

NRCS New Forecast Software and Daily Graphical Forecast Products

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New Software and Forecast Products

- Visual Interactive Prediction and Estimation Routines (VIPER) development and operational software system
- Daily water supply forecast product
- Graphical daily flow probability distribution product (Deschutes, South Umpqua basins)

VIPER

- Excel-based application
- Visual main interface
- Data retrieval from NRCS and USGS databases via web services
- Equation development environment including two regression methodologies and optimization of time periods and predictor variables
- Operational environment for producing monthly and mid-month forecasts

VIPER Main Interface

Type	Target	Start	End
Forecast Point	08248000, CO, Los Pinos River Near Ortiz, Co	May	May
Type	Predictors	Start	End
1 SnowSwe	06M24, CO, Pinos Mill	May F	May F
2 SnotelSwe	874, CO, Wolf Creek Summit	May F	May F
3 SnowSwe	06M21, CO, Grayback	May F	May F
4 SnotelSwe	580, CO, Lily Pond	May F	May F
5 SnowSwe	06M09, CO, Platoro	May F	May F
6 SnowSwe	06M04, CO, Silver Lakes	May F	May F
7			
8 SnotelPrpc	874, CO, Wolf Creek Summit	Oct-1 F	Apr L
9			
10 SnotelPrpc	580, CO, Lily Pond	Oct-1 F	Apr L
11			
12 RouteQaww	08248000, CO, Los Pinos River Near Ortiz	May	Sep
13 NRCSSstrm	08248000, CO, Los Pinos River Near Ortiz	Apr	Apr
14			
15			
16			
17			
18			

Global month changes:	Instantaneous	Accumulated
Station	1	2
Correl	0.886	0.899
Years	36/38	36/38
CurrZ	0.721	0.727
PctNorm	134%	148%
Pred	44.95	44.95
Station	7	8
Correl	0.853	0.853
Years	25/27	25/27
CurrZ	1.110	1.110
PctNorm	128%	128%
Pred	51.26	51.26
Station	13	14
Correl		
Years		
CurrZ		
PctNorm		
Pred		

Group	SnotelSwe	SnowSwe	SnotelPrpc	NWSCoop	USGSStrm	NRCSStrm
Correl	0.899	0.900	0.853			
Years	36	36	25			
CurrZ	0.727	0.831	1.110			
Pred	44.95	47.20	51.26			

Group	ClimInd	Reservoir	RouteQawdb	All
Correl				0.902
Years				36
CurrZ				0.002
Pred				47.5339726

Statistics	Average	Median	Min	Min Year	Max	Max Year
POR	34.7	38.1	2.1	2002	66.7	1985

Analysis Type	Z-Score	Volume	Pct
10	57.21	162%	
30	51.45	146%	
50	47.53	135%	
70	43.62	124%	
90	37.86	108%	
standard	0.814		
jackknife	0.814		
r2	0.814		
StdErr	7.40		
StdErrSS	0.563		

Transformation	None
First Year Used	1970
Last Year Used	9999
Target Data Src	AWDB
Publication Date	May
Published?	<input checked="" type="checkbox"/>

PCA	
# comp	
% var	

VIPER Main Interface

Type	Target	Start	End
SnowSwe	06M24, CO, Pinos Mill	May F	May F
SnotelSwe	874, CO, Wolf Creek Summit	May F	May F
SnowSwe	06M21, CO, Grayback	May F	May F
SnotelSwe	580, CO, Lily Pond	May F	May F
SnowSwe	06M09, CO, Platoro	May F	May F
SnowSwe	06M04, CO, Platoro	May F	May F
SnotelPrpc	06M04, CO, Platoro	Oct-1 F	Apr L
SnotelPrpc	06M04, CO, Platoro	Oct-1 F	Apr L
SnotelPrpc	580, CO, Lily Pond	Oct-1 F	Apr L
RouteQawdb	08248000, CO, Los Pinos River Near Ortiz	May	Sep
NRCSSStrm	08248000, CO, Los Pinos River Near Ortiz	Apr	Apr
		May F	May F
		May F	May F
		May F	May F
		Apr	Apr

Selecting predictors and predictands

Forecast vs observed time series

Station availability, weights

Station	1	2	3	4	5	6
Correl	1	0.886	0.899	0.907	0.322	
Years	36/36	36/36	36/36	36/36	36/36	
CurrZ	0.721	0.727	1.088	0.368		
PctNorm	134%	149%	161%	0%		
Pred	44.95	44.95	50.57	32.61		

Station	7	8	9	10	11	12
Correl		0.853				
Years		25/27				
CurrZ		1.110				
PctNorm		128%				
Pred		41.26				

Station	13	14	15	16	17	18
Correl						
Years						
CurrZ						
PctNorm						
Pred						

Predictors quality, availability

Fcst vs obs scatterplot

Helper variable Scatterplot/Forecast progression

Group	SnotelSwe	SnowSwe	SnotelPrpc	NWSCoop	USGSStrm	NRCSSStrm
Correl	0.899	0.900	0.853			
Years	36	36	25			
CurrZ	0.727	0.831	1.110			
Pred	44.95	47.28	51.26			

Group	ClimInd	Reservoir	RouteQawdb	All
Correl				0.902
Years				36
CurrZ				0.882
Pred				47.5339726

Historical statistics

Analysis Type: Z-Score

Volume Pct: 67.21 (15%)

50: 47.95 (13%)

70: 43.63 (12%)

90: 38.14

standard jackknife

Probability bounds

Transformation: None

First Year Used: 1970

Last Year Used: 9999

Target Data Src: NDR

Publication Date Published?

Recalculate

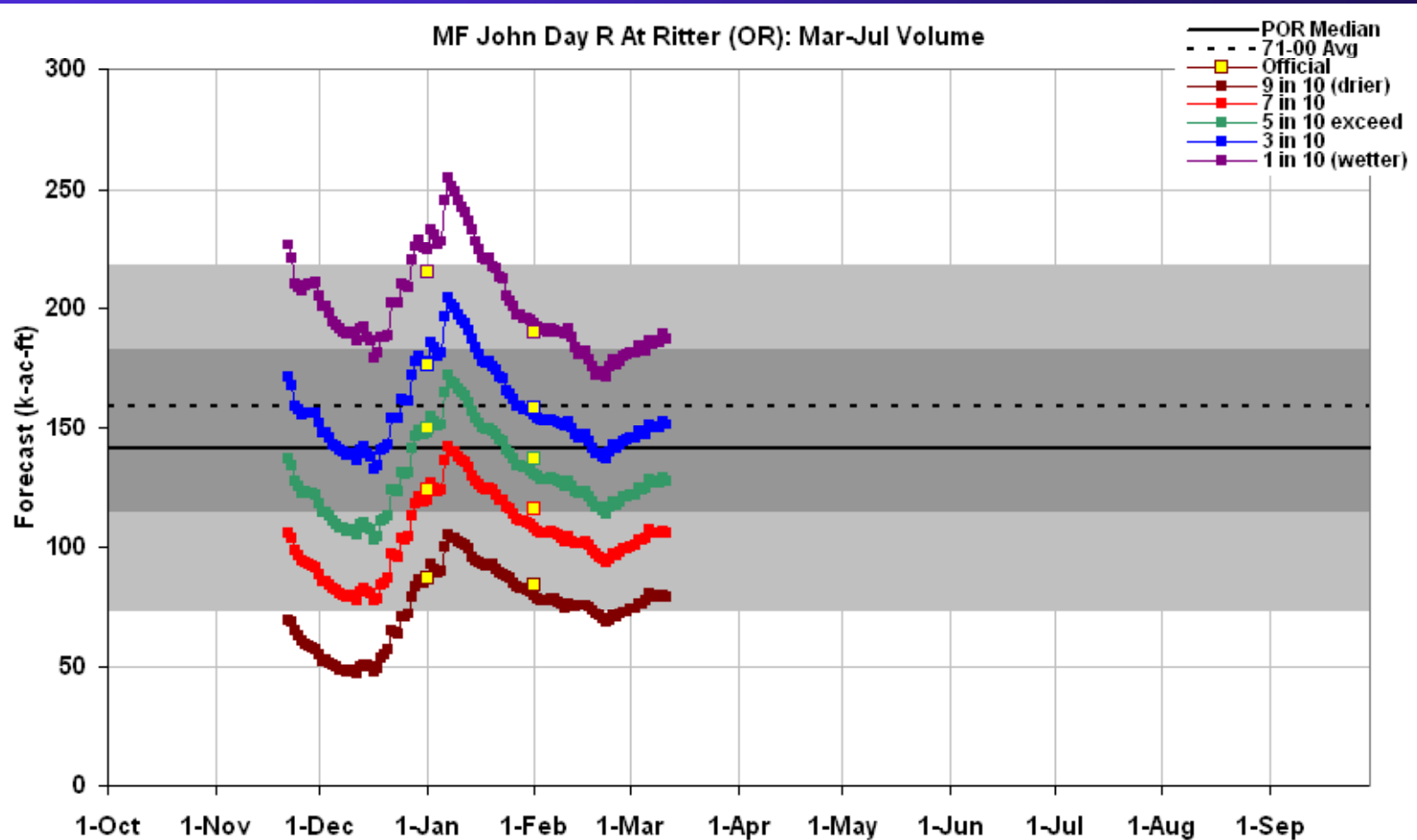
PCA

comp

% var

Settings

Daily Water Supply Forecast Product



Created 7:18 Mar 11 2009

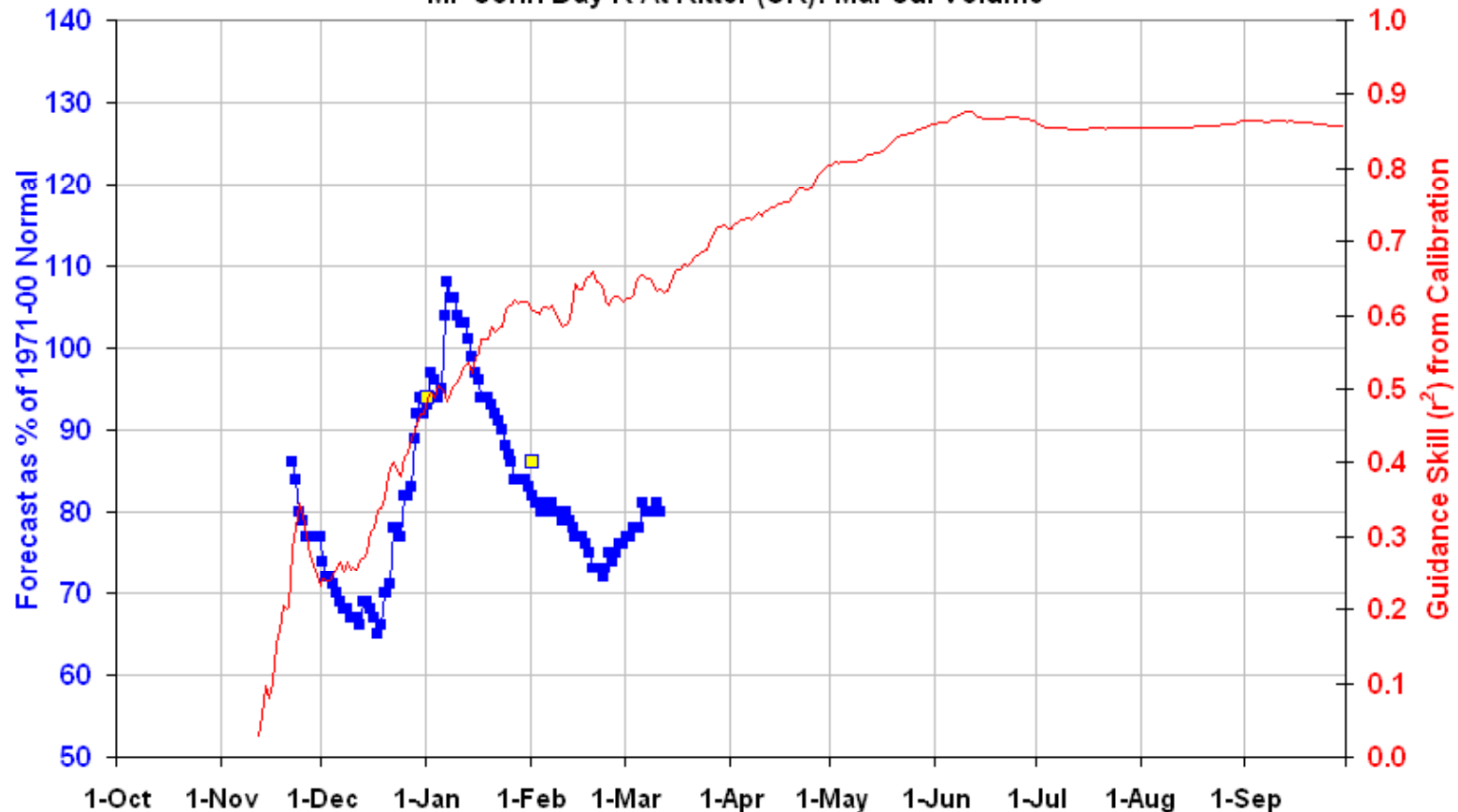


This is an automated product based solely on SNOTEL data, provisional data are subject to change. This product is a statistically based guidance forecast combining indices of snowpack and precipitation. **Yellow squares** are the official outlooks. **Gray background** is the historical period of record variability. This product does not consider climate information such as El Nino or short range weather forecasts, or a variety of other factors considered in the official forecasts. This product is not meant to replace or supercede the official forecasts produced in coordination with the National Weather Service. Science Contact: Jim.Marron@por.usda.gov www.wcc.nrcs.usda.gov/wsf/daily_forecasts.html

Daily Water Supply Forecast Product

Created 7:18 Mar 11 2009

MF John Day R At Ritter (OR): Mar-Jul Volume



- Guidance fcst % norm
- Official fcst % norm
- Guidance Skill (r^2)

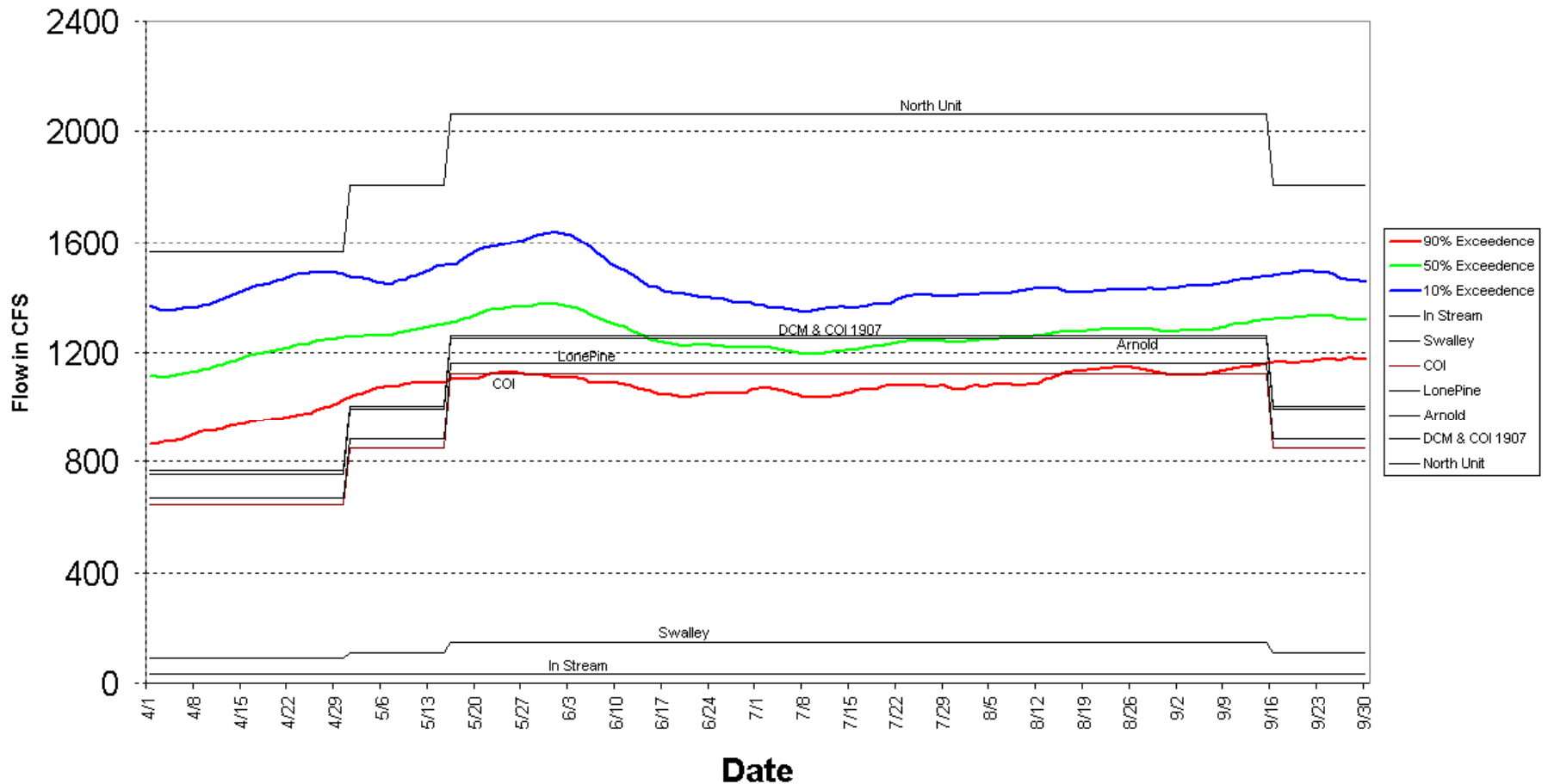


This is an automated product based solely on SNOTEL data, provisional data are subject to change. This product is a statistically based guidance forecast combining indices of snowpack and precipitation. Skill is defined as the correlation (squared) between the guidance and observed during calibration. This product does not consider climate information such as El Nino or short range weather forecasts, or a variety of other factors considered in the official forecasts. This product is not meant to replace or supercede the official forecasts produced in coordination with the National Weather Service. Science Contact: Jim.Marron@por.usda.gov www.wcc.nrcs.usda.gov/wsf/daily_forecasts.html

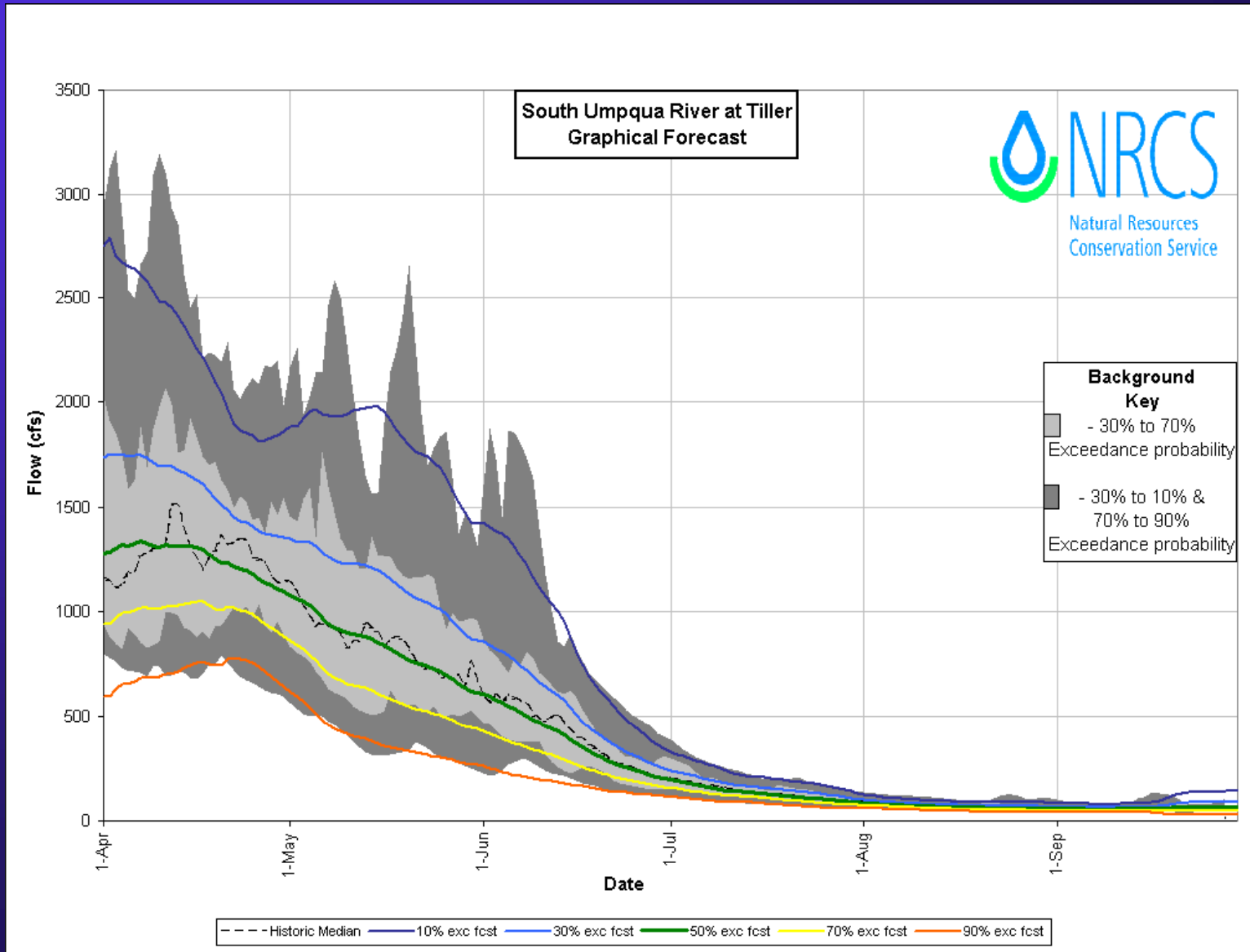
Daily Flow Graphical Forecast Product

Deschutes River at Benham Falls Graphical Forecast:
March, 2009 Release

Apr - Sep: Volume Forecast
460 KAF
88% of Average



Daily Flow Graphical Forecast Product



Columbia River Forecast Group Workshop, Portland, OR, 12 March 2009



Conclusions

- VIPER software has greatly facilitated forecast model development and real-time operational forecasting
- Daily WSF product has had positive reception as a way of tracking trends
- Graphical daily flow products are useful in monitoring fulfillment of water rights (Deschutes) and may be useful for other purposes