Huge Snowmelt Yet to Come

April 1st will be no fools day this year concerning snowpack—at 167% of the April 1st normal (statewide). That day is the normal peak of the snow season. With the 6-10 day and 8-14 day forecasts showing above normal (see page 14&15), more precipitation is probably on the way. The NASA satellite photos below compare California in mid-drought (March 15, 2014) and this year (March 2, 2017). Note the green terrain, snowpack, and the visible rivers in this year’s photo on the right and on the next page.
Compare February 2017 with February 2016

Note the Yolo Bypass in the top satellite photo. What a difference a year makes!

http://earthobservatory.nasa.gov/IOTD/view.php?id=89650&eocn=home&eoci=iotd_grid
Recent Rains Swell Lakes and Rivers in Central California

These color-enhanced composite images captured by the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument aboard the NOAA/NASA Suomi NPP satellite in 2016 (left) and 2017 (right) show just how much the recent West Coast rains have swollen California’s lakes and rivers downslope of the Sierra Mountains.

The image at left, taken February 22, 2016, shows the state of California’s lakes and rivers during time when a large portion of the state was, according to the National Drought Monitor, suffering from “extreme” to “exceptional” drought. The image at right, captured on February 23, 2017, tells a much different story. Note a significant difference in the width of the rivers, which suggests just how much water the series of recent storms added to them. Not surprisingly, current Drought Monitor statistics now show most of the state to be free from drought.

https://www.nwv1.noaa.gov/MediaDetail2.php?MediaID=2000&MediaTypeID=1
San Luis Storage at 100 Percent

As of March 12th, San Luis total (CVP + SWP) storage is at 2,027,835 AF and is at 100% of allotted storage capacity (up 10,790 AF from last week and up 1% in capacity). The CVP share is 962,672 AF and increased by 9,281 AF in the same time frame. CVP+SWP storage is at 100% (of the 2,027,835AF capacity shown on USBR and DWR daily reports). Other sources list capacity at 2,041,000 AF. No additional water has been put into the reservoir since Thursday, March 9th, so the reservoir must be considered full at this time.

For current San Luis Reservoir Storage Shares, go to http://www.water.ca.gov/swp/operationscontrol/docs/storarl.pdf
Federal Storage within San Luis Reservoir
As of March 12th, federal storage was at 962,672AF (99.69% full — up 9,281AF from last week).
Total federal storage capacity is 965,655AF.

State Storage within San Luis Reservoir
As of March 12th, state storage was at 1,065,163AF (now at 100.28% capacity — up 1,509AF from last week).
The total state storage capacity in SLR is 1,062,180AF. Total State and Federal storage reported is 2,027,835AF. The reservoir is at 99% of capacity, but 100% of allotted State and Federal storage (2,027,835AF).
Oroville Storage
As of March 12th, storage was approximately 2,961,981AF (up 287,748AF and at 84% capacity — up 3% in capacity from last week).
The current level is 116% of the historical average. Inflows for the past week averaged 30,658AF/day. Total capacity of Oroville is 3,538,000AF. Current releases into the Feather River as of Sunday have gone to 25,603AF/day.
Northern Sierra Precipitation
As of March 13th, the 8-station Northern California index has recorded 77.8 inches of precipitation for this water year (up 0.2 of an inch from last week). This represents 207% of the typical average rainfall to date (155.6% of total for season). The average total for the normal season is 50.0 inches.
San Joaquin Precipitation
As of March 13th, the 5-station San Joaquin index has recorded 61.8 inches of precipitation for this water year (unchanged from last week). This represents 205% of the typical average rainfall to date (151.5% of total for season). The average total for the normal season is 40.8 inches.
Tulare Lake Basin Precipitation
As of March 13th, the 6-station Tulare Basin index has recorded 41.8 inches of precipitation for this water year (unchanged from last week). This represents 195% of the typical average rainfall to date (142.7% of total for season). The average total for the normal season is 29.3 inches.
A Little Precipitation for Northern California This Week
Feather River Basin—10-Day Forecast

<table>
<thead>
<tr>
<th>Day</th>
<th>Precip (inches)</th>
<th>Snow Level (feet)</th>
<th>Precip (inches)</th>
<th>Snow Depth (inches)</th>
<th>Min Temp (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturday, March 04, 2017</td>
<td>0.0</td>
<td>7.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunday, March 05, 2017</td>
<td>0.8</td>
<td>4.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday, March 06, 2017</td>
<td>0.3</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuesday, March 07, 2017</td>
<td>0.1</td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday, March 08, 2017</td>
<td>0.0</td>
<td>5.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday, March 09, 2017</td>
<td>0.0</td>
<td>8.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday, March 10, 2017</td>
<td>0.0</td>
<td>10.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saturday, March 11, 2017</td>
<td>0.0</td>
<td>9.50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunday, March 12, 2017</td>
<td>0.0</td>
<td>10.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monday, March 13, 2017</td>
<td>0.0</td>
<td>11.00</td>
<td>0.18</td>
<td>1.10</td>
<td>28.4</td>
</tr>
</tbody>
</table>

Total observed: 1.2

<table>
<thead>
<tr>
<th>Day</th>
<th>Precip (inches)</th>
<th>Snow Level (feet)</th>
<th>Precip (inches)</th>
<th>Snow Depth (inches)</th>
<th>Min Temp (F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Tuesday, March 14, 2017</td>
<td>0.0</td>
<td>11.50</td>
<td>0.18</td>
<td>1.00</td>
<td>28.5</td>
</tr>
<tr>
<td>2 Wednesday, March 15, 2017</td>
<td>0.0</td>
<td>10.50</td>
<td>0.18</td>
<td>1.00</td>
<td>28.6</td>
</tr>
<tr>
<td>3 Thursday, March 16, 2017</td>
<td>0.1</td>
<td>9.00</td>
<td>0.18</td>
<td>0.90</td>
<td>28.7</td>
</tr>
<tr>
<td>4 Friday, March 17, 2017</td>
<td>0.0</td>
<td>9.00</td>
<td>0.18</td>
<td>0.90</td>
<td>28.8</td>
</tr>
<tr>
<td>5 Saturday, March 18, 2017</td>
<td>0.0</td>
<td>9.50</td>
<td>0.17</td>
<td>0.80</td>
<td>28.8</td>
</tr>
<tr>
<td>6 Sunday, March 19, 2017</td>
<td>0.1</td>
<td>8.00</td>
<td>0.17</td>
<td>0.80</td>
<td>29.0</td>
</tr>
<tr>
<td>7 Monday, March 20, 2017</td>
<td>0.4</td>
<td>7.60</td>
<td>0.16</td>
<td>0.70</td>
<td>29.1</td>
</tr>
<tr>
<td>8 Tuesday, March 21, 2017</td>
<td>0.9</td>
<td>6.00</td>
<td>0.16</td>
<td>0.70</td>
<td>29.1</td>
</tr>
<tr>
<td>9 Wednesday, March 22, 2017</td>
<td>0.7</td>
<td>4.50</td>
<td>0.16</td>
<td>0.60</td>
<td>29.3</td>
</tr>
<tr>
<td>10 Thursday, March 23, 2017</td>
<td>0.2</td>
<td>4.00</td>
<td>0.16</td>
<td>0.50</td>
<td>29.4</td>
</tr>
</tbody>
</table>

10-Day Total: 2.4

10-Day Percent of Normal: 142%

Accumulated Observed Precip for WY 2017: 83.8 (WY 2016: 63.0)

Comments:

Dry conditions and mild, above-normal temperatures are forecasted to continue for the Feather Basin through midweek. Cooler temperatures and widespread, light precipitation are expected to return to the region around the middle of the week. The next update of this forecast will be about Tuesday, March 14, 2017, unless there are significant hydrologic changes.

http://cdec.water.ca.gov/cgi-progs/products/QPF.pdf
Current Regional Snowpack from Automated Snow Sensors

% of April 1 Average / % of Normal for This Date

- Northern Sierra / Trinity: 148% / 152%
- Central Sierra: 176% / 184%
- Southern Sierra: 172% / 182%

Compared to Last Week’s Summaries

**NORTH**
- Data as of March 13, 2017
- Number of Stations Reporting: 27
- Average snow water equivalent (Inches): 42.2
- Percent of April 1 Average (%): 148
- Percent of normal for this date (%): 152

- 29 stations
  - Up 1.3”
  - Up 1%
  - Down 5%

- 27 stations
  - Down 0.1”
  - Down 2%
  - Down 11%

**CENTRAL**
- Data as of March 13, 2017
- Number of Stations Reporting: 42
- Average snow water equivalent (Inches): 51.5
- Percent of April 1 Average (%): 176
- Percent of normal for this date (%): 184

- 42 stations
  - Up 0.1”
  - Unchanged
  - Down 8%

**SOUTH**
- Data as of March 13, 2017
- Number of Stations Reporting: 27
- Average snow water equivalent (Inches): 45.9
- Percent of April 1 Average (%): 172
- Percent of normal for this date (%): 182

- 27 stations
  - Down 0.1”
  - Down 2%
  - Down 11%

**STATE**
- Data as of March 13, 2017
- Number of Stations Reporting: 96
- Average snow water equivalent (Inches): 47.3
- Percent of April 1 Average (%): 167
- Percent of normal for this date (%): 174

- 98 stations
  - Up 0.5”
  - Unchanged
  - Down 8%

Statewide Average: 167% / 174%

http://cdec.water.ca.gov/cgi-progs/products/swccond.pdf
6-10 day Precipitation Forecast:

6-10 day Temperature Forecast:
8-14 day Precipitation Forecast:

8-14 day Temperature Forecast:
March Precipitation Forecast:

March Temperature Forecast:

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead14/index.php
March–May Precipitation Forecast:

March–May Temperature Forecast:

[Map images showing temperature and precipitation forecasts for March-May]

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1
The Climate Prediction Center/NCEP issued its new Update on March 13, 2017:

**ENSO Alert System Status: Not Active**

- ENSO-neutral conditions are present.*
- Equatorial sea surface temperatures (SSTs) are near-average across the central and east-central Pacific. They are above-average in the eastern Pacific Ocean.
- ENSO-neutral conditions are favored to continue through at least the Northern Hemisphere spring 2017, with increasing chances for El Niño development into the fall.*

* Note: These statements (and the following charts) are updated at least once a month (2nd Thursday of each month) in association with the ENSO Diagnostics Discussion: [http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory)
Reservoir Storage
As of March 12th, Northern California reservoirs are between 71-116% of historical average and 42-84% of capacity—Oroville and Folsom are up 3%, Trinity is up 1%, and Shasta is down 1% in capacity from last week. The central ones are between 85-147% of historical average and 57-99% of capacity. San Luis is unchanged in capacity.
Daily Statewide Hydrologic Update
March 12, 2017

Data as of 11:59:59 PM on March 12, 2017

Sacramento Region Summary
Precip: 8-Station Index
Season to Date % Avg Year 156%
Northern Sierra Snow Water Content
% to Date 155% % Apr 1 155%
Reservoir Storage
Reservoir % Hist Avg % Capacity Enrch
Shasta 99% 75% n/a
Oroville 116% 84% n/a
Folsom 71% 42% n/a
New Bullards 121% 82% n/a

San Joaquin Region Summary
Precip: 5-Stations Index
Season to Date % Avg Year 151%
Central Sierra Snow Water Content
% to Date 186% % Apr 1 177%
Reservoir Storage
Reservoir % Hist Avg % Capacity Enrch
New Melones 113% 70% -298
Don Pedro 136% 93% 386
Elsberry 147% 78% 128
Millerton 85% 57% -158

Tulare Lake Region Summary
Precip: Tulare Precipitation Index
Season to Date % Avg Year 143%
Southern Sierra Snow Water Content
% to Date 184% % Apr 1 173%
Reservoir Storage
Reservoir % Hist Avg % Capacity Enrch
Pine Flat 130% 71% 264
Terminus 266% 44% 78
Success 162% 55% 25
Isabella 145% 49% -33

State Region Summary
Precip: Statewide Precipitation Index
Season to Date % Avg Year %
Statewide Snow Water Content
% to Date 176% % Apr 1 168%
Reservoir Storage
Reservoir % Hist Avg % Capacity Enrch
CDEC State Climatologist
State Meteorologist
California Cooperative Snow Surveys

*Enrch = Flood Space Enouchment in 1,000 acre-ft

Regional river forecast conditions reflect river forecast guidance products issued jointly by CHIRP/DWR, NWS Weather Forecast Offices issue the official watches, warnings, statements, and advisories.
Shasta Storage —

As of March 12th, storage was approximately 3,423,732AF (down 23,052AF and at 75% of capacity — down 1% in capacity from last week). The current level is 99% of the historical average. Total capacity of Shasta is about 4,552,000AF. Shasta’s weekly average inflows are about 31,516AF/day, and outflows are about 19,040AF/day as of Sunday.

Reservoir graphs from: http://cdec.water.ca.gov/reservoir_map.html
Trinity Lake Storage
As of March 12th, storage was approximately 1,965,526AF with capacity being at 80% (up 21,300AF and up 1% in capacity from last week). The current level is 106% of the historical average. Net inflows for the past week averaged 7,109AF/day. Total capacity of the Trinity is about 2,448,000AF. On Sunday, releases to the Trinity River were about 3,880AF/day.
Folsom Storage

As of March 12th, storage was approximately 408,985AF (up 29,108AF and at 42% capacity — capacity up 3% from last week). The current level is 71% of the historical average. Inflows for the past week averaged 17,339AF/day. Total capacity of Folsom is 977,000AF. As of Sunday, releases were about 11,244AF/day.

[Inflows and Outflows graphs]
Friant Storage

As of March 12th, storage was about 297,504AF (down 75,891AF and at 57% capacity—down 15% in capacity from last week). The current level is 85% of the historical average. Inflows for the last week averaged about 10,581AF/day. Total capacity of Friant is 520,500AF. On Sunday, 919CFS was released into the Friant/Kern Canal, 886CFS was released into the Madera Canal, and 8,916CFS was released into the San Joaquin River. The eight upstream San Joaquin River reservoirs are about 50% full, holding 303,377AF of their 611,688AF capacity.
New Melones Storage

As of March 12th, storage was approximately 1,671,941AF (up 52,515AF and at 70% capacity — up 3% in capacity from last week). The current level is 113% of the historical average. Inflows for the past week averaged 8,044AF/day. Total capacity of New Melones is 2,400,000AF. Current releases to the Stanislaus River have been adjusted to 968AF/day.
Pumping Has Slowed with State Storage at Capacity (and Federal is close).

Total Delta Inflow from the Delta Outflow Computation chart (https://www.usbr.gov/mp/cvo/vungvari/doutdly.pdf) for March 12th is listed as 104,485 cfs (207,246 AF/day) and outflow is 98,099 cfs (194,579 AF/day) with delta exports being 5,336 cfs (10,386 AF/day).
Plenty of water has been flowing through the delta. In the last thirty-seven months, almost 61 million acre-feet of water have poured into the delta. Of that water, 80.1 percent, or almost 49 million acre-feet, has gone out to the ocean, but just over 9.2 million acre-feet have been pumped into the California Aqueduct and Delta Mendota Canal for cities and farms. Since October 1, 2016, the losses are worse with 92.3 percent wasted to the ocean.
Delta Flows from October 1, 2016, through March 12, 2017

In five months, 31,382,400AF of water flowed into the Delta. The Net In-Delta Consumption was (548,000AF) (-1.7%). The Banks and Jones Pumps captured 2,851,300AF (9.1%), and 28,967,500AF (92.3%) flowed out to the ocean.
2017 Allocations—
SWP:
The 2017 SWP allocation is set at 20% as of November 28, 2016.  
As of December 21, 2016, the 2017 SWP allocation is set at 45%.  
As of January 18, 2017, the 2017 SWP allocation is set at 60%.  

CVP:
As of February 28, 2017, USBR announces Friant Class 1 allocation is set at 100%.  
https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=58769

2016 Allocations—
SWP:
The 2016 SWP allocation is set at 15% as of January 26, 2016.  
http://www.water.ca.gov/swpao/docs/notices/16-01.pdf
As of February 24, 2016, the 2016 SWP allocation is set at 30%.  
As of March 17, 2016, the 2016 SWP allocation is set at 45%.  
As of April 21, 2016, the 2016 SWP allocation is set at 60%.  
http://www.water.ca.gov/swpao/docs/notices/16-06.pdf

CVP:
As of April 1, 2016, USBR announces South-of-the-Delta Ag CVP Allocation is set at 5%, and Friant Class 1 allocation is set at 30%.  
http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=53447
As of Friday, April 8, 2016, the Friant Class 1 allocation was increased to 40%.  
As of Thursday, April 21, 2016, the Friant Class 1 allocation was increased to 50%.  
http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=53887
As of Friday, May 6, 2016, the Friant Class 1 allocation was increased to 65%.  
http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=54347
As of Monday, July 18, 2016, the Friant Class 1 allocation was increased to 75% along with an exchange agreement to support South-of-Delta operations.  
http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=55667

**Note!** The January 9, 2017 verbal notification that was made that Friant Class 1 allocation will be 100% was for **old year 2016-17 supplies.**
Disclaimer: The information contained herein is compiled from a number of sources. Some of what we report is gleaned from news articles or meetings we attend. While we strive for this information to be accurate, it may be in error, and much of the information and data contained herein is provisional and subject to future revisions. If you plan on using this information to make business decisions about your water assets or needs, we strongly suggest that you do your own independent verification of the accuracy of this information. The Water Agency, Inc. provides no guarantee as to the accuracy or completeness of the information. Neither The Water Agency, Inc., nor any of the sources of the information contained herein are responsible for any errors or omissions, or for the use or results obtained from the use of this information. Please feel free to send us information or opinions, which are contrary to what we write, so we can try to integrate them into future updates.

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