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A 21st Century Shift in the Relationship between ENSO SST Anomalies and Upper Ocean Heat Content

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This presentation describes changes in the relationship between upper ocean heat content and El Nino/Southern Oscillation (ENSO) SST anomalies during the period 1980-2010. Upper ocean heat content is a major source of predictability for ENSO and, during the 1980s-1990s, heat content integrated along the equator led ENSO SST anomalies by 2-3 seasons. During the first decade of the 21st century however, this lead time was reduced to only one season, mainly due to the diminished persistence of heat content anomalies in boreal winter and early spring prior to the onset of ENSO events. These changes are linked to a shift in the character of El Nino, with a greater prevalence of central Pacific (CP) vs eastern Pacific (EP) El Ninos in the past 10 years. The results imply a reduced impact of thermocline feedbacks on development of ENSO SST anomalies and potentially reduced predictability of ENSO.