

Summary of WOD05 SST Schemes for ICOADS

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The impacts of two different schemes for choosing an SST estimate from WOD05 ocean temperature (T) profiles are tabulated and charted in an XCEL workbook named '0+4mSSTschemes.xls'.

The schemes are:

1. Original scheme also called "0M scheme"
 - a. Start at the shallowest depth in a profile and use the first T value at any depth less than or equal to 3.00 meters depth.
2. New scheme also called the "4M scheme"
 - a. Choose the T value closest to 4M and less than or equal to 10.00 meters depth.

Table 1, Overall Impact of two different schemes for estimating SST from WOD05 vertical temperature profiles.

Number of estimated SSTs using the 0M Scheme	6790793
Number of estimated SSTs using the 4M Scheme	7160616
Number of SSTs Gained with the 4M Scheme	369823
% SSTs Gained	5.4
Average Z(m) of Temperature used to estimate SST for 0M scheme	0.21
Average Z(m) of Temperature used to estimate SST for 4M scheme	2.20

Analysis worksheets and charts in workbook '0+4mSSTschemes.xls'

- **0m-Z-data**, mean depth of SST estimate using the 0M scheme.
 - The data are tabulated by:
 - 10 WOD05 data types (APB, CTD, DRB, GLD, MBT, MRB, OSD, PFL, UOR, XBT), Note: An SUR (Surface only data type is also available, these are provided without depths and therefore are not processed as profiles)
 - APB – Autonomous Pinniped Bathythermograph
 - CTD – High resolution Conductivity-Temperature-Depth
 - DRB – Drifting Buoy
 - GLD – Glider
 - MBT – Mechanical Bathythermograph
 - MRB – Moored Buoy
 - OSD – Ocean Station Data
 - PFL – Profiling Float
 - UOR – Undulating Oceanographic Recorder
 - XBT – Expendable Bathythermograph

Detailed documentation is available at URL <http://dss.ucar.edu/datasets/ds285.0/docs/> or the NODC web site.

- Year
 - Full period of record (denoted by year = 9999)
- The SST data processing tabulated quantities are:
 - MISSED, temperature profiles from which NO SST was estimated
 - This occurs if profile temperatures are not available in the depth range of the scheme or the quality flag checks, as specified in the WOD05 'transpec' document, indicate the data is not to be trusted.
 - ERROR, error in expected SST data range is detected.
 - This value is always zero.
 - TOTAL, total number of profiles available
 - PROFILE, number of profiles from which SST estimates were derived
 - REFSST, per rule defined in WOD05 'transpec' if a legitimate SST cannot be taken from the vertical profile of temperature a 2nd Header field, called reference temperature, is used, if it is available.
 - MDEPTH, mean depth in meters of the SST estimated from the vertical temperature profiles
- **4m-Z-data**, mean depth of SST estimates using the 4M scheme.
 - Tabulated values are the same as for 0m-Z-data (above)
- **Comp_obs+Z**, full period of record values for the 10 WOD05 data types from **0m-Z-data** and **4m-Z-data** and various differences between the two schemes
- **Z_chart**, period of record mean depth of SST estimate by data type for 0M and 4M schemes
- **SST_profile_chart**, number of temperature profiles used to estimate SST by data type for the 0M and 4M schemes
- **refSST_chart**, number of Reference Temperatures (2nd Header) used to estimate SST by data type for the 0M and 4M schemes
- **0m-prof-data**, Tabulation of depth, in one-meter intervals, from which an SST is estimated using the temperature profile data and the 0M scheme. Recall, under the original rule SST is estimated from the profile ONLY if the depth is *less than or equal to 3 meters*. In the tabulation and related summary chart (described below) we continue the counting process to depths *greater than 3 meters*. We do this to assess the impact of the 0M scheme if the cutoff depth was reset to a deeper value.
 - The data are tabulated by:
 - 10 WOD05 data types (APB, CTD, DRB, GLD, MBT, MRB, OSD, PFL, UOR, XBT)
 - Year
 - Full period of record (denoted by year = 9999)
 - Depth intervals are, 1M ($\geq 0m Z \leq 1m$), 2M ($>1m Z \leq 2m$), 3M ($>2m Z \leq 3m$), ..., 10M ($>9m Z \leq 10m$), 11M ($>10m$)

- **4m-prof-data**, Tabulation of depth, in one-meter intervals, from which an SST is estimated using the temperature profile data and the 4M scheme.
 - Tabulation and depth intervals are the same as noted for **0M-prof-data** (above).
- **profile_sum**, period of record summaries for the 0M and 4M schemes
- **0M-profile_chart**, number of SST estimates from profiles in 1-meter depth intervals using the 0M scheme.

Note, in producing ICOADS Release 2.4, SST was estimated only from depths *less than or equal to 3 meters*. Depths greater than three meters are shown to illustrate what would happen if the 3-meter cutoff was set to a deeper value and the 11M interval is a count for all profiles with shallowest T greater than 10 meters.
- **4M_profile_chart**, number of SST estimates from profiles in 1-meter intervals using the 4M scheme. Again, the 11M interval is a count for all profiles with shallowest T greater than 10 meters.