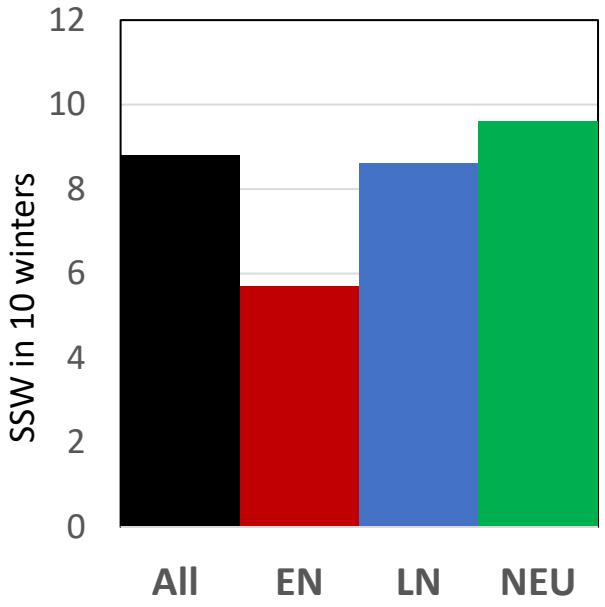
Intraseasonal modulation of Sudden Stratospheric Warmings by ENSO

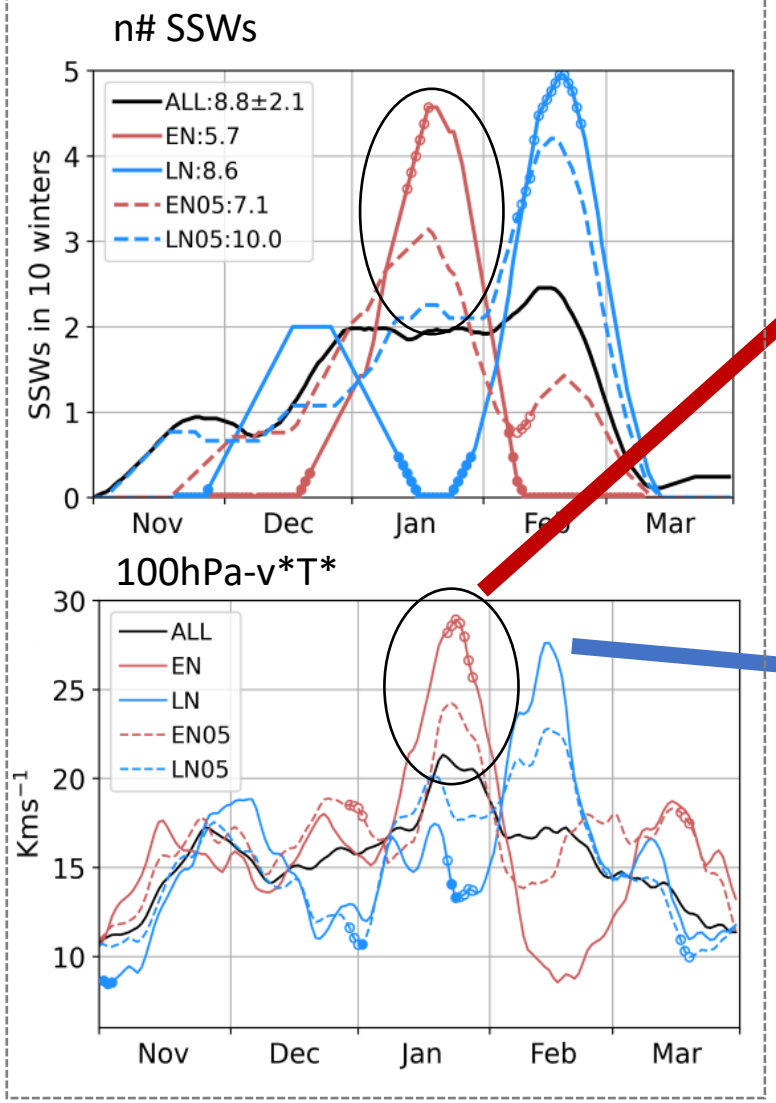
Palmeiro FM, Garcia-Serrano J, Ruggieri P, Batté L, Gualdi S (2021) Clim Dyn (under review)

SSW Occurrence in ERAI (1979-2019)



***More SSWs during La Niña and neutral** winters than during **El Niño** winters

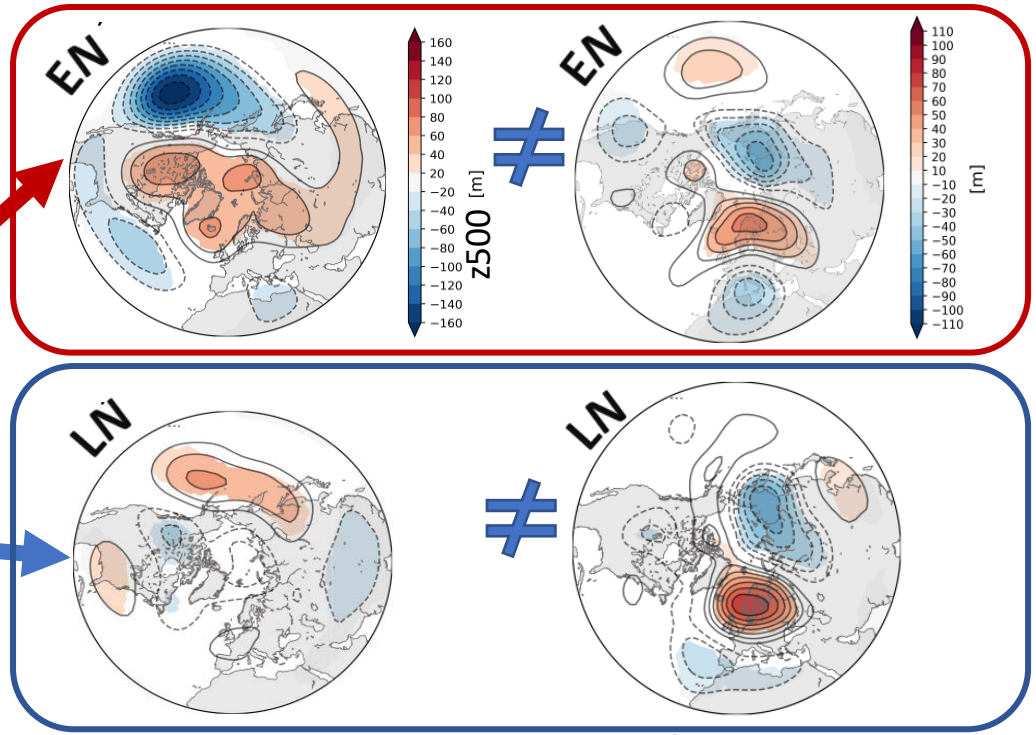
SEASONAL CYCLE



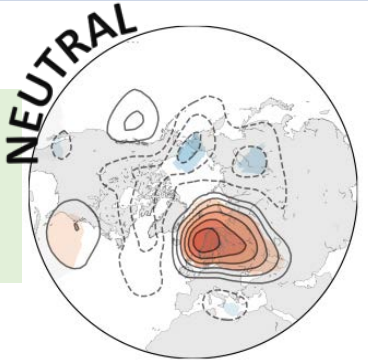
Jan Peak of SSWs and v*T* for **EN**

Anomalous circulation in Jan-Feb (**ENSO-forced** signal)

SSW precursor signal 10-days before SSWs (**ENSO-unforced**)



The **Eurasian wave** pattern always appears as the **dominant SSW precursor**



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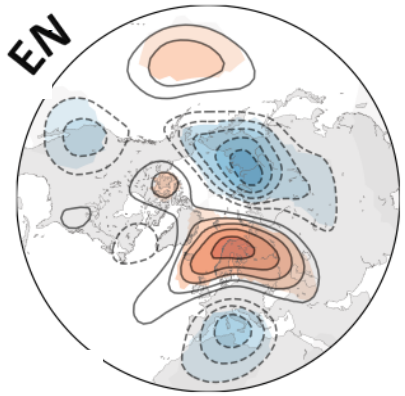
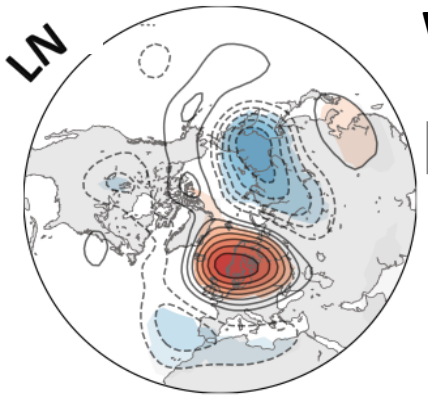
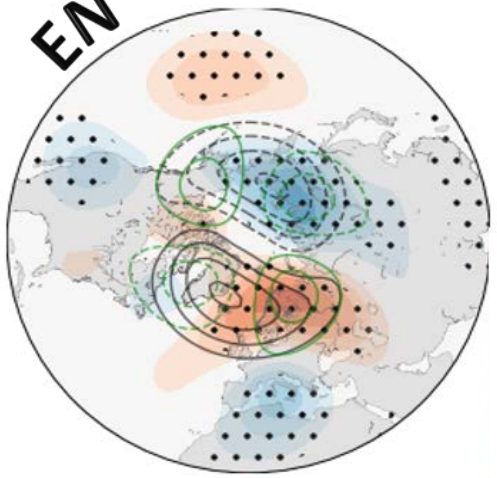
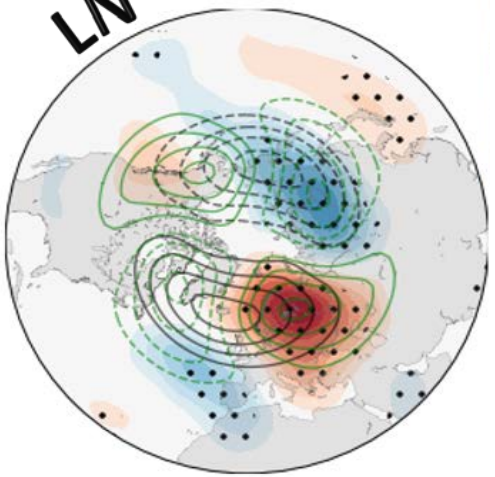




Decompose
precursor into
WN1 and **WN2**

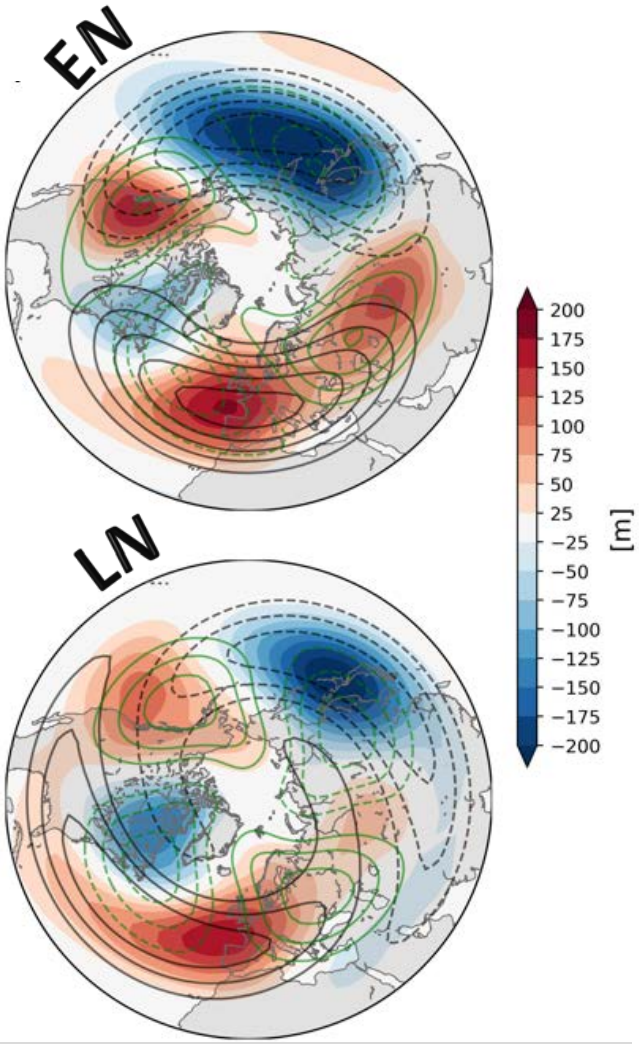




The precursor
during **EN** is
dominated by
WN1

How the **same wave pattern** can have different WN contributions in EN/LN?

WN2 is
stronger before
SSWs during **LN**



Different background conditions in EN/LN shift the climatological **WN1** to the American/Japan coast.

ENSO and SSWs are different sources of variability