

Connecting Scientists and Data for Synthesis through Collaboration

Carbon-Climate Synthesis (BWC Dennis Baldocchi et al)

What is the role of photosynthesis in global warming?

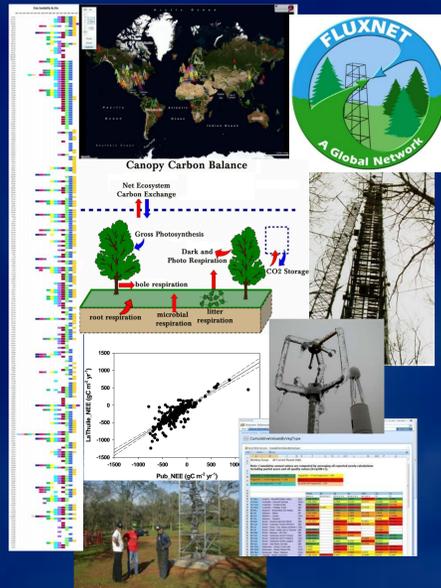
- Measurements of CO₂ in the atmosphere show 16-20% less than emissions estimates predict
- The difference is either due to plants or ocean absorption.

Communal field science – each investigator acts independently.

Cross site studies and integration with modeling increasingly important

Sharepoint site

- 950+ site-years of data from 250+ towers around the world
- 60+ paper writing teams
- American data subset is public and served more widely



<http://www.fluxdata.org>

Russian River Digital Watershed (BWC James Hunt et al)

Can we build digital watersheds useful for water resource planning using only publically available data?

- USGS, NOAA, EPA, Sonoma Ecology Center, etc

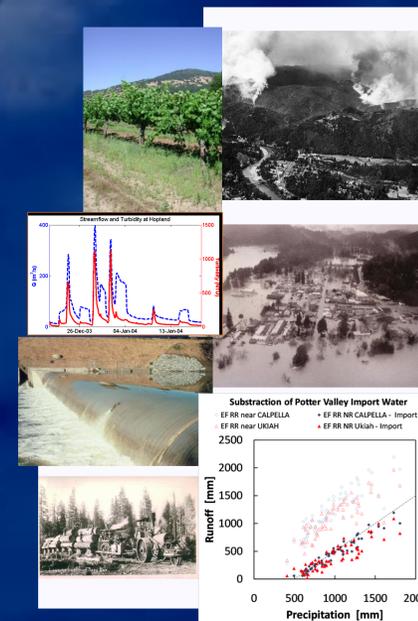
Russian River watershed challenges: forestry, farming, urbanization, gravel mining, and fish habitat restoration.

Early studies examined overall water balance and changes in suspended sediment

- Scientific data “mashups” are leading to useful results.

Recent engagement with National Marine Fisheries and USBR expand to other watersheds across Northern California

Sharing technology with CUAHSI (100 universities)



<http://bwc.berkeley.edu/California>

<http://www.cuahsi.org>

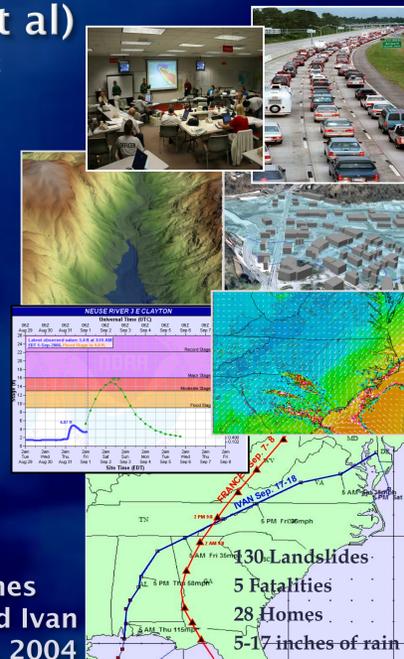
North Carolina Disaster Management (RENCI, John McGee et al)

Most disasters in North Carolina are weather driven. The more information available, the better the response planning.

- Local agencies react with partial data today
- Disaster management never stops – always either managing or preparing

Integrating data to produce a better picture in real time

- Sensors data, model output and human observations
- Meteorology, hydrology, power, transportation, communications, public health, economics



<http://www.renci.org/focusareas/disaster/>

Health-E-Waterways (UQ Eva Abal et al)

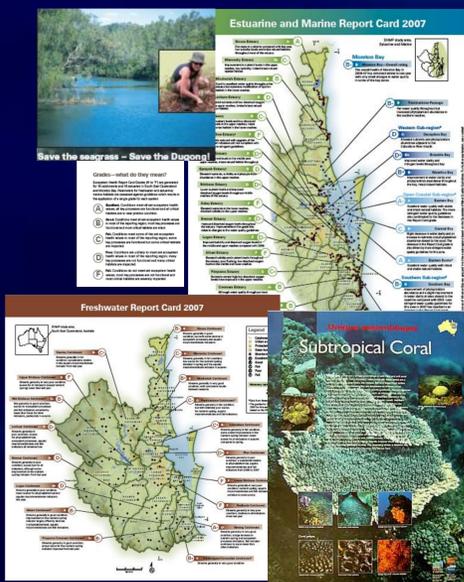
Queensland is experiencing a water crisis due to drought, expanding population, and estuarine reparation

Healthy Waterways includes 19 local governments, 6 state agencies, 5 universities and key industrial partners

Data processing hampered by lack of tools and ontologies (to merge data from heterogeneous sources).

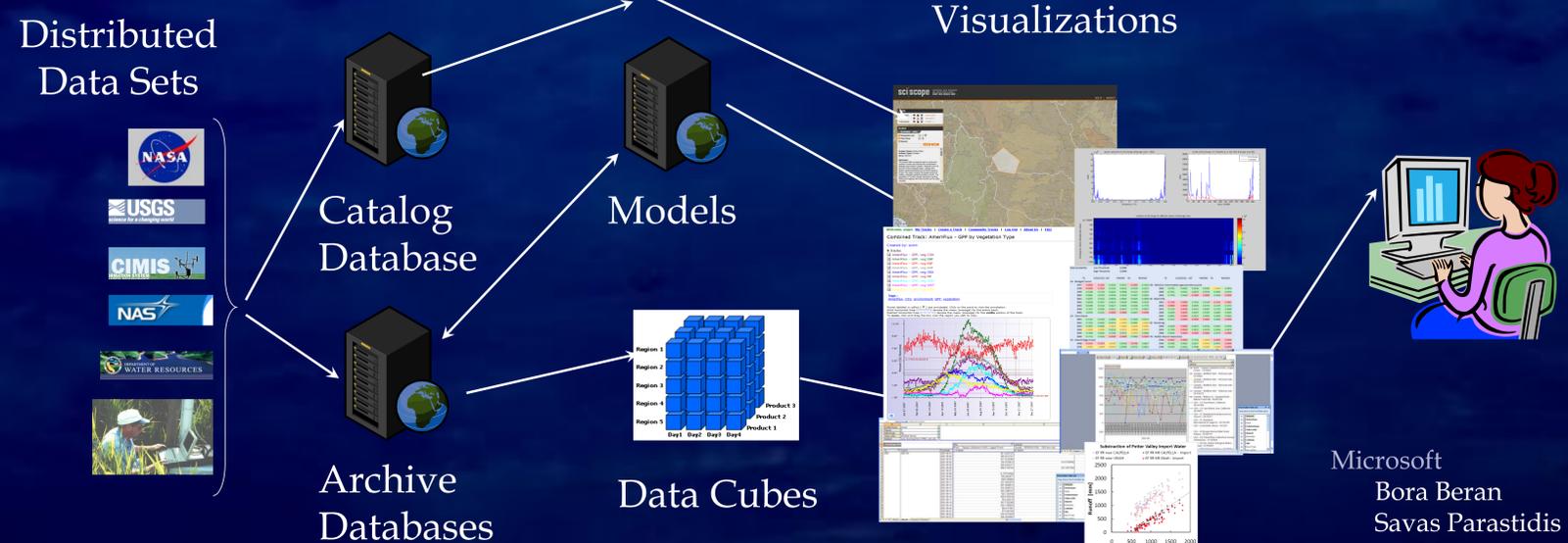
Report cards shown currently take 3 months to compile.

Planned sensor deployments will only make this worse.



<http://www.healthywaterways.org>

Challenge is to Connect Data, Resources, and People



Berkeley Water Center, University of California Berkeley, Lawrence Berkeley Laboratory

- Jim Hunt
- Deb Agarwal
- Robin Weber
- Monte Goode
- Keith Jackson
- Rebecca Leonardson
- Carolyn Remick
- Susan Hubbard

University of Virginia

- Marty Humphrey
- Norm Beekwilder
- San Diego Supercomputer Center
- Ilya Zaslavsky
- David Valentine
- Tom Whitenack
- Matt Rodriguez

University of Queensland, Healthy Waterways

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- Eva Abal
- Johns Hopkins University
- Jayant Gupchup
- Nolan Li

North Carolina Sensor Data Bus, RENCI, UNC Chapel Hill, University of South Carolina, NC State University

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- Jon Goodall
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- Tom Boden
- Susan Holladay

Fluxnet, CarboEurope

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- Markus Reichstein
- Rodrigo Vargas
- Bob Cook
- Bruce Wilson
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Microsoft

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- Scott Counts
- Tony Hey
- Dan Fay
- Jing De Jong-Chen
- Stuart Ozer
- Tom Barclay
- SQL product team
- Jim Gray