

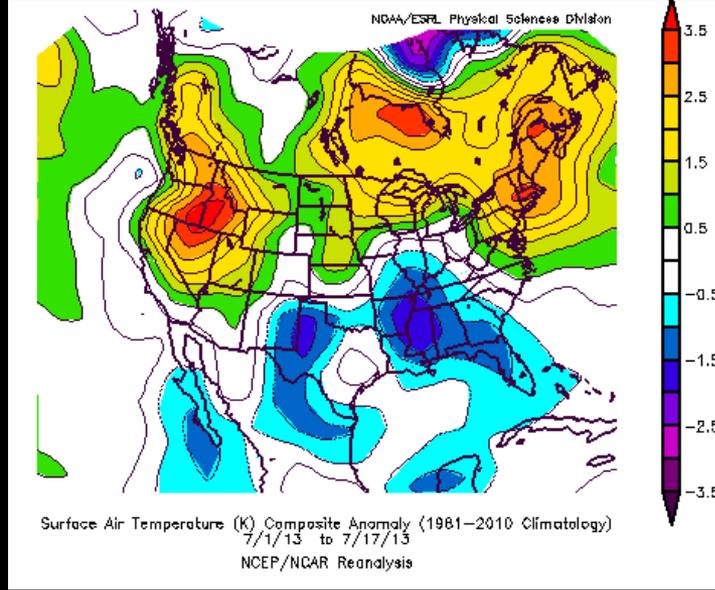
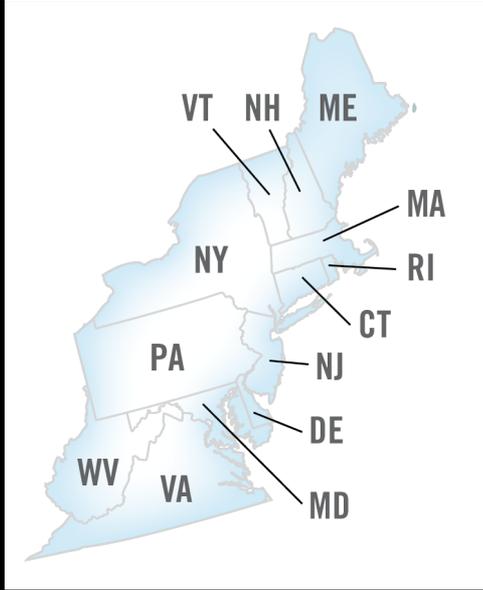


EarthRisk
Technologies

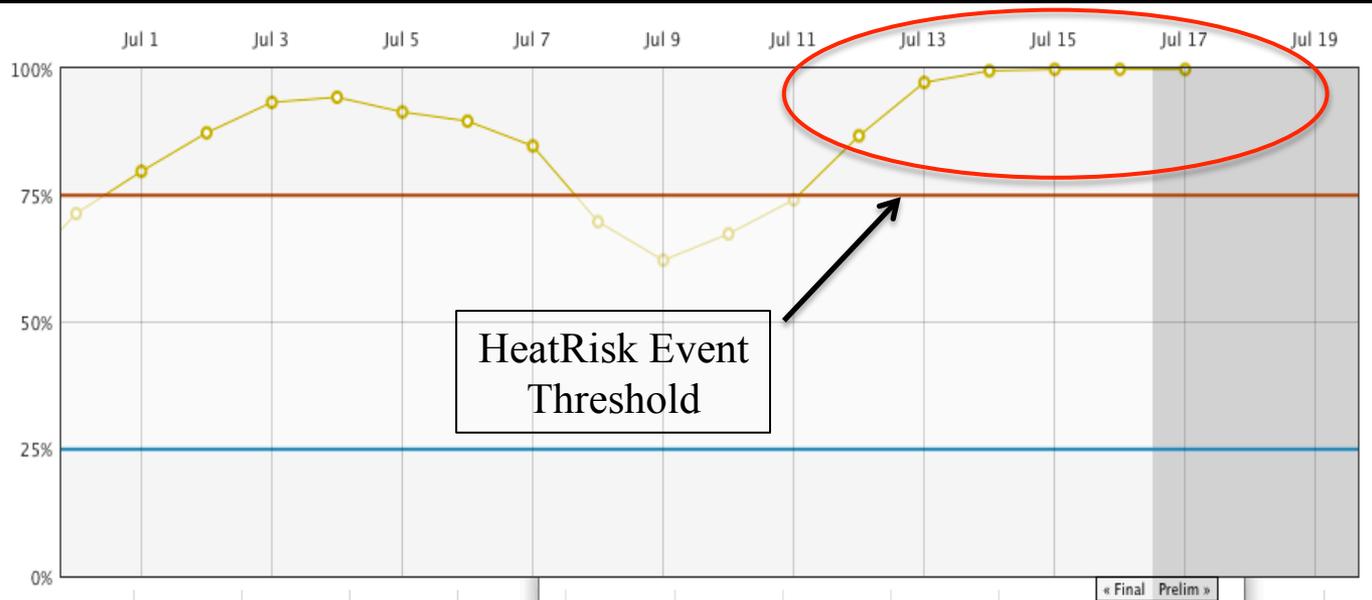
East US July 2013 Heat



East US Heat

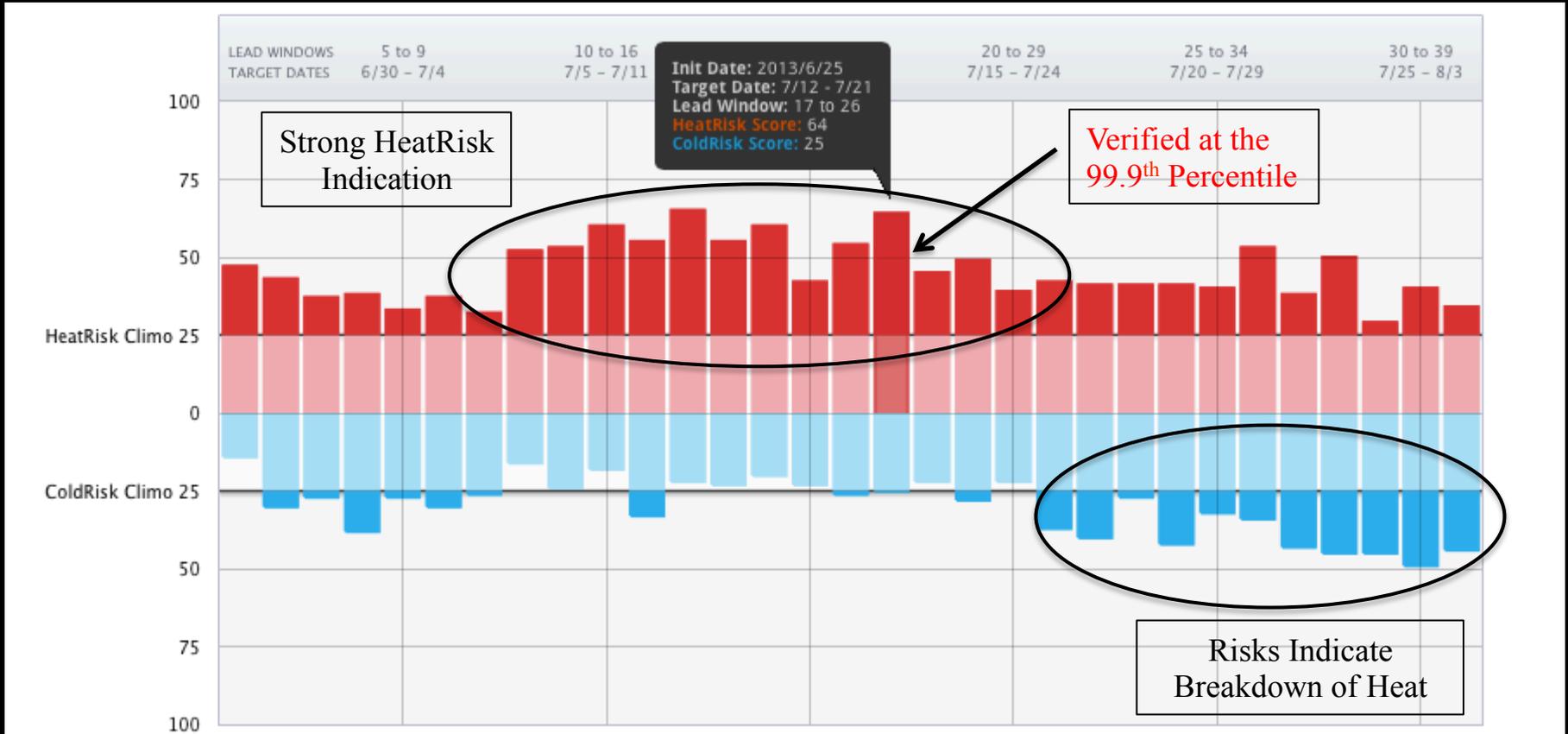


The East US region has endured persistent **heat** throughout July, supported by the Atlantic ridge being displaced over the Northeast US.



Looking at the 5-day average TempRisk Index (left), the period from July 15-19 has registered at the **99.8th percentile** of events, which is nearly the warmest period over the last 60 years.

TempRisk Ensemble June 25 Initialization



Late June TempRisk forecasts gave a strong indication of a potential **heat event** for the East US over the first three weeks of July, with limited risks for significant cold. The June 25 initialization showed the strongest potential for **HeatRisk** during the June 5-20 period, with the highlighted window *verifying* at the **99.9th percentile** of heat events. *TempRisk not only forecasted the heat, but also indicated the potential for the heat to break during late July, which started around July 21.*

NOTE: surrounding initialization dates also showed elevated risks for a HeatRisk event although the June 25 initialization featured the strongest HeatRisks for early-mid July.

TempRisk Pattern Driver

UWIND200 -8, 5 DAY MOVING AVERAGE, MAY-JUN-JUL

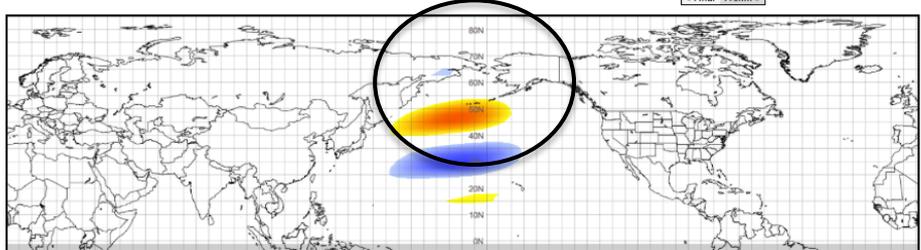
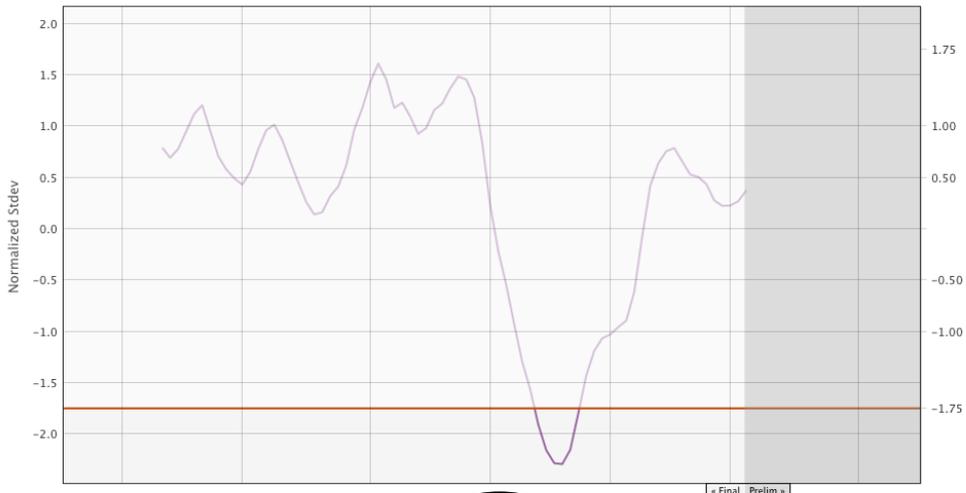
2013/04/23 thru 2013/08/08

[reset zoom](#)

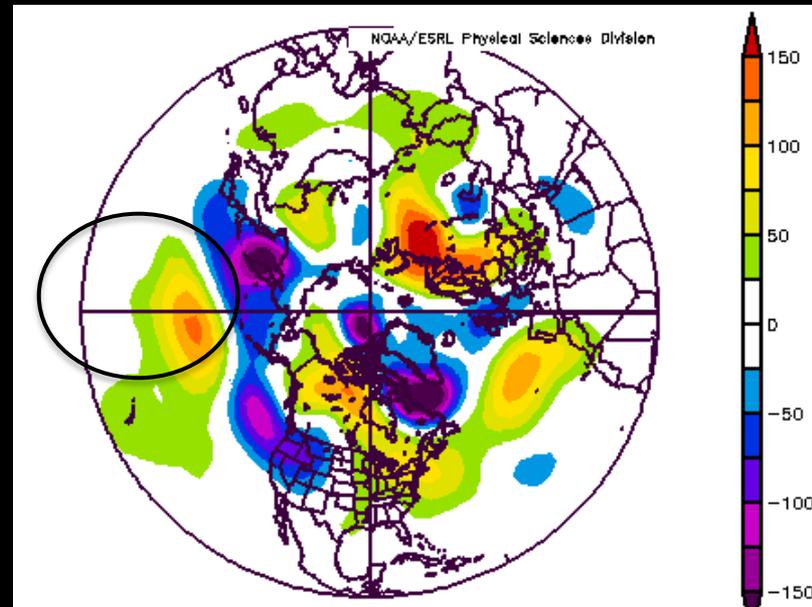
Lead Window 17 - 26

Lead Window	ColdRisk	HeatRisk
17 - 26	-0.50 (NS) -1.00 (NS) -1.75 (NS)	-0.50 (NS) -1.00 (NS) -1.75 (42%)

May 1 May 16 Jun 1 Jun 16 Jul 1 Jul 16 Aug 1

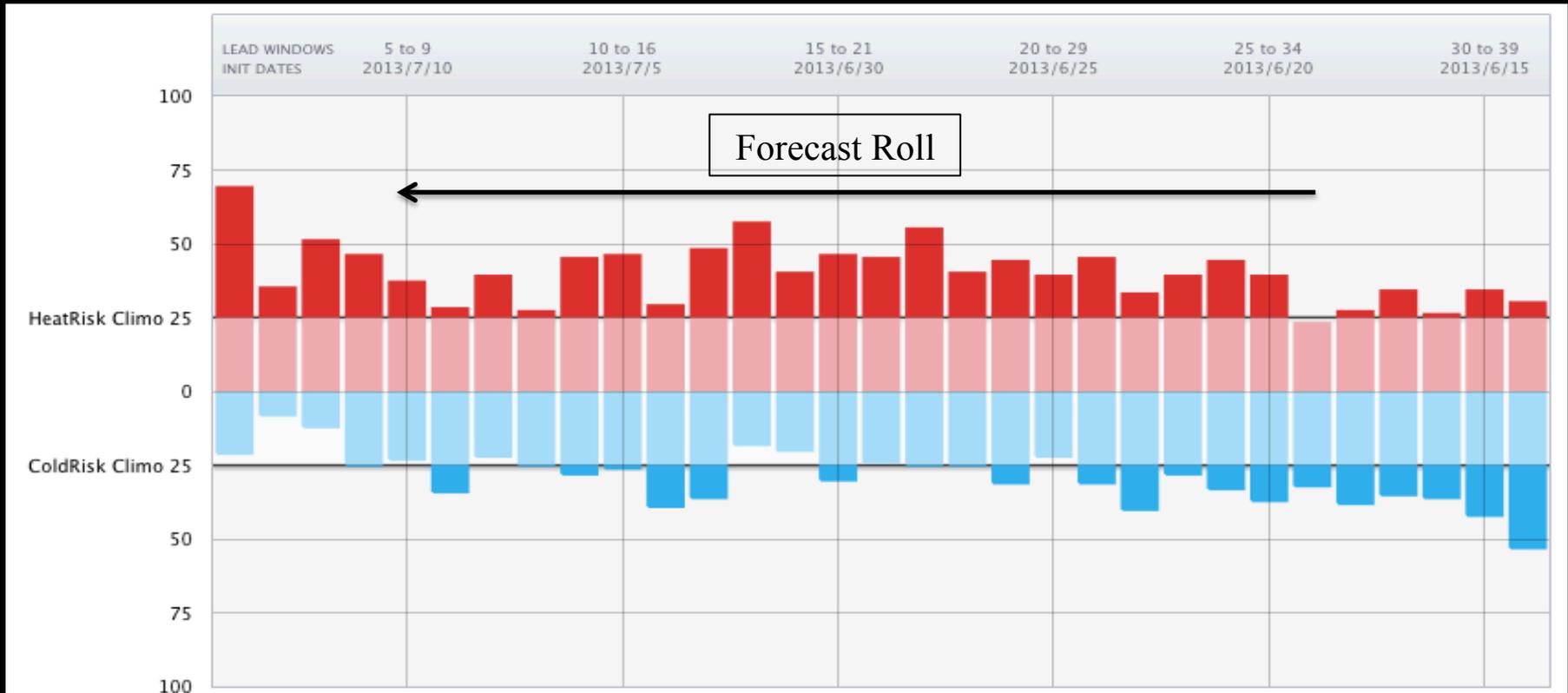


TempRisk's pattern recognition captured 200mb air flow associated with the large anticyclone over the Pacific Ocean, peaking on June 25 with a strength of 2.3 Stdev. This signal was one of many captured by TempRisk, and was indicating a 42% chance of **significant heat** over the East US during July 12-21.



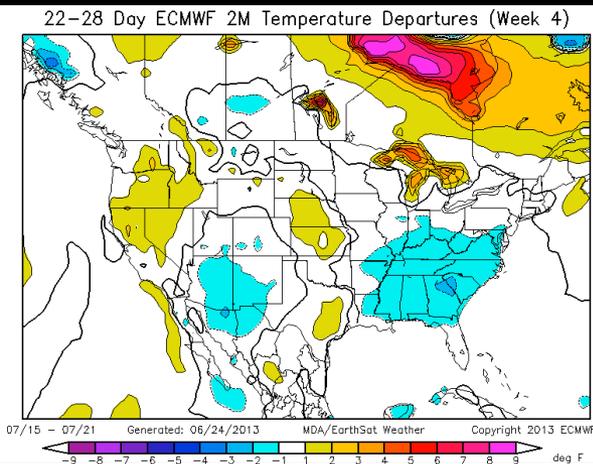
500mb Geopotential Height (m) Composite Anomaly (1981-2010 Climatology)
6/21/13 to 6/25/13
NCEP/NCAR Reanalysis

Locked Target Evolution (July 15)

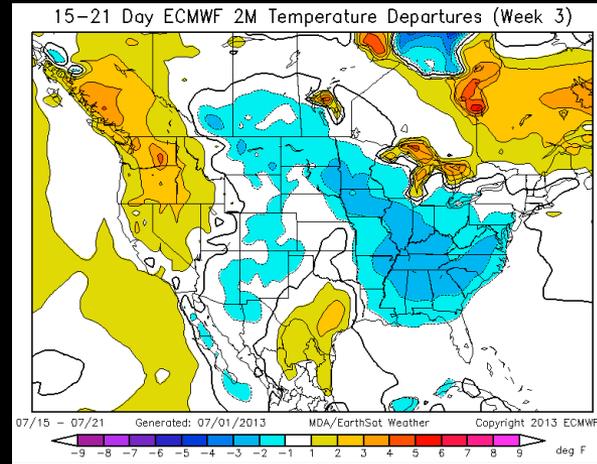


Using a locked evolution view (forecast roll) for target date July 15 (i.e., all forecasts made for the lead window starting on July 15), there had been a persistent **HeatRisk Skew** ($\text{HeatRisk Score} - \text{ColdRisk Score} > 15$) starting four weeks prior (with a couple of exceptions in the 6 to 15 day period). The persistence of the **HeatRisk** probabilities across multiple initializations led to enhanced and early confidence. Preliminary EarthRisk research suggests that persistent risks are more likely to verify.

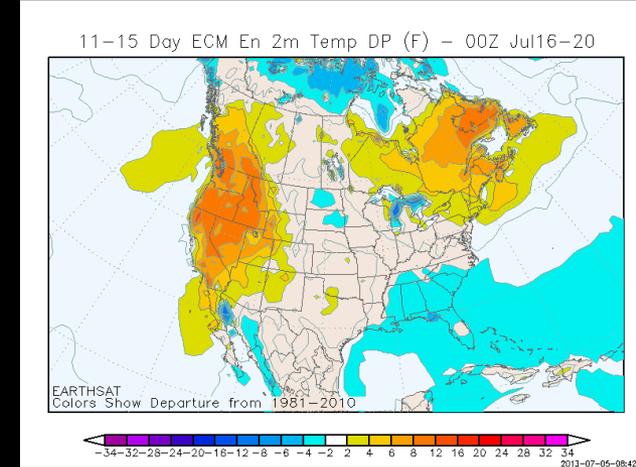
Leveraging TempRisk with Numerical Guidance



Week 4



Week 3



11-15 day

- ECMWF Week 3 and 4 forecasts were indicating Normal to Slightly Below for July 15-21, far from the verified **HeatRisk (99.9th percentile)**
- ECMWF Ensemble 11-15 day forecasts for July 16-20 showed anomalies of **Above**
- *Using TempRisk would have given a lean on how the forecasts rolled from Week 4 to days 11-15, and enhanced confidence once the model went warm*

Takeaways

- The first three weeks of July verified in the **top 10% of heat events** across the East US, with the week of July 15-21 verifying at the **99.9th percentile**
- TempRisk Ensemble gave strong indications of prolonged **heat** during late June initializations (3-4 week lead time)
- TempRisk Ensemble preceded the shift warmer in the ECMWF guidance, giving enhanced confidence once the models ‘caught the heat’
- TempRisk Ensemble also gave indications that the probability of significant heat decreased markedly toward the end of July

Contact Us

The 2013 summer as a whole (May-July) over the East has been highly variable (see figure below), with brief periods of significant heat and cold. The strong and persistent heat during July has been the most robust temperature event of the season and was chosen for deeper analysis by customer request. Please contact us for more information and a comprehensive report for the full summer season.

TempRisk Indices: East US (May-July)

