

Supplementary Information Guide:

File: SI_Video_1.mp4

Title: Evolution of the Idealized Walker Circulation.

Description: a,e,f: Idealized Walker circulation (black lines) compared to observations (purple dashed lines) in terms of zonal wind stresses (ZWS), SST and thermocline depth (TD), where each animated frame corresponds to a given month of the record. The idealized Walker circulation is entirely determined by warm pool edge position and zonal mean thermocline depth (blue dashed lines), which values here match the ones from observations. b,c,d: longitude-time hovmollers of ZWS, SST and TD, with indication of warm pool edge position (blue dashed lines) and time of current frame (purple dashed lines). The idealized circulation's geometry compares reasonably to observations including for individual ENSO events.