

Huang, H.-P., and G. N. Raghunathan, 2022: Predictability associated with high-latitude retrograde waves in the 1979-80 winter season. *J. Meteor. Soc. Japan*, **100**, <https://doi.org/10.2151/jmsj.2022-012>.

Plain Language Summary: The presence of coherent retrograde waves is found to influence extended-range weather forecast in the higher latitudes of the Northern Hemisphere. In the 1979-80 winter season, ensemble reforecasts made within the active period of retrograde waves exhibit an elevated level of anomaly correlation of 500 hPa geopotential height in week-2. The enhanced predictability is particularly significant for the long-wave components.

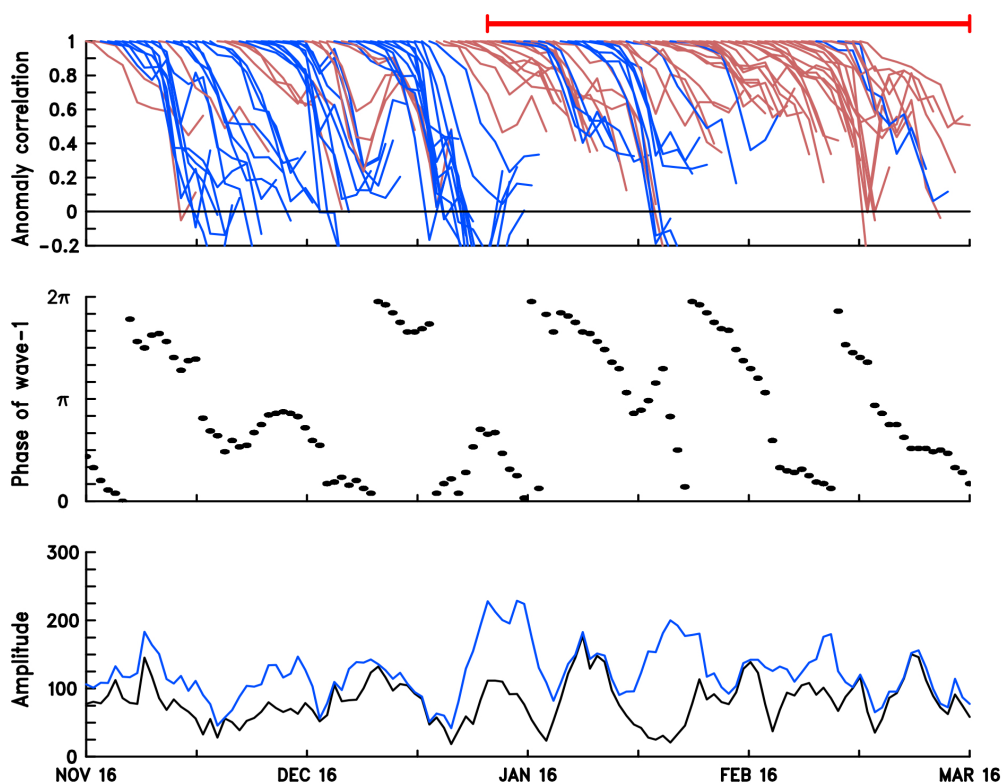


Figure 1. Top: Anomaly correlation of wavenumber 1-2, 500 hPa geopotential height from 40°N-70°N, for daily forecast through 1979-80 winter. Red indicates the cases with AC > 0.5 at day 11. The horizontal red bar indicates the active period of retrograde waves. Middle: Phase of wave-1 component. Bottom: Amplitude of wave-1 (black) and wave 1+2 (blue) components.

- The analysis is based on daily ensemble reforecast data, with the anomaly correlation computed for the full 500 hPa geopotential height field and its long-wave and short-wave components.
- Active and inactive periods of retrograde waves are identified based on the coherence of phase propagation of the wavenumber-1 component.
- The methodology used for the analysis of one winter season can be adopted for a multi-year analysis in future work.