Verification Activities in the CNRFC

Alan Takamoto

Second RFC Verification Workshop
Salt Lake City, UT
November 18, 2008

RVF statistics sent to OCWWS

File Edit Search Preferences Shell Macro Windows Help

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Start Time|End Time|RFC|River Response|Pairing Interval|Leadtime Start|Leadtime End|Location|Max Fcst|Min Fcst|Max Obs|Min Obs|RMSE|MeanErr|MeanAbsError|Count
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|CREC1|||99.9|0|0.607279|-0.063637|0.360606|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|FTDC1|||99.9|0|0.275241|-0.112121|0.196970|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|ORIC1|||99.9|0|0.280422|0.059091|0.162121|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|SLOW|1 hr|0hr|6hr|BTYO3|||99.9|0|0.121065|0.039844|0.090052|60
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|SLOW|1 hr|0hr|6hr|WMSO3|||99.9|0|0.057735|0.012121|0.027273|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|ONSC1|||99.9|0|0.177538|-0.026752|0.121449|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|FTJC1|||99.9|0|0.280872|0.042857|0.160317|63
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|SEIC1|||99.9|0|0.239419|0.076786|0.151786|56
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|HOOC1|||99.9|0|0.200000|-0.060606|0.142424|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|MEDIUM|1 hr|0hr|6hr|KLMC1|||99.9|0|1.032187|-0.103279|0.526230|61
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|ARCC1|||99.9|0|0.304511|-0.006061|0.157576|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|BRGC1|||99.9|0|0.321219|0.050000|0.192424|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|MRNC1|||99.9|0|0.432281|-0.089252|0.259328|66
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|MEDIUM|1 hr|0hr|6hr|SCOC1|||99.9|0|0.271747|0.073846|0.160000|65
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|MEDIUM|1 hr|0hr|6hr|FRNC1|||99.9|0|0.209762|0.052308|0.132308|65
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|NVRC1|||99.9|0|0.558752|0.013559|0.335593|59
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|HOPC1|||99.9|0|0.352846|0.038333|0.241667|60
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|HEAC1|||99.9|0|0.651282|-0.138542|0.375208|60
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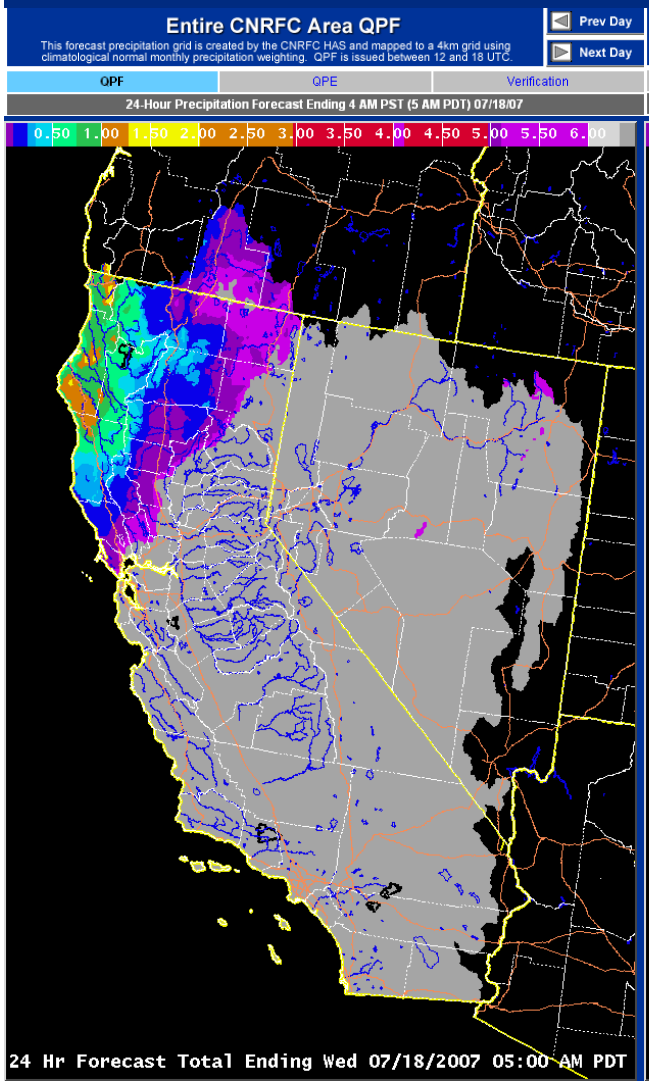
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|SHEC1|||99.9|0|0.593060|0.073802|0.230469|60
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|PRBC1|||99.9|0|0.359871|0.030796|0.153478|62
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|BRDC1|||99.9|0|0.172711|0.024294|0.066129|62
2006-01-01 00:00:00|2006-01-31 23:59:59|CNRFC|FAST|1 hr|0hr|6hr|RDRC1|||99.9|0|0.151338|0.022581|0.058065|62
```

Takes time to qc data. Use MBRFC's "adbpg.pl" program.

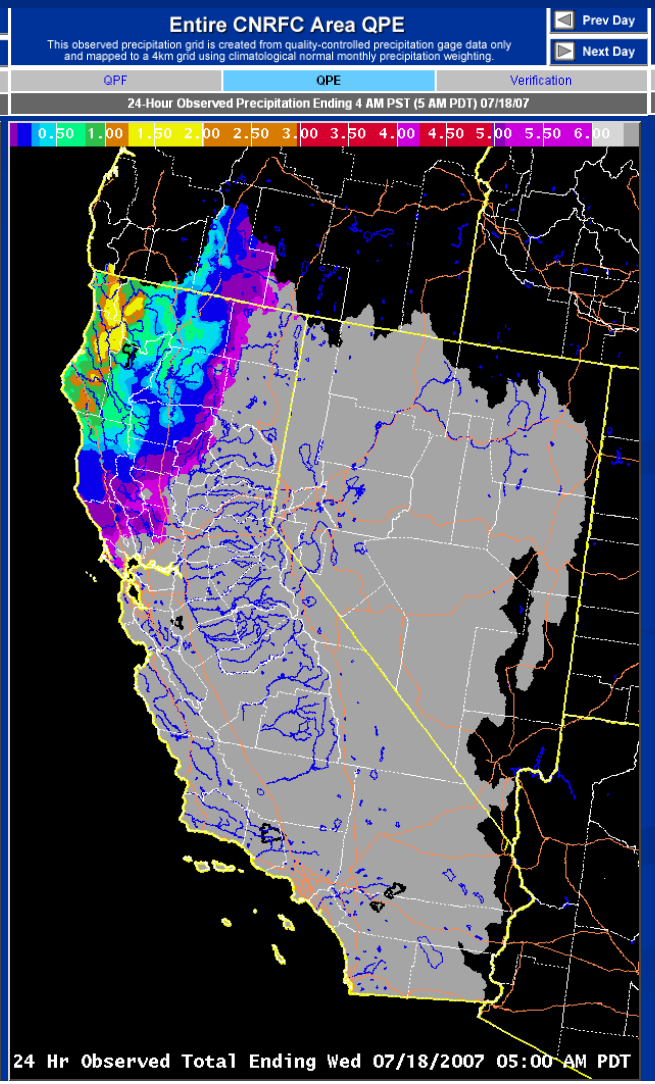
QPF Verification Graphics

http://www.cnrfc.noaa.gov/qpf.php

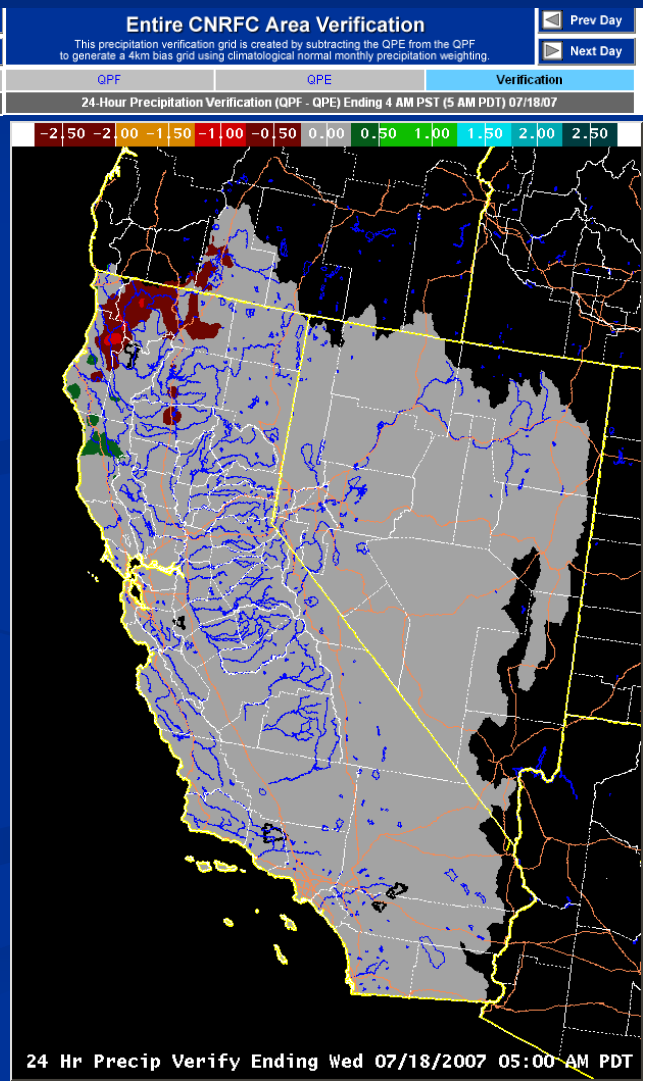
Forecast QPF



Observed QPE

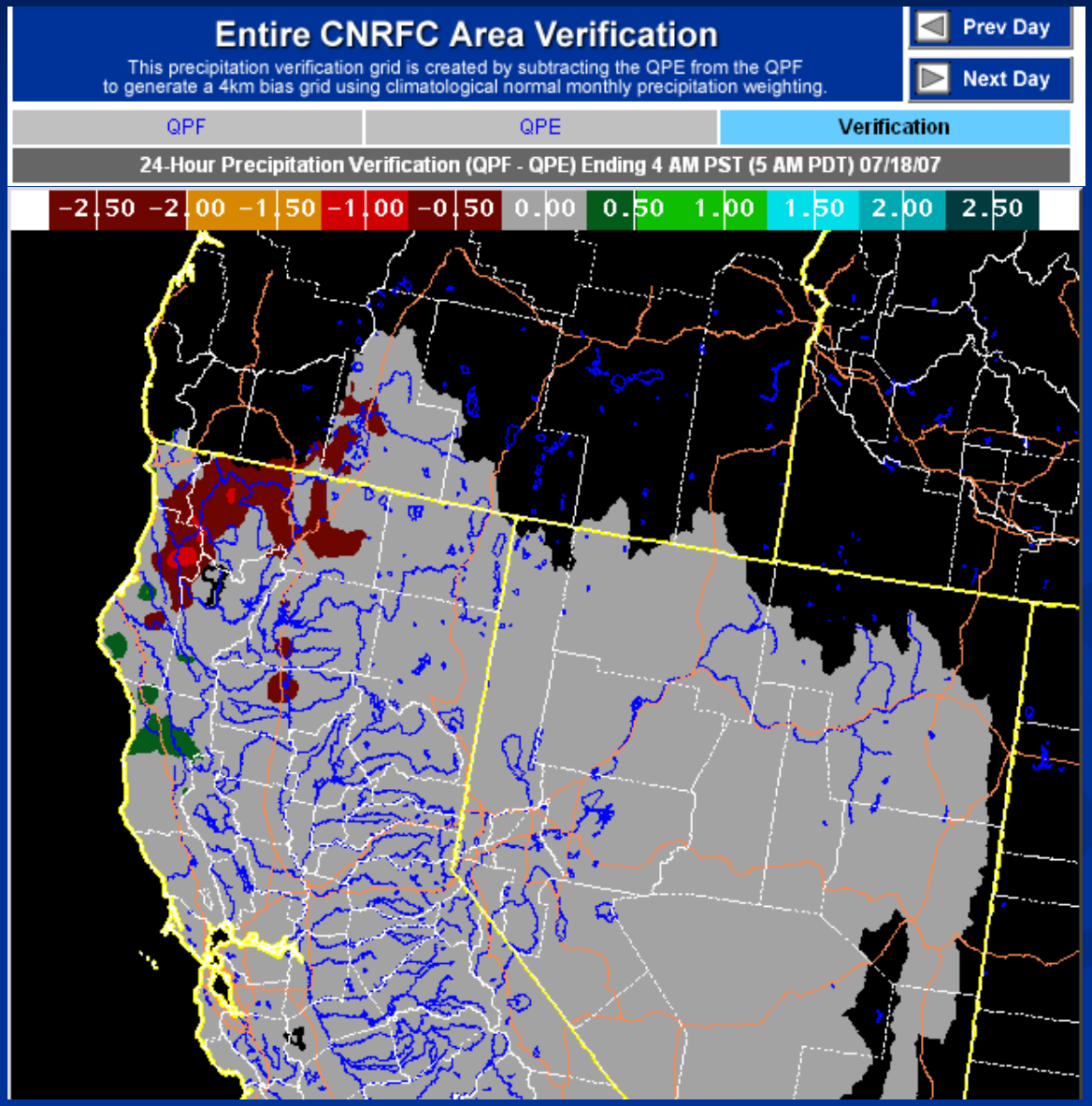


Verification (QPF-QPE)



QPF Verification Graphics

Verification (QPF-QPE)



Temperature Forecasts used in Snowmelt

April Tabular Temperatures - MHS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
4cast Hi:	58	58	65	63	72	68	64	63	62	53	49	50	53	57	58	61	49	44	44	48	54	54	60	67	66	66	74	75	72	67
Obs Hi:	61	58	69	70	77	80	61	63	55	58	52	51	65	47	54	69	53	49	46	58	44	54	64	71	63	68	81	80	75	72
Avg Hi:	55							57							59								61							63
4cast Lo:	37	35	35	35	33	39	42	42	40	36	32	32	32	36	35	38	38	30	30	32	35	36	35	36	36	36	41	45	45	44
Obs Lo:	40	33	31	40	34	37	48	41	33	29	36	32	26	39	32	32	40	32	28	23	34	32	32	35	41	36	39	43	48	37
Avg Lo:	31							32							33								35							36

May Tabular Temperatures - MHS

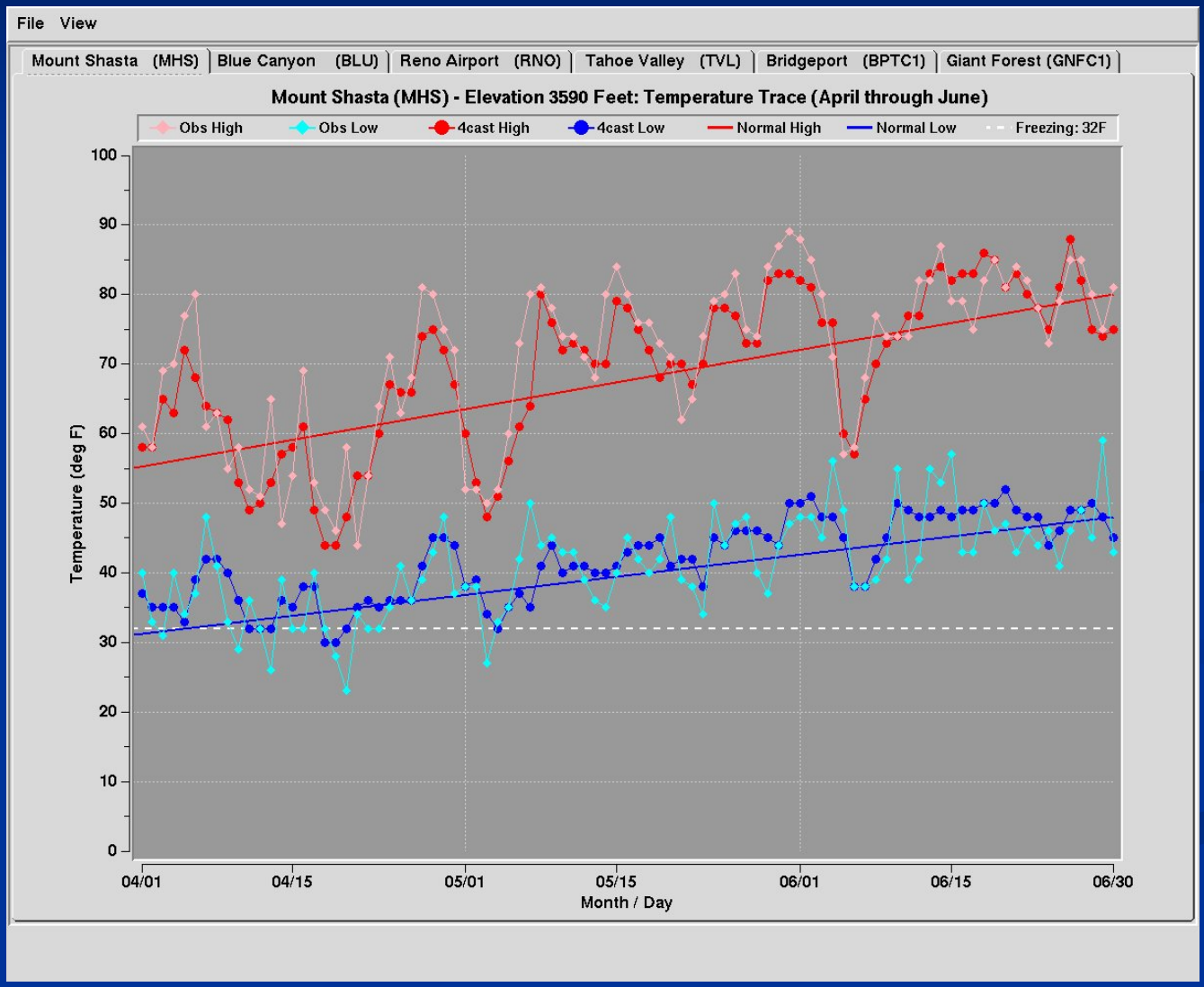
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
4cast Hi:	60	53	48	51	56	61	64	80	76	72	73	72	70	70	79	78	75	72	68	70	70	67	70	78	78	77	73	73	82	83	83
Obs Hi:	52	52	50	52	60	73	80	81	78	74	74	71	68	80	84	80	76	76	73	71	62	65	74	79	80	83	75	74	84	87	89
Avg Hi:	63							65							68								70								72
4cast Lo:	38	39	34	32	35	37	35	41	44	40	41	41	40	40	41	43	44	44	45	41	42	42	38	45	44	46	46	46	45	44	50
Obs Lo:	38	38	27	33	35	42	50	44	45	43	43	39	36	35	40	45	42	40	42	48	39	38	34	50	44	47	48	40	37	44	47
Avg Lo:	36							38							40								42								43

June Tabular Temperatures - MHS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
4cast Hi:	82	81	76	76	60	57	65	70	73	74	77	77	83	84	82	83	83	86	85	81	83	80	78	75	81	88	82	75	74	75
Obs Hi:	88	85	80	71	57	58	68	77	74	74	74	82	82	87	79	79	75	82	85	81	84	82	78	73	79	85	85	80	75	81
Avg Hi:	72							74							76								78							80
4cast Lo:	50	51	48	48	45	38	38	42	45	50	49	48	48	49	48	49	49	50	50	52	49	48	48	44	46	49	49	50	48	45
Obs Lo:	48	48	45	56	49	38	38	39	42	55	39	42	55	53	57	43	43	50	46	47	43	46	44	46	41	46	49	45	59	43
Avg Lo:	43							45							46								47							48

Exit Print and Exit

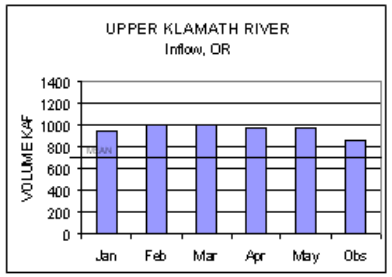
Temperature Forecasts used in Snowmelt

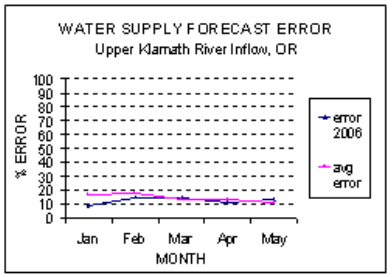


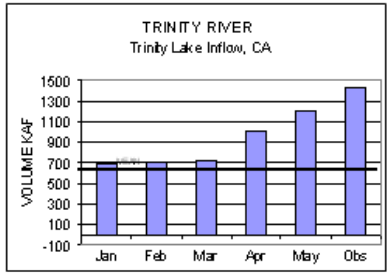
Water Supply Verification Product

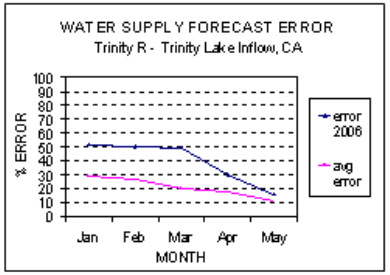
Per ROML W-14-99

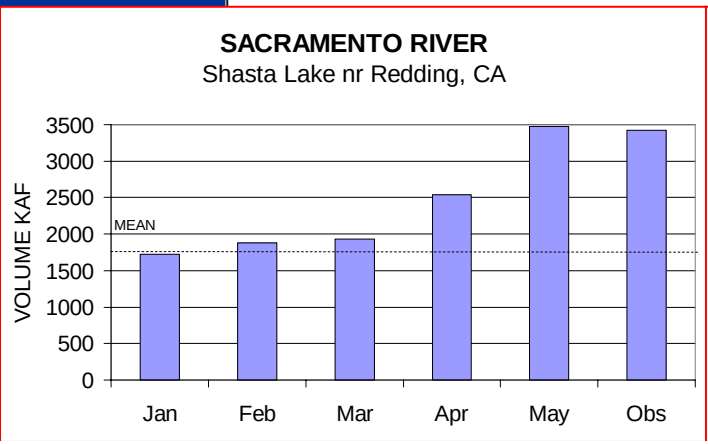
2006
APRIL-JULY VOLUME (UPPER KLAMATH RIVER IS MAR-SEP)
WATER SUPPLY FORECASTS
CALIFORNIA-NEVADA RIVER FORECAST CENTER

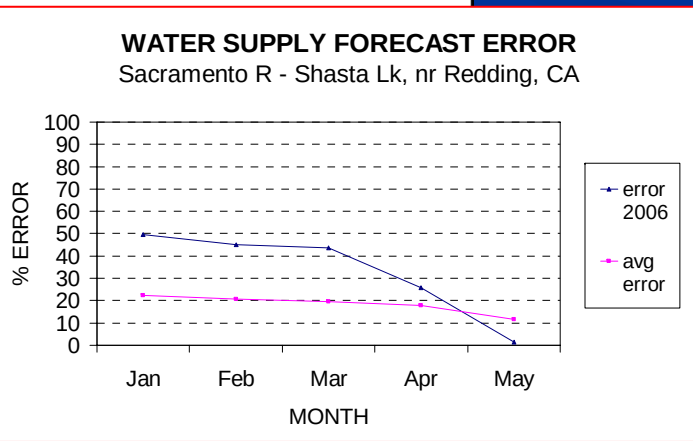








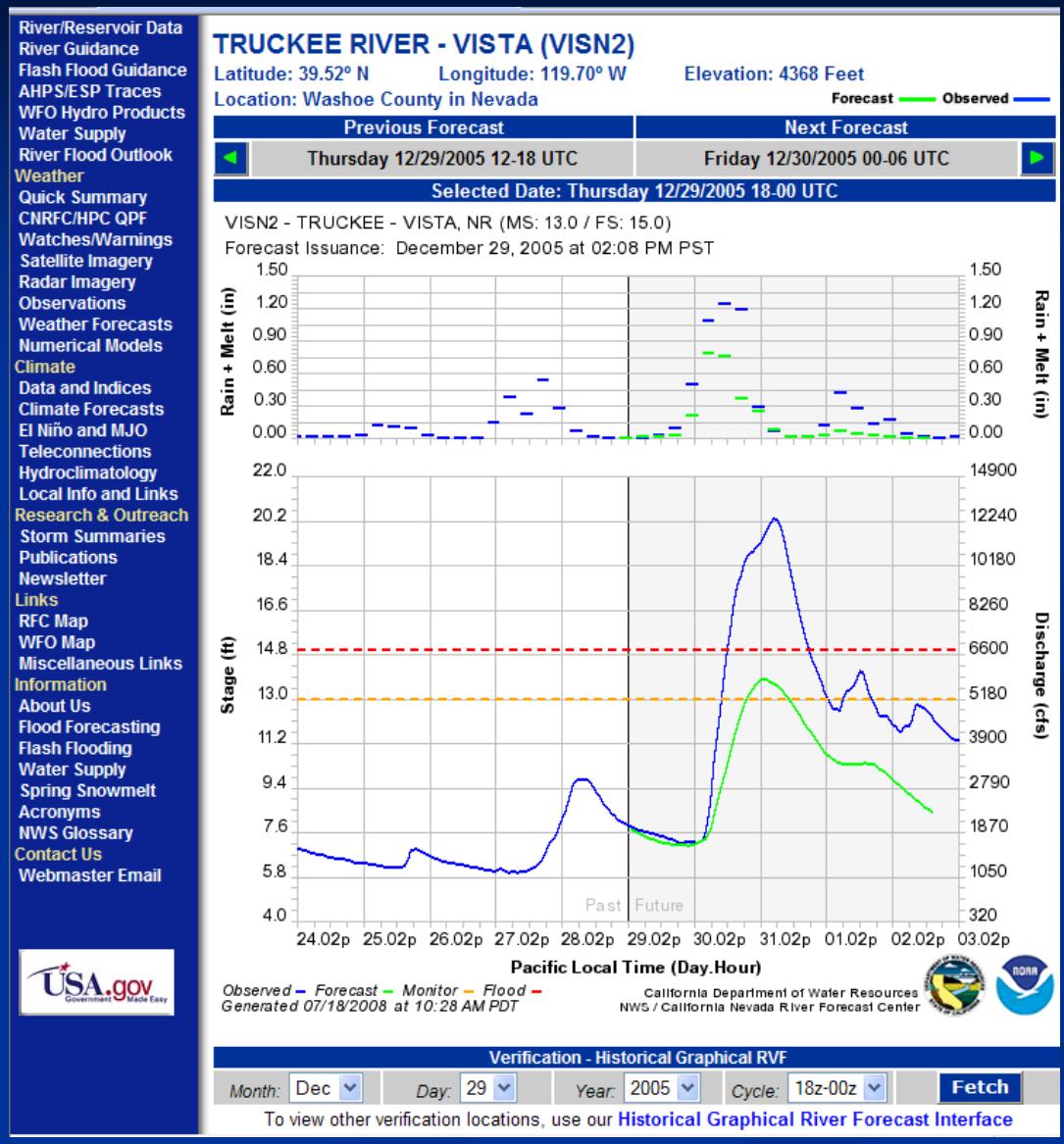




Historical Graphical River Forecast

http://www.cnrfc.noaa.gov/rfc_guidance.php

Example:
5-day deterministic River Forecast Guidance from routine NWSRFS river basin run



http://www.cnrfc.noaa.gov/rfc_guidance.php

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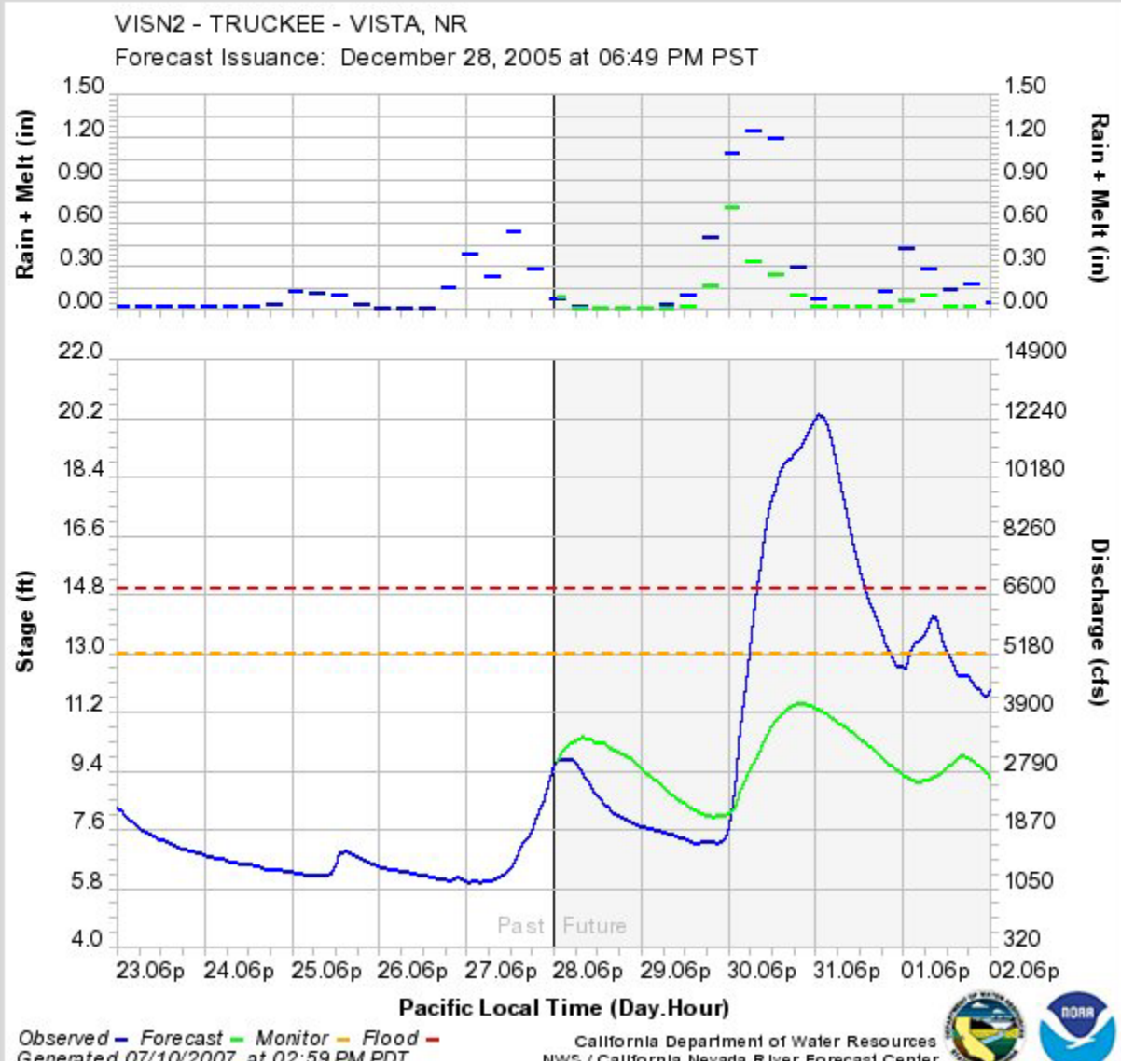
2119
2208

Dec 28, 2005
18:49 hours



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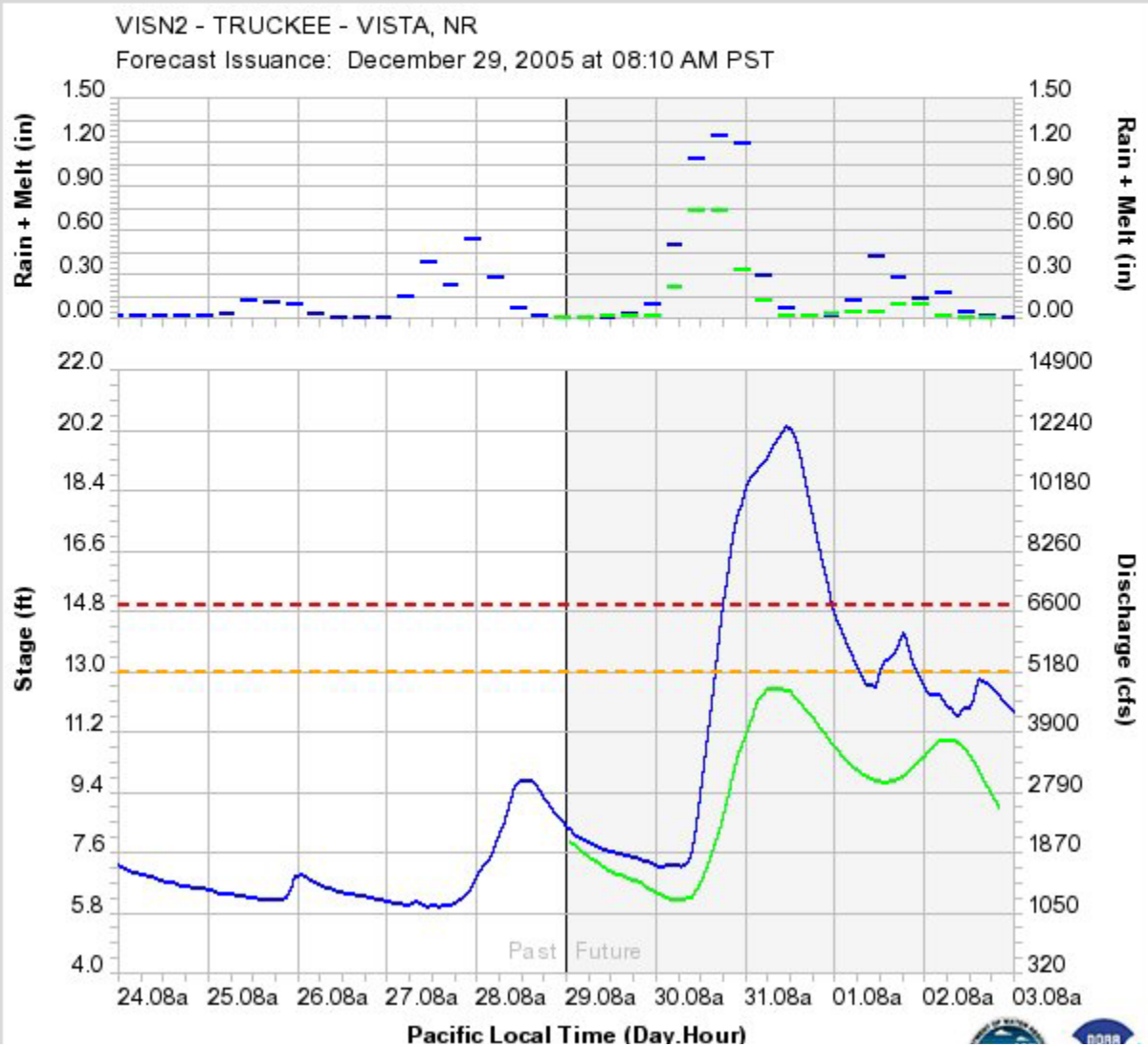

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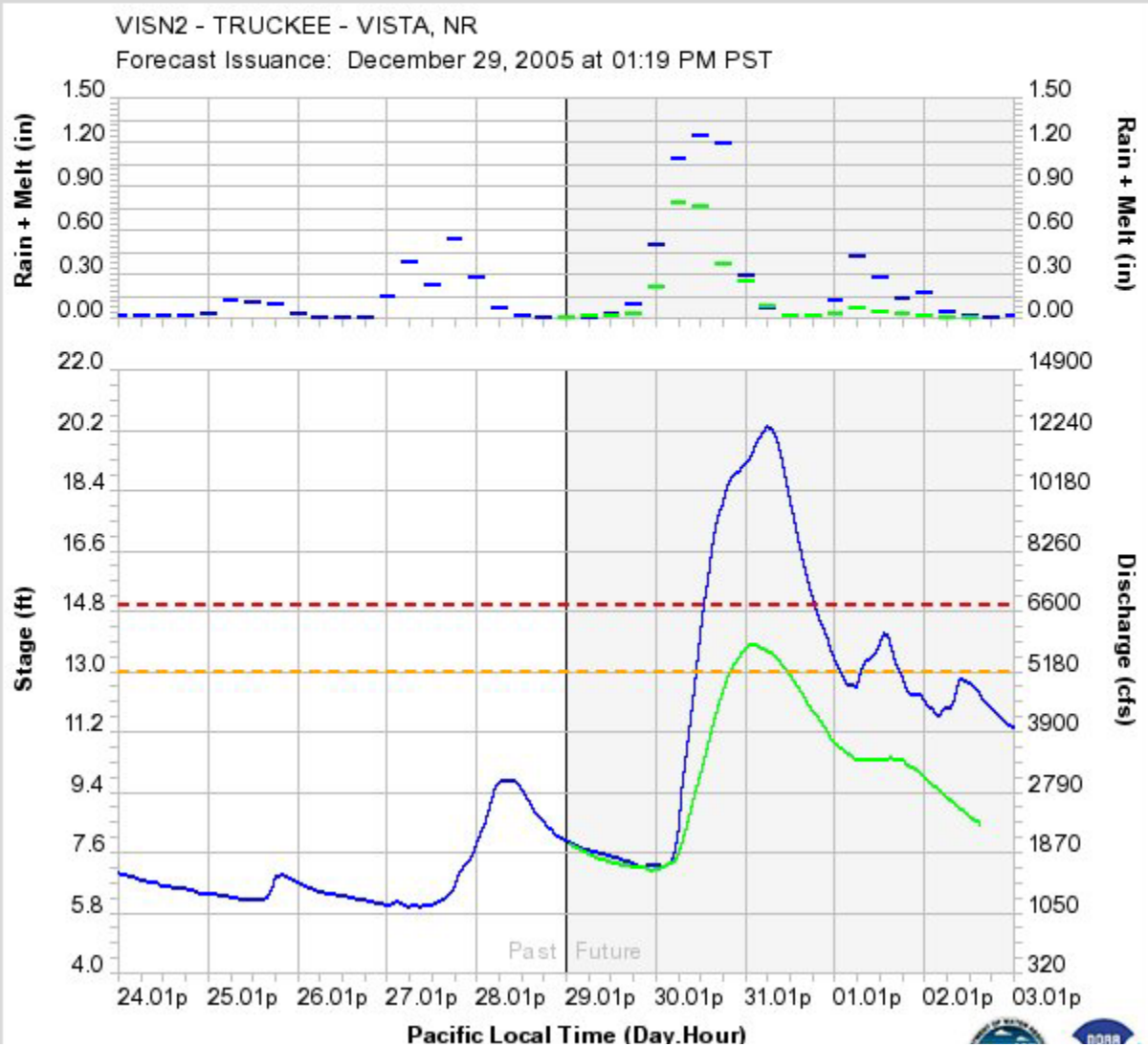

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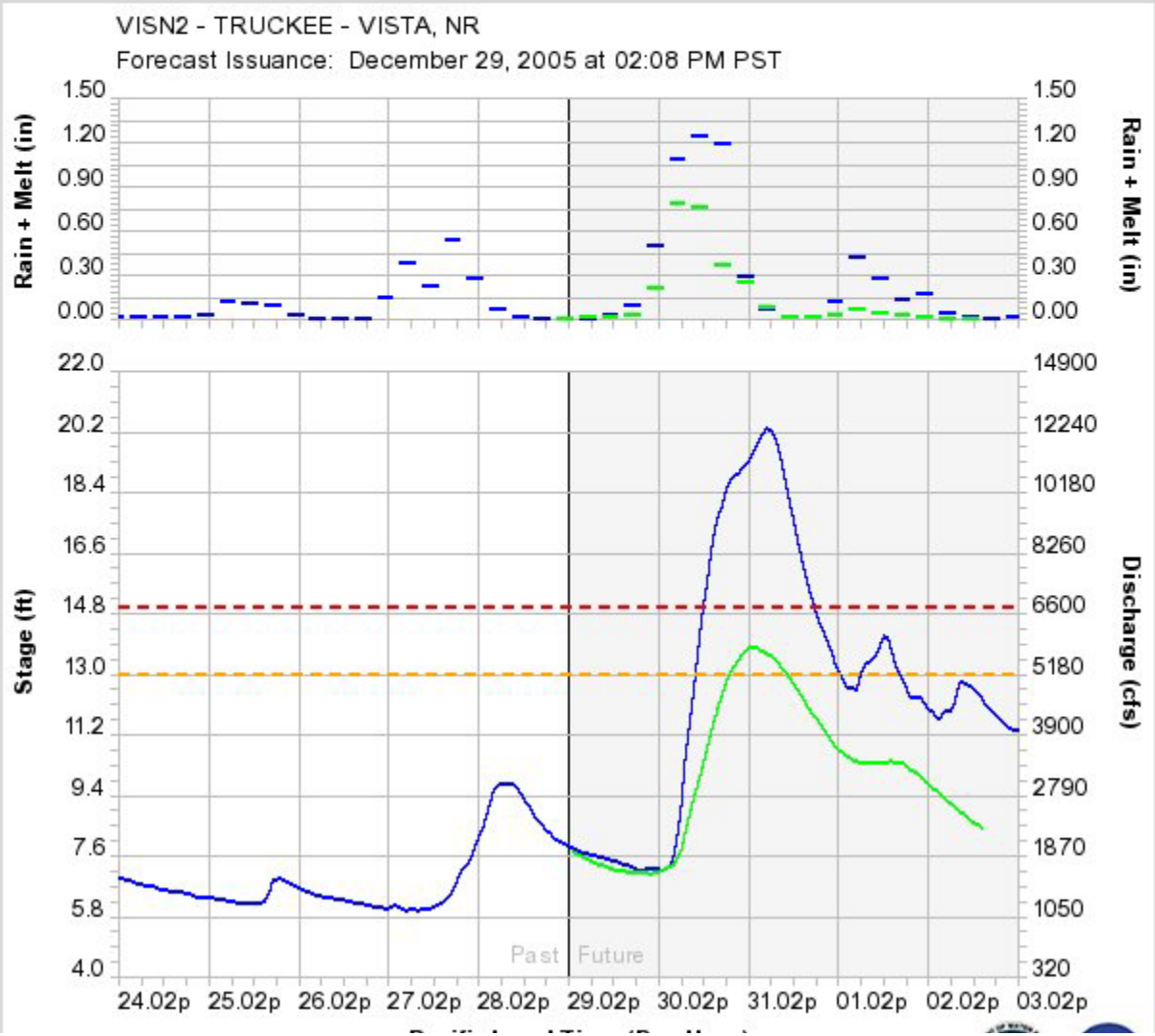

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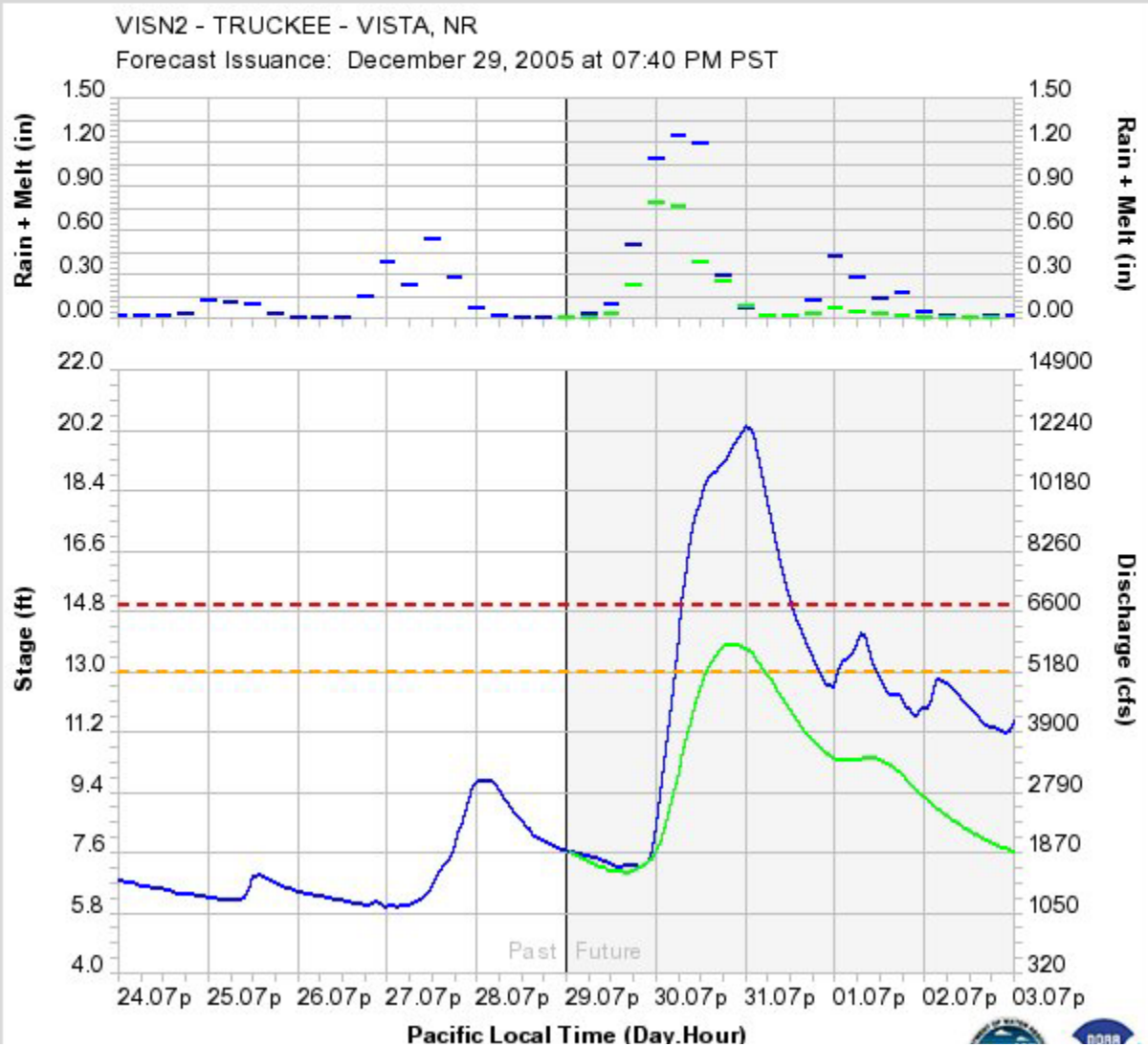

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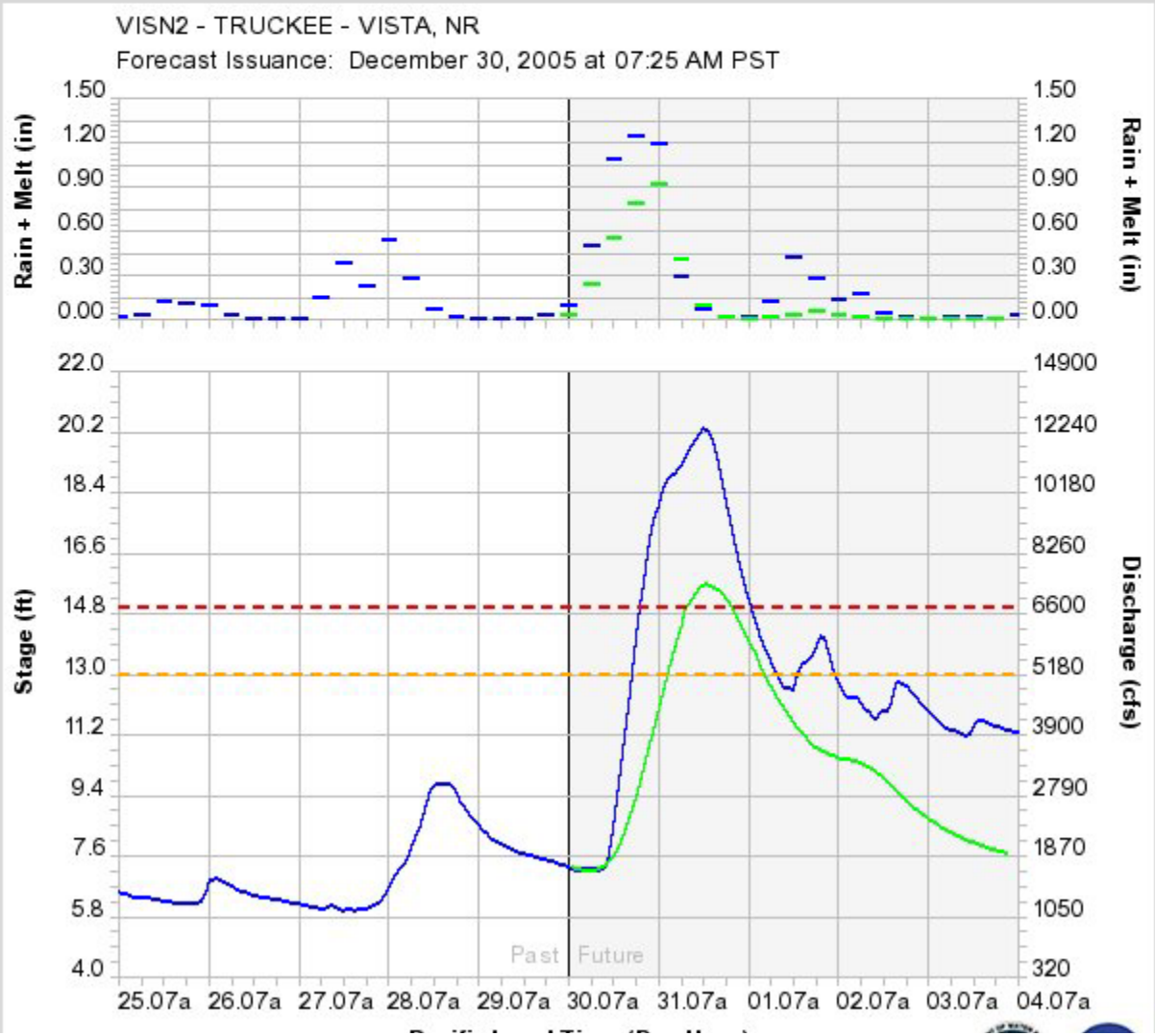

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Dec 30, 2005
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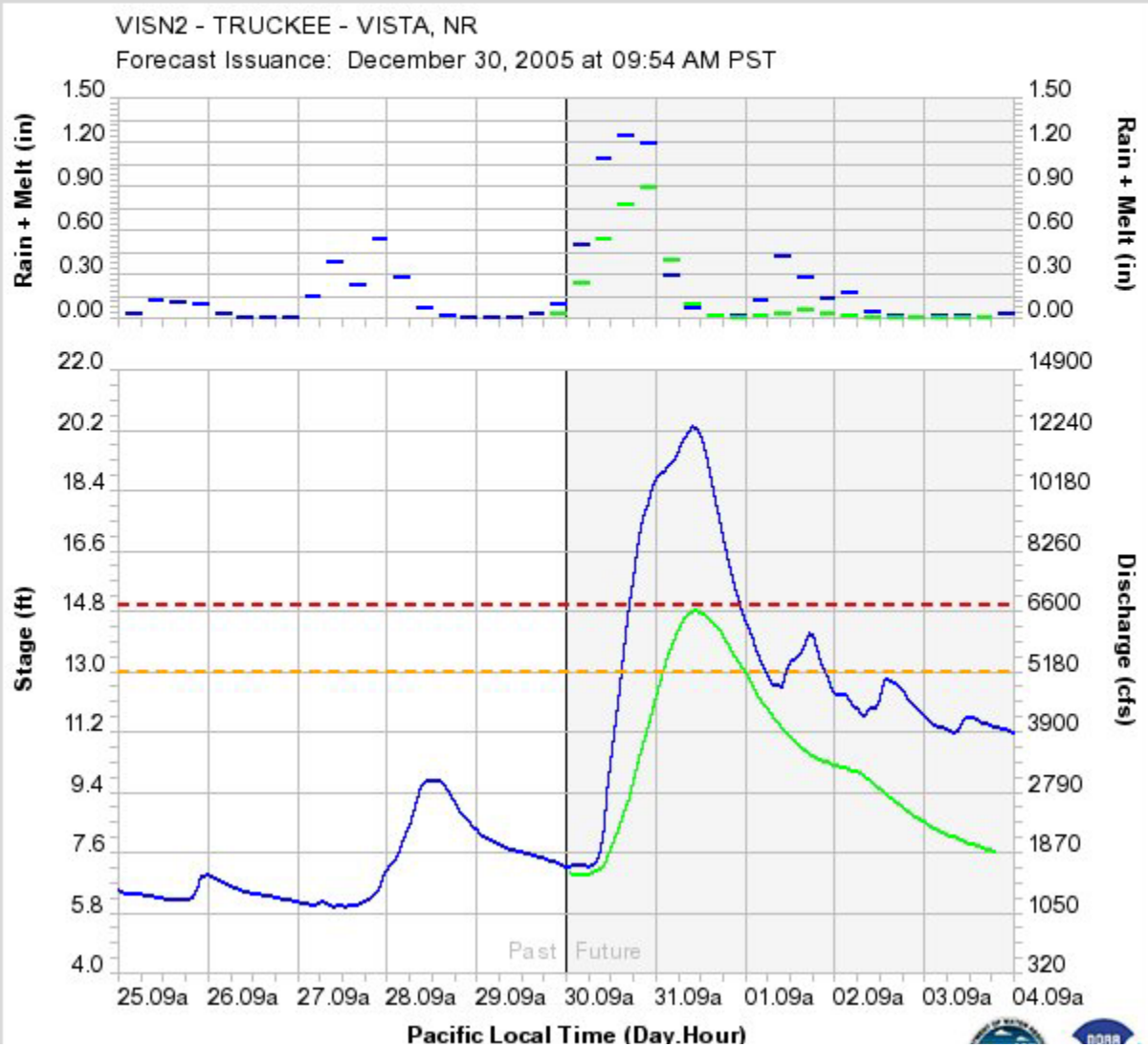

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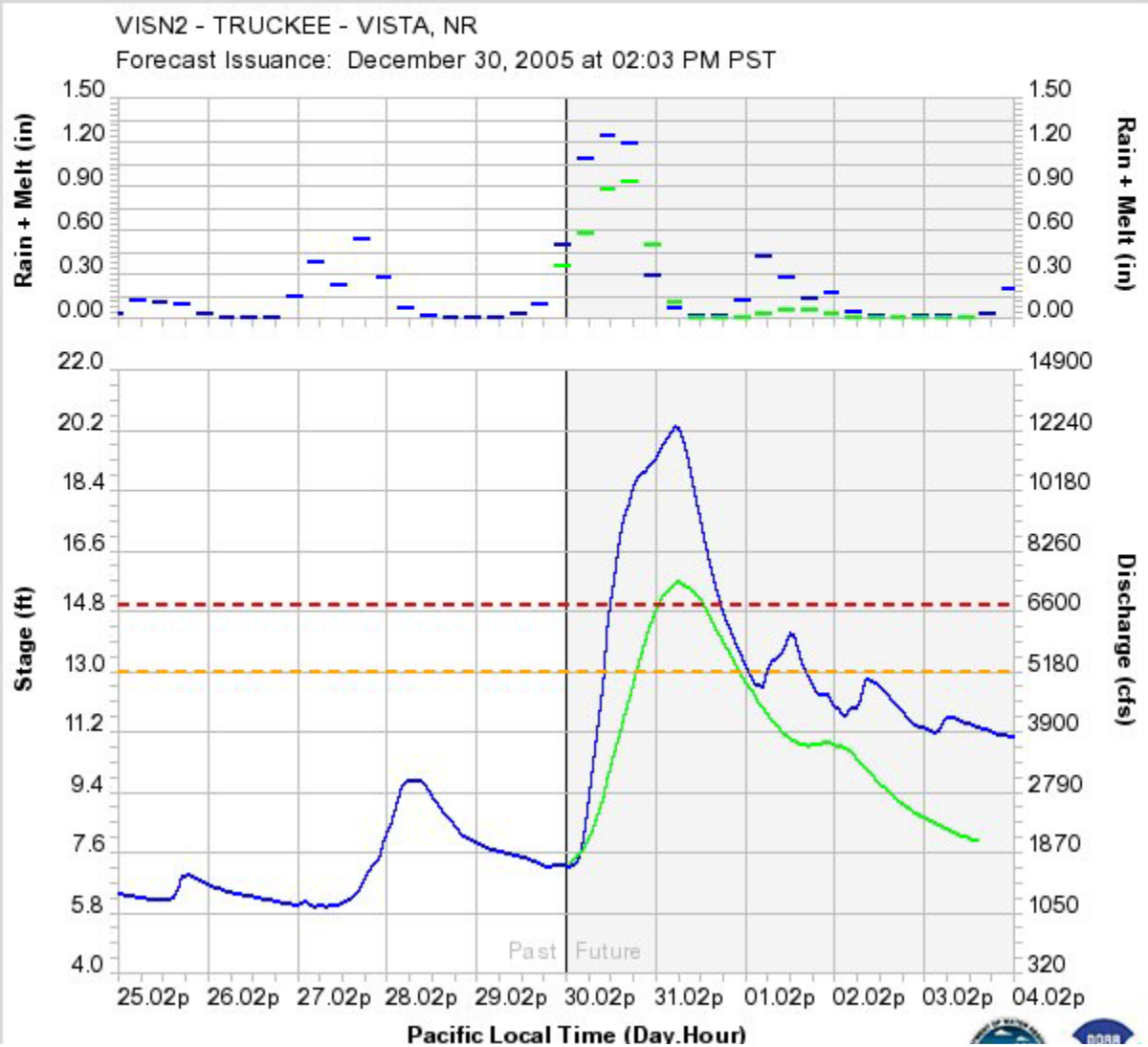

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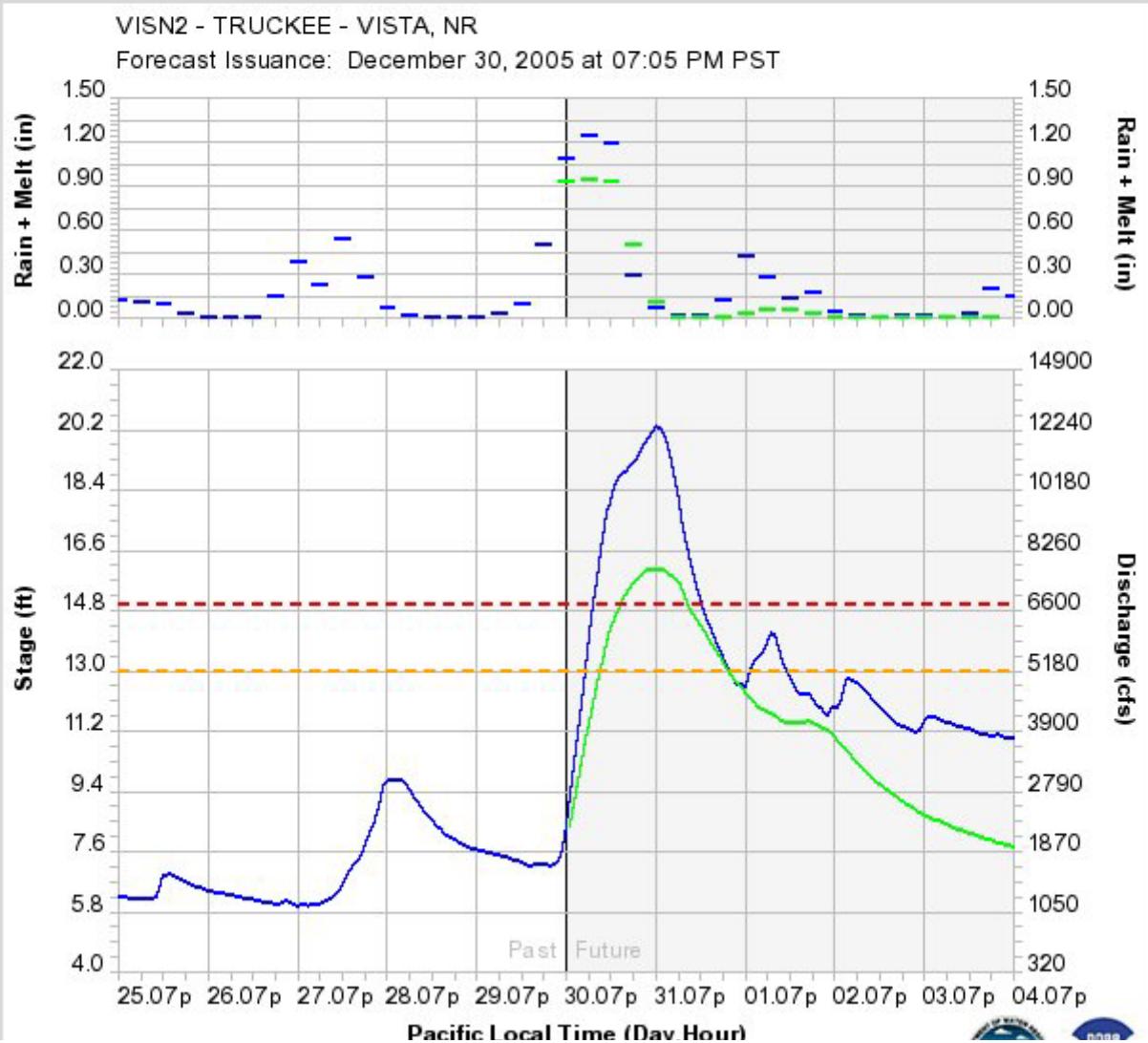

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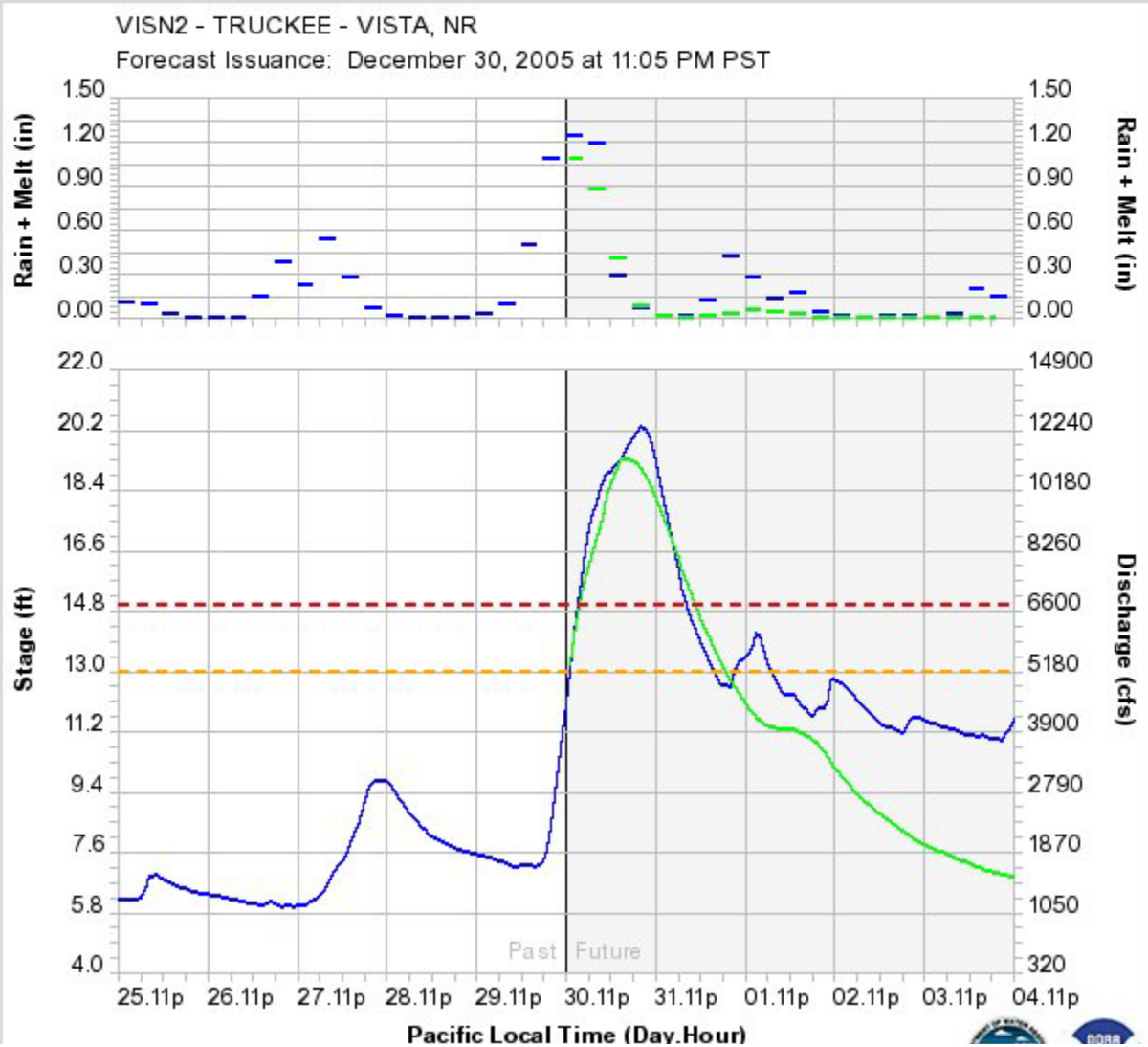

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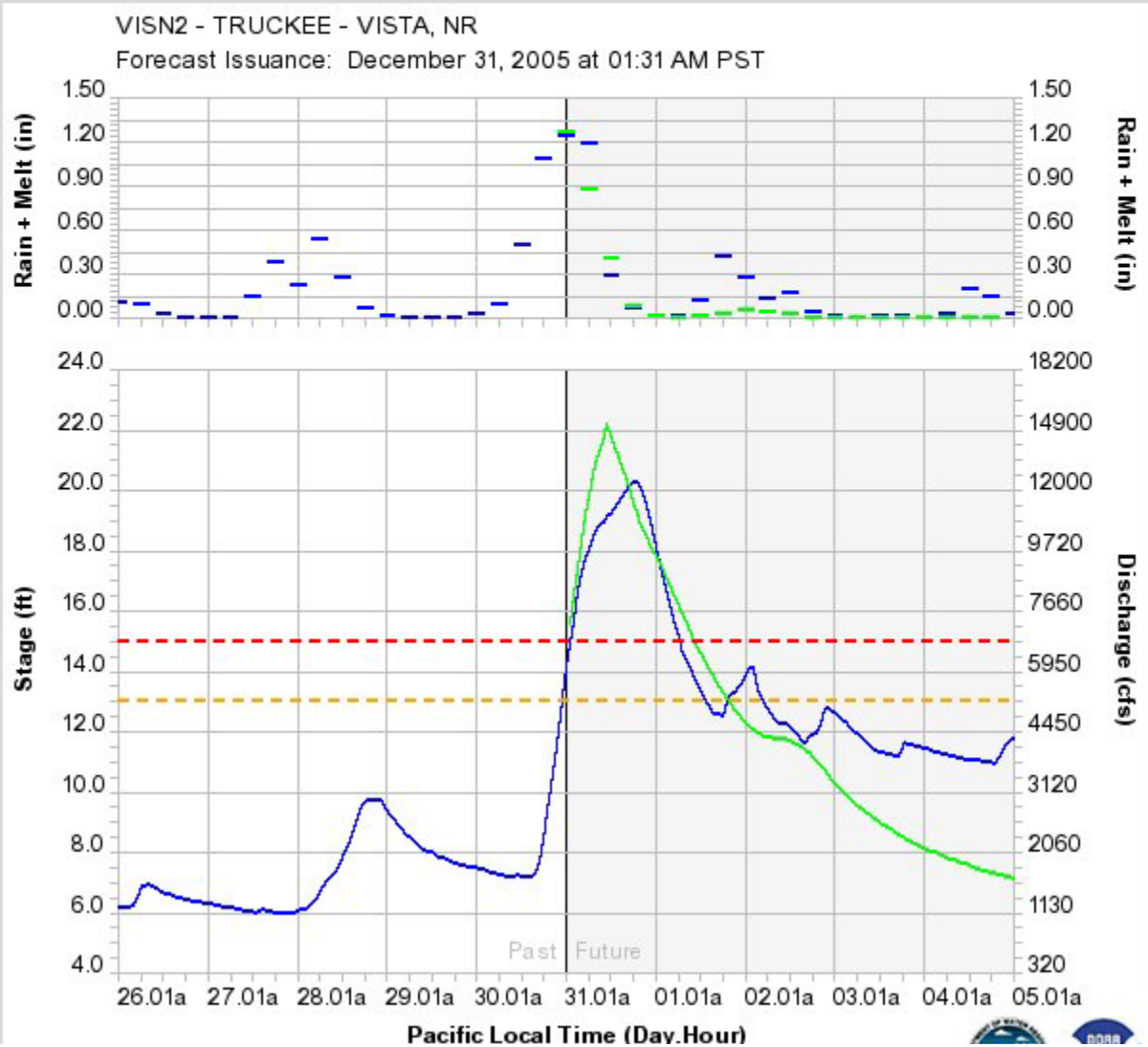

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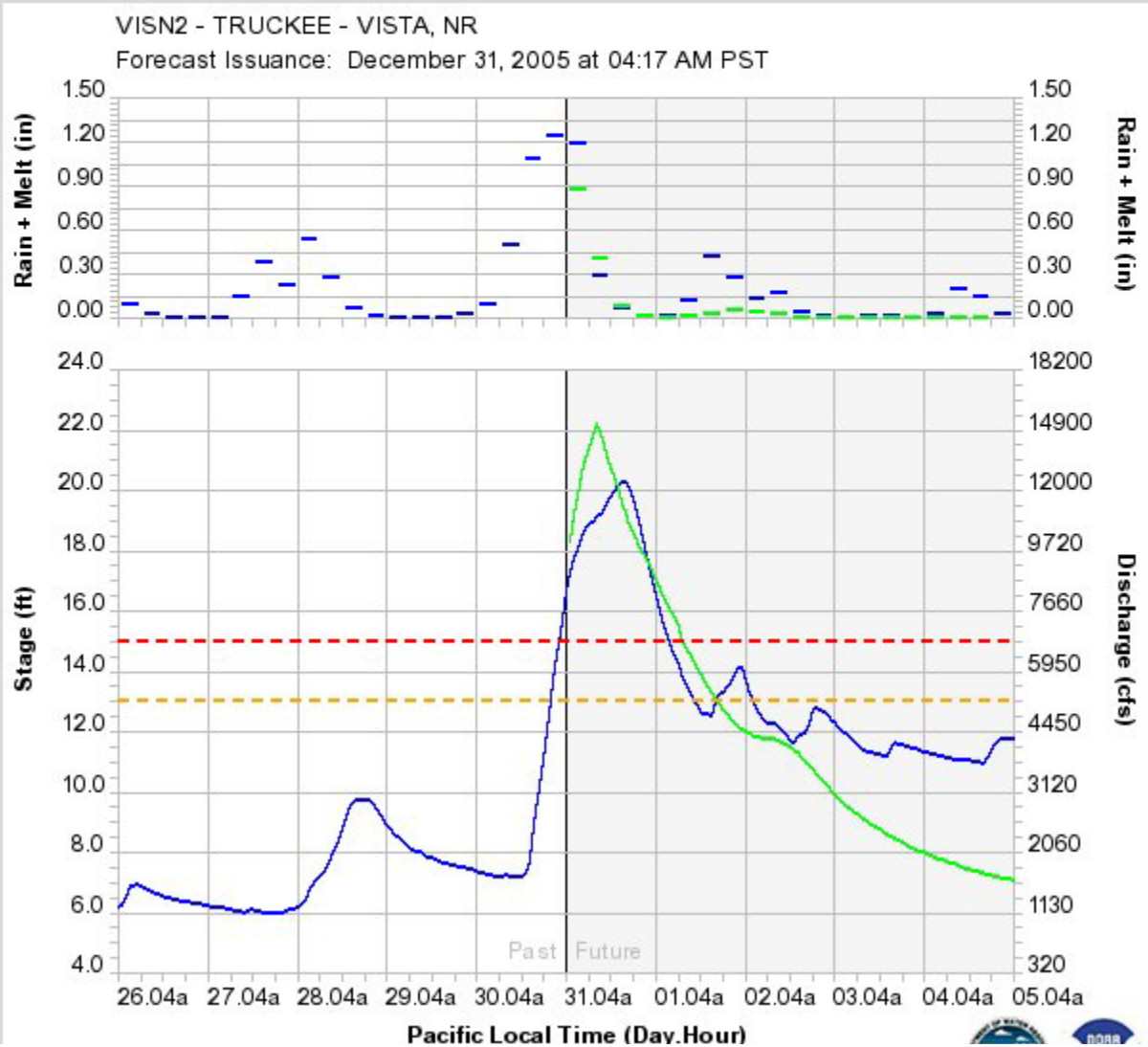

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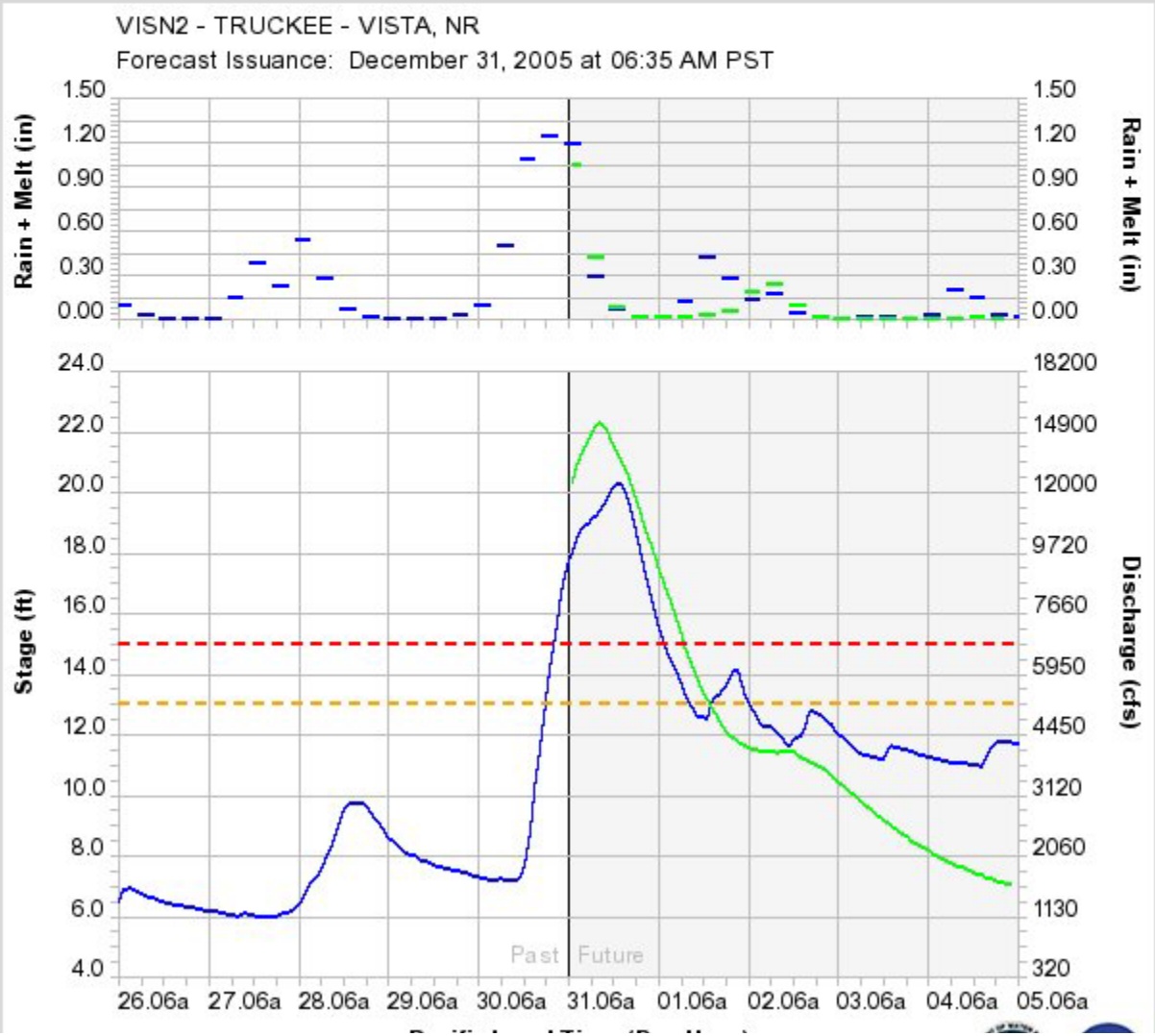

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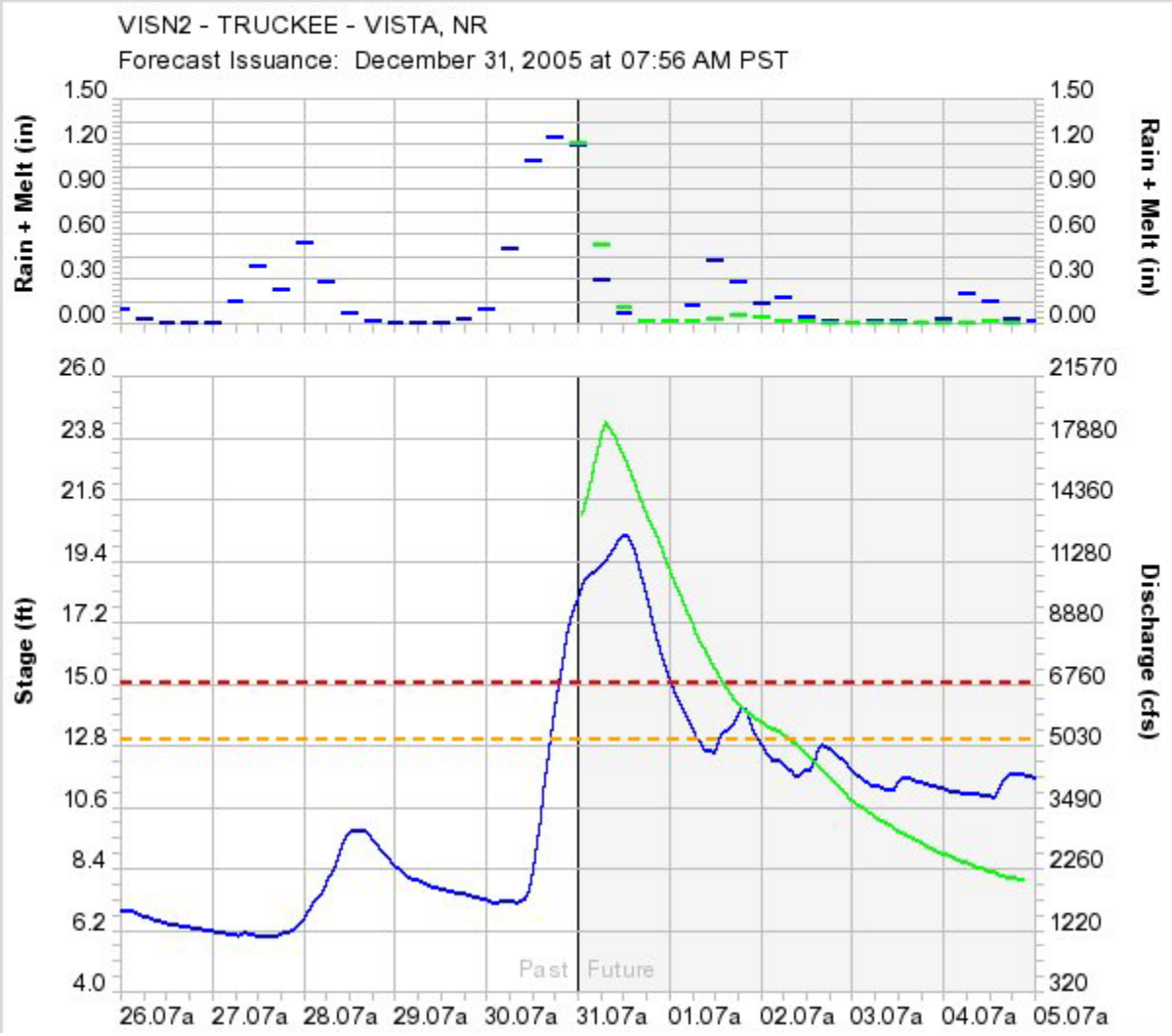

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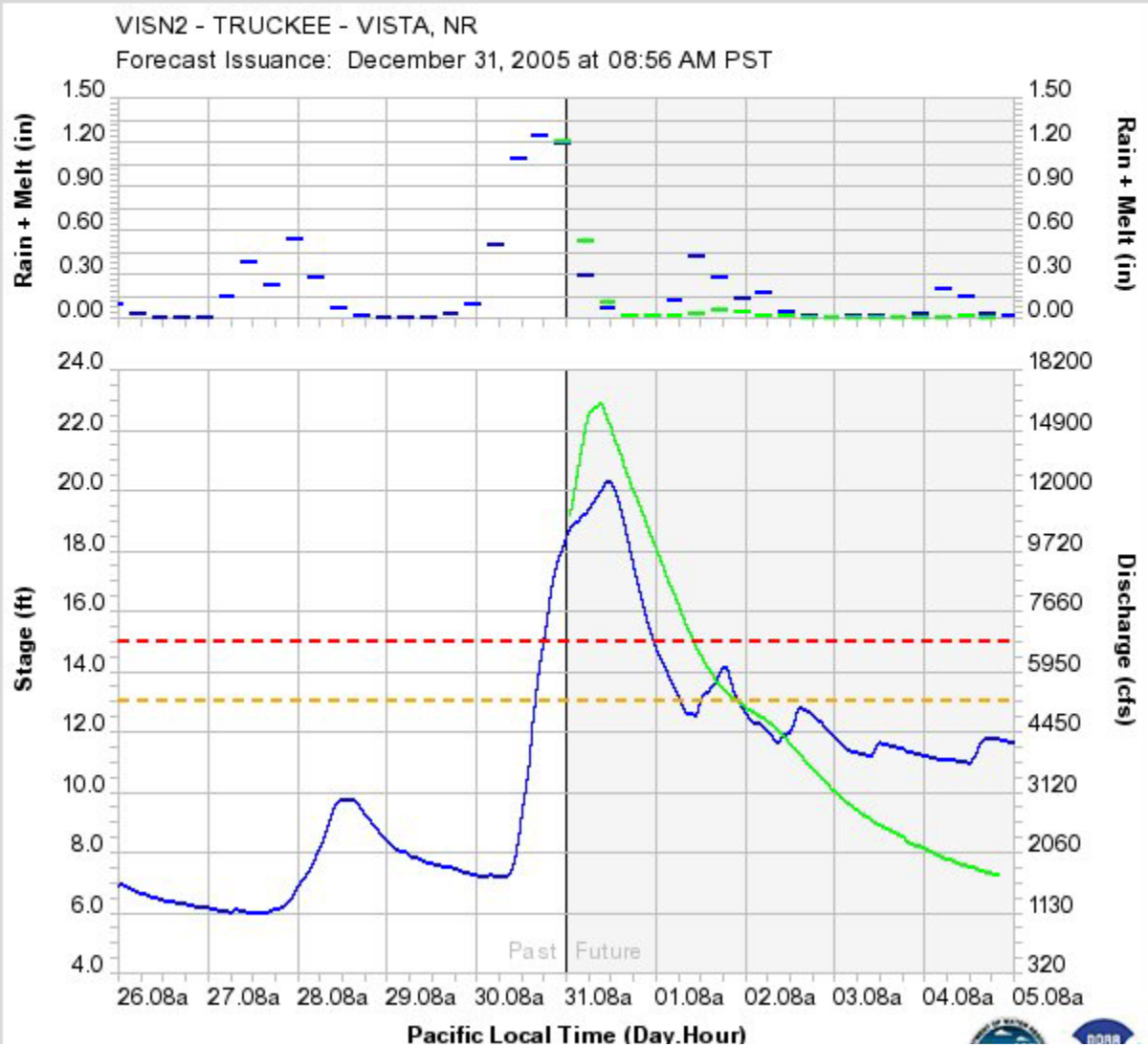

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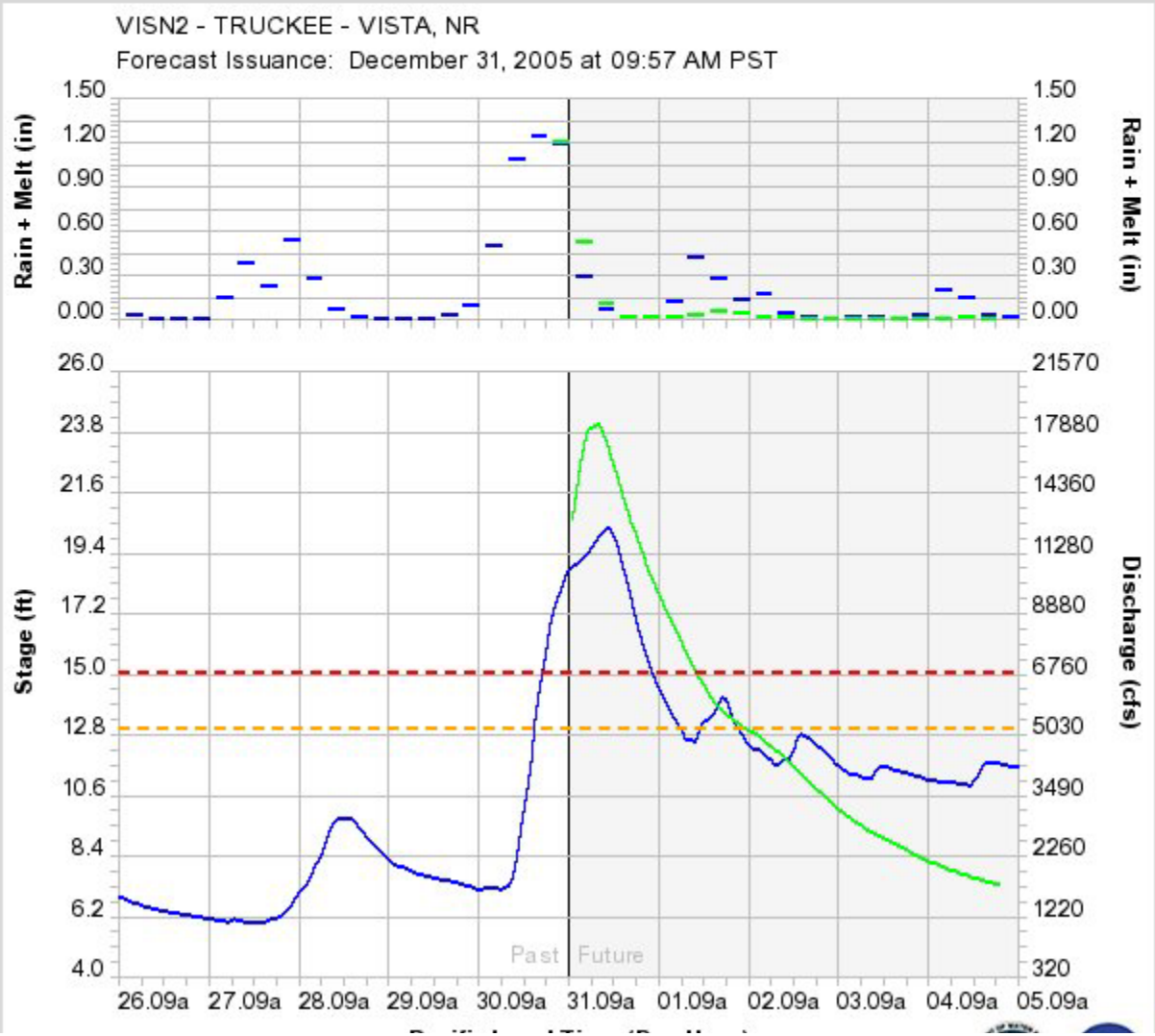

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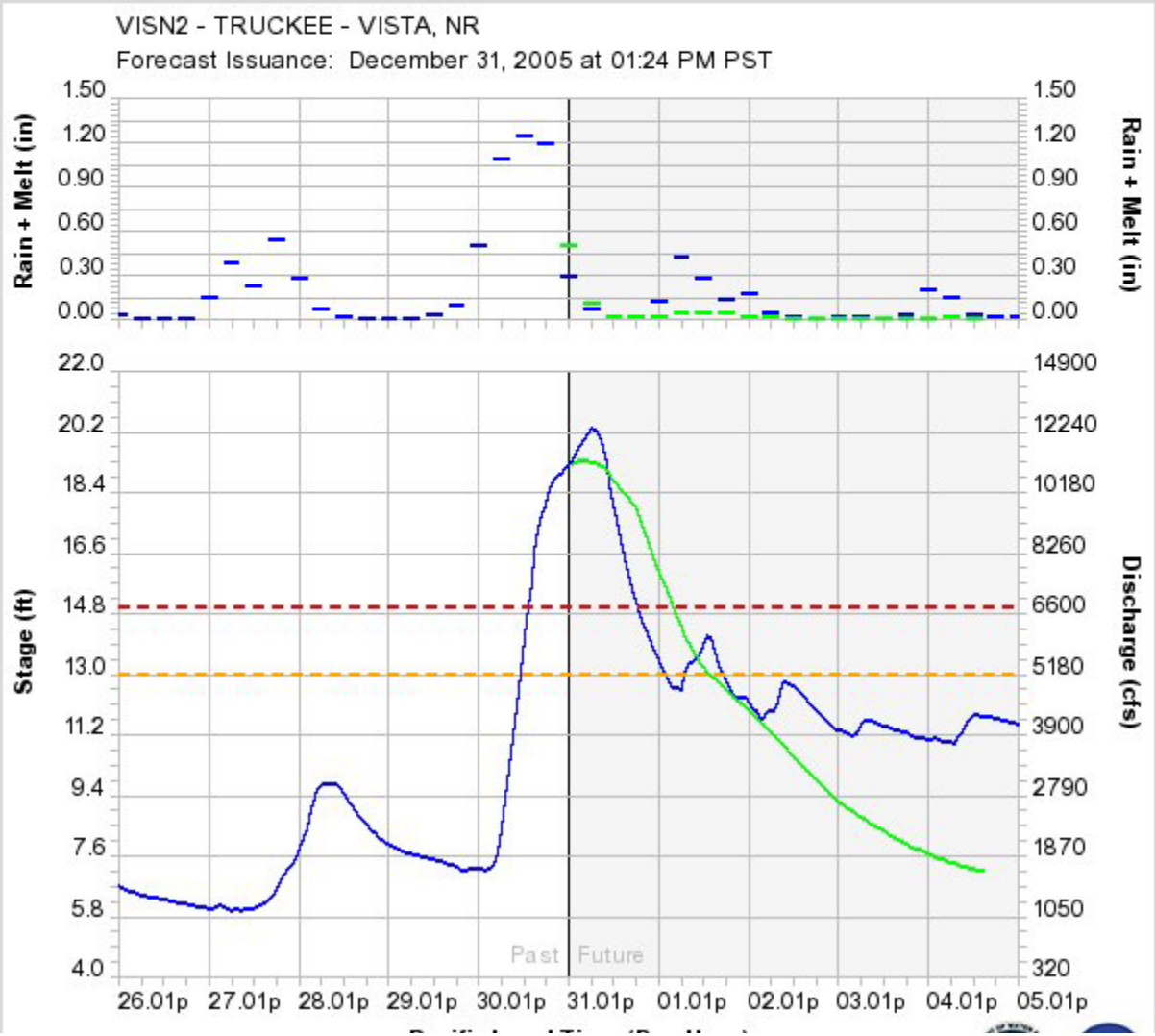

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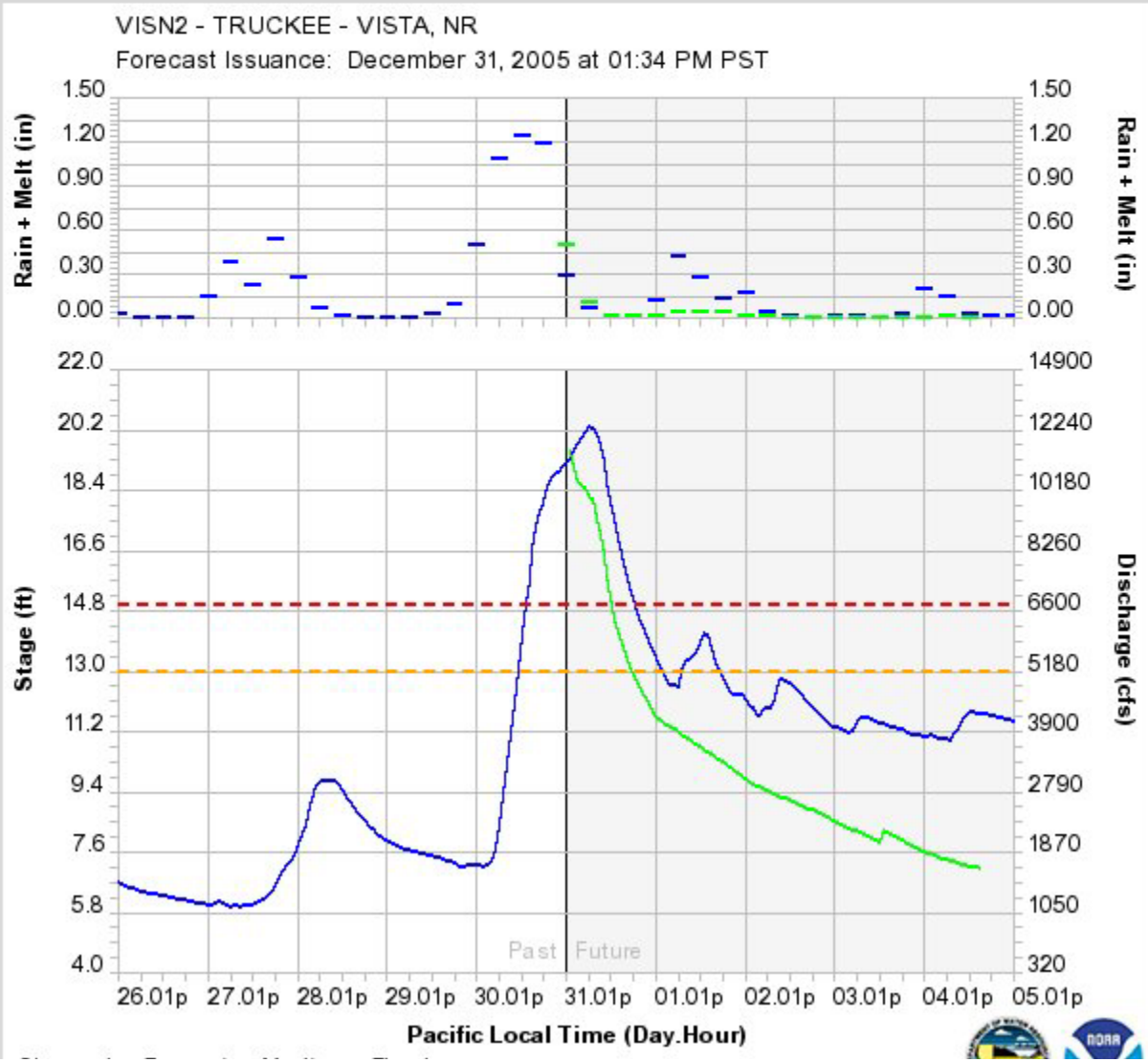

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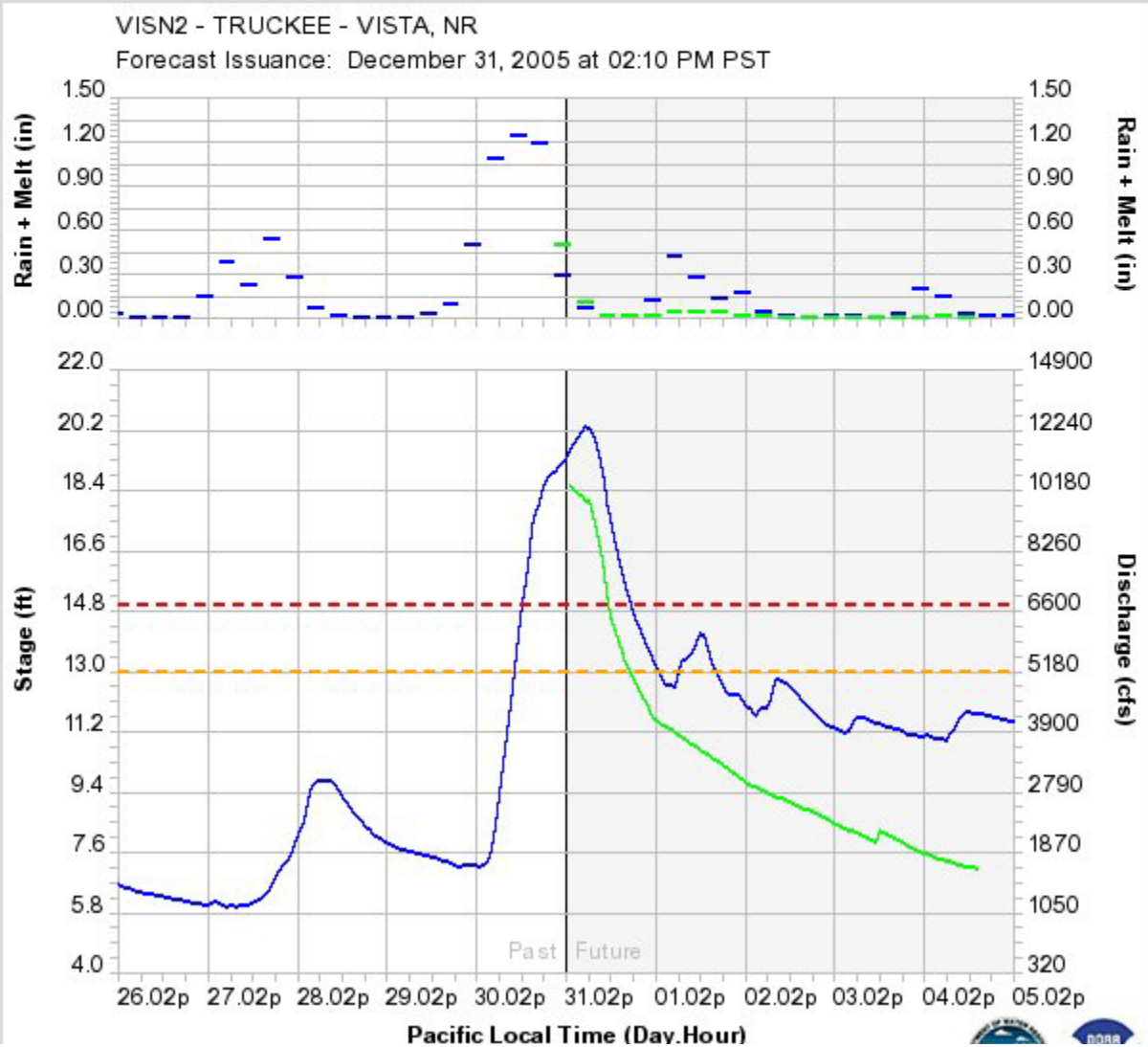

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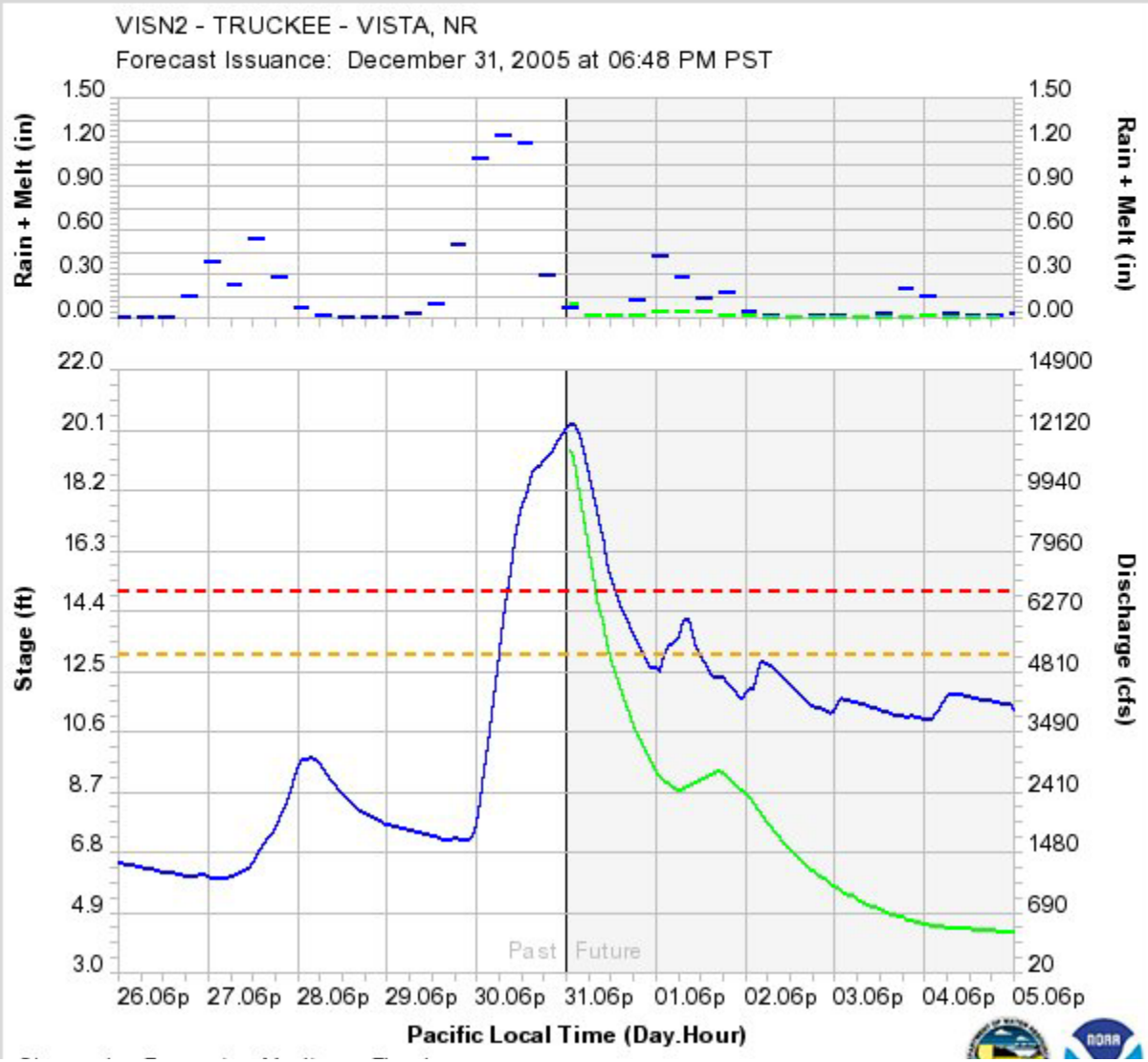

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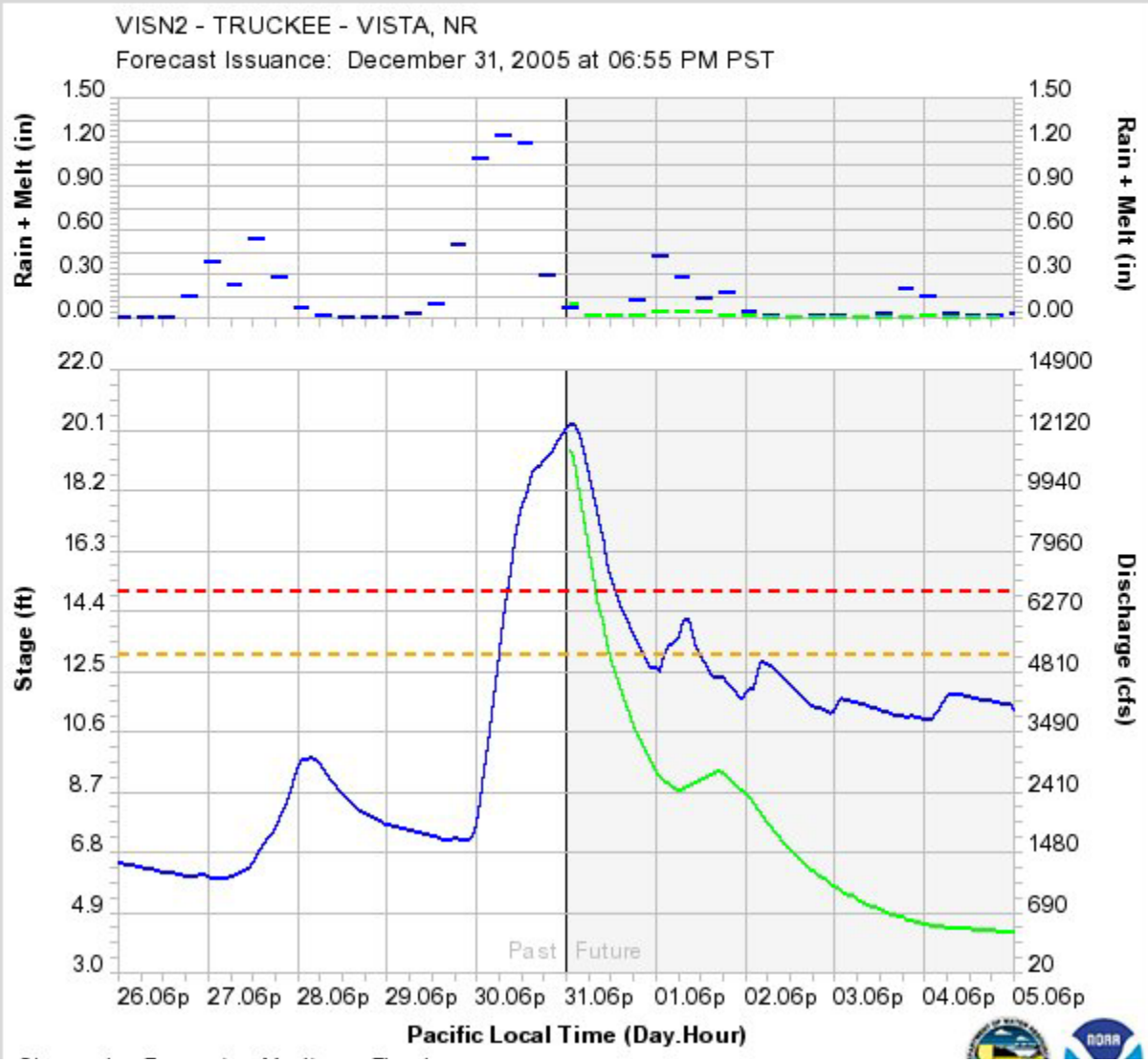

Dec 31, 2005
18:55 hours

Dec 31, 2005
18:57 hours

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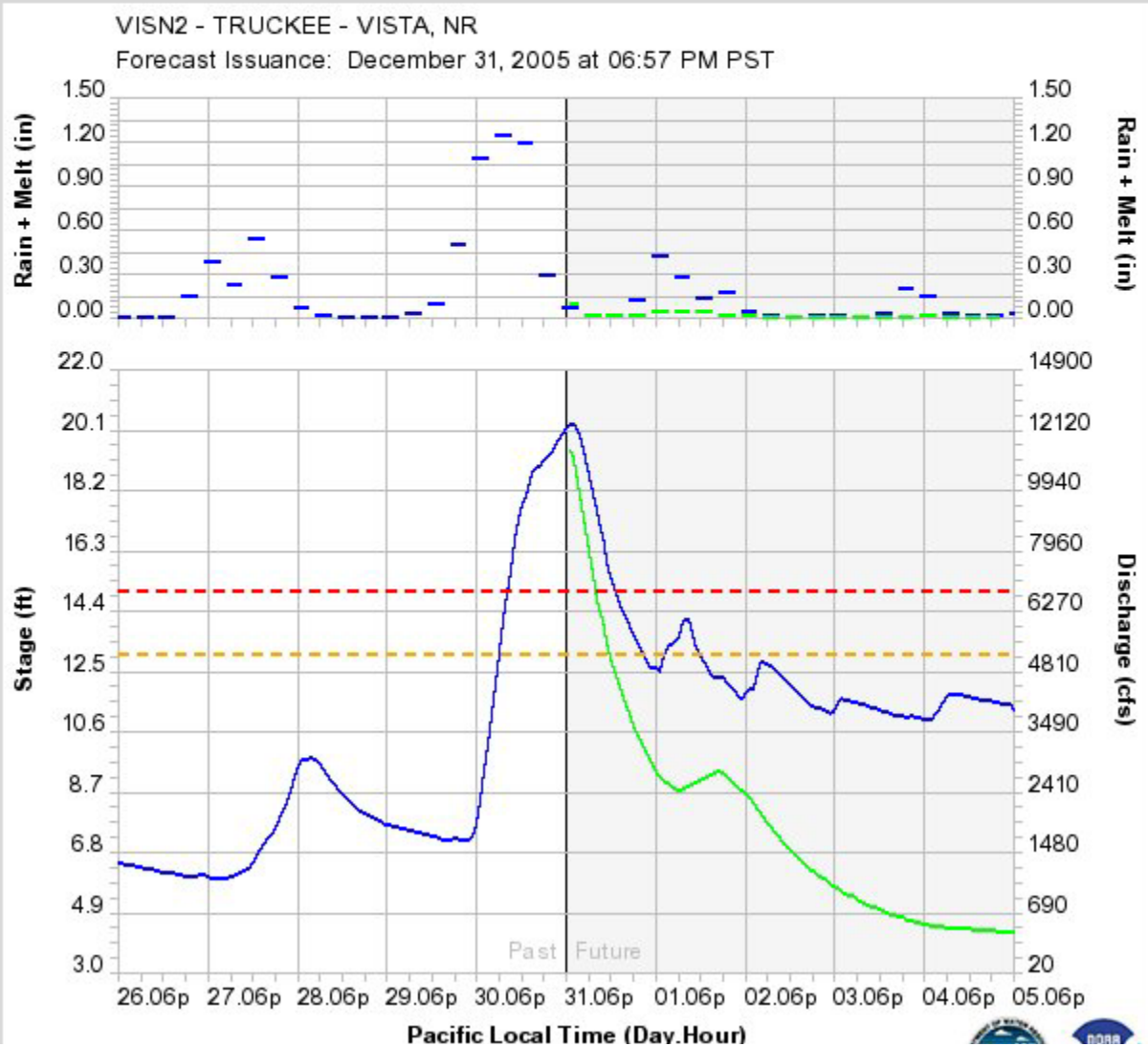

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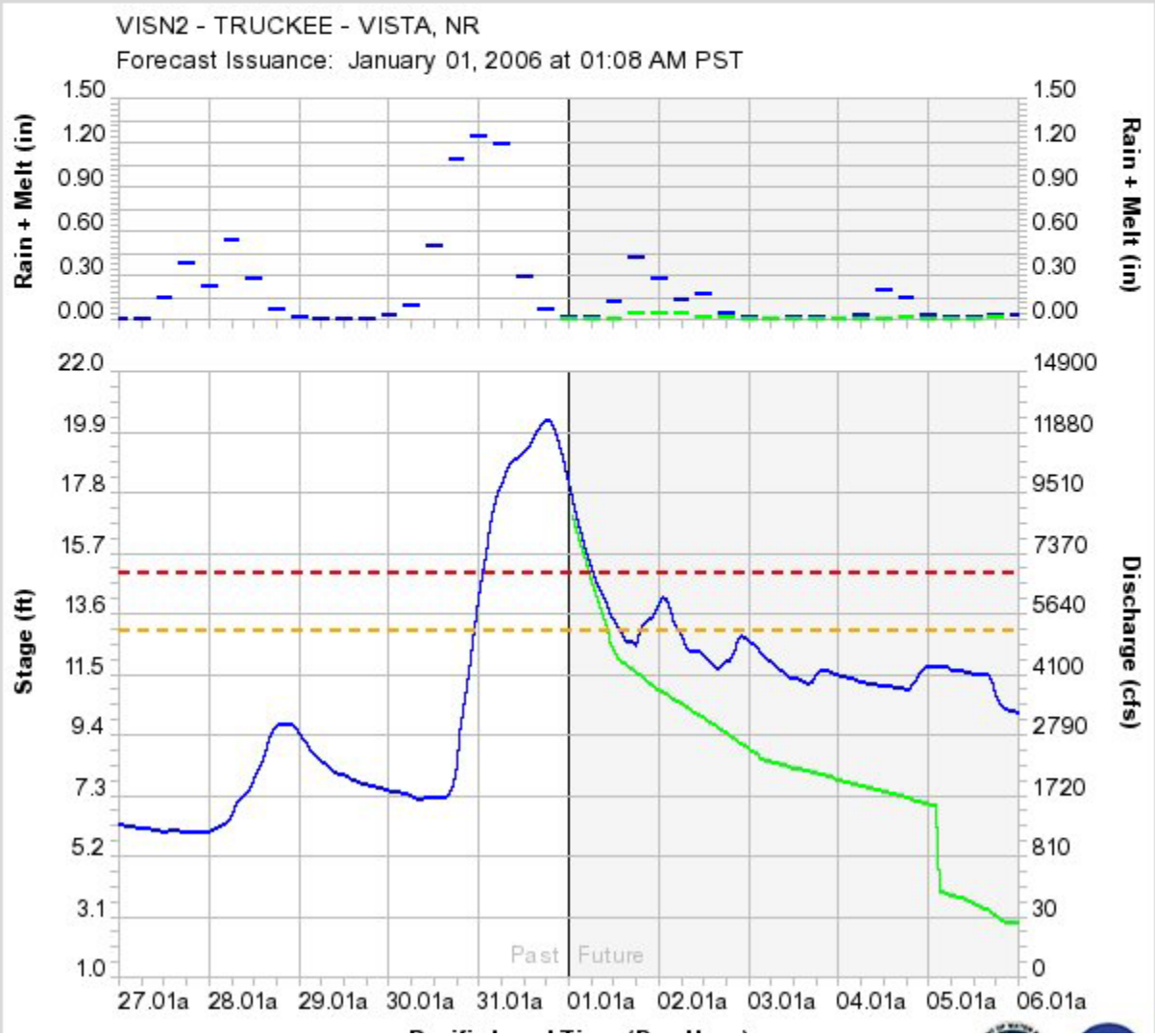

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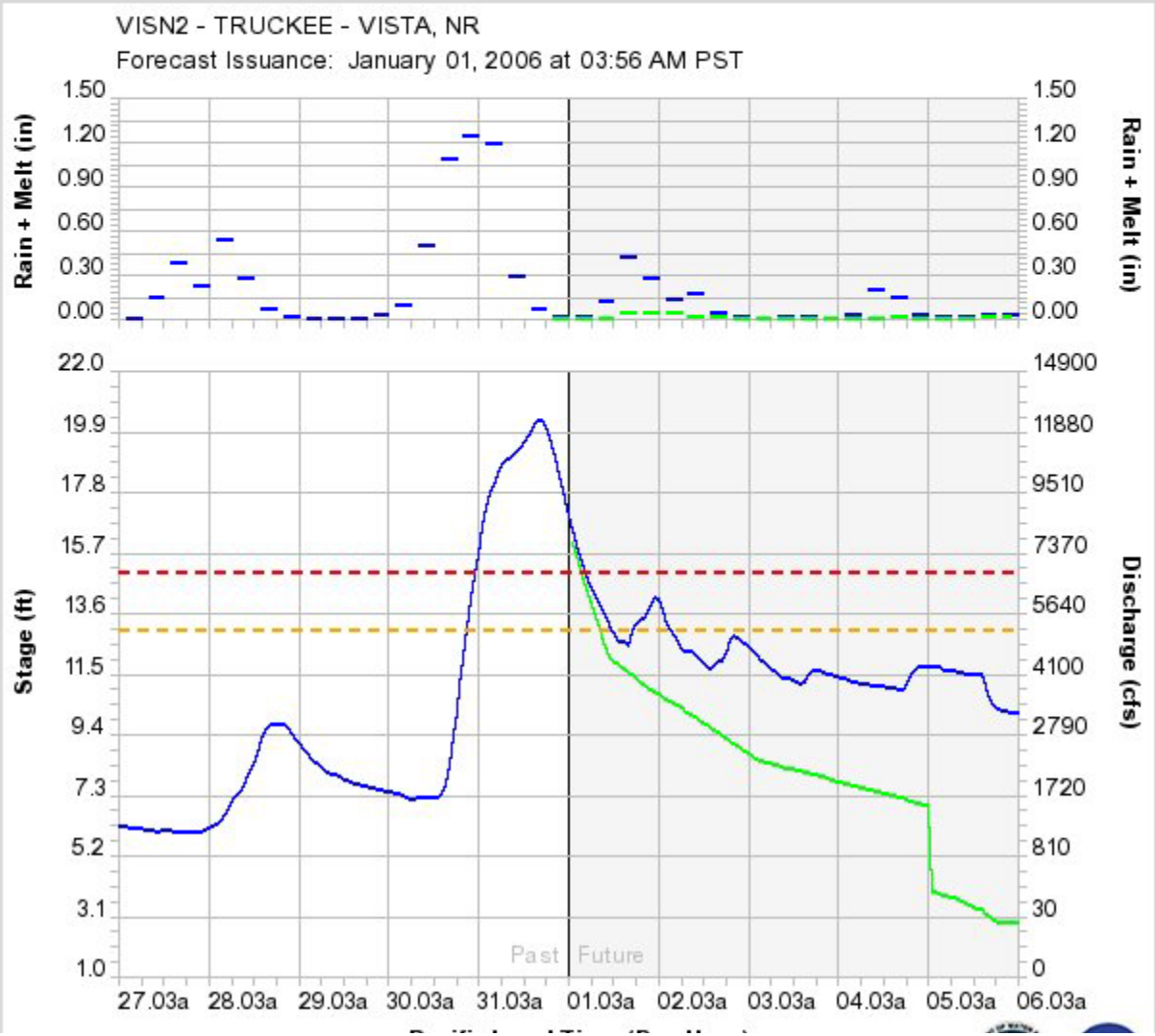

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Jan 1, 2006
08:14 hours

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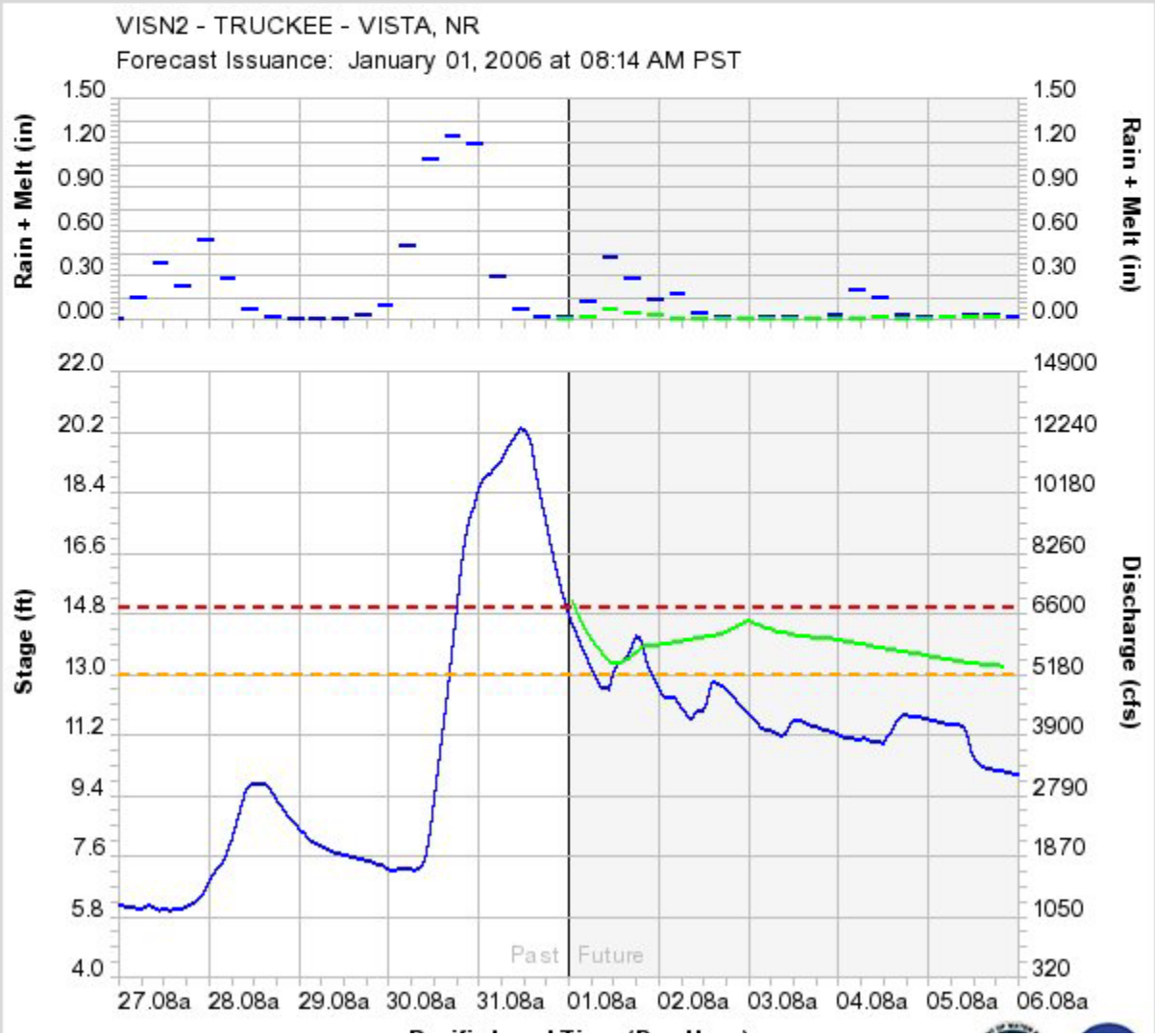

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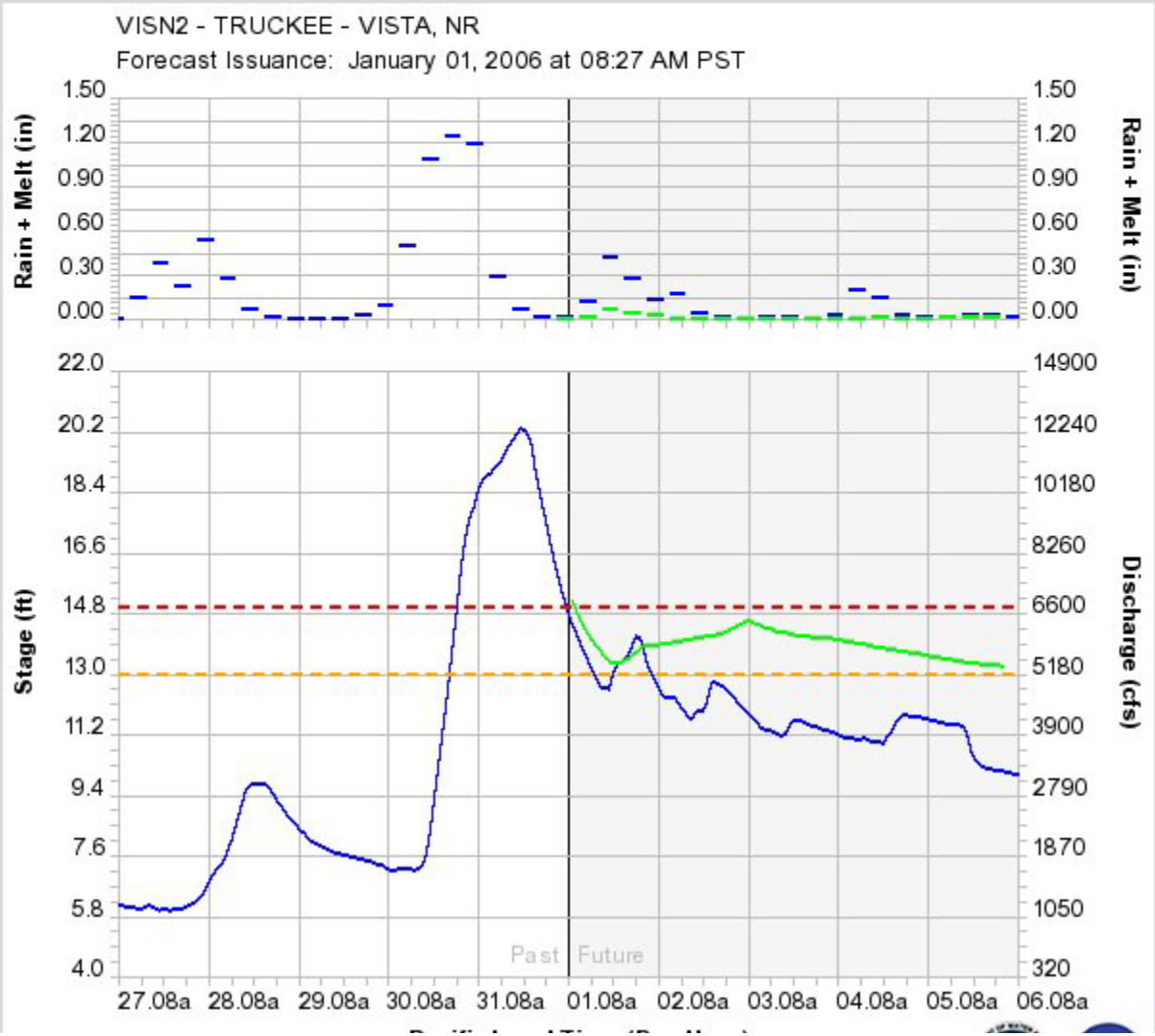

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09:32 hours

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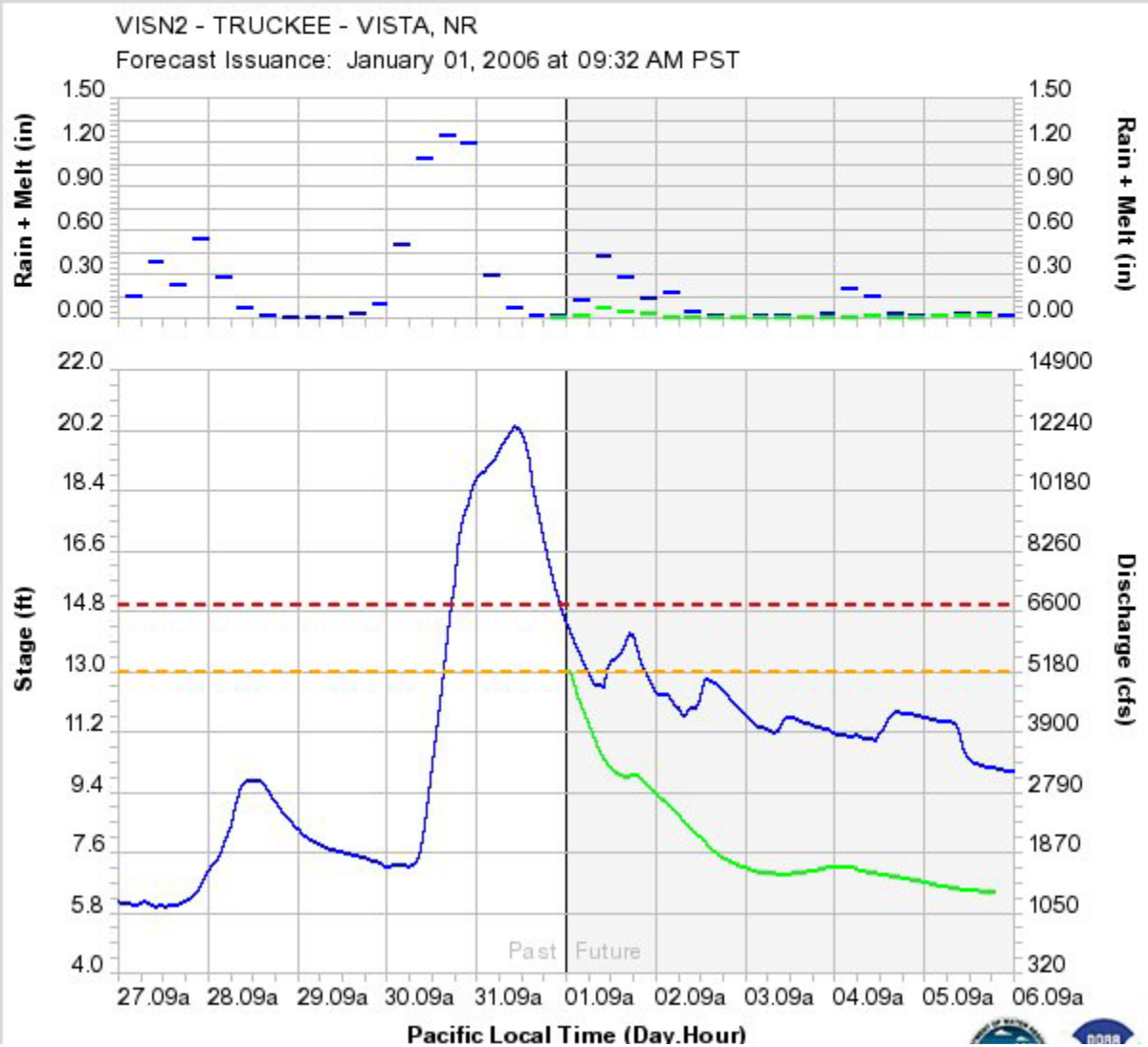

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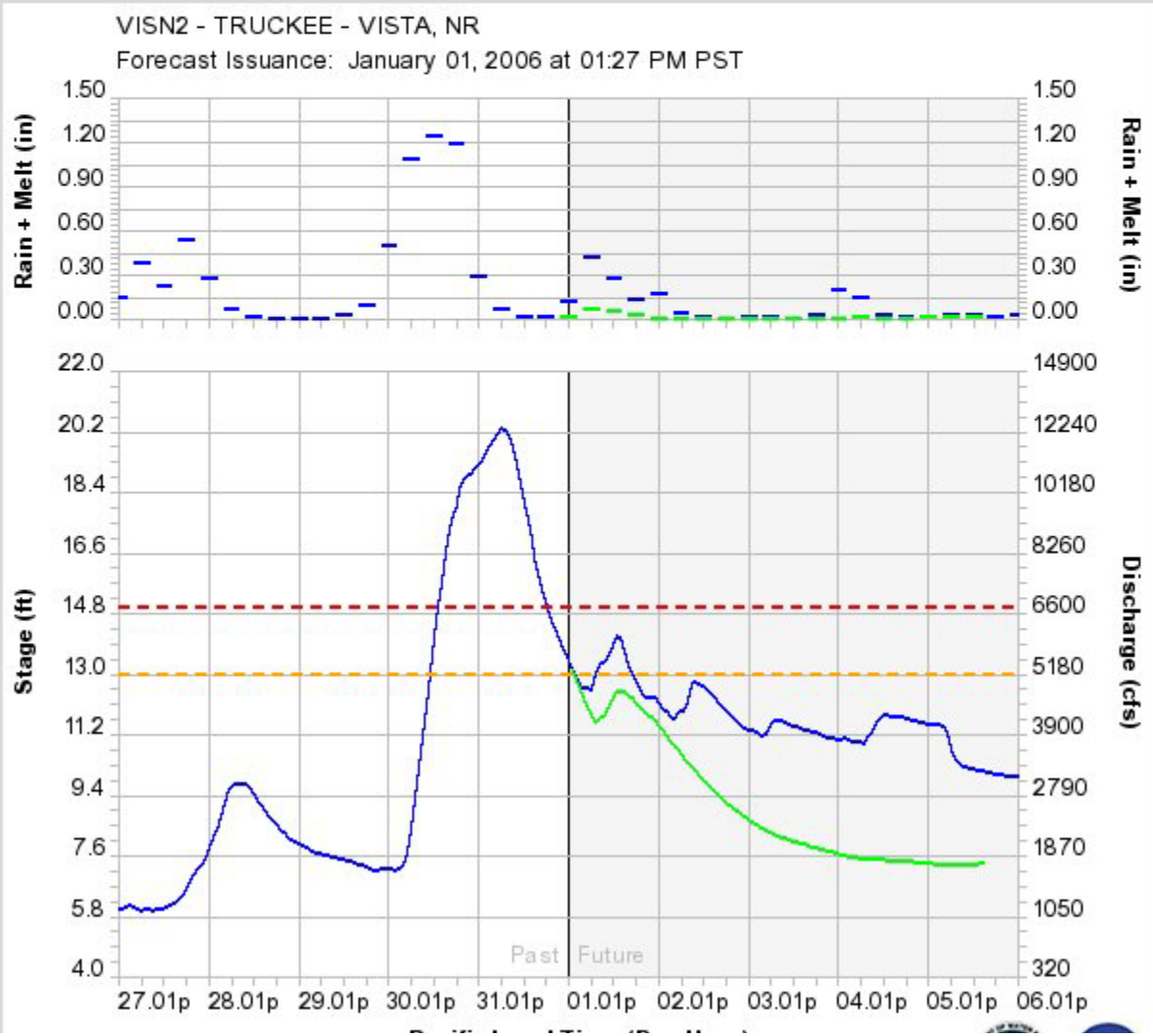

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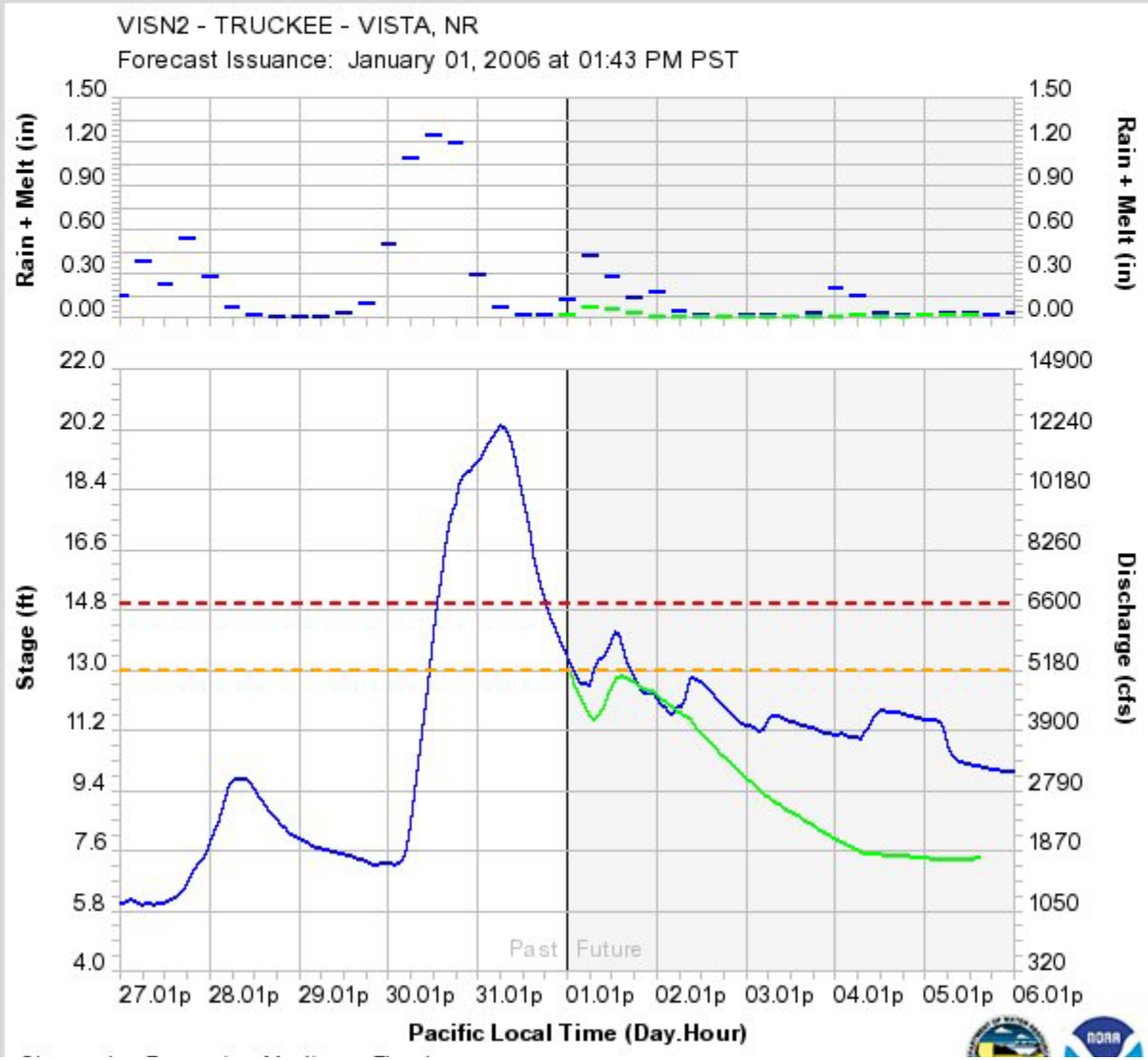

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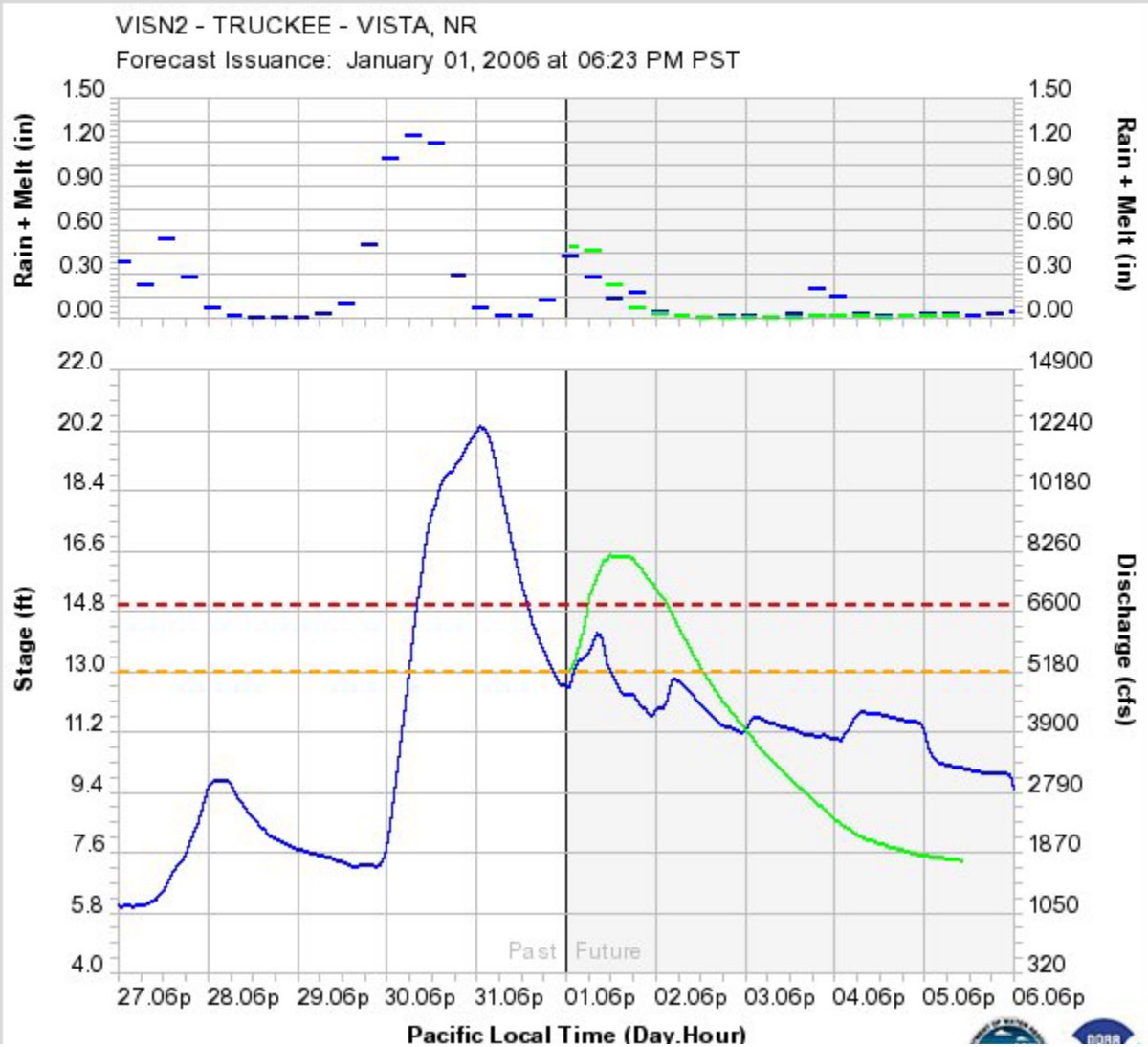

Example 1: Tide Bulletin


```
FGUS56 KRSA 261329
RVFSAC


 ISSUED:   THU  JUL 26 2007    645 AM  PDT

 NEXT:  FRIDAY MORNING JUL 27 ABT 7 AM

                      DELTA TIDE FORECAST

CALIFORNIA NEVADA RIVER FORECAST CENTER...NATIONAL WEATHER SERVICE
AND THE CALIFORNIA DEPARTMENT OF WATER RESOURCES... SACRAMENTO  CA.

 ALL STAGES ARE BELOW MONITOR LEVEL.


FORECASTS ARE BASED ON PRESENT AND FORECASTED METEOROLOGICAL
AND HYDROLOGIC CONDITIONS AT TIME OF ISSUANCE.


 TIDE FORECAST
      RIO VISTA                  ANTIOCH
      THU 07/26                  THU 07/26
  9 30   AM       2.6        9 30   AM       2.1
  4 15   PM       5.3        4 00   PM       4.9
  8 00   PM       4.9        7 30   PM       4.4
      FRI 07/27                  FRI 07/27
  1 45   AM       7.1        1 15   AM       6.7
 10 30   AM       2.5       10 15   AM       1.9
  5 00   PM       5.6        4 30   PM       5.1
  8 45   PM       4.8        8 15   PM       4.5
      SAT 07/28                  SAT 07/28
  2 30   AM       7.3        2 15   AM       7.0

    MALLARD ISLAND             VENICE ISLAND
      THU 07/26                  THU 07/26
  7 30   AM       1.6       11 45   AM       2.6
  1 45   PM       4.8        6 00   PM       5.1
  5 45   PM       4.2        9 30   PM       4.9
 11 45   PM       6.6
      FRI 07/27                  FRI 07/27
  8 15   AM       1.4        3 30   AM       6.9
  2 30   PM       5.1       12 30   PM       2.5
  6 30   PM       4.4        6 45   PM       5.4
                             10 30   PM       4.9
      SAT 07/28                  SAT 07/28
 12 30   AM       6.9        4 15   AM       7.1

ALL THOSE AFFECTED BY RIVER CONDITIONS SHOULD REMAIN
RAPID CHANGES AND FOR POSSIBLE FORECAST REVISIONS.

gwl

.AR RVBC1 20070726 P DH07/DC200707260645/HG   4.3
.AR RVBC1 20070726 P DH0930/DC200707260645/HGIFEZZ
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.AR RVBC1 20070726 P DH2000/DC200707260645/HGIFEZZ
.AR RVBC1 20070727 P DH0145/DC200707260645/HGIFEZZ
.AR RVBC1 20070727 P DH1030/DC200707260645/HGIFEZZ
.AR RVBC1 20070727 P DH1700/DC200707260645/HGIFEZZ
.AR RVBC1 20070727 P DH2045/DC200707260645/HGIFEZZ
.AR RVBC1 20070728 P DH0230/DC200707260645/HGIFEZZ
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.AR ATIC1 20070726 P DH0930/DC200707260645/HGIFEZZ
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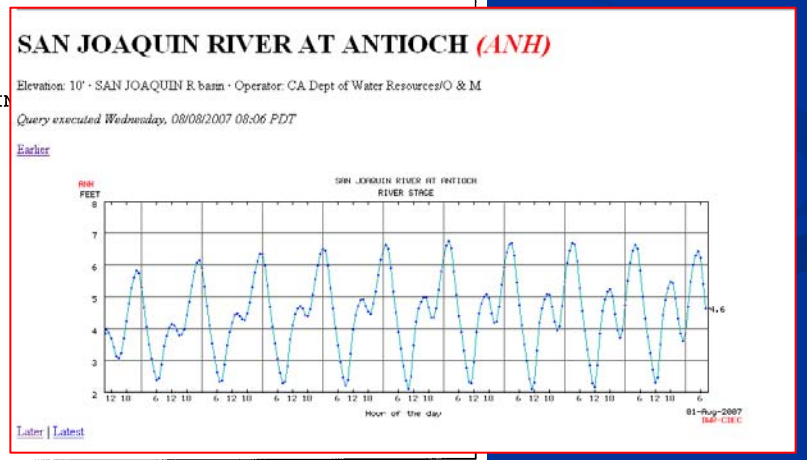

Example 1 (Continued): "CORRTIDE" guidance issued by State CADWR for tide bulletin

California Department of Water Resources — Division of Flood Management

Current River Conditions | Snowpack Status | River Stages/Flows | Reservoir Data/Reports | Satellite Images | Station Information

Data Query Tools | Precipitation/Snow | River/Tide Forecasts | Water Supply | Weather Forecasts | Text Reports

CORRTIDEWTR (07/26/07 0545)

ANH

Astronomical Forecast		Mech Corr	Pres Corr	Wind Corr	Flow Corr	Corrected Forecast		
07/26/2007	08:27:00 1.6	0.31	-0.02	0.18	0.00	07/26/2007	09:15:00	2.1
	14:54:00 4.7	-0.02	-0.01	0.19	0.00		15:45:00	4.9
	18:29:00 3.9	0.33	0.00	0.20	0.00		18:30:00	4.4
07/27/2007	00:18:00 6.1	0.42	-0.04	0.25	0.00	07/27/2007	01:00:00	6.7
	09:12:00 1.5	0.31	-0.06	0.19	0.00		09:45:00	1.9
	15:28:00 4.9	-0.02	-0.04	0.23	0.00		16:15:00	5.1
	19:20:00 3.9	0.33	-0.03	0.29	0.00		19:30:00	4.5
07/28/2007	01:08:00 6.3	0.42	-0.03	0.30	0.00	07/28/2007	01:45:00	7.0
	09:56:00 1.4	0.31	-0.03	0.21	0.00		10:30:00	1.9
	15:59:00 5.0	-0.02	-0.03	0.21	0.00		16:30:00	5.2
	20:08:00 3.8	0.33	-0.03	0.21	0.00		20:15:00	4.3
07/29/2007	01:58:00 6.5	0.42	-0.03	0.21	0.00	07/29/2007	02:30:00	7.1
	10:36:00 1.4	0.31	-0.03	0.21	0.00		11:00:00	1.9
	16:34:00 5.2	-0.02	-0.03	0.21	0.00		17:00:00	5.4
	20:56:00 3.7	0.33	-0.03	0.21	0.00		21:00:00	4.2
07/30/2007	02:45:00 6.6	0.42	-0.03	0.21	0.00	07/30/2007	03:00:00	7.2
	11:11:00 1.4	0.31	-0.03	0.21	0.00		11:30:00	1.9
	17:03:00 5.3	-0.02	-0.03	0.21	0.00		17:15:00	5.5
	21:47:00 3.6	0.33	-0.03	0.21	0.00		21:45:00	4.1
07/31/2007	03:29:00 6.5	0.42	-0.03	0.21	0.00	07/31/2007	03:45:00	7.1

IST

Astronomical Forecast		Mech Corr	Pres Corr	Wind Corr	Flow Corr	Corrected Forecast		
07/26/2007	19:22:00 5.3	0.10	0.00	0.19	0.00	07/26/2007	16:30:00	5.6
	23:13:00 4.6	1.16	-0.03	0.26	0.00		21:45:00	6.0
07/27/2007	04:15:00 5.8	0.00	-0.03	0.26	0.00	07/26/2007	23:45:00	6.0
	15:03:00 4.5	2.22	-0.03	0.22	0.00		06:00:00	6.9
	19:53:00 5.4	0.10	-0.03	0.24	0.00		17:30:00	5.7
07/28/2007	00:03:00 4.7	1.16	-0.03	0.33	0.00	07/27/2007	23:00:00	6.2
	05:02:00 5.8	0.00	-0.03	0.33	0.00		01:30:00	6.1
	15:40:00 4.5	2.22	-0.03	0.23	0.00		08:30:00	6.9
	20:22:00 5.5	0.10	-0.03	0.23	0.00		18:30:00	5.8
07/29/2007	00:47:00 4.7	1.16	-0.03	0.23	0.00	07/29/2007	00:00:00	6.1
	05:50:00 5.9	0.00	-0.03	0.23	0.00		03:00:00	6.1
	16:09:00 4.6	2.22	-0.03	0.23	0.00		10:45:00	7.0
	20:54:00 5.5	0.10	-0.03	0.23	0.00		19:30:00	5.8
07/30/2007	01:28:00 4.7	1.16	-0.03	0.23	0.00	07/30/2007	00:45:00	6.1
	06:33:00 5.9	0.00	-0.03	0.23	0.00		04:30:00	6.1
	16:33:00 4.6	2.22	-0.03	0.23	0.00		13:00:00	7.0
	21:19:00 5.5	0.10	-0.03	0.23	0.00		20:30:00	5.8
07/31/2007	02:16:00 4.7	1.16	-0.03	0.23	0.00	07/31/2007	02:00:00	6.1

MAL

Astronomical Forecast		Mech Corr	Pres Corr	Wind Corr	Flow Corr	Corrected Forecast		
07/26/2007	06:31:00 1.7	-0.32	-0.01	0.18	0.00	07/26/2007	08:30:00	1.6
	12:42:00 4.8	-0.12	-0.01	0.17	0.00		15:00:00	4.8
	16:38:00 3.9	0.08	0.00	0.20	0.00		18:00:00	4.2
	22:42:00 6.4	-0.01	-0.04	0.25	0.00		00:15:00	6.6
07/27/2007	07:17:00 1.6	-0.32	-0.06	0.19	0.00	07/27/2007	09:00:00	1.4
	13:35:00 5.0	-0.12	-0.04	0.22	0.00		15:15:00	5.1
	17:37:00 4.1	0.08	-0.03	0.29	0.00		18:45:00	4.4
	23:25:00 6.6	-0.01	-0.03	0.32	0.00		00:30:00	6.9
07/28/2007	07:59:00 1.5	-0.32	-0.03	0.21	0.00	07/28/2007	09:15:00	1.4
	14:18:00 5.1	-0.12	-0.03	0.21	0.00		15:45:00	5.2
	18:33:00 4.1	0.08	-0.03	0.21	0.00		19:30:00	4.4
07/29/2007	00:11:00 6.7	-0.01	-0.03	0.21	0.00	07/29/2007	01:00:00	6.9

Jul 27, 07 11:50 — Text 1: -1:RNORVFSAC — Page 1

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FGUS56 KRSA 261329
RVFSAC


 ISSUED:   THU  JUL 26 2007    645 AM  PDT

 NEXT:  FRIDAY MORNING JUL 27 ABT 7 AM


                DELTA TIDE FORECAST

CALIFORNIA NEVADA RIVER FORECAST CENTER...NATIONAL WEATHER SERVICE
AND THE CALIFORNIA DEPARTMENT OF WATER RESOURCES... SACRAMENTO  CA.

 ALL STAGES ARE BELOW MONITOR LEVEL.


FORECASTS ARE BASED ON PRESENT AND FORECASTED METEOROLOGICAL
AND HYDROLOGIC CONDITIONS AT TIME OF ISSUANCE.


 TIDE FORECAST
       RIO VISTA                    ANTIOCH
       THU 07/26                    THU 07/26
  9 30  AM       2.6          9 30  AM       2.1
  4 15  PM       5.3          4 00  PM       4.9
  8 00  PM       4.9          7 30  PM       4.4
     FRI 07/27                    FRI 07/27
  1 45  AM       7.1          1 15  AM       6.7
 10 30  AM       2.5         10 15  AM       1.9
  5 00  PM       5.6          4 30  PM       5.1
  8 45  PM       4.8          8 15  PM       4.5
     SAT 07/28                    SAT 07/28
  2 30  AM       7.3          2 15  AM       7.0

    MALLARD ISLAND               VENICE ISLAND
       THU 07/26                    THU 07/26
  7 30  AM       1.6         11 45  AM       2.6
  1 45  PM       4.8          6 00  PM       5.1
  5 45  PM       4.2          9 30  PM       4.9
 11 45  PM       6.6
     FRI 07/27                    FRI 07/27
  8 15  AM       1.4          3 30  AM       6.9
  2 30  PM       5.1         12 30  PM       2.5
  6 30  PM       4.4          6 45  PM       5.4
                             10 30  PM       4.9
     SAT 07/28                    SAT 07/28
 12 30  AM       6.9          4 15  AM       7.1

ALL THOSE AFFECTED BY RIVER CONDITIONS SHOULD REMAIN ALERT FOR
RAPID CHANGES AND FOR POSSIBLE FORECAST REVISIONS.

gwl

.AR RVBC1 20070726 P DH07/DC200707260645/HG   4.3    :OBSERVED
.AR RVBC1 20070726 P DH0930/DC200707260645/HGIFEZZ   2.6
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.AR RVBC1 20070726 P DH2000/DC200707260645/HGIFEZZ   4.9
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.AR ATIC1 20070727 P DH0115/DC200707260645/HGIFEZZ   6.7
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Friday July 27, 2007

Example 2: Probabilistic Water Supply Forecast, Long-term

FGUS66 KRSA 061516
ESPRSA

WATER SUPPLY OUTLOOK Jun 1 2007

COASTAL BASINS

	Period	MP	MP%	RMAX	RMIN	AVG
Williamson River						
Sprague, blo	Mar-Sep	340	67	380	300	505
Sprague River						
Chiloquin, nr	Mar-Sep	144	47	175	115	305
Upper Klamath Falls River						
Inflow	Mar-Sep	475	66	515	435	715
Lost River						
Gerber Reservoir Inflow	May-Jul	1.50	23	2.6	0.40	6.4
Clear Lake Reservoir Inflow	May-Jul	4.0	21	7.0	1.00	19.3
EASTSIDE SIERRA - HUMBOLDT BASIN						
Truckee River						
Lake Tahoe Stage Rise	Apr-High	0.45	33	0.56	0.44	1.38
Ltl Truckee River						
Boca Res, abv, Truckee, nr	Apr-Jul	25	31	32	22	80
Truckee River						
Farad	Apr-Jul	100	38	128	90	260
EF Carson River						
Gardnerville, nr	Apr-Jul	70	37	88	63	189
WF Carson River						
Woodfords	Apr-Jul	20	36	25	18.0	56
Carson River						
Carson City, nr	Apr-Jul	43	23	58	40	188
Fort Churchill, nr	Apr-Jul	38	21	53	34	178
East Walker River						
Bridgeport, nr	Apr-Aug	18.0	27	30	9.0	67
West Walker River						
Ltl Walker, blo, Coleville, nr	Apr-Jul	61	39	78	53	156
Humboldt River						
Elko, nr	Apr-Jul	45	29	70	30	154
Palisade	Apr-Jul	80	32	120	60	250
Comus	Apr-Jul	60	27	100	40	225

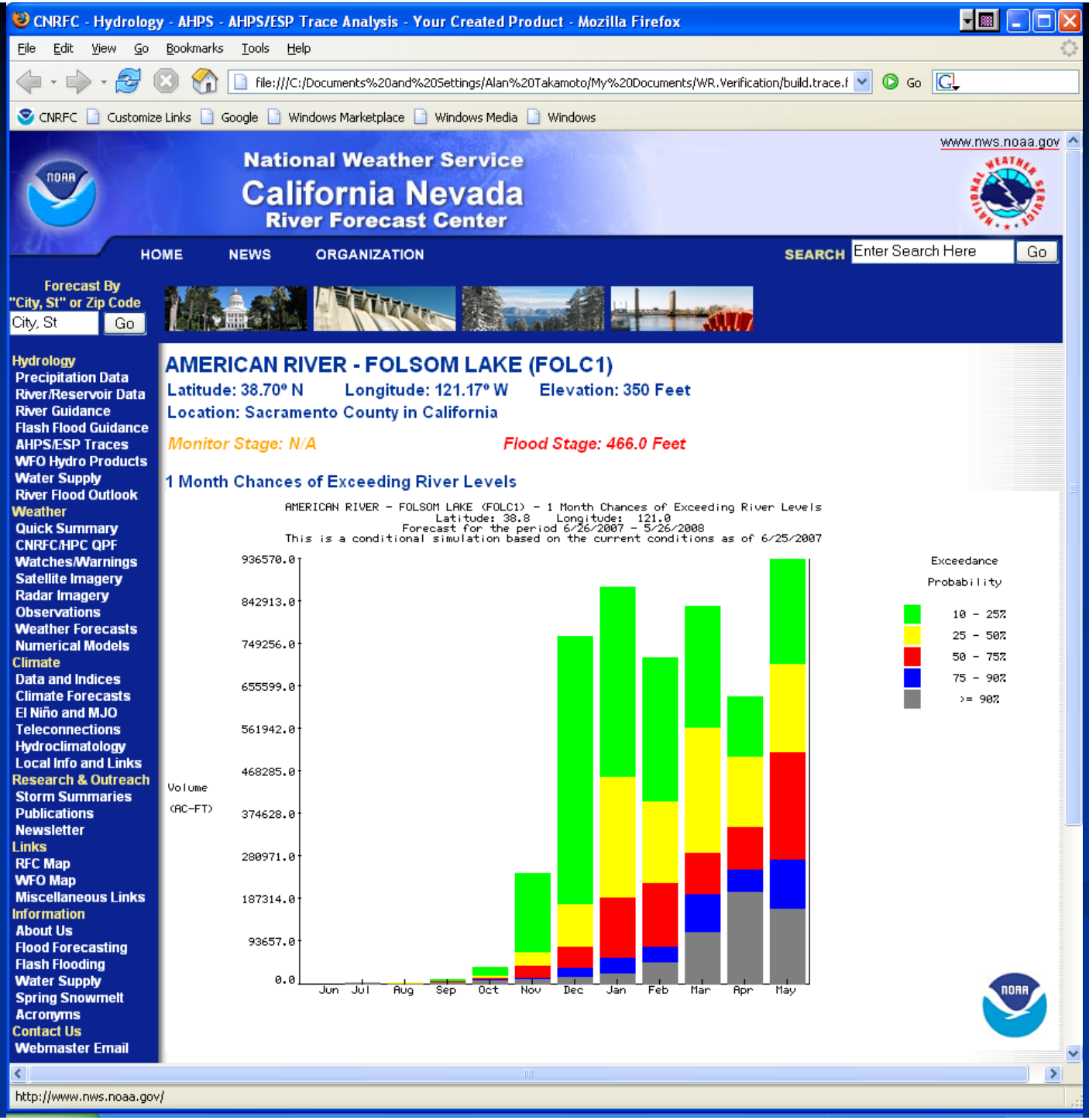
* 30 Year Averages for 1971-2000 are incomplete. Those forecast points with an asterik have incomplete averages, so 1961-1990 averages are listed. The new averages will be incorporated into this product when the complete data sets become available.

MP Most probable volume in 1000 acre-feet.
MP% Most probable volume in percent of the 71-00 average.
RMAX Volume that has a 10 percent chance of being exceeded.
RMIN Volume that has a 90 percent chance of being exceeded.
AVG Average volume for the 71-00 period.

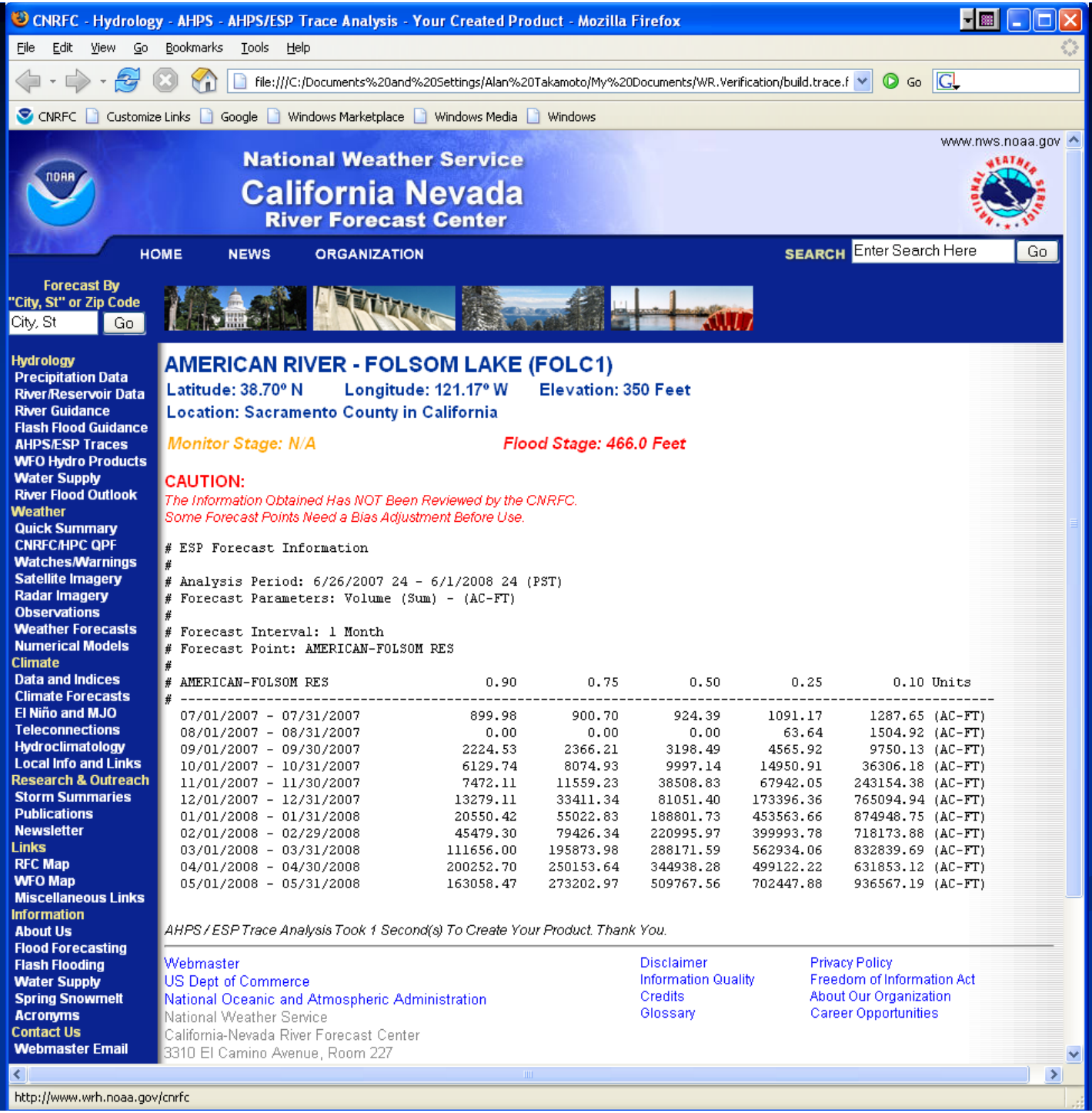
All forecast volumes reflect natural flow. Actual observed flow may be affected by upstream water management.

CNRFC/at/tm

Example 3:
ESP Probabilistic inflow guidance histogram from "build-your-own" AHPS/ESP trace analysis available on CNRFC website. Long-term ensemble guidance



Example 3 (Continued): ESP Probabilistic inflow guidance text output from "build-your-own" AHPS/ESP trace analysis available on CNRFC website. Long-term ensemble guidance



Example 4: ESP Probabilistic 5-day snowmelt volume forecasts out to 20 days.

Forecast of Runoff Volumes for the Snowmelt Season

Issued Wednesday, April 11, 2007

Produced by the NWS California Nevada River Forecast Center and the California Dept. of Water Resources

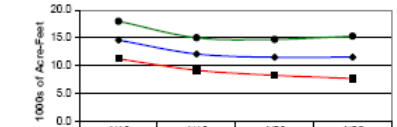
Remarks: Unsettled conditions will bring valley rain and high elevation snows today and again this weekend over the northern and central sections. Otherwise, temperatures will moderate closer to normal during the intervening dry periods.

Forecasts reflect predicted short-term precipitation and temperature as well as the predicted shift from normal climatology provided by NOAA's Climate Prediction Center.

Min:	Reasonable minimum (90 percent chance of being exceeded)
Prob:	Most probable volume (50 percent chance of being exceeded)
Max:	Reasonable maximum (10 percent chance of being exceeded)
Pk Vol/Date:	Most probable peak 1-day volume of runoff (in thousands of acre-feet) and the date of occurrence

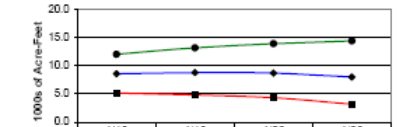
Indicated values are unimpaired flow volumes in thousands of acre-feet in 5-day intervals for the next 20 days. The date indicated above each column is the mid-point of the 5-day interval.

Williamson River at Chiloquin



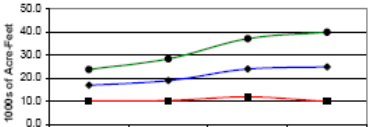
	4/13	4/18	4/23	4/28
Min	11.2	9.2	8.3	7.7
Prob	14.6	12.1	11.5	11.5
Max	18.0	15.0	14.7	15.3

Scott River at Fort Jones



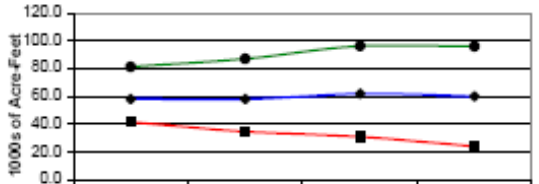
	4/13	4/18	4/23	4/28
Min	5.2	4.8	4.4	3.2
Prob	8.6	8.8	8.7	8.0
Max	12.0	13.2	13.9	14.4

Trinity River at Lewiston



	4/13	4/18	4/23	4/28
Min	10.2	10.5	12.0	10.0
Prob	17.0	19.0	24.0	25.0
Max	23.8	28.5	37.2	40.0

Shasta Reservoir Inflow



	4/13	4/18	4/23	4/28
Min	41.8	34.8	31.0	24.0
Prob	58.0	58.0	62.0	60.0
Max	81.2	87.0	96.1	96.0

Additional Verification Projects

Regional and National Verification case study: 2006 New Year's Flood Event on the Truckee and Russian River Basins already presented.

Verification of other significant flood events:

January 7-11, 2005 Southern California significant precipitation event.

Heavy precipitation event May 17-19, 2005 Northern California