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CRMWG Meeting – August 23, 2005

Who We Are ?

Why We Are Here ?

Short Review

Forecast-Outlook Process

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Who We Are …
Colorado Basin River Forecast Center

Colorado Basin River Forecast Center

National Weather Service

National Oceanic Atmospheric Administration

Dave Brandon –
Hydrologist In Charge

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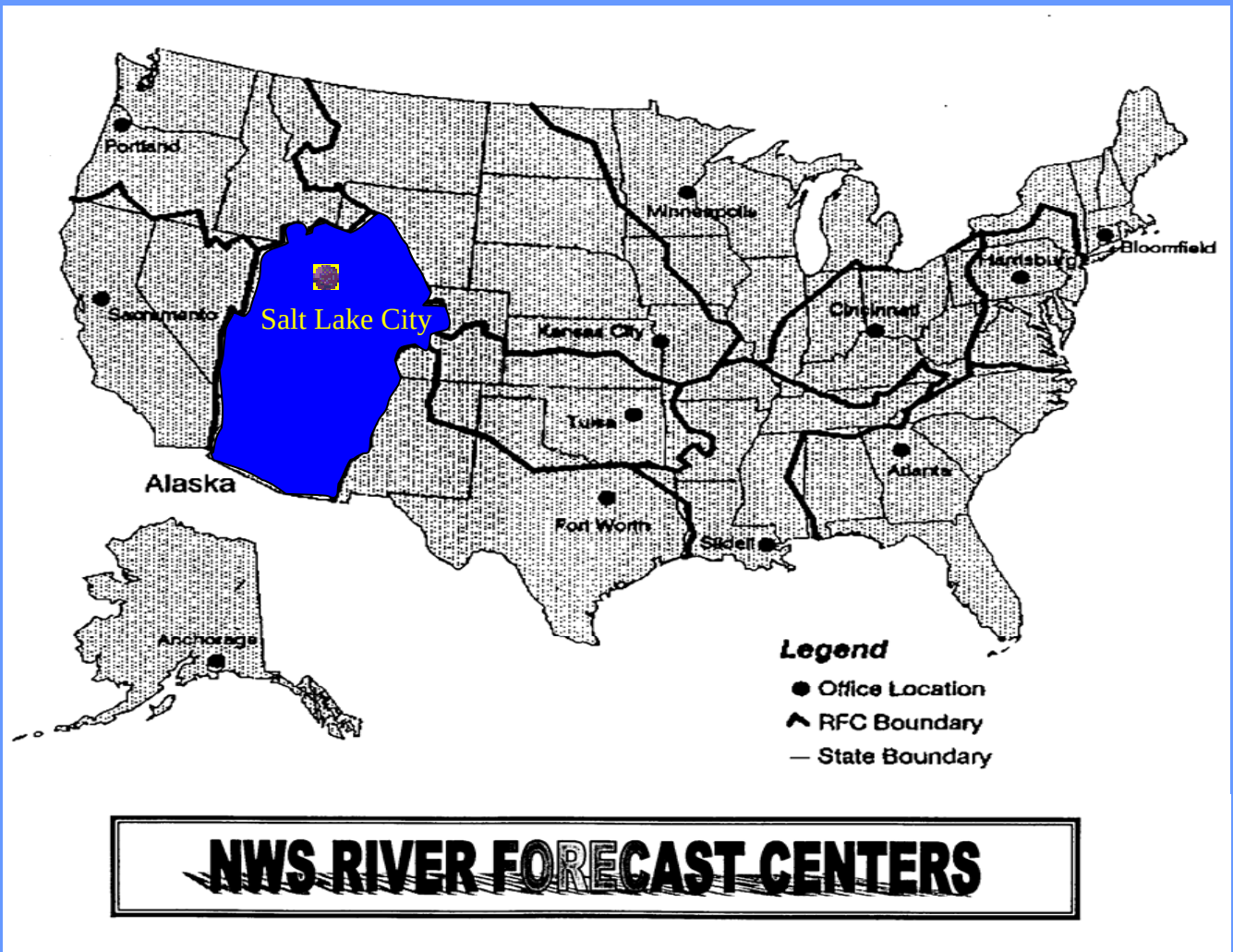
Location



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Mission – Congressional Mandate

Flash Flood Forecasts/Warnings

River Forecasts/Warnings

Recreational Forecasts

Water Supply/Management

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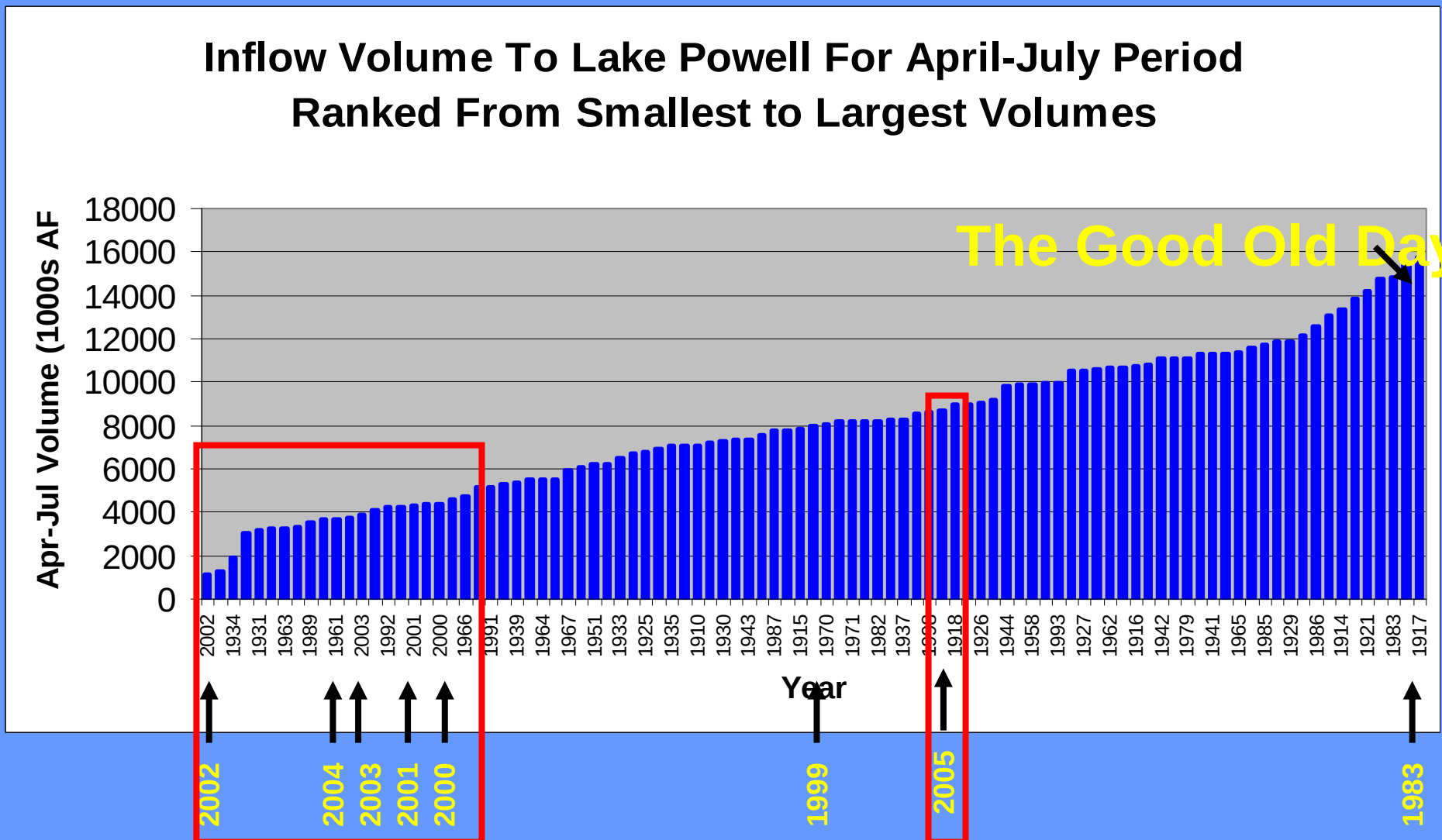
Ranking-Smallest to Largest Apr-Jul Volumes For 96 Years of Record



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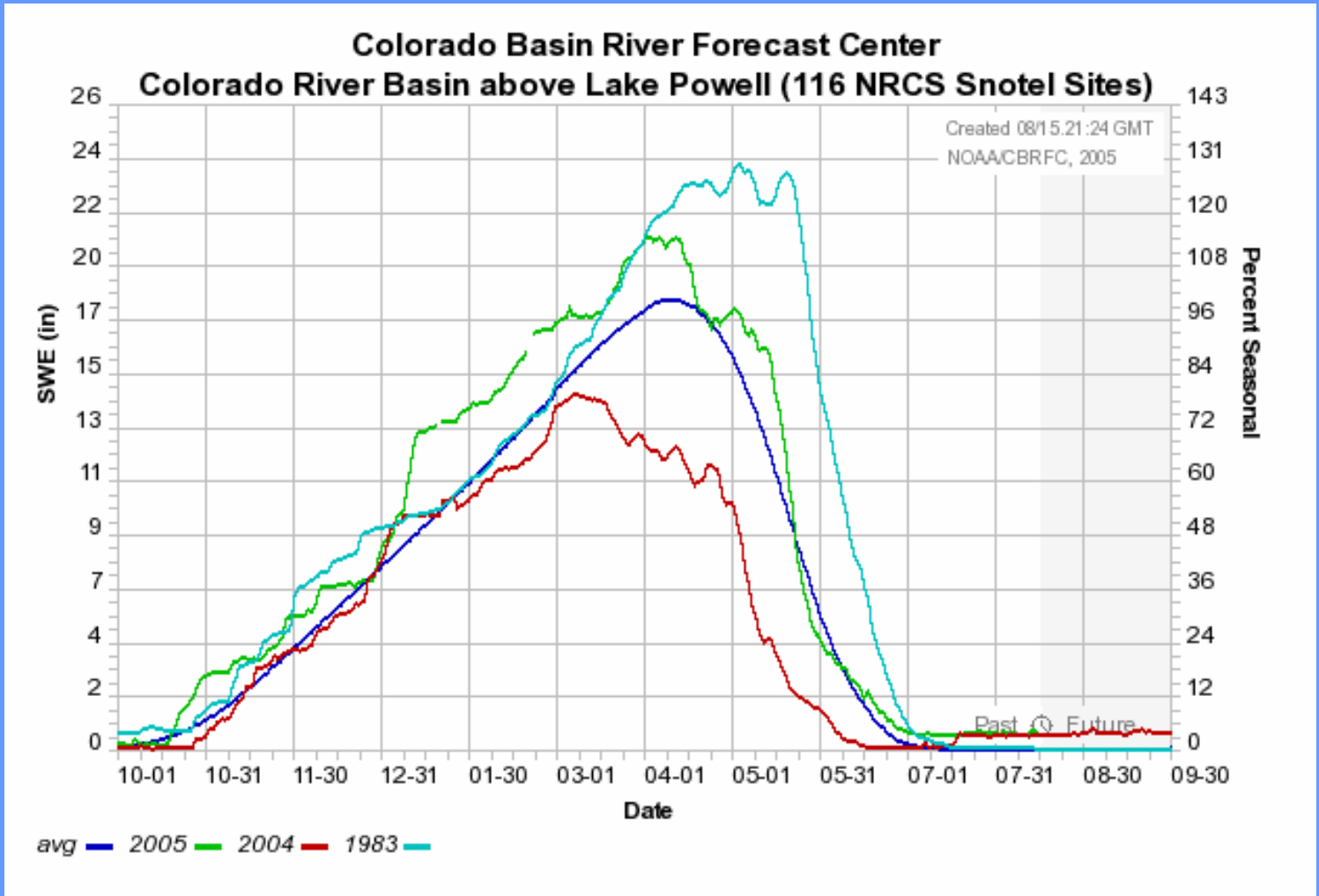
Snow Water Equivalent From 116 Stations Above Lake Powell – WY 2005



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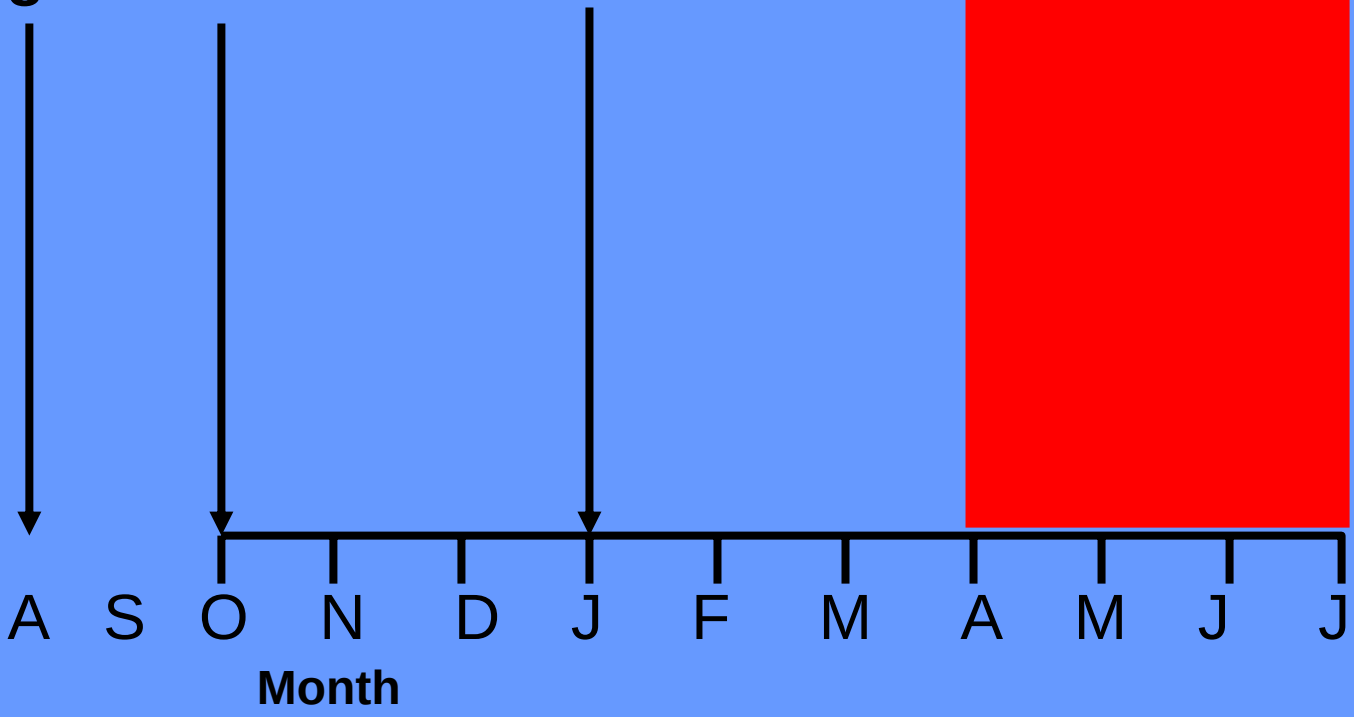
Time Line For Early Season Outlooks

Planning Outlook August

Outlooks Begin Oct/Nov

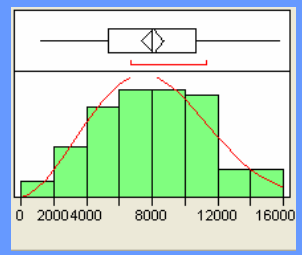
Forecasts Begin Jan 1

Forecast Target (April – Jul Volume)

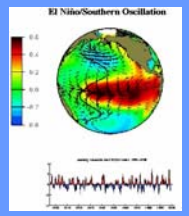


Drivers For Early Season Outlooks Made In Oct/Nov For Spring Runoff Volume Into Lake Powell

(1) Historical Observations/Climatology
Forecasting For Dummies
Best Guess If you Knew Nothing Else
Trivial Forecast 'To Beat'



(2) Initial Watershed Conditions
Antecedent Flow - Persistence
Soil Moisture State
Carryover Effect in Protracted Wet/Dry Period
Snow Pack
Reservoir Status (If Regulated Flow)



(3) Future Weather/Climate Variability
Could Help in High ENSO States
Climate Indices/Climate Forecast Models

(4) Model Bias Correction

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Accounting for the Drivers

ENSEMBLE
STREAMFLOW
PREDICTION
(ESP)

Component of the:
NWS River Forecast System

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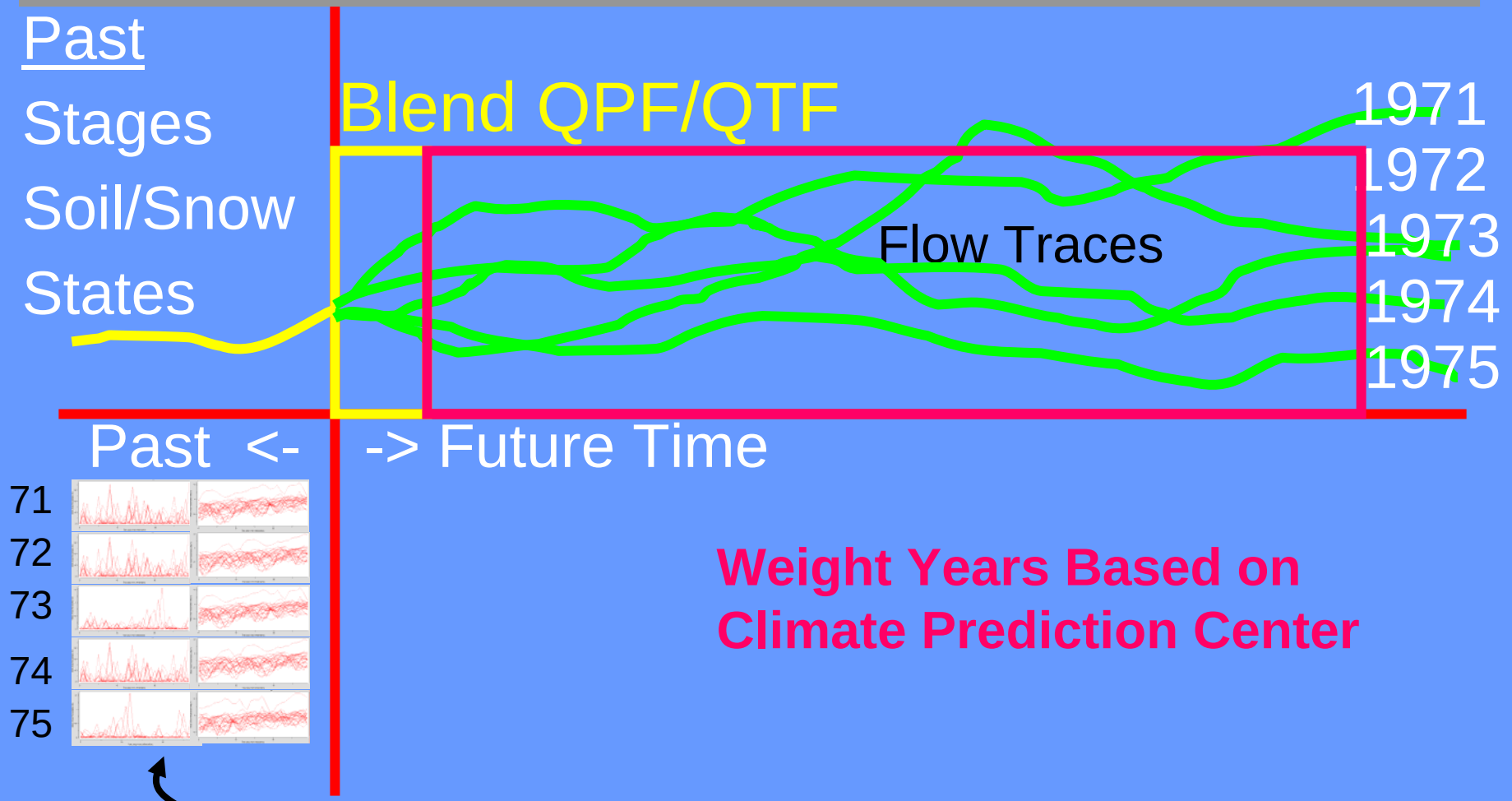
ESP

Continuous Modeling System
Produces Probabilistic Information
Accounts For All Drivers

(1) Historical Observations
(2) Initial Conditions – Antecedent/Soil Moisture
(3) Climate Variability
Year Weighting Techniques
a. Pre-Adjustment Inputs
b. Post Adjustment Outputs
c. Climate Forecast System Ensembles
(4) Model Bias Correction

Making an Ensemble Forecast Using NWSRFS



Historical Precip/Temps for Past Years

Creates a Flow for Each Year

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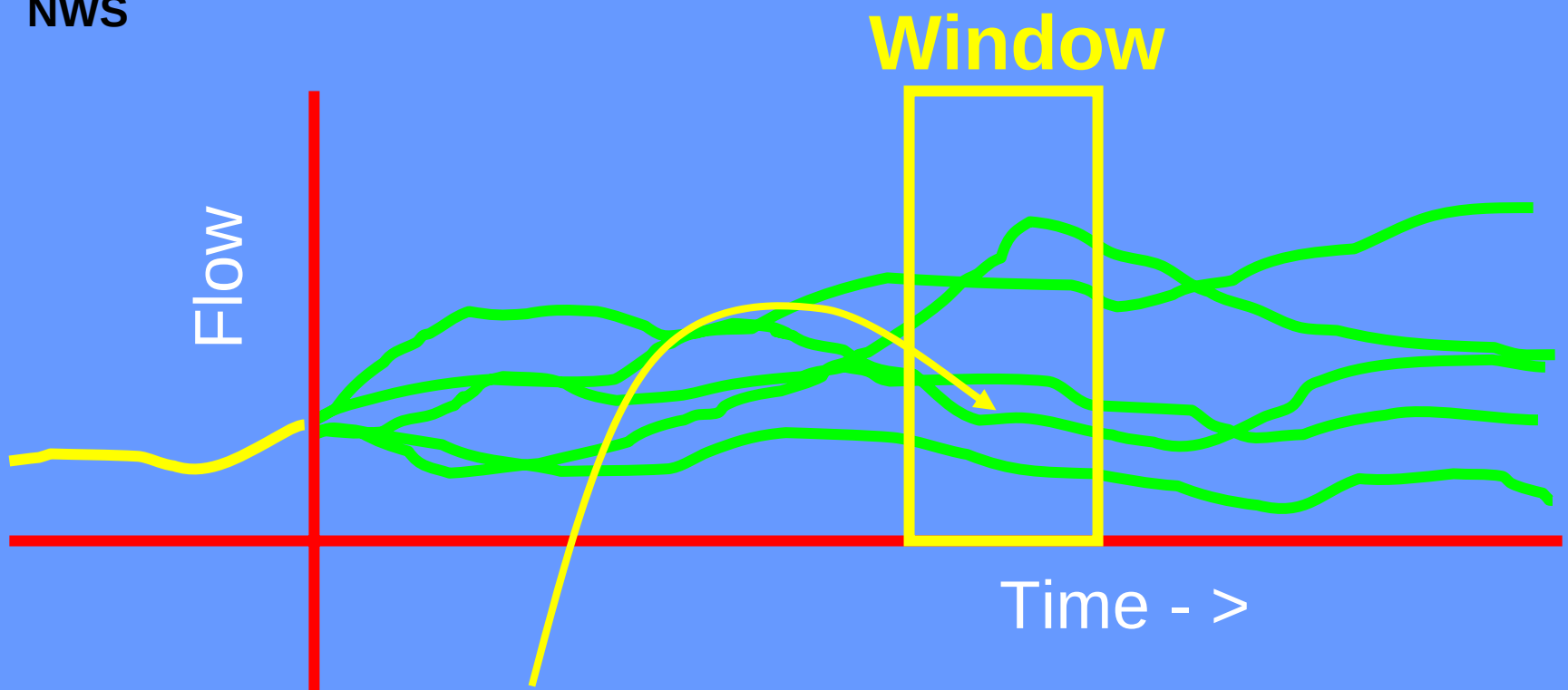
Making an ESP Forecast



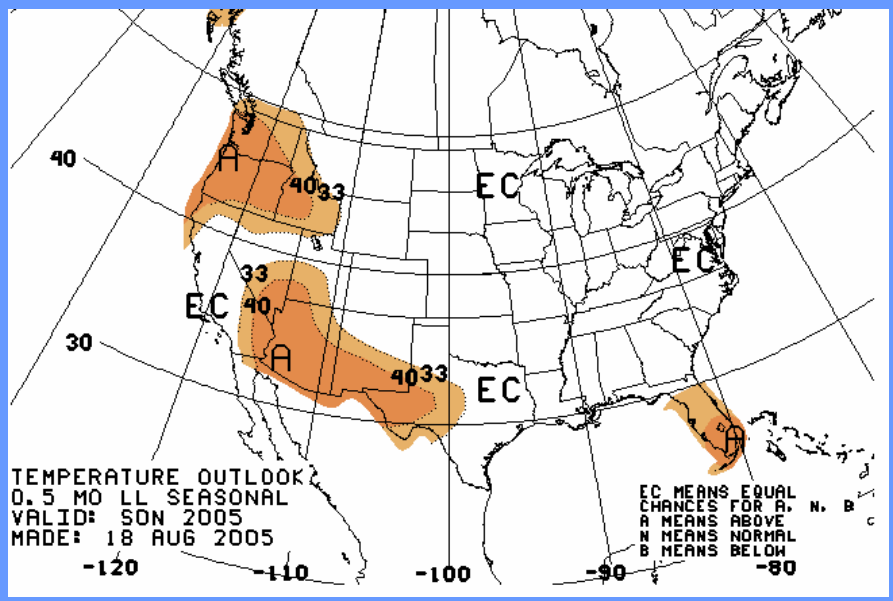
Make a frequency distribution using each ensemble value in the window…and then fit a probability function.

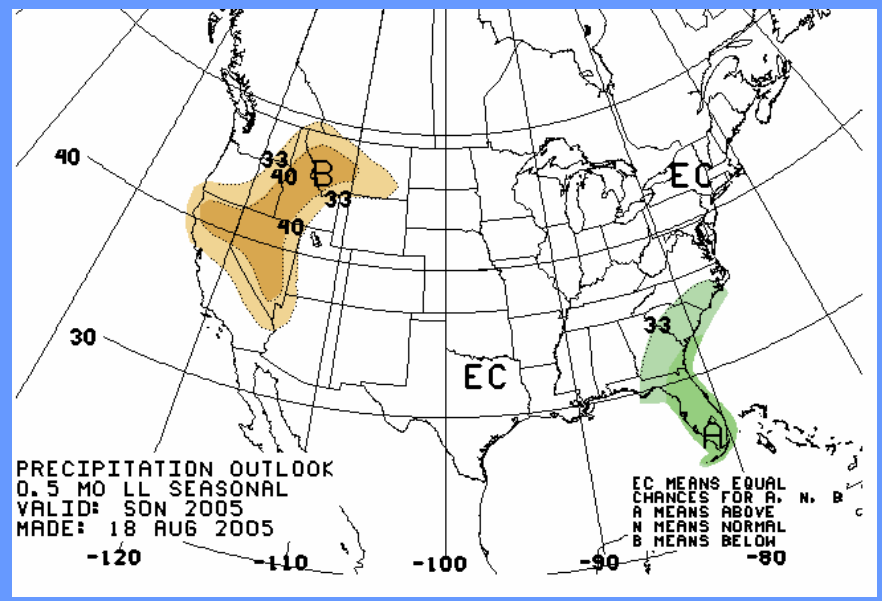
Example: Most Probable (50%), or (10%), (90%)

PROGNOSTIC DISCUSSION FOR LONG-LEAD SEASONAL OUTLOOKS

NWS CLIMATE PREDICTION CENTER CAMP SPRINGS MD 830 AM EDT THU AUG 18 2005 SUMMARY
OF THE OUTLOOK FOR NON-TECHNICAL USERS . . . . . .

SEA SURFACE TEMPERATURES (SSTS) IN THE EQUATORIAL PACIFIC ARE CLOSE TO NORMAL ACROSS THE ENTIRE BASIN. SUBSURFACE OCEAN TEMPERATURES IN THE UPPER LAYERS OF THE EASTERN PACIFIC ARE ALSO QUITE CLOSE TO NORMAL... INDICATING THAT NEUTRAL ENSO CONDITIONS WILL LIKELY PERSIST FOR THE NEXT FEW MONTHS. THERE IS A MODEST CONSENSUS AMONG BOTH STATISTICAL AND DYNAMICAL ENSO PREDICTION MODELS FOR NEUTRAL CONDITIONS TO PREVAIL THROUGH EARLY 2006. SSTS THROUGHOUT THE TROPICAL NORTH ATLANTIC OCEAN EXTENDING INTO THE CARIBBEAN SEA ARE WELL ABOVE NORMAL AND ARE ONE OF THE FACTORS FAVORING AN EXPECTED ACTIVE ATLANTIC HURRICANE SEASON... AND THIS WILL IMPACT THE SEASONAL PRECIPITATION PREDICTION FOR THE SOUTHEASTERN U.S. THIS FALL.





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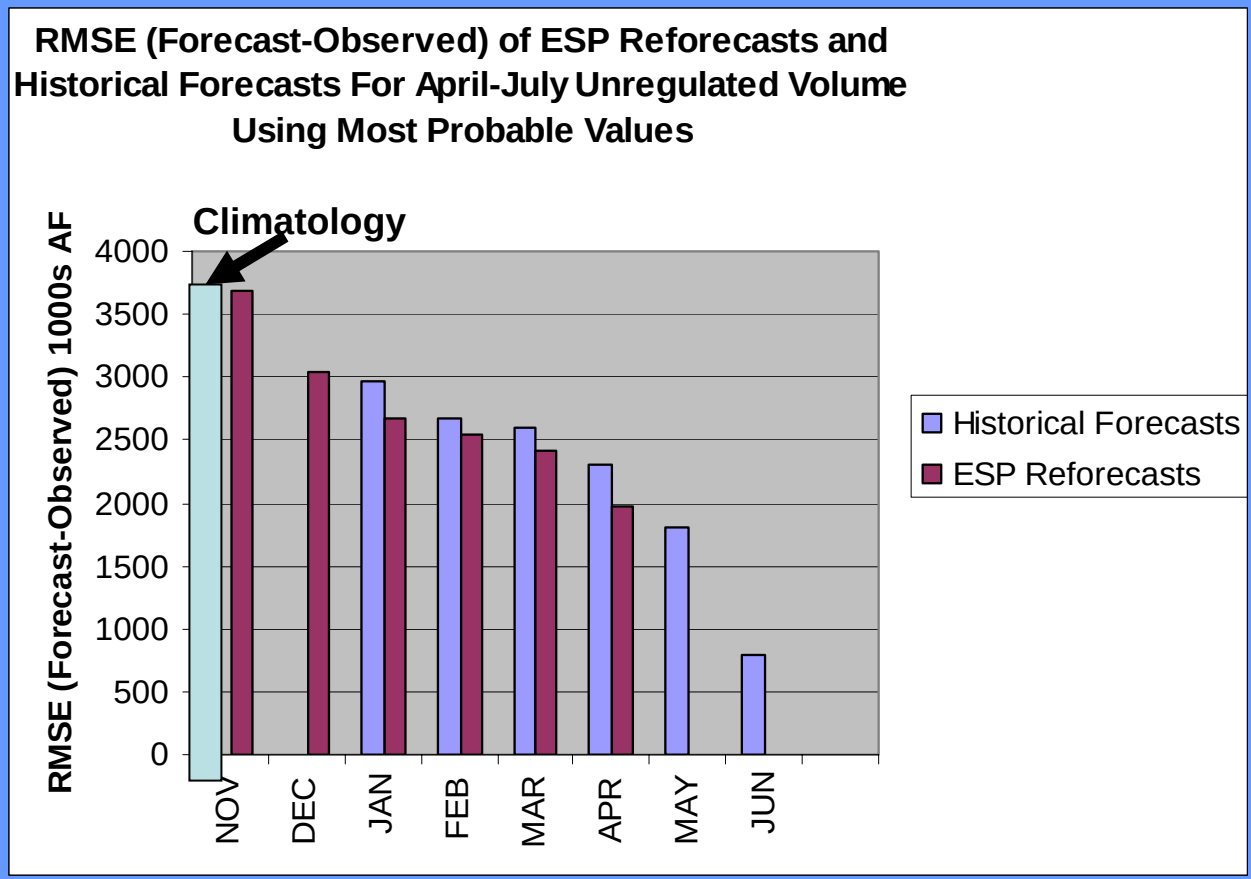
ESP Reforecasting – Comparison To Historical Forecast



50% 40% 36% 32%