Pattern Briefing

...Above normal heating demand to wane as we approach the end of March and April...

Heating demand is expected to undergo a peak for the final time this cold season over the next few days, lasting through around the 17th and 18th of the month. After this cold period, which has been well advertised, guidance is in great agreement that high latitude blocking will dissipate and the Pacific Jet will become dominant once again. This should lead to the risk of milder weather across the Central and Eastern United States from March 20th onward, with the potential for near or below normal heating demand taking over nationally. The GFS and ECMWF EPS have both trended toward this overall evolution over the past several runs, with both now indicating slightly below normal heating demand after 3/22.

Trend Analysis

The ECMWF EPS trended warmer nationally during the medium and longer term, especially during the period from March 25th onward in response to a more notable Pacific Jet and the potential for significant warmth in parts of the East. While we aren’t anticipating widespread or anomalous warmth at this time, it does appear increasingly likely that demand will run below normal from 3/22 onward.

GWHDD Model and Data Trends

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<tr>
<th>DATE</th>
<th>EPS</th>
<th>EPS-1</th>
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Trend Analysis (continued)

Both guidance suites continued to trend more impressively with a flip from above normal heating demand back toward below normal demand from March 20th onward, as we have been discussing for quite some time. The warmth nationally appears likely to lead to a major decrease in demand, even despite the steadily falling 10/30 year averages.
Pattern Briefing

A gradual pattern change still appears likely on all model guidance and fits well within the analog set we have compiled for this Spring. Fluctuating temperatures will remain in control for the next several days as the pattern oscillates nationally. Temperatures will turn colder toward the very end of March for a few days, with a bit of a spike in heating demand during that time. Thereafter, a national warmup is anticipated as we move into early April. It remains to be seen exactly how widespread or intense this warmup will be, but at the very least it appears likely that heating demand will fall below normal as we move into the first - and especially the second - week of April.

Hazards Overview

<table>
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<tr>
<th>Hazard</th>
<th>Severity</th>
<th>Period</th>
<th>Region</th>
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<td>Notable</td>
<td>4/04 - 4/11</td>
<td>Central/Eastern US</td>
<td>HDD ↓↓</td>
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<td>Warm Risks</td>
<td>Notable</td>
<td>4/11 - 4/20</td>
<td>Central/Eastern US</td>
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</table>
Discussion & Thoughts

Overnight ensemble (and operational) model guidance trended toward a much more significant storm system developing in New England and into the Gulf of Maine during the tail end of this week and into the weekend. The resulting mid and upper level atmospheric flow changes are significant in the Eastern United States. Most notably, troughing remains persistent in those regions and another storm threat evolves during the early part of next week as well.

Storm-modulated cold is therefore expected to continue in these regions, leading to rising heating demand nationally - with steadily above normal HDD numbers continuing through at least 3/26. At that point, temperatures may begin to moderate and heating demand may fall back toward normal values as we approach the very end of the month.
Key Points

Week 1 (March 25-31) gained a few HDD overnight, with some brief warmth pushing into the Plains. In week 2 (April 1-7) we observed colder overnight changes with the EPS gaining 9 HDD, centered on the Mid-Continent. Warmer risks have trended less impressive to end the month as more cold dumps into the Plains. Warmest risks into April appear to be in the East and northern tier of the USA.
Mid-Continent drier risks will trend in the wetter direction by this week (March 25-31) with the exception of the northern Plains. Week 2 (April 1-7) will allow for moisture to return to the Plains over time, spreading into the East as well.
Week 1 | 3/22/2019 - 3/28/2019

Trends among model guidance now strongly favor the development of a more significant storm system throughout New England during the next 4 to 5 days. This is a notable development not only for regional impacts but for heating demand, as the entire mid level atmospheric flow is adjusted. Colder than normal air is now expected across those regions through the majority of this period. The ECMWF EPS suggests temperatures may average several degrees below normal.

This will lead to above normal heating demand nationally, with a reduced Southeast Ridge and below normal temperatures in many key regions.

Updated: 3/20/2019

<table>
<thead>
<tr>
<th>GWHDD West</th>
<th>GWHDD Central</th>
<th>GWHDD East</th>
<th>GWHDD National</th>
<th>GWHDD Confidence</th>
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<tbody>
<tr>
<td>Above Normal</td>
<td>Near Normal</td>
<td>Above Normal</td>
<td>Slightly Above Normal</td>
<td>Moderate</td>
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</table>
Warmth should again become more prevalent nationally as we move into the early part of April, especially in the Eastern United States. A positive NAO and decreasing high latitude ridging should allow Pacific air to flow more freely into the United States in general during this time frame.

Heating demand, while becoming much less notable on 10/30 year averages nationally during this time anyway, is expected to run near nationally as a result of the warmer pattern. An inverted temperature profile appears possible nationally, with colder risks across the Southern Plains, Plains Southeast with warmer air dominating further north in the Great Lakes and New England later in the period. Updated: 3/25/2019

<table>
<thead>
<tr>
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<td>Above Normal</td>
<td>Above Normal</td>
<td>Slightly Below Normal</td>
<td>Slightly Below Normal</td>
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The expectation is that warmth will gradually become more prevalent during this time frame, particularly across the Northern and Eastern ⅓ of the country. However, colder air may linger in much of the Central United States as a result of a stubborn pattern in the Pacific Ocean and Western Canada.

Cooler air is expected to remain persistent in parts of the Upper Plains, Intermountain West and occasionally sink southward into parts of the Plains States. Meanwhile, gradually more notable ridging will appear in the Eastern United States - including the Southeast - which will help keep heating demand below normal.

**Updated:** 3/25/2019
The weather pattern will undergo a large-scale adjustment during the month of March, especially during the second half. However, the first half of the month is still very likely to be anomalously cold. Temperatures should average well below normal across the Northern ⅓ of the United States, particularly in the Plains and in the Great Lakes as well. This cold will leak eastward into the Northeast United States as well.

The change in the pattern during the middle of the month will be marked, and will likely feature the introduction of warm air into the Central and Eastern United States. This will lead to adjusting temperature anomalies across the Southeast and Eastern United States, with above normal temperatures during the second and third weeks of the month.

Updated: 03/06/19
## Temperature Anomaly Matrix

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**Last Updated:** 7:00am CST 3/25/2019 | **Forecaster:** Homenuk