

MTI Activity Report (RESET-11N)

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While at Nauru we attempted to characterize the spatial variation of sea-surface temperature in vicinity of the boat harbor about 1.1 km SSW of the ARM site. This evaluation was repeated 4 times, two at 1 PM and two at 1 AM over the period July 1-July 3, 2000. All cases coincided with times of possible MTI image collections.

Bulk temperature measurements were obtained from use of an Omega recording thermometer at a depth of 10 cm at 0.5-second intervals and bulk and skin temperature measurements were obtained with a Heiman KT19 IR thermometer at 2-second intervals. At the same time a Garmin 12XL GPS recorder was used to collect GPS positions at 15-sec interval. The boat used was rented from the Nauru Department of Fisheries.

Merging of the three data sets for the four experiments is in progress. The data and analysis will be included in a HDF data set and a MTI ground truth report. This brief report provides a preview of results for the last case, July 3, 2000 corresponding to one of two MTI images collected.

Skin temperatures are obtained by two methods. Method 1: First make a direct measurement of the effective black body skin temperature of the water surface, Next the black body bulk temperature is measured by aiming the KT19 at the bow wake created by the boat. The difference, Bulk-Skin, is then subtracted from the bulk temperature measured with the omega instrument. Method 2: Measure sky temperature and adjust the black body water temperature with the water emmissivity, 0.986, and the sky temperature. Agreement between the two methods gives us confidence that the skin temperature measurements are correct.

The following table shows data from a few selected points near the boat harbor that can be used for preliminary evaluation of MTI SST estimates. Note the complete data set will provide temperature estimates along a large portion of the leeward coastline and some of the upwind coast.

WGS 84 Datum

Latitude (deg)	Longitude (deg)	Time (local)	Kt19 Tbulk	Kt19 Tskin	Omega Tbulk	Meth 1 Tskin	Kt19 Tbulk	Meth 2 Tskin	SKY TEMP
0.5288 S	166.9081 E	1:25:42	28.7	28.5	28.8	28.6	29.0	28.8	-2 C
0.5287 S	166.9086 E	1:29:36	28.9	28.6	28.8	28.5	29.2	28.9	-9 C
0.5258 S	166.9091 E	1:32:44	28.7	28.4	28.8	28.5	29.0	28.7	-9 C
0.5286 S	166.9089 E	1:35:45	28.7	28.5	28.8	28.6	29.0	28.8	-2 C
0.5293 S	166.9078 E	1:52:12	28.3	28.0	28.8	28.5	28.6	28.3	-5 C
0.5289 S	166.9088 E	1:55:00	28.3	28.0	28.8	28.5	28.6	28.3	-5 C

Preliminary Results of Sea Surface Temperature Patterns for July 3, 2000
image time 1:40.

1. During July 3 the skin temperature is 0.2 to 0.3 C cooler than bulk water temperatures and the two methods used to estimate skin temperature compare to within 0.2 C.
2. Water temperatures beyond 25 meters from the small jetty or 50 m from shore line are quite constant (generally ± 0.2 C) and equal to 28.6 C for skin temperature and 28.8 C for bulk temperature.
3. Daytime temperatures inside the boat harbor are about 0.6 C cooler than temperatures beyond 25 m.