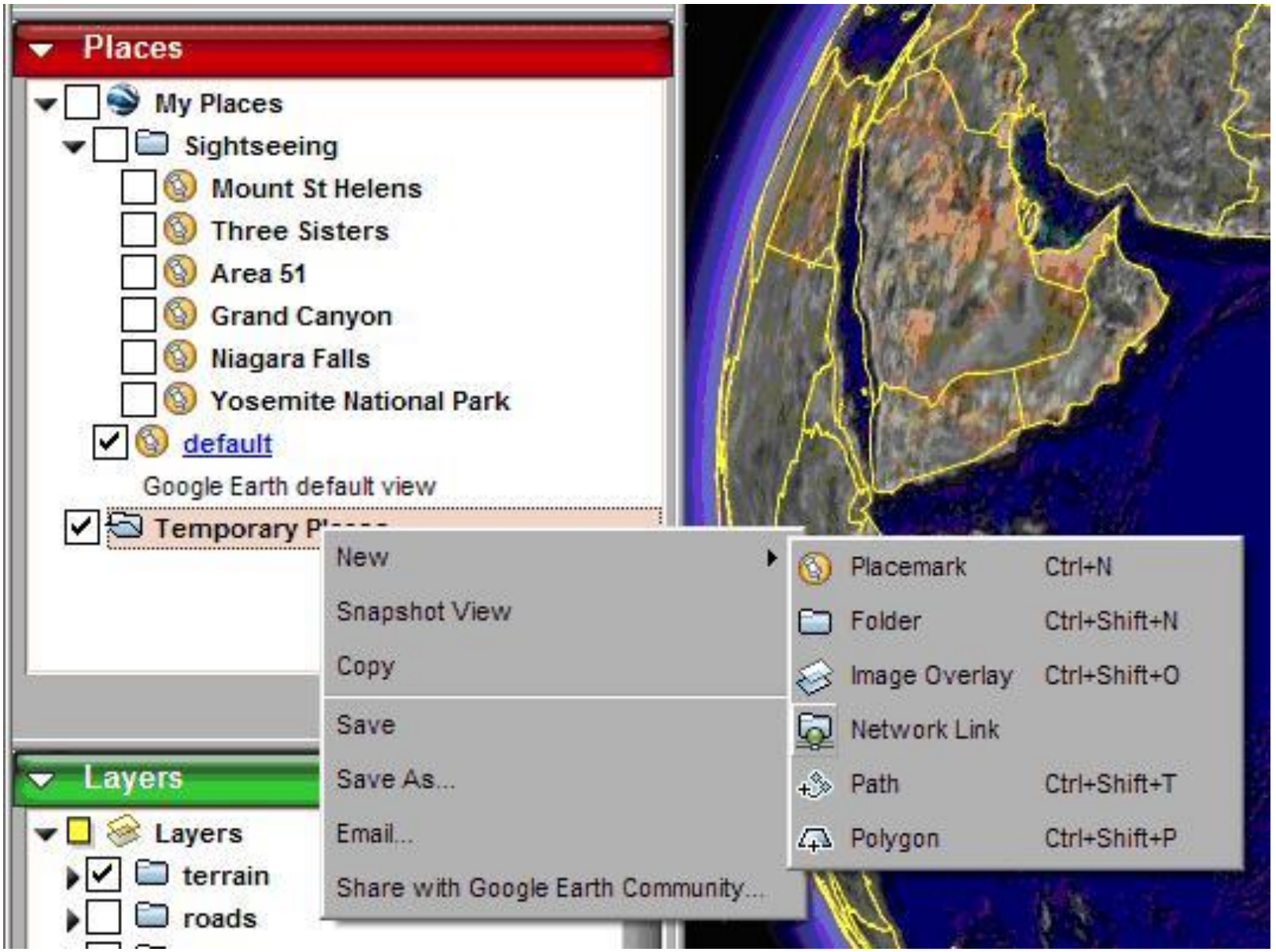
Key #1 – Discoverability – Publish Data on the Internet



Benefits from Being Discoverable

- More people have access
- Data have value when they are used; more use means more value
- Broader scope for assessments
- Water authorities can view their situation in a wider context – local to global

Key #2 – Visualization – Google Earth




Google Earth
File Edit View Add Tools Help
Fly To
Local Search
Directions
e.g. New York, NY
Places
Temporary Places
india.kml
INDIA
Ambika River - at Bilmora
Amlakhadi River - near Anklesh
Bhima River - near Takali
Cauvery River - at Pallipalyam
Cauvery River - at Pitchavaram
Cauvery River - at Thanjavur
Cauvery River - downstream K.R.S. R
Cauvery River - Mettur
Cauvery River - near Musiri
Cauvery River - near Satyagalam
Chaliyar River - at Kalpalli
Chaliyar River - at Koolimadu
Damanganga River - at Kachigaon
Godavari River - at Rajahmundry Dow
Godavari River - at Rajahmundry Upst
Godavari River - near Dhalegaon
Godavari River - near Mancherial
Godavari River - near Polavaram
Kabbini River - at Causeway, Sattar
Kallada River - at Panamthottam Kad
Kathajodi River - at Cuttack (Stn 1301)
Kolak River - at Patalia Bridge
Krishna River - at Gadwal
Krishna River - at Honnali Town
Krishna River - at Sangli
Krishna River - at Vedenapally
Krishna River - near Karad
Krishna River - near Vijayawada
Kuakhai River - Downstream Bhuban
Layers
Layers
terrain
roads
borders
Populated Places
Alternative Place Names
© 2006 Europa Technologies
Image © 2006 TerraMetrics
Image © 2006 NASA
© 2005 Google
Pointer 1°58'42.07" S 87°53'12.06" E
Streaming 100%
Eye alt 3637.61 m
Lodging
Dining
Roads
Borders
Terrain
Buildings

Google Earth

File Edit View Add Tools Help

Fly To | Local Search | Directions

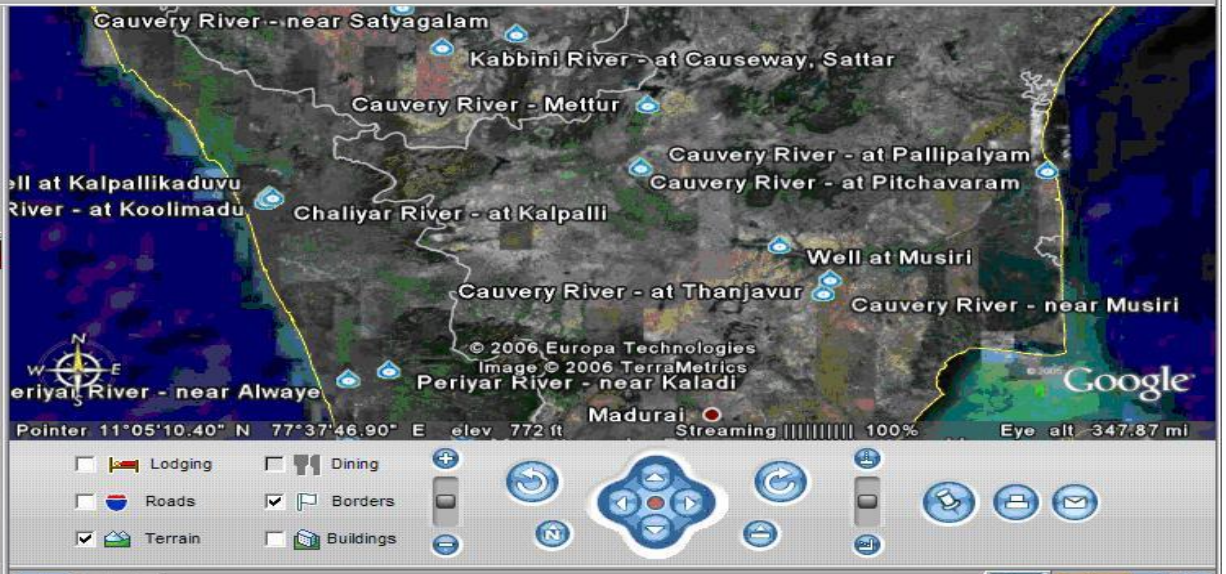
e.g. New York, NY

Places

- Temporary Places
  - GEMS/Water
    - Display water quality monitoring stations from the UNEP GEMS/Water Programme.
  - GEMS/Water stations
    - INDIA
      - Ambika River - at Bilmora
      - Amlakhadi River - near Anklesh
      - Bhima River - near Takali
      - Cauvery River - at Pallipalyam
      - Cauvery River - at Pitchavaram
      - Cauvery River - at Thanjavur
      - Cauvery River - downstream K.R.S.
      - Cauvery River - Mettur
      - Cauvery River - near Musiri
      - Cauvery River - near Satyagalam
      - Chaliyar River - at Kalpalli
      - Chaliyar River - at Koolimadu
      - Damanganga River - at Kachigaon
      - Godavari River - at Rajahmundry Do
      - Godavari River - at Rajahmundry Up
      - Godavari River - near Dhalegaon
      - Godavari River - near Mancherial
      - Godavari River - near Polavaram
      - Kabbini River - at Causeway, Sattar
      - Kallada River - at Panamthottam Ka
      - Kathajodi River - at Cuttack (Stn 130
      - Kolak River - at Patalia Bridge
      - Krishna River - at Gadwal
      - Krishna River - at Honnali Town
      - Krishna River - at Sangli
      - Krishna River - at Vedenapally
      - Krishna River - near Karad
      - Krishna River - near Vijayawada
      - Kuakhai River - Downstream Bhuba
      - Kuakhai River - Upstream Bhubane

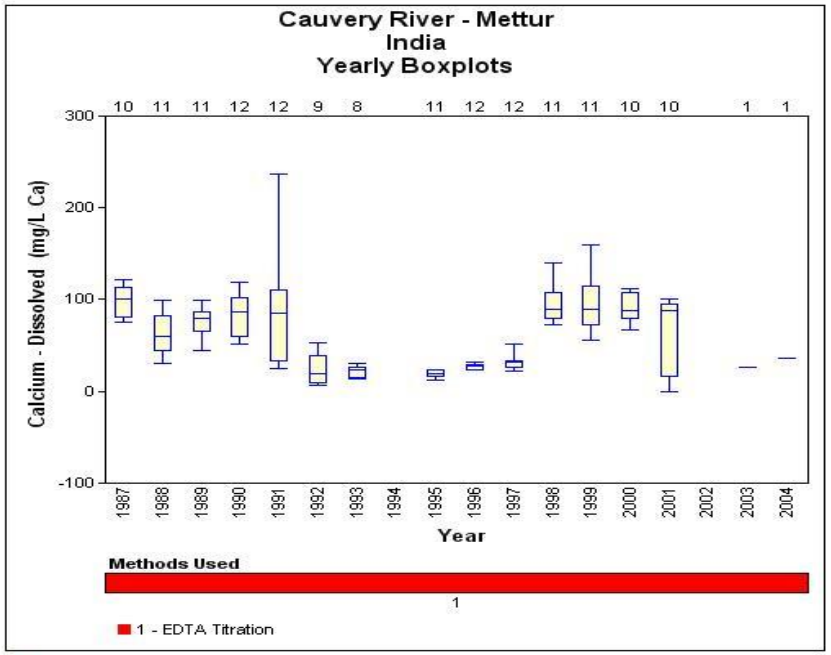
Layers

- Layers
  - terrain
  - roads
  - borders
  - Populated Places
  - Alternative Place Names
  - 3D Buildings



http://www.gemstat.org/graphs.aspx

GEMSoft
Methodology
Global Network
Contact Us

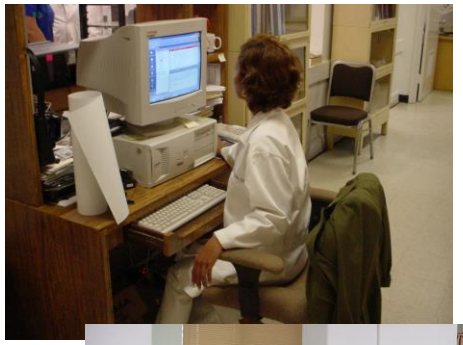


Print

GEMStat: Global Water Quality Database

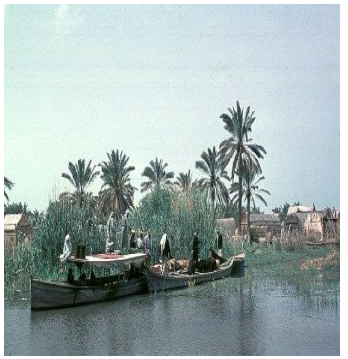
Benefits from Vizualization

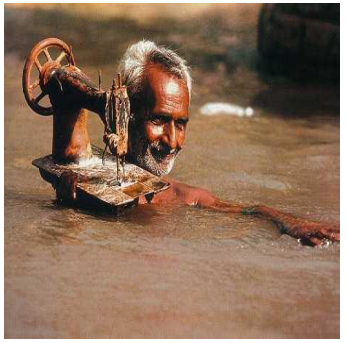
- See and fix bugs
- Better and faster assessments
- Better and faster decision-making

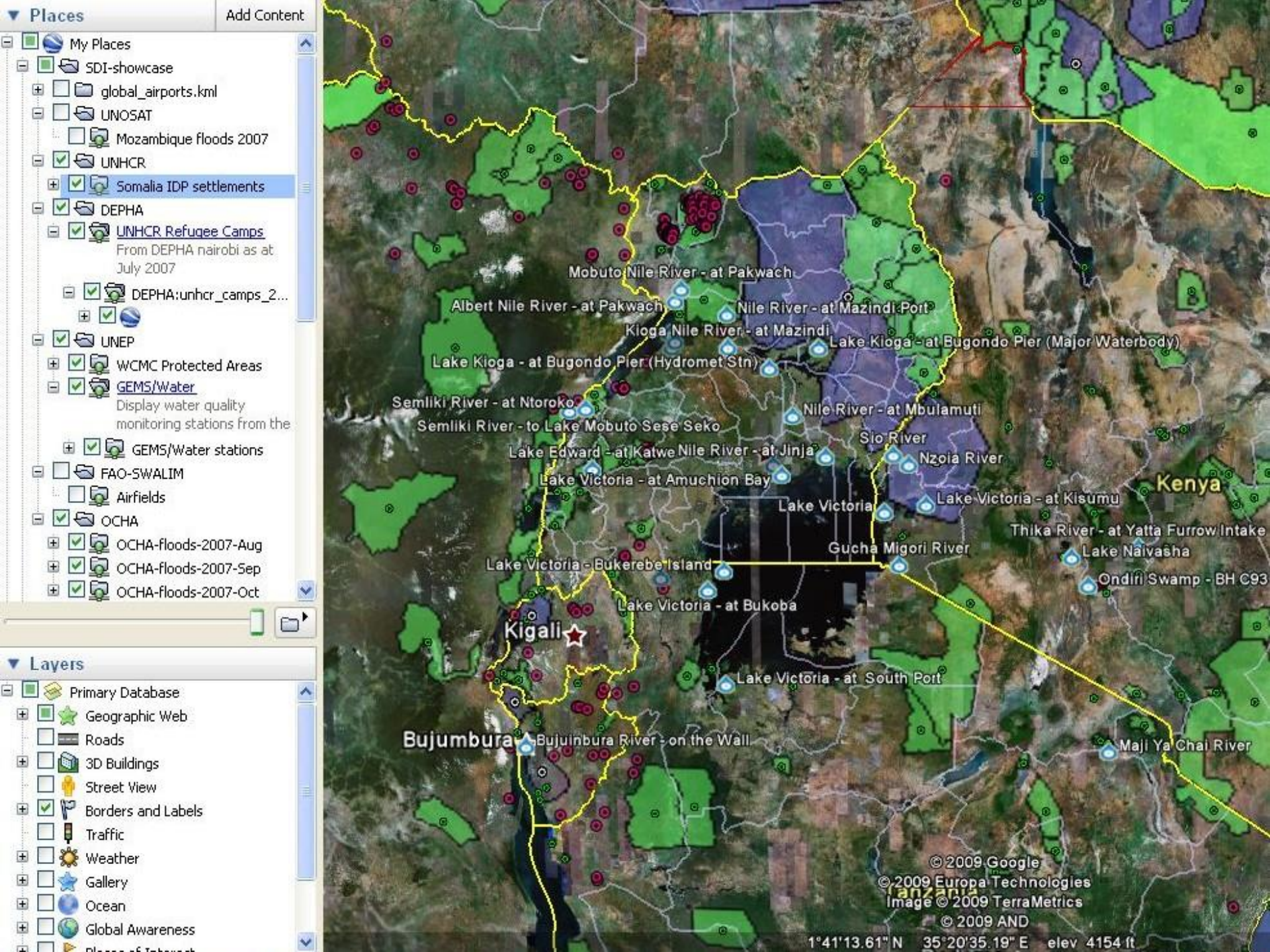


Key #3 – Interoperability

- GEMStat can “talk” to other online databases
- Built using open standards and open web services
- Result is flexibility to identify and fit services that fit particular needs
- One example is SDI-East Africa






Places
Add Content
My Places
SDI-showcase
global_airports.kml
UNOSAT
Mozambique floods 2007
UNHCR
Somalia IDP settlements
DEPHA
UNHCR Refugee Camps
From DEPHA nairobi as at July 2007
DEPHA:unhcr_camps_2...
UNEP
WCMC Protected Areas
GEMS/Water
Display water quality monitoring stations from the
GEMS/Water stations
FAO-SWALIM
Airfields
OCHA
OCHA-floods-2007-Aug
OCHA-floods-2007-Sep
OCHA-floods-2007-Oct
Layers
Primary Database
Geographic Web
Roads
3D Buildings
Street View
Borders and Labels
Traffic
Weather
Gallery
Ocean
Global Awareness
Mobuto Nile River - at Pakwach
Albert Nile River - at Pakwach
Nile River - at Mazindi Port
Kioga Nile River - at Mazindi
Lake Kioga - at Bugondo Pier (Major Waterbody)
Lake Kioga - at Bugondo Pier (Hydromet Stn)
Semliki River - at Ntoroko
Semliki River - to Lake Mobuto Sese Seko
Nile River - at Mbulamuti
Sio River
Lake Edward - at Katwe
Nile River - at Jinja
Nzoia River
Lake Victoria - at Amuchion Bay
Kenya
Lake Victoria
Lake Victoria - at Kisumu
Thika River - at Yatta Furrow Intake
Gucha Migori River
Lake Naivasha
Lake Victoria - Bukerebe Island
Ondiri Swamp - BH C93
Lake Victoria - at Bukoba
Kigali
Lake Victoria - at South Port
Bujumbura
Bujuinbura River - on the Wall
Maji Ya Chai River
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1°41'13.61" N 35°20'35.19" E elev 4154 ft

Plans for the Future

- Continue to fill gaps
- Integrate GEMStat with THREATS – decision-support software
- GEMSoft for data input
- Broader visualization and analysis – GIS, modelling

UNEP GEMS/Water Programme