

In-situ observed detailed temperature profile in surface 10-meter layer over the tropical western Pacific

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The oceanic thermal stratification in the first meters impacts significantly the energy exchanges between the atmosphere and the ocean by modulating the skin Sea Surface Temperature (SST). A thermistor chain was deployed from a research vessel to continuously measure the temperature profile in the ocean first 10 meters during 17 days in June 2013 in the tropical western Pacific (12N-135E). A clear diurnal cycle was captured with daytime warming in the first meters of the ocean that gradually decrease and deepened during the evening. In addition, a 0.5K-cooling event of the first meter with duration of about 3 hours was also captured during the passage of precipitating cloud system. By utilizing meteorological data from on-board instruments, we asses the relative importance of precipitation and accompanying cold pool in this cooling event.