NE Drought Conditions CARC Update: April 2012

Mark Svoboda and Brian Fuchs
National Drought Mitigation Center
University of Nebraska-Lincoln
Current Conditions around Nebraska and the region...
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu/
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## U.S. Drought Monitor

### High Plains

#### Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>42.66</td>
<td>57.34</td>
<td>24.30</td>
<td>5.68</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Last Week (04/10/2012 map)</td>
<td>37.71</td>
<td>62.29</td>
<td>23.92</td>
<td>4.25</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>3 Months Ago (01/17/2012 map)</td>
<td>46.59</td>
<td>53.41</td>
<td>18.52</td>
<td>6.33</td>
<td>2.22</td>
<td>0.04</td>
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<tr>
<td>Start of Calendar Year (12/27/2011 map)</td>
<td>61.66</td>
<td>38.34</td>
<td>18.12</td>
<td>7.22</td>
<td>2.07</td>
<td>0.04</td>
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<tr>
<td>Start of Water Year (09/27/2011 map)</td>
<td>70.09</td>
<td>29.91</td>
<td>17.44</td>
<td>11.97</td>
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<tr>
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<td>62.21</td>
<td>37.79</td>
<td>22.00</td>
<td>10.77</td>
<td>0.00</td>
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</tbody>
</table>

### Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

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Released Thursday, April 19, 2012

Anthony Artusa, Climate Prediction Center/NCEP/NWS/NOAA
## U.S. Drought Monitor

### Nebraska

#### Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
<th>D4</th>
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<tbody>
<tr>
<td>Current</td>
<td>57.82</td>
<td>42.17</td>
<td>11.93</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Last Week (04/10/2012 map)</td>
<td>52.85</td>
<td>47.15</td>
<td>8.09</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>3 Months Ago (01/17/2012 map)</td>
<td>67.30</td>
<td>32.70</td>
<td>13.81</td>
<td>0.65</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Start of Calendar Year (12/27/2011 map)</td>
<td>71.68</td>
<td>28.32</td>
<td>13.81</td>
<td>0.65</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>Start of Water Year (09/27/2011 map)</td>
<td>75.70</td>
<td>24.30</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<tr>
<td>One Year Ago (04/12/2011 map)</td>
<td>46.27</td>
<td>53.73</td>
<td>15.21</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

#### Intensity:

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- **D1 Drought - Moderate**
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These maps depict approximate changes in drought intensity from selected initial times to the current week, with no consideration given to intervening weeks. The change calculations are based on interpolated 4 km grids of the Drought Monitor depiction, and as a result, will be smoother than if based on the published version.
Wyoming SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Apr 23, 2012


- unavailable *
- <50%
- 50 - 69%
- 70 - 89%
- 90 - 109%
- 110 - 129%
- 130 - 149%
- >=150%

Provisional Data Subject to Revision

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00.00).

U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for April 19 - July 31, 2012
Released April 19, 2012

KEY:
- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events such as individual storms cannot be accurately forecast more than a few days in advance. Use caution for applications such as crops that can be affected by such events.

"Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.
Climate Summary

- Relatively dry heading into Spring/Summer 2012
  - 12% of NE in D0-D1 (no D2-D4 at present)
  - Recharge season has been hit and miss
  - Hot and dry March was a big story region-wide ramping up demand early
  - Models trending toward Neutral/El Nino (~90%) later this summer into fall (IRI).....

- Rockies snow pack NOT good and needs a “miracle” end to April and May
  - Most basins feeding the North and South Platte basins are at < 50% of snow water equivalent and resultant streamflow forecasts are generally around 50% of normal

- Climate Prediction Center’s Seasonal Drought Outlook calls for “Some Improvement” to the USDM in ne NE and “Persistence” in the Panhandle between now and the end of July
Nebraska Water Supply Update...
Lake McConaughy Elevation
April 23, 2011 to April 23, 2012

3257.9 Feet
88.0% of Max.

3256.0 Feet
3254.3 Feet
82.4% of Max

SOURCE: CNPPID www.cnppid.com
<table>
<thead>
<tr>
<th>Inflows to Lake McConaughy (Current, Average &amp; Median Inflow graph)</th>
<th>Today (7 a.m.)</th>
<th>Week Ago</th>
<th>Month Ago</th>
<th>Year Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Lake McConaughy Outflow</td>
<td>1,061</td>
<td>596</td>
<td>930</td>
<td>2,871</td>
</tr>
<tr>
<td>North Platte below Keystone Dam</td>
<td>934</td>
<td>849</td>
<td>23</td>
<td>1,228</td>
</tr>
<tr>
<td>Keystone Dam Diversion</td>
<td>127</td>
<td>30</td>
<td>649</td>
<td>1,722</td>
</tr>
<tr>
<td>North Platte at North Platte</td>
<td>1,116</td>
<td>1,330</td>
<td>512</td>
<td>1,906</td>
</tr>
<tr>
<td>South Platte at Roscoe</td>
<td>185</td>
<td>230</td>
<td>338</td>
<td>178</td>
</tr>
<tr>
<td>South Platte at North Platte</td>
<td>187</td>
<td>223</td>
<td>470</td>
<td>236</td>
</tr>
<tr>
<td>Diversion to CNPPID Supply Canal</td>
<td>1,466</td>
<td>1,989</td>
<td>1,477</td>
<td>2,189</td>
</tr>
<tr>
<td>Platte River at Overton</td>
<td>2,140</td>
<td>2,376</td>
<td>1,878</td>
<td>3,981</td>
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<tr>
<td>Platte River at Kearney</td>
<td>1,530</td>
<td>2,250</td>
<td>1,724</td>
<td>3,691</td>
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<tr>
<td>Platte River at Grand Island</td>
<td>1,760</td>
<td>2,173</td>
<td>1,827</td>
<td>5,219</td>
</tr>
</tbody>
</table>

* Percent of capacity is dependent upon maximum elevations/operating levels at different times of the year. Lower maximum levels were established in 1974 after a 1972 storm caused damage to the dam’s face. The limits are in effect for periods when high winds and waves are most likely to occur. (See Lake McConaughy Maximum Operating Levels table)

** Flow too low for gauge to measure
@ - Yesterday’s average flow
# - Ice affecting stream gauges; readings may not be accurate
N/A - Data temporarily unavailable (data not reported from gauge)

SOURCE: CNPPID www.cnppid.com
Lake McConaughy

Civil engineer Cory Steinke reported that snowpack accumulation in the Rocky Mountains of Colorado and Wyoming are below normal. Snowpack is currently 49 percent of normal in the upper North Platte River Basin, 69 percent in the lower basin, and 60 percent in the South Platte River Basin. "Current inflows to Lake McConaughy are 718 cubic feet per second," Steinke said, "while average inflows for this time of year are around 1,480 cfs. With the ongoing releases of water necessary to meet the flow requirements of Central's federal license, the lake's elevation is slowly dropping." Depending upon spring precipitation amounts, he said, Lake McConaughy may have already reached its peak elevation for the year. Steinke added that the U.S. Bureau of Reclamation is no longer projecting a spill of excess water from its Wyoming reservoirs. As recently as a month ago, he said, the Bureau had been anticipating that storage conditions in its North Platte River reservoirs would result in at least a small release of water that exceeded storage capacity. The Wyoming reservoirs are currently 86 percent full.

SOURCE: CNPPID News Release, April 9, 2012
Map of 14-day average streamflow compared to historical streamflow for the day of year

Sunday, April 22, 2012

Explanation - Percentile classes

<table>
<thead>
<tr>
<th>Low</th>
<th>10-24</th>
<th>25-75</th>
<th>76-90</th>
<th>&gt;90</th>
<th>High</th>
<th>Not-ranked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Much below normal</td>
<td>Below normal</td>
<td>Normal</td>
<td>Above normal</td>
<td>Much above normal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

USGS

NIDIS

UNIVERSITY OF NEBRASKA, Lincoln

National Drought Mitigation Center
Map of 14-day average streamflow compared to historical streamflow for the day of year

Sunday, April 22, 2012

Explanation - Percentile classes

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Map of below normal 7-day average streamflow compared to historical streamflow for the day of year.
Hugh Butler: 16.3% of conservation pool
Enders: 42.9% of conservation pool
Harry Strunk: 97.3% of conservation pool
Swanson: 67.4% of conservation pool

Source: BOR http://www.usbr.gov/gp/lakes_reservoirs/
Republican River Basin

Harlan County Current Conditions

✔ Conservation Pool is 100% Full
✔ 320,664 Acre-Feet of water in storage compared to 324,994 AF last year at this time

Source: BOR http://www.usbr.gov/gp/lakes_reservoirs/
Water Supply Summary

- Supply is stable for now, but may have reached seasonal peaks in many basins
  - Lake McConaughy has a lower elevation and reduced inflows already compared to last year and storage may have peaked for the year
  - Storage in the Republican River system is comparable to what it was last year at this time with Harlan County 100% full
  - A combination of reduced run-off, dry soils, and higher irrigation demand will impact water supply over the next several months. Most systems are currently in good shape due to favorable conditions over the last 2 growing seasons but more than likely will see reductions during this growing season
Questions?