JANUS RESEARCH GROUP

Arctic Oscillation and Polar Vortex Analysis and Forecasts

January 12, 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 neutral to slightly negative and is predicted to remain neutral to negative the next two weeks as pressure/geopotential height anomalies across the Arctic are currently mixed to mostly positive and are predicted to remain mostly mixed to positive the next two weeks. The North Atlantic Oscillation (NAO) is currently neutral as positive but weak pressure/geopotential height anomalies dominate across Greenland, and the NAO is predicted to remain near neutral the next two weeks as pressure/geopotential height anomalies are predicted to remain mostly positive but weak across Greenland the next two weeks.
- Weak ridging/positive geopotential height anomalies across Greenland will support weak troughing/negative geopotential height anomalies across Europe the next two weeks. This pattern will favor normal to below normal temperatures across Eastern Europe while a maritime flow will support normal to above normal temperatures across Central and Western Europe including the United Kingdom (UK) this week. However next week as ridging strengthens across the North Altalntic sector of the Arctic, colder air will return to Central and Western Europe including the UK except for normal to above normal temperatures across Southern and Eastern Europe.
- The general pattern across Asia the next two weeks is ridging/positive geopotential height anomalies across the Eurasian sector of the Arctic including Eastern Siberia supporting

spreading troughing/negative geopotential height anomalies across much of Asia with ridging mostly confined to Southeast Asia. This pattern favors widespread normal to below normal temperatures across much of Asia with the biggest exceptions being normal to above normal temperatures across of Eastern Siberia and the Tibetan Plateau.

- The general pattern across North America the next two weeks is strengthening ridging/positive geopotential height anomalies across Alaska and the Gulf of Alaska will support deepening troughing/negative geopotential height anomalies across the interior North America. This patten will support this week widespread normal to above normal temperatures across most of Canda and the United States (US) with the excpetions of normal to below normal temperatures across Alaska, and the Southeastern US. Then next week cold air will once again spread across Canada and the Northern US with normal to above normal temperatures across Alaska and the Southern US.
- I have been discussing how the polar vortex (PV) can walk through three doors and therefore the weather. I stil favor "rinse, lather, repeat" or door number three but my uncertainty has greatly increased this week about what is to follow. My thoughts below.

Plain Language Summary

As we quickly approach mid-winter, cold temperatures have dominated northern Scandinavia, Western and Central Siberia, Alaska, much of Canada and the Northeastern US (see **Figure**). In contrast mild temperatures have dominated Europe, Western, Central and Eastern Asia, Eastern Siberia, Northeast Canada and the Western and Southern US (see **Figure**). The forecast for the second half of January can quickly be summarized as an expansion of the cold across Eurasia and even North America thanks to a resurgence of high-laittude blocking (see **Figures 6** and **9**). The polar vortex (PV) was until recently circular and strong, which favors relatively mild temperatures mostly in North America. However I am still riding the "rinse, lather, repeat" PV and weather pattern for the foreseeable future. Basically, alternating stretched PVs (cold) and relaxation to a more circular PV (mild). We have one stretched PV ongoing currently and nother one looking likely for late January. But what is quite striking to me is the predicted upcoming warm Arctic/cold continents pattern (see **Figures 6** and **9**). It is a stark and impressive example that doesn't occur that often.

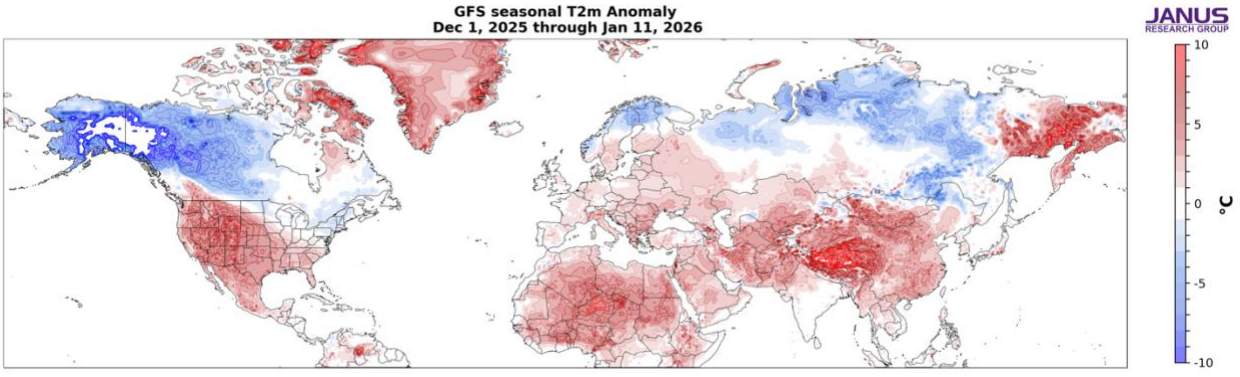

Figure. Estimate of the observed surface temperatures (°C; shading) from 01 Dec 2025 to 11 Jan 2026 based on GFS initializations and the GFS forecast from the 12 Jan 2026 run.

Impacts

Thankfully my X/Twitter account @judah47 is back but one post that I shared on my new account @Snow_Cohen was the remarkable example of "Warm Arctic and cold continents" pattern that the models are producing in the surface temperature forecasts for the second half of January. I show an upcoming forecast in **Figure i**. Of course similar plots are shown below but my plots mask out the oceans. I can't think of a more iconic example of this pattern. The cold stretches from coast to coast in both Eurasia and North America with the bullseye or maximum warming centered right over the Barents-Kara Seas in the Arctic. The Barents-Kara Seas is thought to the focal point of Arctic mid-latitude linkages. Maybe there are few people besides myself that get excited by temperature forecasts like these, but I certainly do. And to my dismay, I haven't experienced too much snow yet again this winter to really get excited about. Speaking of impressive, our snow drought in Boston is certainly impressive.

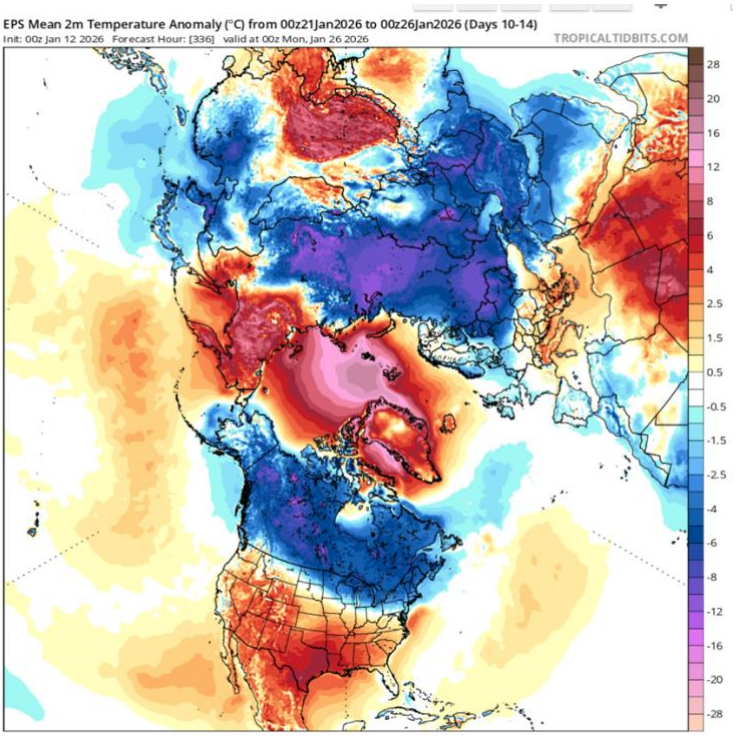

Figure i. Forecasted surface temperature anomalies (°C; shading) from 21 Jan 2026 to 26 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 EPS ensemble. Plot taken from https://www.tropicaltidbits.com/.

I am initmately involved in a debate whether the dipole of temperature anomalies in the Arctic and the continents are incidently related or causally related. I argue the latter (causally related) and hence I use Arctic predictors in our winter forecast. I further argue that regionally across the continents winter temperatures have not warmed as fast as projected in part because of rapid Arctic warming. I could go on and on but not sure how many find this of interest so I will stop here for now.

Now on to the forecast. As my habit is this year, I first discuss the two-week forecast for the mid-tropospheric circulation, which helps set the table for what I am expecting with the PV and our weather. Once again, the mid-tropospheric circulation is characterized by low pressure centered near the North Pole and high-pressure ridging floating around the mid- to high-latitudes (see **Figure ii**), though maybe less so than in previous weeks this winter. Initially, there are two dominant high latitude blocking high pressure centers one centered over Eastern Siberia and the other centered over the Barents-Kara Seas. These two high-latitude blocking centers persist for the next two weeks. However over the period the models are predicting a re-emergence of the Alaskan blocking and possibly Greenland blocking (see **Figures i, 5** and **8**), though the Greenland blocking shown in **Figure ii** is not nearly as impressive in the ensembles (e.g., see **Figure 8**).

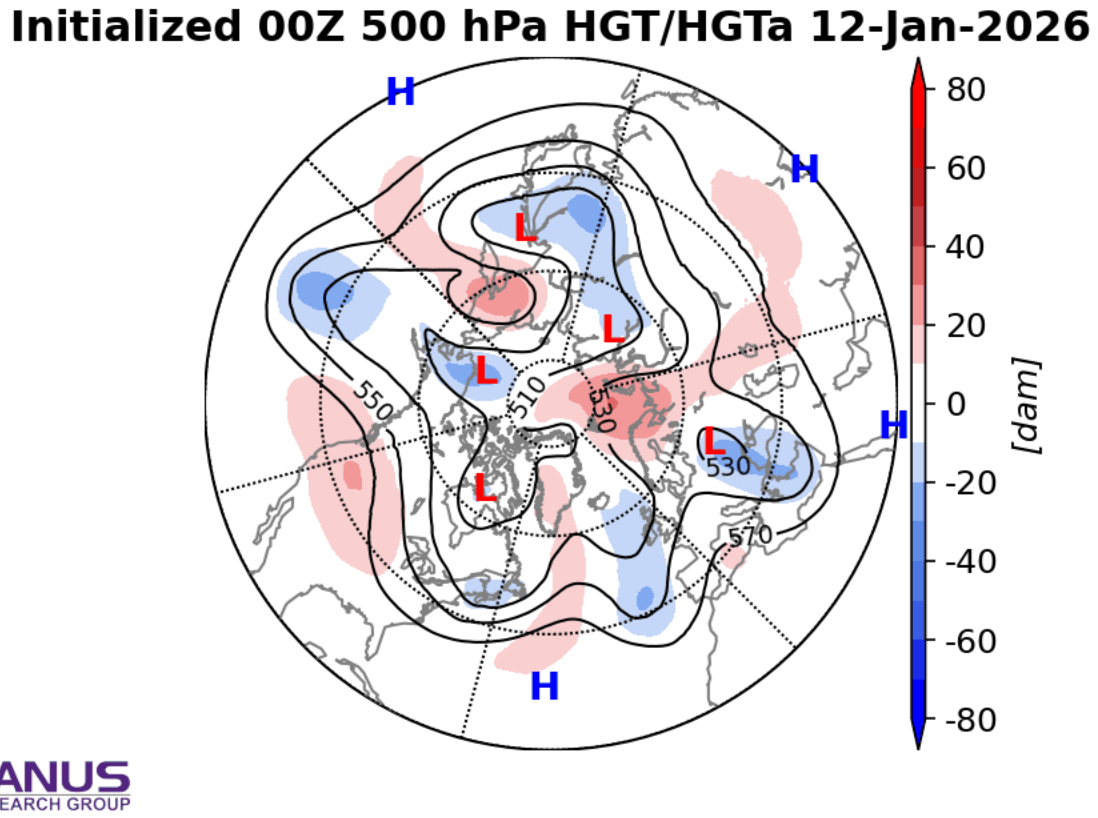

Figure ii. Initialized 500 mb geopotential heights (dam; contours) and decameter anomalies (dam; shading) across the Northern Hemisphere for 12 Jan 2026 and forecasted from 13 Jan 2026 to 27 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS model ensemble.

Last week I talked about the "trifecta" of high latitude blocking simultaneous, Alaska, Greenland and Barents-Kara Seas (Ural) blocking that I believed was supportive of widespread cold weather across the NH. This is looking more of a reality (see **Figure i**) but the three headed horseman is now a four headed horseman with the fourth region being Eastern Siberia. This last region of high latitude blocking throws a wrench in the gears of trying to anticipate the evolution of the PV, as discussed further below. I am struggling with the forecast beyond a week and I suspect the dynamical models are as well.

Another change in the high latitude blocking from last week besides the Eastern Siberia blocking is the Urals blocking transitioning to Barents-Kara Seas blocking. This has two important implications. The first this is much more favorable for cold in Europe. Ural blocking tends to trasnsport codl Siberian air into East Asia while blocking it from reaching Europe while Barents-Kara Seas blocking can help create a conduit for cold Siberian to reach Europe. The other implication is its impact on the PV. I do think Ural blocking is more favorable for weakening the PV with Barents-Kara Seas blocking less favorable for weakening the PV with only stretched PVs likely and not full on sudden stratospheric warmings (SSWs).

As seen in **Figure iii** (and also **Figure 12a**) the PV has an elongated shape in appearance (also see **Figure 12a**) continuing the streak of repeated stretched PVs punctuated or separated by a more circular PV. Certainly the return of blocking across Northwest Eurasia into the Barents-Kara Seas supports at least one more stretched PV.

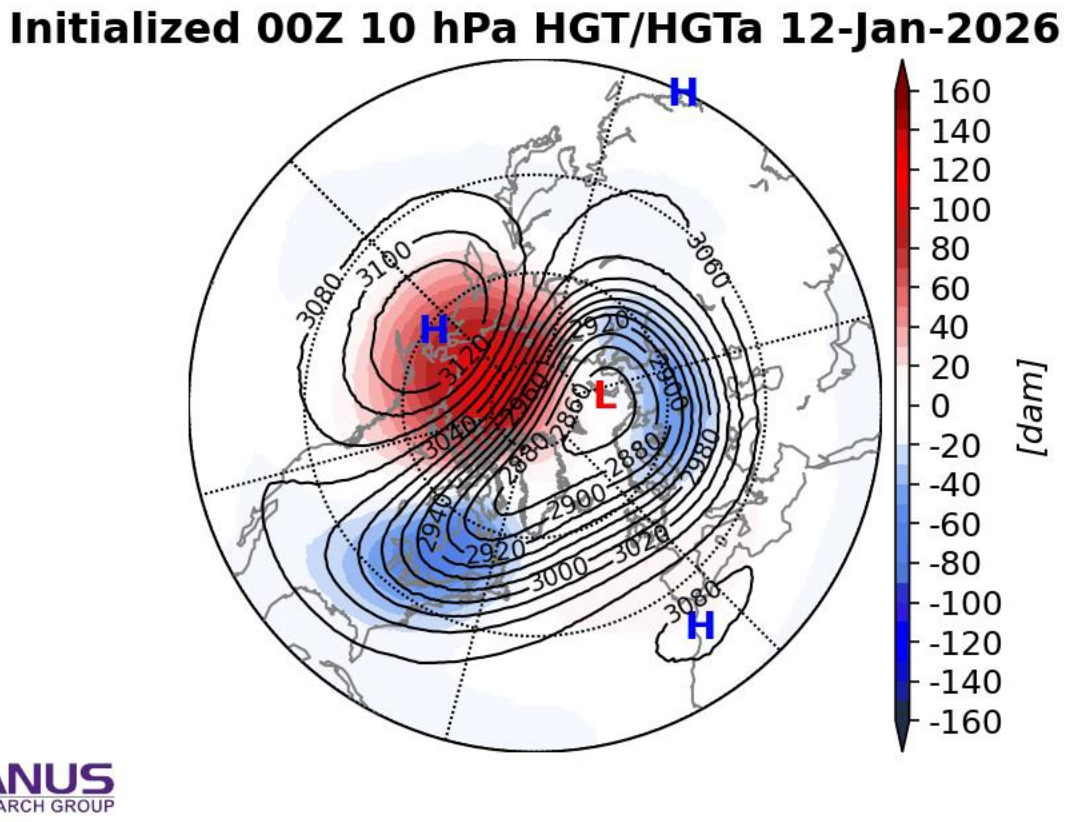

Figure iii. Forecasted average 10 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere for 12 Jan 2026 and forecasted from 13 Jan 2026 to 27 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS model ensemble.

But then what happens next is challenging (at least to me) quantify or characterize the PV in the fourth week of January. As seen in **Figure iii** (and also **Figure 12b**) the PV for the most part maintains its elongated shape in appearance. However at the same time the PV appears to strengthen considerably with the PV center shifted towards North America while undergoing deepening with the deeper shades of blue near the PV center. The stronger PV is certainly consistent as seen with the deepening cold/negative polar cap geopotential height anomalies (PCHs) in the stratosphere shown in **Figure 11**. So despite what I wrote last week, that the scenario of a runaway strong PV coupling to an overall mild NH continents becoming increasingly unlikely, the models are not on board just yet. Good thing that I followed that up with humility is always warranted.

And as I have been routinely doing, looking at the wave diagnostics in **Figure iv** continues to display wave reflection over the weekedn and into late January. For both periods shown, wave energy goes up and east over Asia, reflects off the stratospheric PV and then heads down and east over North America where the energy is re-absorbed and could potentially amplify the standing wave over North America and deliver cold air from the Arctic south, east of the Rockies. There is westward wave tilt with height over Asia and an eastward wave tilt with height over North America that is a classic signature of wave reflection. Though the eastward tilt is more pronounced in the first period compared to the second period.

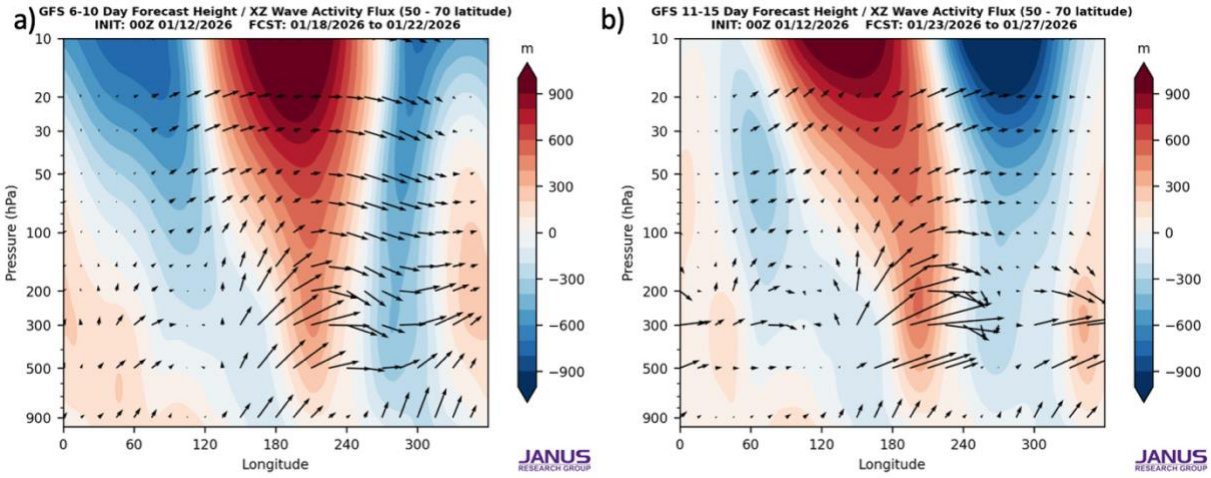

Figure iv. **a)** Predicted longitude-height cross section of geopotential eddy height anomalies (shading) and wave activity flux (vectors) for 18 January through 22 January 2026 **b)** same as **a)** but forecast from 23 January through 27 January 2026. The forecast is from the 00Z 12 January 2026 GFS operational.

Therefore I think the next two weeks will once again be dominated by stretched PVs with some important changes or evolution. Clearly this week the stretched PV is focused in eastern North America with the ensuing cold focused in the Eastern US (see **Figure 6**). However when the PV is quite strong, often the stretched PV is focused more in western North America and this is what appears in **Figure iii** as well. When the stretched PV is focused in western North America the

Eastern US can turn very mild. However I believe that the extent of high latitude blocking in the North Atlantic sector will prevent that, at least in the Northeastern US. Also as I have discussed previously, a stretched PV focused in western North America most often transitions to a strong PV or a stretched PV focused in eastern North America. I am certainly leaning to the latter option and therefore even if there is a milder period in eastern North America, likely focused in the Eastern US, I would expect the cold air to return to the Eastern US.

As I have been doing for many weeks now (and I received only positive feedback from readers), I will continue doing my best Monty Hall from "Let's Make a Deal" impression. The three doors are: door number one - the reflective layer in the stratosphere that gave rise to the stretched PV also protects the PV from subsequent upwelling energy from the troposphere and allows the PV to strengthen. The second door is, though there is short-term strengthening of the PV, high-latitude blocking resumes its assault on the PV and we see more stretched PVs and/or Canadian Warmings (that often transition to stretched PVs) until finally there is knockout punch and a true sudden stratospheric warming (SSW) either in January or February. And finally, the third scenario is that the stretched PVs just keep repeating for much of the winter punctuated or separated by a relatively strong PV and or Canadian warmings.

I have since the late fall favored door number three or what I like to call a "rinse, lather, repeat" PV and weather pattern for the foreseeable future. Basically, alternating stretched PVs and relaxation to a more circular PV and oscillating or alternating cold and mild periods for East Asia and or North America, that can feature some wild temperature swings. Eventually the pattern could transition to either door number one, persistently strong PV or door number two, a major SSW. I think we will experience one or two more stretched PVs for the remainder of January and therefore still riding the "rinse, lather, repeat" train.

I have also been handicapping which door is gaining or losing momentum. I don't think this week there has been much change in momentum this week. High-pressure ridging in the North Atlantic sector support a weakening PV while high-pressure ridging in the North Pacific sector support a strengthening PV. Therefore as seen in **Figure ii** and **Figures 5** and **8**, there is competition across the Eurasian Arctic to whether strengthen or weaken the PV so we have a stalemate of sorts.

I am not jumping on a strenghtening PV bandwagon just yet because of the strength of blocking in the Barents-Kara Seas (which I think favors stretched PV s over both SSWs and a runaway strong PV), the extent of the cold temperatures across the NH but we shall see. So for now staying the course. Our PV forecast model did seem to strongly suggest a larger PV disruption in early February. Admittingly not looking great right now, but I am not ready to totally concede defeat on that one. I will give it at least another week. Also as we head into later into the seasons, both winter and summer, persistence becomes more of a factor. So those places that are still cold at the end of January, I think there is a good chance the cold persists for much of February.

I would just end with the models predicting the PV center shifting into North America and the rapid deepening of geopotential heights over Canada. I show an example from the most recent

ECMWF forecast in **Figure v**. This could be a harbinger of extreme cold in Canada for late January with the risk of entering the Northern US. The models are predicting cold in Canada for the fourth week of January but the forecasts could still go colder.

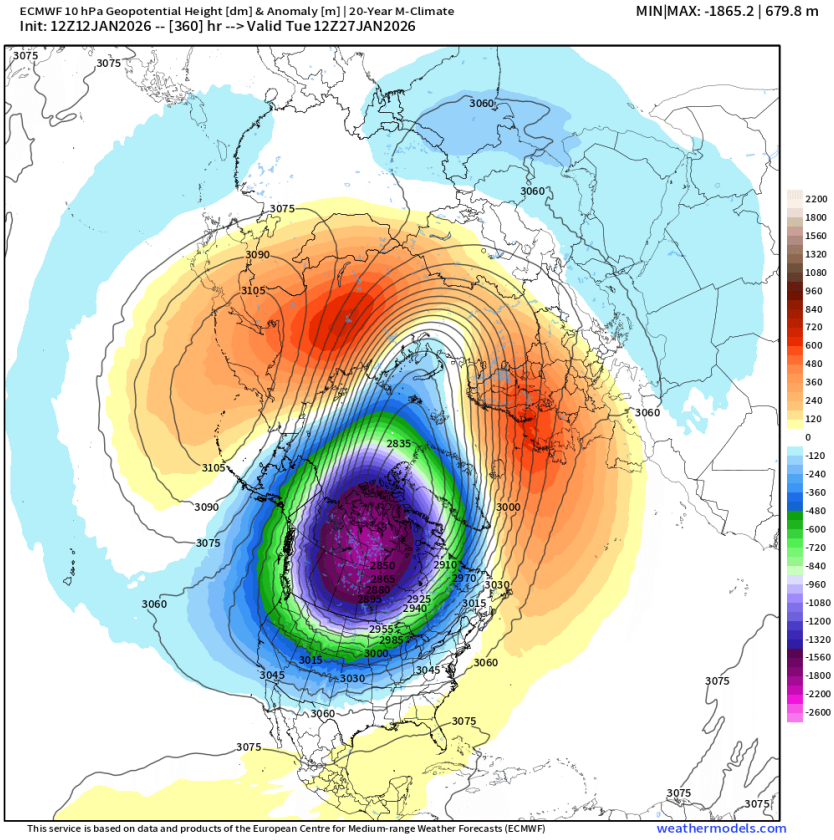

Figure v. Predicted 10 mb geopotential heights (dam; contours) and anomalies (meters) across the Northern Hemisphere averaged for 27 Jan 2026. The forecast is from the 12Z 12 January 2026 ECMWF operational ensemble. Plot taken from https://weathermodels.com/.

Near-Term

This week

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

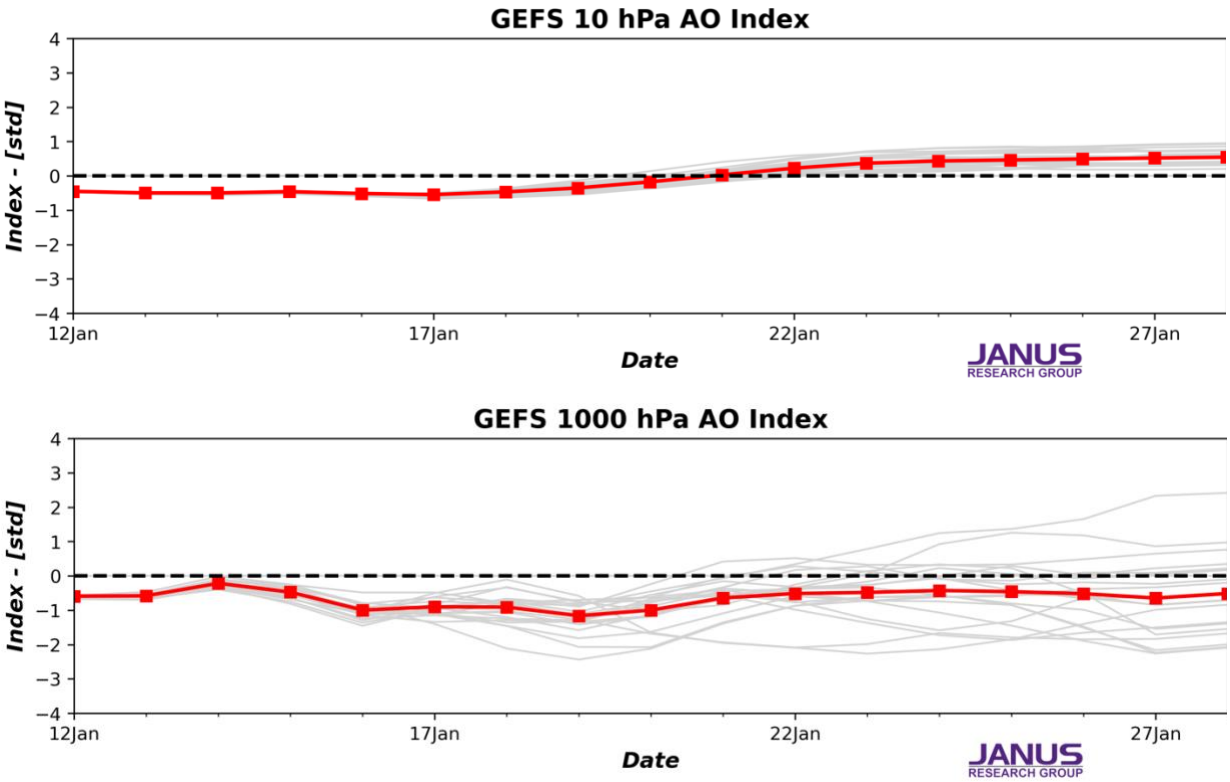

Figure 1. The predicted daily-mean AO at a) 10 hPa and b) 1000 hPa from the 00Z 12 Jan 2026 GFS ensemble. Gray lines indicate the AO index from each individual ensemble member, with the ensemble mean AO index given by the red line with squares.

Weak ridging/positive geopotential height anomalies centered on Greenland will support weak troughing/negative geopotential height anomalies across Europe (**Figure 2).** This pattern will support normal to below normal temperatures across Eastern Europe, however a more maritime flow will support normal to above temperatuers across Western and Central Europe including the UK this week (**Figure 3**). This week the general pattern across Asia is ridging/positive geopotential height anomalies across Northern Asia supporting troughing/negative geopotential height anomalies across Southwestern and Central Asia with more ridging across Southeastern Asia this week (**Figure 2**). This pattern favors normal to above normal temperatures across Northern Siberia and much of Southern Asia with normal to below normal temperatures across Southwest and the interior Asia this week **(Figure 3**).

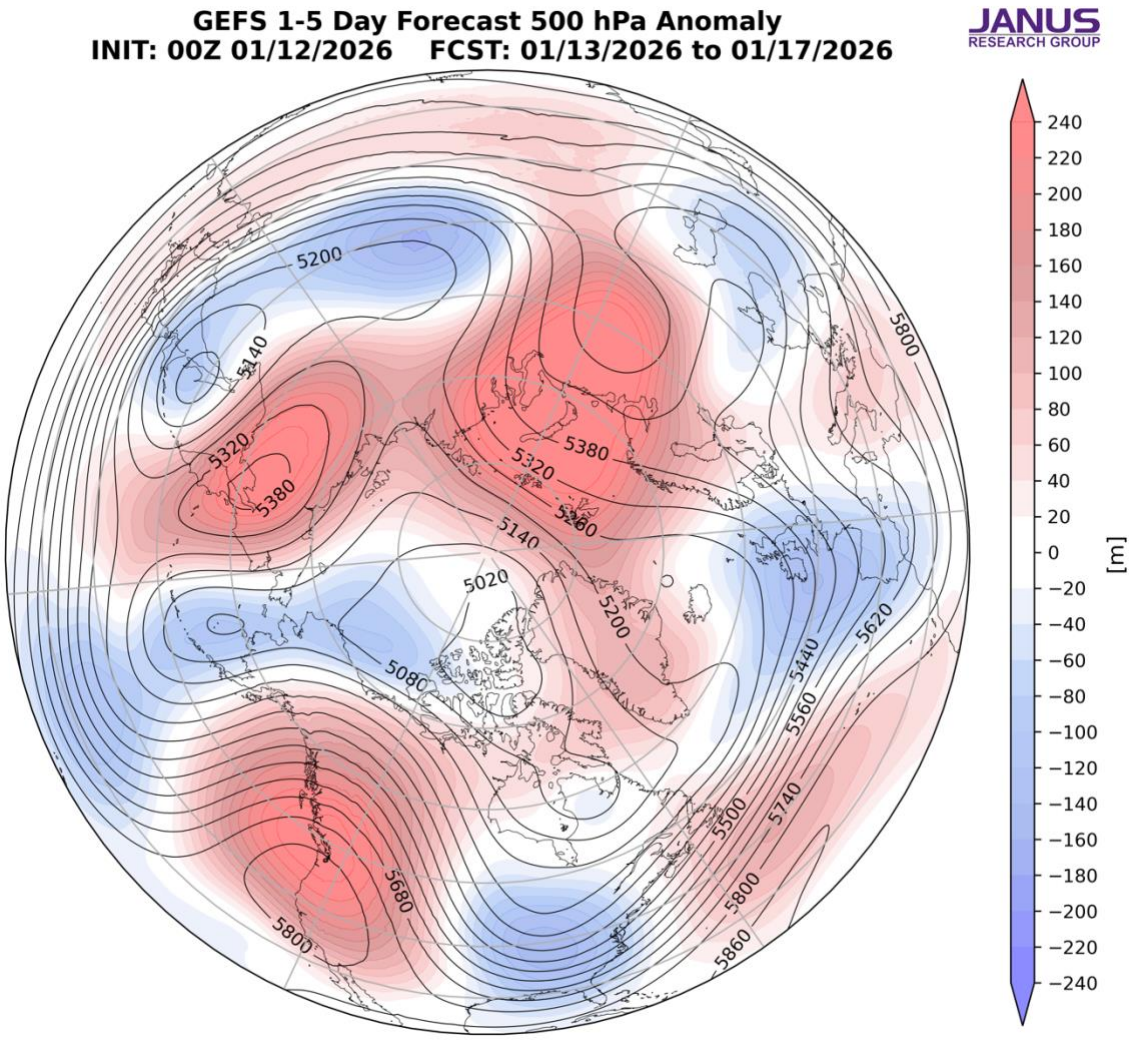

Figure 2. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 13 Jan 2026 to 17 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

This week strengthening ridging/positive geopotential height anomalies across western North America will support deepening troughing/negative geopotential height anomalies across Eastern Canada and the Eastern US this week (**Figure 2**). This patten will favor widespread normal to above normal temperatures across much of Canada and the US with normal to below normal temperatures mostly limited to Alaska and the Southeastern US this week (**Figure 3**).

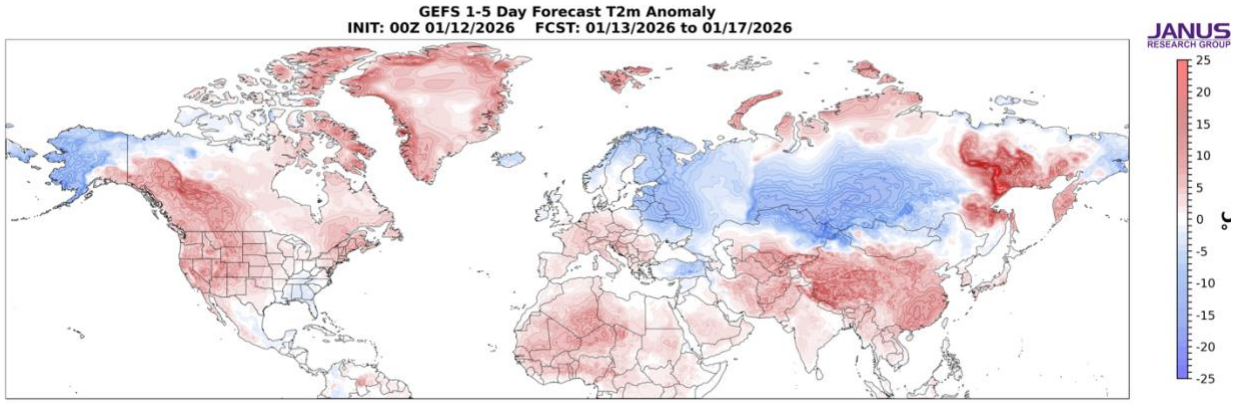

Figure 3. Forecasted surface temperature anomalies (°C; shading) from 13 Jan 2026 to 17 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Troughing and/or cold temperatures will support new snowfall across southern Norway, Scandinavia, parts of Siberia, Central and Northeast Asia and Japan while milder temperatures will support snowmelt across Eastern Europe, Western Russia and parts of Siberia this week (**Figure 4**). Troughing and/or cold temperatures will support new snowfall across much of Alaska, Northern and Eastern Canada and the Great Lakes while milder temperatures will support snowmelt widespread across Southwestern Canada, the Canadian Plains, the higher elevations of the Western US, Southeastern Canada and New England this week (**Figure 4**).

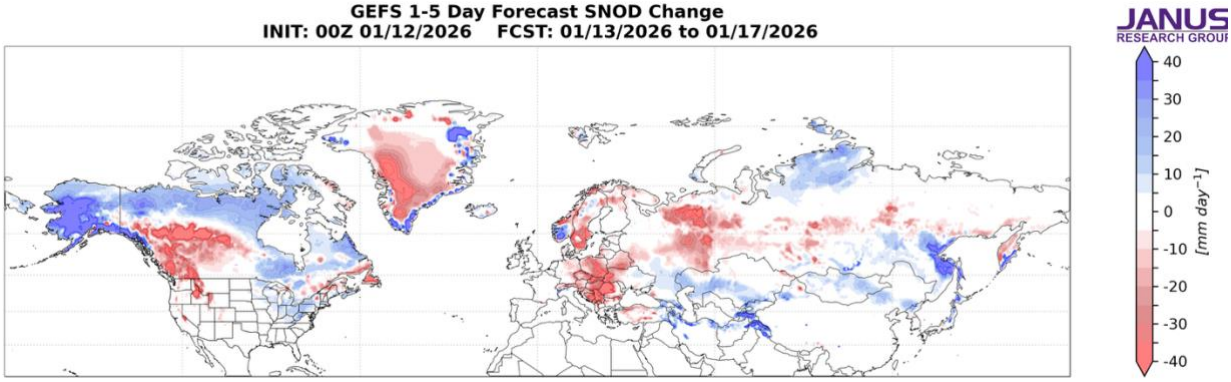

Figure 4. Forecasted snowfall (mm/day; shading) from 13 Jan 2026 to 17 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Near-Mid Term

Next week

With geopotential height anomalies remaining mostly mixed to positive across the Arctic and with mixed geopotential height anomalies across the mid-latitudes this period (**Figure 5**), the AO will likely remain near neutral to negative this period (**Figure 1**). With positive but weak pressure/geopotential height anomalies across Greenland (**Figure 5**), the NAO will likely be near neutral this period.

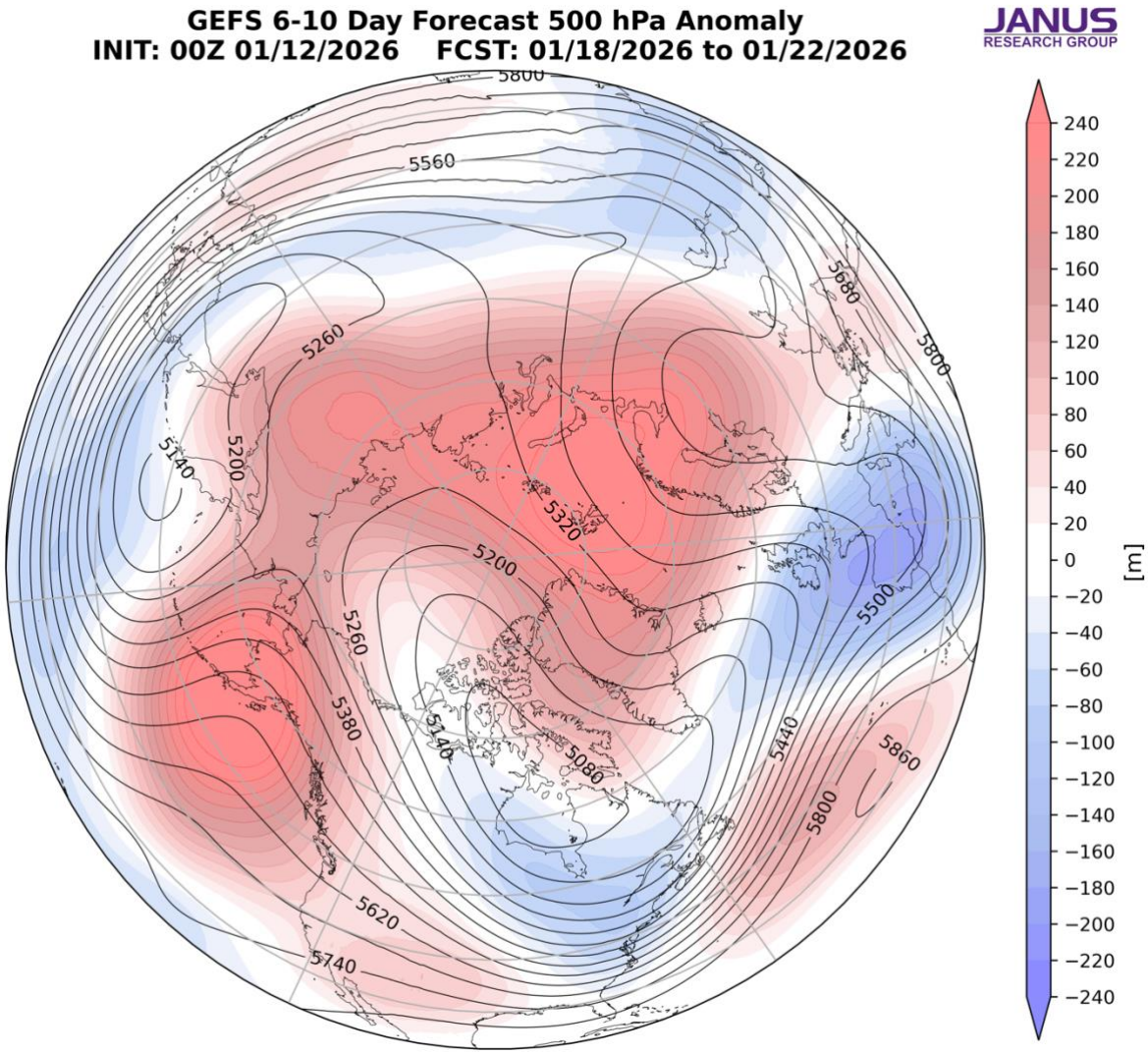

Figure 5. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 18 Jan to 22 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Persistent ridging/positive geopotential height anomalies across Greenland will support troughing/negative geopotential height anomalies across much of Europe this period

(**Figure 5**). The pattern will support normal to below normal temperatures across Northern and Eastern Europe including the UK, however an a mostly westerly flow will support normal to above normal temperatures across Western and Southern Europe this period (**Figure 6**). Across Asia ridging/positive geopotential height anomalies centered in the Barents-Kara Seas will support troughing/negative geopotential height anomalies across Southwestern and the interior of Asia with more ridging/positive geopotential height anomalies across Southeastern Asia (**Figure 5**). This pattern favors widespread normal to below normal temperatures widespread across much of Asia but especially Southern Russia and Mongolia with normal to above normal temperatures across Eastern Siberia and Southern Asia this period (**Figure 6**).

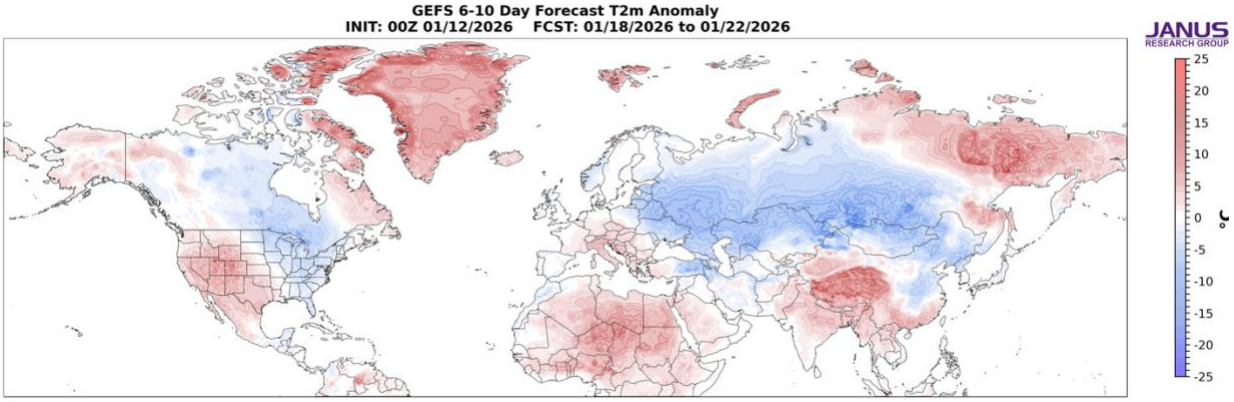

Figure 6. Forecasted surface temperature anomalies (°C; shading) from 18 Jan to 22 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Ongoing strengthening ridging/positive geopotential height anomalies across Alaska and the Gulf of Alaska are predicted to will support deepening troughing/negative geopotential height anomalies in Eastern Canada and the Eastern US this period (**Figure 5**). This pattern will favor normal to above normal temperatures across Alaska, and parts of Western and far Eastern Canada and the Western US with normal to above normal temperatures across most of Eastern Canada and the Eastern US (**Figure 6**).

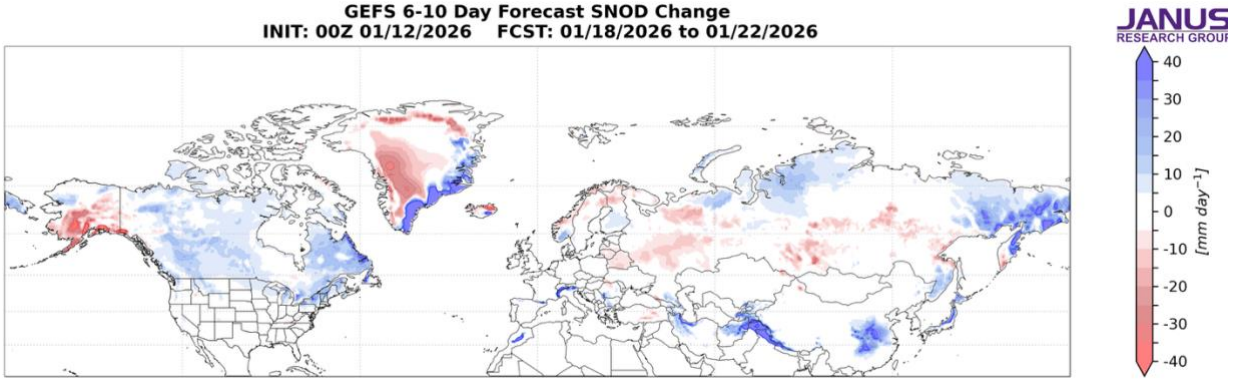

Figure 7. Forecasted snowfall rate (mm/day; shading) from 18 Jan to 22 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Troughing and/or cold temperatures will support new snowfall in the Alps, parts of Siberia, Central Asia, Northeast Asia and Eastern China while milder temperatures will support snowmelt in Scandinavia, Eastern Europe, parts of Western Russia and Southern Siberia this period (**Figure 7**). Troughing and/or cold temperatures will support new snowfall in much of Canada Canada and the Northeastern US while milder temperatures will support snowmelt in southern Alaska 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 negative this period (**Figure 1**). With predicted positive but weak pressure/geopotential height anomalies across Greenland (**Figure 8**), the NAO will likely remain near neutral this period.

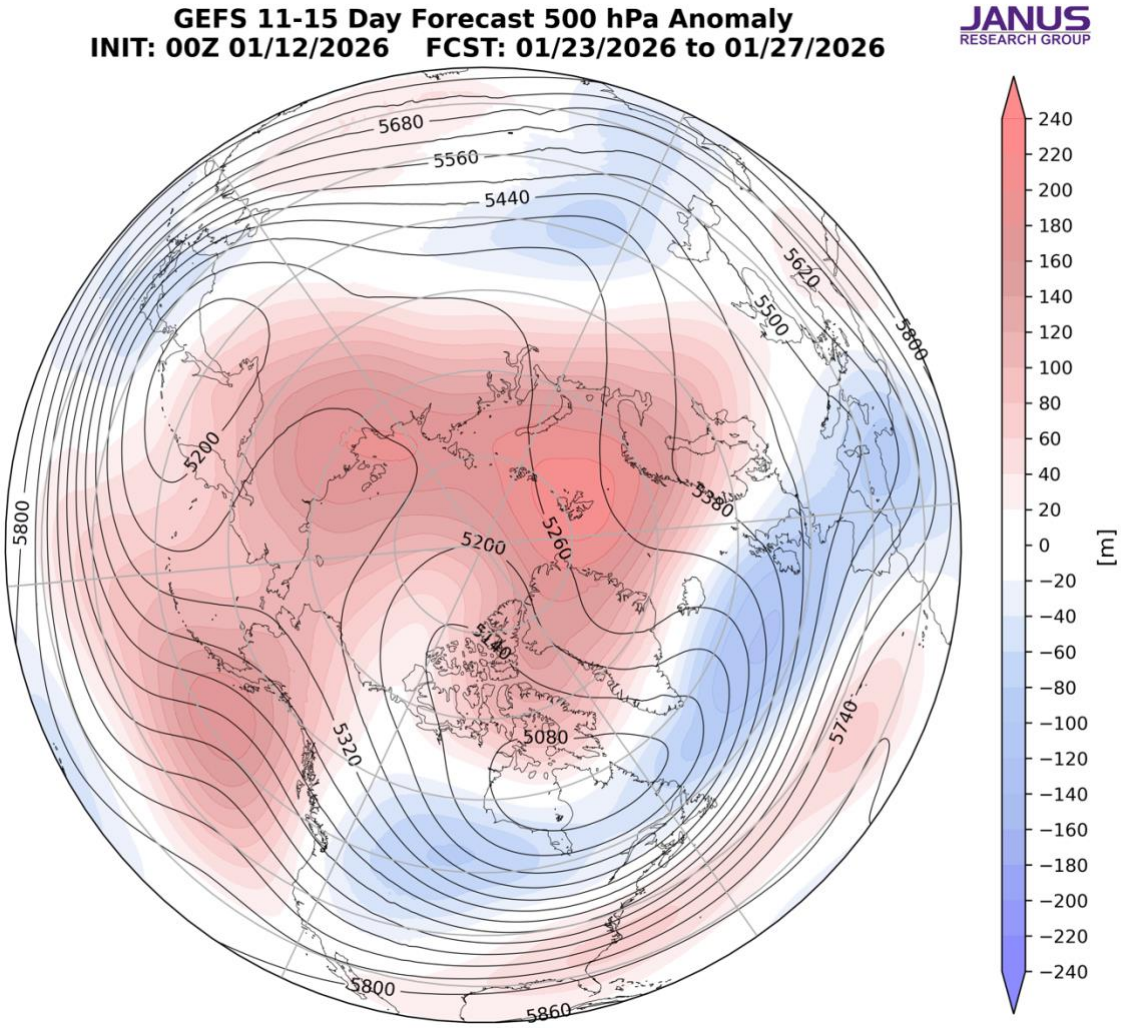

Figure 8. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere from 23 Jan to 27 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Persistent ridging/positive geopotential height anomalies across Greenland and in the Barents-Kara Seas will continue to support troughing/negative geopotential height anomalies across much of Europe this period (**Figure 8**). This pattern should favor normal to below normal temperatures across Northern and Eastern Europe including the UK while a milder southwesterly flow will support normal to above normal temperatures across Southern and Eastern Europe this period (**Figures 9**). Yet again this period ridging/positive geopotential height anomalies across the Eurasian Arctic will support troughing/negative geopotential height anomalies across the interior of Asia with more ridging across Southeastern Asia (**Figure 8**). This pattern favors normal to below normal temperatures widespread across much of Asia with normal to below normal temperatures across Eastern Siberia, the Middle East and the Tibetan Plateau this period (**Figure 9**).

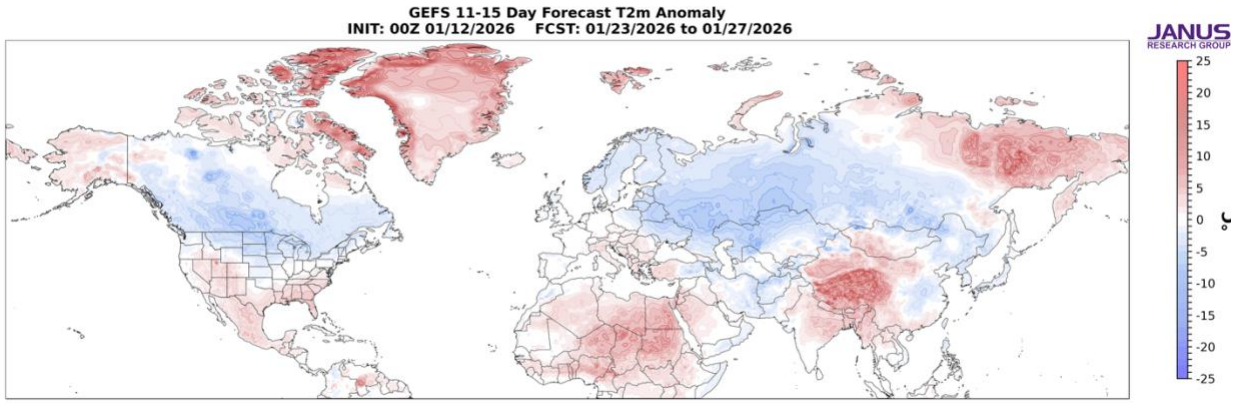

Figure 9. Forecasted surface temperature anomalies (°C; shading) from 23 Jan to 27 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Persistent ridging/positive geopotential height anomalies in the Gulf of Alaska and Alaska will supporting downstream troughing/negative geopotential height anomalies across much of Canada and into the interior US with more ridging across Northeastern Canada and the Southeastern US this period (**Figure 8**). This pattern supports normal to below normal temperatures across much of Canada and the Northern US with normal to above normal temperatures across Alaska, Northeastern Canda and much of the Southern US this period (**Figure 9**). I consider this period of high uncertainty and use any forecast with caution.

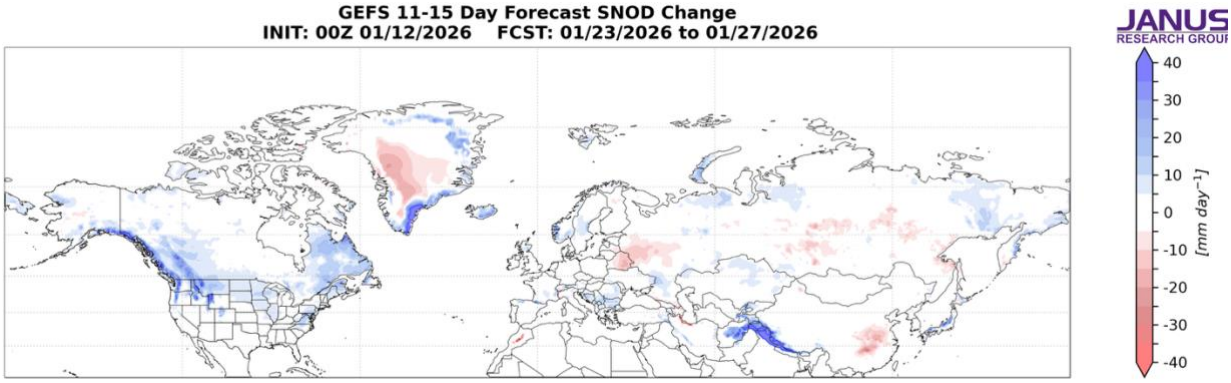

Figure 10. Forecasted snowfall (mm/day; shading) from 23 Jan to 27 Jan 2026. The forecasts are from the 00Z 12 Jan 2026 GFS ensemble.

Troughing and/or cold temperatures will support some possible new snowfall in the Balkans, parts of Siberia and parts of Central Asia while milder temperatures will support snowmelt in parts of the Baltic States, Eastern Europe and China this period (**Figure 10**). Troughing and/or cold temperatures will support new snowfall in southern Alaska, much of Southern Canada, the higher elevations of the Western US, the Northern Plains and the Northeastern US while milder temperatures will support snowmelt in parts of Alaska this period (**Figure 10**).

Longer Term

30–day

The most recent polar cap geopotential height anomalies (PCHs) show warm/positive PCHs in the mid to lower stratosphere and throughout the troposphere with cold/negative PCHs in the upper stratosphere (**Figure 11**). Then for the next two weeks cold/negative PCHs in the upper stratosphere are predicted to descend into the mid-stratophere and strenghten while PCHs in the lower stratosphere and troposphere are predicted to remain warm/positive and strengthen in the tropsophere.

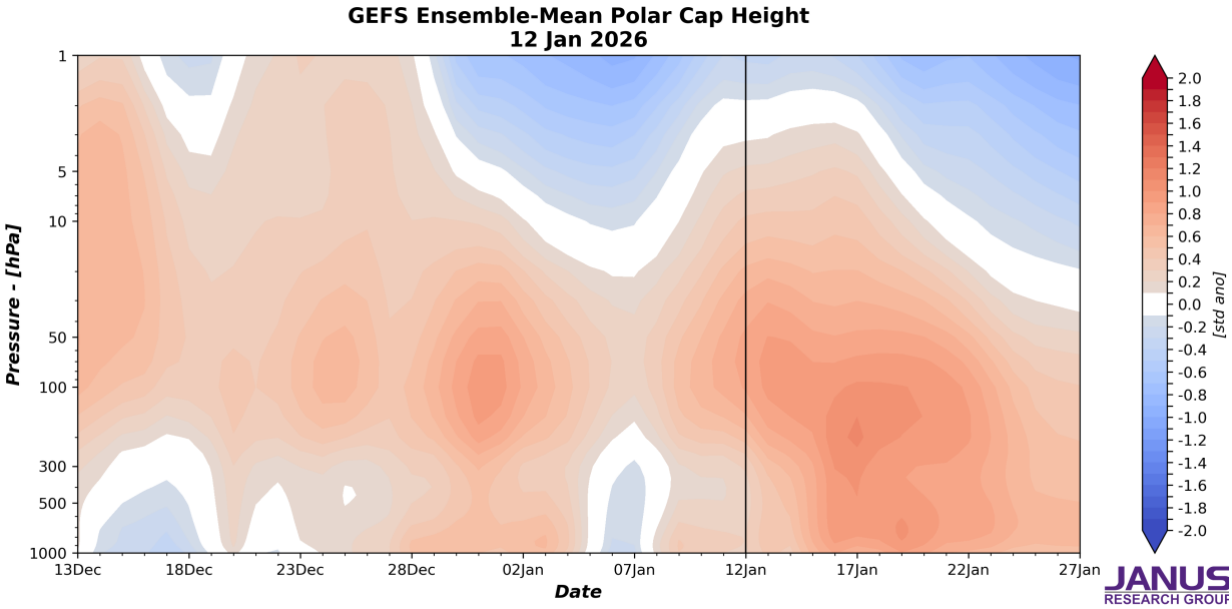

Figure 11. Observed and predicted daily polar cap height (i.e., area-averaged geopotential heights poleward of 60°N) standardized anomalies. The forecast is from the 00Z 12 Jan 2026 GFS ensemble.

The predicted warm/positive PCHs in the lower troposphere this week (**Figure 11**) are consistent with the predicted neutral to slightly negative AO this week (**Figure 1**). Then next week the forecast of strengthening warm/positive PCHs in the lower troposphere (**Figure 11**) should bias further a near neutral to negative AO next week (**Figure 1**).

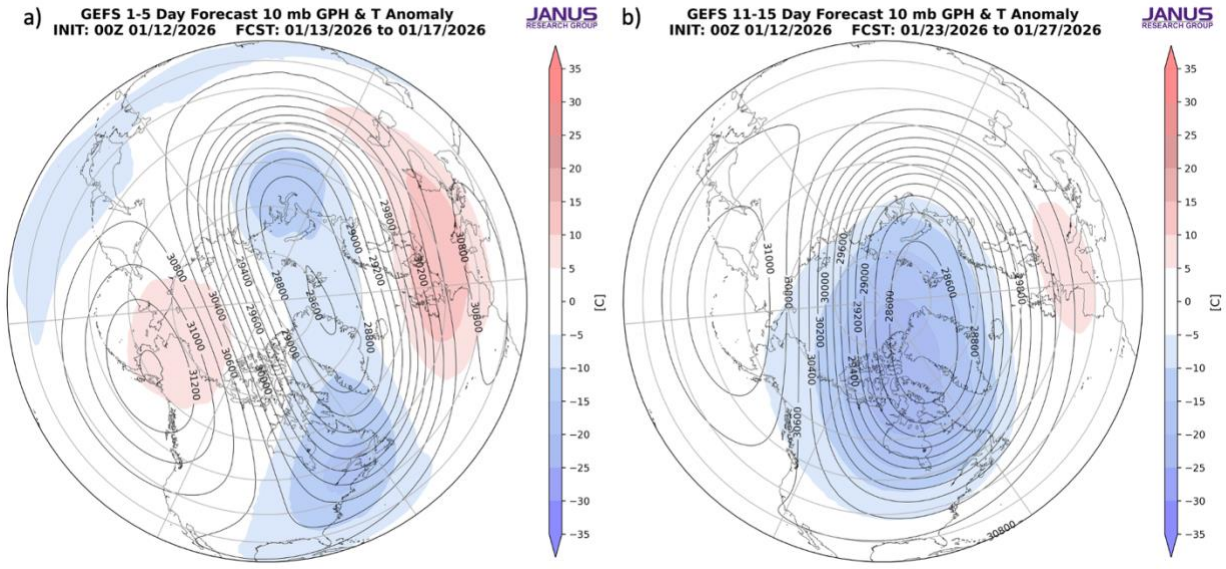

Figure 12. (a) Predicted 10 mb geopotential heights (dam; contours) and temperature anomalies (°C; shading) across the Northern Hemisphere averaged for 13 Jan to 17 Jan 2026. (b) Same as (a) except forecasted averaged from 23 Jan to 27 Jan 2026. The forecasts are from the 00Z 12 January 2026 GFS model ensemble.

This week the polar vortex (PV) is predicted to be elongated in shape from the Urals to eastern North Ameirca with the PV center near Svalbard with relatively cold temperatures focused from the Urals to eastern North America and with high pressure centered near Alaska and relatively warm temperatures across Europe and Alaska in the polar stratosphere (**Figure 12a**). The elongated shape in appearance, signals a stretched PV that favors relatively cold in Asia and North America east of the Rockies. Then during the fourth week of January the PV center is predicted to still be centered over Svalbard and Greenland with high pressure centered over the Dateline with cold temperatures over the Arctic and Eastern Canada with relatively warm temperatures remaining over Europe in the polar stratosphere (**Figure 12b**). This once again resembles a stretched PV configuration but also the PV is relatively streong. The stratospheric AO in **Figure 1** this week is predicted to remain somewhat negative then neutral and then positive next week, signaling a strengthening PV next week.

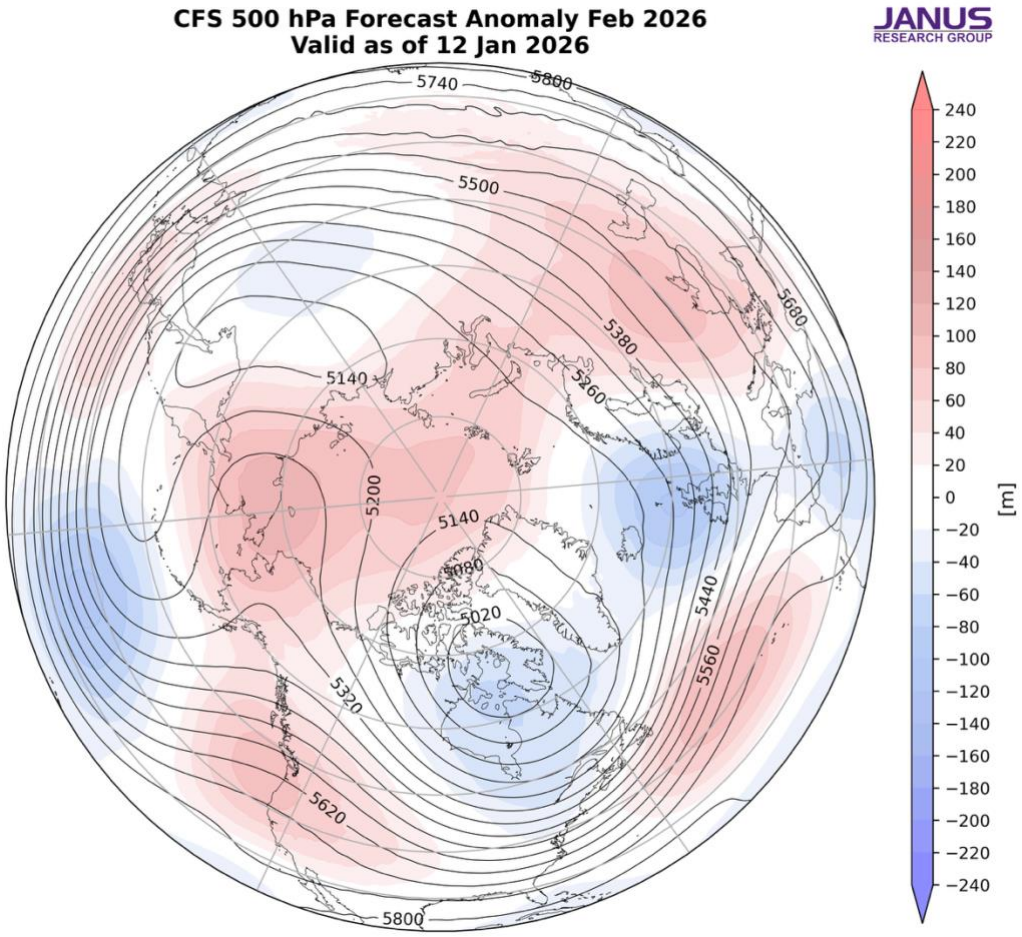

Figure 13. Forecasted average 500 mb geopotential heights (dam; contours) and geopotential height anomalies (m; shading) across the Northern Hemisphere for February 2026. The forecasts are from the 00Z 12 Jan 2025 CFS.

I include in this week's blog the monthly 500 hPa geopotential heights (**Figure 13**) and surface temperatures for February (**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 widespread across the Arctic including northern Greenland, Western Asia, western North America including Alask and into eastern Siberia with troughing across Europe, Northern and Eastern Asia, Eastern Canada and the Eastern US (**Figure 13**). This pattern favors seasonable to relatively warm temperatures across Europe, Western, Southern and Central Asia, including the Middle East, eastern China the Tibetan Plateau, Pakistan and Afghanistan, Eastern Siberia, Alaska, Western Canada and the Western US with seasonable to relatively cool temperatures across Siberia into Northeast Asia, Eastern Canada and the Eastern US (**Figure 14**).

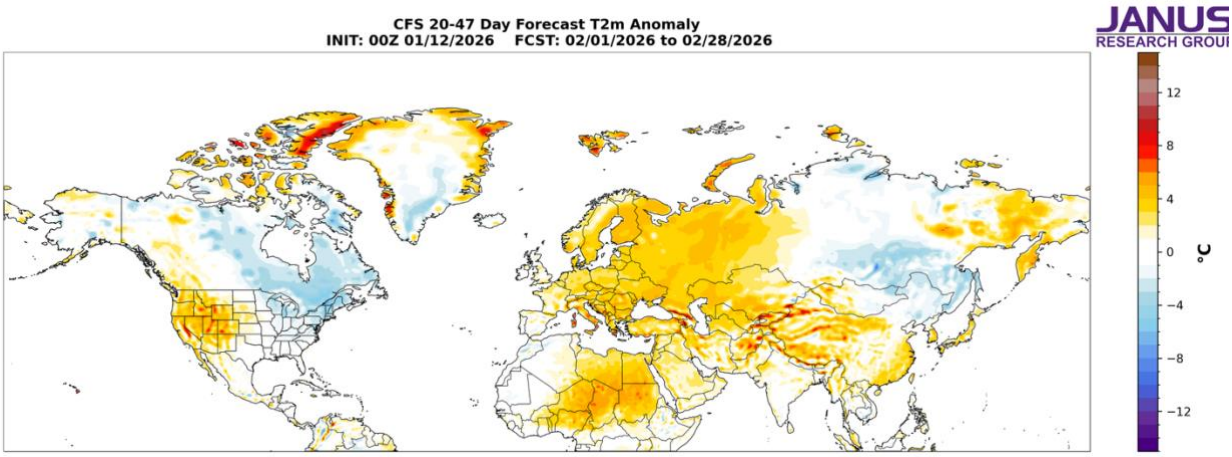

Figure 14. Forecasted average surface temperature anomalies (°C; shading) across the Northern Hemisphere for February 2026. The forecasts are from the CFS 00Z 12 Jan 2025.

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. 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. The negative anomalies are distributed between the Eurasian sector, i.e., Barents Kara Seas and the North American sector, now mostly in Baffin Bay (see **Figure 15**). Therefore, I do think that low sea ice in the Barents-Kara Seas could be helping to support Ural/Scandinavian blocking but low sea ice near Greenland could be supporting blocking in the region as well. Negative sea ice anomalies have also appeared in the Bering Sea and the Sea of Okhotks and could be a result of but also supporting blocking in the region.

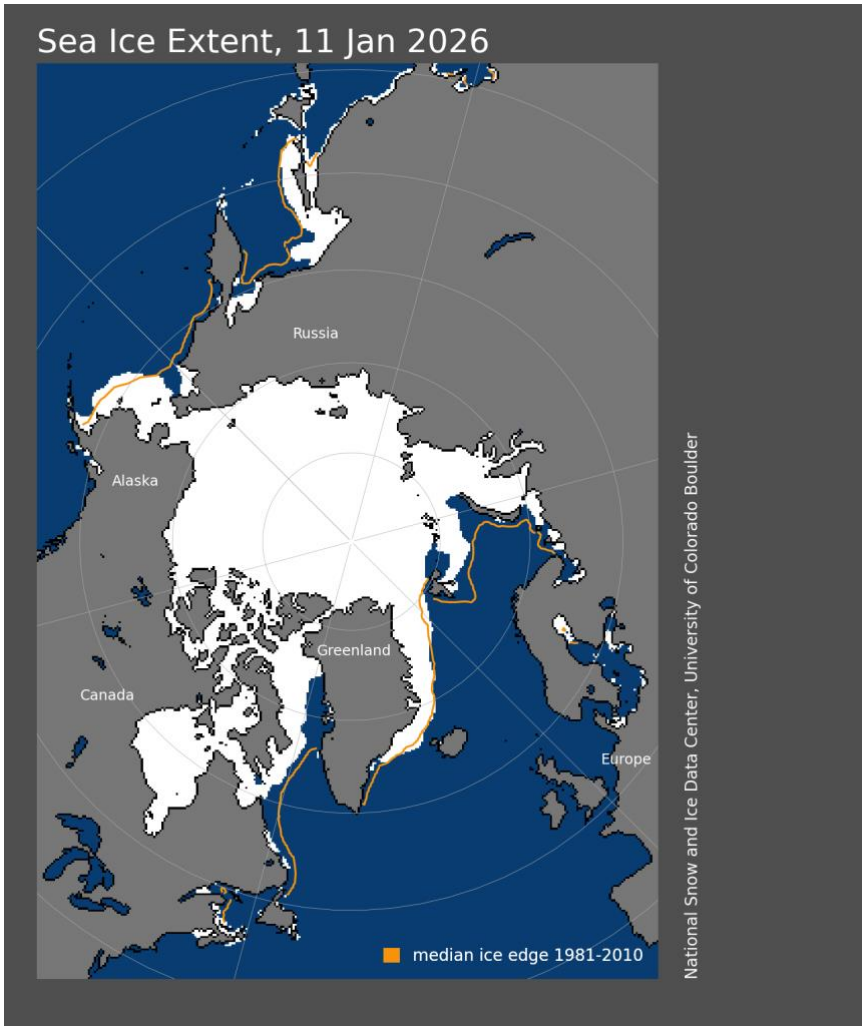

Figure 15. Arctic sea ice cover extent for 11 Jan 2026. White depicts ice covered areas and the orange contour the climatological extent of Arctic sea ice for the date. Plot taken from: https://nsidc.org/sea-ice-today

SSTs/El Niño/Southern Oscillation

Equatorial Pacific sea surface temperatures (SSTs) anomalies are below normal, along the equatorial Pacific (**Figure 15**) consistent with La Niña conditions for much of the winter but current forecasts show some uncertainty but for now mostly favor weak La Niña conditions this winter. 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 South Pacific. The very warm SSTs in both ocean basins could be supporting the predicted mid-ocean ridging in both basins.

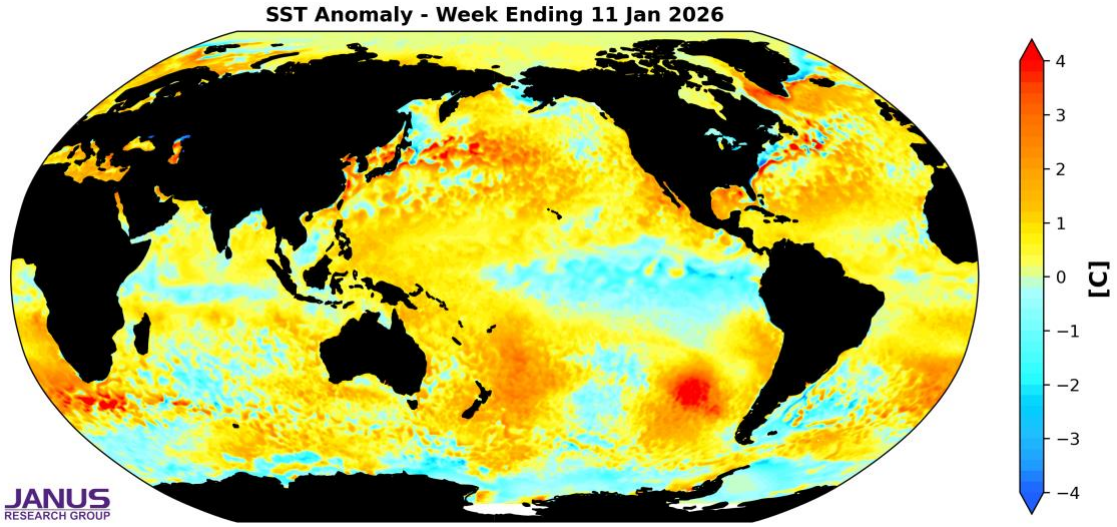

Figure 16. The latest daily-mean global SST anomalies for week ending 11 Jan 2025.

Madden Julian Oscillation

Currently the Madden Julian Oscillation (MJO) is currently in phase six (**Figure 17**) and the forecasts are for the MJO to quickly move to phase seven and then eight (**Figure 17**). Phase six favors ridging across the US with troughing in Canada but phases seven and eight favor the opposite with ridging in Canada and troughing in the US. Therefore, it seems that the MJO could eventually have some influence on North American weather in the next two weeks. But admittedly this is outside of my expertise.

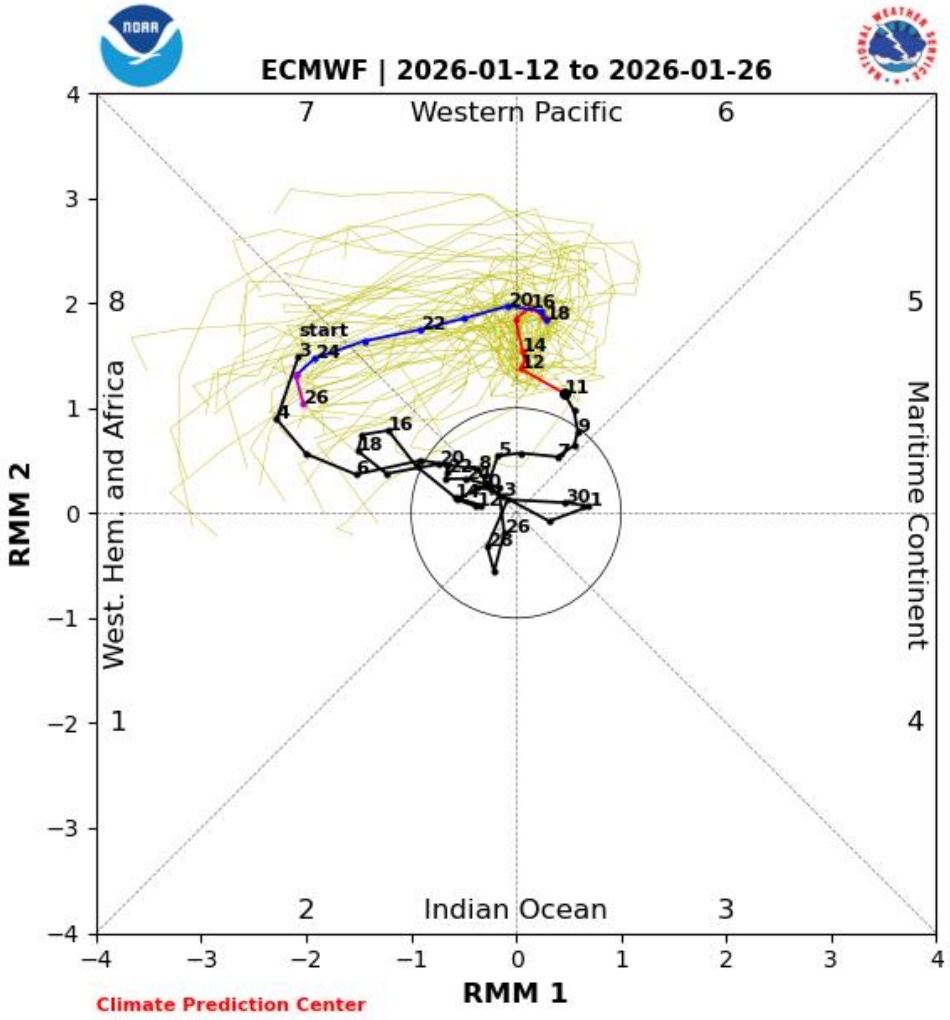

Figure 17. Past and forecast values of the MJO index. Forecast values from the 00Z 12 Jan 2026 ECMWF model. Yellow lines indicate individual ensemble-member forecasts, with the green line showing the ensemble-mean. A measure of the model 'spread' is denoted by the gray shading. Sector numbers indicate 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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