AHPS
Advanced Hydrologic Prediction Service
POTENTIAL PRODUCTS AND SERVICES

HIC/MIC Conference
June 10-13, 2002
Salt Lake City

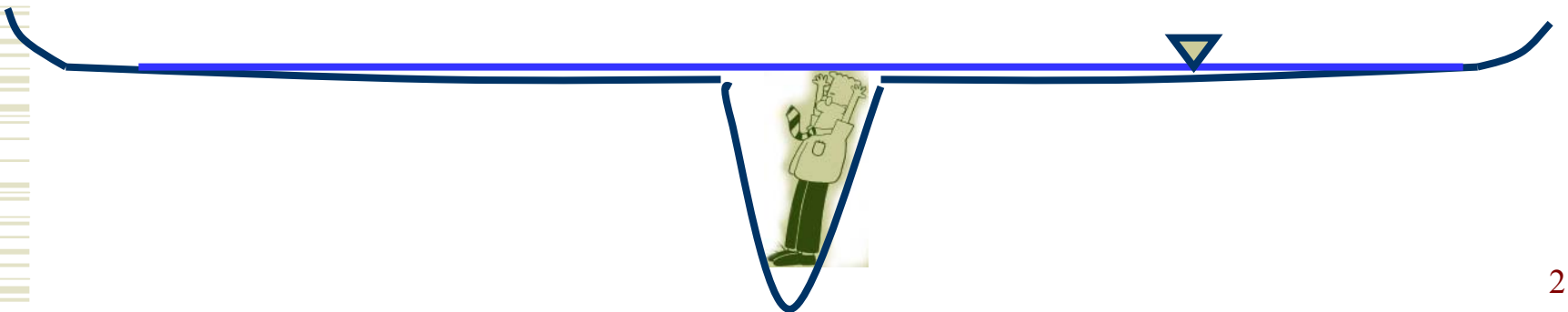
Dave Brandon – HIC
Colorado Basin River Forecast Center

AHPS
ESP- Ensemble Streamflow Prediction
Based On Probability & Statistics

"The importance of a statistical average?"

" Then there is the man who drowned crossing a stream with an average depth of six inches. "

-- W.I.E. Gates



Probability

"***It is a truth very certain, when it is not in our power to determine what is precise, we ought to follow what is most probable***."

Variation on a quote by:
-Rene Descartes

AHPS
POTENTIAL PRODUCTS AND SERVICES

1. Common Suite of Products

2. Customized User Products Build Their Own From ESPADP

3. Futuristic Products Built From the Database

AHPS
COMMON SUITE OF PRODUCTS

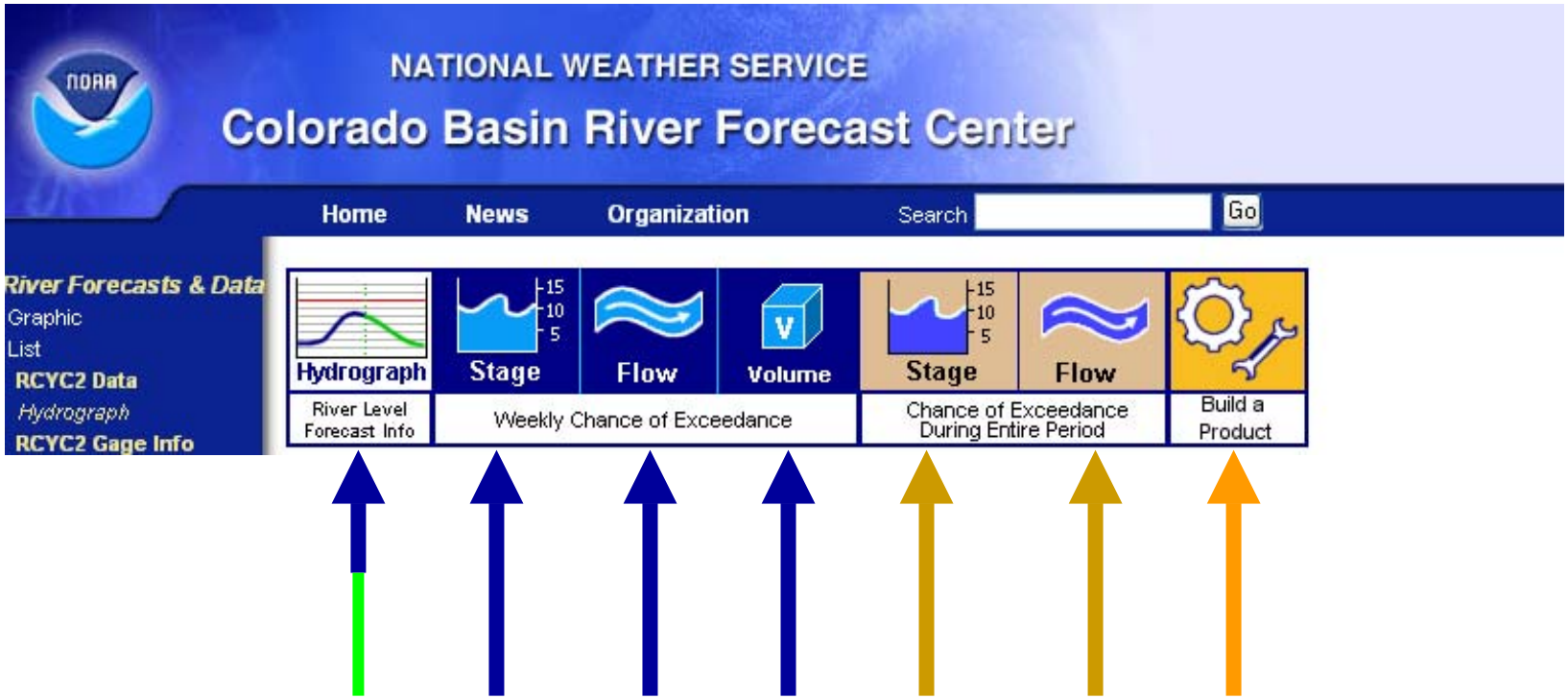
1. **Prototype/Proposal by the Central Region**

   Deterministic Stage and Forecast Hydrograph
   Probabilistic Forecasts - Text and Graphic
   (Examples will be shown on following slides)

RFCs can add local enhancements in addition to a common suite of products.

2. **Details yet to be determined by National Team (Gregg Rishel)**

AHPS
COMMON SUITE OF PRODUCTS



River Forecasts & Data
Graphic
List
APNC2 Data/Forecasts
Hydrograph
Probabalistic
Water Supply
APNC2 Model Data
Precipitation
Temperature
Freezing Level
Snow Information
Soil Moisture
Combination Plot
APNC2 Gage Info
Conditions Map Location
Basin/Location Maps
Aerial Photos/Topo Maps
Photos
Gage Information
Records
Rating Table
APNC2 Verification
Short Range
Long Range (ESP)
Water Supply
Model Simulation

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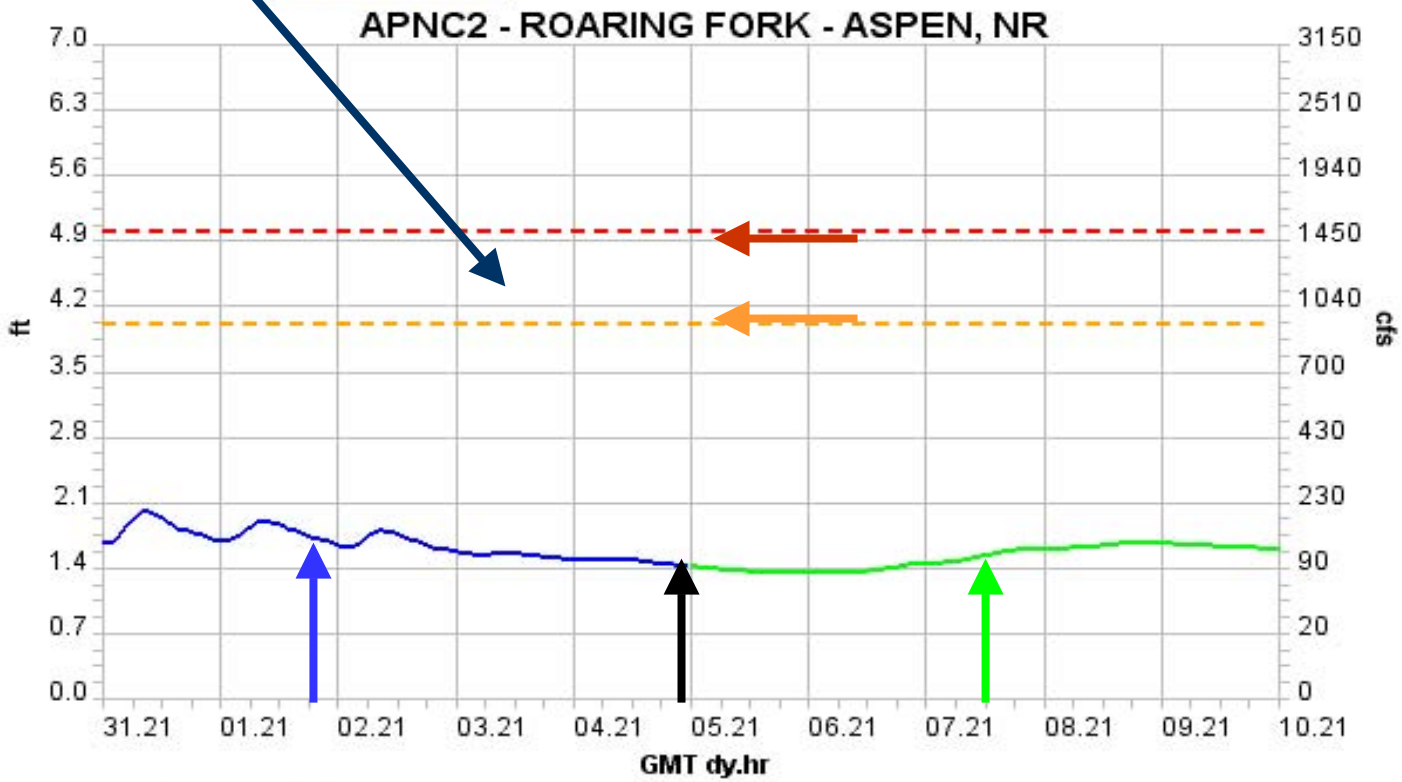
Hydrograph | Stage | Flow | Volume | Stage | Flow | Build a Product

River Level Forecast Info | Weekly Chance of Exceedance | Chance of Exceedance During Entire Period

APNC2 Observed/Simulated Hydrograph

The current time is: 06/05.21:22 GMT.



Colorado Basin River Forecast Center, NWS/NOAA

Hide Flood Stage | Show Simulated | Linear Flow | Show Historical Peak | Show Daily Maxima | Show Statistics |

www.nws.noaa.gov

NATIONAL WEATHER SERVICE

Colorado Basin River Forecast Center

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- Snow Information
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- Combination Plot
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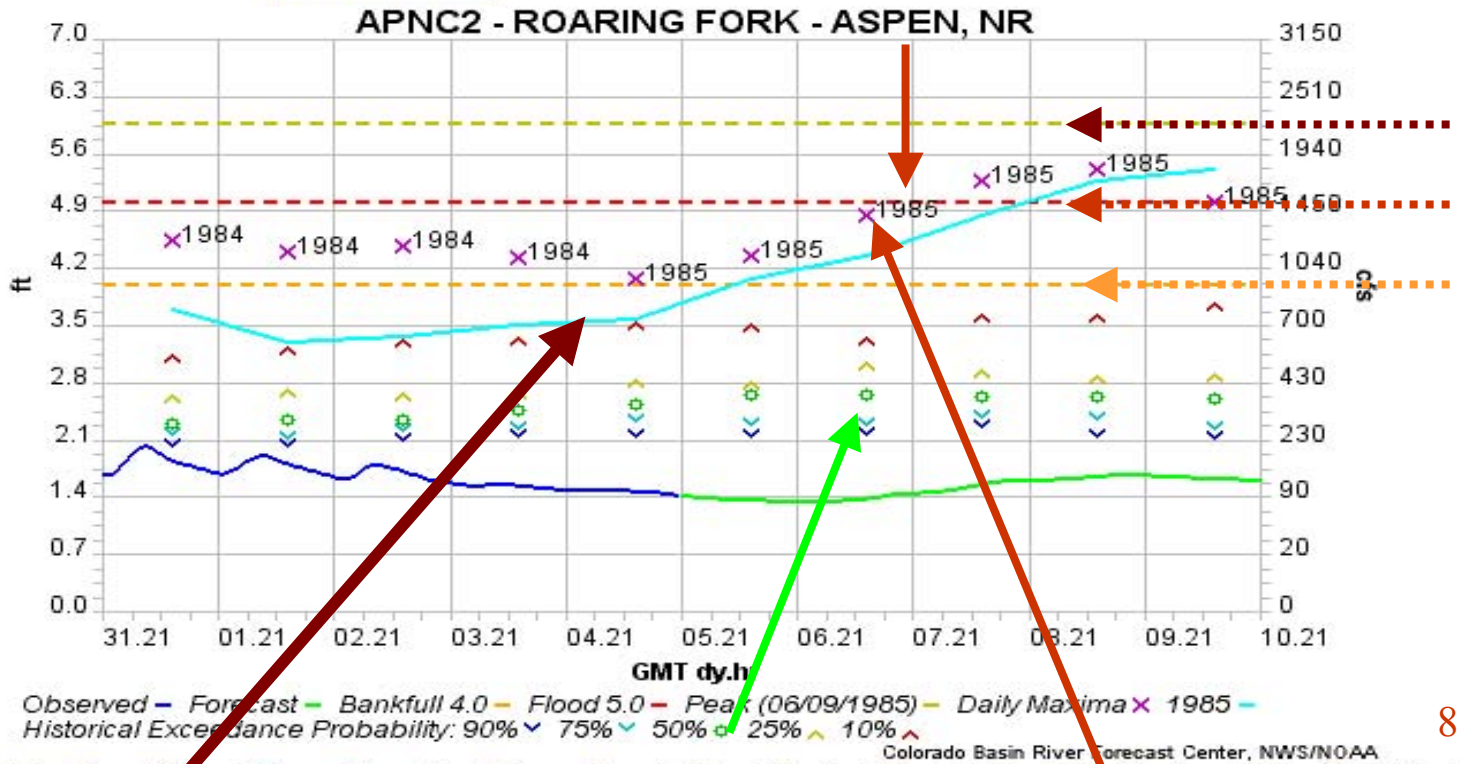
APNC2 Observed/Simulated Hydrograph

The current time is: 06/05.21:47 GMT.



Hide Flood Stage | Show Simulated | Linear Flow | Hide Historical Peak | Hide Daily Maxima | Hide Statistics |

Add Year: 84 02 01 00 99 98 97 96 95 94 93 92 91 90 89 88 87 86 84 83 82 81 80 79 78 77 76 75 74 73 72 71 70

Delete Year: 85

Advanced Hydrologic Prediction Service
Graphic
Description
Operational Prototype
Concepts

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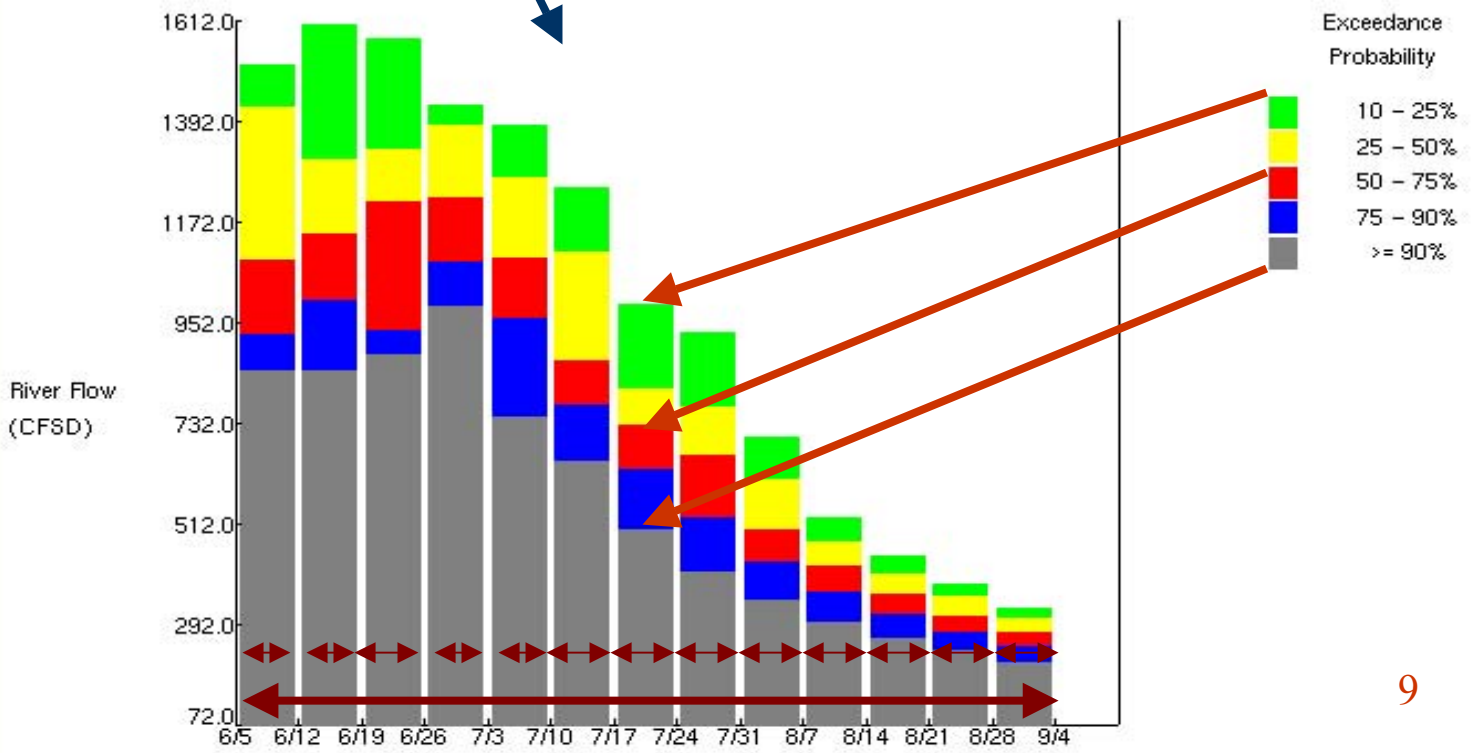
1 Week Chances of Exceeding River Levels on the GREEN-WARREN BRIDGE
Latitude: 43.0 Longitude: 110.1
Forecast for the period 6/5/2002 - 9/4/2002
This is a conditional simulation based on the current coditions as of 6/5/2002



1 Week Chances of Exceeding River Levels on the GREEN-WARREN BRIDGE

Advanced Hydrologic Prediction Service
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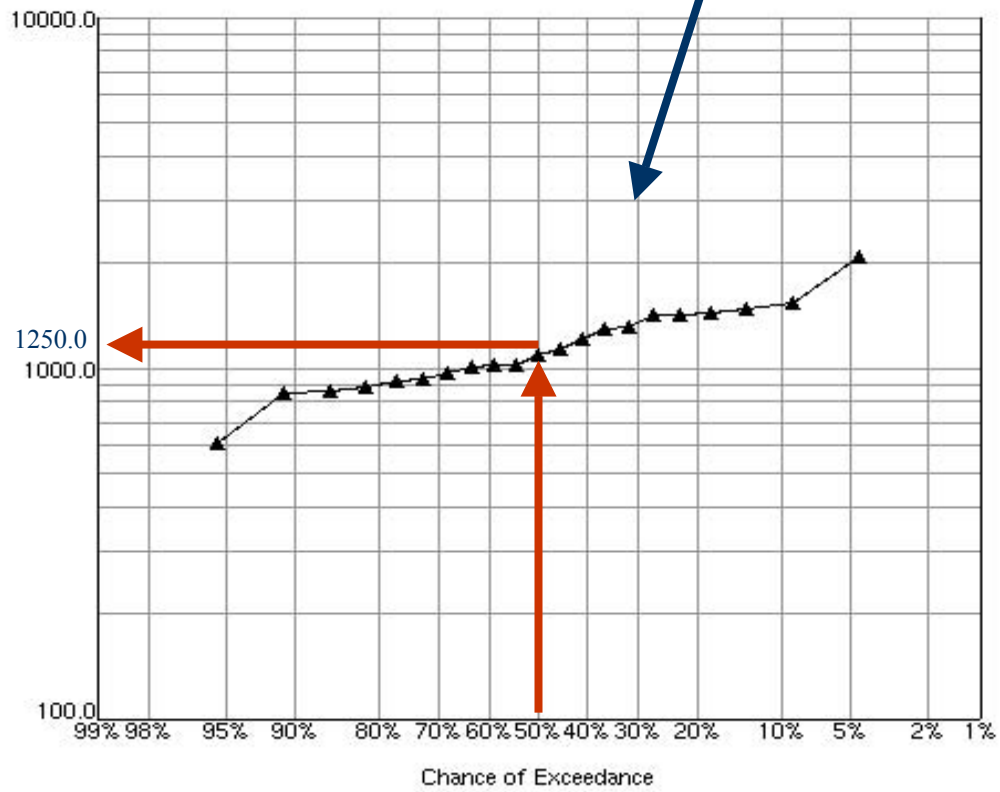
Chances of Exceeding River Levels on the GREEN-WARREN BRIDGE at
Latitude: 43.0 Longitude: 110.1
Forecast for the period 6/5/2002 – 6/12/2002
This is a conditional simulation based on the current conditions as of 6/5/2002



AHPS

CUSTOMIZED USER PRODUCTS

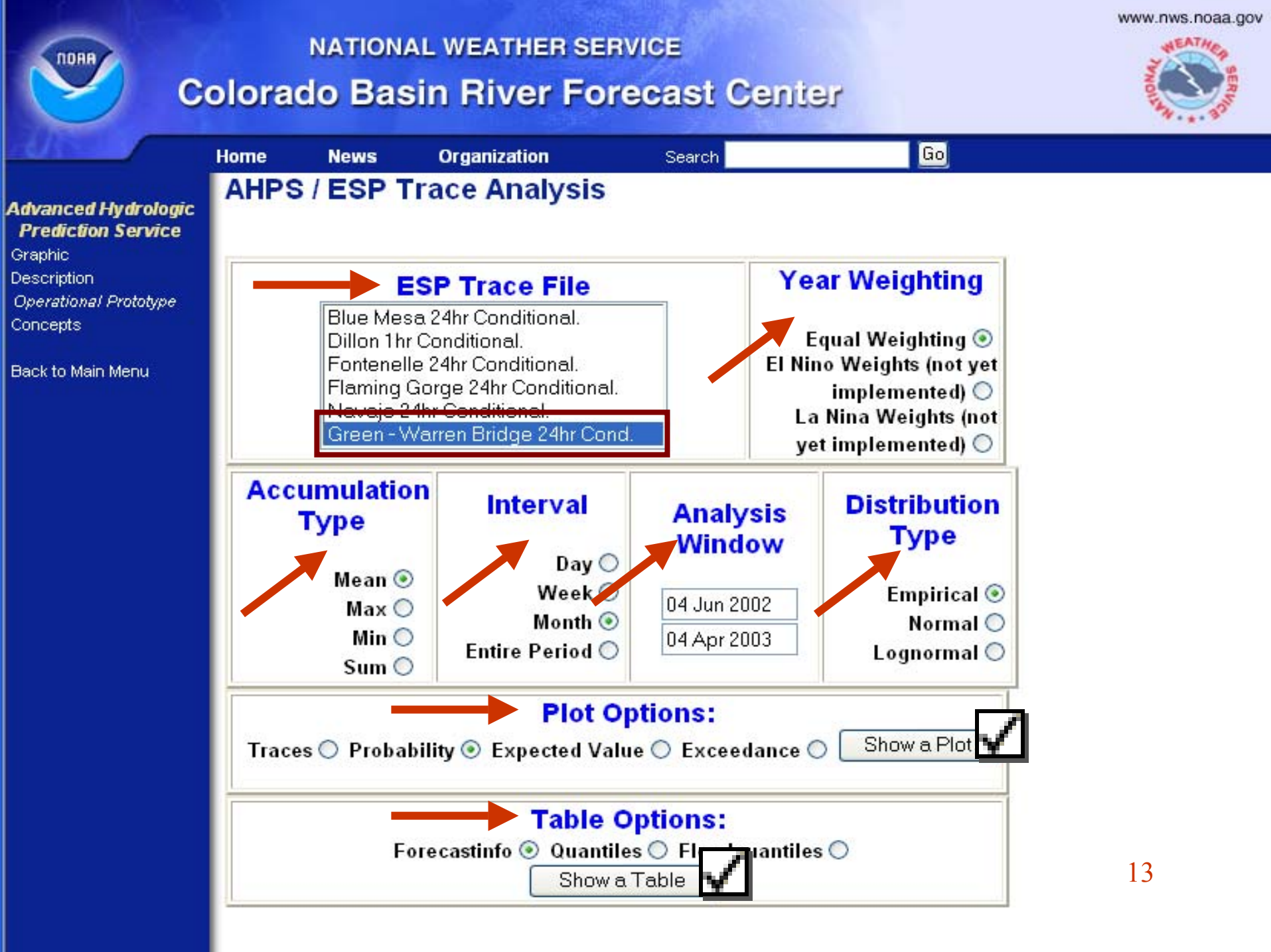
1. **Thousands of Potential Combinations**
   - **10 Data Types**
     - **3 Model Sources**
     - **5 Probability Distributions**
     - **4 Weighting Schemes**
     - **4 Data Intervals**
     - **4 Plot Options**
     - **3 Table Options**

2. **Provide Users Ability to Produce Customized Forecasts/Presentations**

AHPS

BUILD YOUR OWN AHPS/ESP PRODUCT

Developed by Steve Shumate-DOH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Dillon 1hr Conditional.
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Flaming Gorge 24hr Conditional.
Navajo 24hr Conditional.
Green - Warren Bridge 24hr Cond.
Year Weighting
Equal Weighting
El Nino Weights (not yet implemented)
La Nina Weights (not yet implemented)
Accumulation Type
Mean
Max
Min
Sum
Interval
Day
Week
Month
Entire Period
Analysis Window
04 Jun 2002
04 Apr 2003
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Empirical
Normal
Lognormal
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Table Options:
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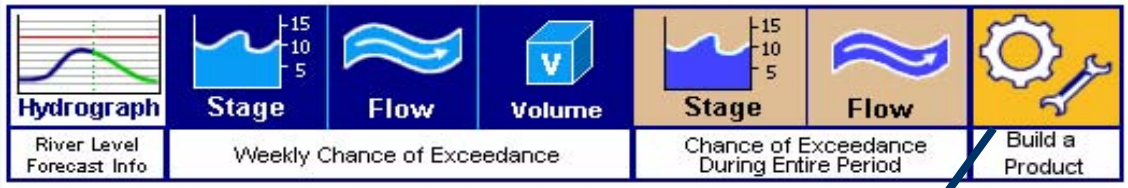

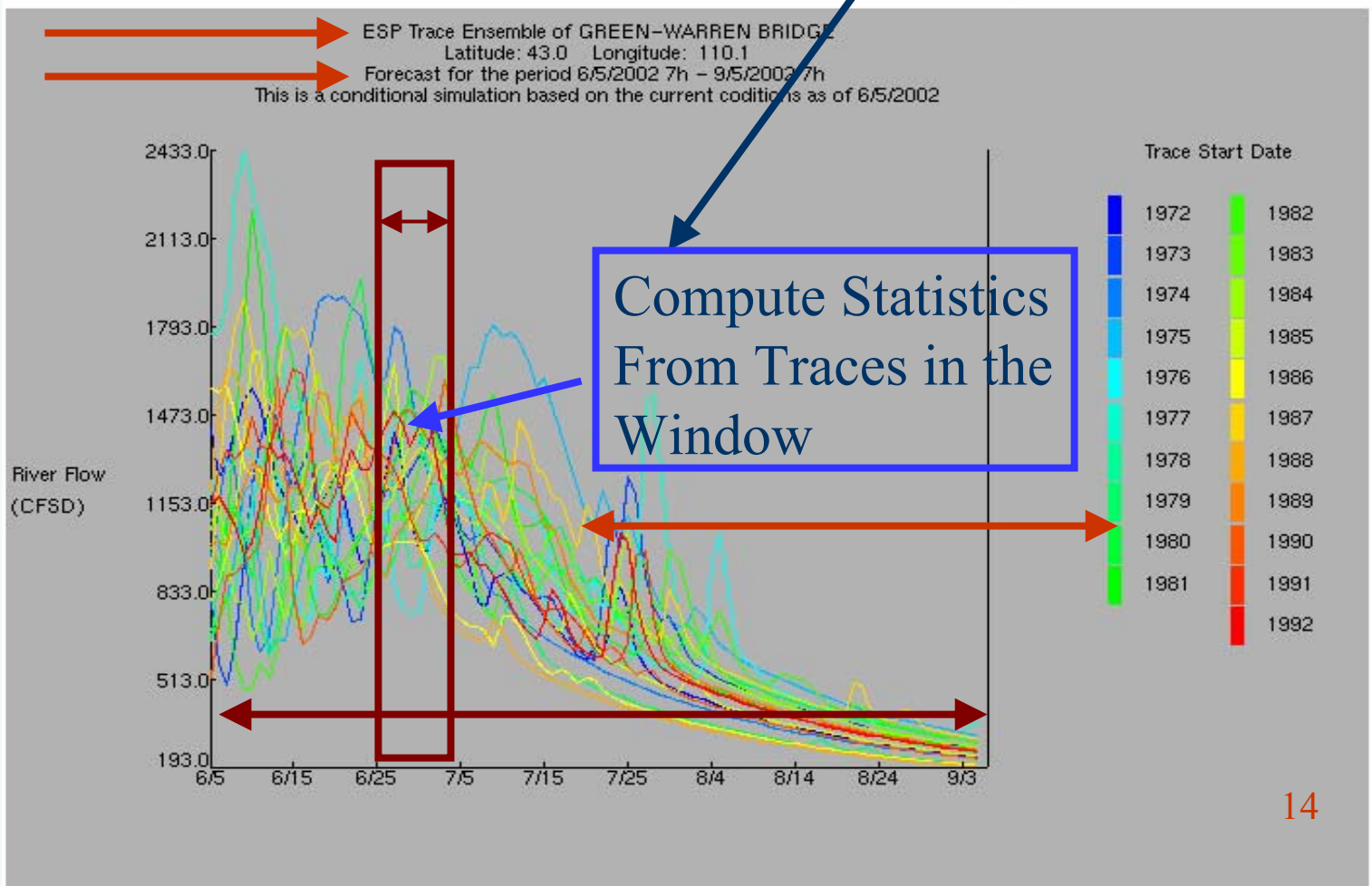

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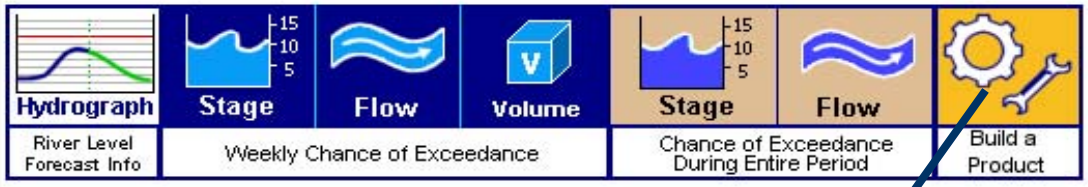
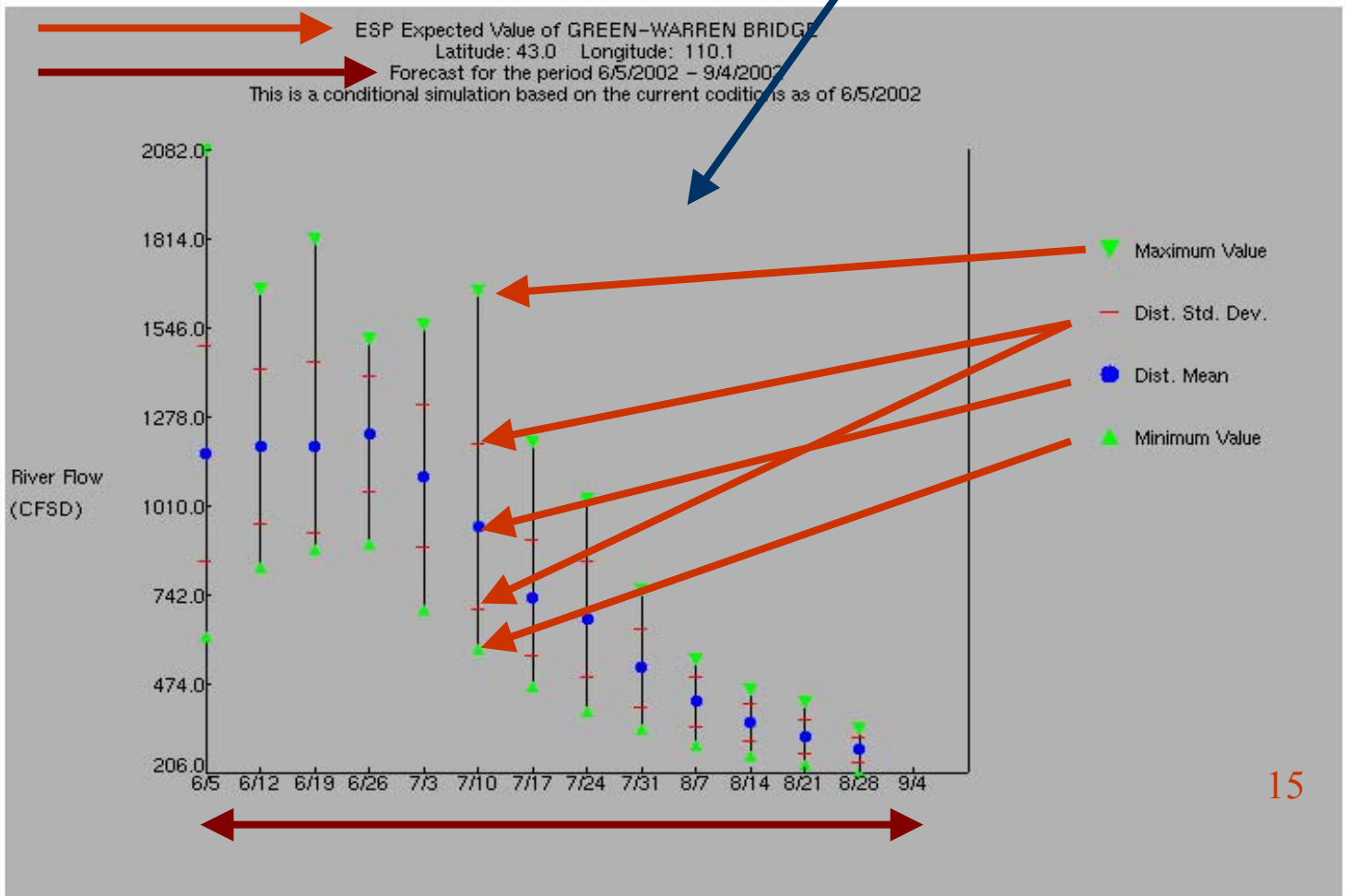




ontact Us

NVRN5 NVRN5L_F.SIM24.SQME.24.CS Navajo 24hr Conditional.

xxxxx NVRN5L_F.SIM24.SQME.24.HS Navajo 24hr Historical.

GBRW4 GBRW4R_F.SIM24.SQME.24.CS Fontenelle 24hr Conditional.

xxxxx GBRW4R_F.SIM24.SQME.24.HS Fontenelle 24hr Historical.

WBRW4 WBRW4H_F.SIM24.SQME.24.CS Green - Warren Bridge 24hr Cond.

||TE|| TraceEnsemble=WBRW4H_F.SIM24.SQME.24.CS

xxxxx WBRW4H_F.SIM24.SQME.24.HS Green - Warren Bridge 24hr Hist.

ESP Forecast Information

#

Analysis Period: 5/6/2002 24 - 12/6/2002 24 (MST)

Forecast Parameters: River Flow (Max) - (CFSD)

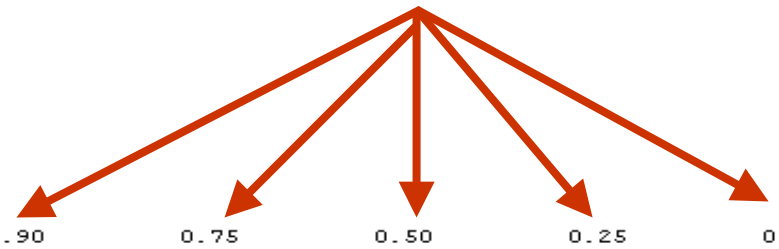
#

Forecast Interval: 1 Month

Forecast Point:

#

TEXT OUTPUT



#	0.90	0.75	0.50	0.25	0.10 Units
05/01/2002 - 05/31/2002	-999.00	-999.00	-999.00	-999.00	-999.00 (CFSD)
06/01/2002 - 06/30/2002	1094.29	1247.01	1380.99	1679.17	1793.95 (CFSD)
07/01/2002 - 07/31/2002	846.34	942.42	1176.40	1339.09	1754.95 (CFSD)
08/01/2002 - 08/31/2002	309.09	357.09	455.17	573.03	790.22 (CFSD)
09/01/2002 - 09/30/2002	182.06	206.78	264.84	314.11	341.17 (CFSD)
10/01/2002 - 10/31/2002	135.45	159.84	180.79	225.60	320.62 (CFSD)
11/01/2002 - 11/30/2002	108.67	125.45	140.12	158.11	175.40 (CFSD)

National Weather Service
Colorado Basin River Forecast Center (CBRFC)
Last Modified: May 6, 2002

Disclaimer Privacy Notice 28930 hits/week

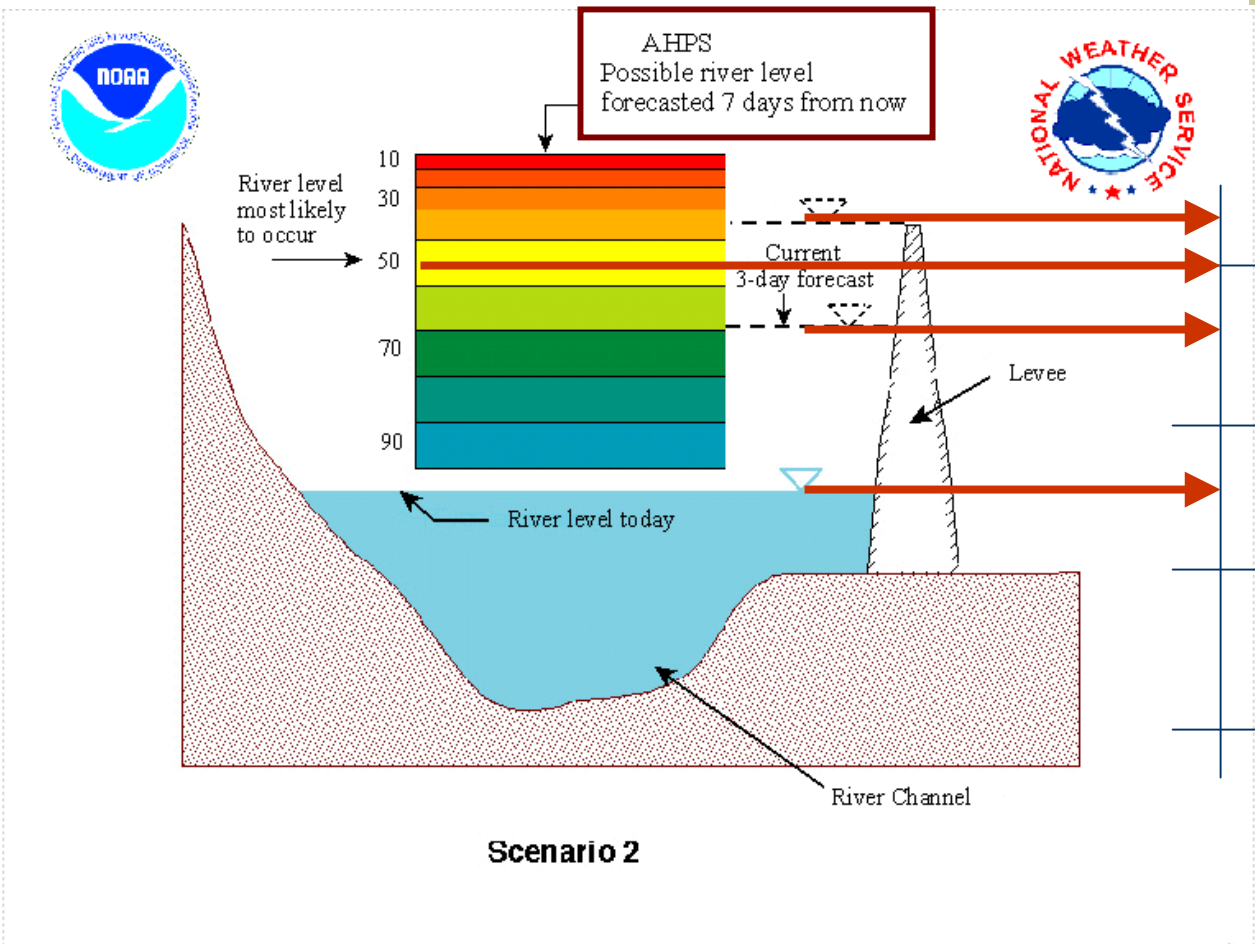
AHPS
FUTURISTIC PRODUCTS AND SERVICES

1. Store Component Pieces of an ESP Forecast In a Relational Database in Lieu of Images

2. Pull Pieces out and Create New Products

   (Examples will follow)

AHPS
EXAMPLE 1: FUTURE PRODUCT



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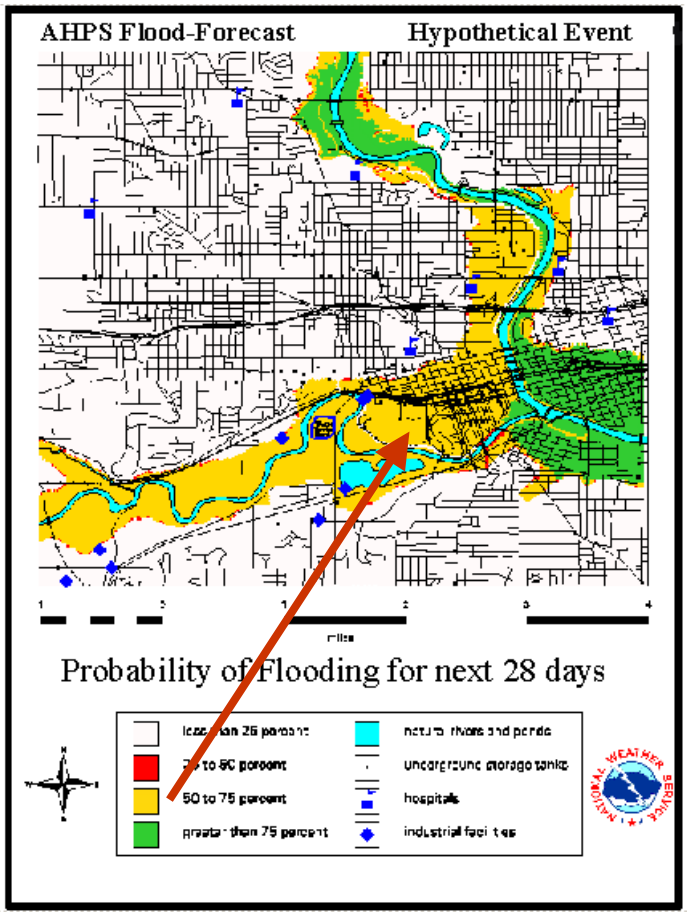
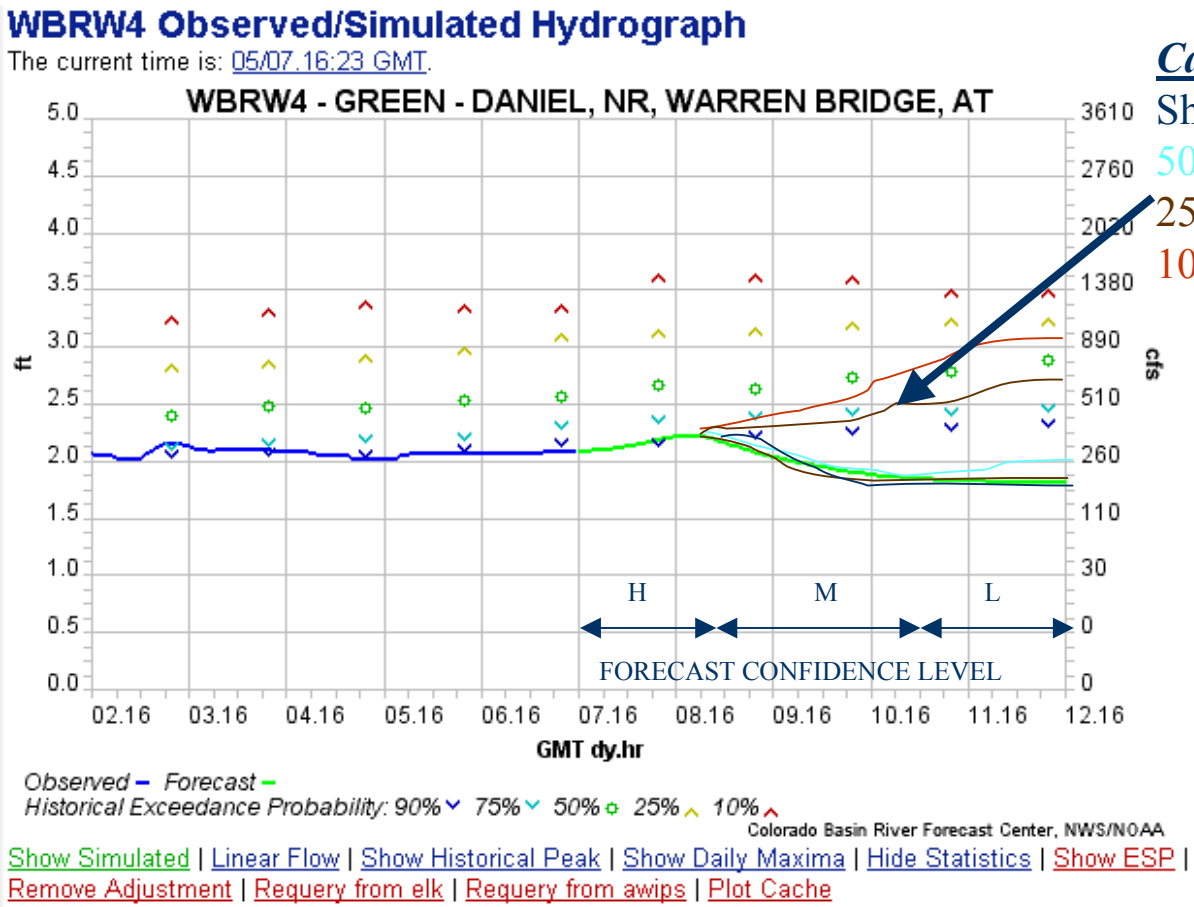
EXAMPLE 2: FUTURE PRODUCT



AHPS
EXAMPLE 3: FUTURE PRODUCT



Canned Example

Short Term Probabilistic Forecasts

50% Exceedence Level

25% & 75% Exceedance Levels

10% % 90% Exceedance Levels

Status of Improved Cooperation Between the RFC and WFO

Indicative of the following quote:

"We love you guys (CBRFC)!"

-- Lawrence Dunn