

Arctic Oscillation and Polar Vortex Analysis and Forecasts

October 26, 2026

Dr. Judah Cohen from Atmospheric and Environmental Research (AER) embarked on an experimental process of regular research, review, and analysis of the Arctic Oscillation (AO) and Polar Vortex (PV). This analysis is intended to provide researchers and practitioners real-time insights on one of North America's and Europe's leading drivers for extreme and persistent temperature patterns.

During the winter schedule the blog is updated once every week. Snow accumulation forecasts replace precipitation forecasts. Also, there is renewed emphasis on ice and snow boundary conditions and their influence on hemispheric weather. In late Spring, we transition to a spring/summer schedule, which is once every two weeks. Snow accumulation forecasts will be replaced by precipitation forecasts. Also, there will be less emphasis on ice and snow boundary conditions and their influence on hemispheric weather.

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Summary

- The Arctic Oscillation (AO) is currently positive as pressure/geopotential height anomalies across the Arctic are currently mostly negative and the AO is predicted to trend negative the next two weeks as pressure/geopotential height anomalies are predicted to become increasingly mixed to positive the next two weeks. The North Atlantic Oscillation (NAO) is currently positive with mostly negative pressure/geopotential height anomalies across the mid-latitudes of the North Atlantic, and the NAO is predicted to trend negative the next two weeks as pressure/geopotential height anomalies are predicted to become mixed to mostly positive across Greenland the next two weeks.
- The next two weeks predicted ridging/positive geopotential height anomalies widespread across Europe this week will consolidate near Scandinavia next week favoring troughing/negative geopotential height anomalies initially limited to Southeastern Europe to expand across much of Southern and Central Europe. This pattern will favor normal to above normal temperatures widespread across most of Europe including the United Kingdom (UK) except for normal to below normal temperatures in the Balkan States and Turkey this week. However next week temperatures will become increasingly normal to below normal across much of Europe including the UK except for normal to above in Scandinavia and the Iberian Peninsula.
- The next two weeks predicted ridging/positive geopotential height anomalies across the

Urals, Barents-Kara Seas and Scandinavia will favor troughing/negative geopotential height anomalies across Siberia and Northeast Asia. This pattern favors widespread normal to above normal temperatures across Western and Southern Asia with normal to below normal temperatures across Siberia and into Northeast Asia the next two weeks.

- Over the next two weeks ridging/positive geopotential height anomalies is predicted to dominate North America with the exception of troughing/negative geopotential height anomalies in Western Canada, the Western United States (US) and New England this week and mostly just the west coasts of Canada and the US next week. This pattern will support widespread normal to above normal temperatures across much of Alaska, Canada and the US with the exceptions of normal to below normal temperatures limited to Western and far Eastern Canada, New England and the Western US this week and then mostly just the US West Coast next week.
- We have an unprecedentedly early large polar vortex (PV) disruption predicted for early November. Below I discuss how it can impact Northern Hemisphere (NH) weather in the coming weeks and maybe even months. Also, more thoughts on the usefulness of Siberian snow cover extent as a predictor of winter weather.

Plain Language Summary

The widespread warmth across the Northern Hemisphere (NH) this past summer and now the fall has continued into October (see **Figure**). However, a series of stretched polar vortex (PV) this month has led to some, albeit modest cooling in Siberia, East Asia and to an even lesser extent far Eastern Canada and New England (see **Figure**). However, one last stretched PV will bring more intense cooling to Siberia and East Asia and yet again more modest cooling to far eastern Canada and New England (see **Figures 3 and 6**). Some blocking in the North Atlantic and near Scandinavia will also bring colder temperatures to Europe (see **Figure 9**). But all eyes then turn to a much larger disruption of the PV that is likely to have an important influence on NH weather late November into December.

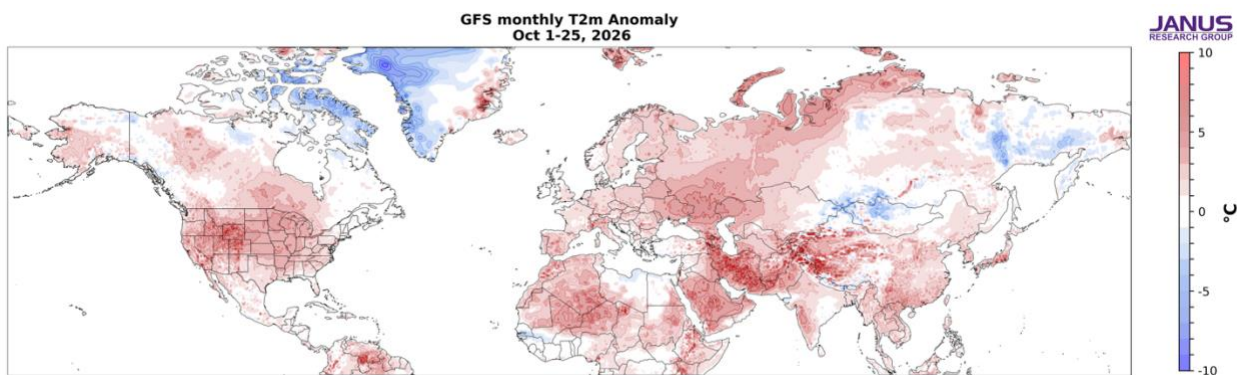


Figure. Estimate of the observed surface temperatures (°C; shading) from 01 Oct to 25 Oct 2026 based on GFS initializations and the GFS forecast from the 13 Oct 2026 run.

Impacts

I will spend most of the Impacts section discussing what is looking increasingly an unprecedented weak polar vortex (PV) for early November but a quick clarification about the super El Niño. I do believe that the super El Niño favors an overall mild winter for North America, especially eastern North America. The main reason because we have had a total of three super El Niños in the observational record and they all produced an overall mild winter. In fact, if my recollection is correct, all strong El Niños and La Niñas have produced relatively mild winters in the Eastern US. So maybe a more comprehensive conclusion is that all strong ENSO events favor a relatively mild winter in the Eastern US. But this certainly doesn't preclude more wintry periods that can even last multiple weeks. Where I think that I differ from most forecasters, I don't think an overall mild winter is a foregone conclusion. And today's blog is mostly about how uncertain the forecast is probably through the end of the year if not beyond.

Snow Forced Cold Signal

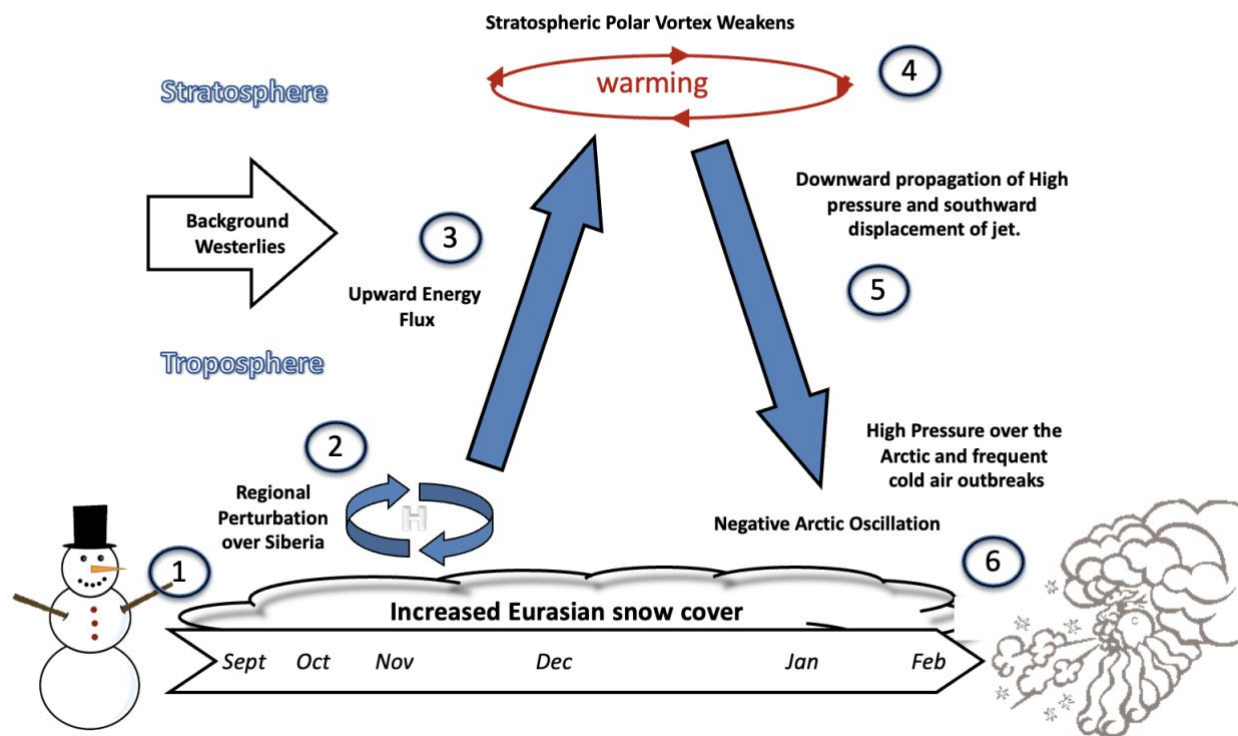


Figure i. Conceptual model for how fall snow cover modifies winter circulation in both the stratosphere and the troposphere; case for extensive snow cover illustrated: 1) Snow cover increases rapidly in the fall across Siberia. When snow cover is above normal. 2) diabatic cooling helps supports a westward expansion of the Siberian high (also supported by reduced sea ice in the Barents-Kara Seas) and leads to below normal temperatures across Siberia. 3) High pressure in proximity and to west of the high topography of Asia increases upward flux of wave activity flux (WAF) from the troposphere, which is absorbed in the stratosphere. 4) Strong convergence of WAF leads to higher geopotential heights, a weakened polar vortex, and warmer temperatures in

the stratosphere. 5) Zonal mean geopotential height and wind anomalies propagate down from the stratosphere into the troposphere all the way to the surface. 6) Dynamic pathway culminates with strong negative phase of the Arctic Oscillation at the surface.

This might be a record early for the blog but I start with the six-step model of how above normal October Siberian snow cover extent can force a PV disruption/sudden stratospheric warming followed by a period of high latitude blocking, a negative AO (though not necessarily) and a period of severe winter weather (potentially weeks in duration) in three preferred regions but rarely simultaneously – East Asia, Europe and the US (typically east of the Rockies) shown in **Figure i** and is taken from [Cohen et al. 2007](#). Siberian snow cover was slightly above normal and I did not think initially it necessarily favored triggering the six step process but snow cover in November advanced more robustly across Eurasia and with the predicted Rex block (high pressure to the north and low pressure to the south) across Siberia is favorable for heavy snowfall across Siberia. I would argue heavy snowfall across Siberia coupled with low sea ice in the Barents-Kara Seas this October has been favorable for initiating and maintaining step two - the northwestward expansion of the Siberian high into the Urals/Scandinavian region that is often referred to as Ural/Scandinavian blocking. We have observed strong Ural/Scandinavian blocking this month and likely to persist into November, though the high heights/pressures will likely weaken as WAF becomes more active.

The third step is the initiation of positive anomalous Wave Activity Flux in the vertical direction (or z coordinate; WAFz). WAFz is the vertical transfer of energy from waves in the atmosphere and is directly proportional to the poleward transport or advection of heat. Only the largest or Rossby waves (wavenumbers 1-2) across the Northern Hemisphere (NH) produce energy strong enough to escape the troposphere into the stratosphere. When the vertical energy is absorbed in the polar stratosphere it leads to warming of the polar stratosphere or a weakening of the stratospheric PV. If it is of sufficient amplitude, it will result the fourth step of the model or in a sudden stratospheric warming (SSW). A major SSW is defined as the reversal of westerly to easterly winds at 10hP and 60°N. A minor SSW is defined as where there is no wind reversal but there is a rapid rise in the temperatures in the polar stratosphere of at least 25°C in less than a week. **It is important to remember that during steps 3 and 4 it is mild often very mild in the Eastern US.** It may turn cold in the Eastern US when step 6 happens but It may remain mild. This is very important to keep in mind for this upcoming winter.

When an SSW occurs, the PV vacates its perch near the North Pole and besides being anomalously warm across much of the polar stratosphere, the vacuum created by the absence of the PV center is filled by relatively high pressure. Meanwhile across the mid-latitudes anomalous low pressure occurs and in the most extreme cases the PV center itself will reach into the mid-latitudes accompanied by relatively cold temperatures. In addition, the belt of strongest zonal (west to east) winds is shifted south or equatorward. The fifth step is the downward propagation of the circulation anomalies from the stratosphere to the troposphere and ultimately to the surface. The climax or culmination of the whole event is relatively high pressure in the Arctic coupled with anomalous warmth, relative low pressure in the mid-latitudes, especially in the ocean basins and an equatorward shifted Jet Stream. A southward

shifted Jet Stream increases the probabilities of both cold air outbreaks and snowstorms across the mid-latitude continents including Europe, East Asia and the US east of the Rockies. It can be in one or two of those regions but rarely all three.

Sometimes I will refer to the six-step model or process in a more abbreviated three step troposphere-stratosphere-troposphere (T-S-T) coupling event with a troposphere precursor (same as step two in **Figure i** or Ural/ Scandinavian blocking) followed by a stratospheric PV disruption (same as step four or an SSW) and culminating with an extended period of high-latitude blocking/negative AO (same as step six). And regardless if you accept the importance of snow cover initiating this pathway, I think it is almost universally accepted with maybe snow cover substitute with your pet boundary forcing – sea ice, ENSO, MJO etc. And again regardless of how much you accept the role of snow cover this model should be extremely informative observing and anticipating stratosphere-troposphere coupling in the coming weeks and maybe even months.

Before anyone jumps all over me about what was the cause and effect, Ural blocking or snow cover advance, the time lapse between the two is so condensed, I agree that we have a chicken and egg question here and for what comes next, it is mostly academic of whether the snow forced the Ural blocking or the Ural blocking forced the snow. More likely it is a symbiotic relationship.

Initialized 00Z 500 hPa HGT/HGTa 26-Oct-2026

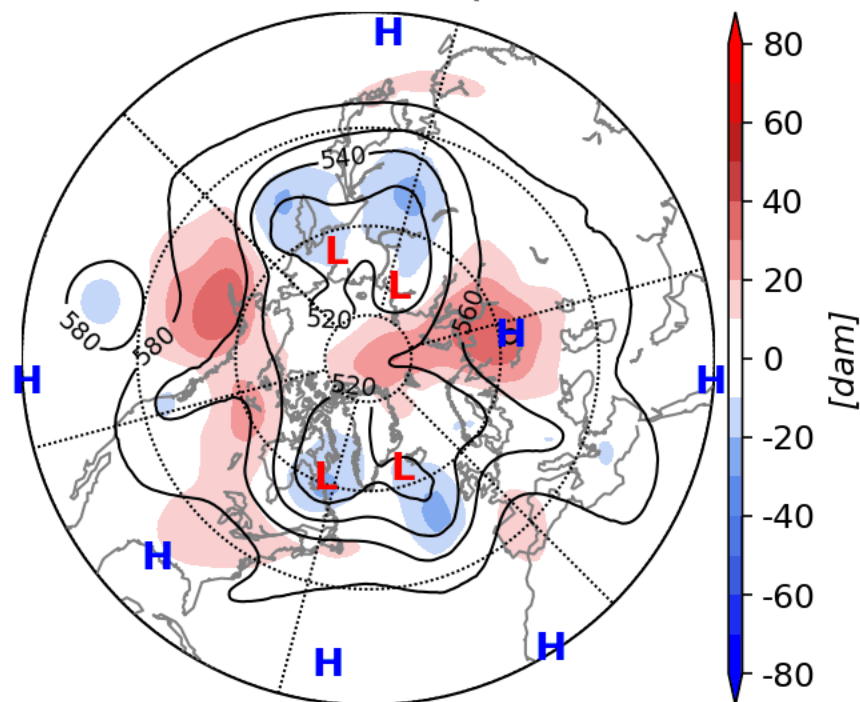


Figure ii. Initialized 500 mb geopotential heights (dam; contours) and decameter anomalies (dam; shading) across the Northern Hemisphere for 26 Oct 2026 and forecasted from 27 Oct to 10 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS model.

Since Ural blocking has been invoked, I will next present the mid-tropospheric animation in **Figure ii**. This unprecedentedly strong Ural block for this time of the year that you can observe right at the beginning of the animation is largely responsible for the unprecedentedly early strong WAF or poleward heat flux in the polar stratosphere and finally the unprecedentedly early large disruption of the PV. The high-pressure ridging in the Urals/Barents-Kara Seas/Scandinavian region mostly persists throughout the animation and should continue to support a weak PV over the next two weeks. The other major region of high-pressure ridging is Canada, and this is a pattern we have seen repeat itself since the beginning of the summer. Needless to say, the Canadian high-pressure ridging will result in an overall very mild pattern for North America, especially east of the Rockies.

Initialized 00Z 10 hPa HGT/HGTa 26-Oct-2026

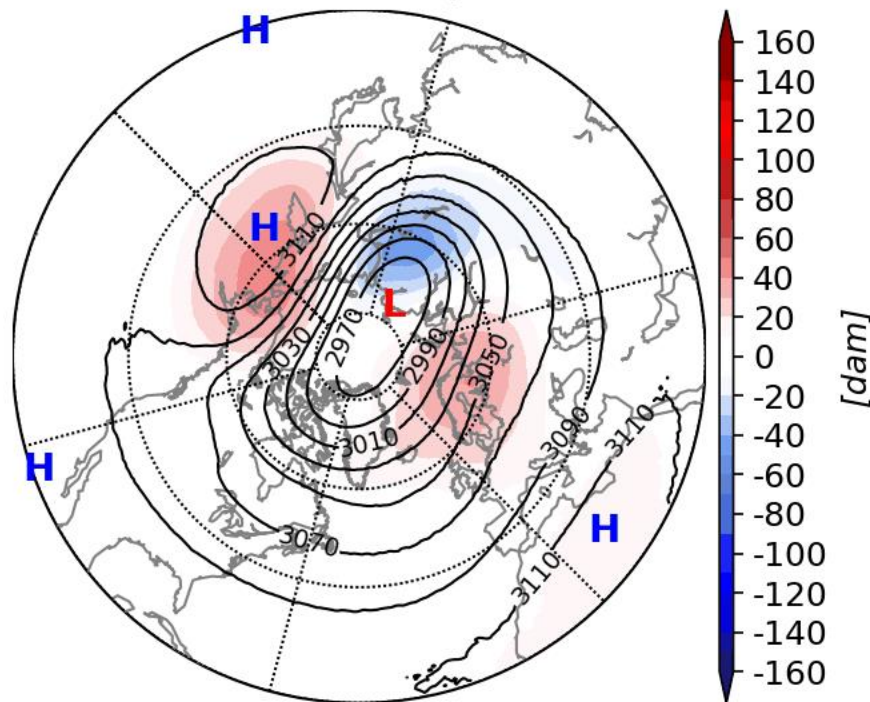


Figure iii. Initialized 10 mb geopotential heights (dam; contours) and decameter anomalies (dam; shading) across the Northern Hemisphere for 26 Oct 2026 and forecasted from 26 Oct 2026 and forecasted from 27 Oct to 10 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS model.

Looking at the latest PV animation in **Figure iii**, first up we have stretched PV this week. I have been anticipating a stretched PV since the beginning of October. Someone on social media rated this forecast a failure and I fully disagree. In our research we identified the different modes or behavior of the PV from clustering or pattern recognition. Looking at the PV over the next seven days or so, the PV has a very recognizable stretched PV appearance. Though I didn't show it, there is wave reflection associated with this event, but it is admittedly not very impressive. Not every stretched PV has been found to produce cold air in the Eastern US, but I do think that every stretched PV is related with cold air in East Asia and/or North America (often east of the Rockies). This stretched PV is associated with some impressively early cold in Siberia (possibly up to 30°C below normal!) and eventually East Asia at the end of the week. There is cold in North America as well, mostly in western North America but there are a couple of cold shots across far eastern North America but short in duration and regionally limited. During the stretched PV and especially what is to follow, the flow in the polar stratosphere is southwesterly across eastern North America and eventually a ridge builds along the US East Coast (see **Figure iii**), not an optimal circulation conducive for cold in the Eastern US.

I will admit that I was leaning more towards the GFS solution of a Canada warming would follow the stretched PV as that is favored based on climatology alone, but with the predicted warming in the polar stratosphere focused on the Central Arctic rather than over Canada, it does seem that the ECWMF forecast of a sudden stratospheric warming, either minor or major is the more accurate forecast. And in the PV animation the warming is clearly centered near the North Pole and not Northern Canada. This is the classic signature of an SSW, minor or major.

Though I do want to emphasize just like last winter in the end the SSW at the end of November got everyone excited about an SSW, and a long duration negative -NAO/Greenland blocking, in the end it turned out to be for all intents and purposes a fairly routine stretched PV with a negative North Pacific Oscillation with all the usual trimmings – cold in the Eastern US, mild in Europe and the impact being of short duration. So too I think it is a non-trivial possibility this event will do the same. But even if it passes the duck test for an SSW, it is worth a reminder that SSWs are favorable environments for follow on stretched PVs/wave reflection events.

I want to elaborate on the point more about snow cover and its relationship with winter weather. As I wrote last week, I continue to believe that it is a valuable tool in winter prediction and its predictive power has stayed impressively consistent ever since its introduction three decades ago now. But I readily admit how to measure the index or to optimize its contribution to a winter forecast has evolved. One index that has gotten some play on social media is the snow advance index (SAI). I used to use it to predict NH winter temperatures, but I don't anymore. Instead, I use it to help anticipate the timing of an SSW and I share this every fall in the blog. A negative SAI favors a later occurrence of a winter SSW and a positive SAI an earlier occurrence of a winter SSW (an SSW doesn't happen every winter). This fall the SAI is looking to be robustly positive (see post from @Recretos here for an [SAI estimate](#)) an indication of an earlier SSW and maybe just maybe we will get the earliest SSW on record.

I readily admit the relationship between snow cover extent, SSWs and the AO has dropped off to the point that it is probably no longer useful or barely useful in making a winter AO or NAO

forecasts. This has probably been true since the mid 2010's. The key transition year seems to be 2013. It worked quite well before that year and then became no better than a coin flip after that year. But I maintain that the relationship between fall snow cover extent and the winter climate including surface temperatures has remained steady but has evolved. I have three recent papers that demonstrate this and the latest being this paper, [Fan and Cohen 2026](#). But also, as I have written in recent years there are other more recent research that argues it is not the continent-wide snow cover extent that is critical but the pattern of snow cover extent (SCE), specifically a dipole with below normal snow cover across northwestern Eurasia and above normal snow cover across northeastern Eurasia, that is important. To my mind that was critical for understanding the impact of Eurasian snow cover last winter and so far, this fall we have yet again another strong looking dipole setting up. More computer problems today so instead of an update of the daily Eurasian SCE plot, I include the NH snow cover anomalies that yet again show a nice dipole taking shape across Eurasia (see **Figure iv**).

Daily SCE Departure - October 25, 2026 (Day 298)

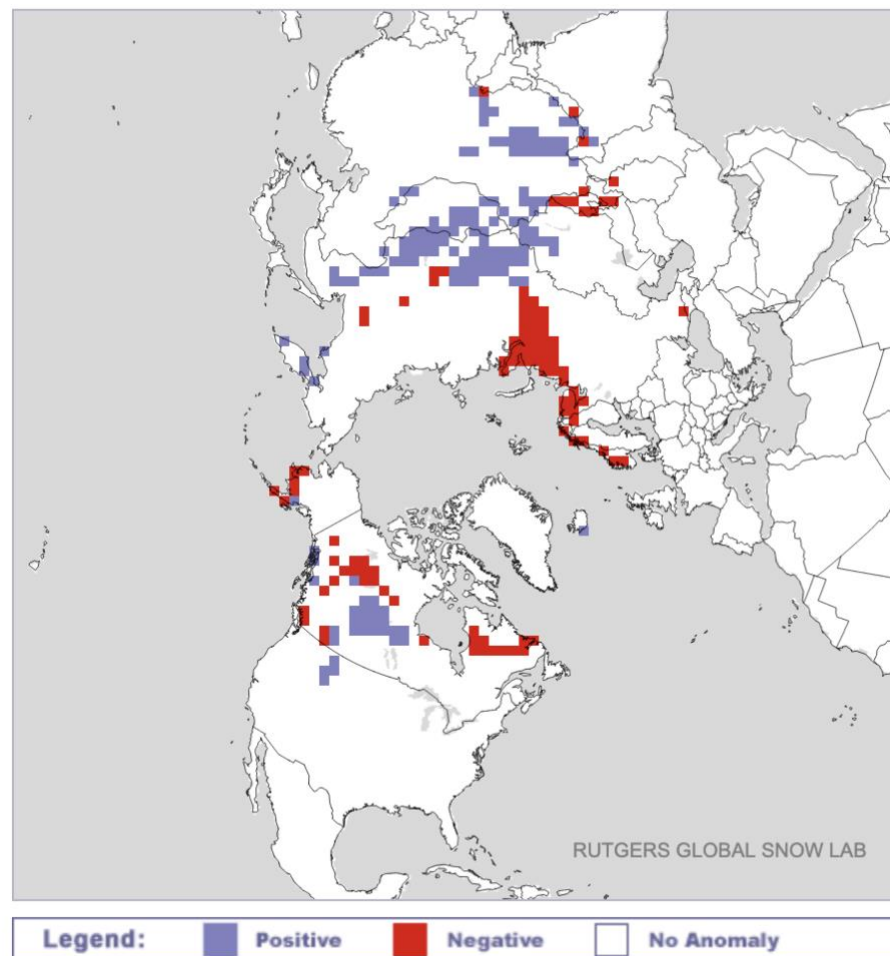


Figure iv. Observed snow cover anomalies for the Northern Hemisphere observed on 25 October 2026. Plot copied from <http://climate.rutgers.edu/snowcover/190km/index.php>.

Jumping back to El Niño and snow cover together. Which October had the most positive SAI observed? October 2009. That happens to be a moderate to strong El Niño winter as well. Over the past thirty years, 2009/10 winter is the third strongest El Niño behind the two super El Niño winters of 1997/98 and 2015/16. November 2009 also featured a minor SSW, even if minor still an usually early SSW, only to be eclipsed by November 2026. Also see the observed 500 hPa geopotential heights from November 2009 in **Figure v**. Almost a dead ringer for the 500 hPa geopotential heights forecasts for November 2026 (see **Figures 5 and 8**). I am sure than as now you could imagine everyone saying El Niño is in full control and the rest is a foregone conclusion.

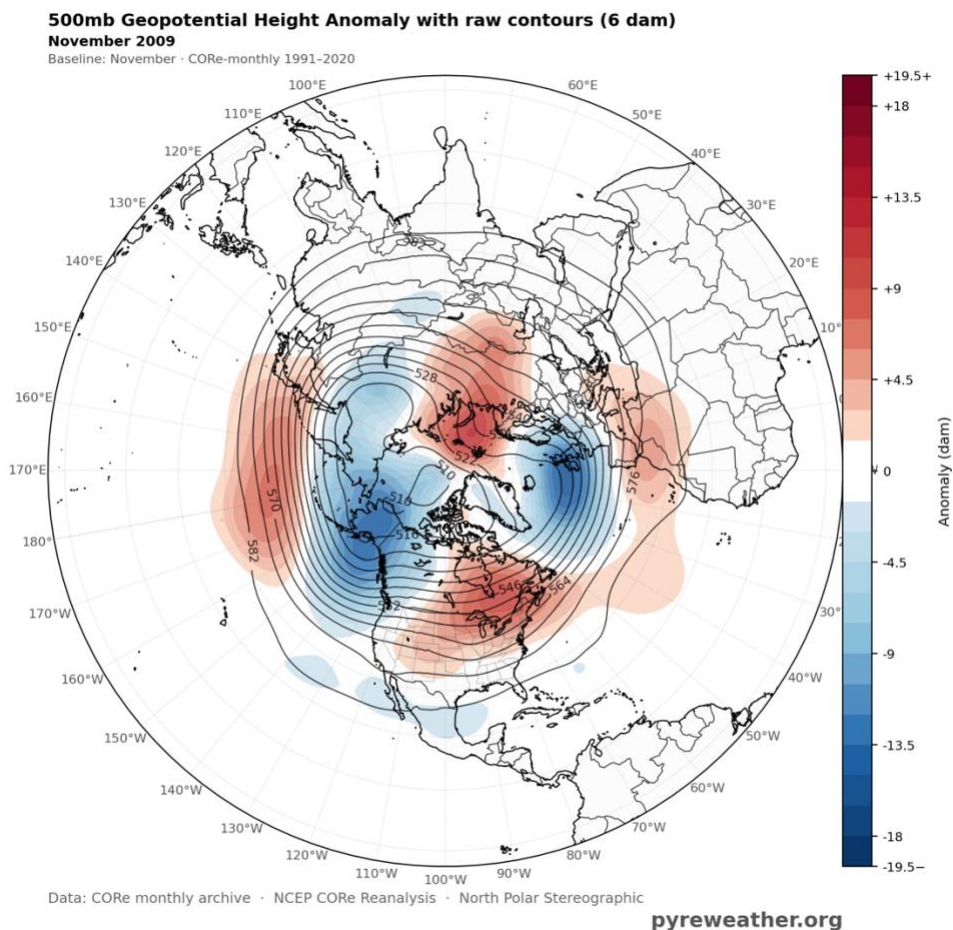


Figure v. Observed average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere for November 2009. The plot created at <https://app.pyreweather.org>.

But that turned out to be a bad call. Despite only being a minor SSW there was a robust tropospheric response in December complete with Greenland blocking a negative NAO cold and snow for both Europe and the Eastern US. For the winter as a whole the cold was unusually extensive in Northern Eurasia and the US and the Mid-Atlantic had a truly historic snow season. And with all things being equal and today being nothing more than a snapshot in time, looking at

El Niño and the entire atmospheric circulation, November 2009 is the single best analog for the upcoming winter. I refuse to go back too far in time but I can't think of a better analog than 2009. For those interested in reading more about the winter of 2009/10 and the role of stratosphere troposphere coupling here is my paper on that winter [Cohen et al., 2010](#).

But before you conclude I am all in on a winter 2009/10 repeat or even a sequel, I will bring it all together and will only confuse the forecast more. In a further continuation of what I wrote in the previous blog, it isn't just the snow-AO relationship that only worked in the "before times" but has since broken down or the relationship disappeared. The SSW, AO and winter temperature relationship as we have come to understand only worked in the before times. The last winter (December-January and February only) that featured all of the following – an SSW, a negative NAO and cold temperatures in both Northern Europe and the Eastern US is you guessed it – 2009/10. You could argue 2013 or 2018 but the true cold didn't make it to the Eastern US until March and DJF was overall warm in the Eastern US both those winters. If you think since 2010, to first order winters in the Eastern US that featured SSWs and a negative NAO were mild and those that didn't were cold. You could argue that the winter of 2020/21 featured an SSW and was mostly cold in the Eastern US. But the cold that determined the character of that winter was courtesy of a stretched PV and not an SSW or a negative NAO.

So what should we weigh more how close November 2026 resembles November 2009 or that the snow-SSW-NAO-winter temperatures pathway/relationship seems broken possibly irreversibly or irredeemably broken? Is the broken relationship little more than a figment of my wild imagination or is it real. I don't know the answer, and I really don't believe anyone else does either. For me this winter's forecast has always been challenging and only continues to get more challenging. But fear not, regardless of my uncertainty I will eventually issue a winter forecast.

I have much more to say but I am losing steam and not sure how many want to read any more on this topic for one week.

Near-Term

This week

The AO is predicted to be positive this week (**Figure 1**) with mostly negative geopotential height anomalies currently across the Arctic and mixed geopotential height anomalies across the mid-latitudes of the NH (**Figure 2**). With predicted negative geopotential height anomalies across Greenland (**Figure 2**), the NAO is predicted to be positive this week.

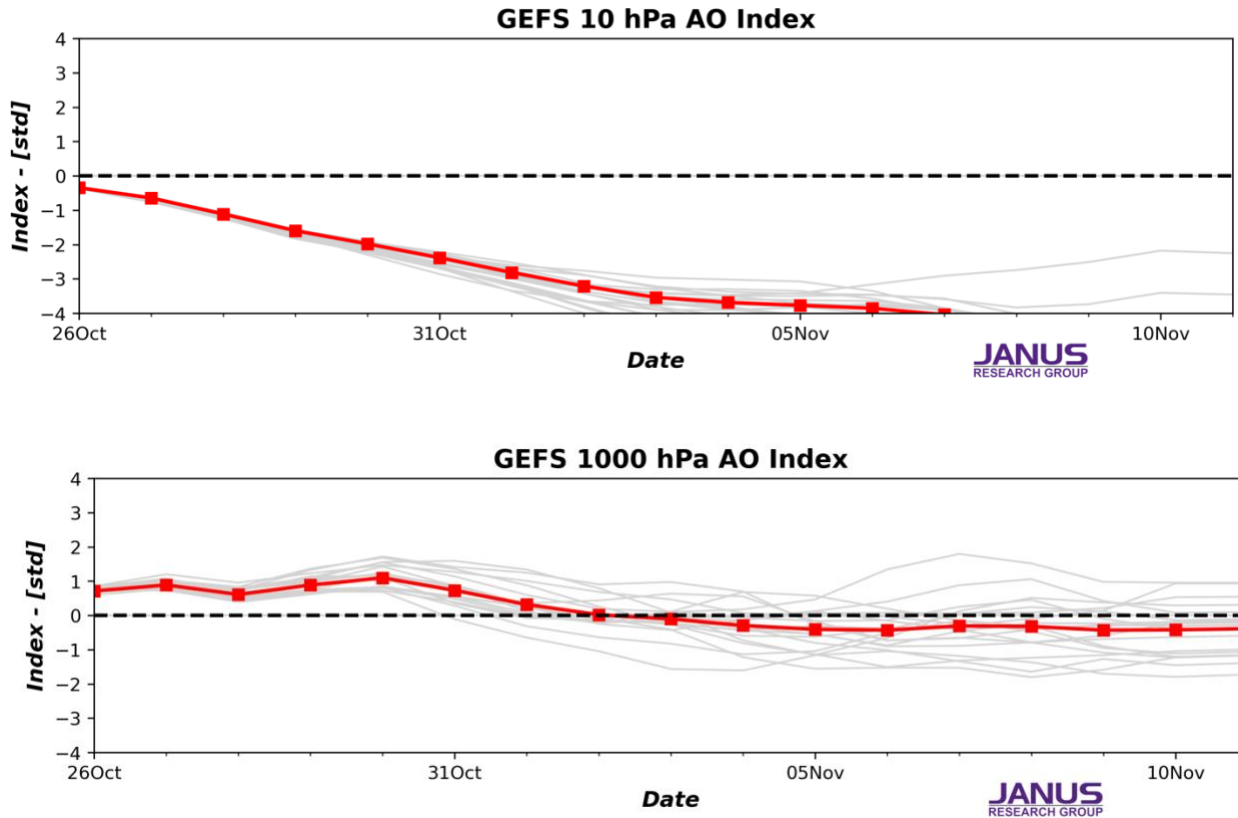


Figure 1. The predicted daily-mean AO at **a)** 10 hPa and at **b)** 1000 hPa from the 00Z 26 Oct 2026 GFS ensemble. Gray lines indicate the AO index from each individual ensemble member, with the ensemble mean AO index given by the red line with squares.

Ridging/positive geopotential height anomalies are predicted to dominate much of Europe with the exception of troughing/negative geopotential height anomalies across troughing to the southeast across the Eastern Mediterranean this week (**Figure 2**). This pattern will support widespread normal to above normal temperatures across much of Europe including the UK except for normal to below normal temperatures across the Balkans and Turkey this week (**Figure 3**). This week the general pattern across Asia is ridging/positive geopotential height anomalies centered across the Barents-Kara Seas and the Urals forcing troughing/negative geopotential height anomalies across Siberia and into East Asia this week (**Figure 2**). This pattern favors widespread normal to above normal temperatures across Western and Southern Asia with normal to below normal temperatures across Siberia and into Northeast Asia this week (**Figure 3**).

GEFS 1-5 Day Forecast 500 hPa Anomaly
INIT: 00Z 10/26/2026 FCST: 10/27/2026 to 10/31/2026

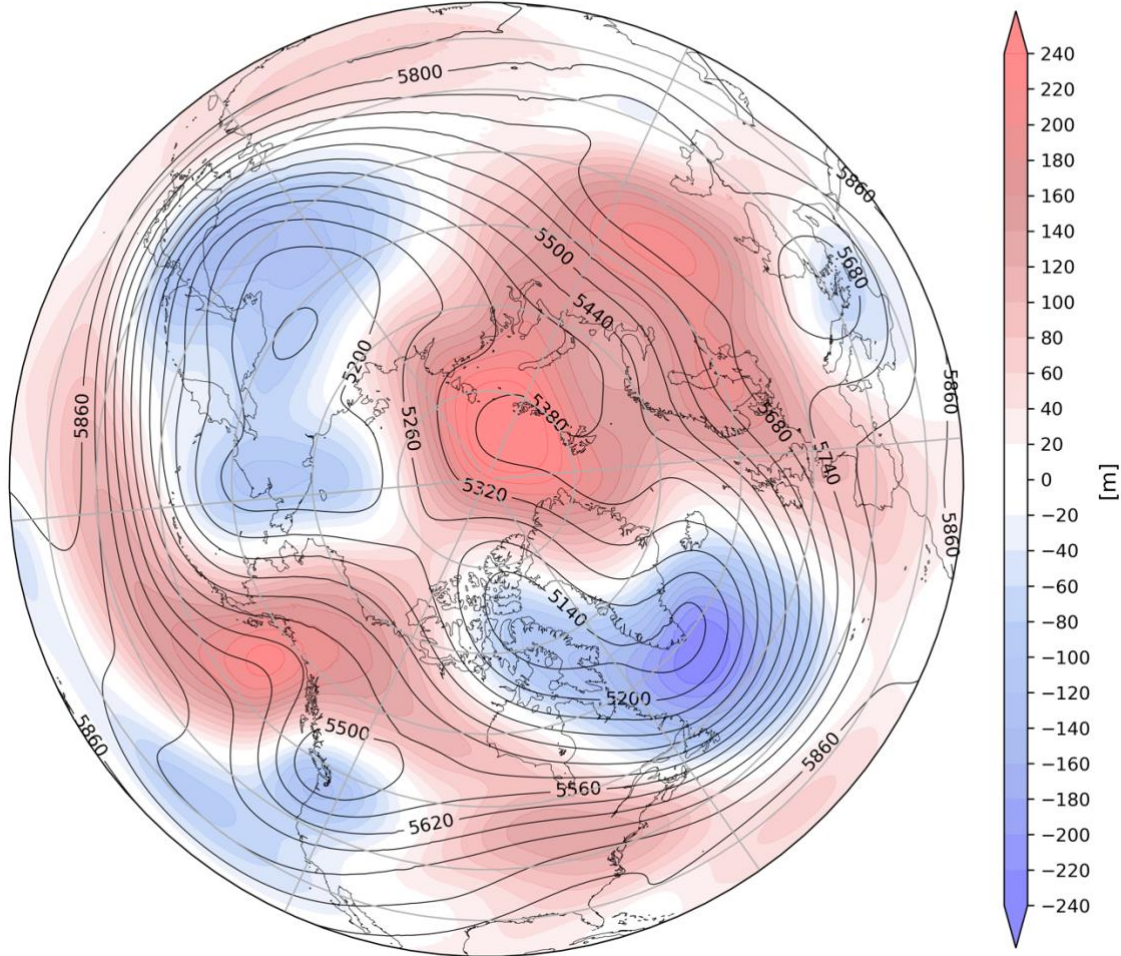


Figure 2. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 27 Oct to 31 Oct 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Ridging/positive geopotential height anomalies are predicted to dominate North America centered in the Gulf of Alaska and across the Eastern US forcing troughing/negative geopotential height anomalies across Southwestern and Eastern Canada and the Western US this week (**Figure 2**). This pattern will favor normal to above normal temperatures across Alaska, Northern and Central Canada, the US east of the Rockies with normal to below normal temperatures limited to Southwestern and far Eastern Canada, which will filter into New England and the Western US this week (**Figure 3**).

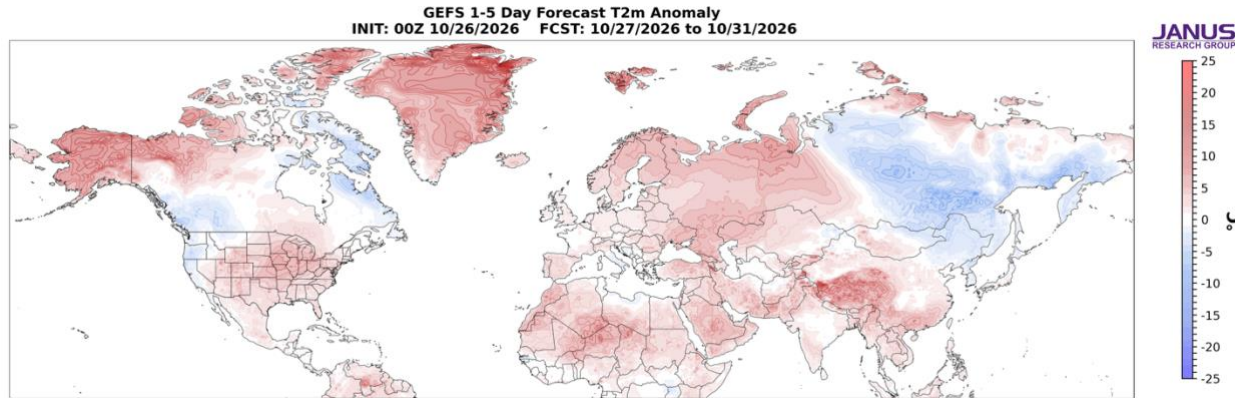


Figure 3. Forecasted surface temperature anomalies ($^{\circ}\text{C}$; shading) from 27 Oct to 31 Oct 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Trouging and/or cold temperatures will support new snowfall across Siberia and the Tibetan Plateau this week (**Figure 4**). Trouging and/or cold temperatures will support new snowfall across Alaska, Southwestern, Northern and Eastern Canada this week (**Figure 4**).

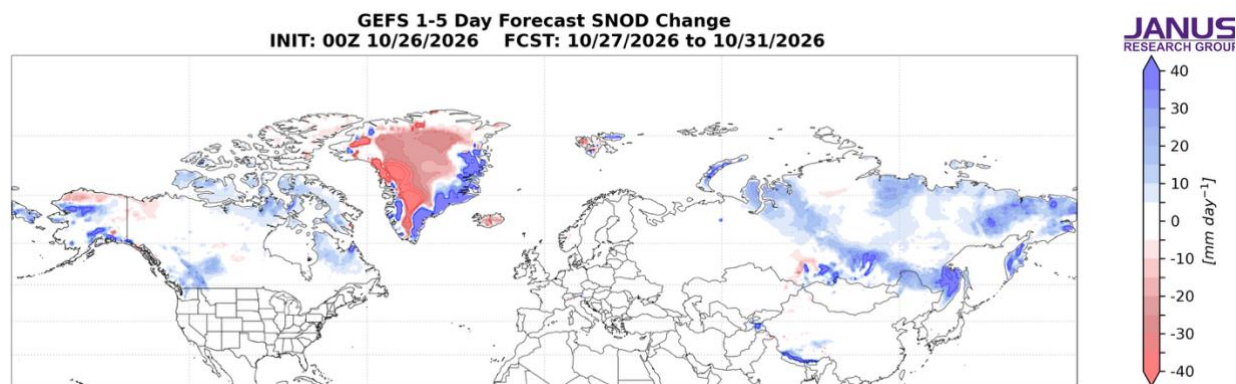


Figure 4. Forecasted snowfall (mm/day; shading) from 27 Oct to 31 Oct 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Near-Mid Term

Next week

With geopotential height anomalies becoming mostly mixed across the Arctic and with mixed geopotential height anomalies across the mid-latitudes this period (**Figure 5**), the AO will likely trend towards neutral this period (**Figure 1**). With weak and mixed pressure/geopotential height anomalies across Greenland (**Figure 5**), the NAO will likely also trend towards neutral this period.

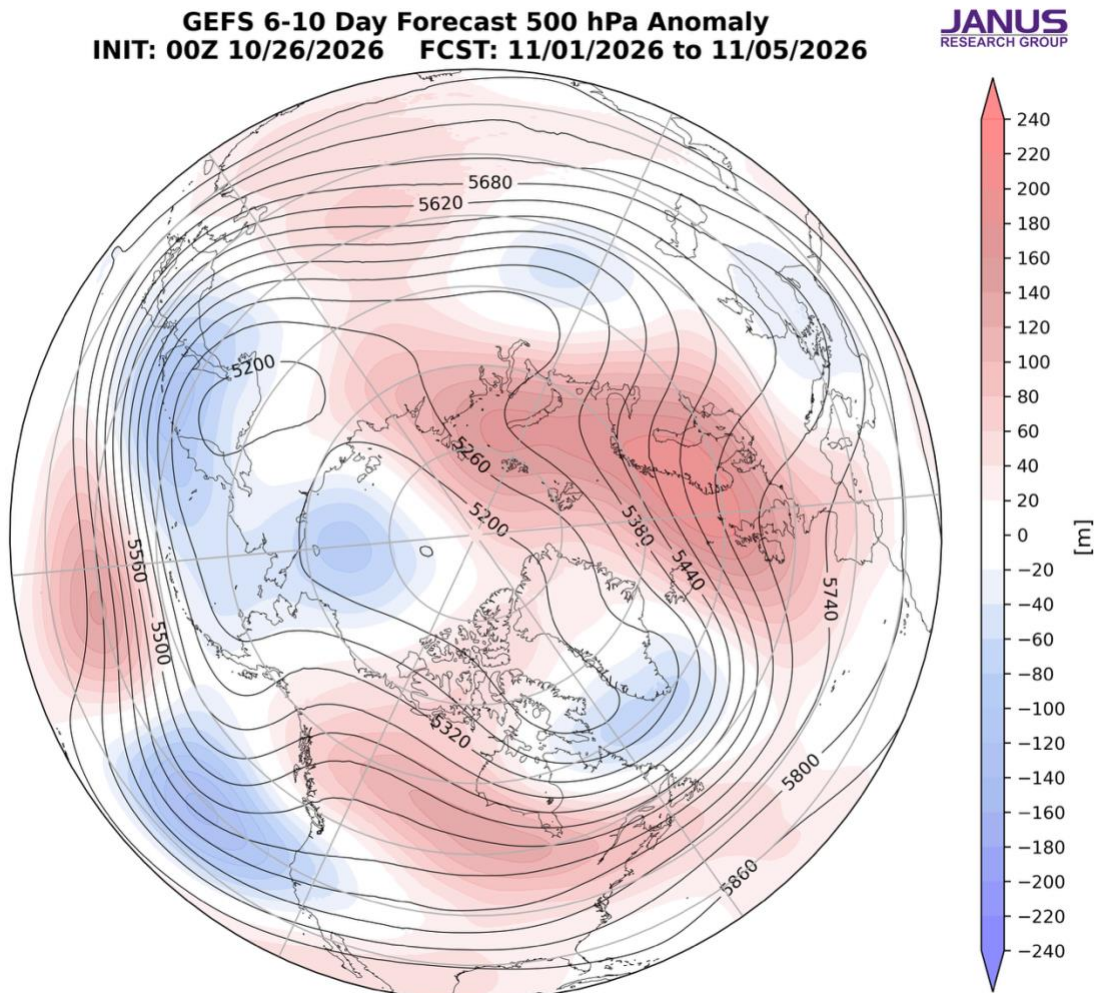


Figure 5. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 1 Nov to 5 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Ridging/positive geopotential height anomalies centered between the UK and Scandinavia will support deepening troughing/negative geopotential height anomalies across the Southeastern Europe this period (**Figure 5**). The pattern will support widespread normal to above normal temperatures across Europe including the UK except for normal to below normal temperatures across the Mediterranean countries and possibly into Central Europe

this period (**Figure 6**). Ridging/positive geopotential height anomalies centered Northern Europe and the Barents-Kara Seas will support troughing/negative geopotential height anomalies across Siberia and into Northeast Asia this period (**Figure 5**). This pattern favors widespread normal to above normal temperatures widespread across Western and Southern Asia but especially South-Central Asia with normal to below normal temperatures across Siberia and into Northeast Asia this period (**Figure 6**).

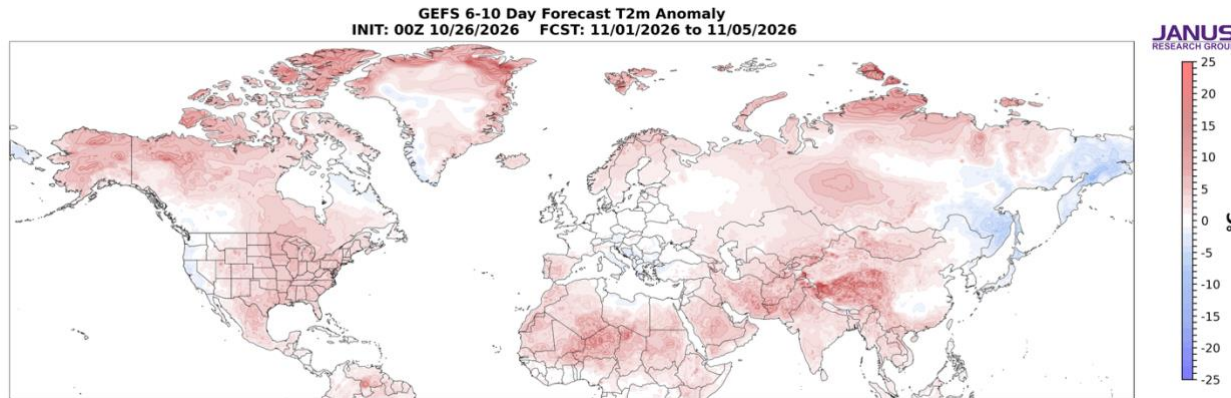


Figure 6. Forecasted surface temperature anomalies ($^{\circ}\text{C}$; shading) from 1 Nov to 5 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Ridging/positive geopotential height anomalies will dominate most of North America and centered in Central Canada with troughing/negative geopotential height anomalies limited to Northeastern Canada and the US West Coast this period (**Figure 5**). This pattern will favor widespread normal to above normal temperatures widespread across Alaska, much of Canada and the US with normal to below normal temperatures limited to the west coasts of Canada and the US and with some residual cool temperatures in the Canadian Maritimes but mostly northern Quebec this period (**Figure 6**).

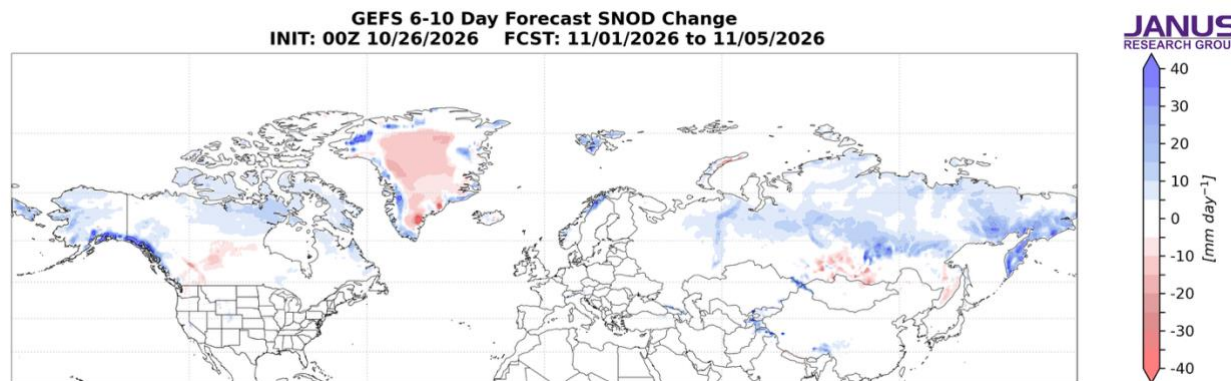


Figure 7. Forecasted snowfall rate (mm/day; shading) from 1 Nov to 5 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Troughing and/or cold temperatures will support new snowfall across Northern Norway, the Urals, Siberia and Central Asia while warm temperatures will cause snowmelt in South-Central Siberia this period (**Figure 7**). Troughing and/or cold temperatures will support new snowfall

across Alaska and Northern Canada while warm temperatures will cause snowmelt in the Canadian Plains this period (**Figure 7**).

Mid Term

Week Two

With predicted mostly positive geopotential height anomalies across the Arctic and mixed geopotential height anomalies across the mid-latitudes this period (**Figure 8**), the AO will likely turn negative this period (**Figure 1**). With predicted weak but positive pressure/geopotential height anomalies across Greenland (**Figure 8**), the NAO will likely turn negative this period as well.

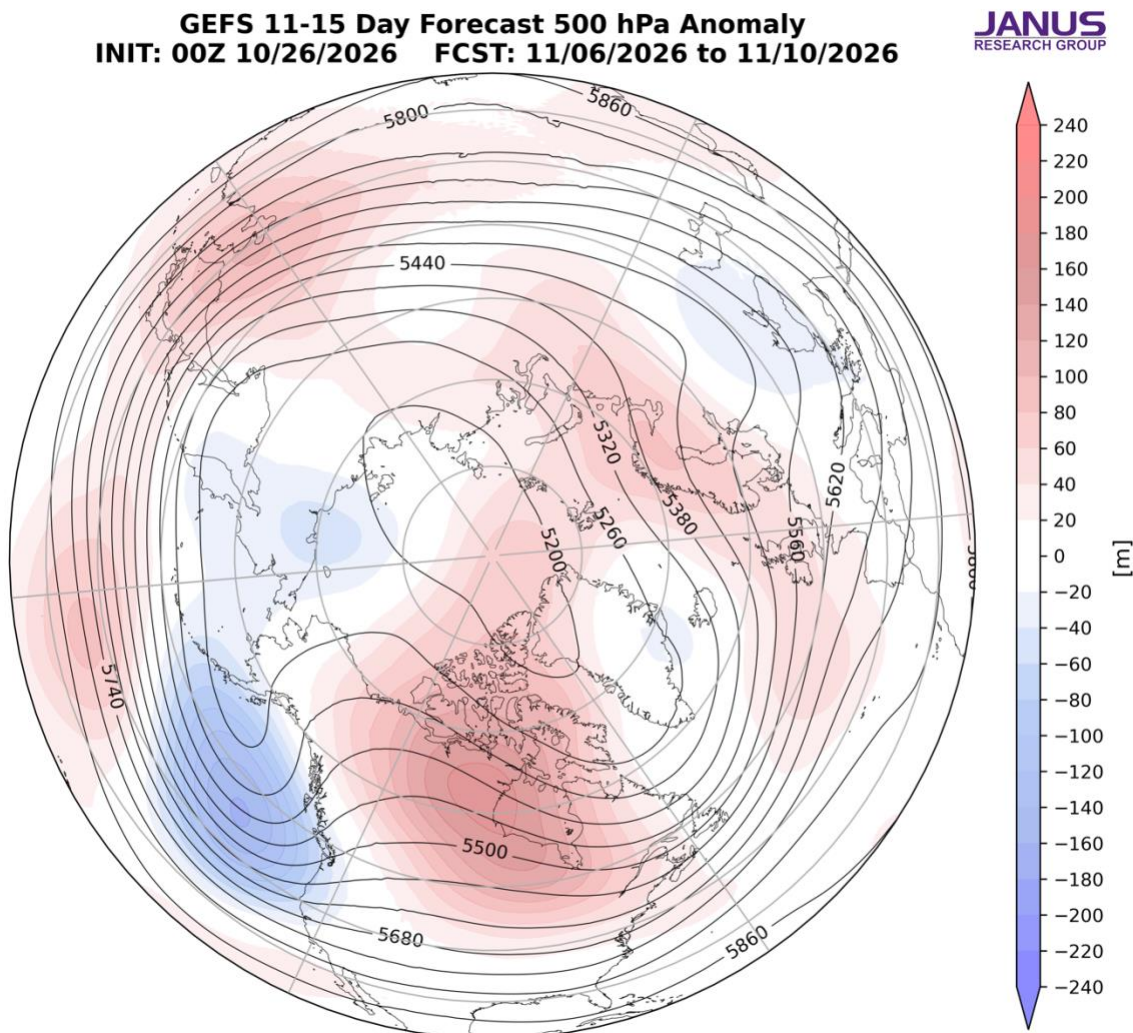


Figure 8. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 6 Nov to 10 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Ridging/positive geopotential height anomalies are predicted to persist across Scandinavia and the Barents-Kara Seas and this will promote deepening troughing/negative geopotential height anomalies to the south across Central and Southern Europe this period (**Figure 8**). This pattern will favor expanding normal to below normal temperatures across much of Europe including the UK with the exception of normal to above normal temperatures in the Iberian Peninsula and Scandinavia this period (**Figures 9**). Persistent ridging/positive geopotential height anomalies centered in the Barents-Kara Seas will continue to support troughing/negative geopotential height anomalies across Siberia and into Northeast Asia this period (**Figure 8**). This pattern favors widespread normal to above normal temperatures across most of Asia especially Central Asia with normal to below normal temperatures limited to parts of Western Russia and Eastern Siberia this period (**Figure 9**). I do think temperatures are likely to be colder in Siberia than predicted by all the models.

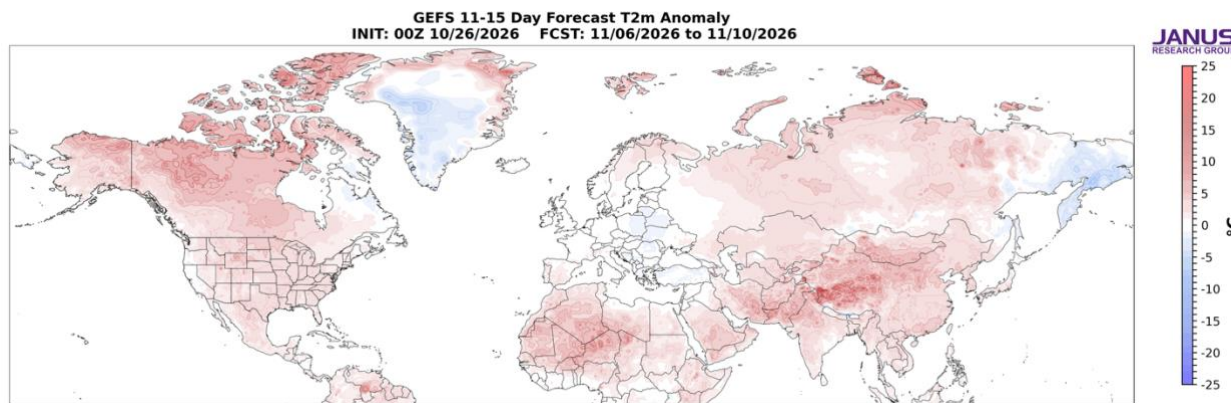


Figure 9. Forecasted surface temperature anomalies (°C; shading) from 6 Nov to 10 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Ridging/positive geopotential height anomalies are predicted to continue dominating North American weather with troughing/negative geopotential height anomalies limited to the west coasts of Canada and the Western US this period (**Figure 8**). This pattern supports widespread normal to above normal temperatures across Alaska, much of Canada and the US, with possible exceptions of the west coasts of Canada and the US and northern Quebec this period (**Figure 9**).

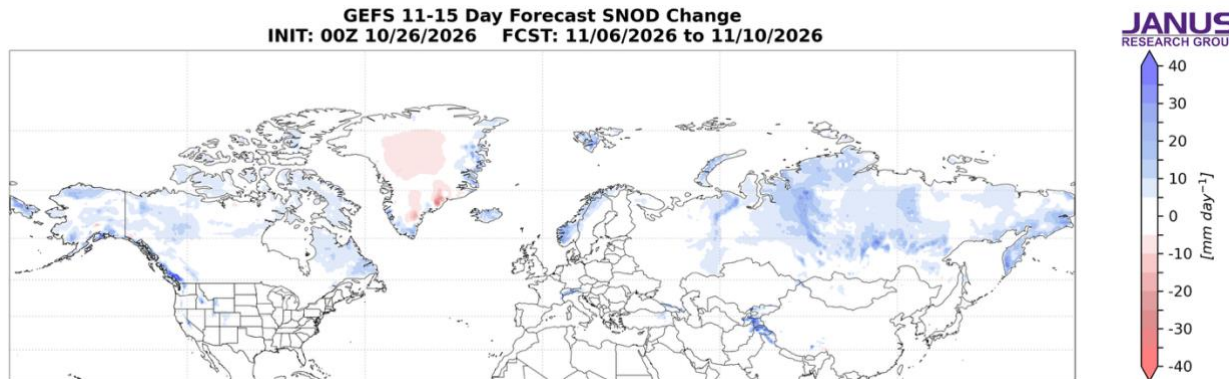


Figure 10. Forecasted snowfall (mm/day; shading) from 6 Nov to 10 Nov 2026. The forecasts are from the 00Z 26 Oct 2026 GFS ensemble.

Troughing and/or cold temperatures will support new snowfall across Norway, the Alps, much of Siberia and Central Asia this period (**Figure 10**). Troughing and/or cold temperatures will support new snowfall across Alaska, Western, Northern and Eastern Canada this period (**Figure 10**).

Longer Term

30-day

Today's polar cap geopotential height anomalies (PCHs) plot currently shows cold/negative PCHs in the upper stratosphere and the lower troposphere with warm/positive PCHs in the mid- to lower-stratosphere and upper troposphere (**Figure 11**). However, this week, the warm/positive PCHs in the stratosphere are predicted expand upward into the upper stratosphere and eventually descend into the lower troposphere.

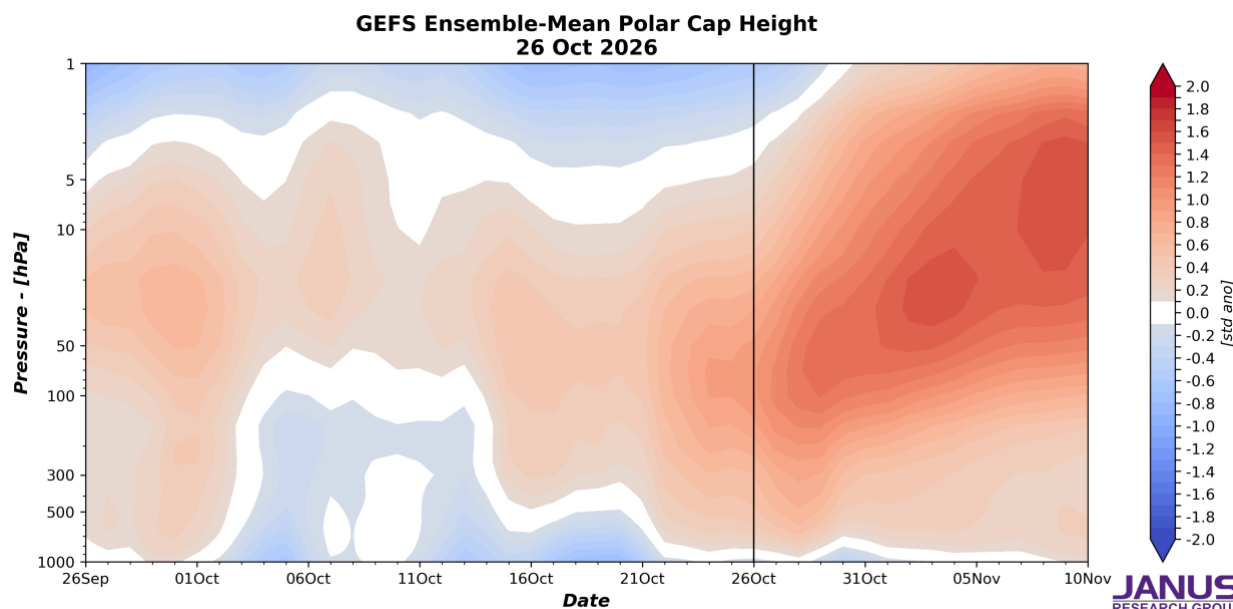


Figure 11. Observed and predicted daily polar cap height (i.e., area-averaged geopotential heights poleward of 60°N) standardized anomalies. The forecast is from the 00Z 26 Oct 2026 GFS ensemble.

This week the predicted cold/negative in the lower troposphere (**Figure 11**) are consistent with the predicted positive surface AO (**Figure 1**). However, beginning next week when the warm/positive PCHs descend through the troposphere (**Figure 11**) the surface AO is predicted to trend negative (**Figure 1**).

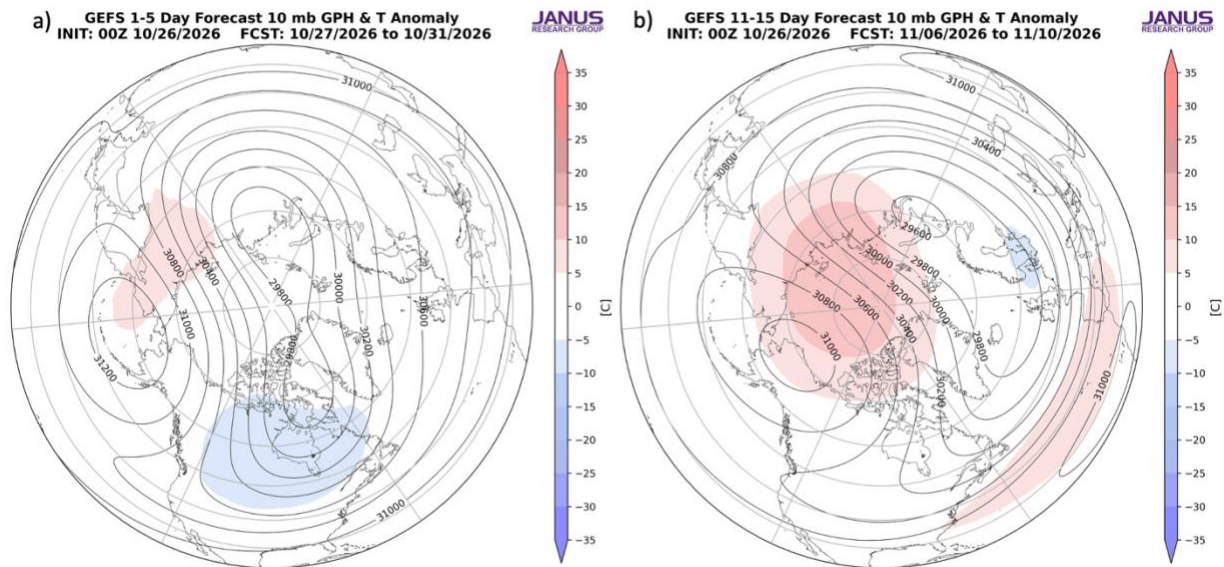


Figure 12. (a) Predicted 10 mb geopotential heights (dam; contours) and temperature anomalies (°C; shading) across the Northern Hemisphere averaged for 2 Dec to 6 Dec 2025. (b) Same as (a) except forecasted averaged from 12 Dec to 16 Dec 2025. The forecasts are from the 00Z 1 December 2025 GFS model ensemble.

This week the polar vortex (PV) is predicted to be elongated in shape, from Siberia to Canada, with one PV center over the Laptev Sea and a second in Baffin Bay with relatively cold temperatures focused in Canada and with high pressure centered near Alaska and the Dateline with warm temperatures in the North Pacific sector and Eastern Siberia in the polar stratosphere (**Figure 12a**). To me this is a stretched PV. Then, in early November the PV center is predicted to be centered in the Barents-Kara Seas to Baffin Bay while remaining stretched in shape from Siberia to Eastern Canada with high pressure over Alaska and the Beaufort Sea and warming extending out of Asia and covering the Central Arctic in the polar stratosphere (**Figure 12b**). This resembles more of classical sudden stratospheric warming (SSW) configuration. The stratospheric AO in **Figure 1** this week is predicted to weaken from slightly negative to off the charts negative this week with the unprecedented early strong disruption of the PV.

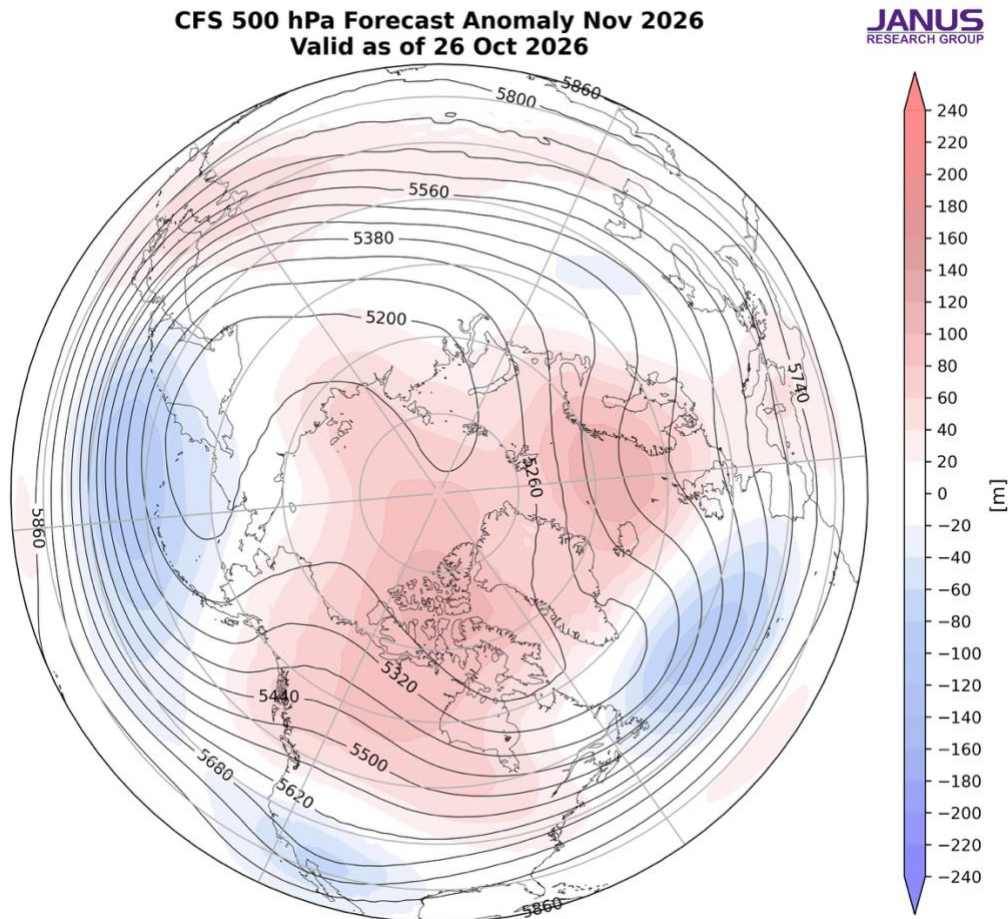


Figure 13. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere for Nov 2026. The forecasts are from the 00Z 26 Oct 2025 CFS.

I include in this week's blog the monthly 500 hPa geopotential heights (**Figure 13**) and surface temperatures for November (**Figure 14**) from the Climate Forecast System (CFS; the plots represent yesterday's four ensemble members). I do want to emphasize unless I say otherwise, I find the CFS forecasts of low confidence and most often don't match my own thinking. The forecast for the troposphere is ridging stretching from Greenland, across Iceland and Northern Europe across the Central Arctic and into Canada with troughing across the mid-latitudes of the North Atlantic, Asia, the mid-latitudes of the North Pacific and the Western US (**Figure 13**). This pattern favors seasonable to relatively warm temperatures across Western and Northern Europe, the Southern half of Asia including the Arabian Peninsula, the Tibetan Plateau, Pakistan and Afghanistan, Alaska, Western, Central and Northern Canada and the Eastern US with seasonable to relatively cool temperatures across Central and Eastern Europe, much of Northern Asia, Southeastern Canada and the Western US (**Figure 14**). This pattern clearly projects onto the pattern of the negative AO, following an SSW. This pattern is possible but maybe the CFS is jumping the gun

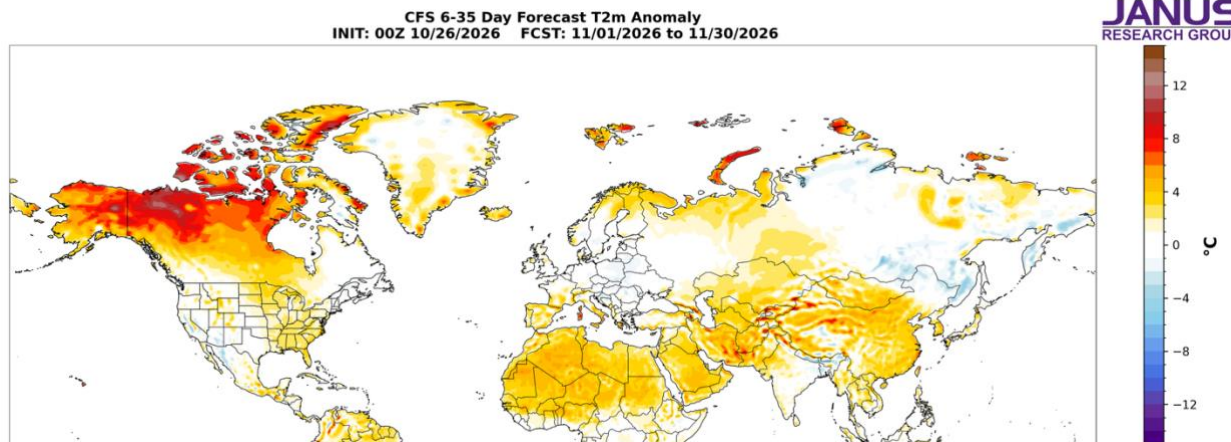


Figure 14. Forecasted average surface temperature anomalies (°C; shading) across the Northern Hemisphere for Nov 2026. The forecasts are from the 00Z 26 Oct 2026 CFS.

Boundary Forcings

Arctic Sea Ice

I am and will continue to watch Arctic sea ice. Current conditions are shown in **Figure 15**. It has been shown that less sea ice in the North Atlantic sector of the Arctic weakens the polar vortex while less sea ice in the North Pacific sector strengthens the polar vortex. Sea ice has been growing a good clip, but more in the but North Pacific sector than the North Atlantic sector and therefore Arctic sea ice anomalies continue to show a strong focus or weighting of negative anomalies towards the North Atlantic sector relative to the North Pacific sector and this is a robust signal of an overall weaker PV this winter. I believe that the lack of sea ice in the Barents-Kara Seas may have contributed to the record strong high-pressure Ural/Scandinavian blocking and the unprecedentedly early weak PV that so far resembles more of an SSW than the more common stretched PV this time of year.



Figure 15. Arctic sea ice cover extent for 17 October 2026. White depicts ice covered areas and the orange contour the climatological extent of Arctic sea ice for the date. Plot taken from: <https://nsidc.org/sea-ice-today>

SSTs/El Niño/Southern Oscillation

Equatorial Central Pacific sea surface temperatures (SSTs) anomalies are well above normal, with the warming focused along the South American coast and out to the Dateline (see **Figure 16**), clear signs of El Niño conditions. In fact, a possible “super” El Niño is increasingly likely this fall and winter has been receiving much attention in the media. The El Niño is likely close to its peak and is expected to become the strongest El Niño on record. Observed SSTs across the NH remain well above normal especially in the North Pacific and

much of the North Atlantic especially near Europe, though below normal SSTs exist regionally especially in the Southern Ocean. The widespread above normal SSTs remain impressive.

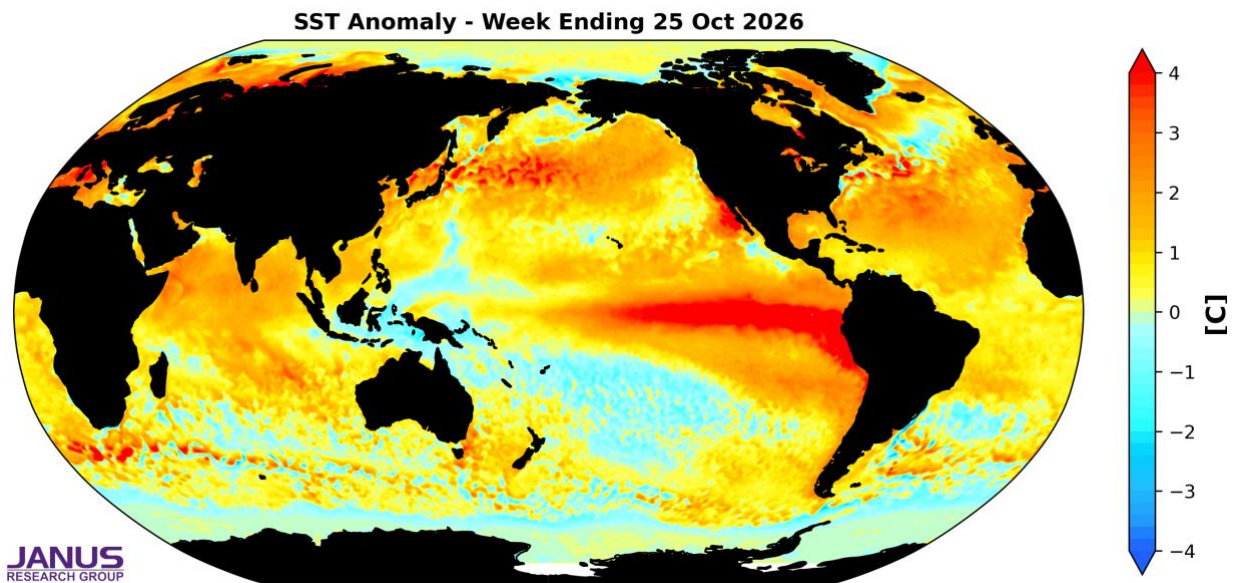


Figure 16. The latest daily-mean global SST anomalies for week ending 25 Oct 2026.

Madden Julian Oscillation

Currently the Madden Julian Oscillation (MJO) is weak but still in phase two (**Figure 17**), and the forecasts are for the MJO to remain weak and in phase two but barely the next two weeks (**Figure 17**). Phase two mostly favors troughing across Alaska and Canada with ridging across the US, therefore, it seems that the MJO could be having some influence on North American weather this week but seems limited to me. But admittedly this is outside of my expertise.

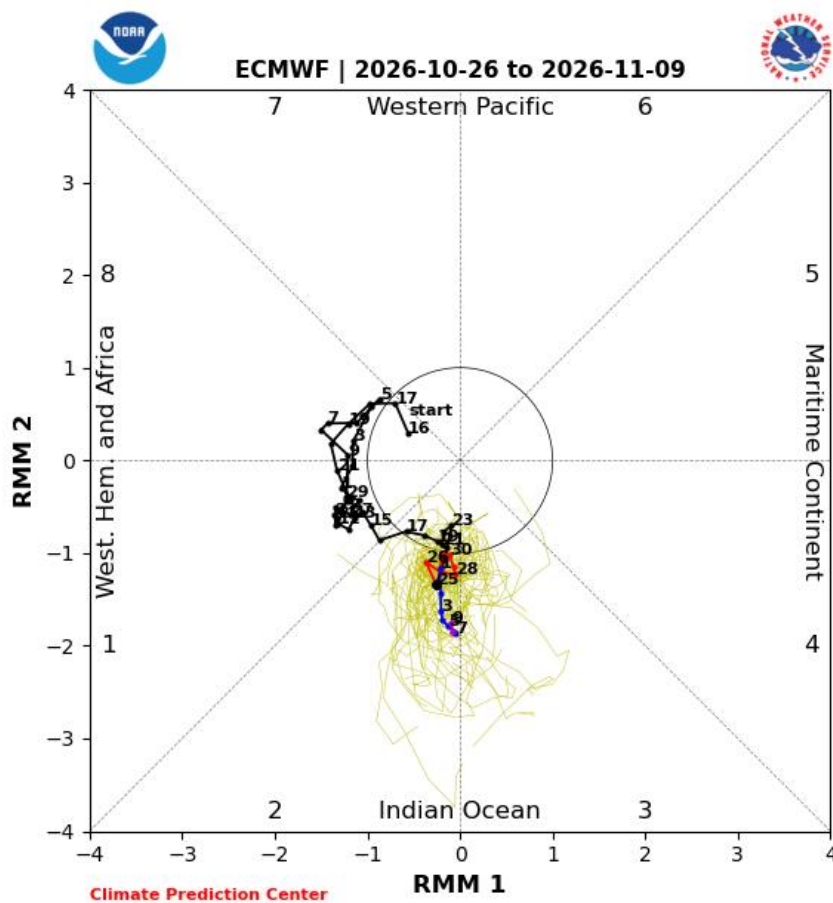


Figure 17. Past and forecast values of the MJO index. Forecast values from the 00Z 13 Oct 2026 ECMWF model. Yellow lines indicate individual ensemble-member forecasts, with the green line showing the ensemble-mean. A measure of the model 'spread' is denoted by the gray shading. Sector numbers indicate the phase of the MJO, with geographical labels indicating where anomalous convection occurs during that phase. Image source <https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CLIVAR/ecmf.shtml>

Get Detailed Seasonal Weather Intelligence with [sCast](#)

We appreciate your taking the time to read the public Arctic Oscillation blog from Dr. Judah Cohen and the AER Seasonal Forecasting team.

Dr. Cohen's detailed monthly seasonal forecast, sCast, is also available. [sCast](#) provides a monthly 30-60-90-180-day outlook into temperature and precipitation, solar flux and wind anomalies across the globe, and regional population weighted cooling and heating degree forecasts for the US.

Our sCast principal engineer, [Karl Pfeiffer](#), can help you use sCast and other AER seasonal forecast products to deliver important, long-lead time weather intelligence to your business. Please reach out to Karl today!