Comparison of Composite AAM Excitation Functions

May 25, 2012

Some notes on the following plots:

1. Selection of downward-propagating events from Nakagawa and Yamazaki [2006]: Events where the mean 30-day (after the central date) anomaly of 500hPa polar temperature is positive are called “troposphere warm” events (there are 14). The rest are called “troposphere cold” events (there are 8).
2. Selection of downward-propagating events by Sophia: Events where the wind anomaly at 50hPa and 60N exceeds -15 m/s are called ”strong events” (there are 10). Events where the wind anomaly exceeds -20 m/s are called ”stronger events” (there are 6).

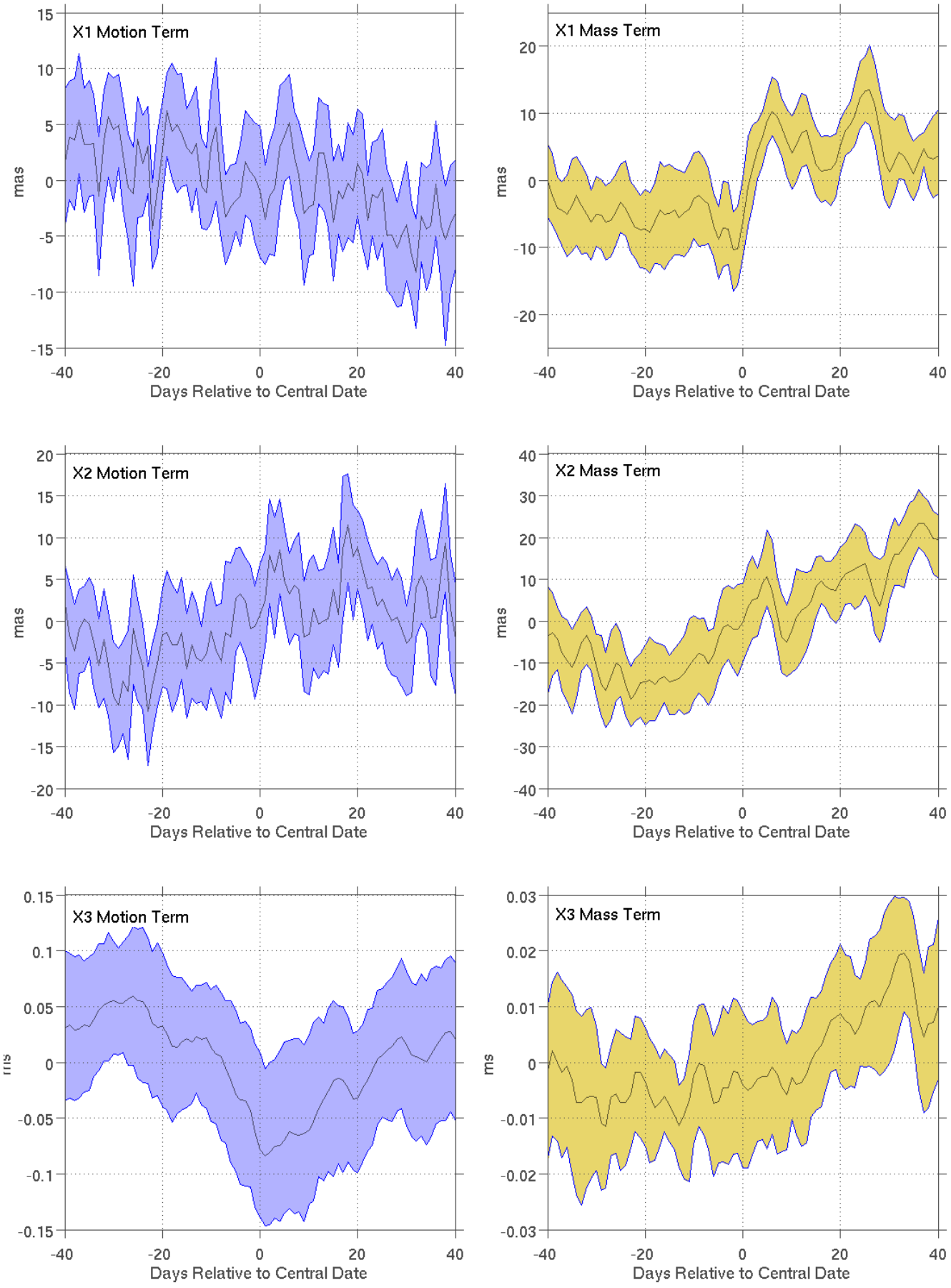

Figure 1: Composites of the six AEFs, over all SSW events.

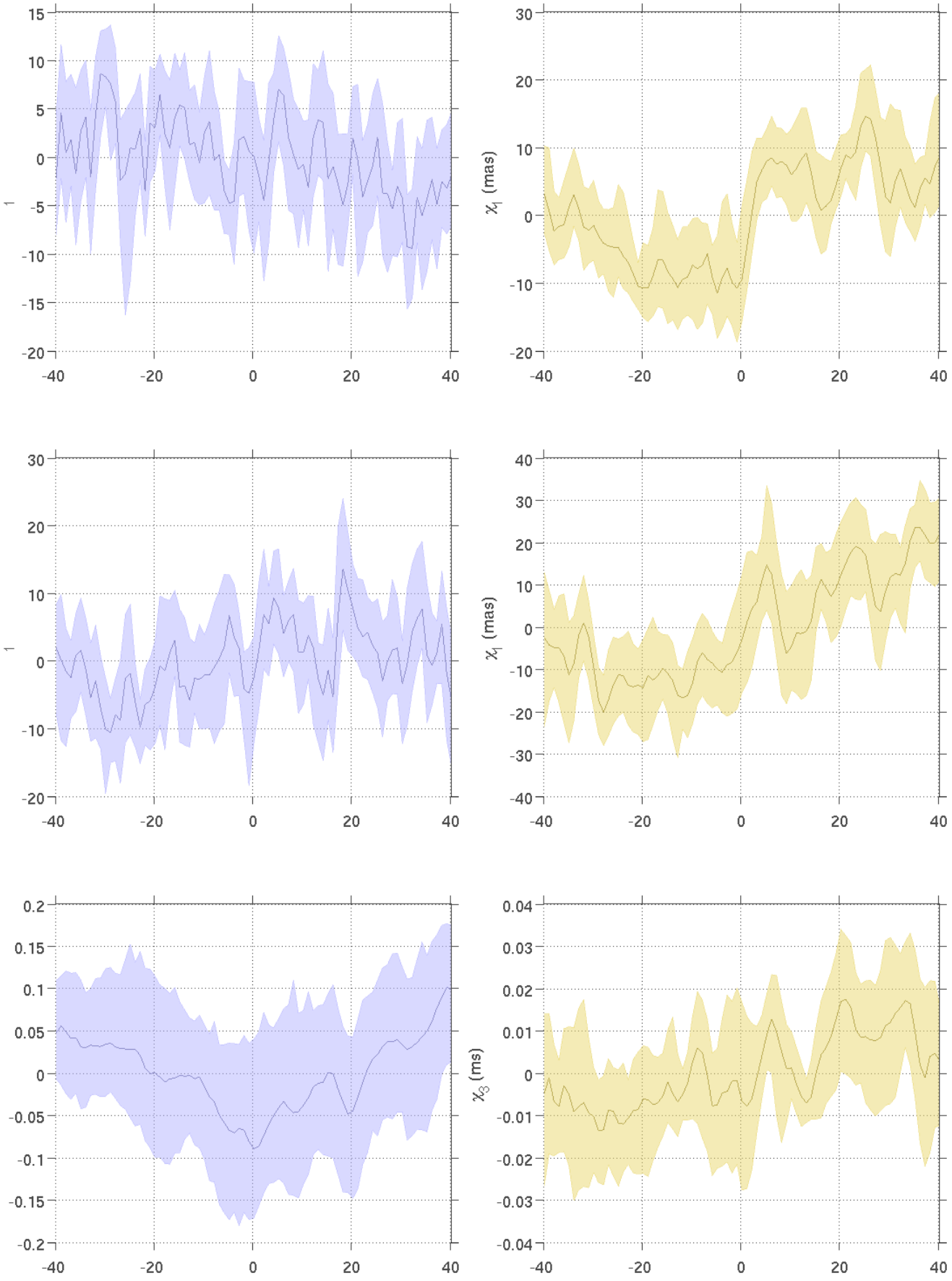

Figure 2: Composites of the six AEFs, over the 12 vortex-displacement events.

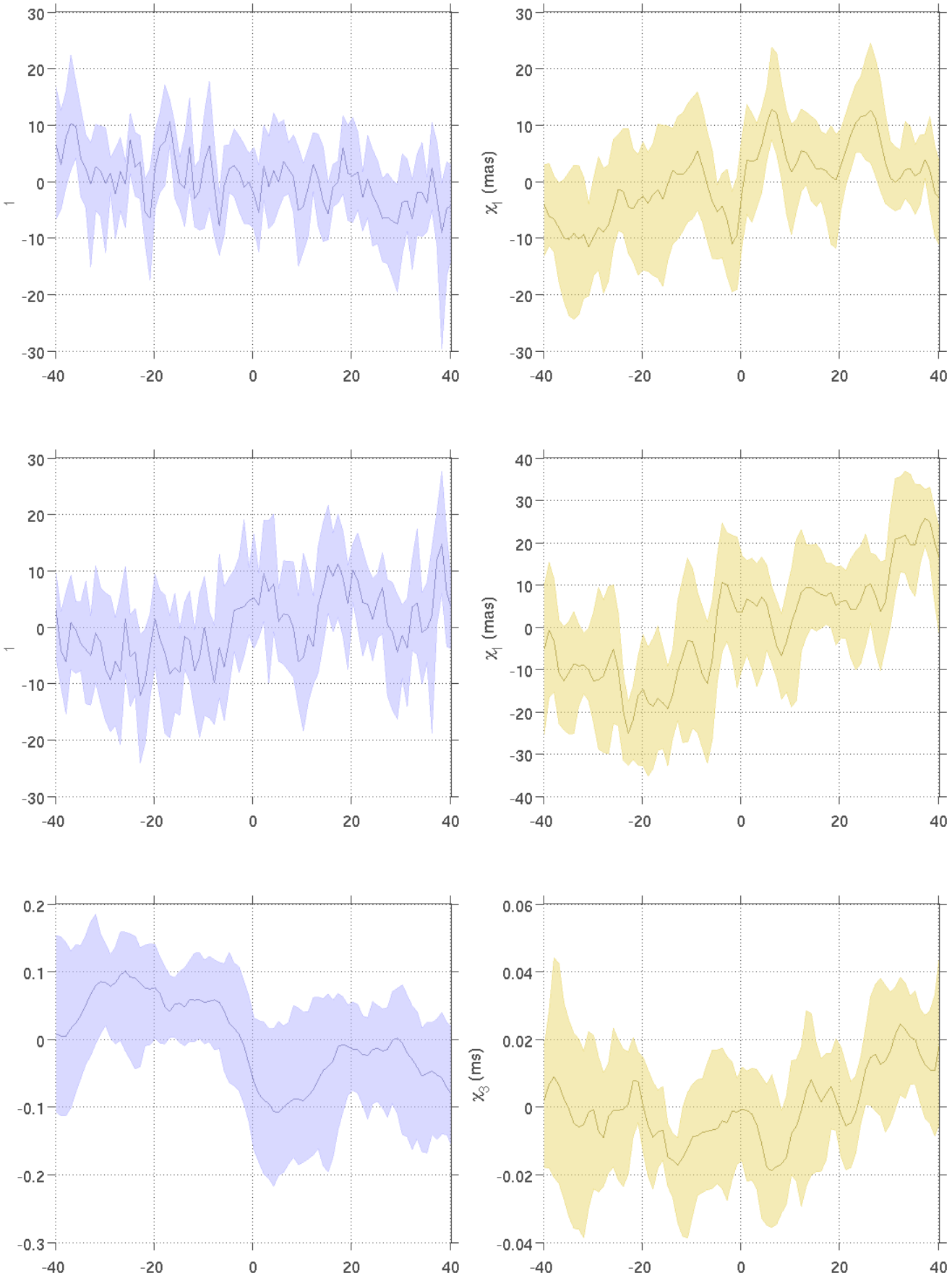

Figure 3: Composites of the six AEFs, over the 10 vortex-split events.

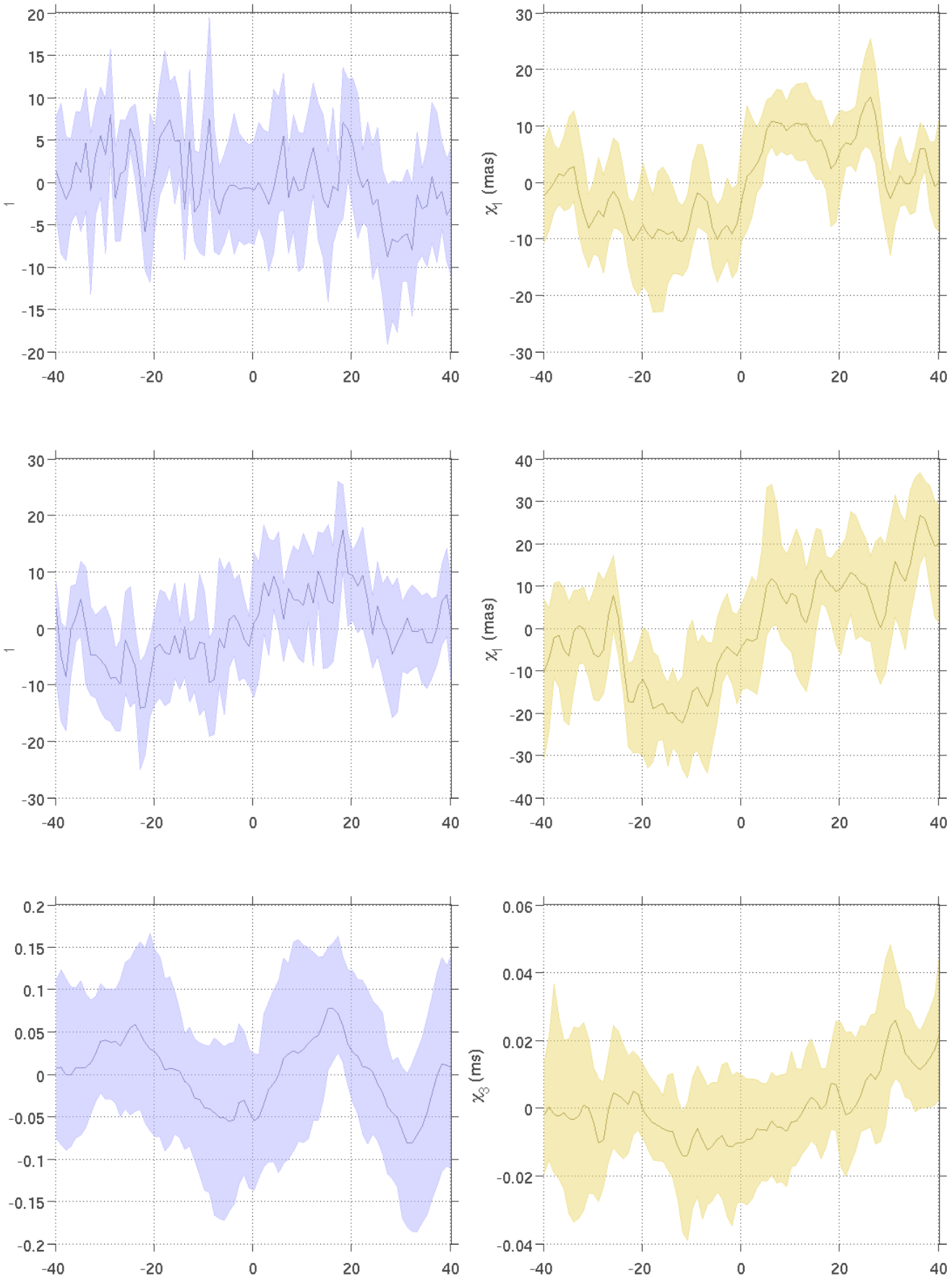

Figure 4: Composites of the six AEFs, over the 10 events where the 50hPa (60N) u-anomaly is below -15 m/s.

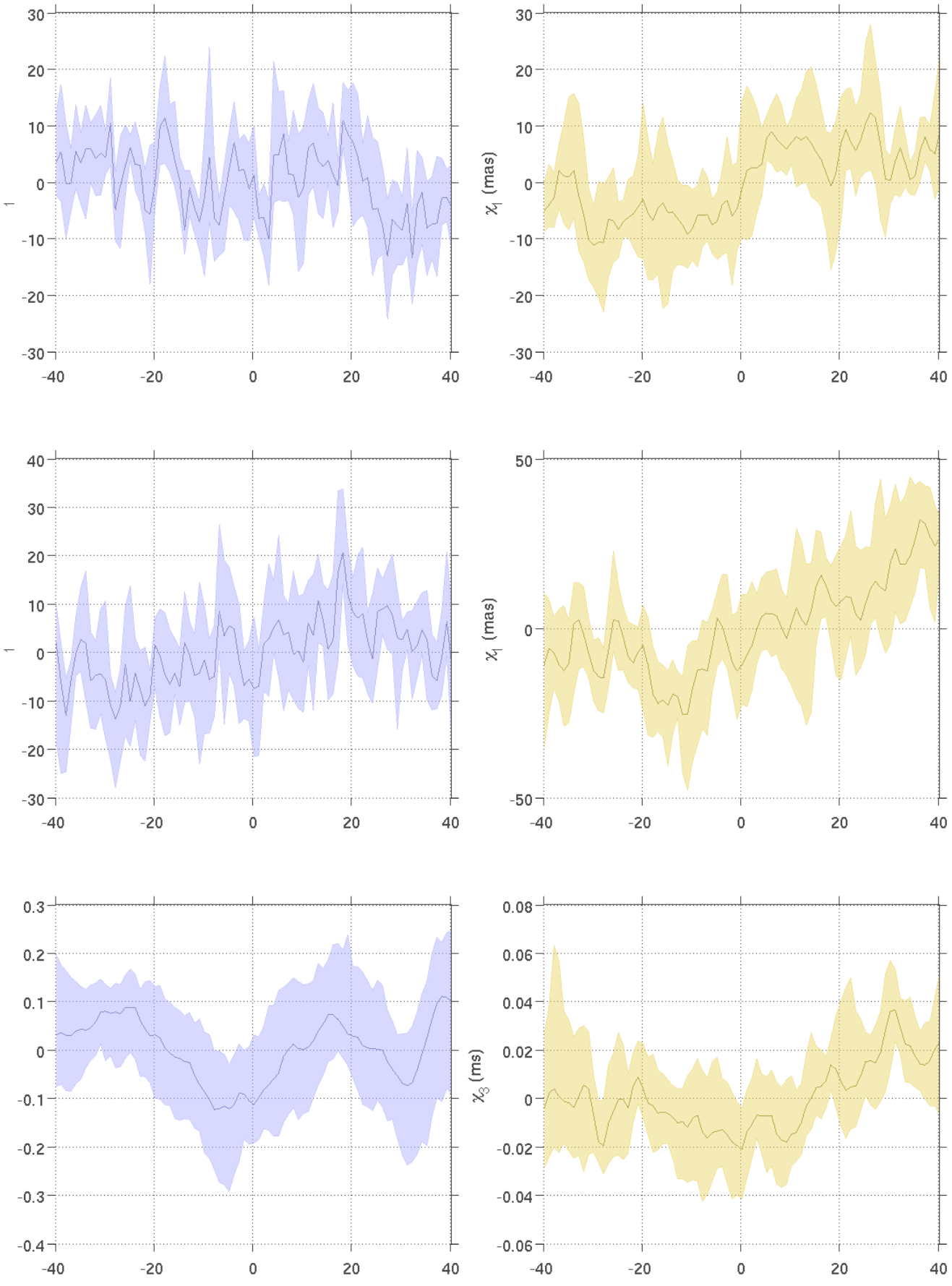

Figure 5: Composites of the six AEFs, over the 10 events where the 50hPa (60N) u-anomaly is below -20 m/s.

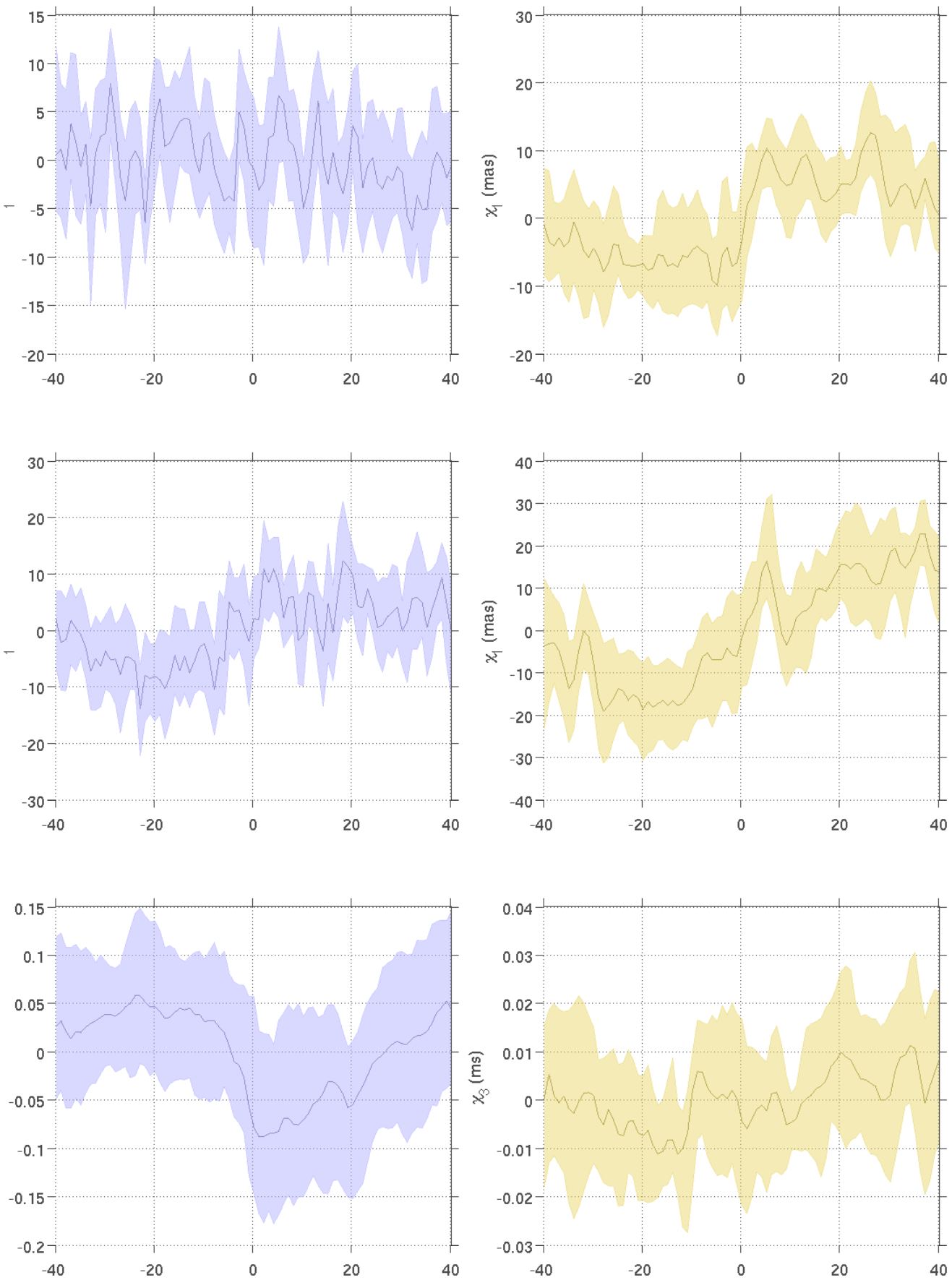

Figure 6: Composites of the six AEFs, over the 14 events classified as "troposphere warm" events according to the criterion of Nakagawa and Yamazaki [2006].

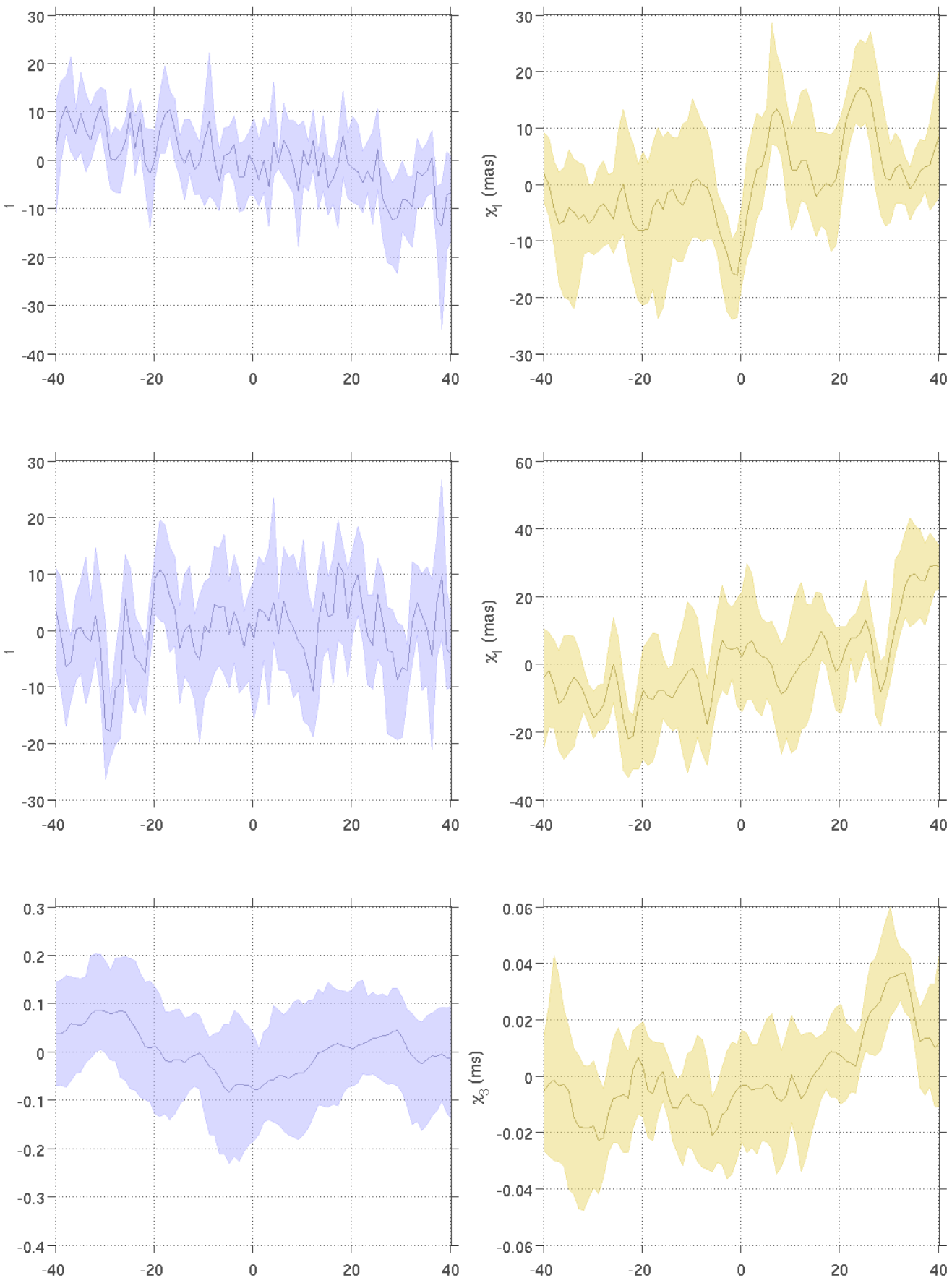

Figure 7: Composites of the six AEFs, over the 8 events classified as "troposphere cold" events according to the criterion of Nakagawa and Yamazaki [2006].

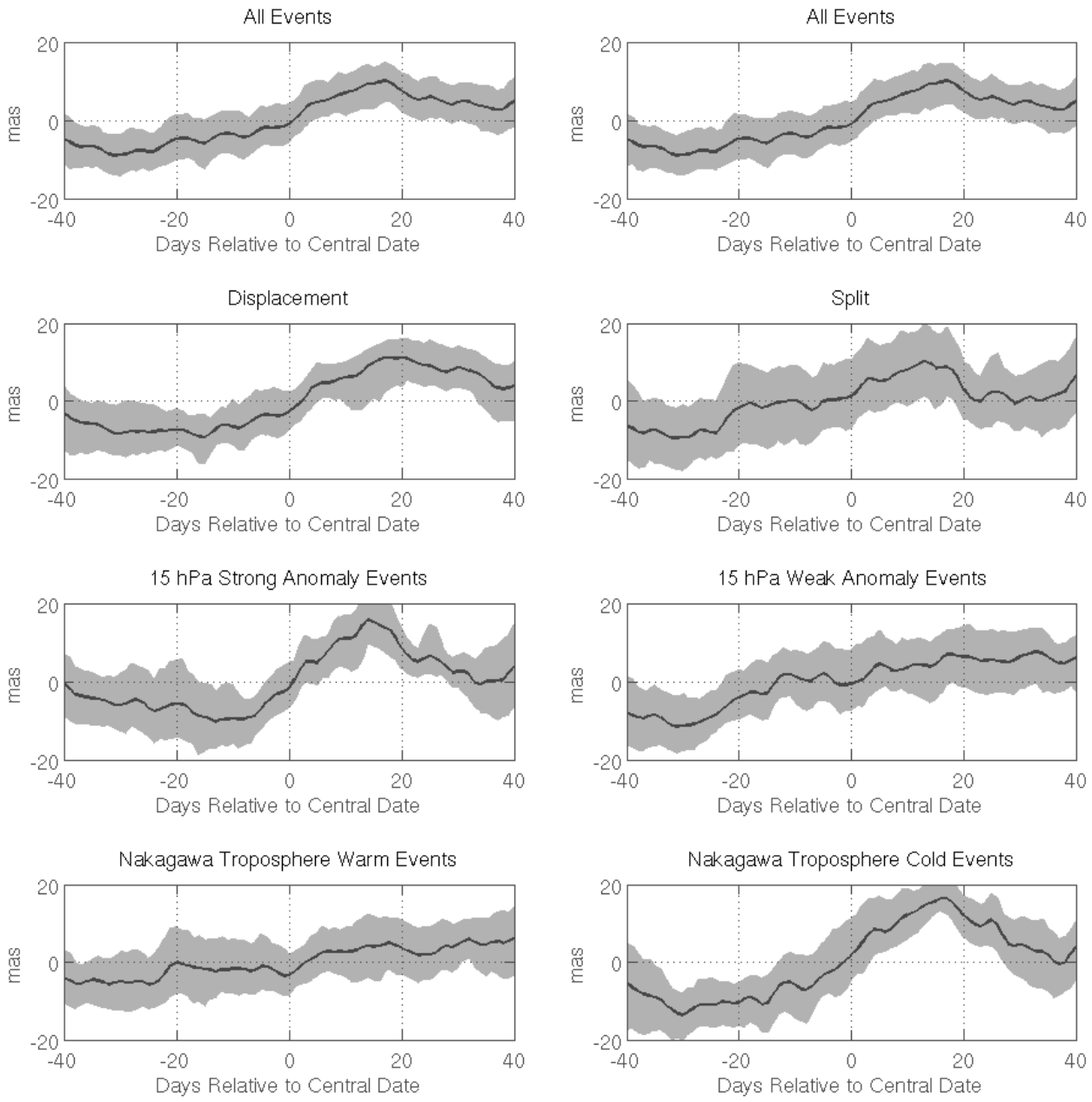

Figure 8: Composites of observed p_1, for each of the 7 SSW subsets.

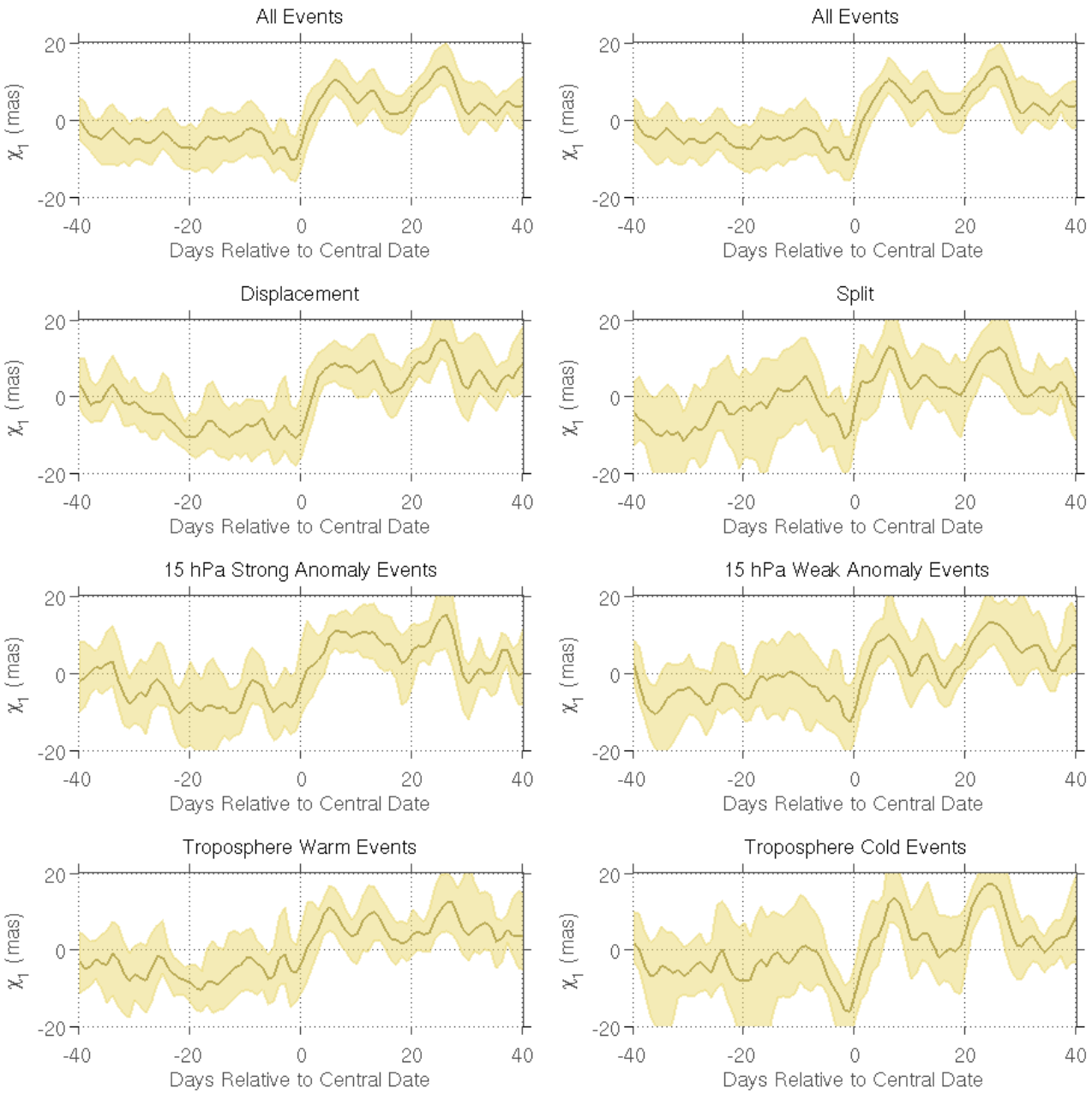

Figure 9: Composites of observed p_1 and the χ_1 mass term, for each of the 7 SSW subsets.

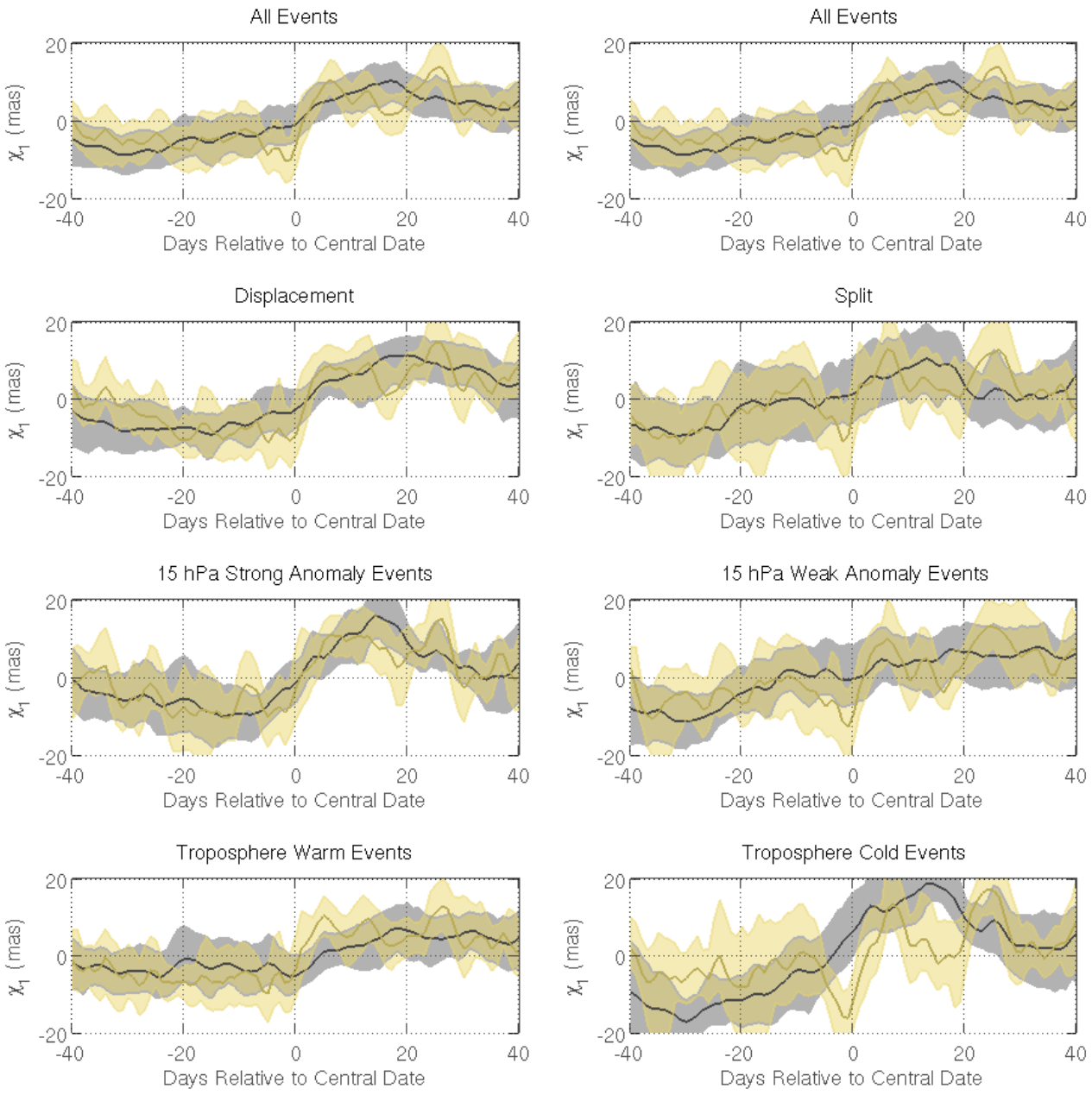

Figure 10: Composites of the χ_1 mass term, for each of the 7 SSW subsets.

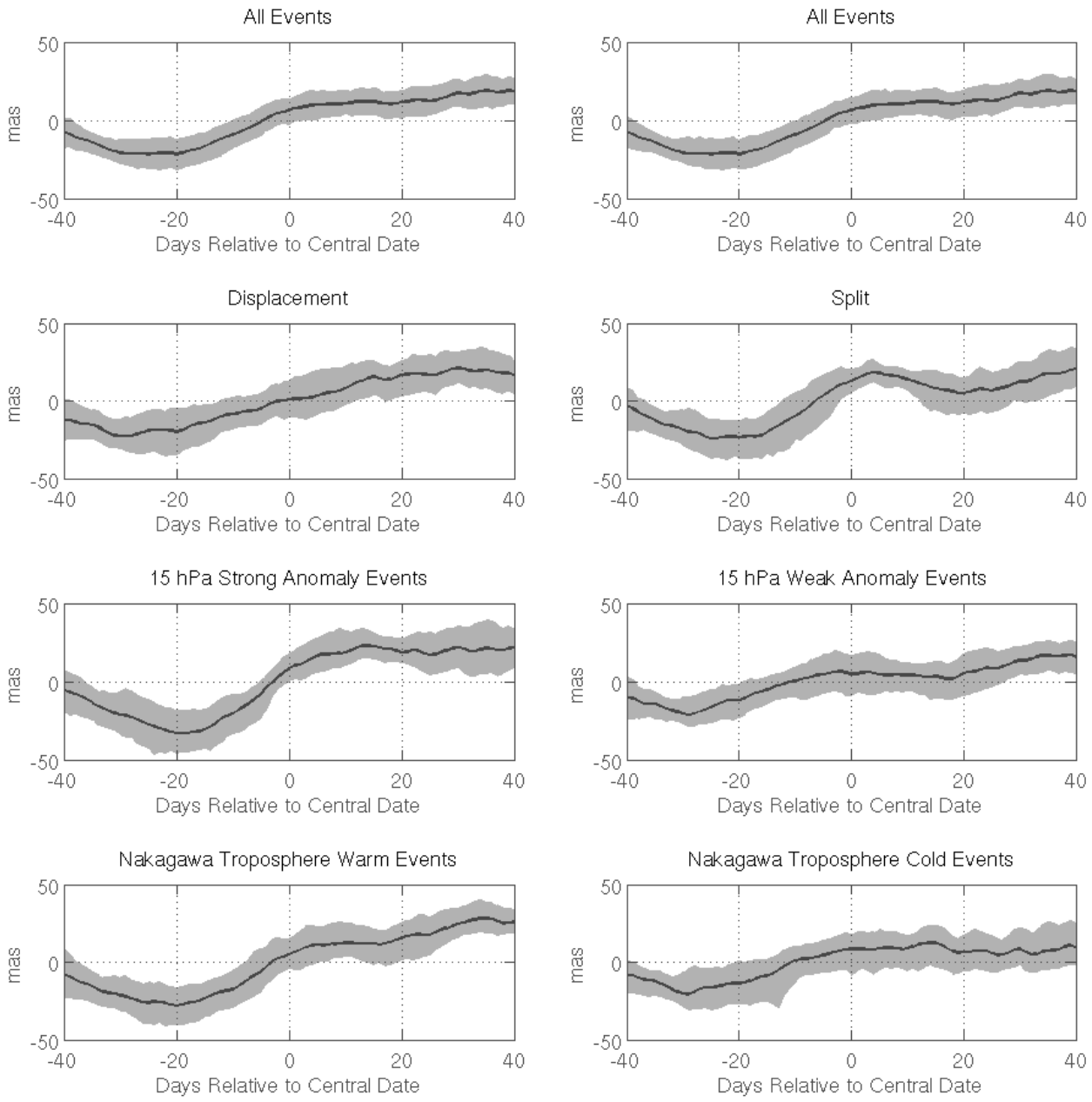

Figure 11: Composites of observed p_2, for each of the 7 SSW subsets.

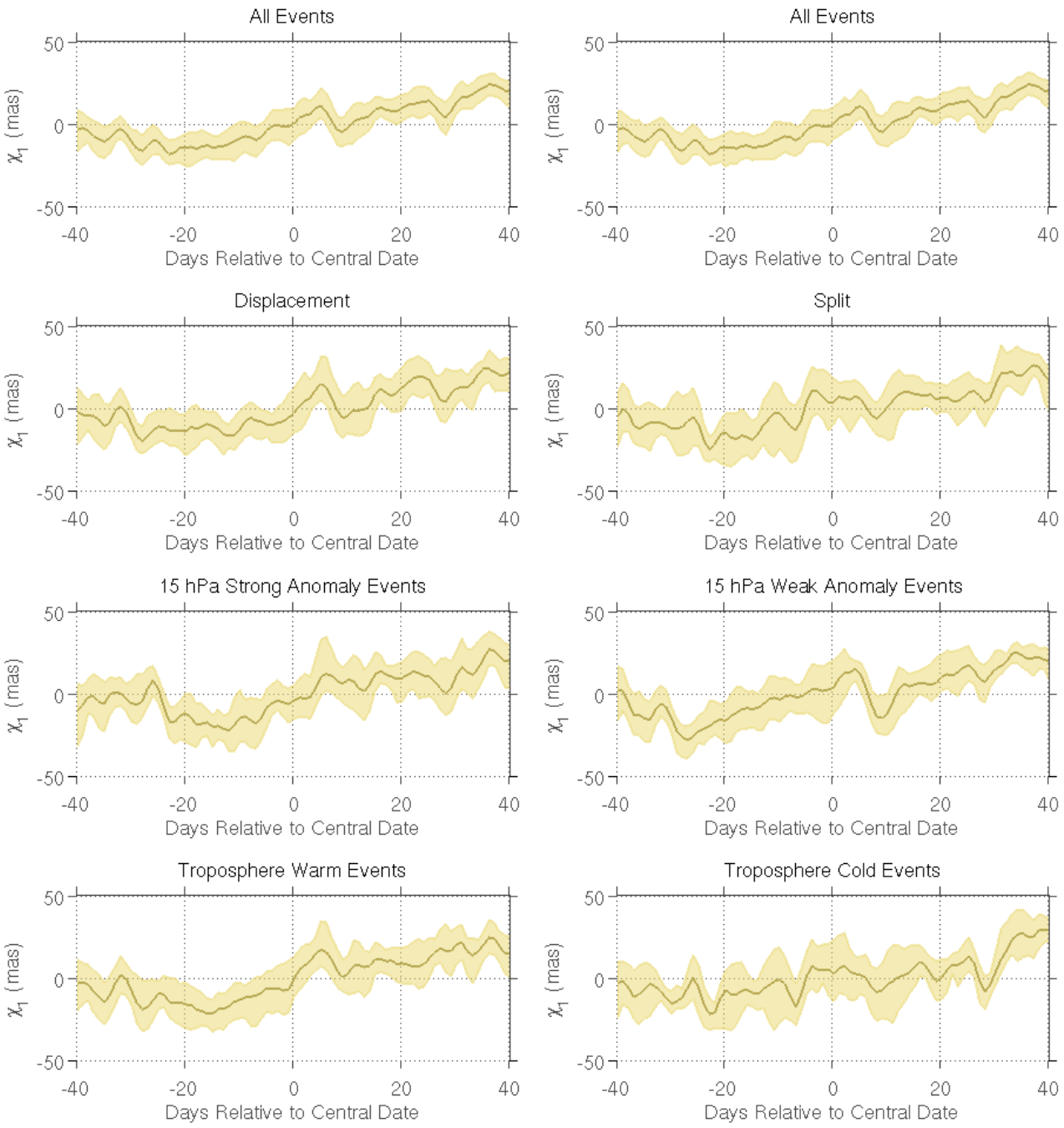

Figure 12: Composites of the χ_2 mass term, for each of the 7 SSW subsets.

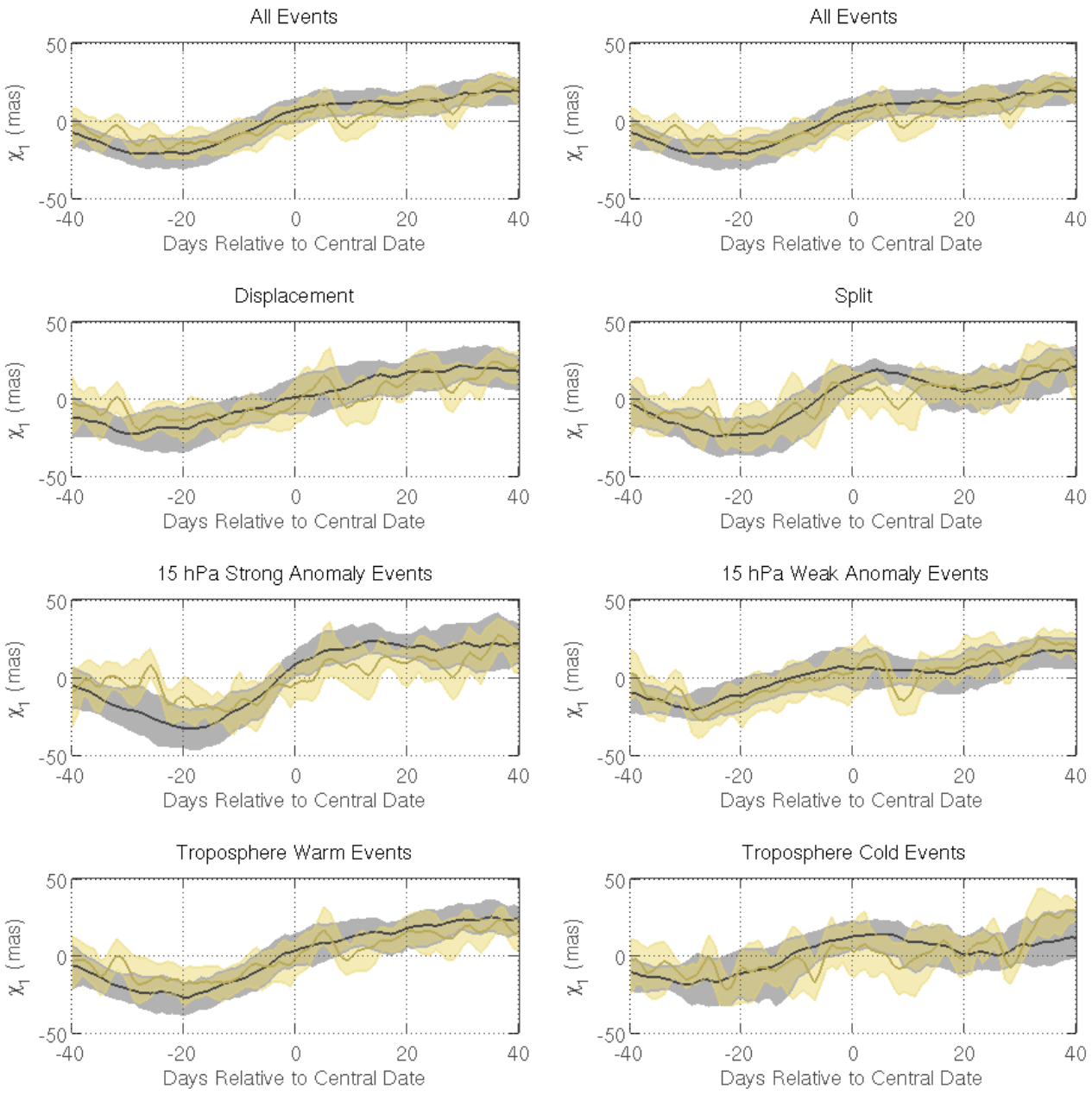

Figure 13: Composites of observed p_2 and the χ_2 wind term, for each of the 7 SSW subsets.

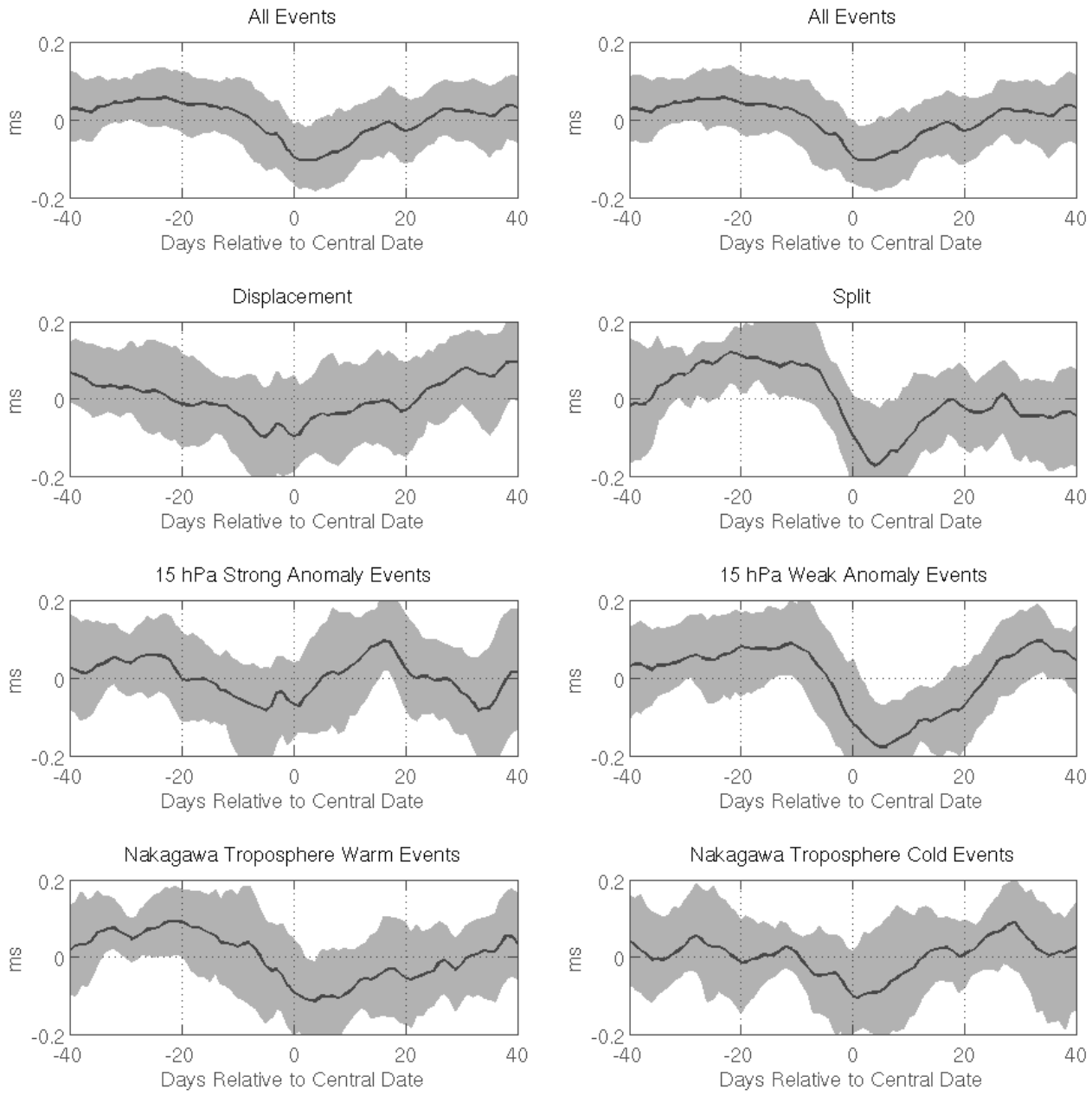

Figure 14: Composites of observed ΔLOD, for each of the 7 SSW subsets.

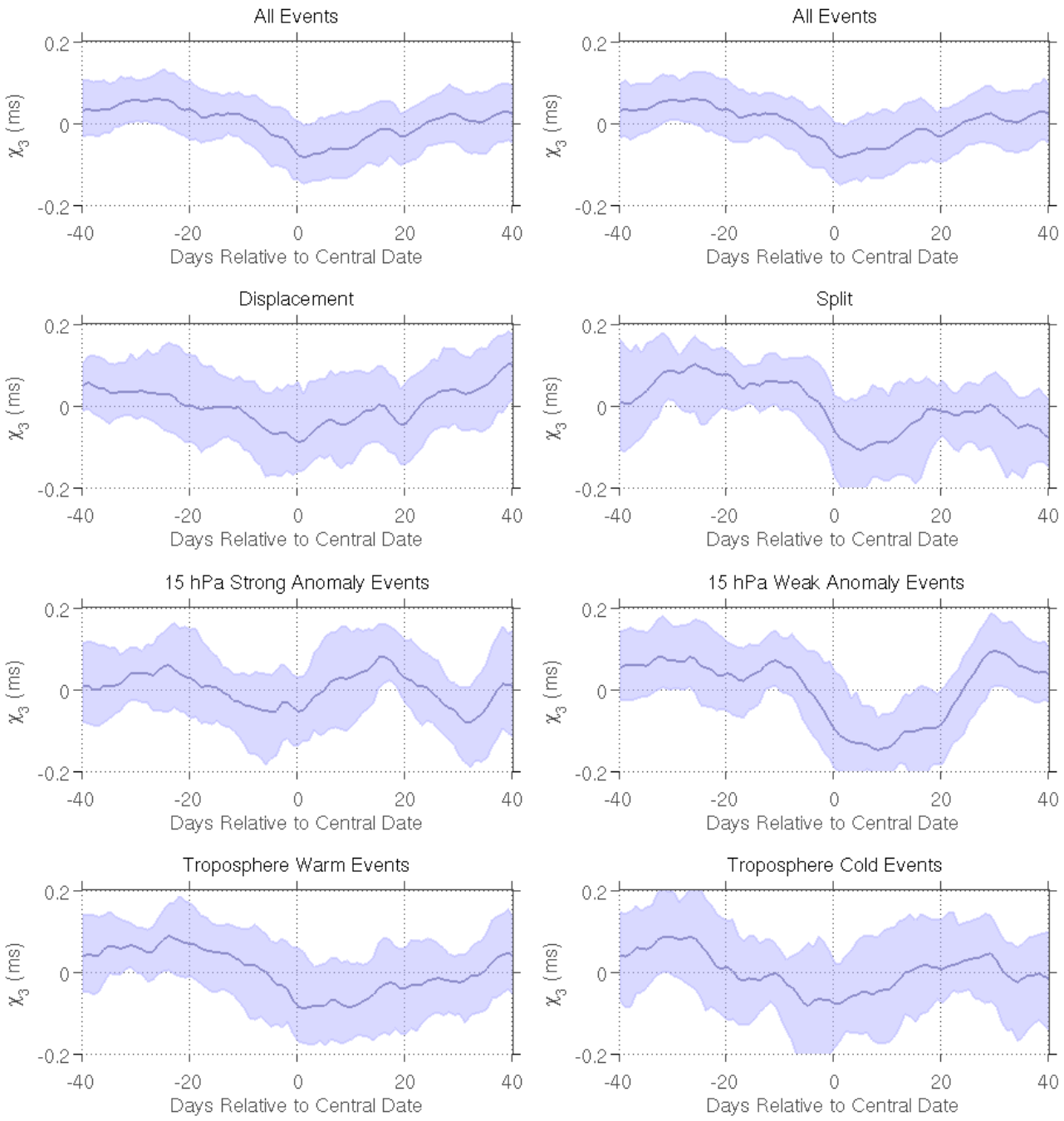

Figure 15: Composites of the χ_3 wind term, for each of the 7 SSW subsets.

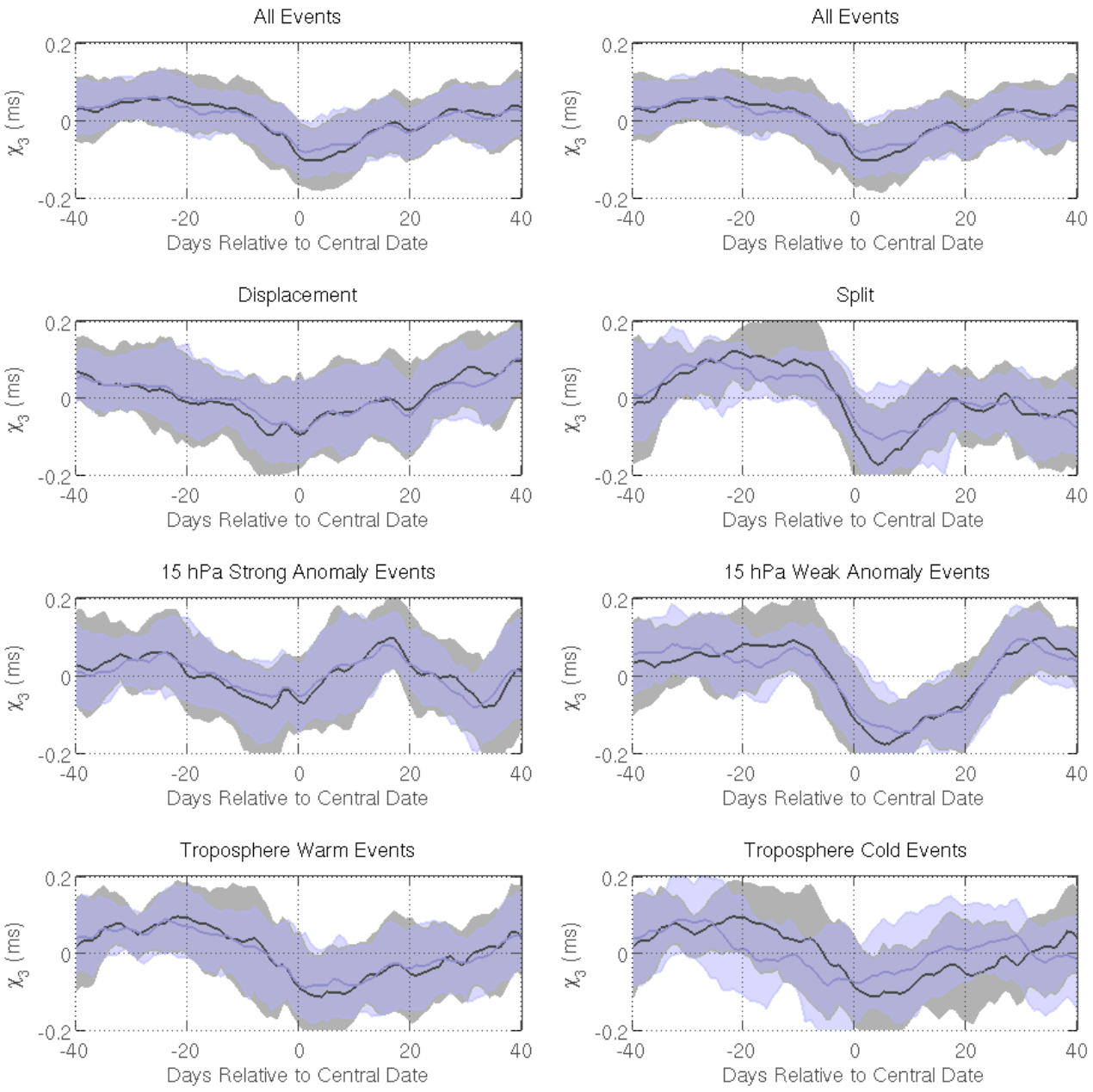

Figure 16: Composites of observed ΔLOD and the χ_3 wind term, for each of the 7 SSW subsets.

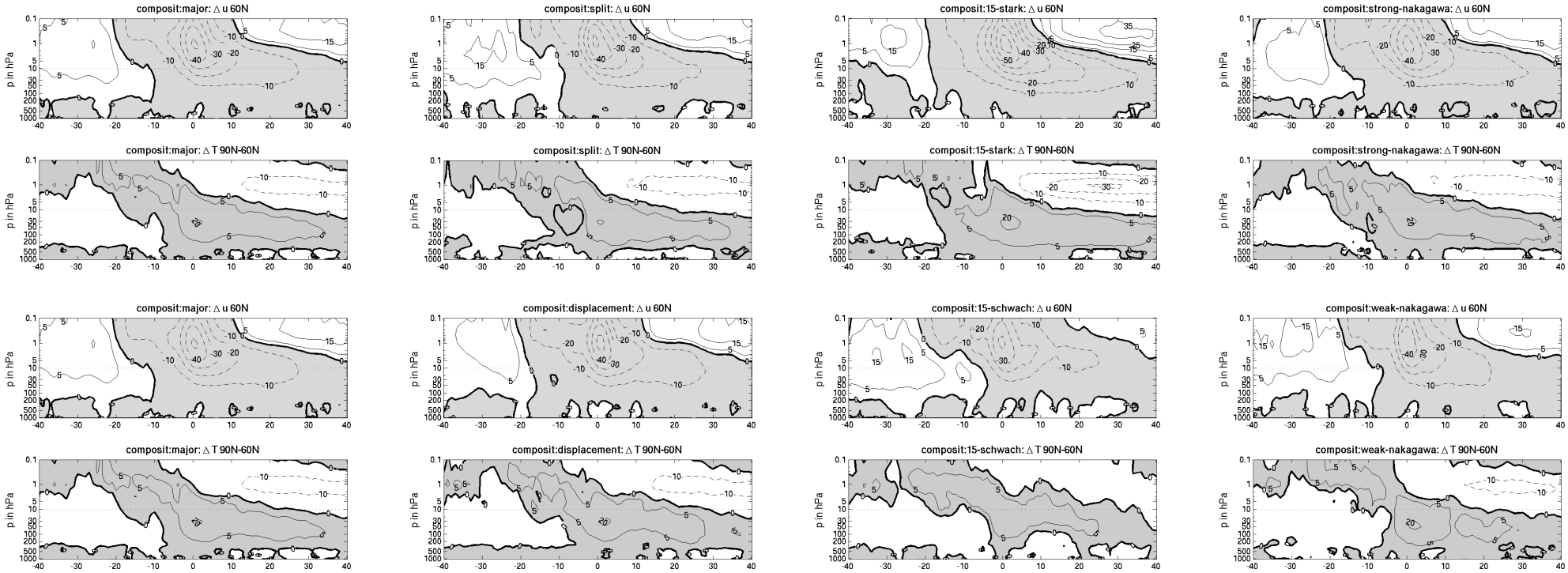

Figure 17: Composites of wind and and temperature anomalies over the different SSW subsets.

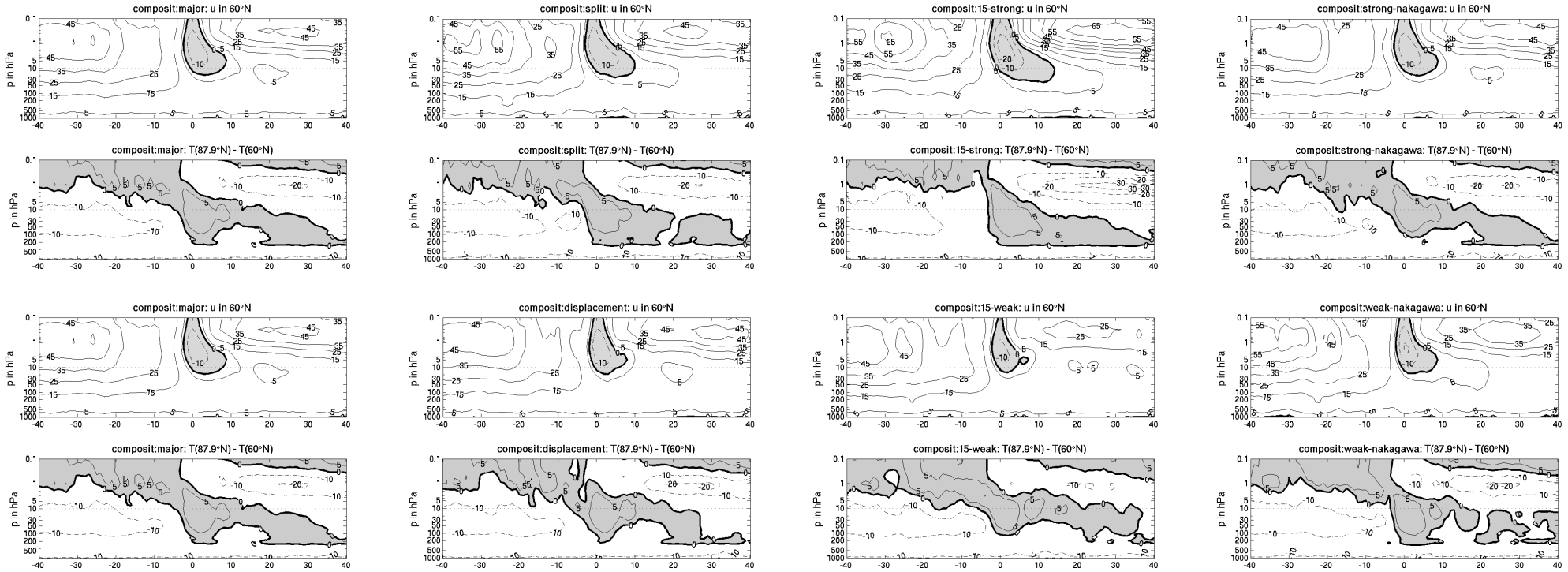

Figure 18: Composites of wind and and temperature over the different SSW subsets.

References

Ken I. Nakagawa and Koji Yamazaki. What kind of stratospheric sudden warming propagates to the troposphere? *Geophys. Res. Lett.*, 33:L04801, 2006.

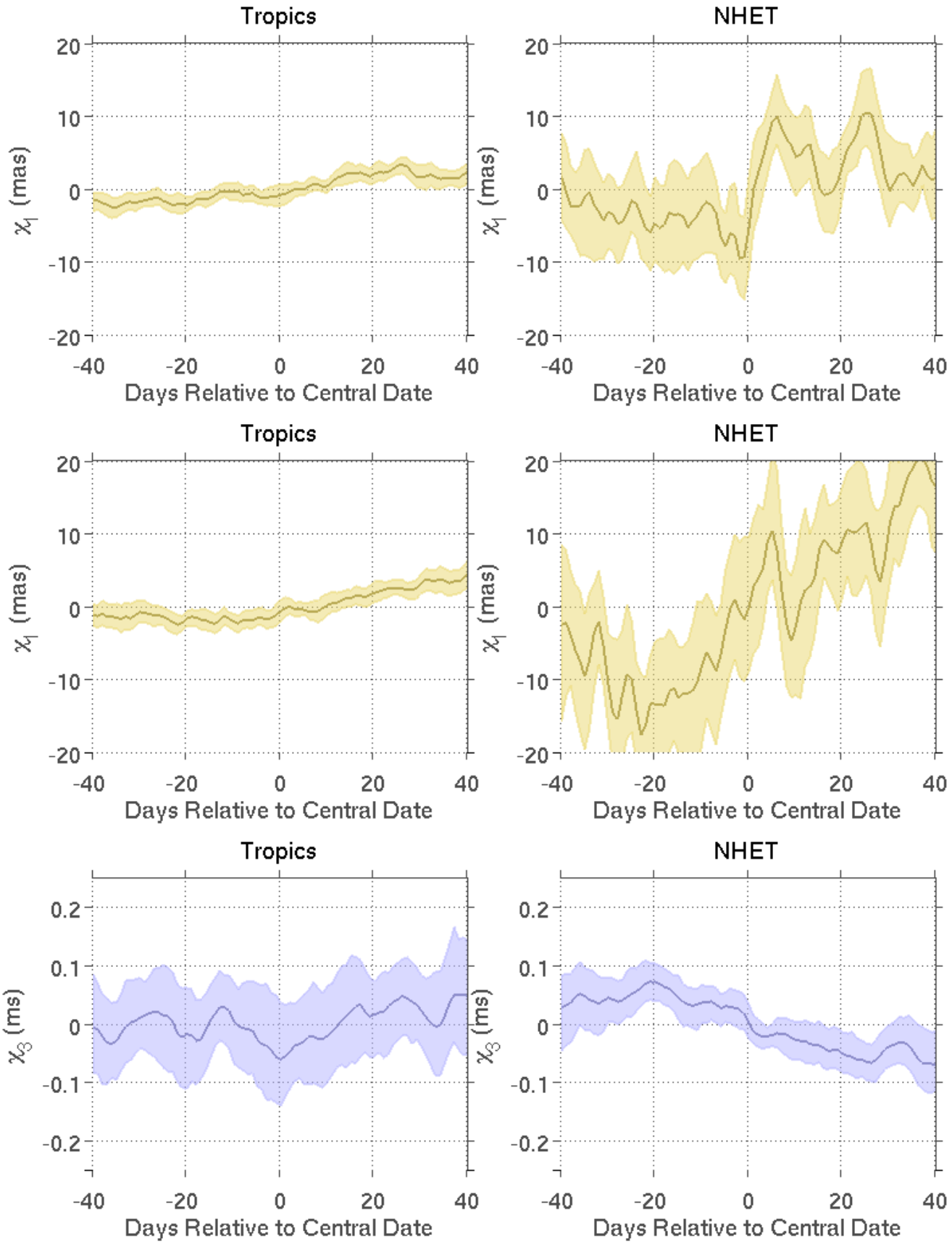

Figure 19: Composites of the dominant terms of each AEF, comparing integrationover the tropics only (center), and the NHET only (right).