NWSFO SLC FIRE WEATHER 2007 ANNUAL REPORT

JANUARY 16, 2008

2007 FWX Season Summary

During the first two winter months (December and January) widespread below normal precipitation was observed across Utah. The only area that significantly differed from this was a swath from the southwest mountains northeast into the western Uinta Basin. Outside this swath precipitation was only 20-60% of normal. Finally, February brought welcomed snow to most of the area with many sites reporting 110-150% of normal. Only the northeast managed to have below normal precipitation.

March brought very warm and dry conditions to the majority of the region. The snow pack was hard hit this month with the deepest snow pack at Alta occurring in the first week of March rather than the first week of April. This depleted snow pack was a harbinger of an extreme fire season ahead. April continued in the same vein with warm and dry conditions. Average precipitation for the two months combined was only 30-60% of normal. At Salt Lake City, April was the third driest on record. This warm dry period prevailed through June, despite the one and only significant storm in early June which brought monthly average rainfall to portions of the north and 50 to 75% of monthly averages across an area from the southwest through northeast. This four month span of dry and warm conditions set the stage for an active summer.

Despite many areas (both valley and mountains) with/or near historic low fuel moisture conditions and ERCs, there were relatively few fire starts in June. This was attributed to the lack of any thunderstorms as the southwest Monsoon was slow in organizing in the summer of 2007. The first two weeks of July were very hot and dry with finally some monsoon moisture invading the state by the second week. This moisture surge with its many lightning strikes was considered more of a fire initiator rather than a monsoon surge that brings relief. Utah experienced its largest fire on record with the Milford Flats fire where over 380 square miles were consumed. The hot conditions continued through the end of July despite the periodic moisture surges associated with the monsoon. Salt Lake City posted the hottest month on record with an average reading of 84 degrees.

The affect of the monsoon in August varied greatly from place-to-place. Portions of the north and west central Utah received over 180 percent of normal, while over the majority of the state the percentage was more in the 60-90% of normal range. Temperatures remained above normal across the region. This combined with the previous two months to make the summer of 2007 the hottest on record at Salt Lake City.

The fire season quickly came to a halt by the third week of September as a couple of cold storms brought significant rains to the valleys with snow to elevations above 7000 ft. The average precipitation for September across the state was about 120-150% of normal. The jet stream remained relatively active across the northern half of the fire district through October while a ridge of high pressure became established over the south. This scenario is very typical for a La Nina pattern which was forecast to prevail during the 2007-2008 winter.

November fulfilled the expectations of a La Nina pattern with mild and dry conditions. So much so that a record absence of snow was reported in the northern Utah mountains. The high elevation precipitation was only 37% of normal. This dormant period though changed to a vigorous stormy pattern that never relinquish throughout the month of December. The state average precipitation was 136% of normal. The snow pack that was nearly non-existent at the end of November climbed to over 100% of normal by the end of December.

There were five large wildfires that required IMET support in the district during 2007. They were: 1) Neola North Fire 6/30-7/11, 2) Mathis 7/10-7/15, 3) Milford Flats Fire 7/11-7/16, 4) Salt Creek Fire 7/20-7/29, and 5) Dakota Hill 7/21-7/25.

Mark Struthwolf, Fire Weather Program Leader/IMET Trainee
National Weather Service
Salt Lake City

Wildfire Activity Report

For complete breakdown by agencies and land owners, go to the following link.
http://www.utahfireinfo.gov/ytd+media+links/yeartodate.htm

2007
TOTAL NUMBER OF WILDFIRES IN SLC FWX DISTRICT……..... 1,535
TOTAL ACRES BLACKENED DUE TO WILDFIRES IN SLC FWX DISTRICT... 647,296*

Agency	# Wildfires	#Acres burned
NUIFC	465	146,385
RIFC	184	275,075
CCIFC	496	169,575
MIFC	205	11,912
UBIFC	185	44,349*

*This number includes the Grand Junction CWA portion of the Uinta Basin.

2006
TOTAL NUMBER OF WILDFIRES IN SLC FWX DISTRICT…… 1,935
TOTAL ACRES BLACKENED DUE TO WILDFIRES IN SLC FWX DISTRICT...368,505

Agency	# Wildfires	#Acres burned
NUIFC	483	79,222
RIFC	306	87,729
CCIFC	877	188,637
MIFC	269	12,917

2005
TOTAL NUMBER OF WILDFIRES IN SLC FWX DISTRICT…….1,117
TOTAL ACRES BLACKENED DUE TO WILDFIRES IN SLC FWX DISTRICT...315,448

2004
TOTAL NUMBER OF WILDFIRES IN SLC FWX DISTRICT.....1,429
TOTAL ACRES BLACKENED DUE TO WILDFIRES IN SLC FWX DISTRICT... 73,941

Red Flag Warning Verification for SLC for 2007

TOTAL RED FLAG WARNINGS

# issued	310	[360 in 2006]
# verified	244	(41 Dry lightning, 203 Non lightning)
# not verified	66	(19 Dry lightning, 47 Non lightning)
# unwarned events	41	(6 Dry lightning, 35 Non lightning)

TOTAL RED FLAG WARNINGS

YEAR	WRH Goals	2007	2006	2005
*FAR	0.37	0.21	0.25	0.13
**POD	0.82	0.86	0.90	0.92
***CSI	0.60	0.70	0.69	0.81
Avg Lead Time	9.0 hrs	15.8 hrs	12.5 hrs	11.9 hrs

RED FLAG WARNINGS (DRY THUNDERSTORM)

YEAR	WRH Goals	2007	2006	2005
FAR	0.49	0.32	0.28	0.10
POD	0.72	0.87	0.83	0.95
CSI	0.51	0.62	0.62	0.86
Avg Lead Time	6.75 hrs	10.6 hrs	5.2 hrs	

# issued	60
# verified	41
# unwarned events	6

RED FLAG WARNINGS (WIND/LOW RH/OTHER)

YEAR	WRH Goals	2007	2006	2005
FAR	0.25	0.19	0.24	0.14
POD	0.92	0.85	0.94	0.91
CSI	0.69	0.71	0.73	0.80
Avg Lead Time	11.25 hrs	16.8 hrs	16.9 hrs	

issued 250
verified 203
unwarned events 35

The greatest improvement over 2006 was the RFW average lead time for dry thunderstorms. This was a direct result of the forecasters being pro-active on the midnight shift by issuing RFWs rather than waiting for the day shift to issue which was the practice in the past.

Verification Statistics Definitions

*FALSE ALARM RATIO
False Alarm Ratio is the ratio of Red Flag events warned but not verified to the total number of actual Red Flag events.

**PROBABILITY OF DETECTION
Probability of Detection is the ratio of Red Flag events warned to the total number of actual Red Flag events.

***CRITICAL SUCCESS INDEX
Critical Success Index is the ratio of Red Flag events warned to the sum of the false alarms and actual red flag events.

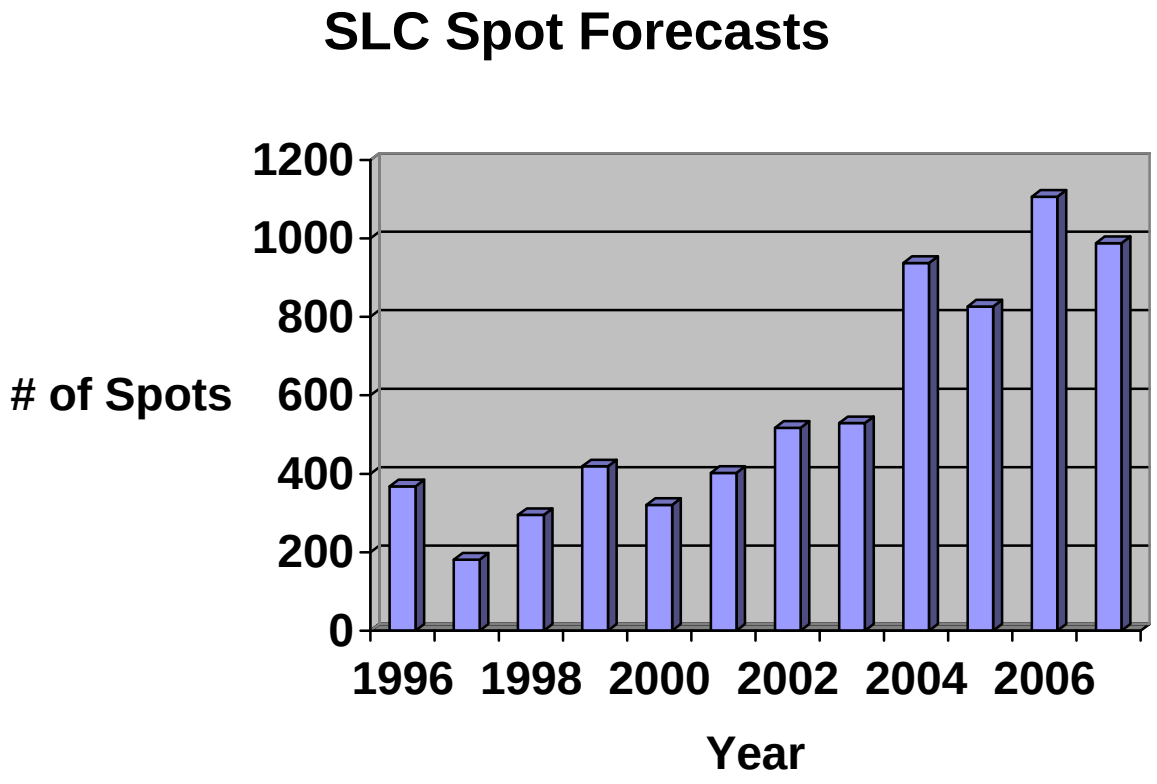
Fire Weather Watches Issued for SLC District

Year	2007	2006	2005	2004
Fire Weather Watches Issued	206	199	132	95
Watches preceded a Red Flag Event	180	144	116	76
Average Lead Time	17.5	18.1	29.0	26.8

Spot Forecast Numbers for 2007

Year	2007	2006	2005	2004
Total Spots	988	1106	826	937
Prescribed Burns	472	564	481	555
Wildfires	506	530	333	377
Search and Rescue	10	11	9	4
Hazmat	0	1	2	0

10 Year total number of spot forecasts:	6340
10 Year annual average number of spot forecasts:	634
5 Year annual average number of spot forecasts:	877



NWSFO SLC IMET dispatches in 2007

Total of 32 days of IMET out of the office in 2007(38 in 2006)
(does not include 1-2 days of R&R upon return from dispatch)

IMET Trainee (Smith) served 6 days on 1 wildfire dispatch
IMET Trainee (Struthwolf) served 26 days on 3 wildfire dispatches
1. Mathis Fire (7/10-7/15, near Price, UT)
2. Dakota Hill Fire Complex (7/21-7/25), near Zion Nat'l Park, UT)
3. BBD Fire Complex Fire (8/24-9/6, near Wisdom, MT)
4. Witch Creek Fire (10/24-10/30, near Escondido, CA)

NWSFO SLC FWX training/coordination activities in 2007

1. Attended S-390 training, Boise, Jan (Struthwolf)
2. Attended IMET Workshop, Boise, Mar (Struthwolf and Smith)
3. Taught S-390 at Utah Fire Academy, Provo, Apr (Struthwolf) (Smith-attended as a student)
4. Met with Ed Delgado and Shelby Sharples at EGBCC
5. Taught S-290 at Ogden Fire Academy, Ogden, May (Struthwolf)
6. Outreach visit to Northern Utah Interagency Fire Center, May (Struthwolf and Dunn)
7. Outreach visit to Richfield and Color Country Dispatch, Jun (Struthwolf and Barjenbruch)
8. Attended CAMEO/MARPLOT/ALOHA training, Riverton WY, Aug (Struthwolf)
9. Attempted an Open House at the SLC WFO, but little response, Sep-Oct (Struthwolf)
10. Presented SLC's 2007 RFW and SPOT statistics at the BLM Fall Fire Review in Richfield, Nov (Struthwolf)
11. IS-700 National Incident Management System (NIMS) online training, Nov (Struthwolf)
12. IS-800A, Nov (Struthwolf)
13. Participated in the Eastern Great Basin Post Season Review AOP Meeting, Nov (Struthwolf)
14. Taught S-290 at Fire Academy, Provo, Dec (Struthwolf)

FWX program goals in 2008

1. Increased outreach activities across the CWA

    -Meet with customers at dispatch and preseason meetings:

    - Have arranged to meet with dispatch coordinators in Moab in April)
    - Have coordinated a visit with Jeff Kline (BLM Fire Management Officer) in March
    - In-house seminar on the NFDRS scheduled for April

2. Create in-house drills and perform local research:
    - Create an Articulate presentation on ALOHA and MARPLOT for Hazards
    - Collaborate with EGBCC on research concerning lightning starts verses RFWs issued for lightning
3. Teach S-290, S-390 and other fire weather courses as needed
4. Continued transition to IFPS-based Fire Weather Products
    -Explore use of 7-day weather planner
5. Increase Lead Time for Red Flag Warnings
6. Improve POD and FAR for RFWs
7. Promote use of GOTOMeeting for Coordination purposes
8. Continue to address any concerns of NWS partners

FWX program concerns in 2008

Fuels information from the field continued to be a problem in the Eastern Great Basin region throughout 2008. Although there was a slight improvement over 2007 through early July, due to little fire activity and many resources available, once the fire season got into full swing the fuels update in general became unreliable. Frequently, the condition of the fuels was not updated for weeks to even months at a time. This uncertainty of knowing whether the fuels are favorable to burn creates issues in our office on issuing or not issuing RFWs. This concern was addressed at the AOP in late November with the Eastern Great Basin GACC.

2007 SALT LAKE FIRE WEATHER DISTRICT FORECAST PRODUCT STATISTICS

MONTH	Routine FWX Zone Forecasts Issued	Smoke Management Forecasts Issued	Spot Forecasts for Prescribed Burns (PRE)	Spot Forecasts for Wildfires (WIL)	Spot Forecasts for Wildfire Usage (WFU)	Spot Forecasts for Search and Rescue (SAR) /Hazards (HAZ)	Total Spots
JAN	0	0	15	0	0	0	15
FEB	0	0	35	0	0	0	35
MAR	1	0	40	3	0	0	43
APR	29	1	73	3	0	1/0	77
MAY	62	31	44	3	14	2/0	63
JUN	60	30	19	52	5	2/0	78
JUL	62	31	14	123	5	2/0	144
AUG	62	31	0	52	75	3/0	130
SEP	60	30	28	34	128	0	190
OCT	40	13	101	6	0	0	107
NOV	0	0	68	3	0	0	71
DEC	0	0	35	0	0	0	35
TOTAL	376	167	472	279	227	10/0	988

Lead Times:

WFO SLC		
PRESCRIPTION	472	31.1*
WILDFIRE	279	28.9*
WILDFIRE USE	227	32.0*
SEARCH AND RESCUE	10	20.2
HAZMAT	0	00.0

* Inflated due to some requests submitted in the evening but not needed until the following morning.

Figures 1 and 2 are from NCDC showing the 2007 statewide ranking for temperature and precipitation. Figures 3 and 4 are also from NCDC and they show the regional deviations of temperature and precipitation in 2007. Finally, Fig. 5 is the Standardized Precipitation Index.

Fig. 1. Temperatures across the area were much above normal for 2007.

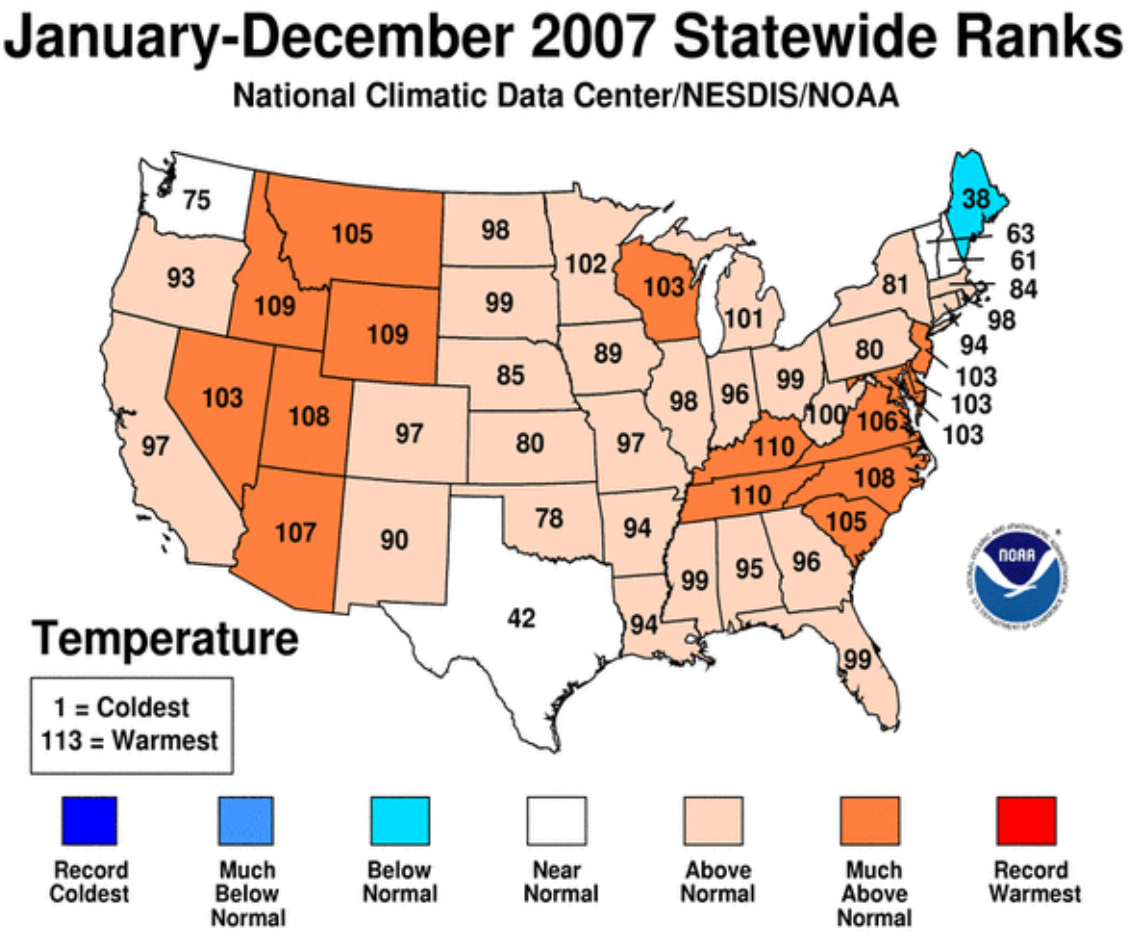


Fig. 2. As a whole, precipitation was below normal statewide.

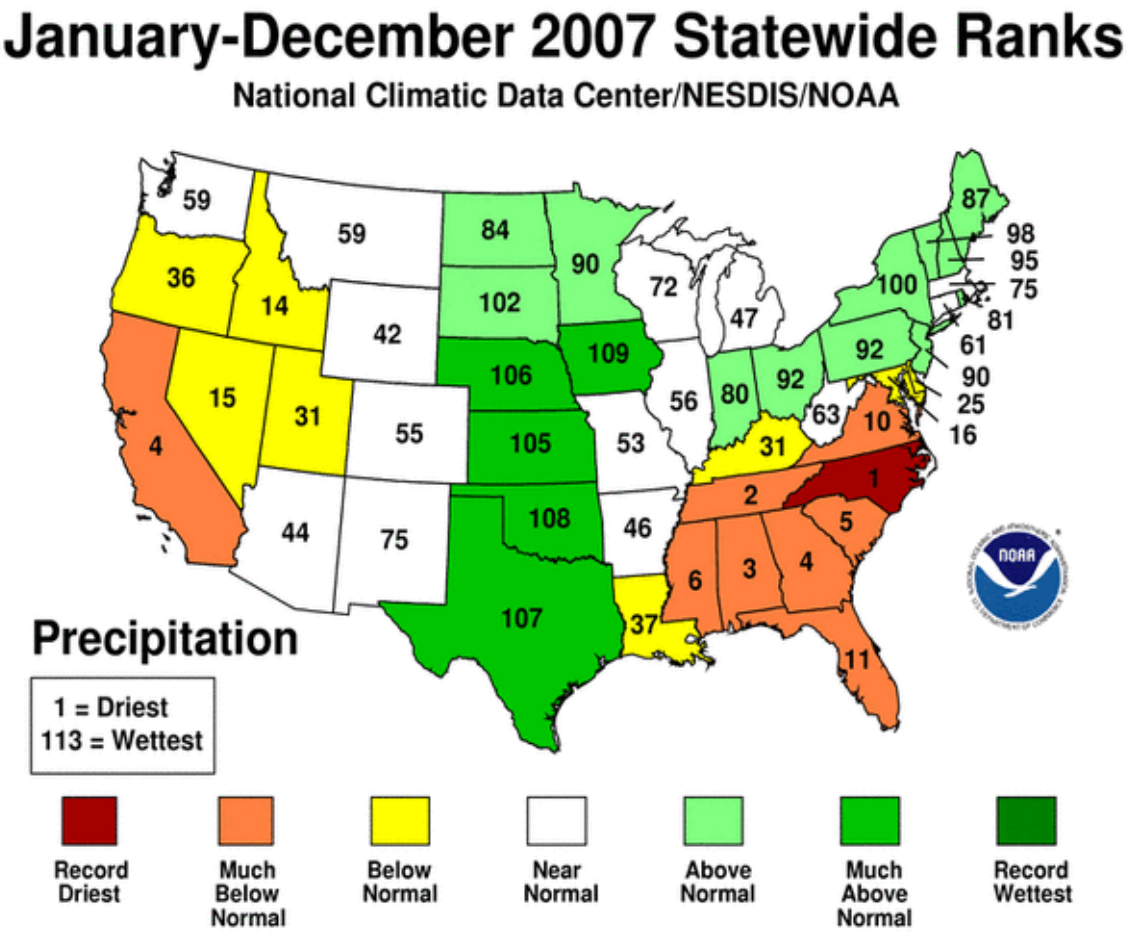


Fig. 3. Temperatures much above normal in 2007 across central and eastern portions of Utah, while the western valleys were above normal.

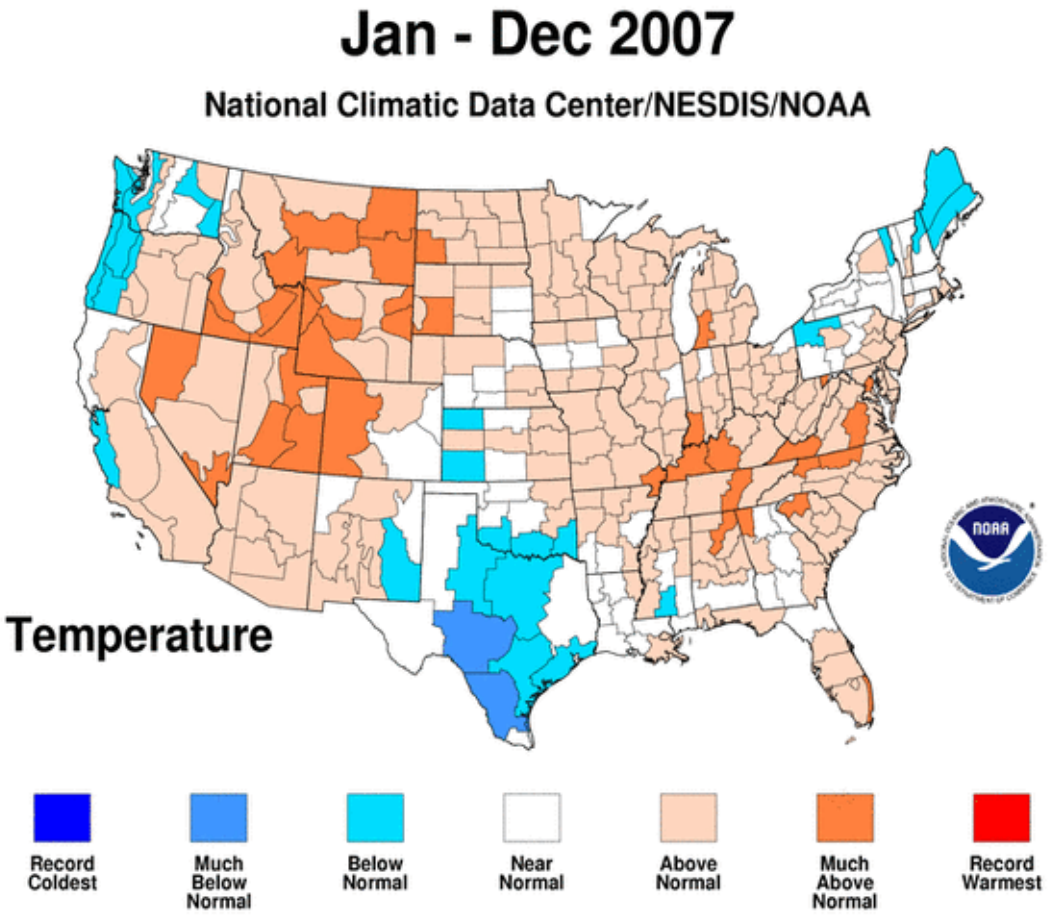


Fig. 4. Utah's 12 month precipitation varies from near normal in the southeast to much below normal over the western valleys.

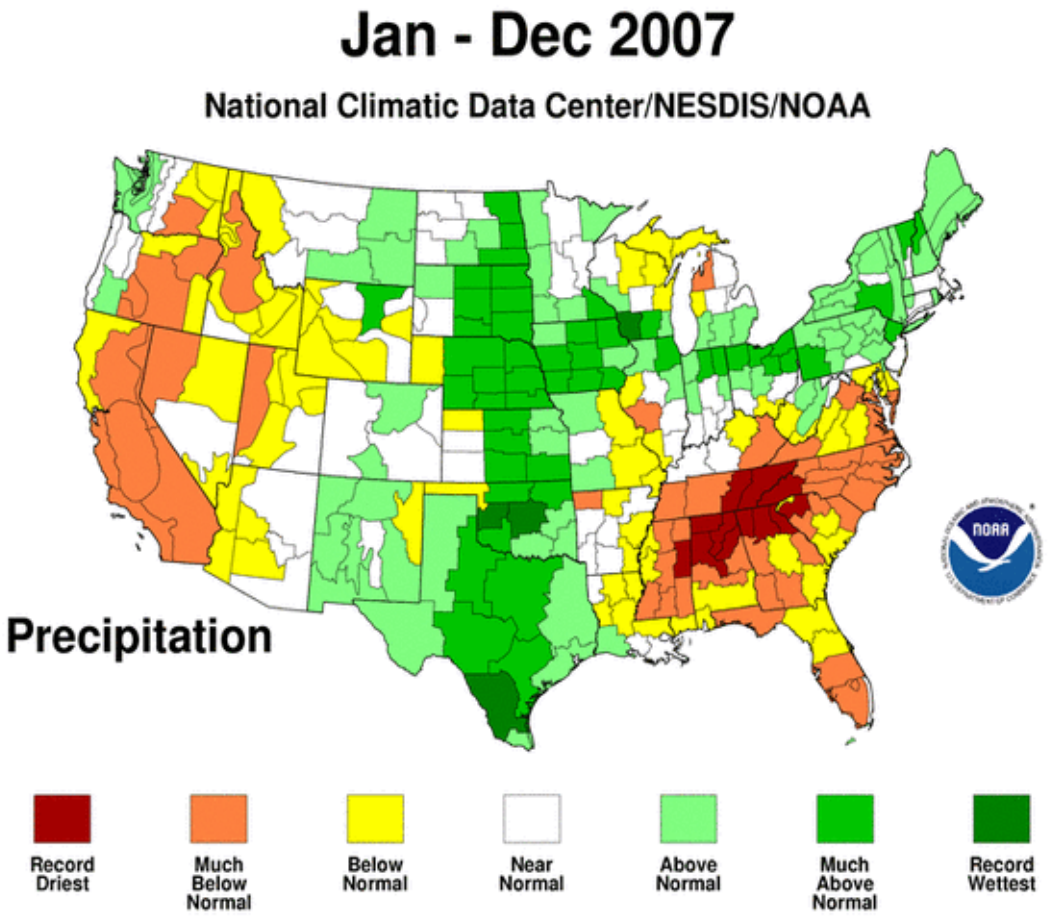


Fig. 5. Utah's Standardized Precipitation Index varies from near normal in the southeast to severely dry over the western valleys.