

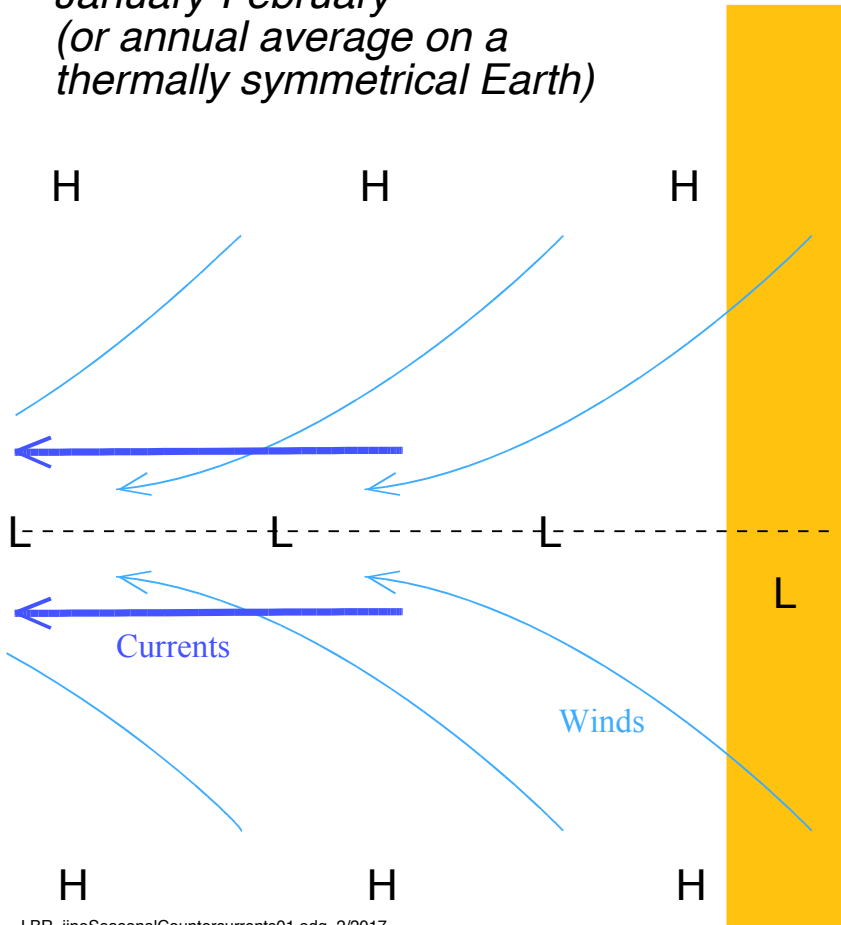
The surface currents of the oceans IV: seasonal countercurrents in the eastern Pacific and Atlantic

The Inter-Tropical Convergence Zone (the ITCZ) migrates toward the warmer hemisphere through one year's seasons and across years. On the present Earth, the greater warmth of the Northern Hemisphere means the ITCZ is near

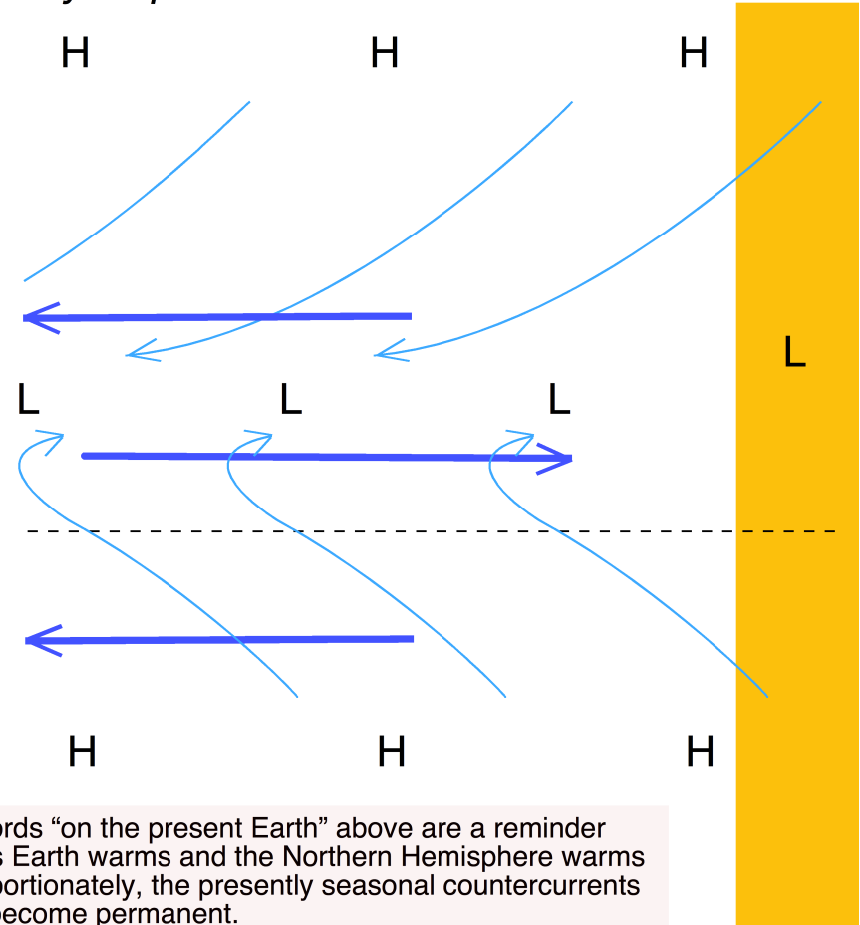
the equator in austral summer and shifts well north of the equator in boreal summer. Thus in austral summer, the symmetrical easterlies drive two equatorial currents west. However, when the ITCZ shifts north of the equator in boreal summer, the

easterlies from the Southern Hemisphere cross the equator, turn to the right in response to the NH Coriolis Effect, and drive a current eastward, giving a more-or-less equatorial countercurrent.

*January-February
(or annual average on a
thermally symmetrical Earth)*



July-September



The words "on the present Earth" above are a reminder that, as Earth warms and the Northern Hemisphere warms disproportionately, the presently seasonal countercurrents could become permanent.