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Arctic Oscillation and Polar Vortex Analysis and Forecasts

November 9, 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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The AO/PV blog is partially supported by NSF grant AGS: 1657748

Summary

- The Arctic Oscillation (AO) is currently negative as pressure/geopotential height anomalies across the Arctic are currently mostly positive and the AO is predicted to remain negative to neutral the next two weeks as pressure/geopotential height anomalies are predicted to remain mixed to positive the next two weeks. The North Atlantic Oscillation (NAO) is currently negative with mostly positive pressure/geopotential height anomalies across Greenland, and the NAO is predicted to remain negative to neutral the next two weeks as pressure/geopotential height anomalies are predicted to remain mixed to positive across Greenland the next two weeks.
- This week ridging/positive geopotential height anomalies are predicted to stretch from Greenland United Kingdom (UK) favoring troughing/negative geopotential height anomalies across Northern Europe with more ridging across Southern Europe. However next week as the ridging weakens across Greenland so will the troughing across Northern Europe. This pattern will favor normal to below normal temperatures across Northern Europe including the UK with normal to above normal temperatures across Southern Europe this week. However next week normal to above normal temperatures will become more widespread across much of Europe though some residual cold temperatures are possible across Scandinavia and the UK.
- The next two weeks predicted ridging/positive geopotential height anomalies across the

Beaufort Seas and the Central Arctic will favor troughing/negative geopotential height anomalies across Northern and Western Asia with more ridging in Southern and Eastern Asia. However, because the flow is mostly zonal this pattern favors week widespread normal to above normal temperatures across much of Asia with the exceptions Southwestern Asia this week and across Eastern Siberia the next two weeks.

- Over the next two weeks predicted deep troughing/negative geopotential height anomalies in the Gulf of Alaska and into the Western United States (US) will support ridging/positive geopotential height anomalies widespread across North America except for troughing/negative geopotential height anomalies mostly in the Eastern US this week. This patten 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 the Eastern US later this week and then the Western US next week. The transitory troughing in the Eastern US in my opinion reflects the ongoing PV disruption.
- We have an unprecedently early large polar vortex (PV) disruption ongoing for early- to mid-November and it is likely to cross the threshold for sudden stratospheric warming (SSW) criteria. Below I discuss how it can impact Northern Hemisphere (NH) weather in the coming weeks. But as I have been discussing for more than a month now, my impression is that the canonical SSW-Greenland blocking pathway is broken and we live in a stretched PV world.

Plain Language Summary

The widespread warmth across the Northern Hemisphere (NH) this past summer and now the fall has continued into November (see **Figure**). However, high-latitude blocking in the North Atlantic sector has resulted in colder temperatures in Europe and especially Siberia and into Northeast Asia (see **Figure**). Troughing in the Gulf of Alaska has resulted in very mild temperatures for North America (see **Figure**). However, the very large PV disruption ongoing, in my opinion will resolve into a stretched PV. Stretched PVs first result in cold temperatures in East Asia followed by a colder pattern in North America. So despite the indefinite reign of mild weather across North America predicted by the weather models, I expect colder temperatures to arrive ashore across North America late November and/or early December. And as I am fond of saying one good (PV) stretch deserves another.

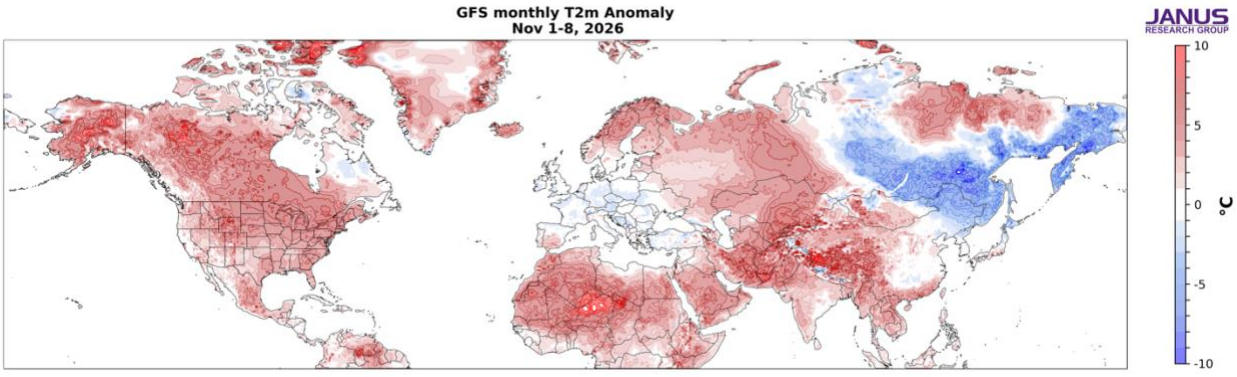


Figure. Estimate of the observed surface temperatures (°C; shading) from 01 Nov to 08 Nov 2026 based on GFS initializations and the GFS forecast from the 9 Nov 2026 run.

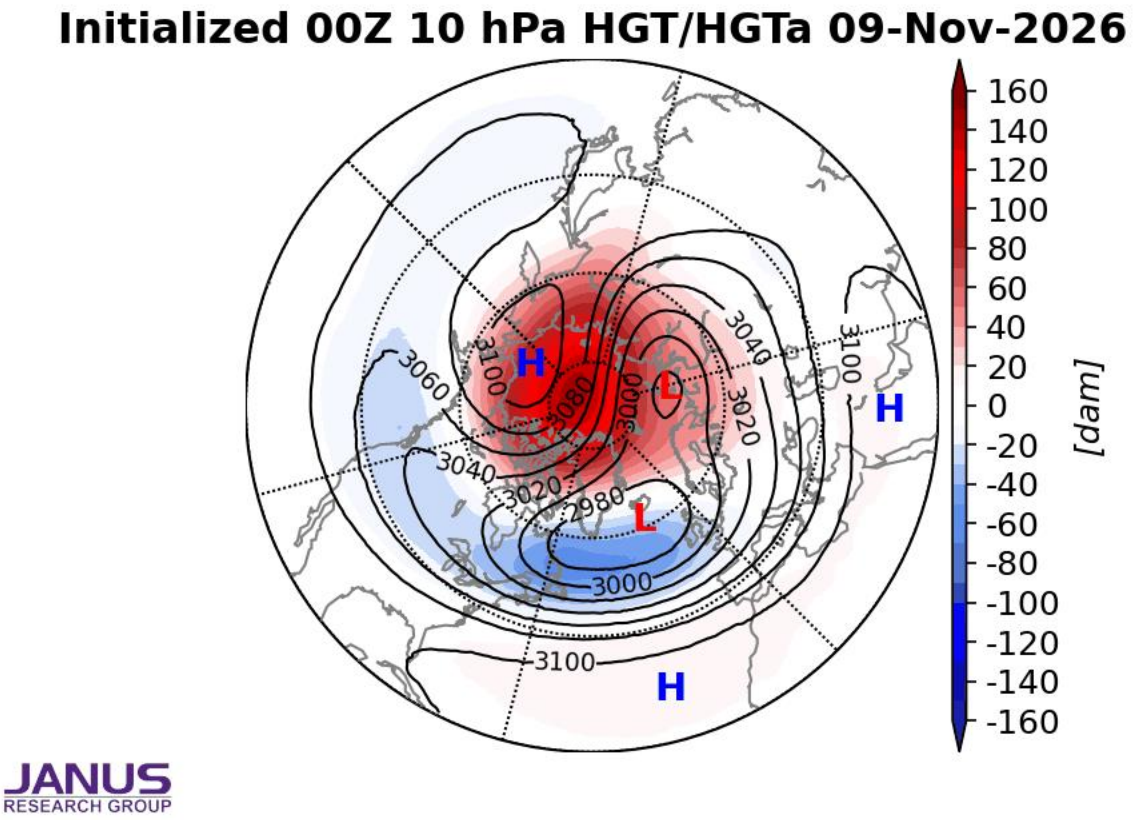
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Impacts

While the rest of the meteorological community has been focused on the super El Niño, my focus this fall has been stretched polar vortex (PV) events. Back in late September (28 Sep 2026) I noted a very early stretched PV and posed two questions to ponder. Could this be a foreshadowing by the atmosphere for the winter? Since 2013 the canonical sudden stratospheric warming (SSW) extended Greenland blocking pathway is no longer in operation, instead we seem to be in a paradigm where all PV disruptions of the cold kind are PV stretching (obviously an exaggeration but to first order true). Since then, I have been arguing with myself saying based on the SSW the best analog for November 2026 is November 2009. However, 2009 is clearly in the "before times," and now there is a new Sherrif in town, or of you prefer a new paradigm in operation. In 2009 the SSW-negative NAO ruled and today we are under new management and the PV stretch-negative North Pacific Oscillation rules. And when the models first caught on to the possibility of an SSW and excitement was building for the expected tropospheric response of a long duration Greenland block/negative NAO, I shared with USA Today don't be surprised if this all resolves as yet just another stretched PV (USA Today 26Oct2026). And I have juxtaposed and contrasted my thoughts with the almost universal expectation that super El Niño is simply too large and strong for the PV to have a meaningful impact on our weather. The super El Niño will deflect any tendency in the mid-troposphere to form ridging in the Gulf of Alaska/Alaska/Western Canada region favored by the PV disruption and deep troughing in the Gulf of Alaska will continue to flood North America with mild, North Pacific air.

Well, this is where the rubber meets the road. Looking at most of the weather model forecasts, the behavior of the PV can only be interpreted as the beginning of a PV stretch including in our latest PV animation (see **Figure i**). The one model that I have seen so far that suggests a different path for the PV is the 12Z ECMWF deterministic run. Not sure where it is heading but doesn't look like a robust stretch towards Canada as seen in other models. I feel that the ECMWF has performed very well with regards to the SSW, so I don't want to dismiss its contrarian forecast.

From the PV animation, the SSW is clearly visible for the first ten days, and the SSW should achieve major status (defined as the reversal of westerly to easterly winds at 10hP and 60°N) this week. The central Arctic is covered by exceptional warming for this time of year with the PV center displaced into Northern Siberia and the PV is elongated from west to east along northern Eurasia, a very classical signature of a PV displacement. However, at the end of the animation the PV starts to recover and the orientation of the elongation pivots from west to east to more south to north or from Siberia to Canada. This is approaching a classical stretched PV signature. And if the warming on both sides of the PV holds up throughout the event, it could even be considered a more extreme stretched PV event.



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Figure i. Initialized 10 mb geopotential heights (dam; contours) and decameter anomalies (dam; shading) across the Northern Hemisphere for 10 Nov to 24 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS model.

Given the behavior of the PV what might be the tropospheric response. Last week I discussed it is my experience that following an SSW there is an immediate impact and a delayed impact. The immediate impact was deep low-pressure trough over the Barents-Kara Seas and the Urals and over eastern North America (see **Figure ii**). These regions of troughing seem to align with the two initial PV center locations and associated troughing in the stratosphere and is the immediate impact of the SSW.

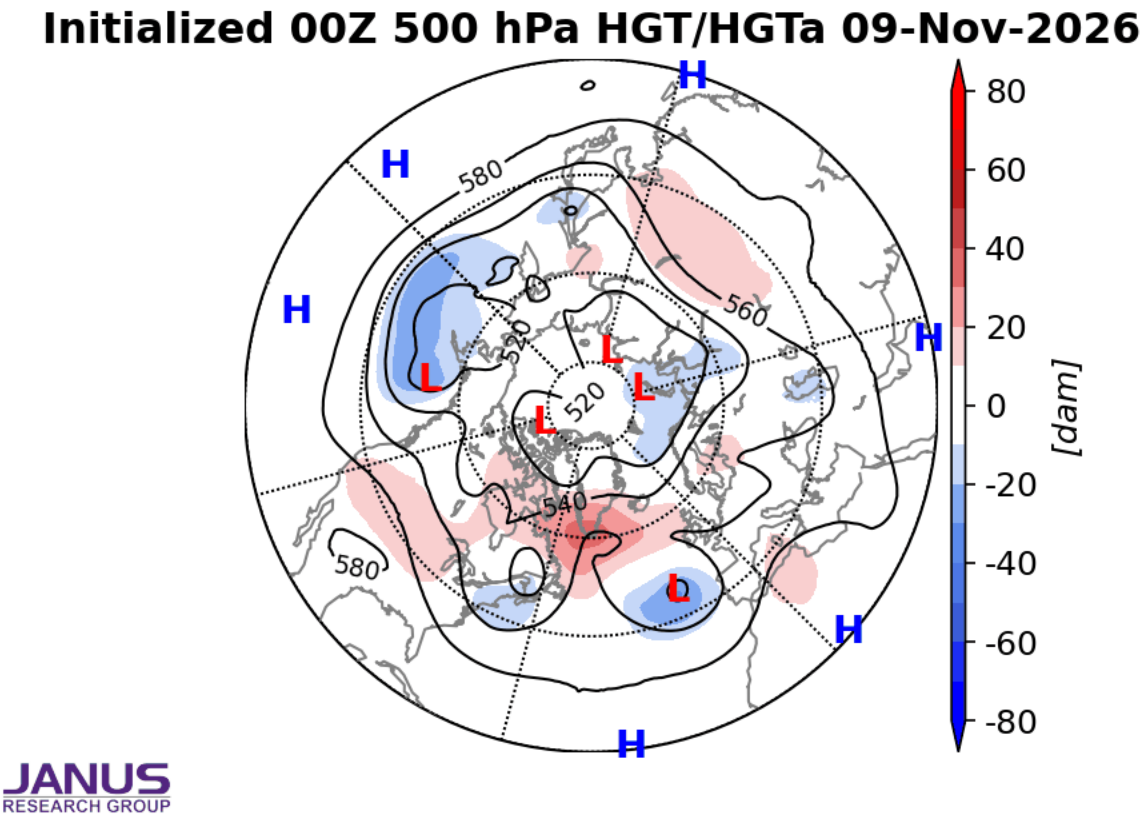


Figure ii. Initialized 500 mb geopotential heights (dam; contours) and decameter anomalies (dam; shading) across the Northern Hemisphere for 2 Nov 2026 and forecasted from 3 Nov to 17 Nov 2026. The forecasts are from the 00Z 2 Nov 2026 GFS model.

Eventually we see high-pressure ridging over Eastern Canada (see **Figure ii**) that to me is consistent with a Canadian warming that I think quickly follows the SSW in late November right before the transition to a stretched PV. And I concluded last week's blog with this thought. And I do want to pause at this idea of a Canadian warming. Often Canadian warming will precede Greenland blocking. And though I don't see Greenland blocking predicted in any of the models, I do think that it could materialize in future model forecasts. Though if the transition to a stretched PV is to be believed there is little reason that any Greenland blocking would be other than a transitory feature.

But following the high-pressure ridging centered over Eastern Canada, I would expect the high-pressure ridging to slide westward towards Western Canada and Alaska. Some models are sort of predicting this scenario, maybe with the EPS being the most consistent but I have yet to see any models predicting any kind of meaningful cold. I think that temperatures at either the very end of November or into early December could eventually transition from well above normal as currently predicted to below normal. And depending on the magnitude of the stretched PV turn much colder. I would feel much better about this forecast or expectation if there was any cold air around, even in Siberia but none exists. The only location at high latitudes with any cold air is

Eastern Siberia and that is not coming to North America. I do believe that a rapid transition to colder temperatures is more likely in late November and early December, especially if it is preceded by a rapid advancement in snow cover more so than in March for example or even late February. Last November when we had a similar SSW rapid transition to a stretched PV there was some antecedent cold air around making the transition to cold across North America more likely, or at least I felt more comfortable to make the prediction. Importantly at the end of November last year, wave reflection was clearly visible, which is not the case just yet this year. For me to gain confidence in a cold scenario I would like to see robust wave reflection. If you feel lost when I bring up wave reflection, you can look at last winters' blog posts for a better explanation, or I hope to describe it more clearly and, in more detail, soon.

I have had a change of heart since last week's blog. I do think to characterize as the SSW as short in duration is correct and for me to argue that it was not the case was probably incorrect. For me to be honest with myself a quick transition from an SSW to a stretched PV admits to a short duration SSW. Once a stretched PV follows an SSW, the PV quickly recovers and the downward influence of the SSW comes to an end. I still don't rule out some kind of Greenland blocking but seems a bit disingenuous of me to argue a disrupted PV coupled with an SSW of typical duration.

Therefore, with the PV strengthening by late November and into early December we will likely reach a fork in the road with regards to the strength of the PV. Stretched PVs and accompanying wave reflection protect the PV from further disruption. In winter 2019/20 we had a stretched PV in early December and from there the PV strengthened and stayed strong to record strong for the remainder of the winter. Last winter we had a PV stretch in early December, followed by a strengthening PV but the PV was quickly perturbed again. This setup a "rinse, lather, repeat" themed winter with stretched PVs punctuated by a strengthening PV and/or Canadian warmings. Looking at the model forecasts, I don't think this upcoming PV stretch (assuming that I am correct) is a one and done. It seems that the models are suggesting a return to Ural blocking (see **Figure ii**) and colder temperatures returning to Siberia. This is a favorable background for a follow-up stretched PV. Are we back on the "rinse, lather, repeat" merry-go-round, I think we don't know yet.

It seems strange enough to discuss below normal temperatures with the models still predicting a very mild pattern across North America indefinitely, so it seems even more bizarre to raise the possibility of severe cold. I certainly don't see evidence of severe cold yet, but my cold antenna has gone up seeing some model runs predicting a Western Canada/Alaska-Urals ridge-bridge, with the ECMWF being the most consistent (see **Figure iii**). I am not jumping on-board extreme cold for December, especially since I don't trust any of the model forecasts, but I think it is worth keeping an eye on it.

I did start the blog because I thought recognizing common patterns in the atmosphere I believed can provide at times forecast visibility lacking in the weather models. So, it would seem now hypocritical to want to tether myself to the comfort of model affirmation. It will be interesting to watch if the weather can turn considerably colder than predicted by any of the weather models across North America. If the weather stays mild across North America, that will lend support to

the idea El Niño is driving the weather bus, and the PV is sitting in the back along for the ride. But if it does turn colder than currently forecasted this would lend support that the PV can also at times push aside El Niño and take the wheel of the bus.

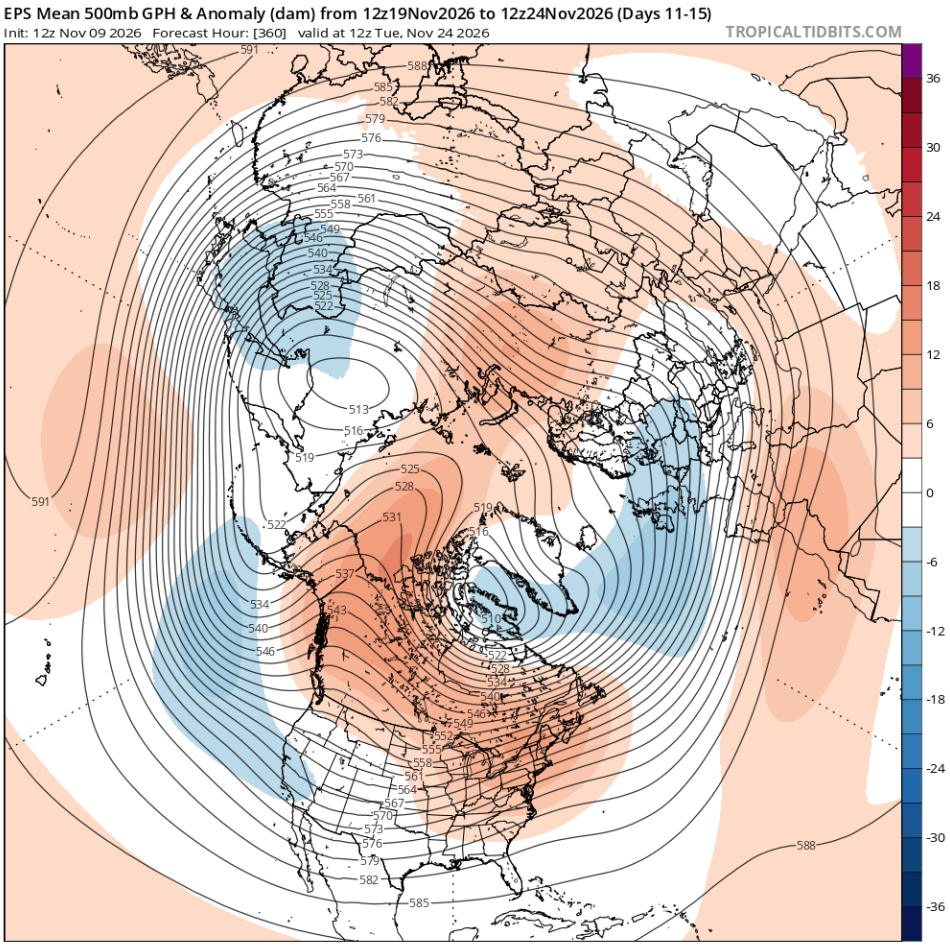


Figure ii. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (dam; shading) across the Northern Hemisphere from 20 Nov to 24 Nov 2026. The forecasts are from the 12Z 9 Nov 2026 ECMWF ensemble.

I was able to update the October Siberian snow cover extent with this year's final number in **Figure iv**. As I expected the value came in just a little higher than average and in line with the previous six years. So not much of a signal there.

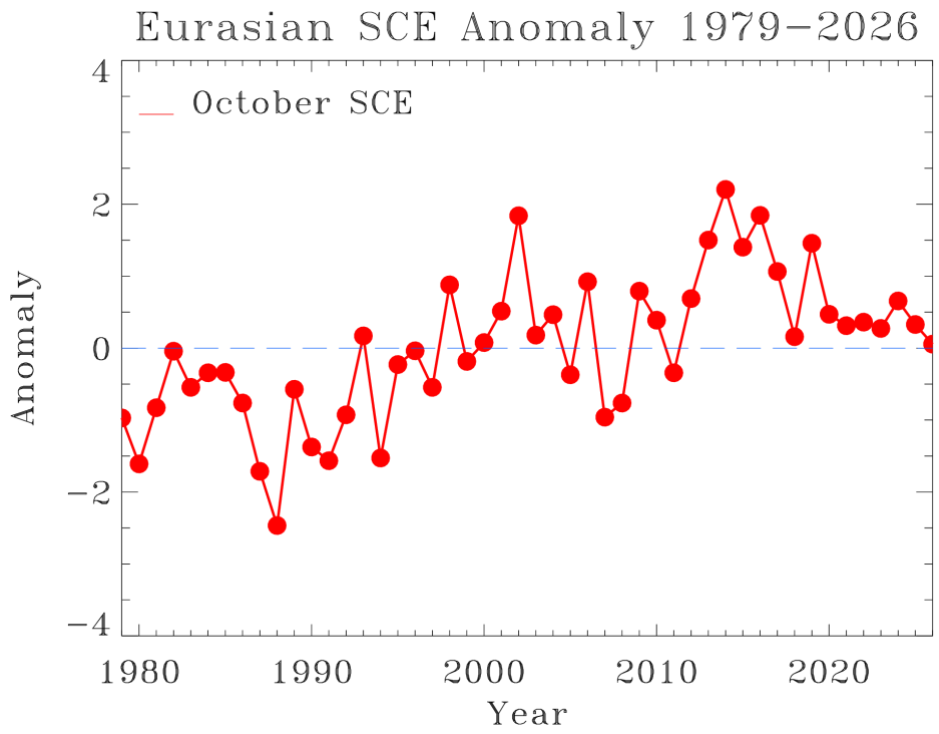


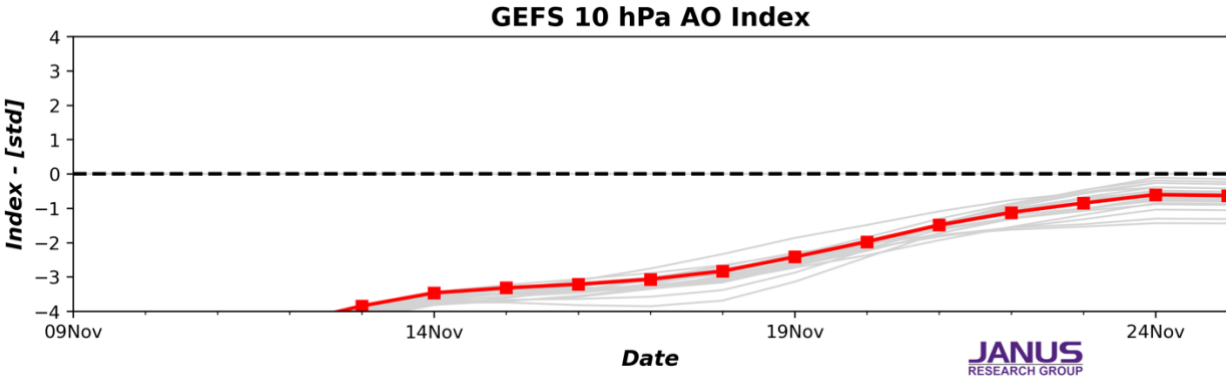
Figure iv. October Eurasian snow cover extent from 1979 through 2026. Long term average from 1979 through 2026 shown as a blue dashed line.

Again I must thank my Janus colleagues John Galantowicz and Karl Pfeiffer, without whose assistance this plot would not be possible!

Near-Term

This week

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



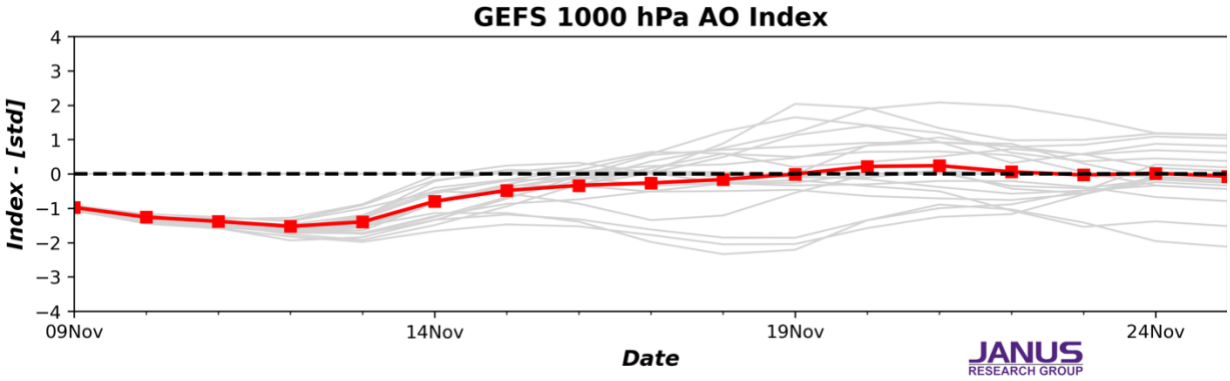


Figure 1. The predicted daily-mean AO at **a)** 10 hPa and at **b)** 1000 hPa from the 00Z 9 Nov 2026 GFS ensemble. Gray lines indicate the AO index from each individual ensemble member, with the ensemble mean AO index given by the red line with squares.

Ridging/positive geopotential height anomalies stretching from Greenland are predicted to support troughing/negative geopotential height anomalies across Northern Europe with ridging/positive geopotential height anomalies across Southern Europe this week (**Figure 2).** This pattern will support normal to below normal temperatures across Southern Europe with normal to below normal temperatures across Northern Europe including the UK this week (**Figure 3**). This week the general pattern across Asia is ridging/positive geopotential height anomalies centered across the Beaufort Sea forcing troughing/negative geopotential height anomalies across Northern and Western Asia with more ridging across Southern and Eastern Asia this week (**Figure 2**). This mostly zonal flow pattern favors widespread normal to above normal temperatures across Asia with normal to below normal temperatures limited to Eastern Siberia and into Southwest Asia this week **(Figure 3**).

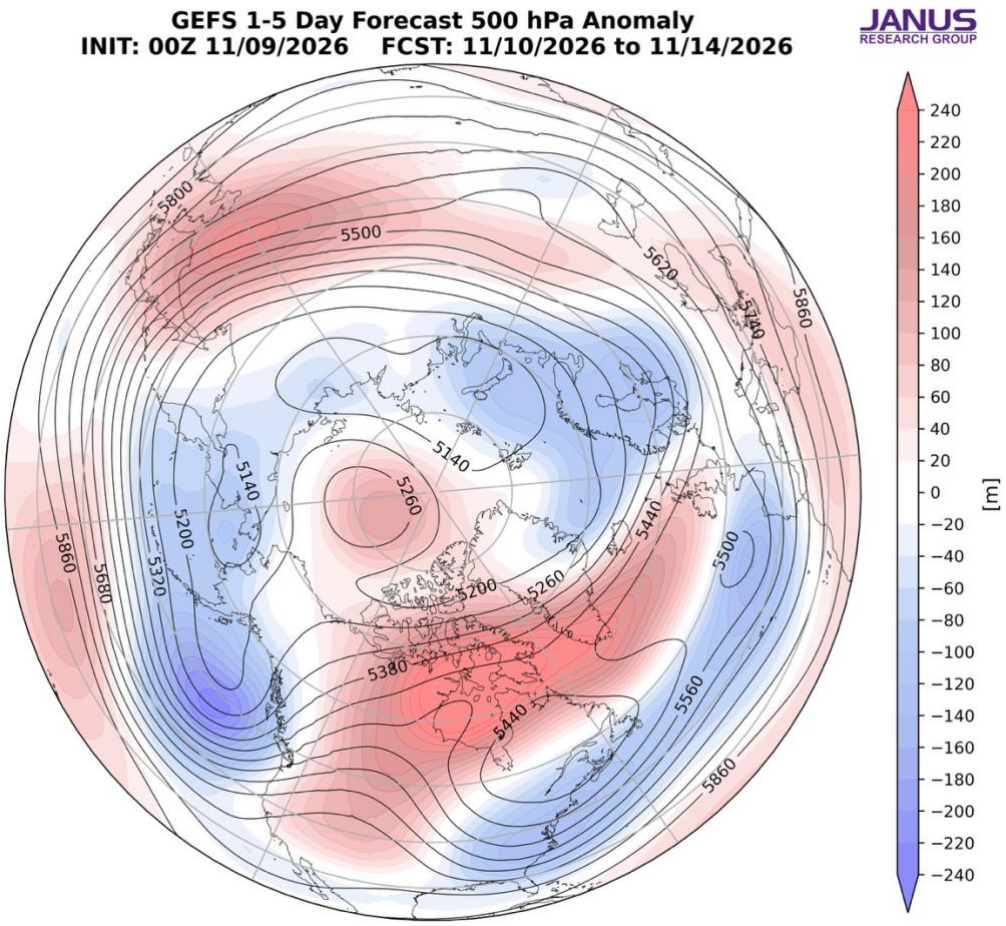


Figure 2. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 10 Nov to 14 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Predicted troughing/negative geopotential height anomalies centered in the Gulf of Alaska will force downstream ridging/positive geopotential height anomalies across much of North America except for troughing/negative geopotential height anomalies in the Eastern US this week (**Figure 2**). This patten will favor normal to above normal temperatures across Alaska, Canada and the US except for normal to below normal temperatures limited to the Eastern US later this week (**Figure 3**).

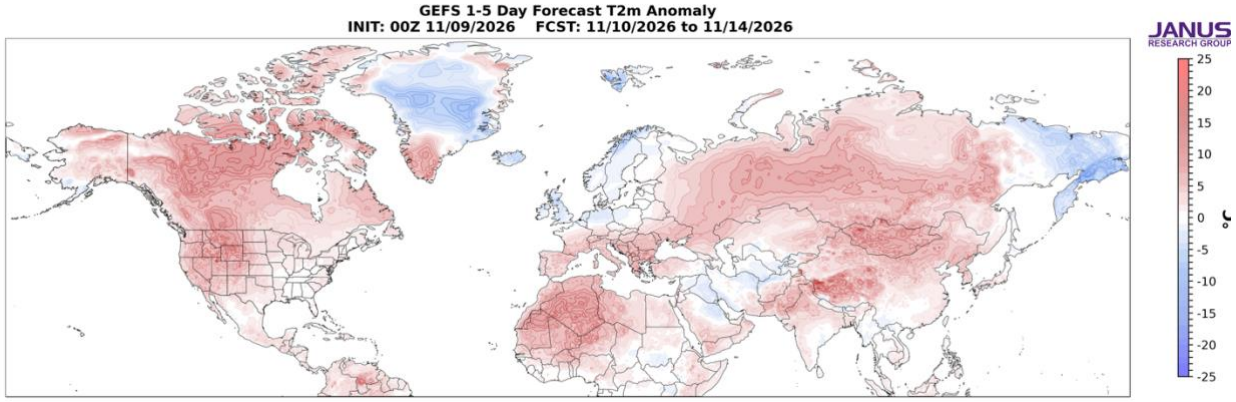


Figure 3. Forecasted surface temperature anomalies (°C; shading) from 10 Nov to 14 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Troughing and/or cold temperatures will support new snowfall across Scandinavia, Northwest Russia, Siberia into Northeast Asia and the Tibetan Plateaus this week while mild temperatures will cause snowmelt in Western Russia, Northeast China and Hokkaido this week (**Figure 4**). Troughing and/or cold temperatures will support new snowfall across the western Alaska, the west coast mountains of Canada and Northern Canada while mild temperatures will cause snowmelt in Central Canada this this week (**Figure 4**). Though it is faint snowfall is also predicted in the Appalachian Mountains of the Eastern US.

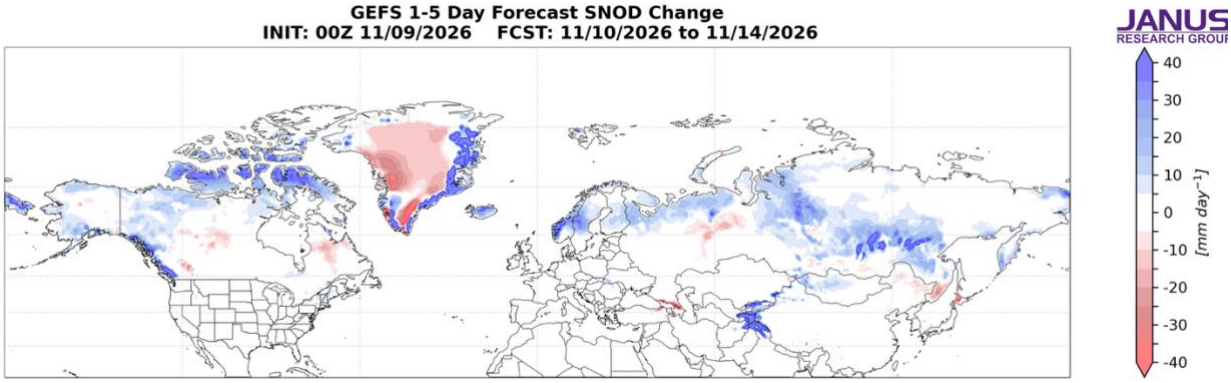


Figure 4. Forecasted snowfall (mm/day; shading) from 10 Nov to 14 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

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 remain close to neutral to slightly negative 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.

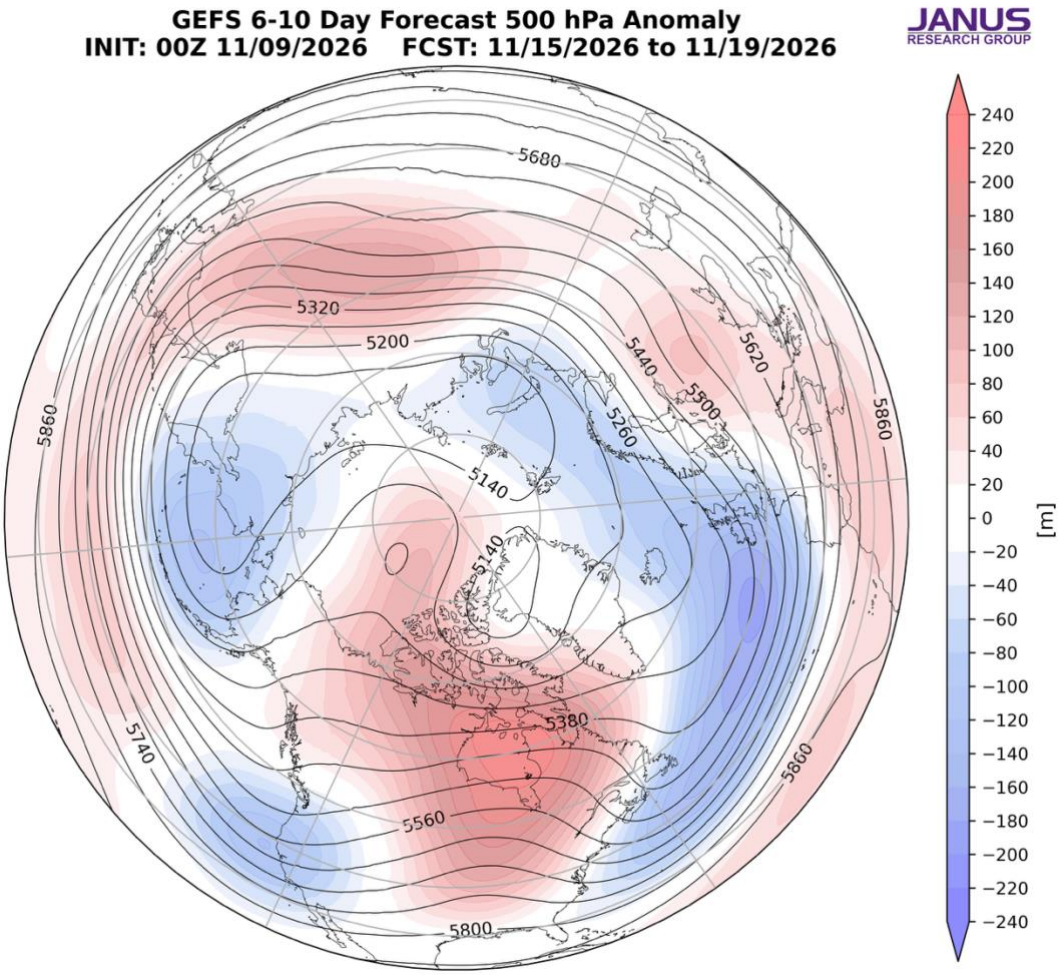


Figure 5. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 15 Nov to 19 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Weak ridging/positive geopotential height anomalies across Greenland will continue to support troughing/negative geopotential height anomalies across Northern Europe with ridging/positive geopotential height anomalies across Southern Europe this period (**Figure 5**). However, the quasi-zonal flow pattern will support the spreading of normal to above normal temperatures across Europe with the best exception for normal to below normal

temperatures in Scandinavia and the UK this period (**Figure 6**). Persistent albeit weakening ridging/positive geopotential height anomalies centered across the Beaufort Sea forcing troughing/negative geopotential height anomalies across Northern Asia with more ridging across Central and Southern Asia this period (**Figure 5**). This zonal flow pattern favors widespread normal to above normal temperatures widespread across much of Asia but especially Central Asia with normal to below normal temperatures limited to Eastern Siberia this period (**Figure 6**).

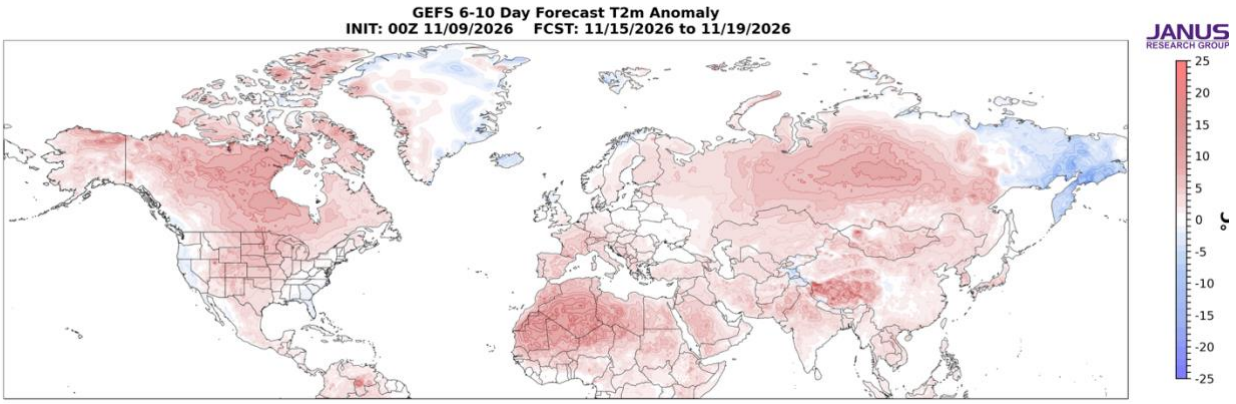


Figure 6. Forecasted surface temperature anomalies (°C; shading) from 15 Nov to 19 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Predicted persistent troughing/negative geopotential height anomalies centered in the Gulf of Alaska will push into the Western US and force downstream ridging/positive geopotential height anomalies across much of North America except for exiting troughing in the Eastern US this period (**Figure 5**). This pattern will favor widespread normal to above normal temperatures widespread across Alaska, much of Canada and the US with the possible exceptions of normal to below normal temperatures limited to the US West and East Coasts this period (**Figure 6**).

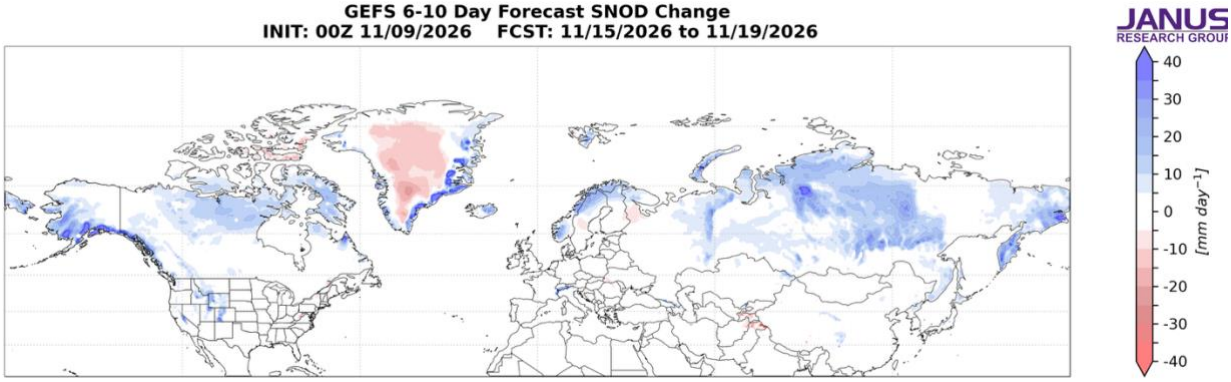


Figure 7. Forecasted snowfall rate (mm/day; shading) from 15 Nov to 19 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Troughing and/or cold temperatures will support new snowfall across the Alps, Norway, the Urals and Siberia while warm temperatures will cause snowmelt around the Baltic Sea and

Central Asia this period (**Figure 7**). Troughing and/or cold temperatures will support new snowfall across western Alaska, Northern Canada, the west coast mountains of Canada and the Rockies this period (**Figure 7**).

Mid Term

Week Two

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

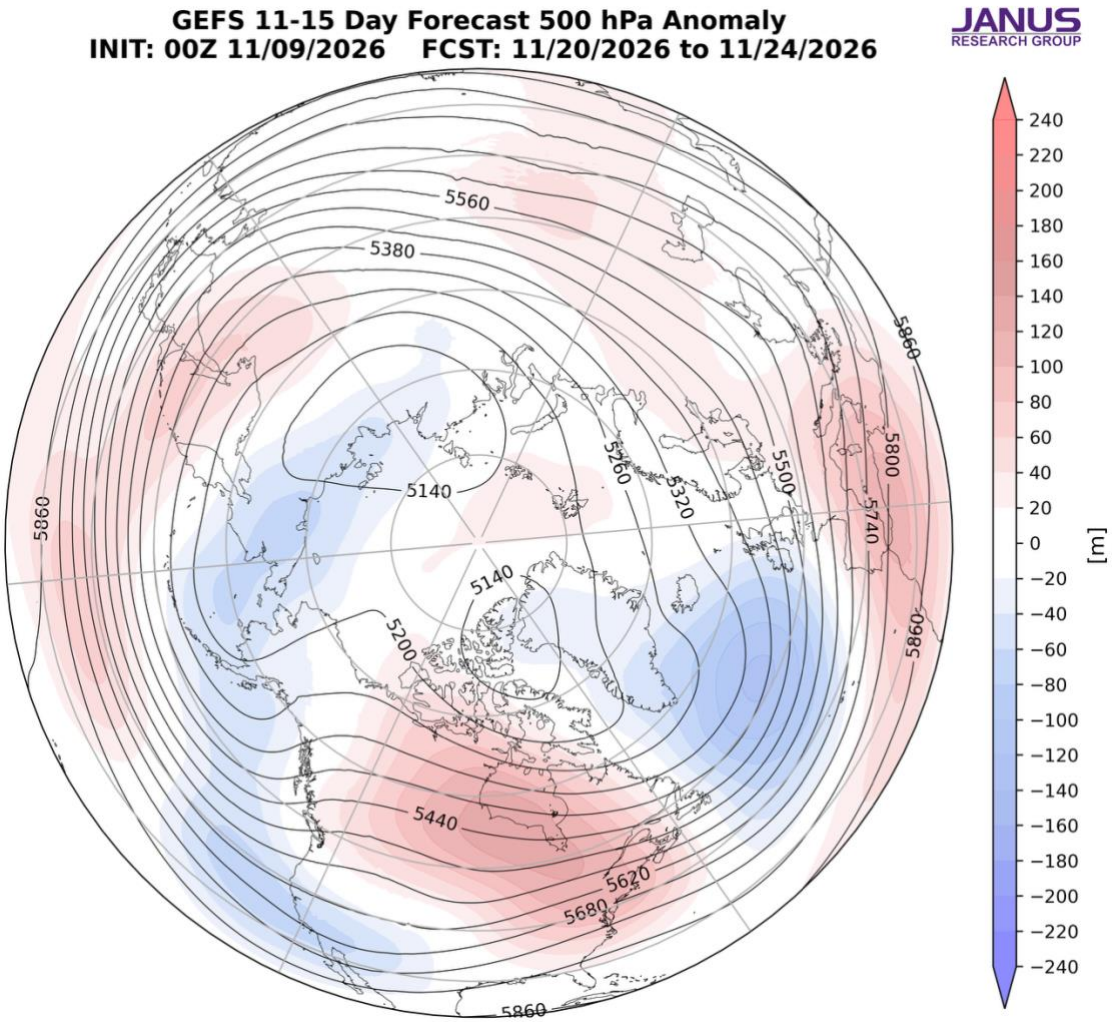


Figure 8. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 20 Nov to 24 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Deepening troughing/negative geopotential height anomalies across the mid-latitude North Atlantic will favor strengthening ridging/positive geopotential height anomalies across Europe this period (**Figure 8**). This pattern will favor widespread normal to below normal temperatures across much of Europe, though some residual cold temperatures are possible in Scandinavia and the UK this period (**Figures 9**). The pattern of troughing/negative geopotential height anomalies across Northern Asia with ridging/positive geopotential height anomalies across Southern Asia is predicted to persist 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 Eastern Siberia this period (**Figure 9**).

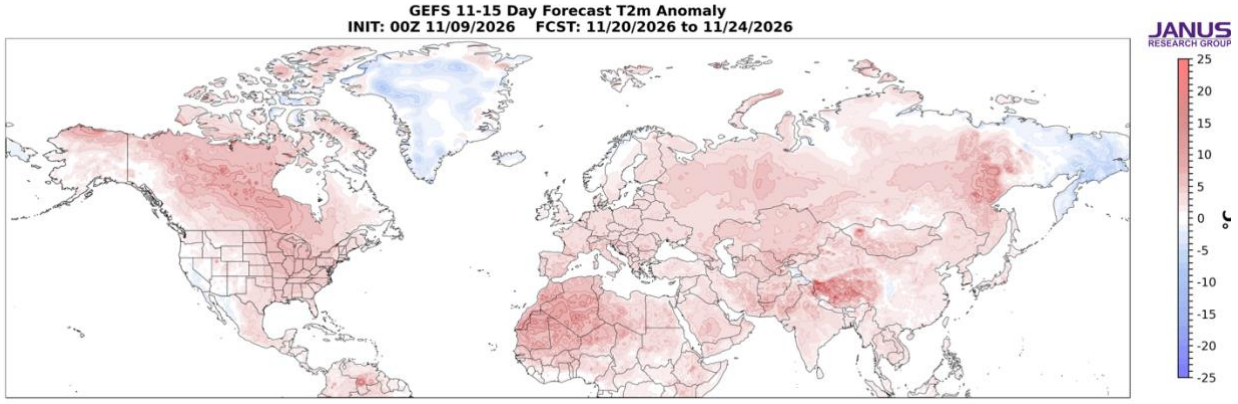


Figure 9. Forecasted surface temperature anomalies (°C; shading) from 20 Nov to 24 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Persistent troughing/negative geopotential height anomalies centered in the Gulf of Alaska and extending into the west coasts of Canada and the US will support downstream ridging/positive geopotential height anomalies across much of North America 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 this period (**Figure 9**).

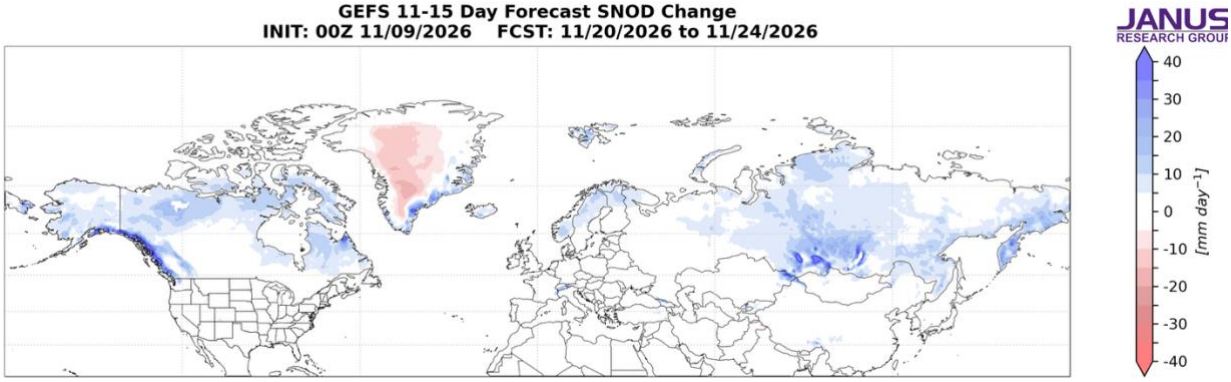


Figure 10. Forecasted snowfall (mm/day; shading) from 20 Nov to 24 Nov 2026. The forecasts are from the 00Z 9 Nov 2026 GFS ensemble.

Troughing and/or cold temperatures will support new snowfall across Scandinavia and much of Siberia this period (**Figure 10**). Troughing and/or cold temperatures will support new snowfall across Alaska, Western and Northern Canada this period (**Figure 10**).

Longer Term

30–day

Today's polar cap geopotential height anomalies (PCHs) plot currently shows cold/negative PCHs limited to the lower troposphere with warm/positive PCHs throughout the stratosphere and upper troposphere (**Figure 11**). However, this week, the warm/positive PCHs in the stratosphere are predicted to descend into the lower troposphere. This is followed by cold/negative PCHs in the upper stratosphere.

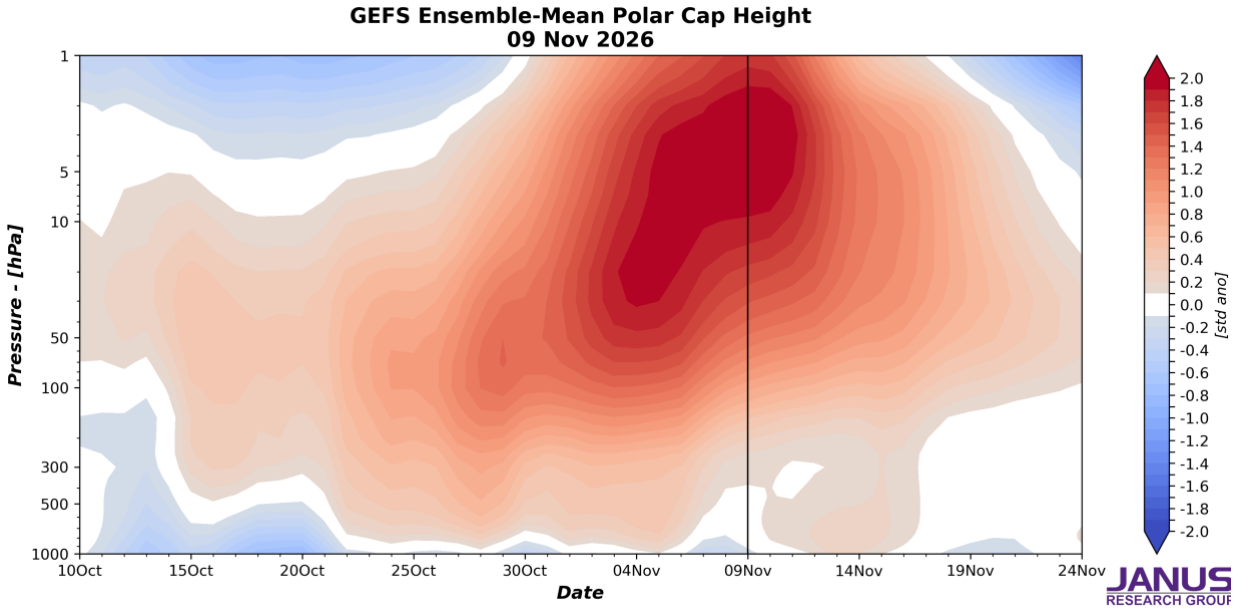


Figure 11. Observed and predicted daily polar cap height (i.e., area-averaged geopotential heights poleward of 60°N) standardized anomalies. The forecast is from the 00Z 09 Nov 2026 GFS ensemble.

This week the predicted neutral PCHs in the lower troposphere (**Figure 11**) are consistent with the predicted negative to neutral surface AO (**Figure 1**). There can be a temporary strengthening of the negative AO over the weekend as the warm/positive PCHs descend to the surface. However, beginning next week when the reemergence of cold/negative PCHs in the lower troposphere (**Figure 11**) could push the surface AO to pop positive.

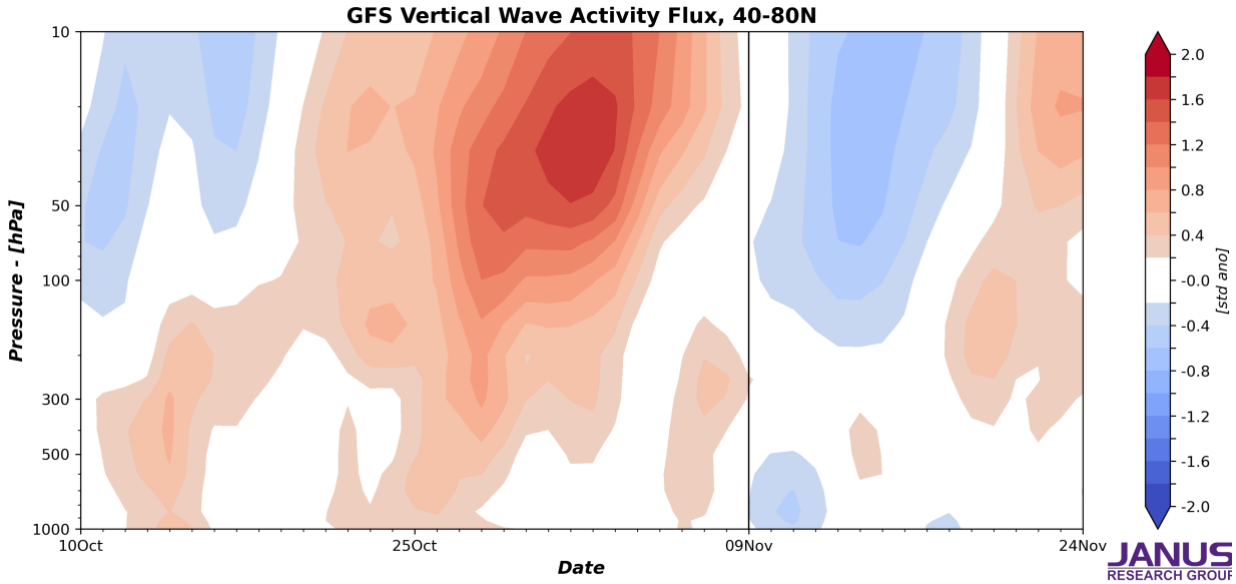


Figure 12. Observed and predicted daily vertical component of the wave activity flux (WAFz) standardized anomalies, averaged poleward of 40-80°N. The forecast is from the 00Z 09 Nov 2026 GFS ensemble.

The large positive (upward) pulse of vertical Wave Activity Flux (WAFz) from the troposphere to the stratosphere or poleward heat transport in the stratosphere is starting in late October is winding down (**Figure 12**). But it does appear that it is sufficient to push the ongoing large PV disruption visible into SSW territory in the warm/positive PCHs in the mid to upper stratosphere (**Figure 11**). All models including the GFS are predicting the earliest SSW on record later this week.

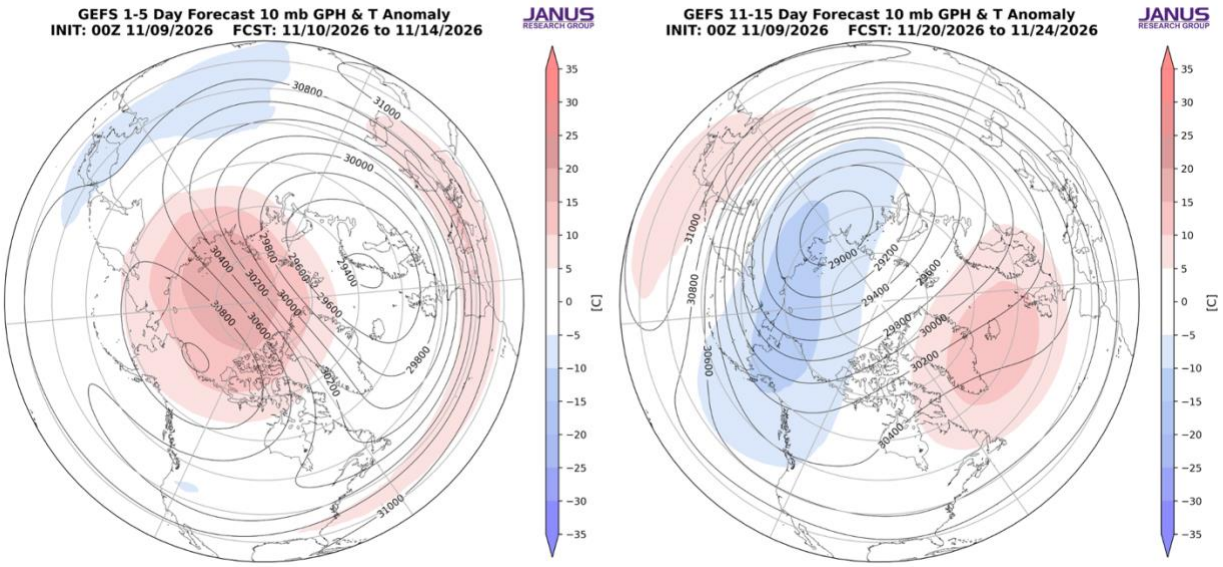


Figure 13. (a) Predicted 10 mb geopotential heights (dam; contours) and temperature anomalies (°C; shading) across the Northern Hemisphere for 10 Nov to 14 Nov 2026.

(b) Same as (a) except forecasted averaged from 20 Nov to 24 Nov 2026. The forecasts are from the 00Z 9 November 2026 GFS model ensemble.

This week polar vortex (PV) is elongated in shape, from Siberia to Canada, with one PV center over Northern Scandinavia with relatively cold temperatures focused on Asia and with high pressure centered over the Beaufort Sea with warm temperatures covering most of the Arctic in the polar stratosphere (**Figure 13a**). This is a displacement type of sudden stratospheric warming (SSW). Then, during the fourth week of November the PV center is predicted to be centered in Siberia with troughing spreading across the North Pacific and into Alaska and Western Canada with two high pressure centers one over Japan and the other over Iceland and warming extending out of Asia into the North Pacific and over the northern North Atlantic in the polar stratosphere (**Figure 13b**). This resembles to me a developing stretched PV. The stratospheric AO in **Figure 1** this week is predicted to strengthen from off the charts negative to just negative this week with the unprecedented early strong disruption of the PV but climbing its way back to near normal by late November.

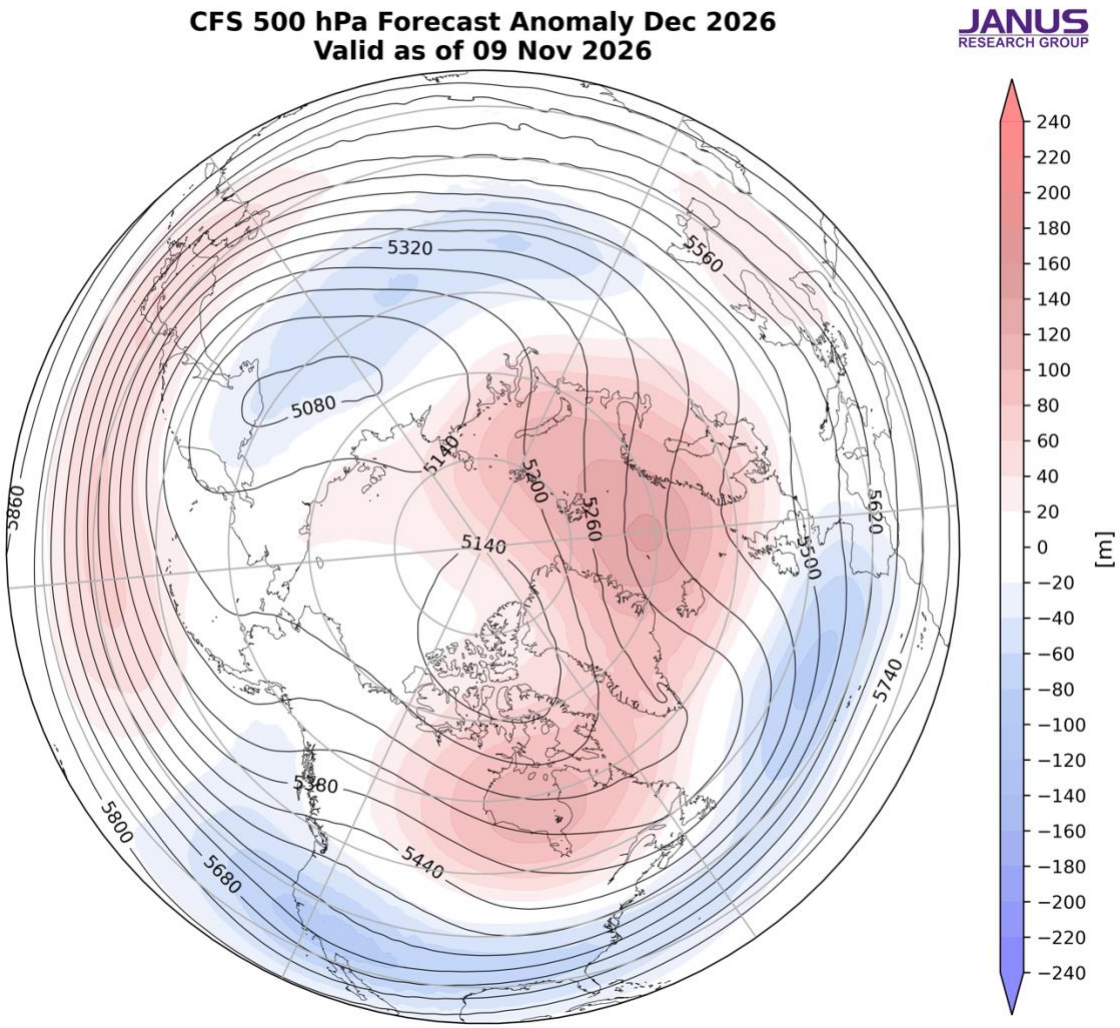


Figure 14. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere for Dec 2026. The forecasts are from the 00Z 9 Nov 2026 CFS.

I include in this week's blog the monthly 500 hPa geopotential heights (**Figure 14**) and surface temperatures for December (**Figure 15**) 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 across Hudson Bay and Greenland, across Scandinavia and into the Barents-Kara Seas with troughing across the mid-latitudes of the North Atlantic into Europe, Siberia into East Asia, the Gulf of Alaska and the Southern US (**Figure 14**). This pattern favors seasonable to relatively warm temperatures across Southern Europe and Scandinavia, the Southern half of Asia including the Arabian Peninsula, the Tibetan Plateau, Pakistan and Afghanistan, Alaska, much of Canada and the Northern US with seasonable to relatively cool temperatures across Northern Europe, much of Northern and into Northern Asia, Alaska, Western Canada and the Southern US (**Figure 15**). This pattern clearly projects onto the pattern of the negative AO, following an SSW across Eurasia but El Niño across North America.

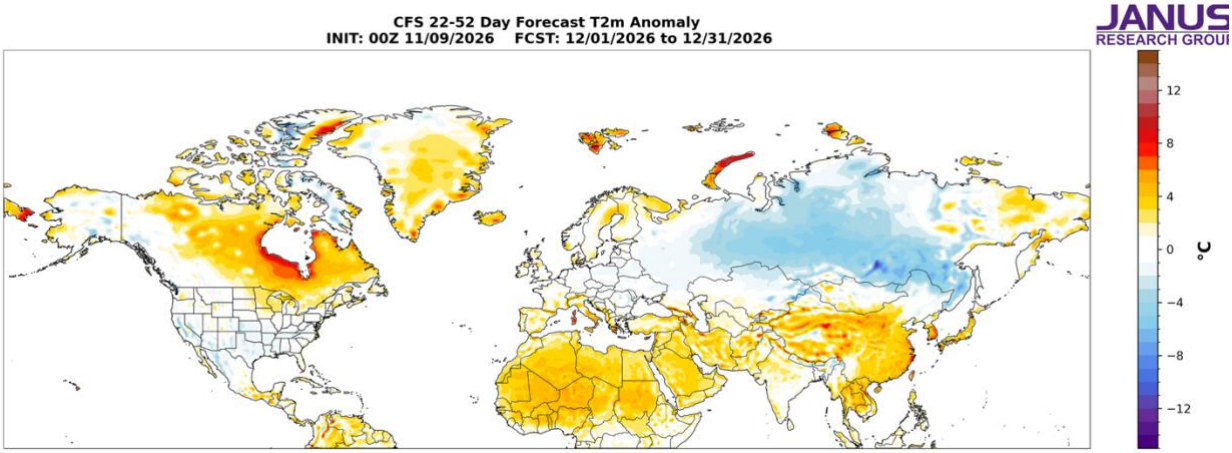


Figure 15. Forecasted average surface temperature anomalies (°C; shading) across the Northern Hemisphere for Dec 2026. The forecasts are from the 00Z 9 Nov 2026 CFS.

Boundary Forcings

Arctic Sea Ice

I am and will continue to watch Arctic sea ice. Current conditions are shown in **Figure 16**. 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 decent clip, but clearly more in the 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. In fact with sea ice near normal in the North Pacific sector and well below normal in the North Atlantic sector looks nearly optimal for perturbing the PV. 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.

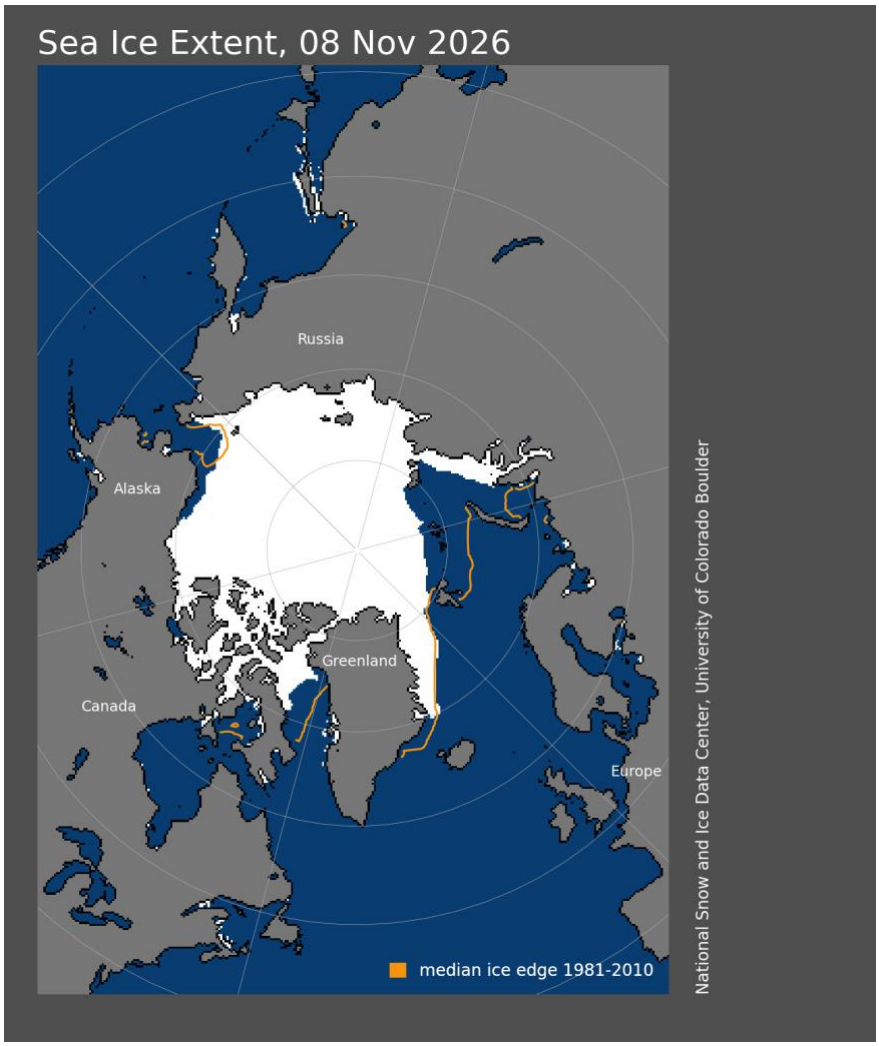


Figure 16. Arctic sea ice cover extent for 8 November 2026. White depicts ice covered areas and the orange contour the climatological extent of Arctic sea ice for the date. Plot taken from: https://nsidc.org/sea-ice-today

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 17**), clear signs of El Niño conditions. In fact, "super" El Niño has been achieved contributing to the large attention in the media. The El Niño is likely close to its peak and is

expected to become the strongest El Niño on record, though some weakening has been observed of late. Observed SSTs across the NH remain well above normal especially in the North Pacific and much of the North Atlantic, though below normal SSTs exist regionally especially in the Southern Ocean. The widespread above normal SSTs remain impressive. The SST pattern in the North Atlantic resembles the "tripole" pattern that is thought to favor a negative NAO.

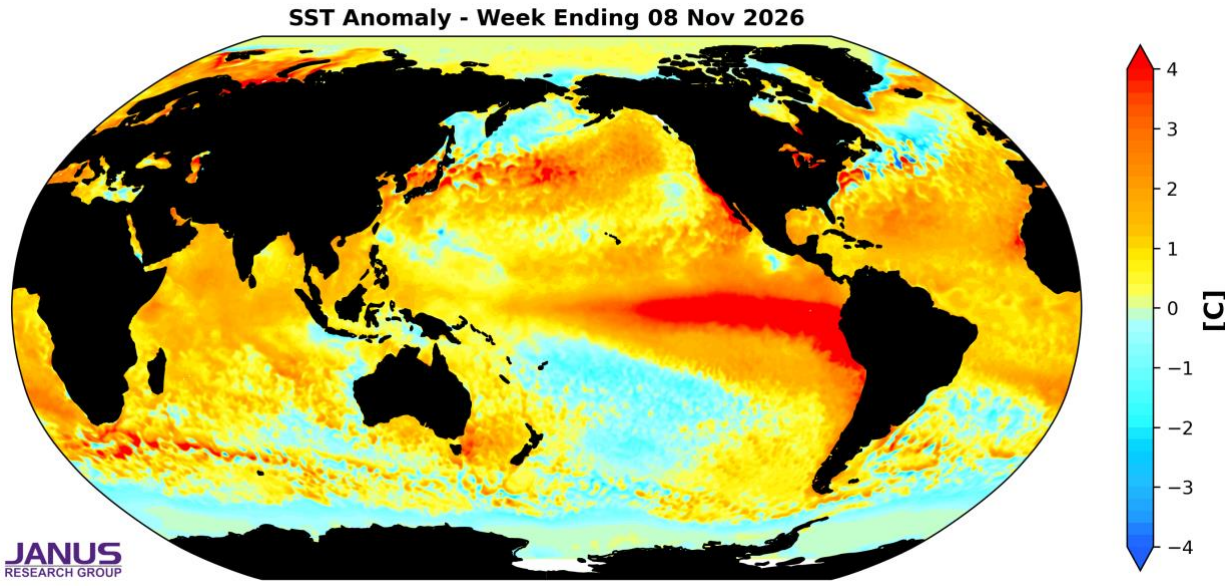


Figure 17. The latest daily-mean global SST anomalies for week ending 8 Nov 2026.

Madden Julian Oscillation

Currently the Madden Julian Oscillation (MJO) is in phase two (**Figure 18**), and the forecasts are for the MJO to strengthen move into phase three and weaken again the next two weeks (**Figure 18**). Phases two and three mostly favor troughing in the Gulf of Alaska with ridging across Eastern Canada, therefore, it seems that the MJO is having influence on North American weather the next two weeks. But admittedly this is outside of my expertise.

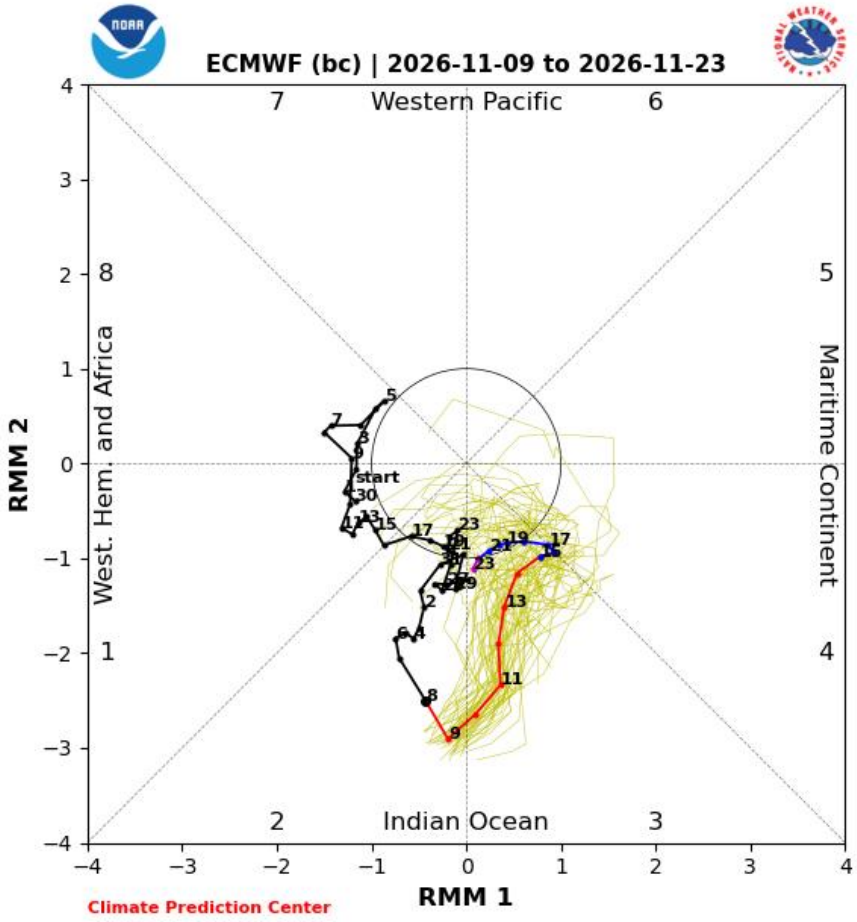


Figure 18. Past and forecast values of the MJO index. Forecast values from the 00Z 9 Nov 2026 ECMWF model. Yellow lines indicate individual ensemble-member forecasts, with the green line showing the ensemble-mean. A measure of the model 'spread' is denoted by the gray shading. Sector numbers indicate 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

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