Frontier Weather
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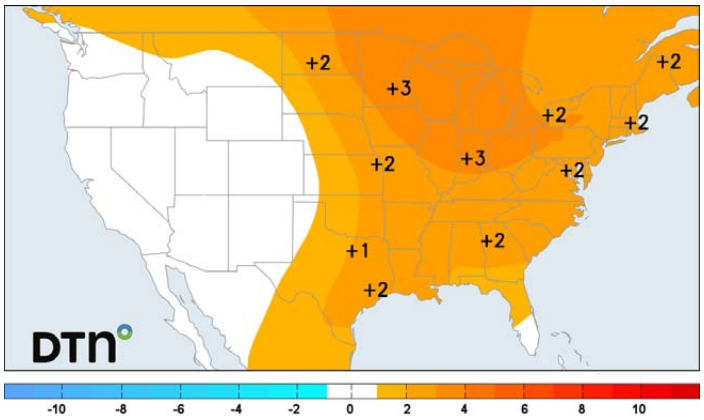
Forecast for Days 16-30

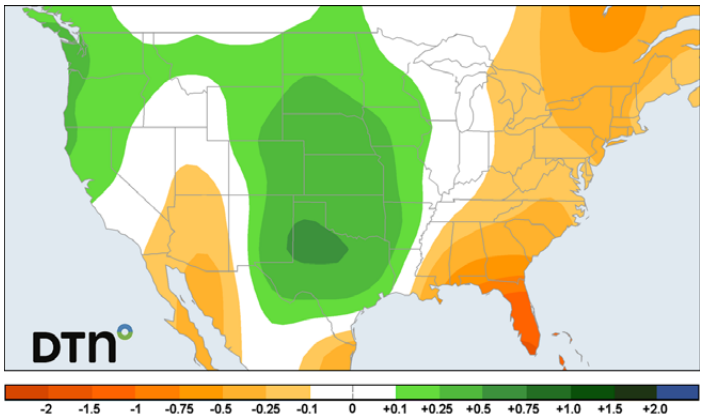
Issued: Tuesday September 12, 2023

Forecast Valid for Wednesday September 27 through Wednesday October 11

Temperature Anomaly (Degrees F)



Precipitation Anomaly (inches)



Forecast Gas Weighted HDD Totals

US gHDDs		
47.1	Last Year	90.9
	30 Yr Average	84.4
	Anomaly	-37.3

Forecast Population Weighted CDD Totals

US pCDDs		
48.9	Last Year	39.3
	30 Yr Average	51.8
	Anomaly	-2.9

Region	Forecast	30YR Avg	Anomaly	Last Yr
East	41.8	89.9	-48.1	128
Midwest	60.3	118.9	-58.6	133.3
Mountain	117.8	128.2	-10.4	85.2
Pacific	29.2	41.7	-12.5	14.5
South Central	2.7	20.7	-18	8.5

Region	Forecast	30YR Avg	Anomaly	Last Yr
East	48.8	51.5	-2.7	26.6
Midwest	7	19.3	-12.4	1.1
Mountain	49.5	54.4	-5	67.1
Pacific	21	33.6	-12.6	61.6
South Central	130.8	111.1	19.7	84.5

Forecast Notes and Reasoning

Temperatures should be above normal across the Central and Eastern US during the 16-30 day period. The strongest anomalies should be located across the Upper Midwest/Great Lakes. This pattern won't be known so much for generating CDDs as it will for not generating HDDs. That said, there are risks of 1-3 warmer days that could produce a few more CDDs than indicated. The reason for the warmer shift toward the East is the movement of MJO related tropical forcing through phase 6-7 during week three and potentially into phases 7-8 during week four. Week three should be the warmest period across the Upper Midwest/Great Lakes with the potential for a summer-like day or two. Analogs for MJO phase 6 show strong ridging across portions of central Canada through Hudson Bay. The guidance shows warmth biased north as well. The forecast will reflect that reality. Week four will depend on whether the MJO can reach phase 8 or not. If it does, which is what DTN is forecasting, ridging will push toward the East Coast of North America, especially across eastern Canada. This will allow the warmest air to be across the Northeast relative to normal. The ECMWF shows this idea very well. At the same time, analogs suggest a trough along the West Coast. The guidance is probably too warm in the West with that idea in mind, so the forecast is for more seasonable temperatures, closer to what MJO analogs might suggest. If the CFS is right, the forcing might not reach phase 8. If that is the case, more warmth will be observed in the Central US, especially the North Central states. The CFS model shows what might occur in that scenario. The MJO has struggled reaching phase 8, but the ECMWF/GEFS both show a strong enough signal to suggest it is the most likely scenario for now.

Above normal precipitation is expected across the Central US and the Northwest during the period. This could mean severe storm risks across the Plains/Midwest at times. Below normal rainfall should impact the East. There should be a relative lull in new tropical system generation across the tropical Atlantic later week two and probably into week three. Model guidance agrees that downward motion will impact the Atlantic basin through the end of September. This will slow down the surge of activity we have experienced lately. However, favorable upward motion should return to the basin during the first half of October. This should encourage tropical development to increase once more. If the MJO can reach phase 8 and ridging can develop across eastern Canada. This will leave the door open for increase risks of US landfall. If not, a trough near the East Coast will encourage re-curving storms to the north with reduced US landfall risks.

The next seasonal forecast report will be issued on Wednesday, September 13th.

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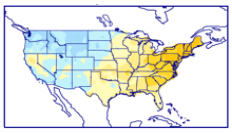
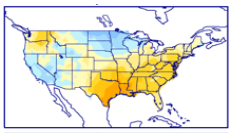
Forecast Indicators

Recent and Forecast MJO Trends with Temperature Analogs

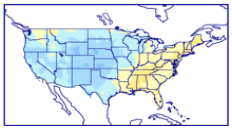
Phase 7
Aug-Oct Analogs



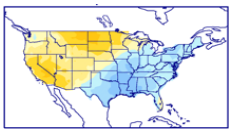
Phase 8
Aug-Oct Analogs

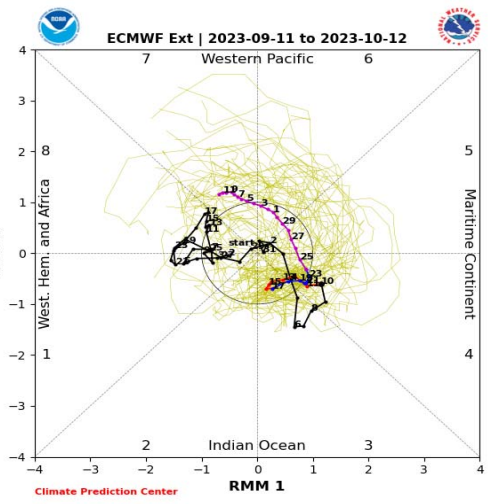


Phase 1
Aug-Oct Analogs

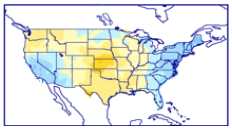


Phase 2
Aug-Oct Analogs

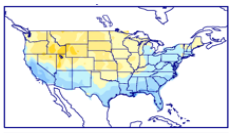




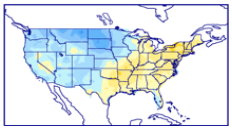
Phase 6
Aug-Oct Analogs



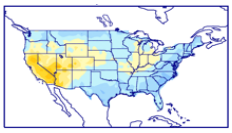
Phase 5
Aug-Oct Analogs



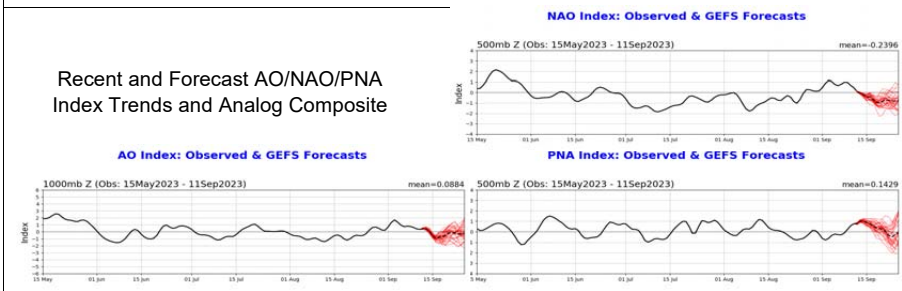
Phase 4
Aug-Oct Analogs



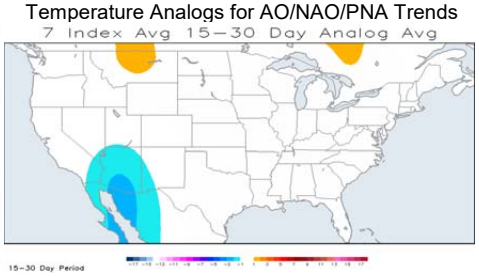
Phase 3
Aug-Oct Analogs



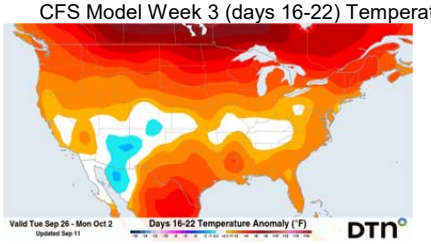
Recent and Forecast AO/NAO/PNA Index Trends and Analog Composite

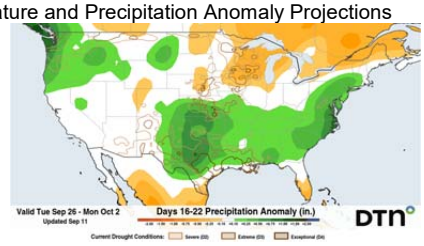


Temperature Analogs for AO/NAO/PNA Trends

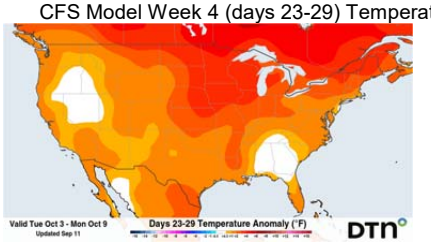


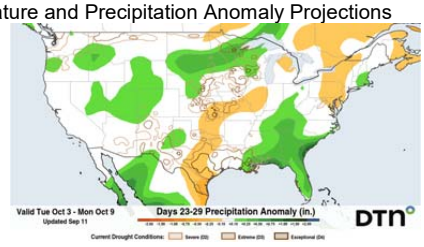
CFS Model Week 3 (days 16-22) Temperature and Precipitation Anomaly Projections



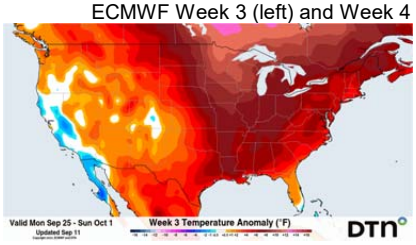


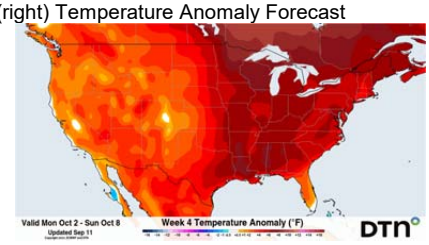
CFS Model Week 4 (days 23-29) Temperature and Precipitation Anomaly Projections



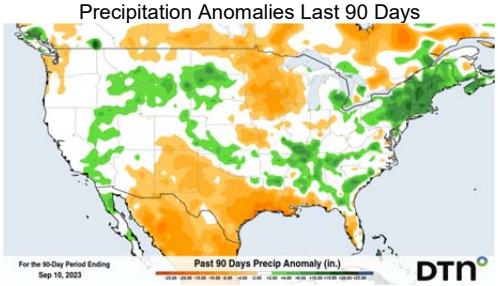


ECMWF Week 3 (left) and Week 4 (right) Temperature Anomaly Forecast

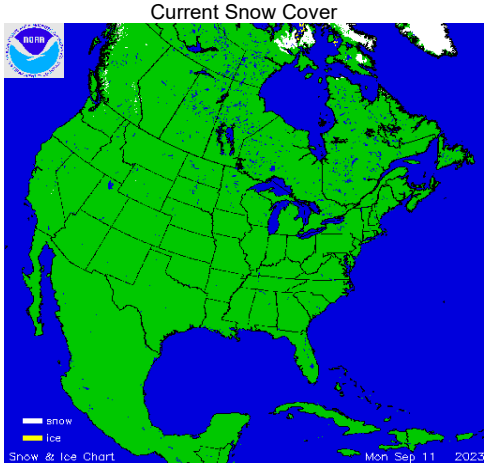




Precipitation Anomalies Last 90 Days



Current Snow Cover



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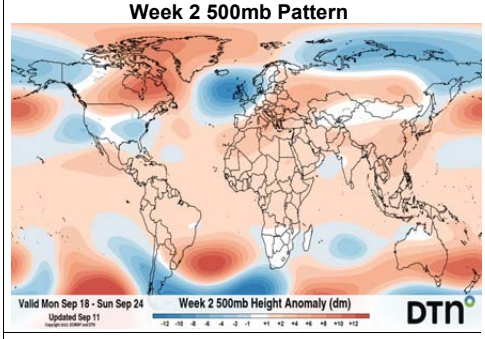
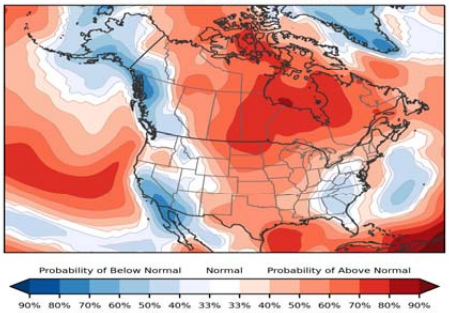
Pattern and Long-Range Forecast

Upper level ridging will expand across a good portion of Canada during week two. Ridging will extend southward into the Central US with a trough along the East Coast and West Coast. This ridging should consolidate across eastern Canada into the Eastern US during weeks three and four, progressively making it further east. A trough will gradually take over more of the Western US. The ridging will remain strongest in Canada, so the warmest temperature anomalies will be closer to the Canadian Border during weeks three and four.

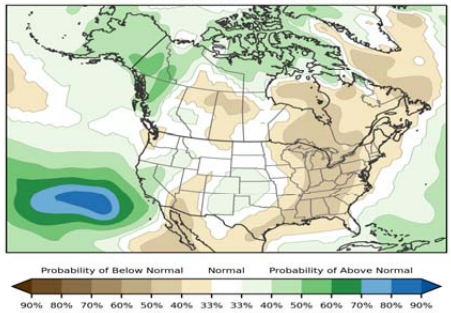
Week 2 500mb Pattern



naefs st-bc tmean probabilities
week2 forecast issued 20230911
valid 20230919 - 20230925

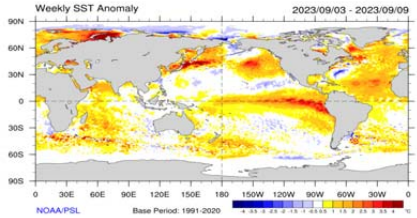


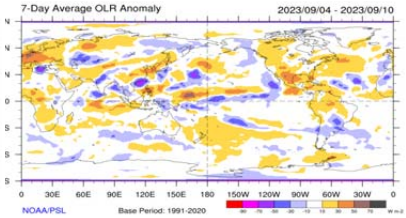
naefs raw precip probabilities
week2 forecast issued 20230911
valid 20230919 - 20230925



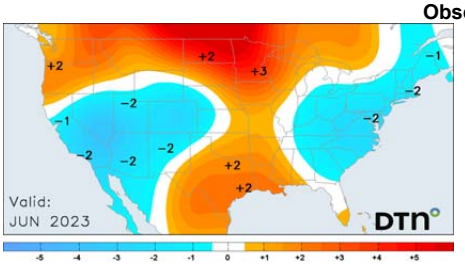
Six Month Climate Index Trends

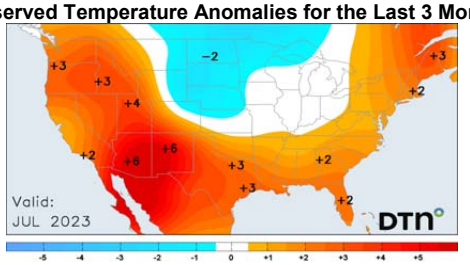
Index	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23
Nino 3.4	-0.01	0.19	0.47	0.88	1.07	1.3
SOI	0.3	0.4	-1.7	0.4	-0.4	-1.4
PDO	-1.667	-2.116	-1.608	-2.014	-1.746	
AMO						
QBO	10.93	12.89	9.26	0.72	-5.96	-9.88

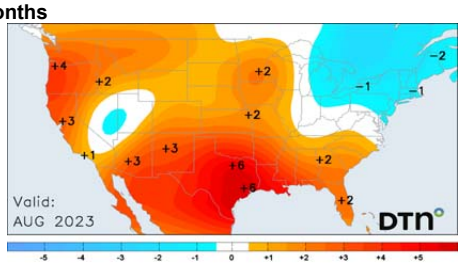




Observed Temperature Anomalies for the Last 3 Months





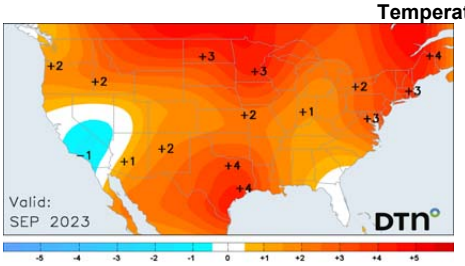


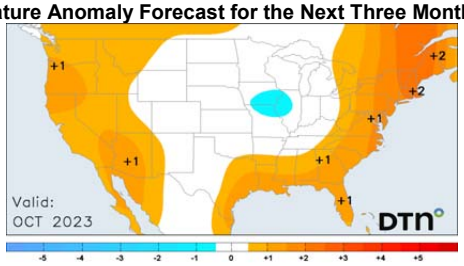
Degree Days for June 2023			
pCDDs	225	gHDDs	30
10 Yr Avg	268	10 Yr Avg	22
30 Yr Avg	234	30 Yr Avg	33
Last Year	280	Last Year	21

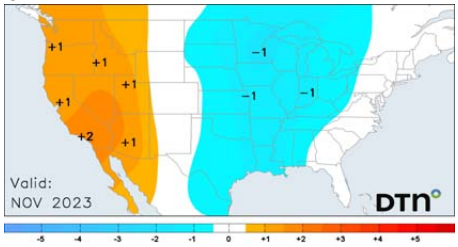
Degree Days for July 2023			
pCDDs	394	gHDDs	4
10 Yr Avg	377	10 Yr Avg	4
30 Yr Avg	343	30 Yr Avg	6
Last Year	408	Last Year	3

Degree Days for August 2023			
pCDDs	360	gHDDs	6
10 Yr Avg	346	10 Yr Avg	6
30 Yr Avg	316	30 Yr Avg	9
Last Year	369	Last Year	4

Temperature Anomaly Forecast for the Next Three Months







Degree Days for September 2023			
pCDDs	214	gHDDs	29
10 Yr Avg	219	10 Yr Avg	48
30 Yr Avg	175	30 Yr Avg	73
Last Year	218	Last Year	52

Degree Days for October 2023			
pCDDs	62	gHDDs	250
10 Yr Avg	81	10 Yr Avg	247
30 Yr Avg	60	30 Yr Avg	287
Last Year	59	Last Year	264

Degree Days for November 2023			
pCDDs	13	gHDDs	559
10 Yr Avg	20	10 Yr Avg	548
30 Yr Avg	16	30 Yr Avg	556
Last Year	26	Last Year	549

All monthly degree days shown in these tables use weights similar to NOAA's values. These values will differ from some of our other degree day products that use our own weighting schemes.