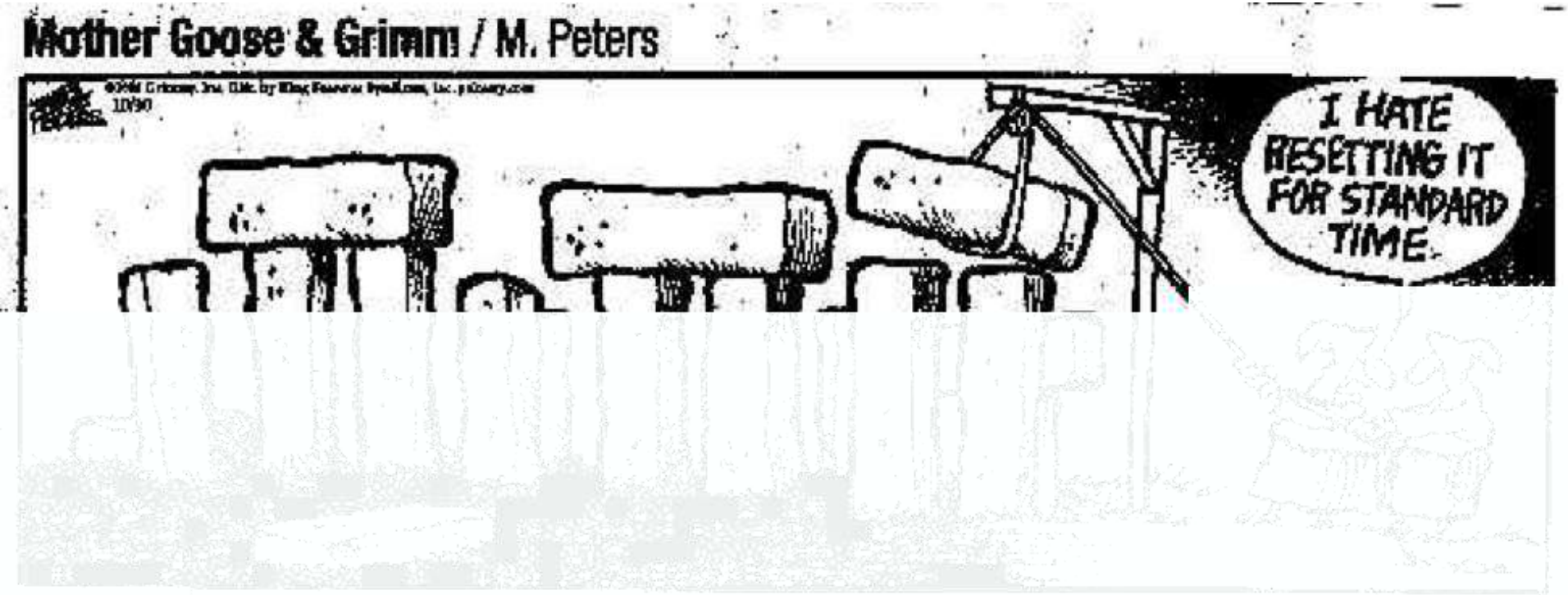
OGC®
Open Geospatial Consortium

# Toward synergy in use of OGC standards in the geosciences

**Third Workshop on the Use of GIS/OGC Standards in Meteorology, 15-17 November 2010, Exeter UK**

David Arctur, PhD
Director, Interoperability Programs

# Before OGC standards…



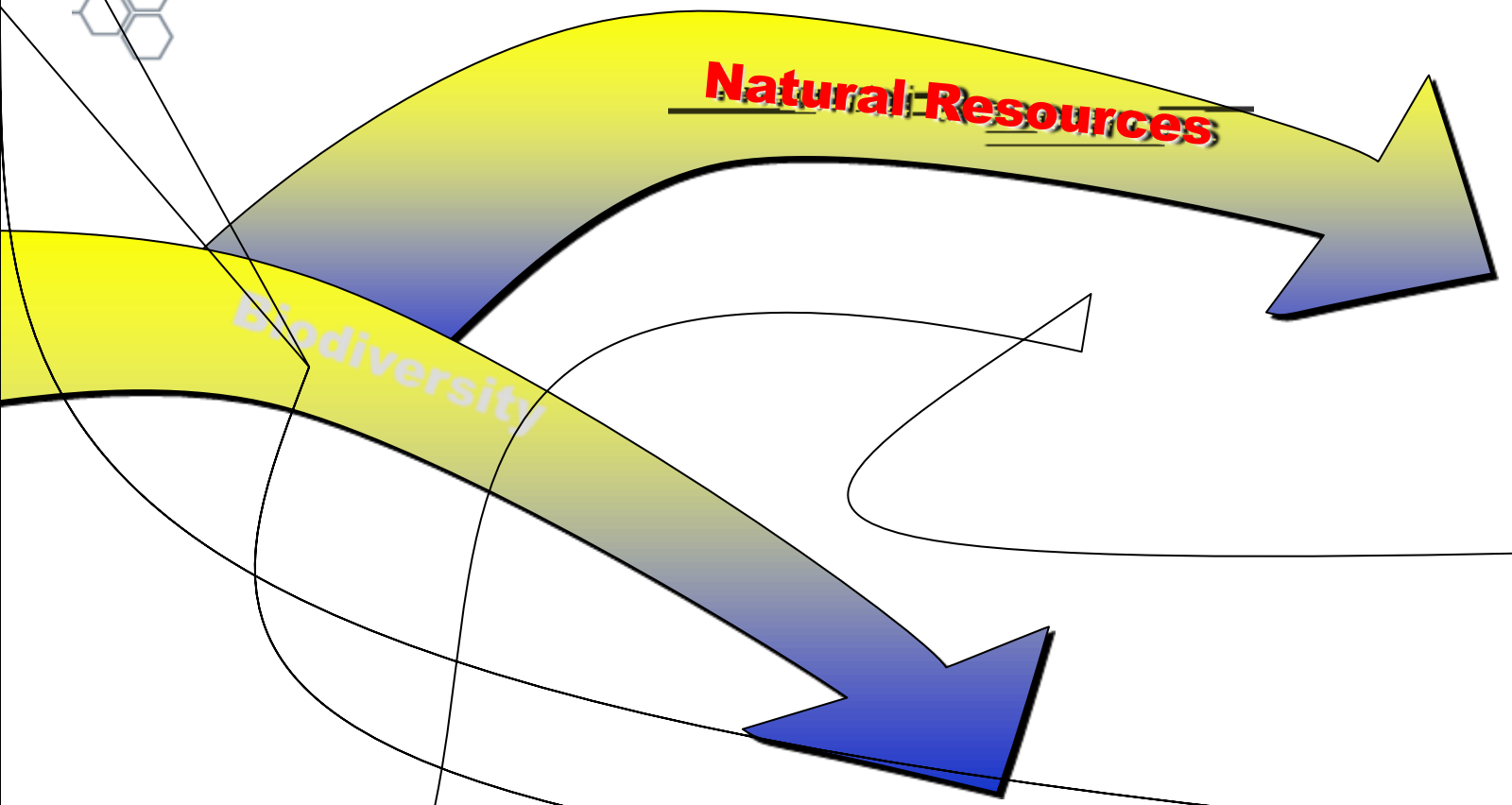

**Early bespoke calendar**

# Importance of good communications cannot be overstated…

*… the real reason the dinosaurs are gone??*


OGC®

# Who can say what's to be done?



# Antecedents to WMO-OGC MOU

- 3000-2500 B.C.E.:
  - Egyptians build Great Pyramid at Cheops – astronomical observatory?
  - Brits build Stonehenge – early special events calendar?
- In 1873:
  - International Meteorological Organization formed (became UN WMO in 1950)
- In 2007:
  - Prof. Maidment / CUAHSI submits WaterML system to OGC review
- By August 2008:
  - Prof. Maidment asks what it will take for WaterML to gain traction in OGC
  - Realizes the need to recruit the hydrologic science community to OGC ➔ ***OGC needs mutual recognition and collaboration with WMO***

# Crafting the WMO-OGC Relationship

- In November 2008:
  - OGC meets WMO first time at CHy meeting, Geneve
  - ECMWF hosts first workshop on GIS/OGC standards in meteo
  - WMO Information System manager agrees to support MOU development between WMO, OGC
  - UK Met Office lends a hand to help the process via WMO CBS
- During 2009:
  - Both Hydrology DWG and Meteo DWG are formed, start planning activities toward conceptual model development, better time handling in WMS, etc.
- In November 2009:
  - WMO-OGC MOU is signed by both parties
  - ***OGC effectively becomes an instrument to help advance standards for WMO***

OGC®

# And in less than two years…

- With the creation of OGC Hydrology DWG in early 2009, and kickoff of Groundwater Interoperability Experiment in December 2009, previously started work on WaterML got even wider participation from the community.
- WaterML 2.0 is planned for submission for OGC vote by December 2010
- And other aspects of CUAHSI Hydrologic Information System are migrating from custom-programmed web services intended only for that application … to build on OGC standards for web services and information models.

# Results and Realizations

- *An information system that provides accurate observations can be the basis for sound science*

- Consider how we discover new knowledge:
  - ✓ By deduction from existing knowledge
  - ✓ By experiment in a laboratory
  - ✓ By observation of the natural environment

# Recognizing the science of Observation

- Deduction and experiment are important, but hydrology is primarily an observational science
- discharge, climate, water quality, groundwater: measurement data collected to support this.

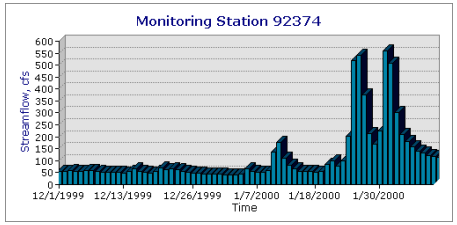
Courtesy of Dr. David Maidment, University of Texas at Austin

# Crossing the Digital Divide

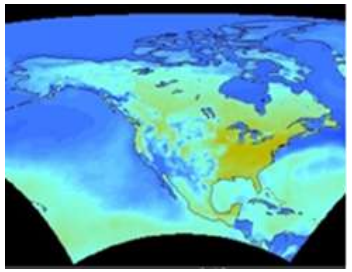
**Discrete** spatial objects with time series

**Continuous** space-time arrays

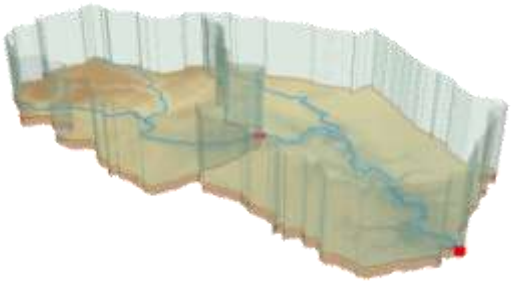
## Observations



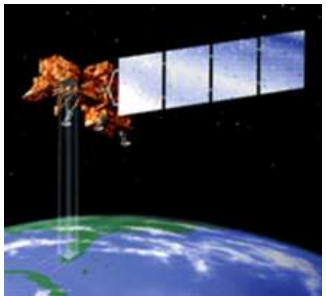

## Weather and Climate



## GIS



## Remote Sensing

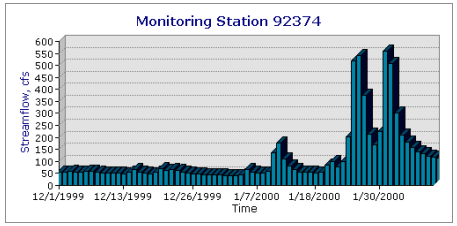


These are two very different data worlds

OGC®

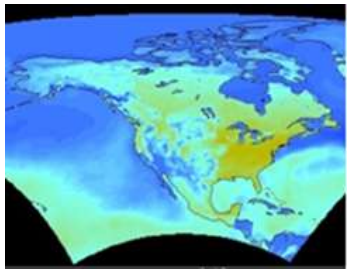
# Made possible through carefully developed standard interfaces

Observations

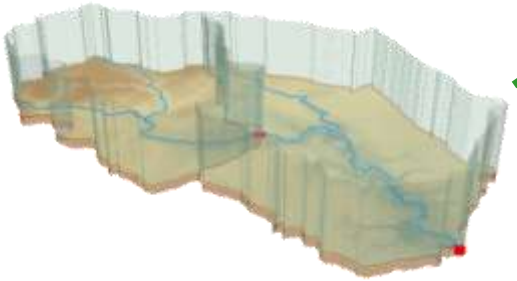


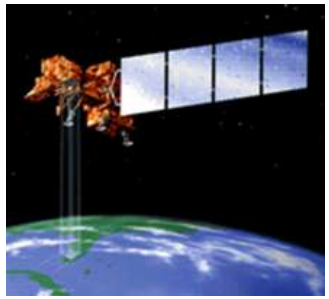

Modeling

Weather and Climate



GIS





Remote Sensing

OGC®

# Recent Activities

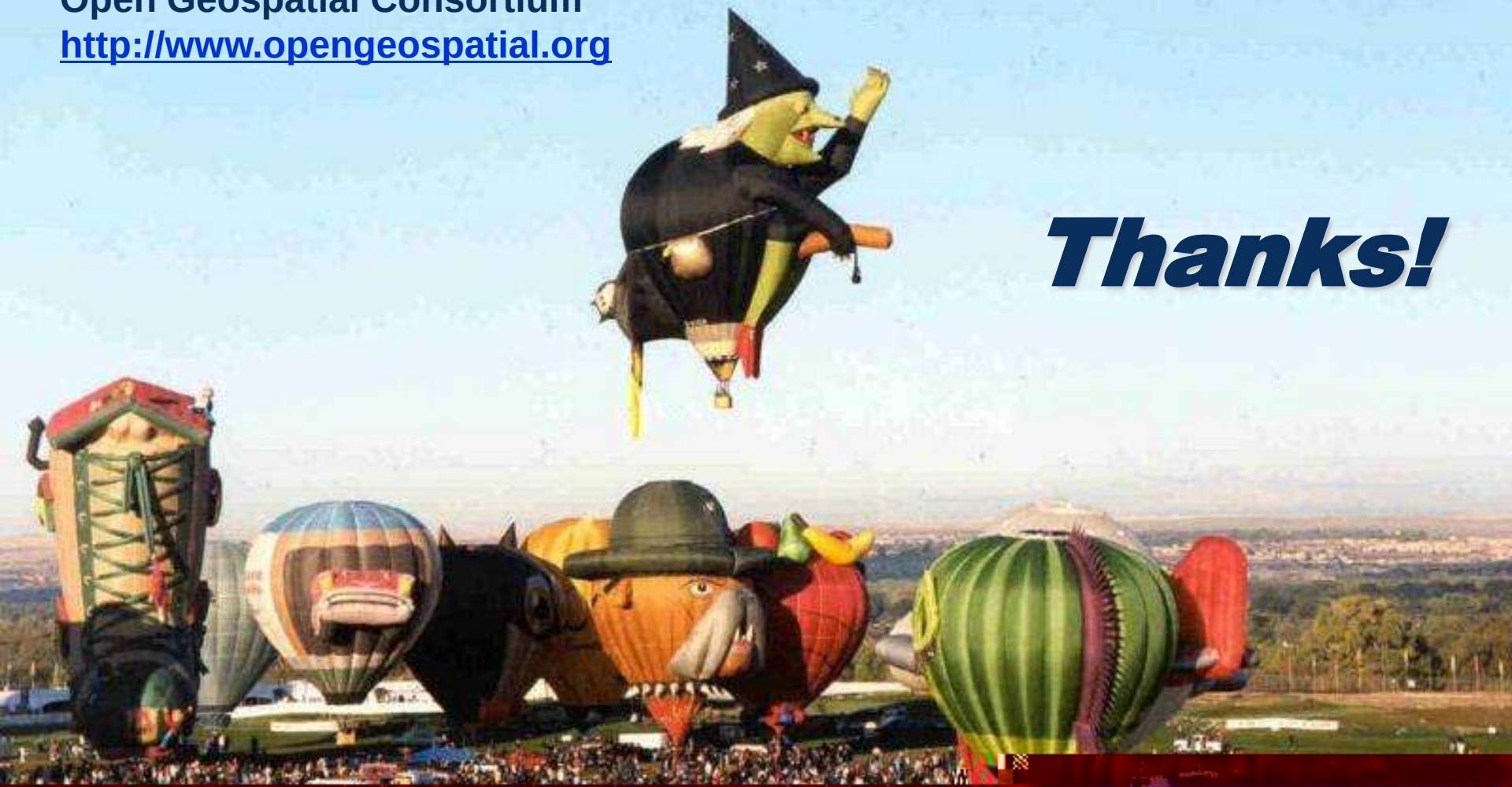
- Interoperability Experiments for Groundwater, Surface Water
- Coordination taking place in OWS testbeds between NOAA, FAA and Eurocontrol for encodings and web services describing weather events
- Geosynchronization of databases across an SDI
- Climate Informatics Integration
- GEOSS Support Activities

# Next Up: Bringing Climate into Focus

OGC®

**Dr. David Arctur**
***darctur@opengeospatial.org***

**Open Geospatial Consortium**
**http://www.opengeospatial.org**



# *Thanks!*