



Drilling records indicate a tectonic-gateway-driven tipping point in ocean circulation due to closure of the Central American Seaway (CAS). The divergence of carbonate preservation records (a) between Ocean Drilling Program sites in the Caribbean Sea and the Pacific Ocean indicate a separation of deep water masses around 4.4 million years ago, while records of sea surface salinity (b) indicate a partitioning of surface waters between the Caribbean and the Pacific a few hundred thousand years later. Together, these records indicate the CAS closed gradually. They are consistent with the modeled effects of closure of a wide open CAS on global ocean circulation (c) and sea surface salinity (d). Sources: (a and b) modified from O'Dea et al. (2016), <https://doi.org/10.1126/sciadv.1600883>, which is based on data from (a) Haug and Tiedemann (1998), <https://doi.org/10.1038/31447> and (b) Sarthein (2013), <https://doi.org/10.1016/B978-0-444-53643-3.00129-1>. (c and d) from figures in Sentman et al. (2018), <https://doi.org/10.1029/2018PA003364>