Gary
Lagerloef
Earth & Space Research
ChuanLi Jiang, Earth & Space Research
Scott Springer, Earth & Space Research
Oral
In the Proceedings of the 20 Years of Progress in Radar Altimetry Symposium (2012) we noted that the map of the 20-year sea level trend measured by satellite altimetry bears a clear imprint of the PDO spatial pattern in the North Pacific. Here we investigate this further and show that, after the global mean sea level (GMSL) trend (~3.2 mm/yr) is removed, most of the residual trend in the North Pacific matches the pattern produced by projecting the sea surface height onto the PDO index. The negative trend of the PDO index during this period, coupled with this pattern, has suppressed the mean sea level rise in the eastern North Pacific (ENP), and enhanced it in the central North Pacific. Thus, the ENP sea level trend has been moderated by the PDO to be near zero or slightly negative, in contrast to positive GMSL rise. There is also a strong positive sea level trend in the western tropical Pacific during this period. We then examine a possible future scenario with a shift of the PDO from a negative to positive phase, with similar magnitude trend as the past 20-years. In such a situation, the ENP sea level rise could become two to three times greater than the global average, with potential implications for accelerating long-term sea level rise along the west coast of North America and Alaska.
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