

SATELLITE AND CONVENTIONAL MEAN MONTHLY SEA SURFACE TEMPERATURES
FOR THE EASTERN NORTH PACIFIC--A COMPARISON

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ABSTRACT

Monthly mean satellite-derived sea surface temperatures for the eastern North Pacific for 1975 are compared with monthly means calculated from commercial ship observations. The spacial and temporal variation in the monthly mean differences within 2° latitude-longitude squares are described. The spacial differences are stratified by latitude. The satellite monthly means are higher than ship means (as much as 5°C) in low latitudes and lower (as much as -4°C) in high latitudes. Regardless of latitude, there is a seasonal variation in the differences. Satellite monthly means are generally lower than ship means in winter, higher in spring, and much higher in summer. Five major factors affecting the accuracy of satellite temperatures are discussed: (1) retrieval bias adjustment, (2) calibration errors, (3) screening of atmospheric-attenuation corrections by quality control tests, (4) errors in atmospheric-attenuation corrections, and (5) residual cloud contamination. The effect of each factor on the monthly mean differences in three latitude bands is estimated. It is shown that the largest errors occur in the atmospheric-attenuation corrections. Some minor factors affecting the accuracy of satellite and ship observations are discussed. Then, the suitability of the satellite data (and the ship data as well) for various oceanographic applications is examined, and it is concluded that the satellite data have the potential to fulfill most data requirements, if measurement accuracy is improved. Finally, some suggestions are offered which could lead to improvement in the accuracy of satellite sea surface temperatures.