El Padre: Pacific Pliocene sea surface temperatures and thermocline

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The tropical Pacific thermocline strength and depth are critical to tropical sea surface temperatures (SSTs) and variability. During the early Pliocene (~3.5 to 4.5 Ma), the zonal SST gradient is reduced and we call this "El Padre." How did the equatorial thermocline contribute to this reduced zonal SST gradient? Our measurements of Mg/Ca of subsurface dwelling *Globorotalia tumida* in the eastern and western equatorial Pacific site indicate Pliocene subsurface temperatures warmer than today; El Padre included a basin-wide thermocline that was relatively warm, deep, and weakly tilted. At ~4 Ma, thermocline steepening was coupled to cooling of the Eastern Equatorial Pacific (EEP) cold tongue. Since ~4 Ma, the basin-wide thermocline cooled/shoaled gradually, with implications for thermocline feedbacks in tropical dynamics and the interpretation of TEX_{86}-derived temperatures. We also use temperature distributions of individual *Trilobatus sacculifer* (without sac) and show WEP SSTs respond to pCO_2-radiative forcing and associated feedbacks. We find tropical temperature sensitivity was equal to, or less than, that of the Late Pleistocene. In sum, over the last five million years, the EEP responds to the long-term evolution of the thermocline that sets important tropical dynamics whereas the WEP responses to mostly radiative forcing.