

Evaluating Satellite Precipitation Estimates over Ocean using Passive Aquatic Listeners

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Passive Aquatic Listeners (PALs) estimate rain rates over ocean at high spatial and temporal resolution. When recording acoustic signals at depths of 1000m, PALS provide estimates of average rain rate over 5km fields of view every 2 minutes. Wind speed is also measured when rain is not falling. PALs have been deployed on drifting and moored buoys in every ocean basin. They have been used as part of multiple field projects including both NASA SPURS campaigns, and also several long-term research mooring sites. These in-situ PAL datasets present an opportunity to evaluate the performance of satellite-based precipitation products over oceans. Many PALs are mounted to drifting buoys, thus offering the unique ability to evaluate satellite-based precipitation estimates in regions not previously studied using stationary buoy arrays. In this study, PAL precipitation estimates are used to evaluate the performance of the IMERG, CMORPH, PERSIANN, AND GSMaP products at their native spatial and temporal resolution. We first assess the performance of the satellite products using all available PAL data. Then we perform more in-depth assessments based on region, season, and interannual states.