

# UNEP Global Environmental Alert Service

**By**

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# Vision

***Vision:*** Everyone in the world should have access to information about what is happening to his/her environment

***Mission:*** Providing scientific information for decision making

***Goal:*** Empowering people with engaging environmental information

# UNEP Global Environmental Alert Service (GEAS)

- WHY?
- WHAT?
- HOW?

An aerial photograph of a vast, dense forest landscape. A winding river flows through the center of the image, surrounded by numerous lakes and ponds of varying sizes. The forest is a mix of green and brown, suggesting a temperate or boreal environment. The sky is clear and blue.

# **A Tale of Two Trends**

**Lars Laestadius**

**World Resources Institute**



**Trend 1**

**Trend 2**

## Trend 1 - Responsibility and Accountability

- **Millennium Development Goals**

- reverse loss of environmental resources (by 2015)

- **Biodiversity Convention**

- reverse loss (by 2010)

- **Many more**

- **Governments**

- **Investors**

- **Producers**

- **Civil society**

## Trend 2 – Information & Communication Technology

- **Satellite images**  
better, cheaper, more abundant, more accessible
- **Hardware**  
better, cheaper, smaller
- **Software**  
better, cheaper, easier to use
- **Analysts**  
better, more numerous
- **New users**  
civil society activists !!!

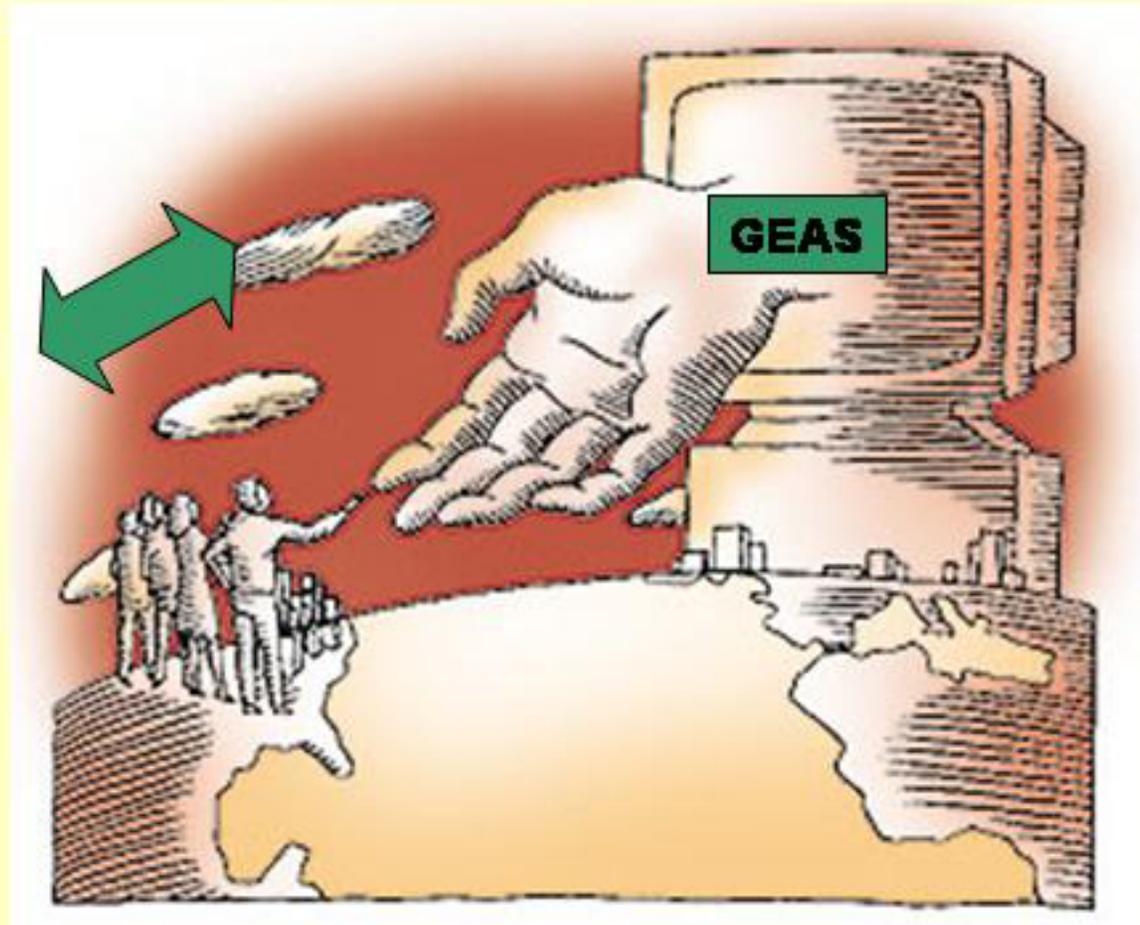


**Trend 1**

**When these trends meet,  
the world will change**

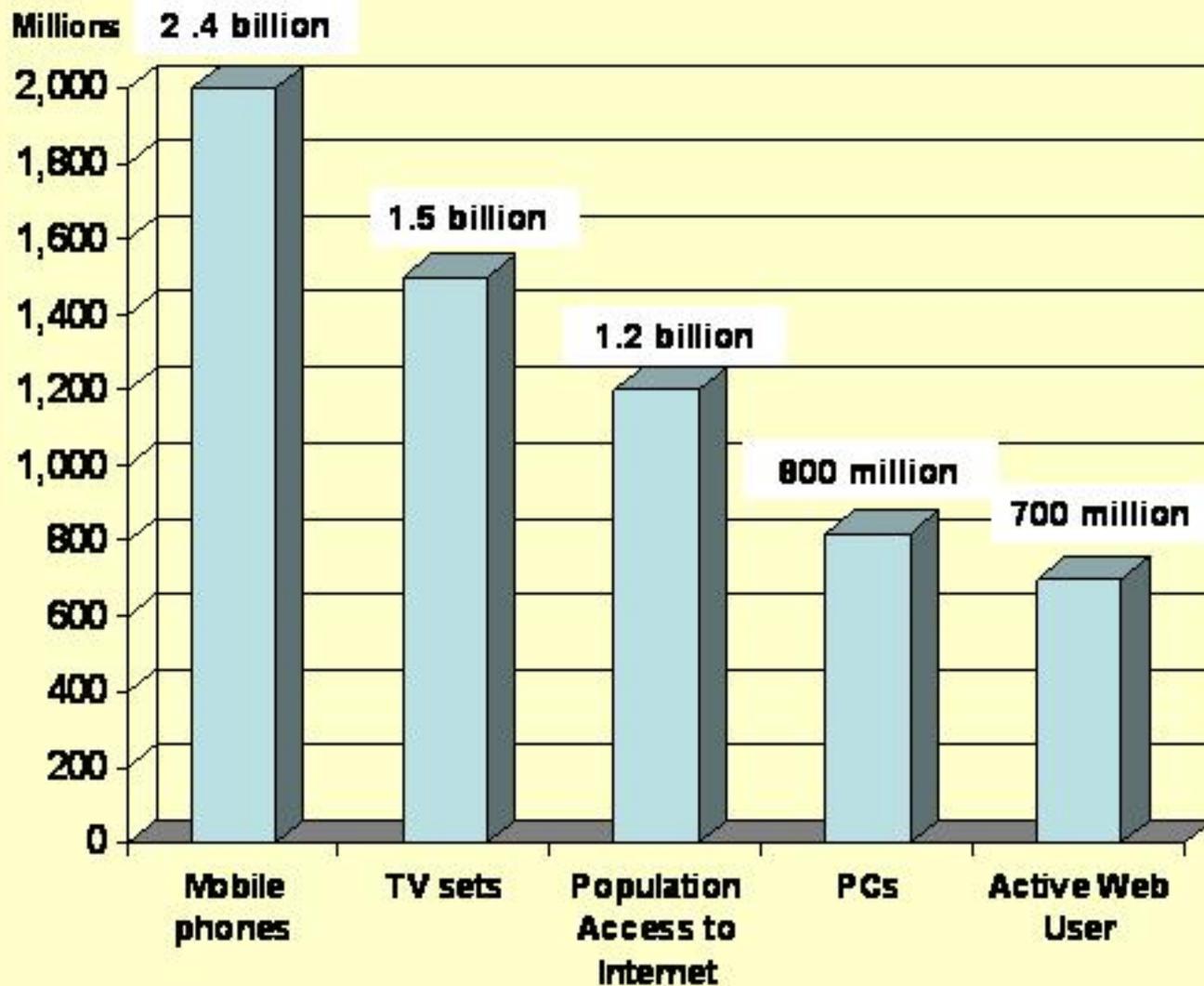
**Trend 2**

# Globalization of locals: Connecting global to local (GLOCAL)



**..Monitoring, Informing, Guiding..**

# Forces Shaping Our Future



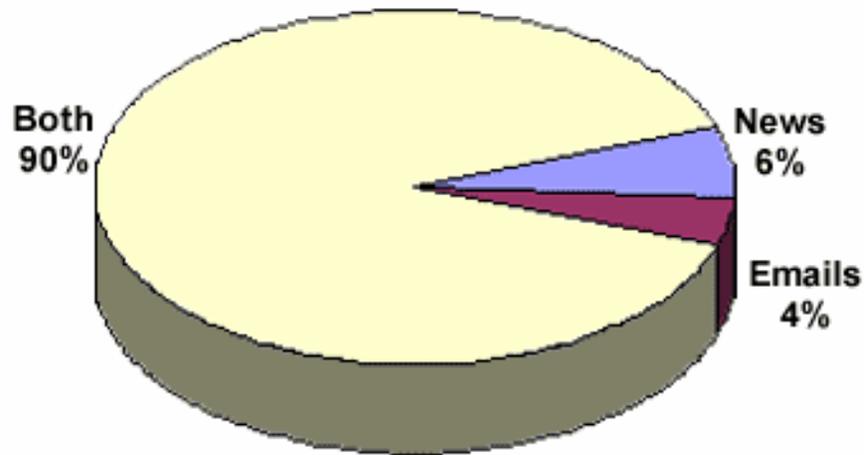
- Last year, human beings produced more **transistors** (and at a lower cost) than they did **grains of rice**.

- The US **blog-reading** audience is already 20% the size of the newspaper-reading population.

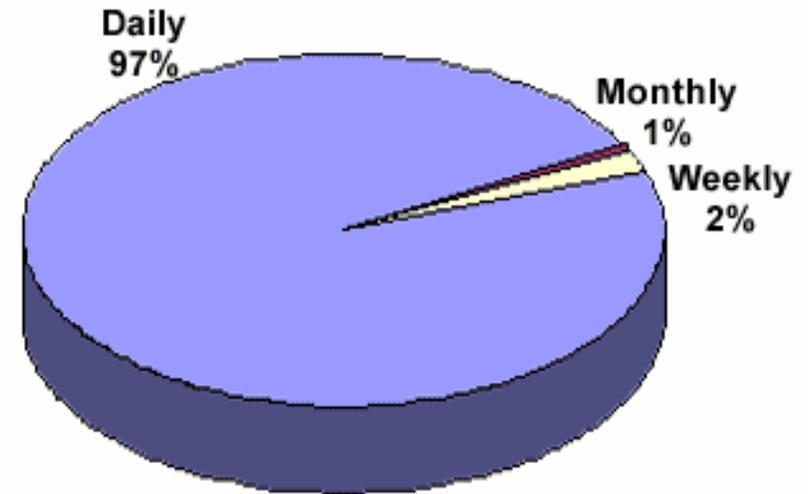
# Internet as the eighth wonder of the world

(Public opinion survey Hindustantimes.com dated 11.8.2006)

### Internet used for?



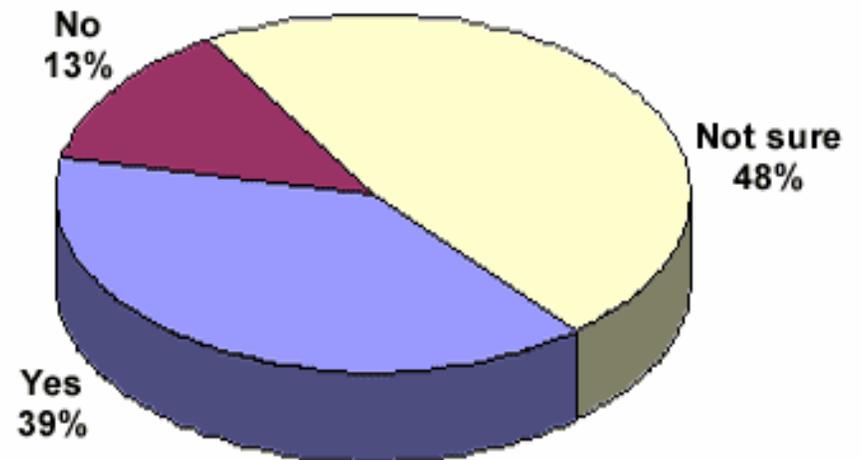
### How often?



### Internet has?



### Net info reliable?



# Technological drivers of change

- **Top four countries** : number of people connected to Internet - USA, Japan, China and India;
- **Web 1.0**: WWW, Yahoo, Google, Ebay etc.;
- **Web 2.0** : Social networking (Myspace.com, Facebook.com): Collaboration, knowledge sharing;
- **Internet 2** (10gb/sec); Dynamic data visualization and 3 D maaping, Videocasting, Podcasting;
- **Open software** (Linux, Office tool online); \$100 Laptop.

## The World is Flat: Globalization 3.0 (Thomas Friedman)

- Is driven not by major corporations or giant trade organizations but by individuals: *desktop freelancers and innovative startups all over the world;*
- Digital revolution that have made it possible to do business, or almost anything else, instantaneously with billions of other people across the planet;
- "uploading," the direct-from-the-bottom creation of culture, knowledge, and innovation through blogging, podcasts, and open-source software

## Social media and new waves in web

*The new culture on the Web is all about **consumer** creation; it's composed of things like the nearly 30 million blogs out there. With a click of the mouse, anyone can be a journalist, a photographer. The audience -- that 1 billion-plus throng linked by the Web--itself is creating a new type of social media.*

### **UNEP role**

Information and data aggregator

Personalized streaming

Collaborative publisher

Social network

Image sharing

Mix & match and filtering

CAP and RSS feed

# WHAT?

## *UNEP's Role*

- Grand integrator and communicator of scientifically credible data and information;
- Connecting producer of information (i.e. GEOSS) to users;
  - Proactive in delivery of information to users via email, web services, SMS and other media;
  - Leverage upon partners assets and provide outlet to their products and services
  - Harness the power of Internet and other ICT tools e.g. 3 D visualization, mapping etc.

# WHY?

## ***Benefits to UNEP:***

- UNEP as a credible authoritative sources of environmental information;
- Connecting stakeholders and catalyzing actions;
- UNEP as a source of information to CNN, BBC etc.;
- Implementation of the Bali Plan: Catalyze national actions for collection of data and provide public access to environmental information  
;

# WHY?

## ***Benefits to UNEP:***

- Enhancing UNEP's capacity building efforts;
- Value added over Global Earth Observation System of Systems (GEOSS) products and services;
- Enhanced accountability and transparency through 'evidences' and Visualization tools;

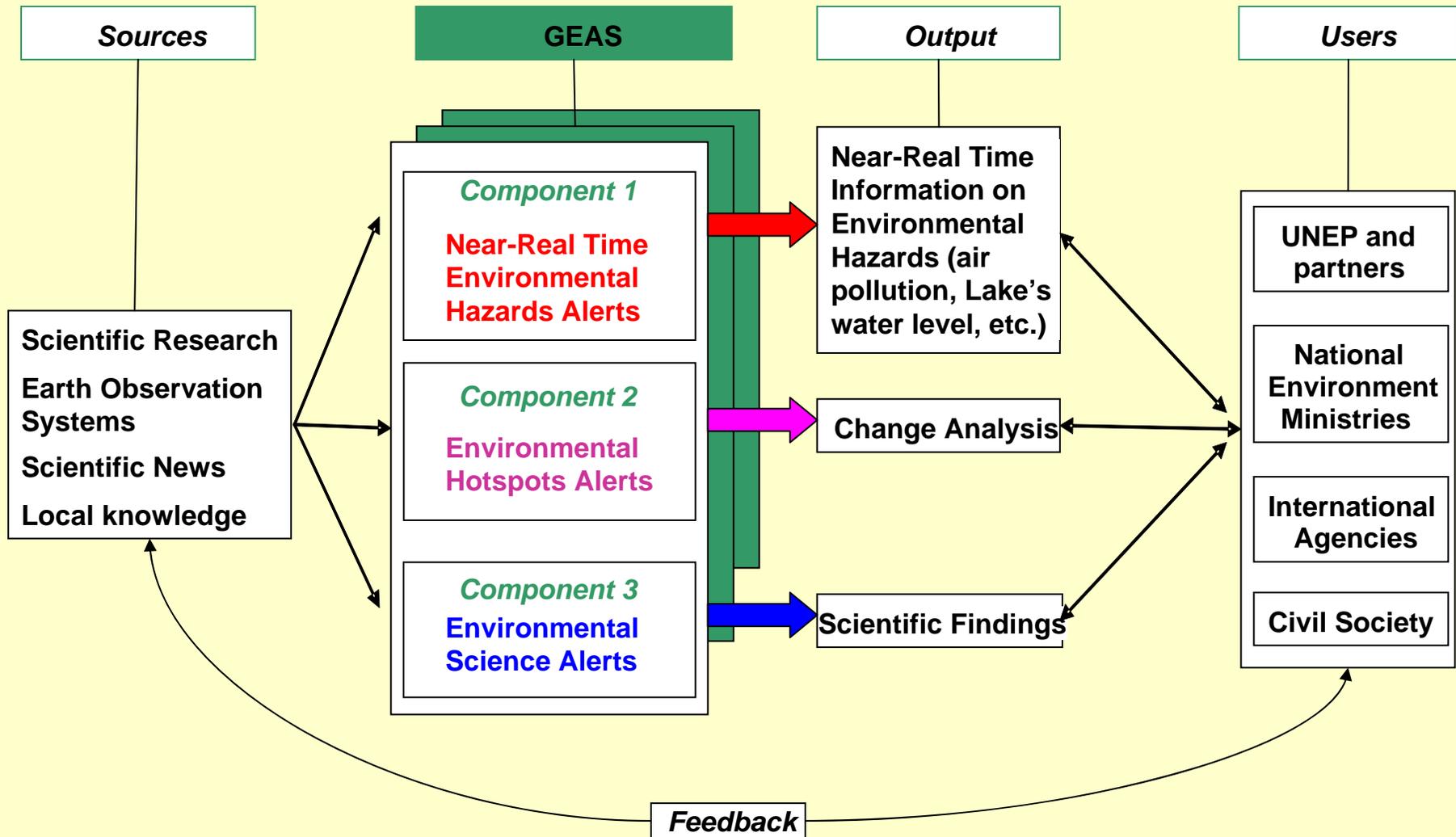
# HOW?

## *Business Model:*

**Business model between Nupedia (failed because of heavy peer review process) and Wikipedia (growing lack of credibility)**

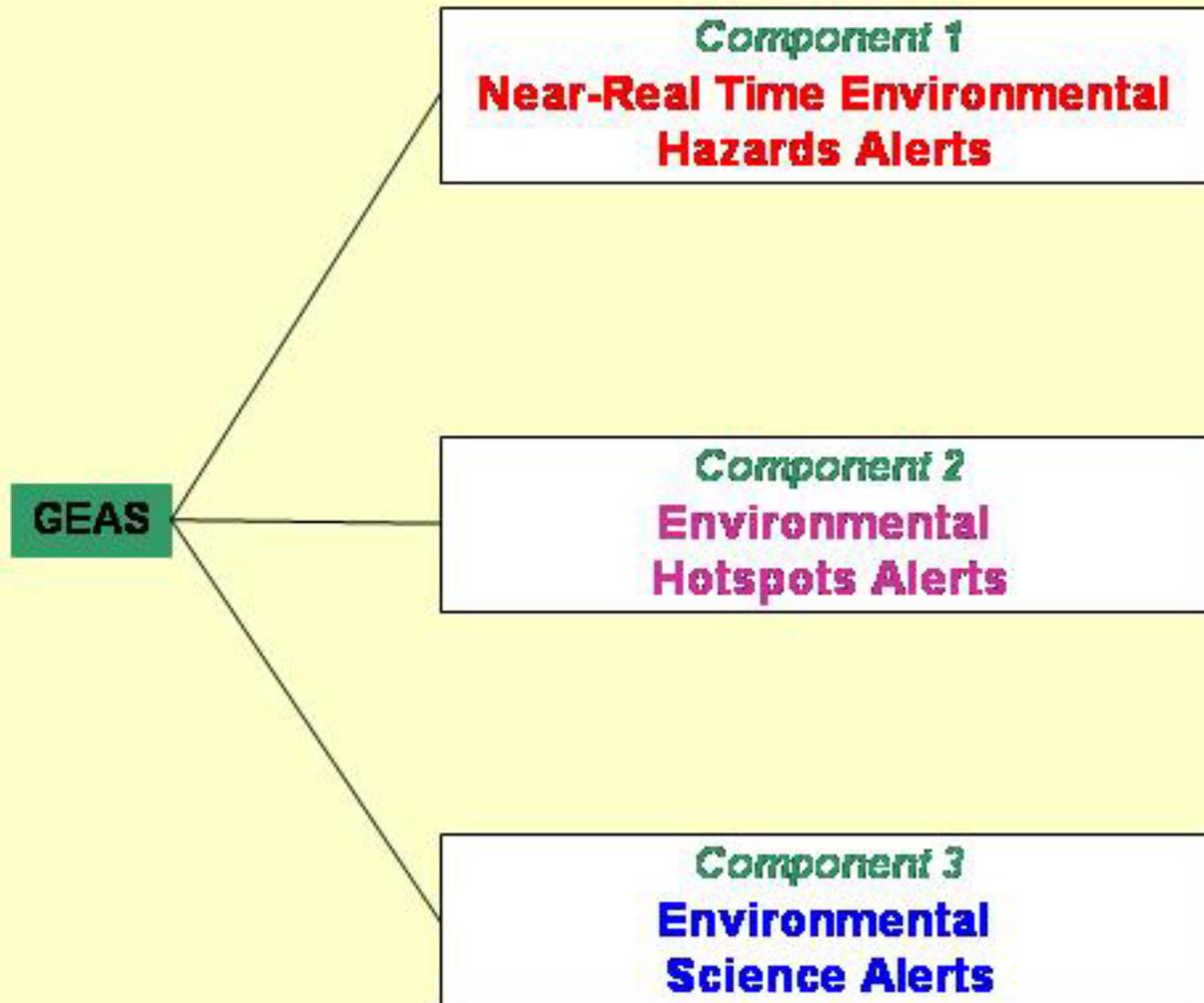
# HOW?

## Global Environmental Alert Service (GEAS)



# HOW?

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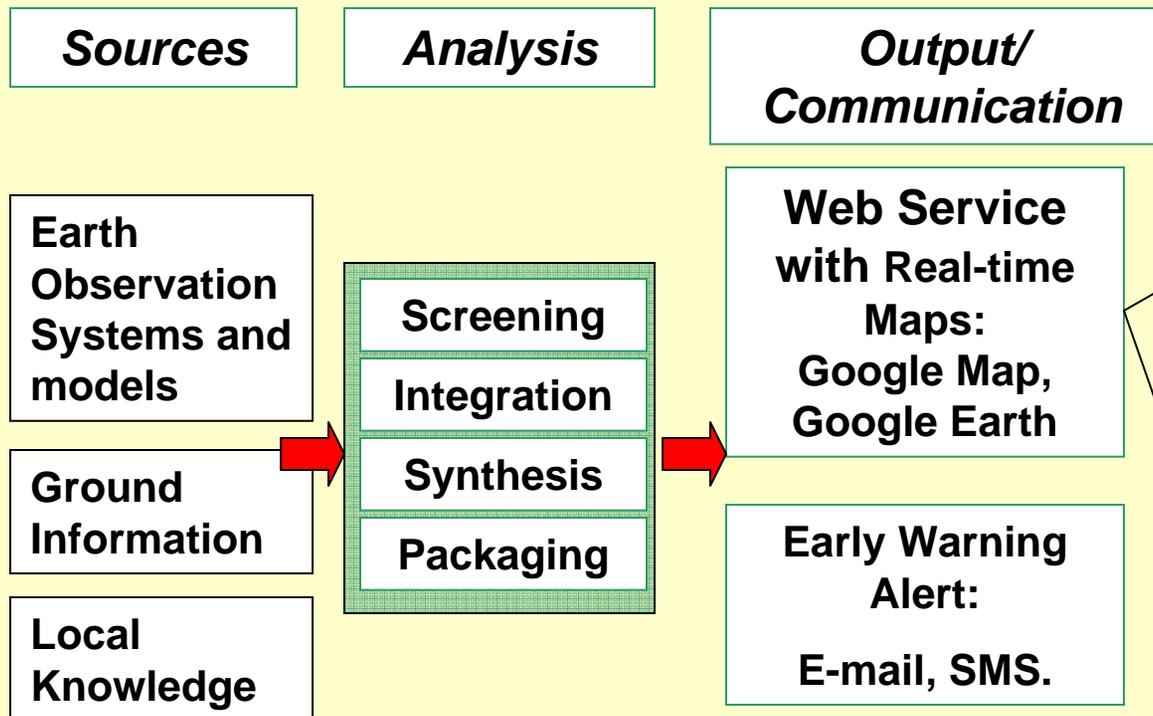


**Malaria Early Warnings for Sub-Saharan Africa**  
Recently, a group of scientists from the Center for Medium-Range Weather Forecasts in Reading, UK, developed a method for predicting malaria impact several months in advance. Malaria represents the most important parasitic infection in people causing more than a million deaths each year, mostly in Sub-Saharan Africa. Unfortunately more often malaria treatments are not easily accessible and effective in Africa, especially to children.  
Reference: Palmer T. N., Alexander I. A., Anderson LL, ...

# HOW?

# Global Environmental Alert Service (GEAS)

## GEAS Component 1 Near-Real Time Environmental Hazards Alerts



# HOW?

# Global Environmental Alert Service (GEAS)

## GEAS Component 1 Near-Real Time Environmental Hazards Alerts

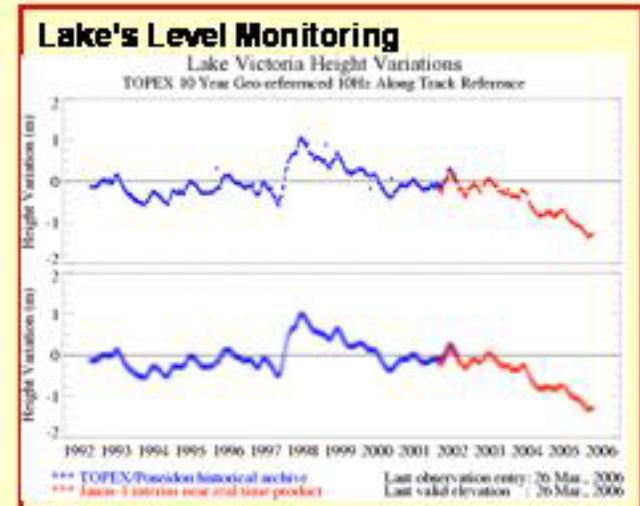
### Output/ Communication

Web Service  
with Real-time  
Maps:  
Google Map,  
Google Earth

Early Warning  
Alert:  
E-mail, SMS.

### Content

Extreme  
climate  
conditions,  
Aerosol,  
Lake's level  
monitoring,  
Natural  
Hazards  
Wild Fires  
Air Pollution



# HOW?

## Global Environmental Alert Service (GEAS)

### GEAS Component 2 Environmental Hotspots Alerts

#### Sources

Earth  
Observation  
Systems and  
models

Ground  
Information

Local  
Knowledge

#### Analysis

Screening  
Integration  
Synthesis  
Packaging

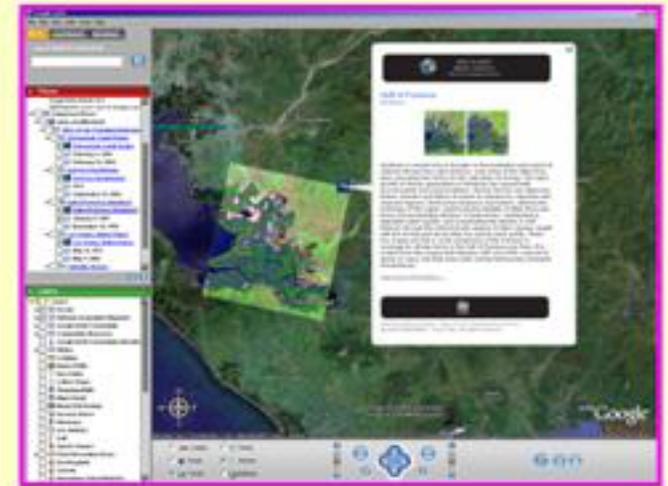
#### Output/ Communication

Environmental  
Change case  
studies

Google Earth  
Visualization



1973 and 2003 Iguazu, South America.



# UNEP Atlas of our Changing Environment



Monitoring of environmental hot spots using before and after satellite images



# Atlas Design – Main Components



Visiting Scientist

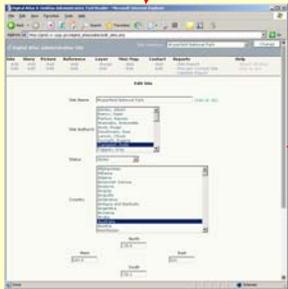
Site Metadata

Site Imagery

Site Metadata

Site Imagery

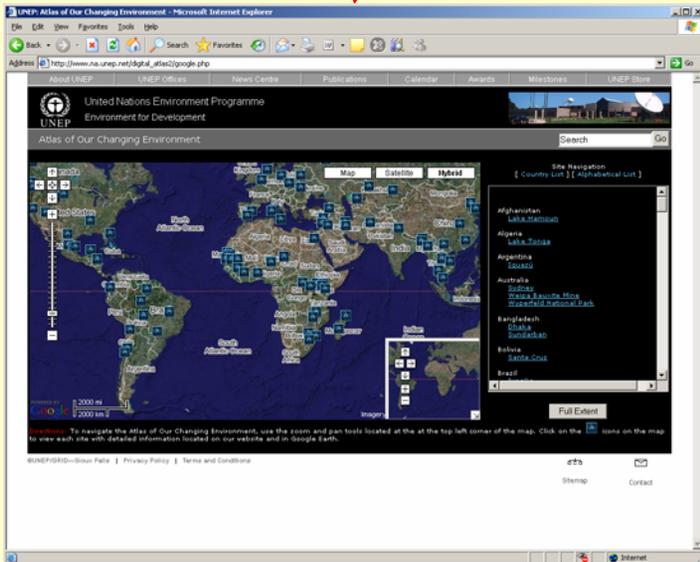
INTRANET



UNEP Digital Atlas Database

Google Image Server  
UNEP WWW Server

INTERNET



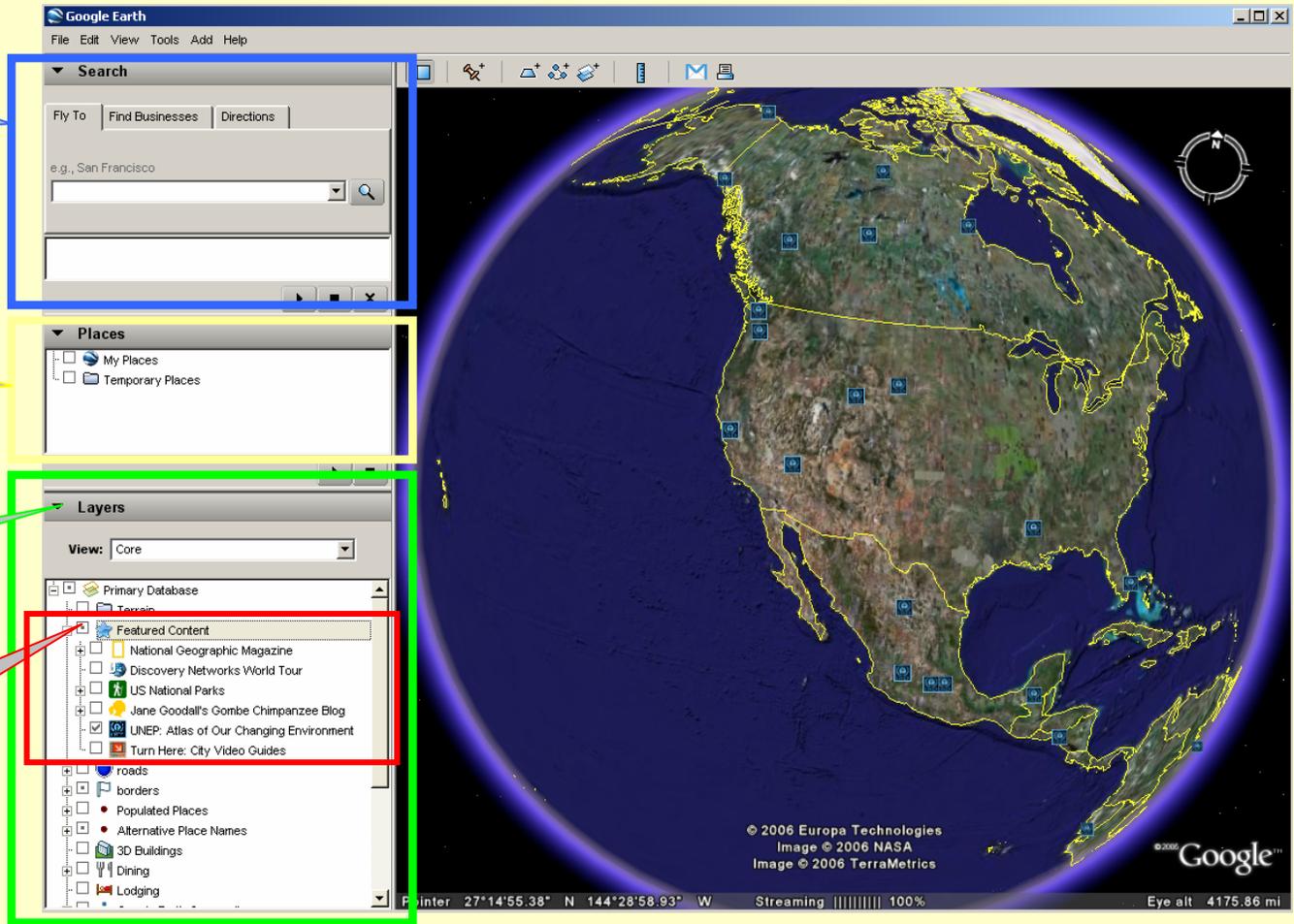
# UNEP on Google Earth

Search Panel

Places Panel

Layers Panel

Featured Content



# HOW?

## Global Environmental Alert Service (GEAS)

### GEAS Component 3 Environmental Science Alerts

#### Sources

Findings of  
Scientific  
Research

#### Analysis

Screening  
Integration  
Synthesis  
Packaging

#### Output/ Communication

- Science and policy briefs
- Journal access
- Research online
- Educational resources/ PPT
- Solutions case studies

#### Malaria Early Warning for Sub Saharan Africa

Recently, a group of scientists from the Center for Medium-Range Weather Forecasts in Reading, UK, developed a method for predicting malaria impact several months in advance.

Malaria represents the most important parasitic infection in people causing more than 1 million deaths each year, mostly in Sub-Saharan ..... Unfortunately more often malaria treatments are not easily accessible and effective in Africa, especially to ones

#### References

Palmer T. N.,  
Alessandri A.,  
Andersen U., ...

# **Environmental Science on the Internet**

## **Ask UNEP?**

**- What is environmental situation in my background?**

(Type the address and get location of toxic waste site, level of air pollution etc.)

**- What are environmental consequences of my choices?**

( connecting local to global)

- The advantage of standard format alerts is their compatibility with all information systems, warning systems, media, and most importantly, with new technologies such as web services.
- A partnership with Google and the news media is being explored

- **CAP: Common Alerting Protocol**

A standard format designed for exchange of alert messages:

- **about any kind of threat situation**

*Weather, Fires, Air Quality Warnings, Earthquakes, Volcanoes, Landslides, Disease Outbreaks, Beach Closings, Transportation Problems, Power Outages, ...*

- **over any and all media**

*television, radio, telephone, fax, highway signs, e-mail, Web sites, RSS "Blogs", ...*

- **to the public or to specific people**

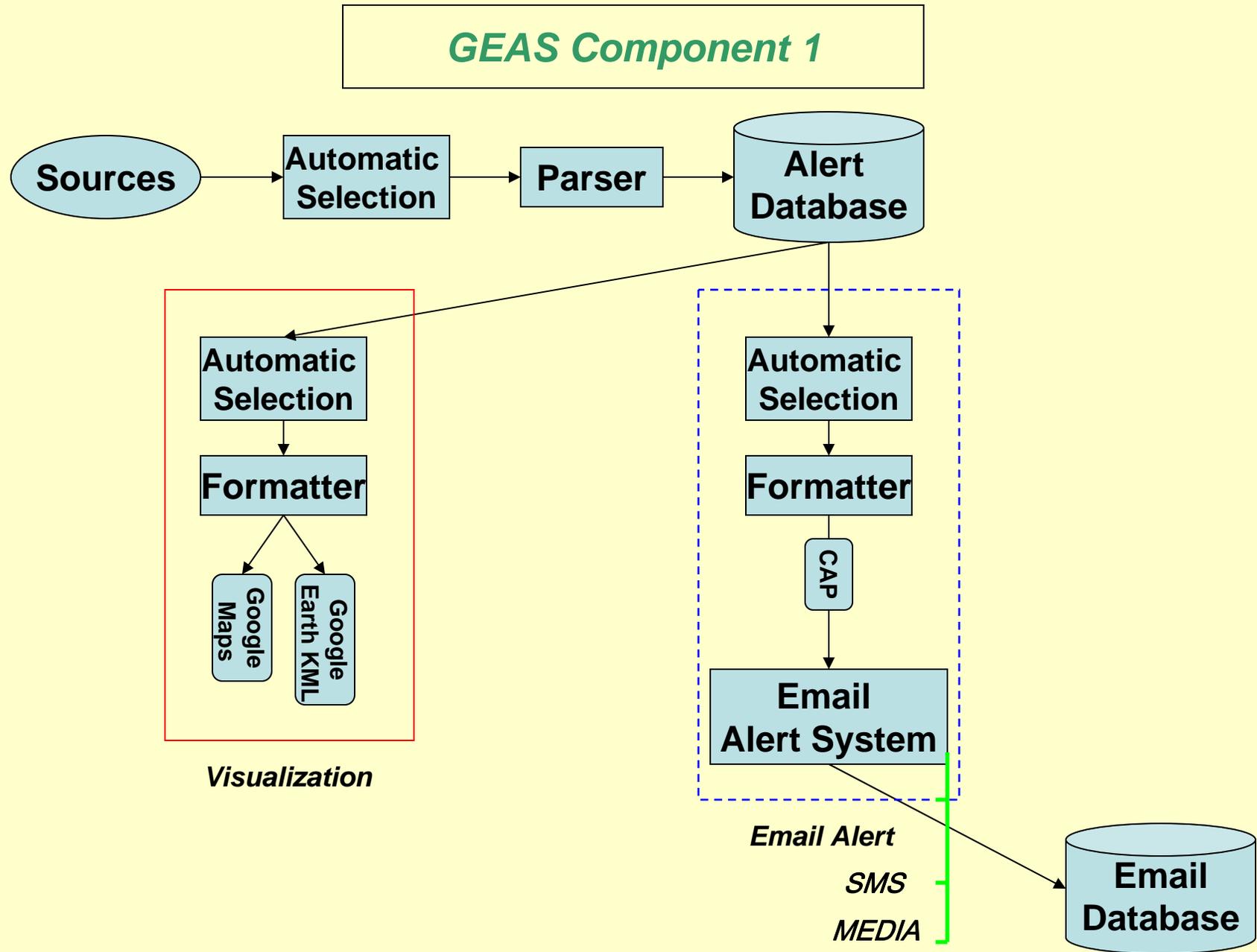
- **RSS: Really Simple Syndication**

A standard format designed for news information exchange:

- **through aggregators of RSS feeds**

# HOW?

## GEAS – Near Real Time Component



## Implementation and *Challenges*

- Identification of credible sources supporting standard format- *Few sources use standard formats*
- Automatic streaming of information from sources- *Script tailored to source*
- Database of Alerts- *Design and Management*
- Packaging of information- *Develop CAP*
- Database of Users- *Subscription and Outreach*
- Visualization of Alerts- *Google partnership*
- Email, SMS to users- *Google partnership*

# GEAS – Near Real Time Component: Demo

## - GEAS : Global Environmental Alert Service

The screenshot displays the GEAS interface. On the left, a world map is shown with several colored markers indicating disaster locations: a red fire icon in South America, a red fire icon in Africa, a blue water drop icon in Africa, a yellow car icon in the Middle East, a yellow car icon in Asia, and a blue snowflake icon in Asia. The map includes navigation controls (arrows, zoom in/out, pan) and a scale bar (2000 mi / 2000 km). The text 'POWERED BY Google' and 'Immagini ©2006 NASA' is visible at the bottom left of the map area. On the right, a panel titled 'Site Navigation' contains a list of alerts categorized by type. The categories and their respective alerts are:

- Air Quality**
  - [Good to Moderate for San Jose, U.S.](#)
  - [Air quality for London, England](#)
  - [Good to Moderrate Ground Level Ozone in W](#)
- Crises and Emergencies**
  - [War Crisis between Lebanon and Israel](#)
  - [Food Insecurity](#)
- Disease Outbreaks**
  - [Avian influenza in Thailand](#)
- Drought**
  - [19 County Drought in Nebraska, U.S.](#)
- Earthquake**
  - [4.4 Magnitude in Northern California](#)
  - [Magnitude 5.0 Sendai, Honshu, Japan](#)
- Fires**
  - [Brazilian Rain Forest](#)
  - [Southwest Forests in South Africa](#)
- Flood**
  - [Fitzroy River in Australia](#)
  - [Brahmaputra River in Bangladesh](#)
- Storm**
  - [Tropical Storm Bebinca](#)
  - [Tropical storm Norman](#)

**Directions:** Navigate around the map using the zoom and pan functions using the controls in the top left corner of the map. Click on the colored markers on the map to view the natural disasters, as well as links to interactive maps.

**Legend**

**Alerts in Google earth**

**HOW?**

**GEAS – Near Real Time Component**

*Demo*

<http://www.na.unep.net/geas/index.php>