2018 - 2019 late seasonal forecast

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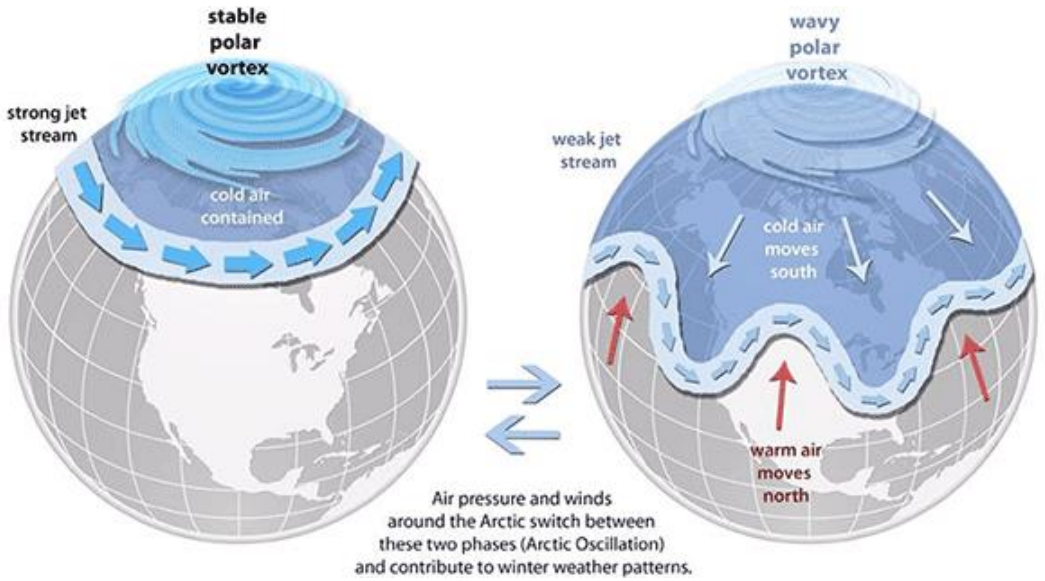
The late-season forecast was delayed until today because of uncertainty in global snow, ice, and atmospheric evolution, but I finally feel confident enough to provide a reasonable, albeit difficult long-term weather severity index prediction for the remainder of the 2018-2019 waterfowl season for eastern North America, mid-Nov 2018 – Jan 2019. For reference, we provide links throughout this document.

Our early-season forecast called for above average temperatures throughout eastern North America which we certainly experienced throughout much of the Mississippi and Atlantic Flyways during much of October. Later in October, we experienced cold outbreaks into the prairies, upper mid-west and Great Lakes region that were severe enough to move early migrating dabbling ducks into mid and southern latitudes, but most mallards and black ducks had not yet migrated in abundance to these locales.

Advancing to today, and for those of you that remember the timing of duck migration last year during December - January, the simplest comment is….

WE PREDICT A CARBON COPY OF LAST YEAR.

This year, in late-October, there was a substantial advance of northern hemispheric snow cover in Siberia, possibly a result of the 3rd lowest ice extent in the Arctic on record that provided the open water/moisture needed to produce substantial snow cover through this region once temperatures were appropriate for snowfall. This scenario creates changes in atmospheric pressure at Arctic latitudes, which can result in a polar vortex disruptions (PVDs). The term we should all remember in eastern North America is warming planet, colder continents. The greater the warming of the planet accompanied by reductions in Arctic ice cover, and conditions still cold enough to produce snowfall in Eurasia/Siberia, the greater likelihood of PVDs. This scenario can result in substantial and sometimes short-lived cold outbreaks into eastern North America.



A stable polar vortex (Left) is typical when pressure system blocking does not occur, but during periods of polar vortex disruption (PVDs) (Right), which are becoming increasingly common with a warming climate, cold high-pressure systems and warm low-pressure systems cause a 'wavy' jet stream which results in cold air outbreaks into southern latitudes. Typically, the west is warmer and drier during these PVDs and the Great Lakes and east coast are colder than normal; nor'easters with substantial snowfall in the upper and mid- Atlantic Flyway are also more common during PVDs.

2018 - 2019 late seasonal forecast continued…

Certainly, much to digest here, **but boiling it down**…a warming, but still cold enough planet creates a situation whereby snowfall (sometimes in abundance) occurs in Eurasia/Siberia during October, this sets up a cold-high pressure system over a snow-covered landscape which contrasts strongly with warm oceans. This scenario creates strong cold, high-pressure systems (continents) and strong warm, low-pressure systems (oceans) at higher latitudes, which results in PVDs from cold continents and warm oceans, a 'wavy' jet stream, and extreme warm areas and extreme cold areas across the planet. A common term you will hear is blocking; blocking pressure systems cause pulses of cold and warm across the planet. Simply, in the short-term, pulses of warm and cold during the winter season are predicted to become increasingly common as the planet warms…but only to a point…once snow no longer falls as snow in Siberia, but as rain, **the scenario likely changes like a light switch**. Once Eurasia/Siberia is rain covered and not white and snow cover the absorption and reflection of the energy of the sun greatly changes. Some people think this is our tipping point. As such this does not appear to be a linear relationship from cold to warm winters but changes vary through time from 1/ historic cold to 2/ extreme variation (current) to 3/ eventually warm winters. We might certainly see cold and intense winters and quality duck migrations in the near-term, especially in eastern North America, up until a tipping point. That said, stay tuned.

Now, let us play-back to last year which was an extremely cold December and early-January and then relatively mild mid-January through March which continued into Spring throughout eastern North America. Current conditions with potential for PVDs suggest strong potential for similar weather patterns this year. This would provide a quality migration of ducks to southern latitudes despite a warming climate. During El Niño conditions, which are predicted for winter 2018-2019, our research suggests a 50:50 chance of more severe weather than normal, but the current Artic Oscillation Index as influenced by PVDs suggests a sustained cold period in the near-term and potential for substantial and early snowfall in the Atlantic Flyway. In the Mississippi Flyway, dry but cold conditions are predicted in the short-term with temperatures that are predicted to be severe enough to move an abundance of ducks south during late November and December.

Once early season PVDs occur, temperatures often moderate because global pressure systems 'equilibrate', which could result in a strong late-winter/spring warming trend.

The overall late-season prediction is movement of ducks south relatively early, late-November - December, but then moderating weather conditions during January that could make hunting conditions more difficult as the season progresses.

As always, feel free to email me with any questions mlschumm@esf.edu

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