



Variability in seasonal forecast skill of Northern Hemisphere winters over the twentieth century

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Seasonal hindcast experiments are analysed for Northern Hemisphere winters from 1900-2010. The skill for the ensemble mean Pacific/North American pattern (PNA) varies dramatically, dropping towards zero during the mid-twentieth century, with similar variability in North Atlantic Oscillation (NAO) hindcast skill. The PNA skill closely follows the correlation between the observed PNA index and tropical Pacific SST anomalies. The minimum in PNA predictability is related to a series of mid-century negative PNA events, which were not forced in a predictable manner by tropical Pacific SST anomalies, and are also responsible for the mid-century minimum in NAO skill. The negative PNA phase is less predictable, arising more from internal atmospheric variability than the positive PNA phase. Our results suggest that seasonal forecast systems assessed over the most 30-year period may be less skillful in periods, such as the mid-twentieth century, when there was relatively weak forcing from tropical Pacific SST anomalies.