

DETAIL ANALYSIS OF STRATOSPHERIC TRENDS USING ERA 5

Michal Kozubek, Jan Lastovicka, Radek Zajicek
Institute of Atmospheric Physics CAS, Prague

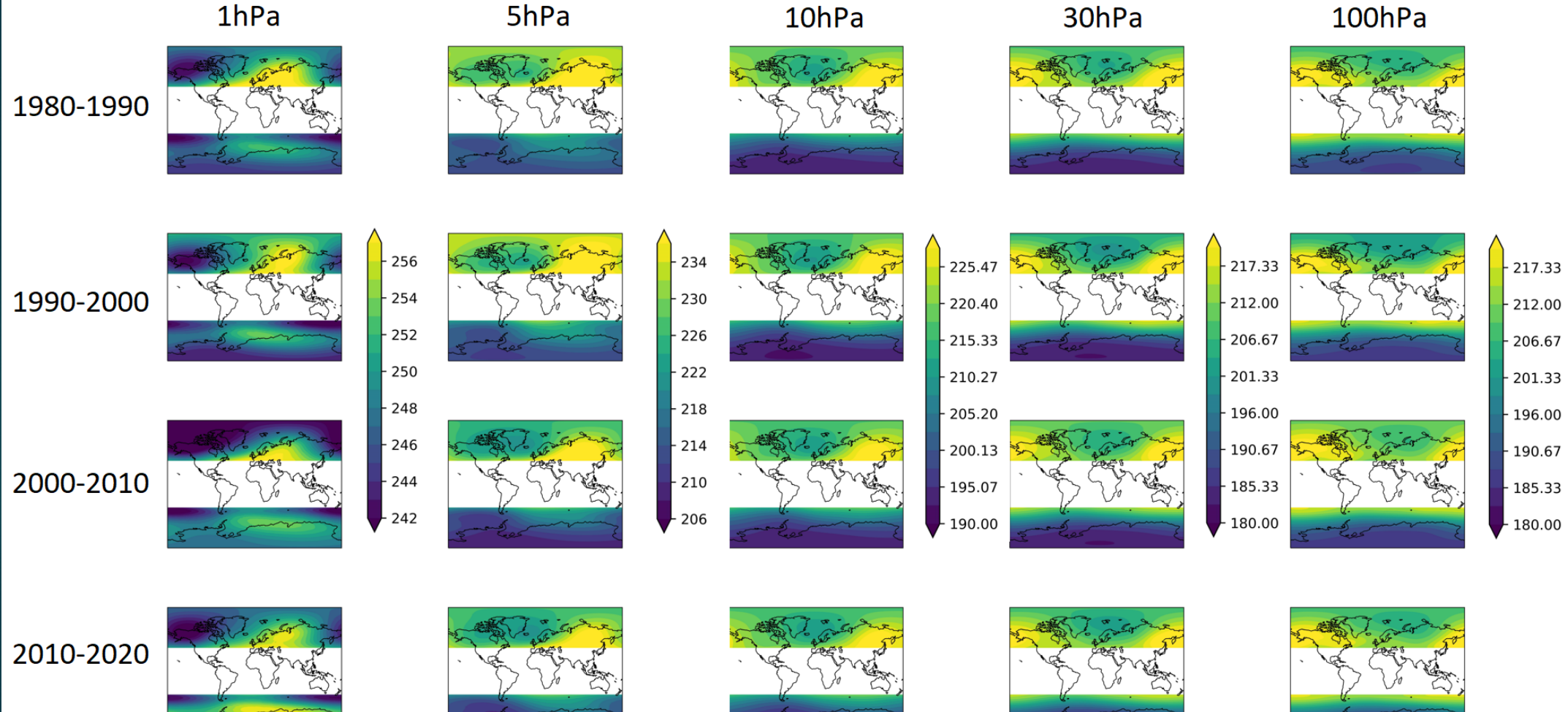
Outline

- ▶ Winter average (DJF for NH and JJA for SH) for every grid point for 90°-40°N/S
- ▶ Temperature and zonal wind trend
- ▶ Divided into four decades and their comparison
- ▶ Zonal average for temperature
- ▶ Effect of different stratospheric parameters

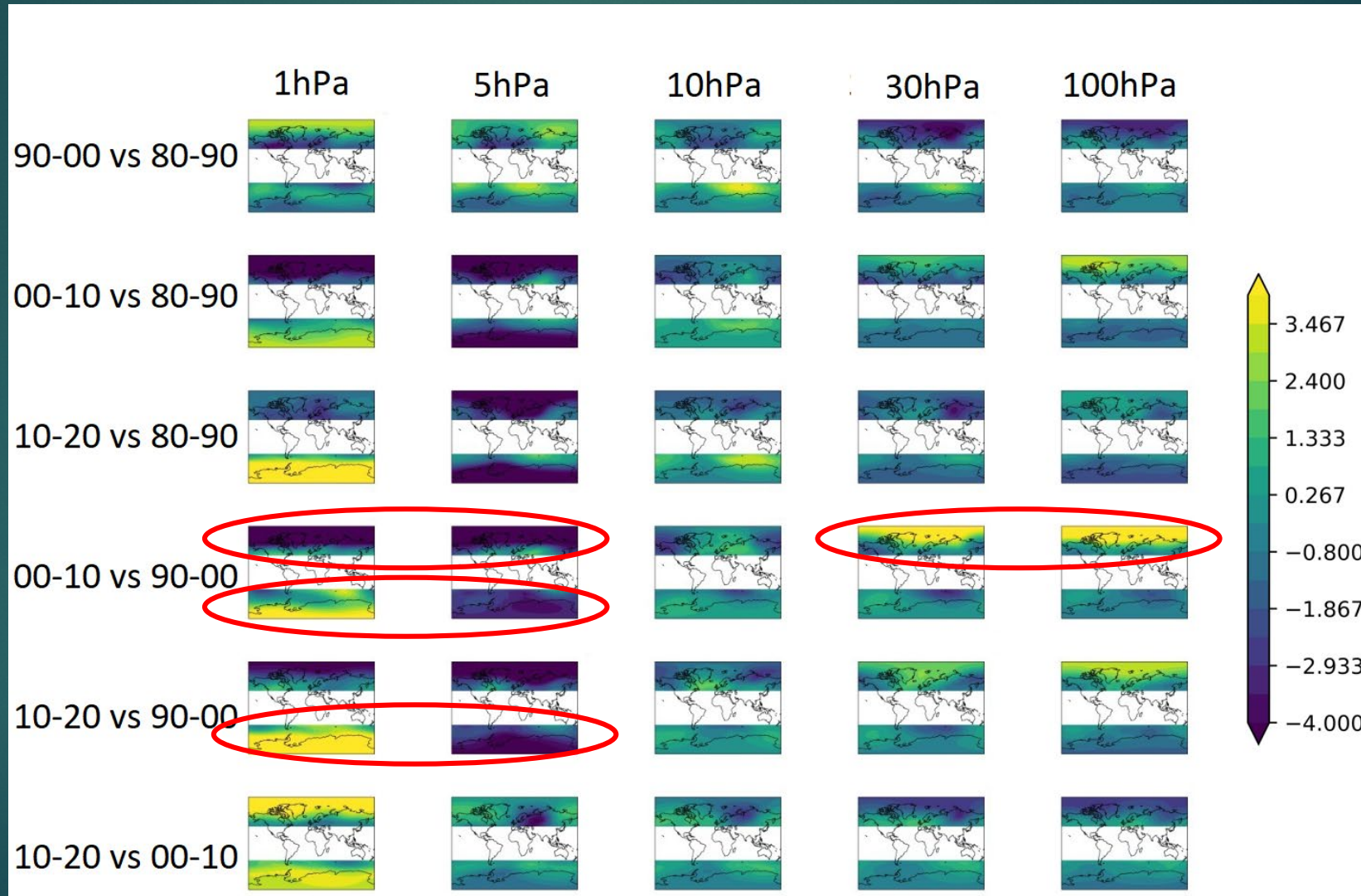
ERA 5 reanalysis metadata

- ▶ Period : 1958-present
- ▶ Grid resolution $0.25^{\circ} \times 0.25^{\circ}$
- ▶ Time resolution 1-hours (we use mostly mean)
- ▶ Vertical levels up to 1 hPa
- ▶ Zonal and meridional wind and temperature

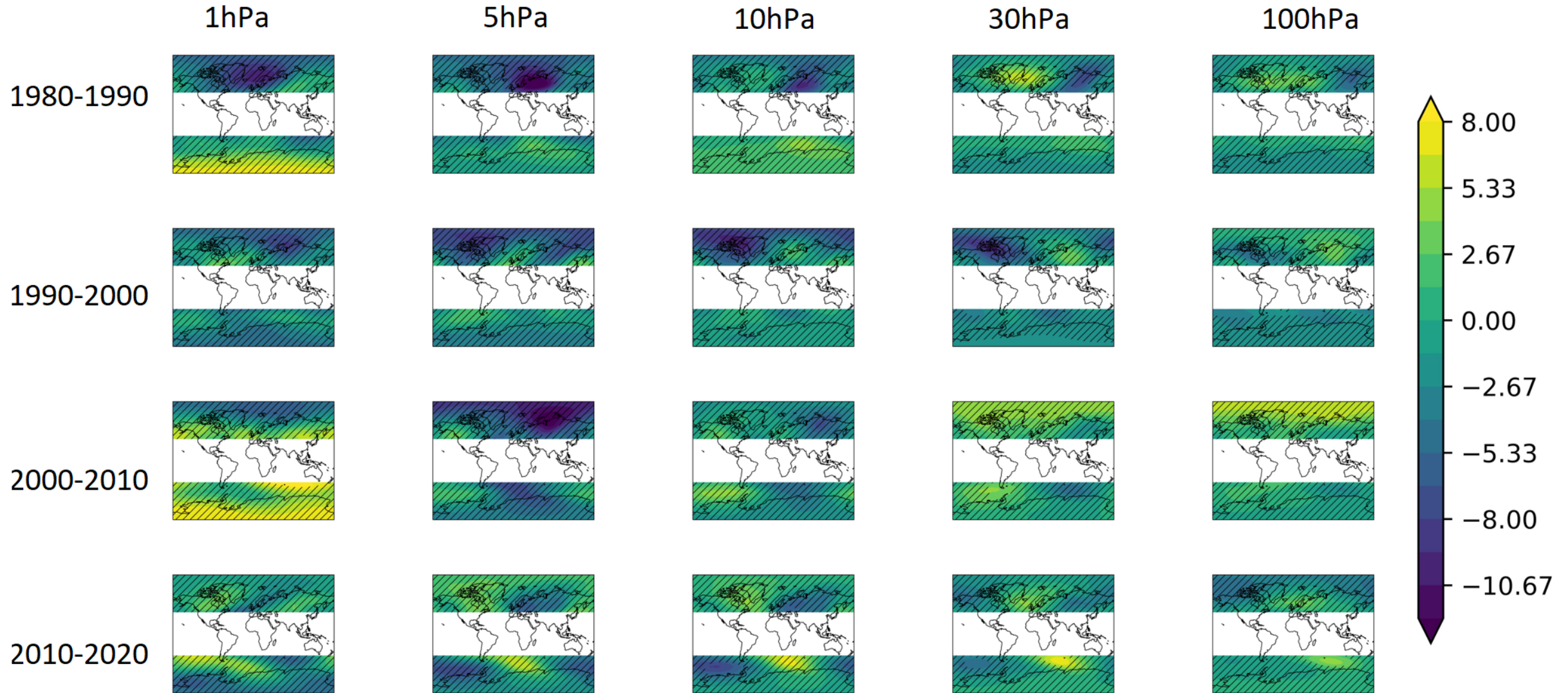
Temperature average



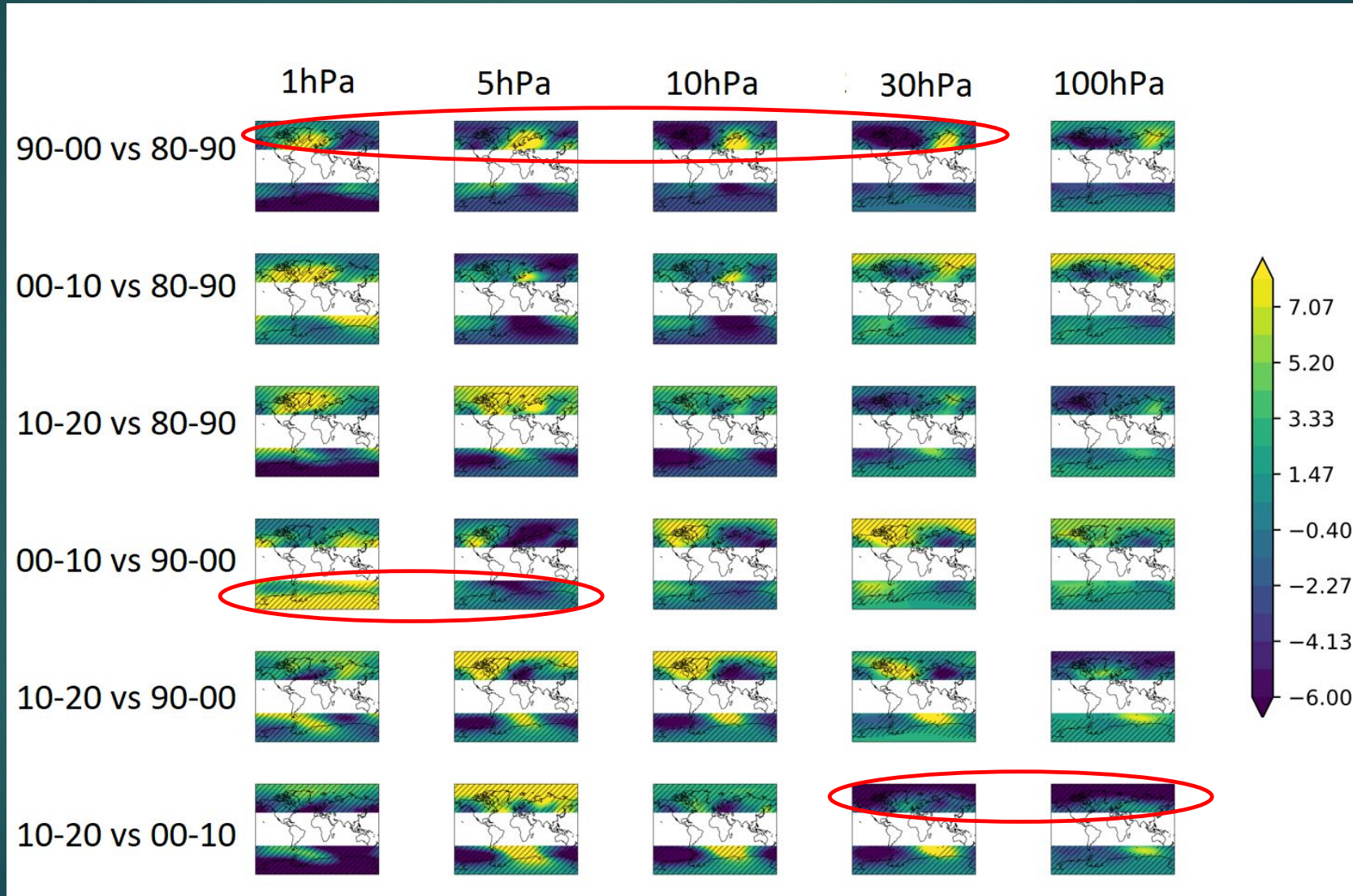
Temperature average difference



Temperature trend

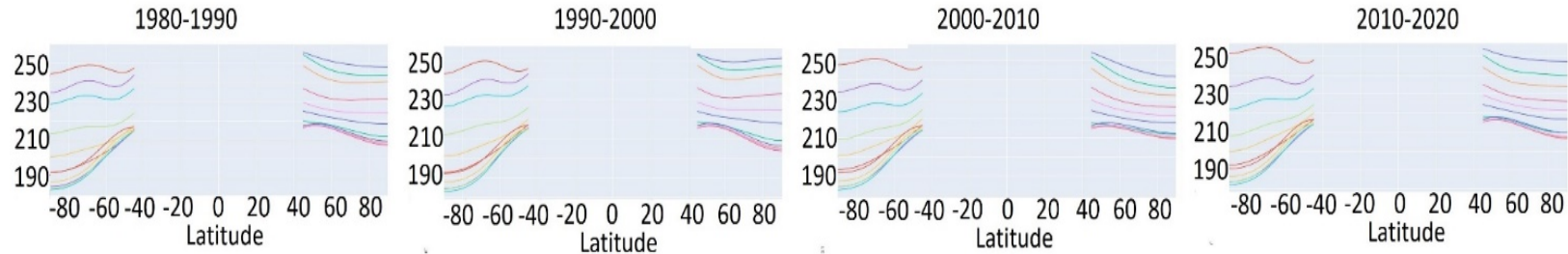


Temperature trend difference

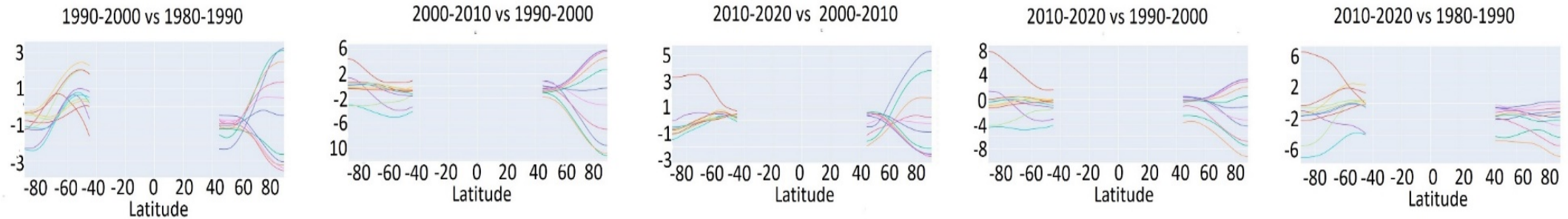


Temperature zonal average

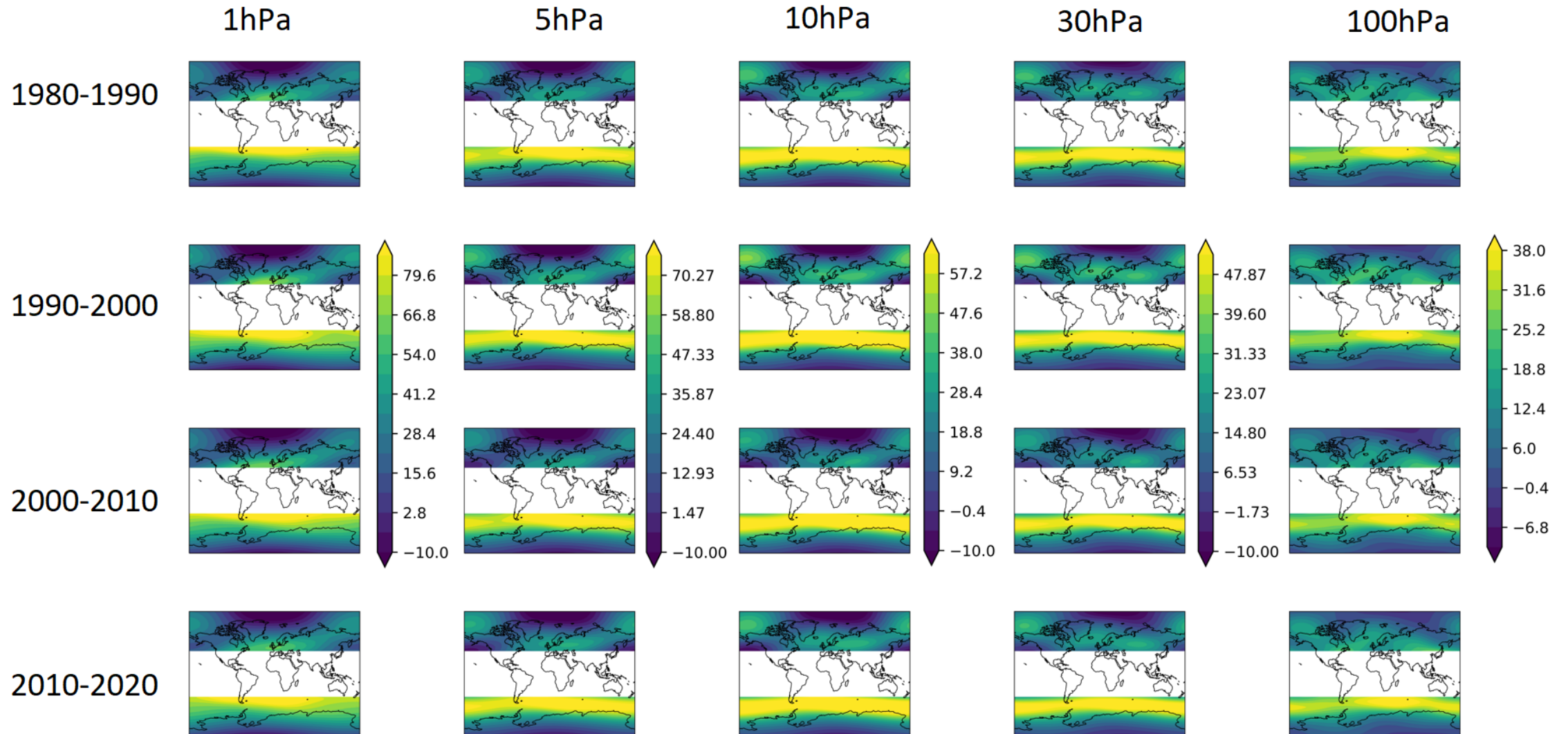
Temp avg zonal mean (K)



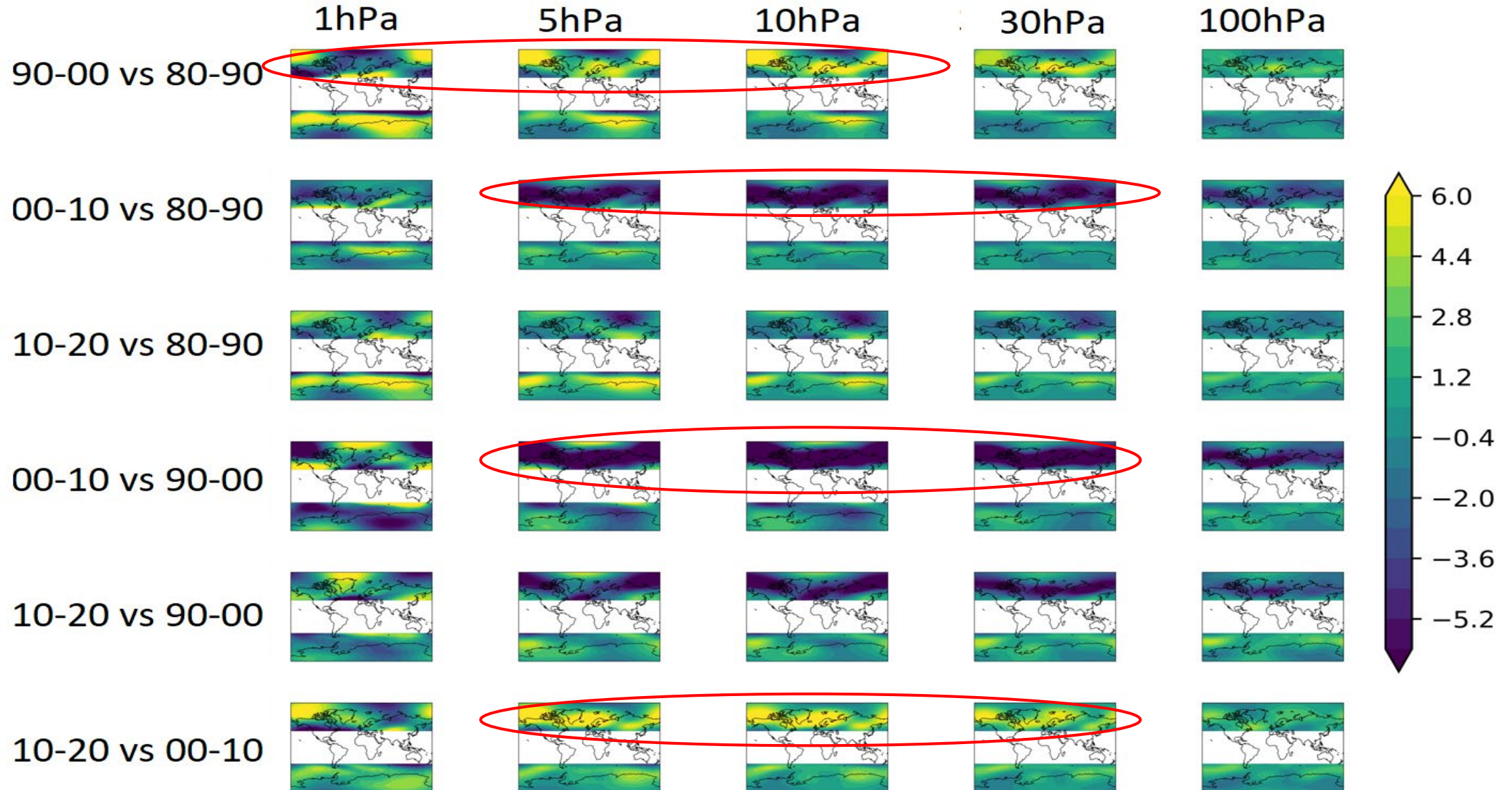
Temp avg difference zonal mean (K)



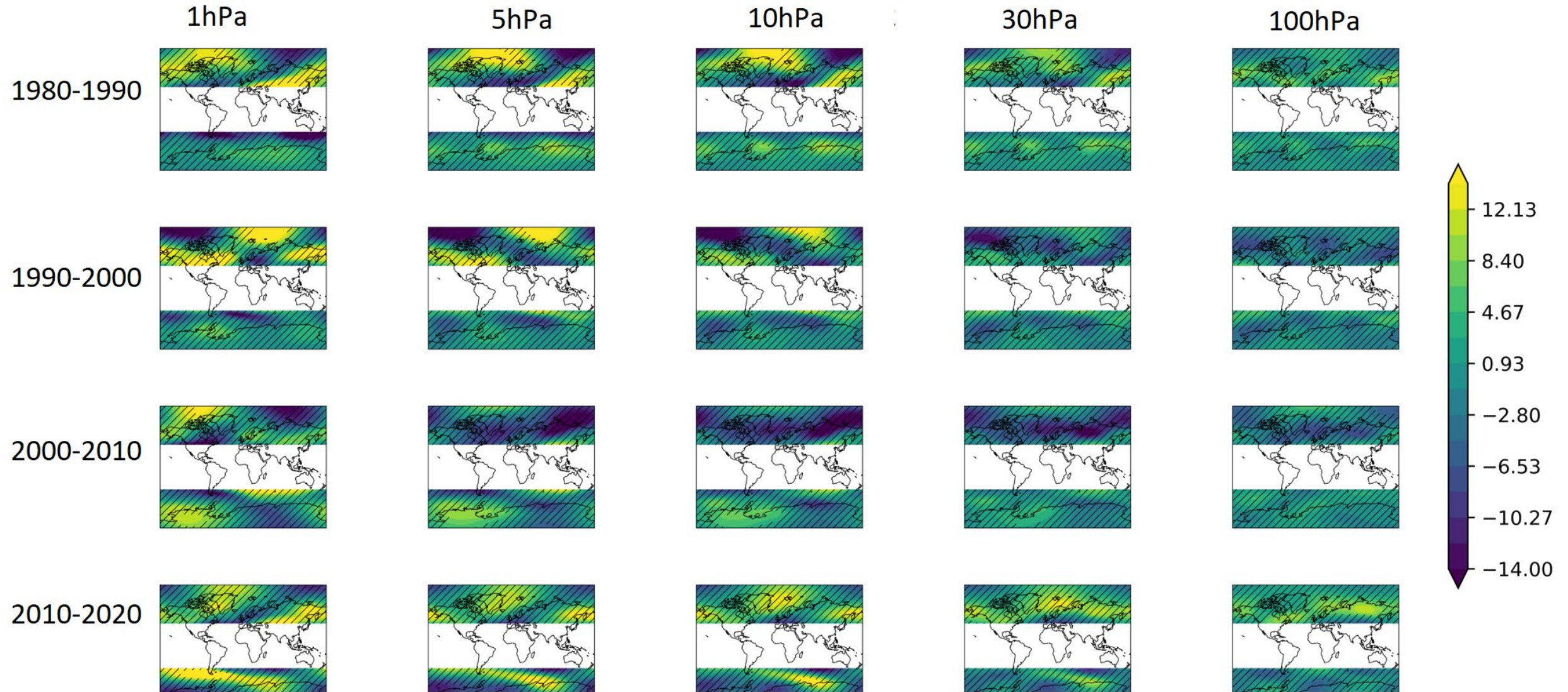
Zonal wind average



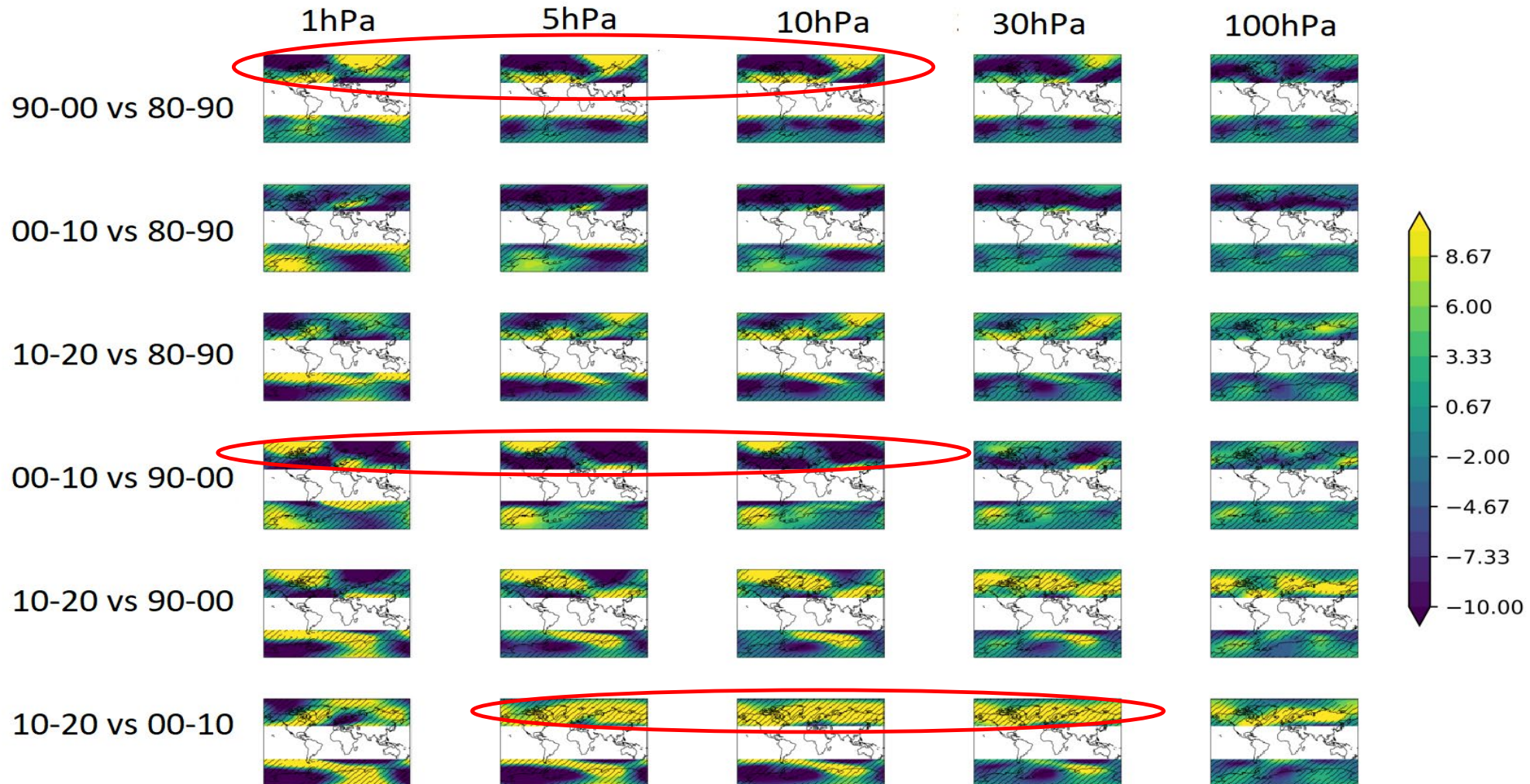
Zonal wind average difference

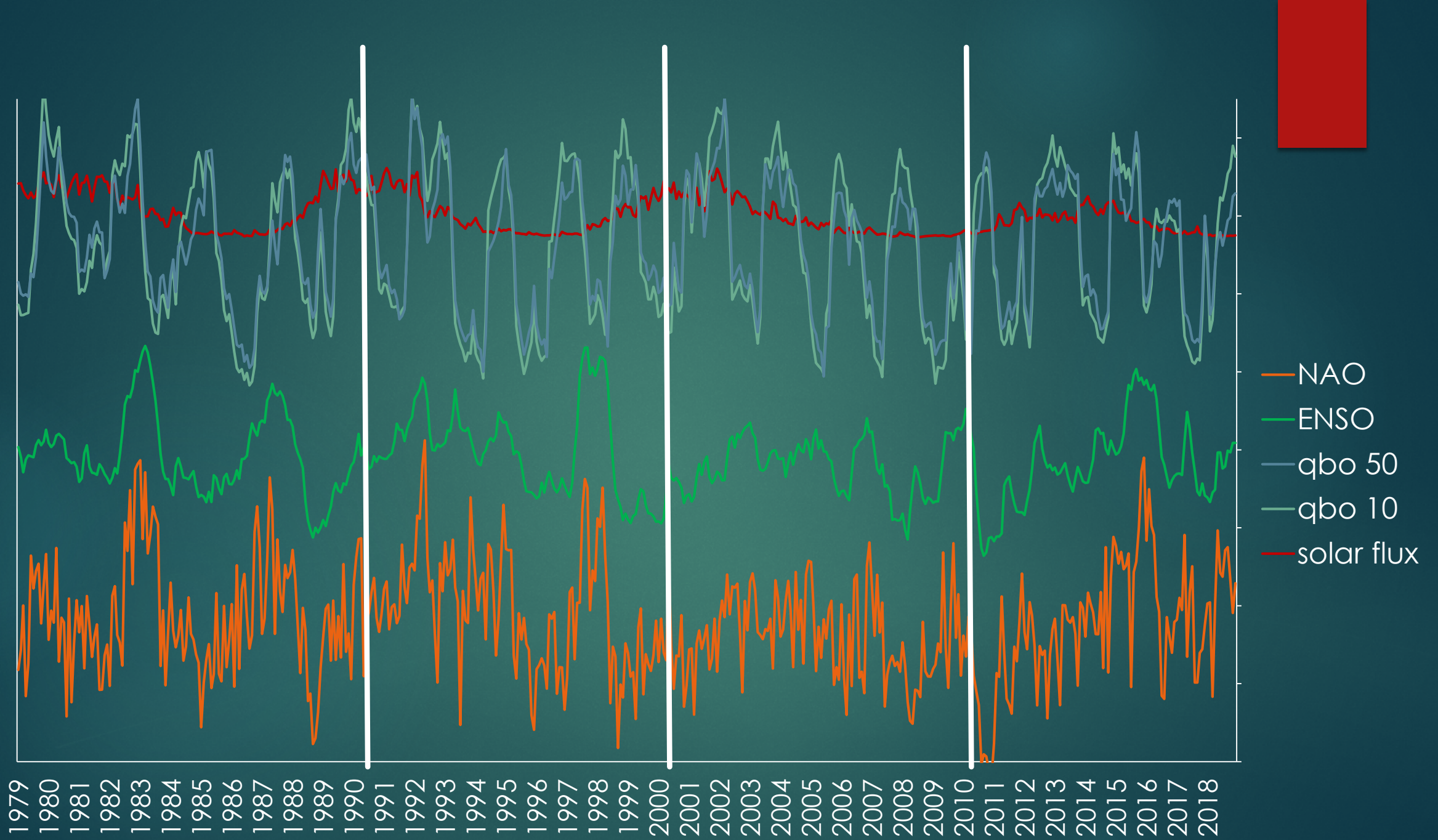


Zonal wind trend



Zonal wind trend difference





Conclusion

- ▶ Two core structure in the Northern Hemisphere for temperature
- ▶ The biggest difference between 00-10 and 90-00 for temperature averages and 10-20 and 00-10 for temperature trend at 1, 5 and 10 hPa
- ▶ Negative difference between 00-10 and 90-00 and positive between 80-90 and 90-00 or 00-10 and 10-20 for wind averages
- ▶ The possible reason for this behaviour is occurrence of major SSW in the stratosphere