



# Interdecadal Pacific Oscillation Modulates Hydrological Sensitivity Residuals Derived from Energy Budget Decomposition

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## HS(hydrologic sensitivity) :

how much **additional latent-heat release** occurs per degree of global-mean surface warming

→ HS represents how much additional **latent-heat** release occurs **per degree** of global-mean surface warming

→ HS is a fundamental indicator that determines future changes in the global water cycle

HS can be decomposed as follows:  $HS\left(\frac{dP}{dT}\right) = \frac{dLWC}{dT} - \frac{dSWA}{dT} - \frac{dSH}{dT}$

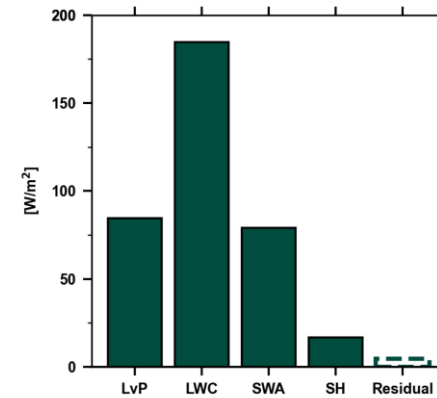
**However**



using **ERA5**, HS decomposition => **residuals** appear!!

$$HS\left(\frac{dP}{dT}\right) \neq \frac{dLWC}{dT} - \frac{dSWA}{dT} - \frac{dSH}{dT}$$

ERA5  
Atmosphere Mean  
(1980-2025)



CMIP6 (historical + ssp585)  
Atmosphere Mean  
(1980-2025)

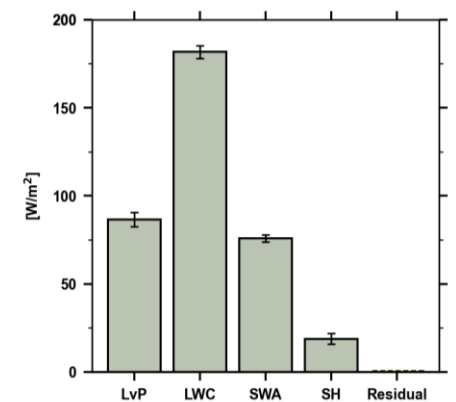
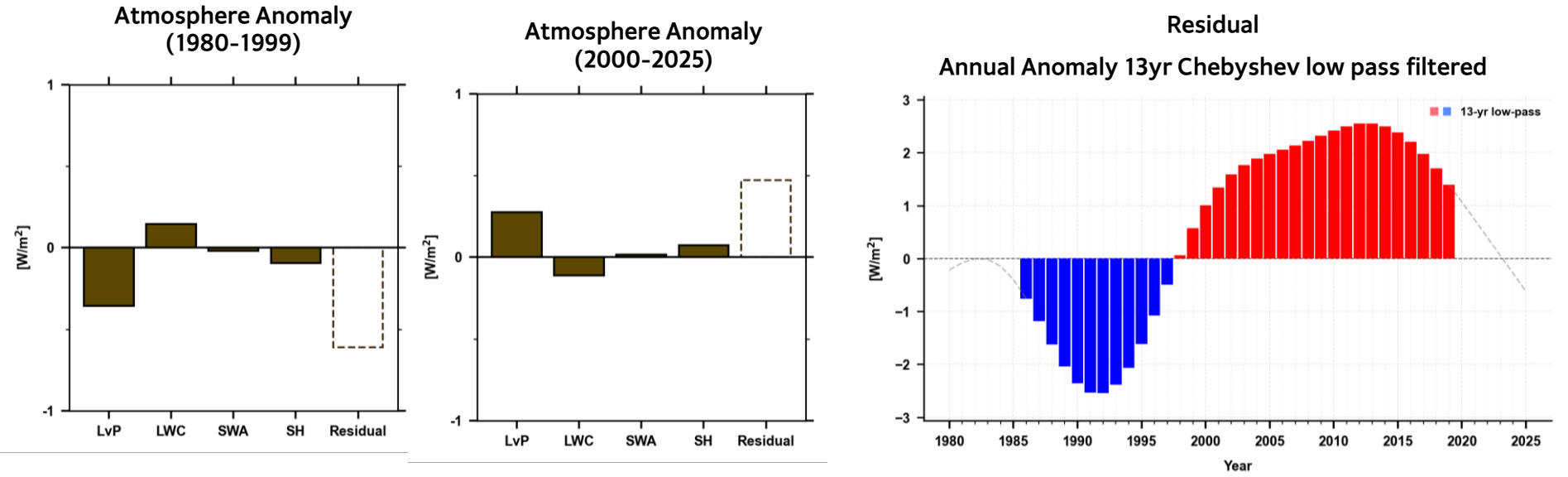


Figure S2

ERA5



CMIP6  
(historical + ssp585)

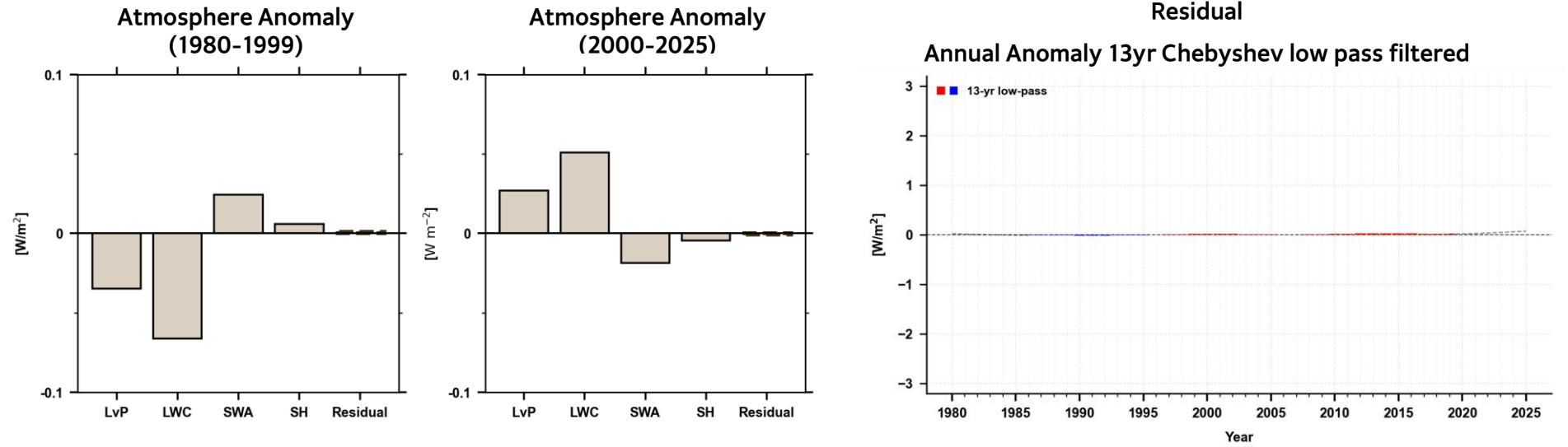
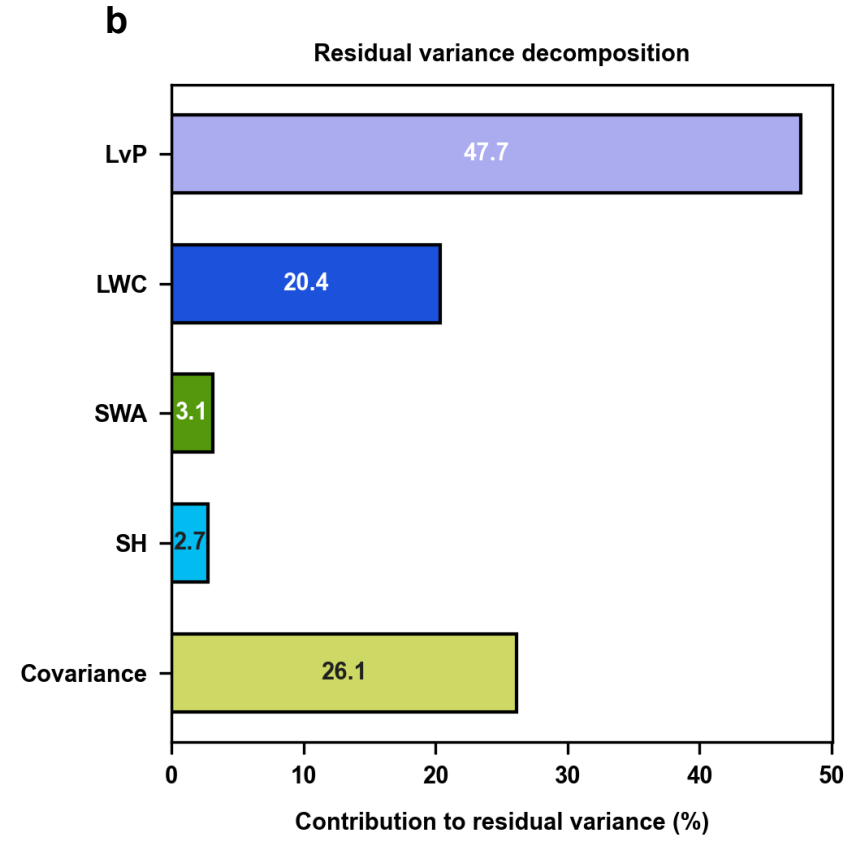
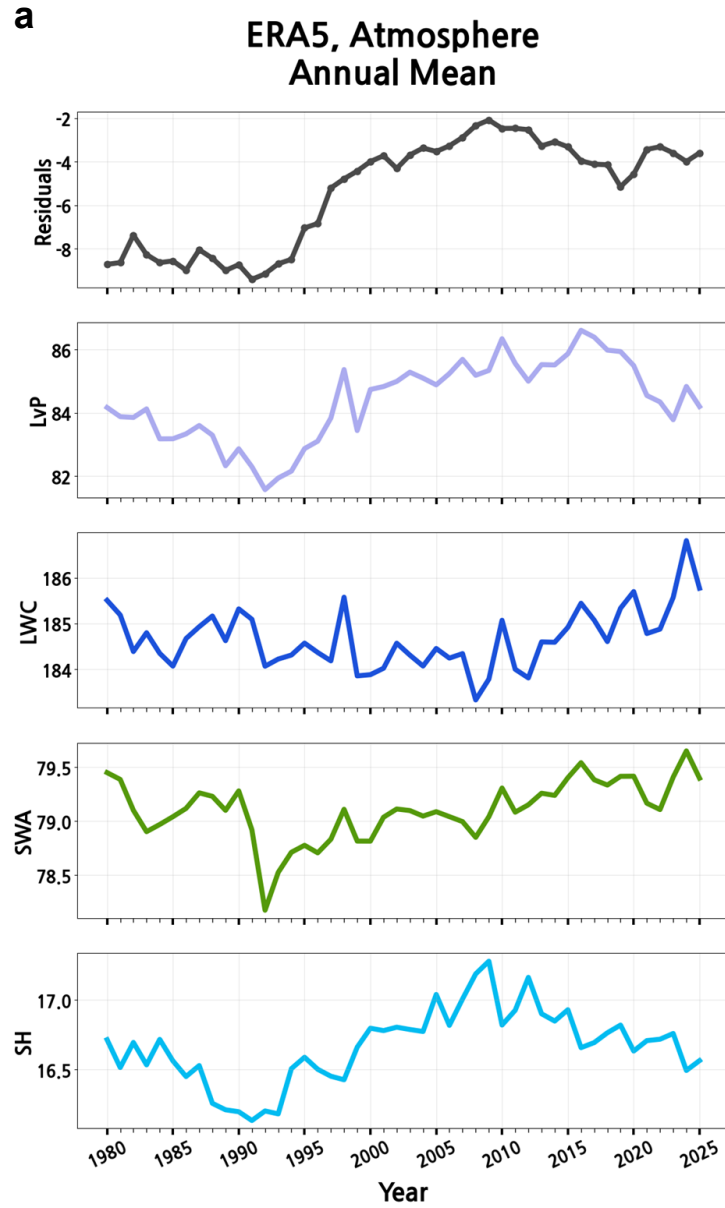
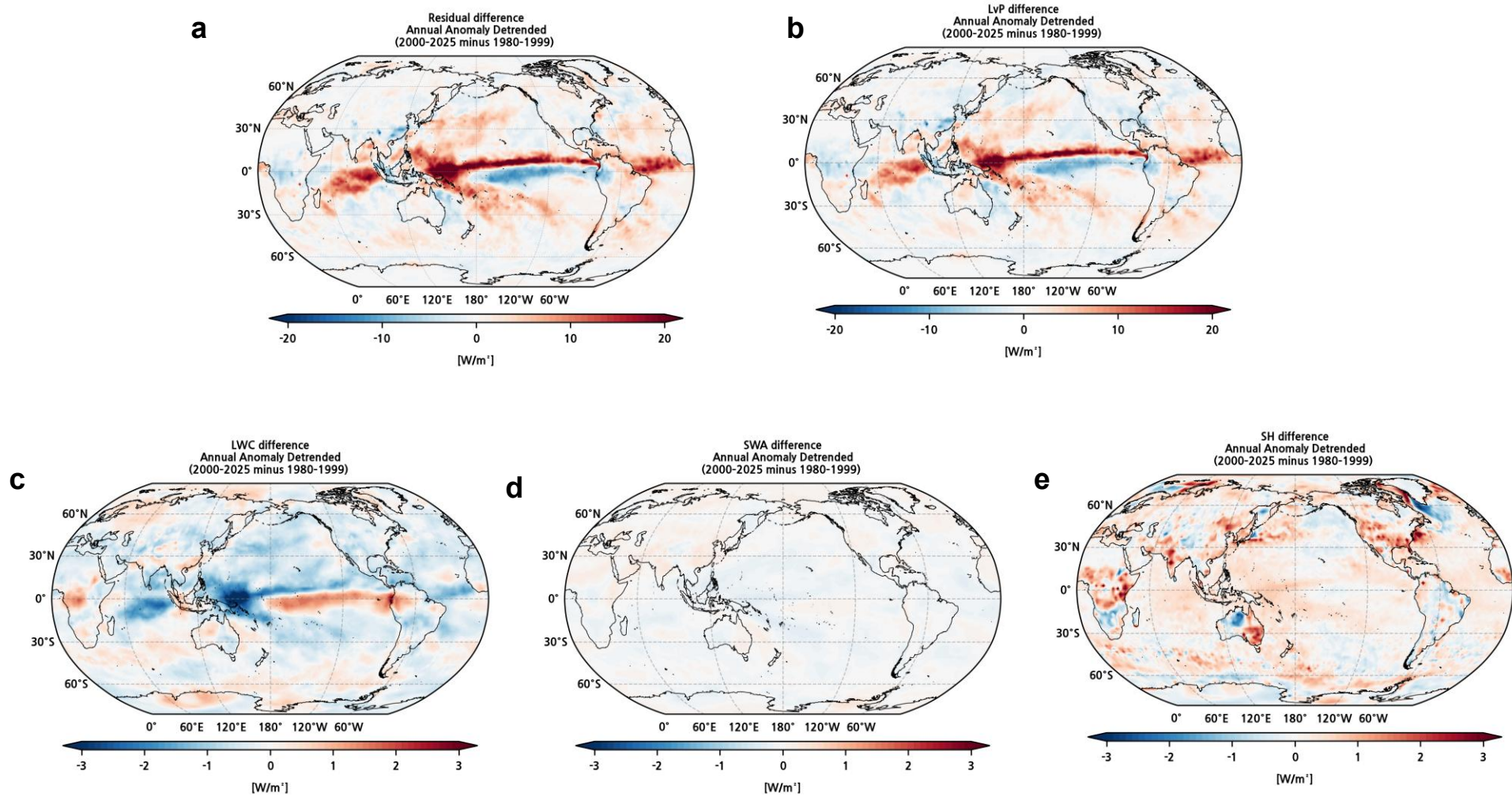


Figure S3



### Residual difference between pre-2000 and post-2000 periods



Spatial regression of residual variability onto IPO index

