

Great Basin & Mojave Desert Climate Change Workshop

Las Vegas, Nevada

April 21, 2010



Tony Willardson, Executive Director
Western States Water Council

Water Needs and Strategies for a Sustainable Future



1. Growth and Water Policy
2. Meeting Future Water Demands
3. Water Infrastructure Needs and Strategies
4. Resolution of Indian Water Rights Claims
5. Climate Change Impacts
6. ESA & Protecting Aquatic Species

Water Needs and Strategies for a Sustainable Future



Western Governors' Association ♦ June 2006

Water Needs and Strategies for a Sustainable Future: *Next Steps*



Western Governors' Association ♦ June 2008





"They can't spell conservation in Salt Lake City,"
Southern Nevada Water Authority director Pat Mulroy
said in a recent interview.

***"I think Pat was a little angry and she over-stated
some of her comments, especially about
conservation,"*** said Dennis Strong, Director, Utah
Division of Water Resources.

Blog Responses

“We send enough water to...Nevada in the form of the Colorado River from which they suck huge amounts of water [for]all of their big casino fountains and residential developments surrounding man-made lakes.”

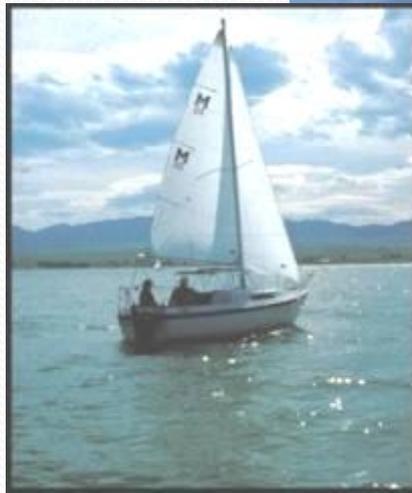
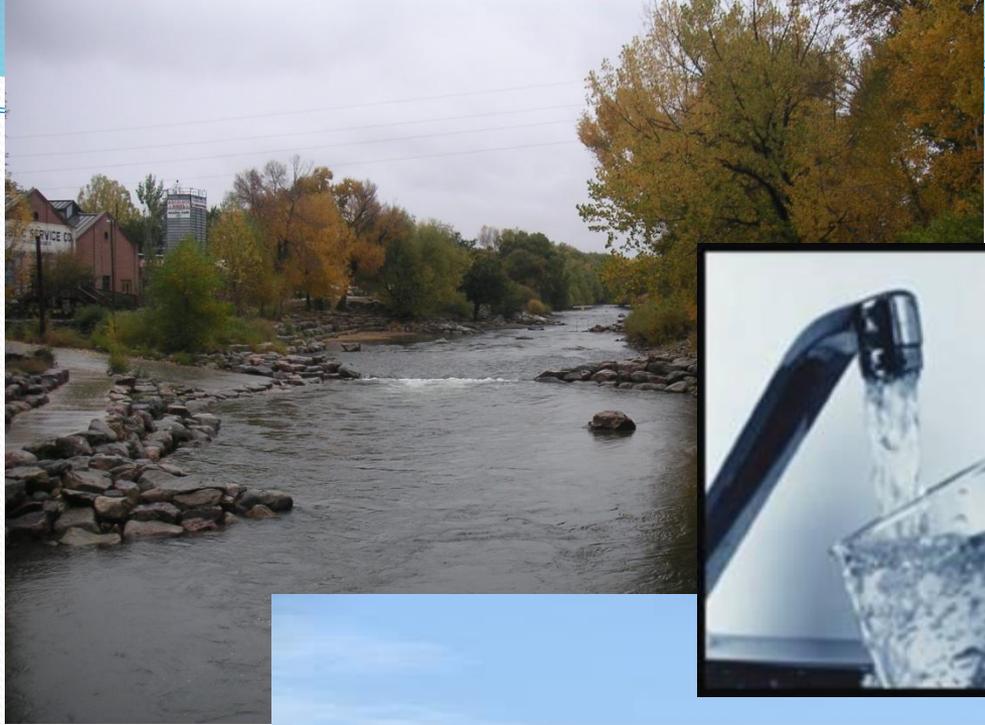
“Frankly speaking, it isn't any of her's or Nevada's business how much water Salt Lake City uses because most of the water we use comes out of the Wasatch Mountains and it's runoff.”

“Utah doesn't know how to spell conservation?” Try Googling how much electricity it takes to power Las Vegas!”

“The question should be asked as to whether that many people should be living in Las Vegas anyway? Why make it Utah's burden to provide water to an urban area that shouldn't be urban?”

“I have a great way for Las Vegas to conserve water - Dry up and blow away!”

To ensure the West has an adequate, sustainable supply of water of suitable quality to meet our diverse economic and environmental needs now and for future generations will require a regional effort.



Competing Uses for Limited Supply

Energy



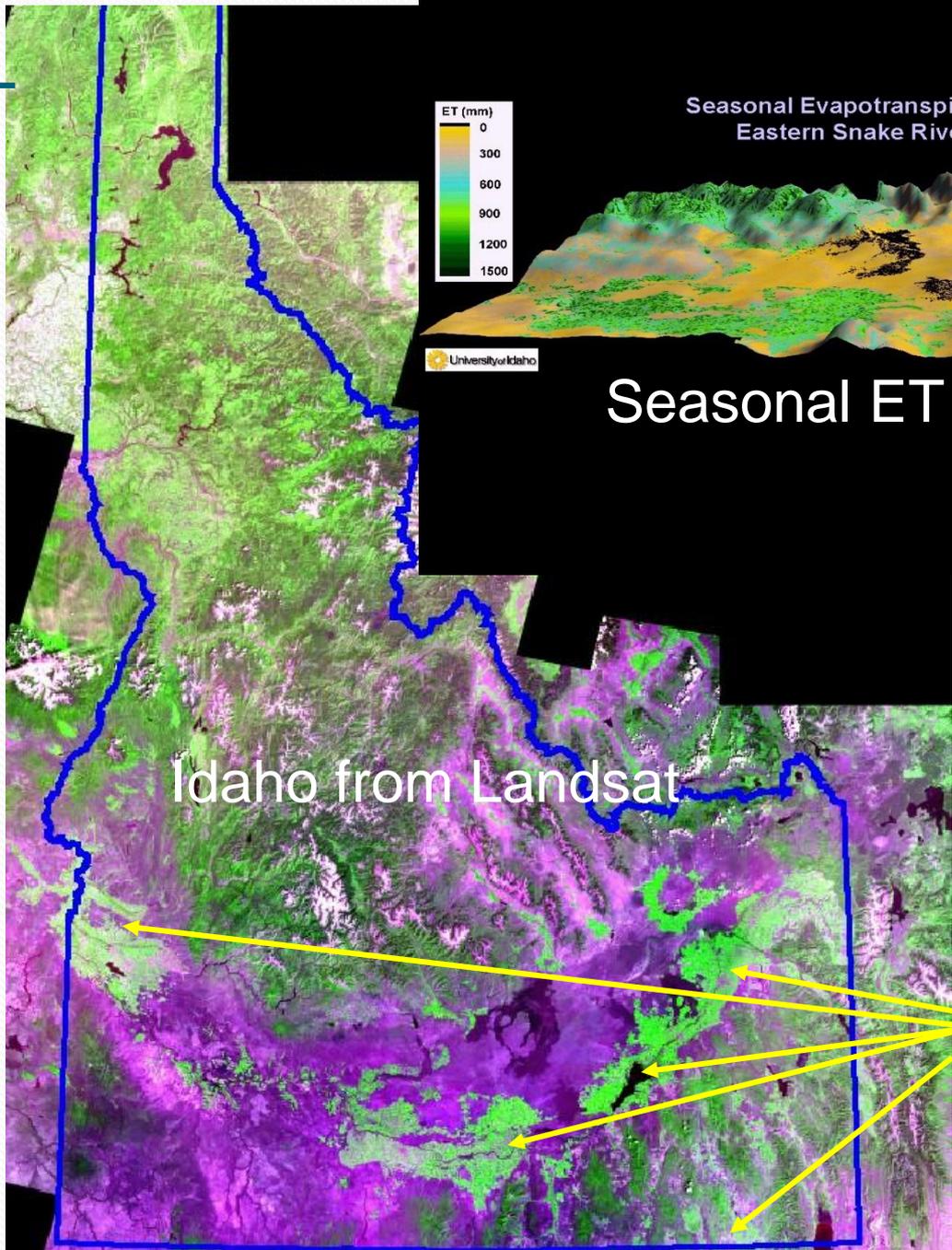
Municipal and Industrial



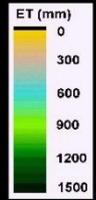
Instream Flows for Rafting, Fishing And Environmental

Agriculture

Vegetation,
Water and ET
are variable
in space and
time



Seasonal Evapotranspiration during 2000
Eastern Snake River Plain, Idaho



University of Idaho

Seasonal ET for SE Idaho

Idaho from Landsat

Major Irrigated
areas in Idaho and
areas of
METRIC application

Make a Map of Idaho - Windows Internet Explorer

http://maps.idwr.idaho.gov/et/viewer.htm

Make a Map of Idaho

Idaho Department of Water Resources Evapotranspiration

Layers | Legend | Metadata

- Base Map
- Evapotranspiration
 - 2003 -- P39R30
 - 2003 P39R30 6/5, 2
 - 2003 P39R30 7/7, 2
 - 2003 P39R30 8/24
 - 2003 P39R30 6/1-9
 - 2003 P39R30 LAND
 - 2000 -- Southern Idaho
 - 2000 Snake Plain 3/:
 - 2000 P3940 LANDS
 - 2000 -- P42R2930
 - 2000 -- P41R30
 - 2000 -- Lemhi
 - 1997 -- P42R30
 - 1985 -- P39R3031
- Background Images

Zoom In [Download GIS data from the Idaho FTP site.](#)

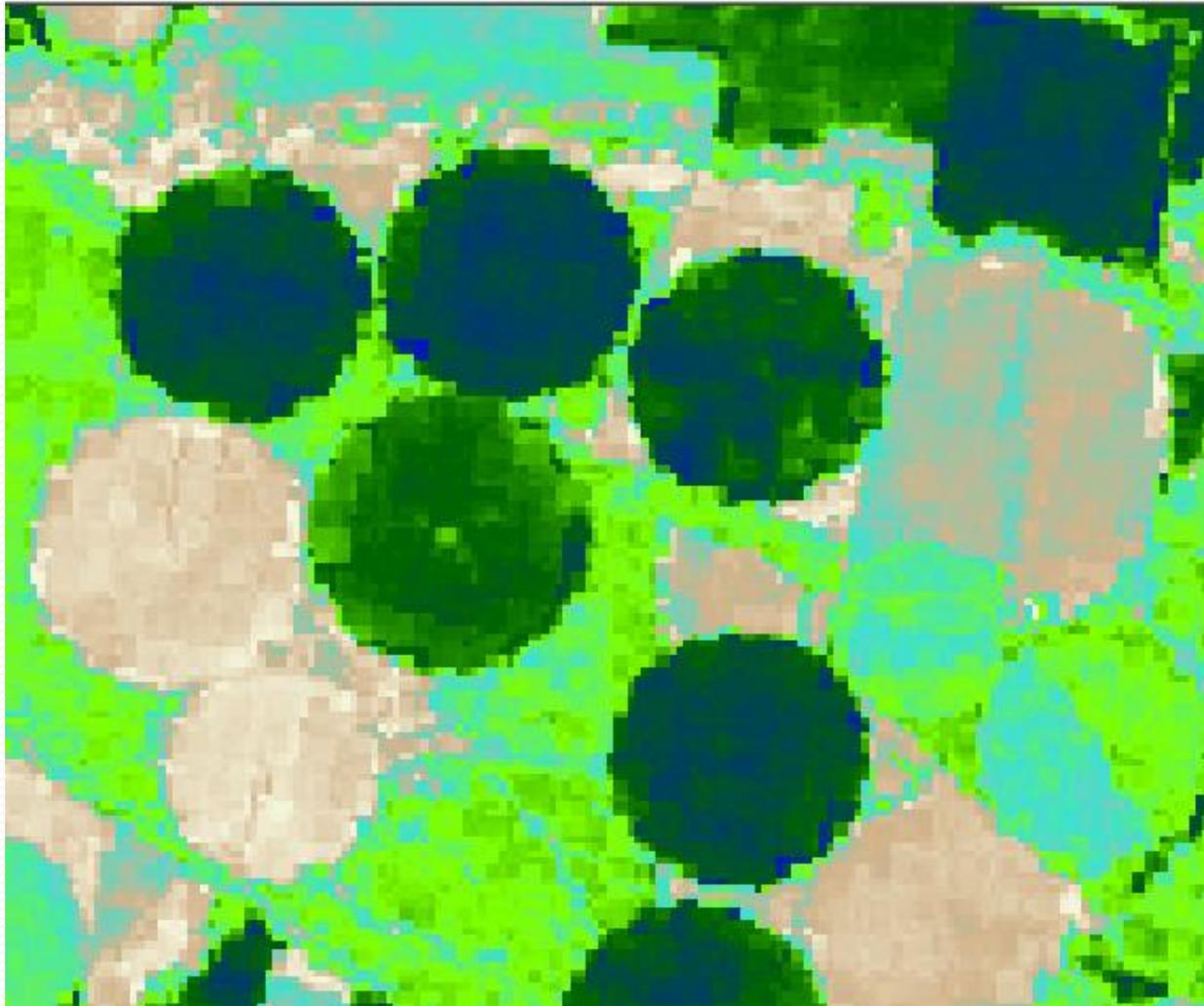
Active Layer
Counties
Refresh Map

Done Internet 100%

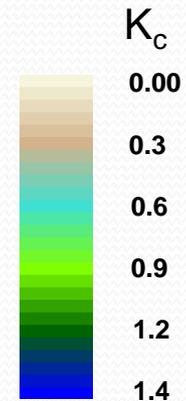
start Pegasus Mail 2 Firefox Adobe Acrob... 3 Microsoft... Microsoft Word RickJan2007... Norton File M... Make a Map ... 54 12:27 PM

<http://maps.idwr.idaho.gov/et/>

Why use High Resolution Imagery?



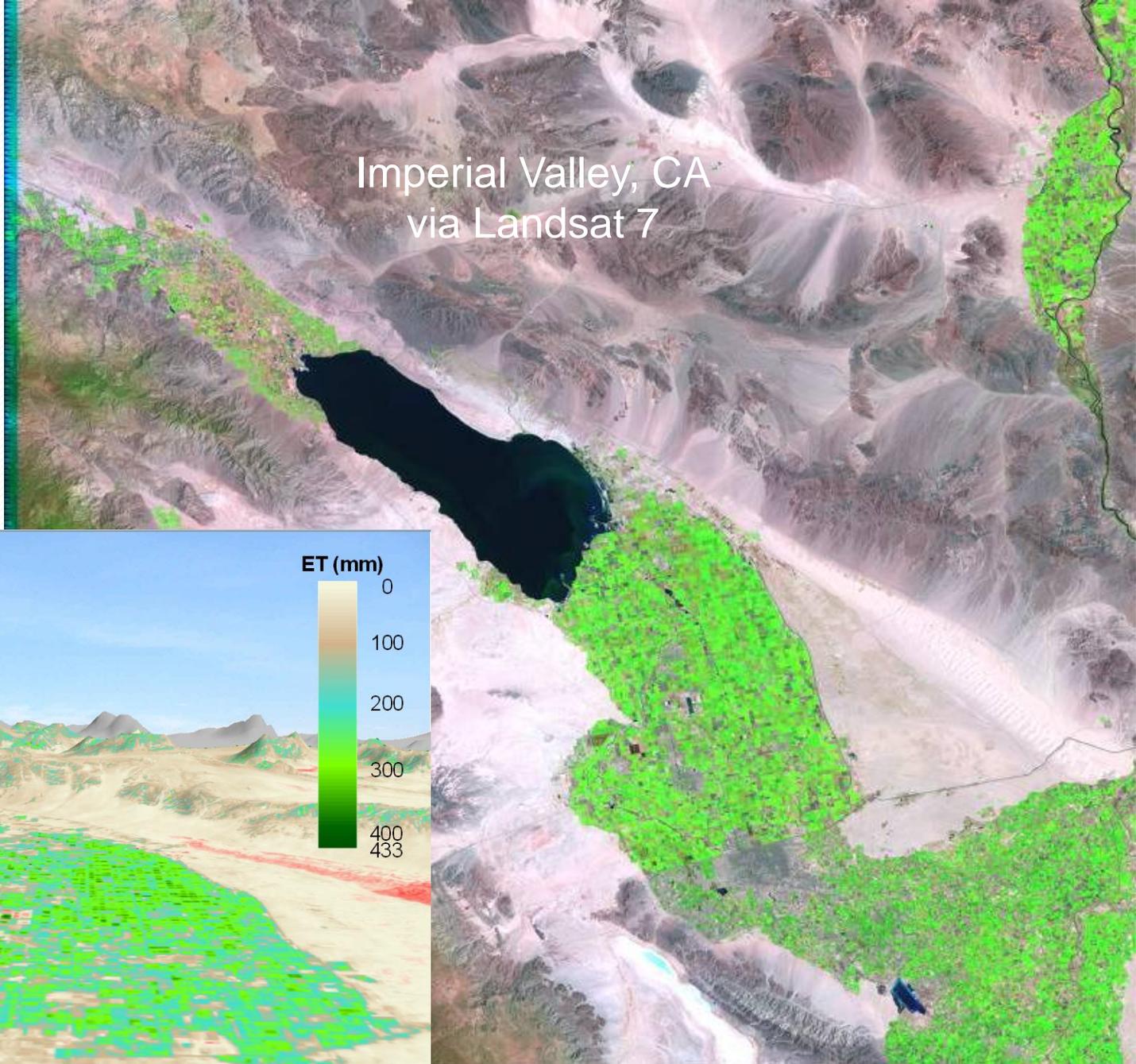
ET from
Landsat 5
with thermal
sharpened to
30 m



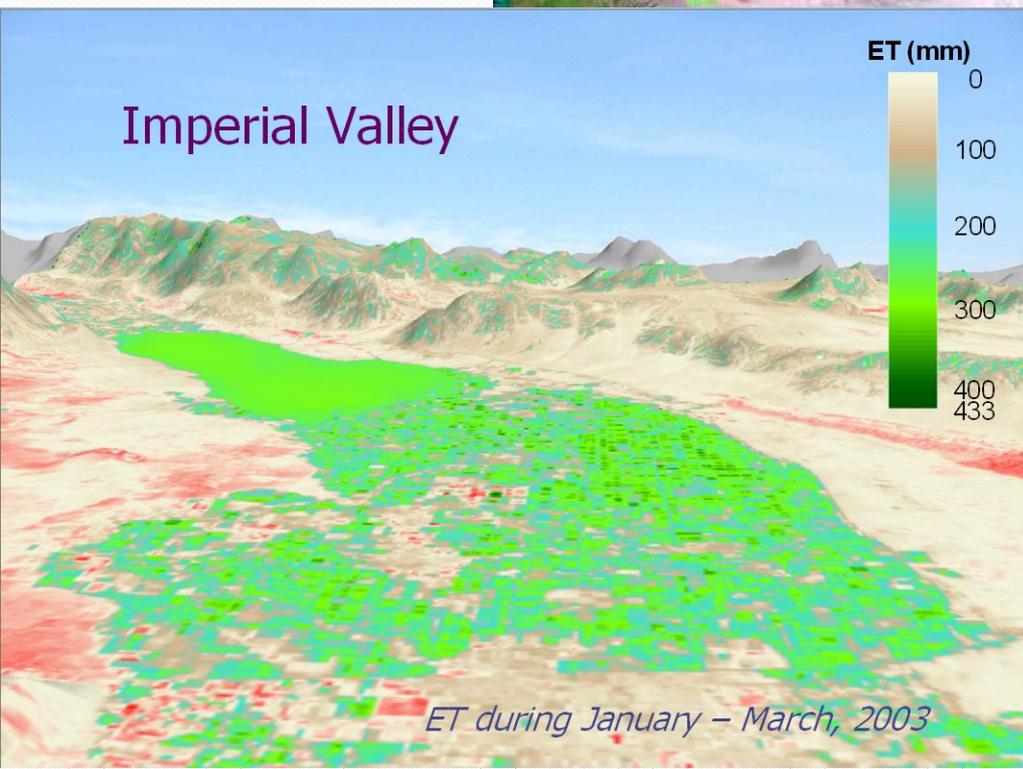
$$(K_c = ET_{act} / ET_{ref})$$

*ET from individual fields is essential for: Water Rights,
Water Transfers, Farm Water Management*

Imperial Valley, CA
via Landsat 7



Imperial Valley



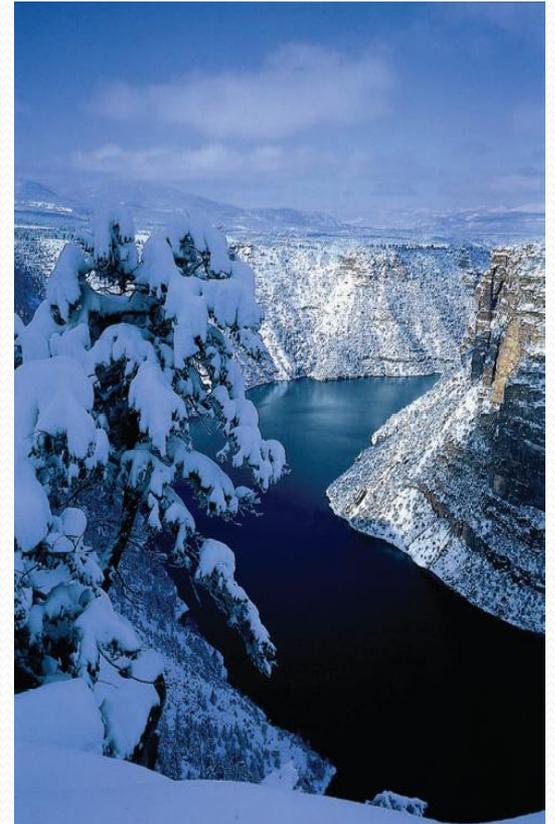
ET during January – March, 2003

Climate Change Impacts

- Global surface temperatures are increasing
- Hydrologic impacts include:
 - smaller coastal/mid-elevation snowpacks
 - earlier snowmelt and runoff
 - changing flood-control releases
 - more extreme flood events
 - receding glaciers and rising sea levels
 - extreme drought and more evapotranspiration
 - less ground water recharge

Climate Change Impacts

- Economic/Environmental Impacts
 - greater drought losses
 - more wildfires
 - water quality challenges
 - less hydroelectric generation
 - water-borne shipping impacts
 - ecosystems/fish & wildlife impacts
 - recreation impacts
 - longer growing season



Climate Change Adaptation

- Focus on vulnerabilities and building increased resiliency to climatic extremes.

1st Data Collection

- Expand Funding for snow surveys, streamgaging, and remote sensing of evapotranspiration (ET), ground water, water use

2nd Improved Climate Prediction & Modeling

- Urge Congress to fund more research
- Need for scaling models to regional and local level

3rd Impact Assessment

- Water supplies and demands

Climate Change Adaptation

State Planning

1. Assess projected climate impacts and trends
 - Inventory data sources
 - Seek funding to support activities
2. Maintain various water-related plans
 - Include climate change scenarios
3. Include local government in planning efforts
4. Ensure flexibility to respond to climate change/variability and extreme weather events

Climate Change Adaptation

Need for more –

- Applied science to support decisionmaking
- National and regional impact assessments
- Better, more robust forecasting models
- Watershed scaled climate model outputs
- Agreed upon data standards and protocols
- Better understanding of climate drivers
- An internet portal for public/decisionmakers
- Federal climate change adaptation legislation



WGA Climate Adaptation Policy

Policy Resolution 09-2: *Supporting the Integration of Climate Change Adaptation Science in West*

- Supports planning for climate adaptation among all levels of government
- Seeks funding for research to improve predictive climate models and related federal programs
- Encourages the development of a National Climate Service to provide decision tools for local and state governments – connecting social, health and economic trends to climate change
- Calls for Federal support for updates to state water plans, flood plans, drought plans to include climate scenarios

WGA Climate Adaptation Policy

Establishes a Climate Adaptation Working Group

- Determining uses for adaptation modeling in informing natural resource and economic policy
- Identify and fill gaps in WGA climate adaptation work, as necessary
- Membership will include relevant WGA groups: Western States Water Council, Western Governors' Wildlife Council, Forest Health Advisory Group, Western Regional Air Partnership
- Members will share adaptation information and science to identify and fill gaps in their workplans

Thank You

Western States Water Council

Tony Willardson, Executive Director

twillards@wswc.state.ut.us

(801) 685-2555