Wind-induced trend (1930-2000)


\[ \sim 0.008^\circ C/\text{decade} \]
Trends from 1982 to 2012

Armour et al. (Nature Geosci., 2016)
Four 50-member ensembles

ALL: GHG, AER, NAT, OZ, LU
NAT: VOL, SOL
AER: SA, OC, BC
SOZ: SOZ

Swart, Fyfe & Gille (in progress)
Temperature anomalies (depth-year)

Swart, Fyfe & Gille (in progress)
Heat storage anomalies (latitude-year)

Swart, Fyfe & Gille (in progress)
Temperature anomalies (depth-year)

Swart, Fyfe & Gille (in progress)
Heat storage anomalies (latitude-year)

Swart, Fyfe & Gille (*in progress*)
Temperature and heat storage anomalies

Depth-year

Latitude-year

Swart, Fyfe & Gille (in progress)
Summary

• Warming due to increasing GHG emissions with an aerosol offset

• Slight but robust ozone-induced cooling below about 150 meters

Swart, Fyfe & Gille (in progress)
Zonal wind stress anomalies (latitude-year)

Swart, Fyfe & Gille (in progress)