

# Developing Products with Partners

## Hydro-Climatology Products

**Integrated Water Resources Science & Service  
Community Hydrologic Prediction System  
Water Resources Outlook  
Precipitation Frequency Estimates**

**Customer  
Satisfaction  
Survey...  
as an example..  
&  
3 thoughts**

CFI GROUP  
WORLDWIDE

ANN ARBOR

ATLANTA

BUENOS AIRES

KUALA LUMPUR

LONDON

MADRID

MILAN

PARIS

PORTO ALEGRE

SHANGHAI

STOCKHOLM



# National Weather Service Hydrologic Services Program

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Customer Satisfaction Results

October 23, 2008

**CFI** Group  
Claes Fornell International



# Customer Satisfaction Survey

## **Survey Focus:**

**Advanced Hydrologic Prediction Service  
Web Pages**

**Used professional survey group...**

**Conducted three surveys...**

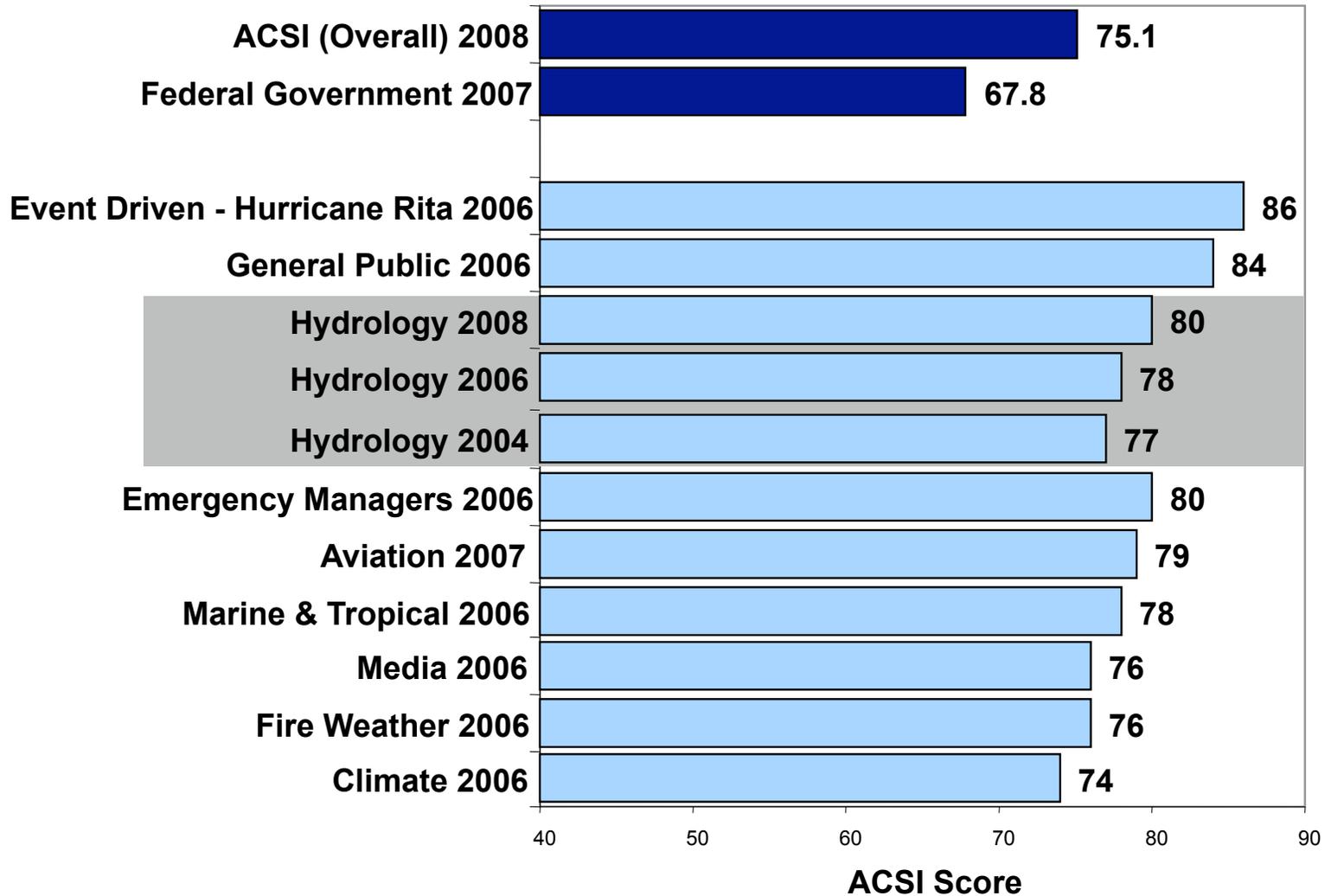
**Conducted every 2 years...**

**Obtained feedback...**

**Measured improvements/problems ... responded**

# Hydrology Receives High Marks Again

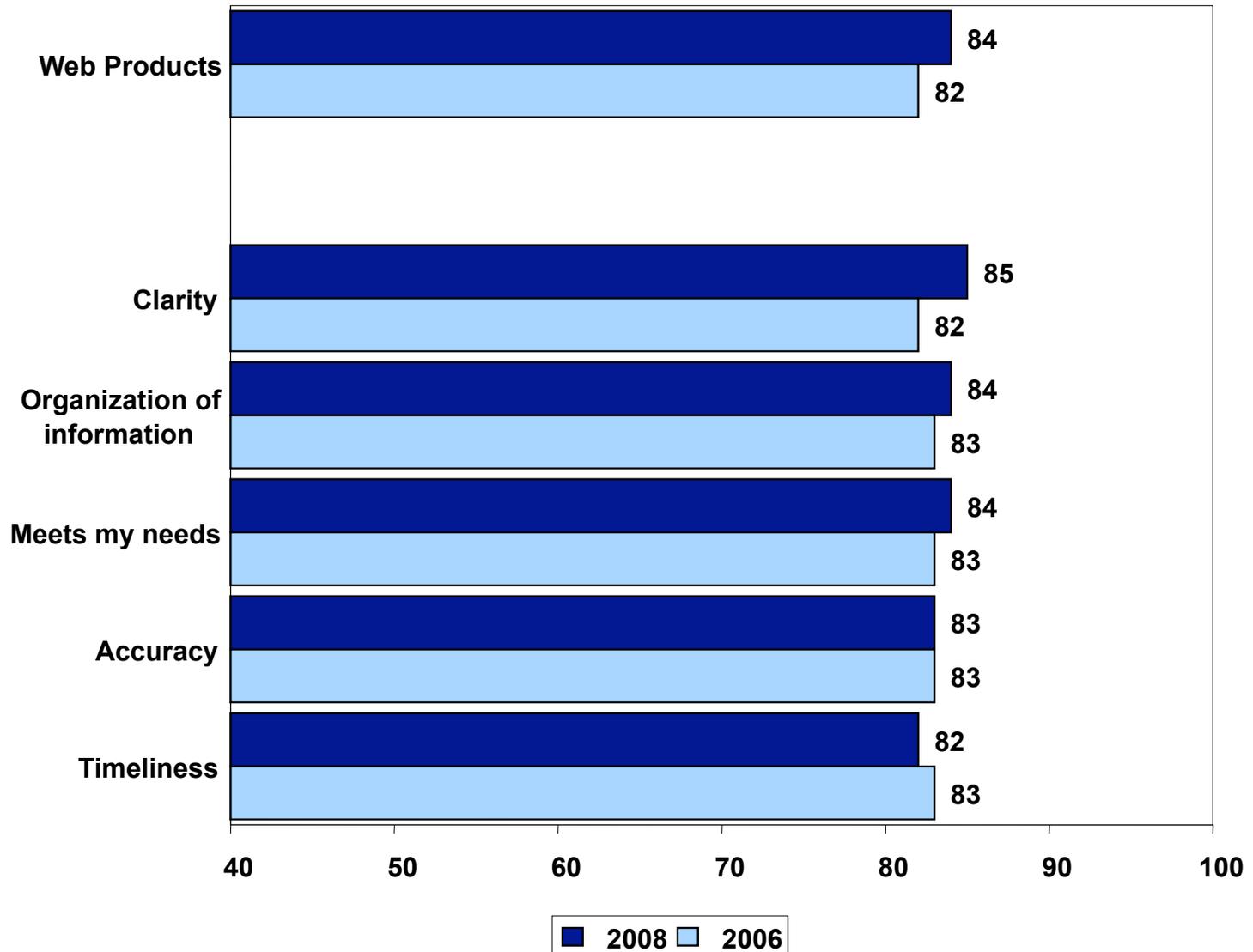
*Similar to other NWS scores; above ACSI too*



# Web Products

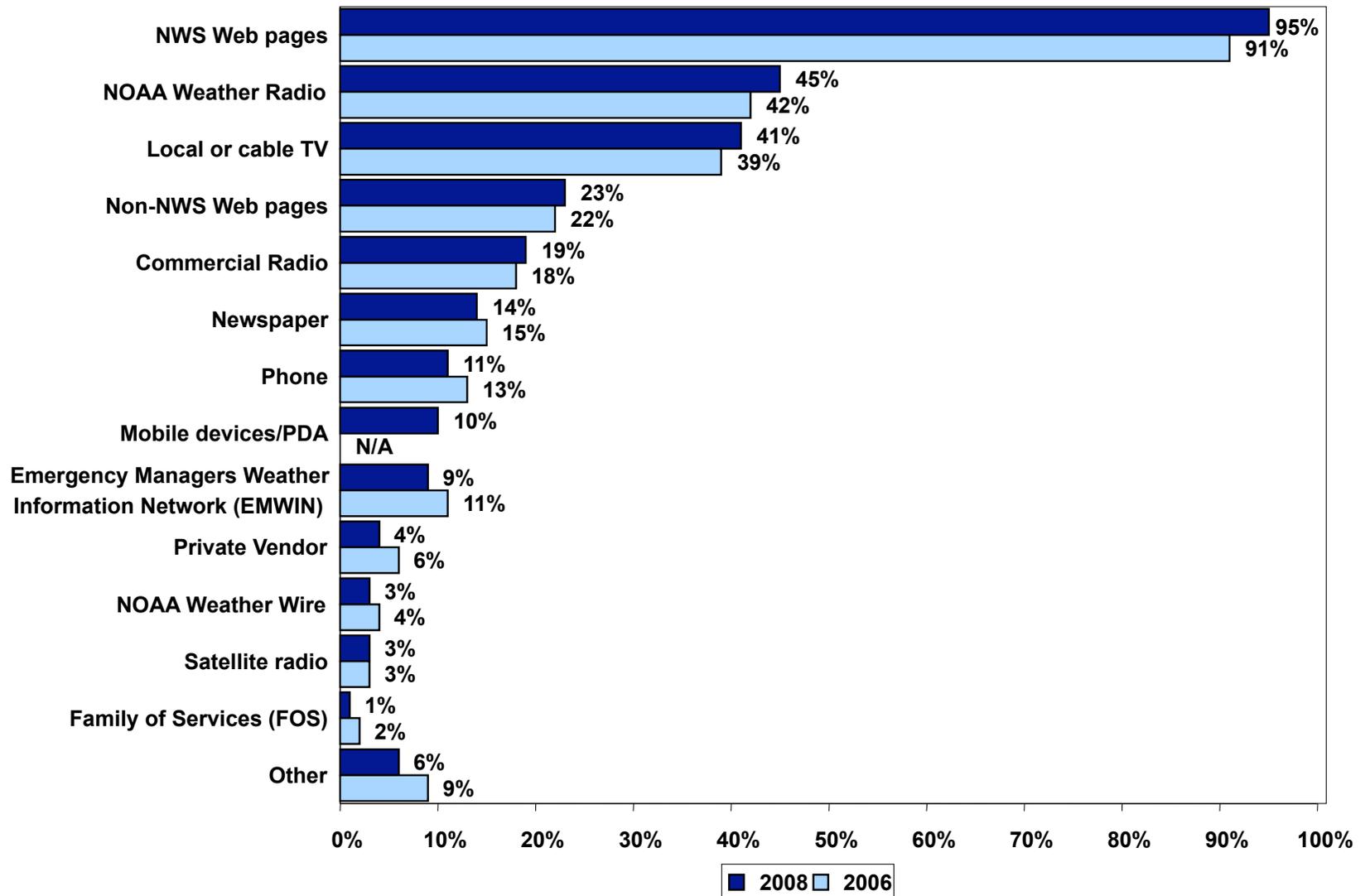
n=1496

Score for the usefulness of providing Flood Warnings and Watches, River Forecasts and other Water Information on your PDA is 65

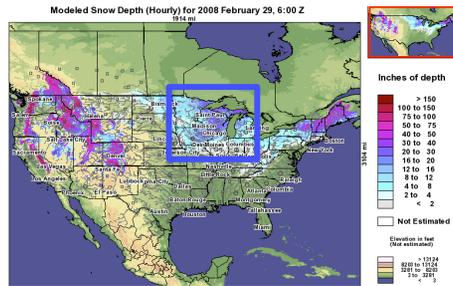


# Means of Receiving Hydrologic Information

6. By what means do you receive National Weather Service hydrologic information? (select all that apply)

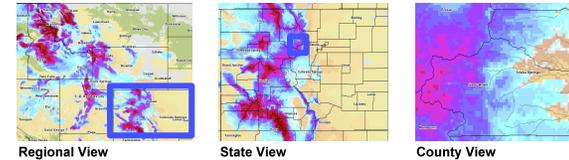
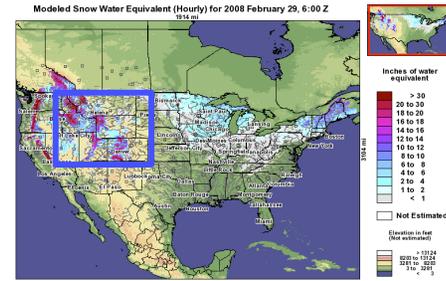


# Part III: Water Resources Services



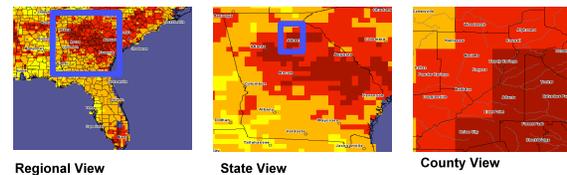
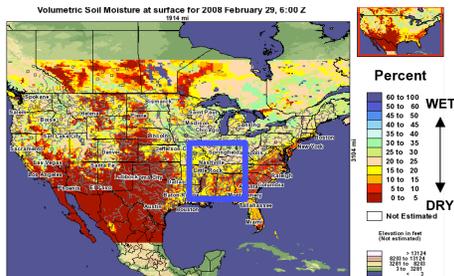
**Snow Depth Map**

**Average: 89**  
**90: Visual Appeal**  
**90: Ease of Understanding**  
**90: Tells me what I need to know**  
**84: Usefulness of snow depth map in decision making process**



**National Analysis of the Amount of Water Contained in Snow**

**Average: 87**  
**89: Visual Appeal**  
**89: Ease of Understanding**  
**88: Tells me what I need to know**  
**83: Usefulness of estimates of amount of water contained in snow**



**Soil Moisture Map**

**Average: 86**  
**88: Visual Appeal**  
**88: Ease of Understanding**  
**88: Tells me what I need to know**  
**80: Usefulness of soil moisture in decision making**

# Part III: Water Resources Services

*57% of respondents say soil moisture at multiple discrete levels is of more value to them; 43% feel that a single value describing bulk soil moisture is more valuable*

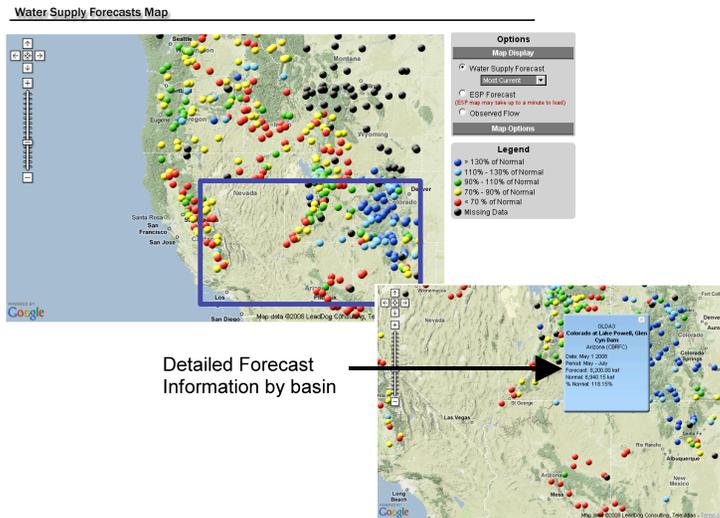
<b>Soil Depth where Soil Moisture is Important*</b>	<b>%</b>
Surface and near-surface	73%
Sub-surface, including typical rooting zone depths (e.g., 20-50 cm to 100-150 cm)	65%
Deeper sub-surface, down to 2-3 meters	29%

\*Select all that apply

# Part III: Water Resources Services

## Water Manager Questions

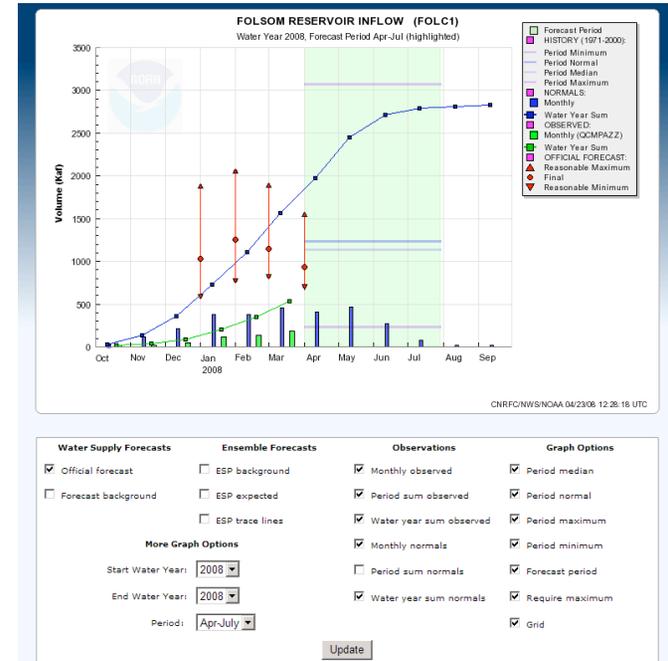
40% of respondents continued on to the water manager questions



### Water Supply Volume Inflow Forecast Map

**Average: 86**

- 88: Visual Appeal
- 88: Ease of Understanding
- 86: Tells me what I need to know
- 81: Usefulness of water supply volume inflow forecast map
- 89: Usefulness of water supply volume inflow forecast map for the entire United States



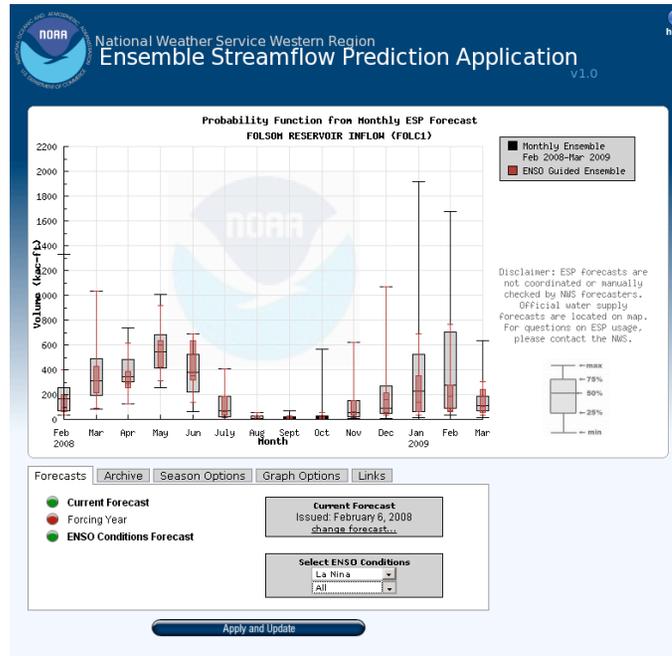
### Water Supply Volume Inflow Forecast Progression

**Average: 87**

- 88: Visual Appeal
- 86: Ease of Understanding
- 90: Tells me what I need to know
- 82: Usefulness of water supply volume inflow forecast uncertainty

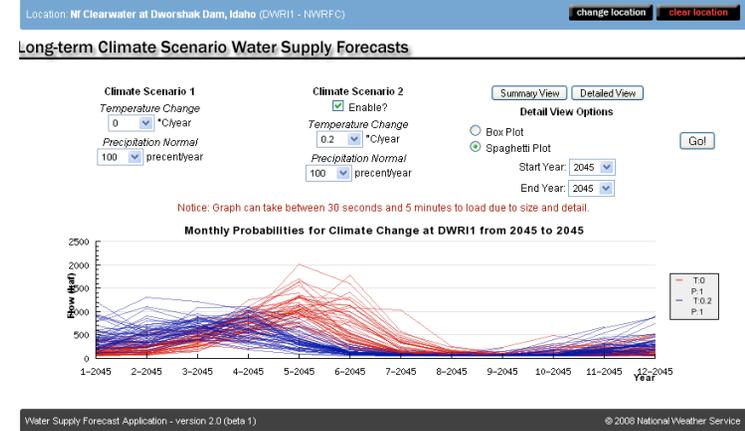
# Part III: Water Resources Services

## Water Manager Questions



### Monthly Ensemble Volume Forecast

**Average: 83**  
**85: Visual Appeal**  
**83: Ease of Understanding**  
**86: Tells me what I need to know**  
**79: Usefulness of monthly ensemble volume forecasts**



### Climate Sensitivity Study

**Average: 76**  
**78: Visual Appeal**  
**76: Ease of Understanding**  
**79: Tells me what I need to know**  
**72: Usefulness of climate sensitivity studies**

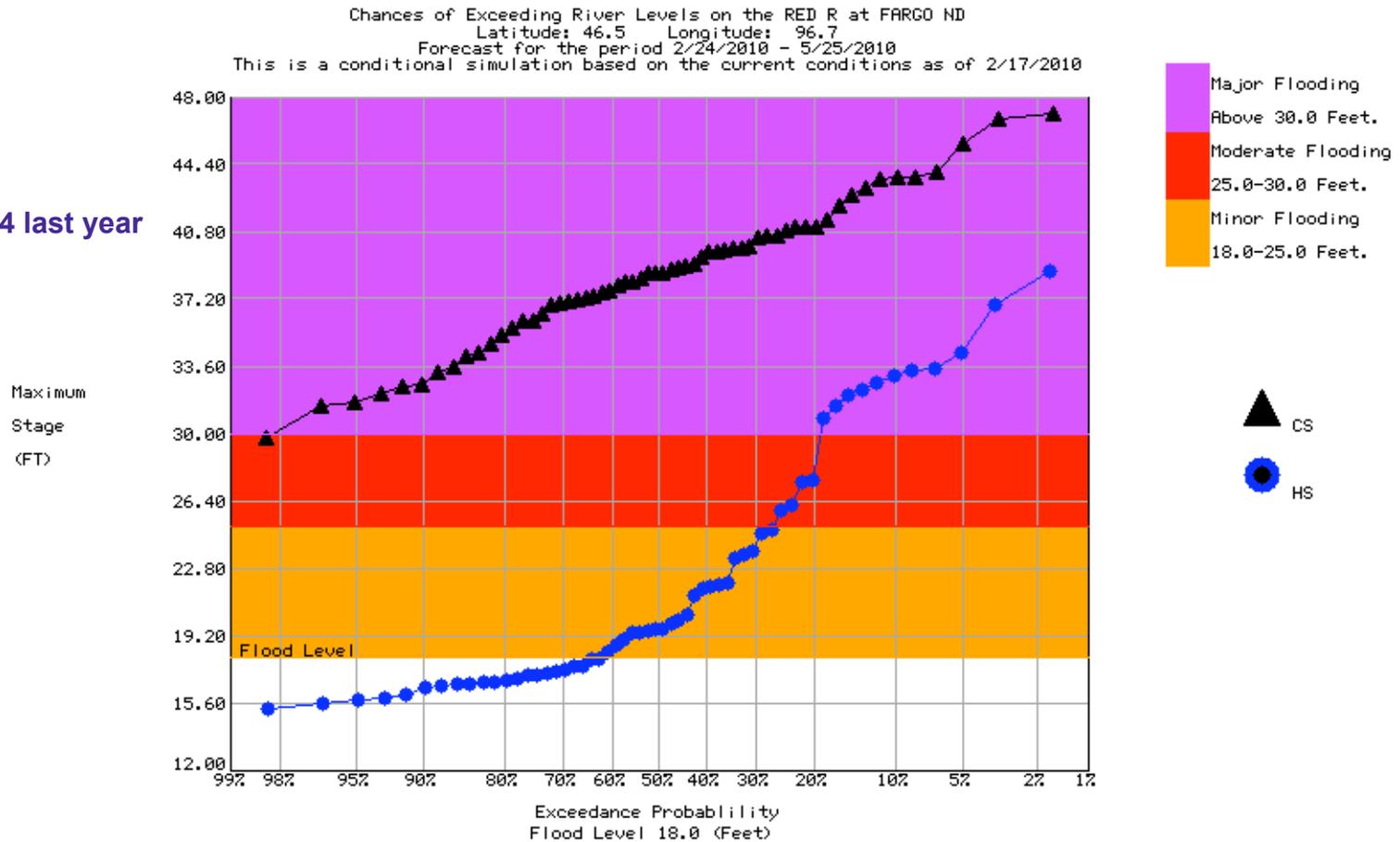
# Summary

**Professional Survey that is periodically performed can be one way to measure Customer satisfaction.**

**Results were used to help guide development and improvements.**

# Red River North @ Fargo, ND

Record 40.84 last year



## Thought 1

# Model Validation & Forecast Verification

**Users always ask...how  
Good are the forecasts?**

## Thought 2

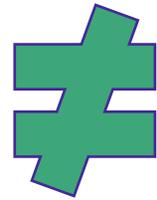
# Probabilistic Forecasts

**Challenging for Everyone**

**Some users still want the  
a single-deterministic value  
forecast**

## Thought 3

**User Expectations  
of skill/accuracy**



**Science  
Capabilities**