Session: B3 Oral presentation

## Decadal sea level change along the US west coast during recent decades

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Decadal changes of sea level and sea surface temperature (SST) along the US west coast since the 1960s are investigated by analyzing tide gauge and satellite observations combined with ocean and atmospheric model experiments. The results show that changes of sea level and SST along the coasts of California, Oregon and Washington are coherent, even though there are spatial variations. Overlying on the increasing trends there are significant decadal variations. Sea level rises from the 2nd half of the 1970s to early 1980s, remains relatively stable until early 1990s, and decreases afterwards. These coherent decadal variations of sea level and SST along the US west coat correspond to basin-scale phase changes of sea level pressure (SLP) associated with the Pacific Decadal Oscillation (PDO) or Gyre Oscillation in the north Pacific, which generate changes in longshore winds and local Ekman pumping velocity that force the ocean. The maximum cooling and sea level fall since the 1990s occur during Jan-Mar at lower latitudes (e.g., San Diego and San Francisco) but during Apr-June at higher latitudes (e.g. Seattle). Decadal changes of trade winds in the equatorial ocean also appear to contribute to the observed low-frequency sea level change along the US west coast. Results from two AGCM experiments are analyzed to shed light on the effects of tropical Pacific SST on the longshore winds and Ekman pumping velocity.