

## Training Data: SeeBor Version 5.0

This training database of global profiles (called SeeBor V5.0) consists of 15704 global profiles of temperature, moisture, and ozone at 101 pressure levels for clear sky conditions. The profiles are taken from NOAA-88, an ECMWF 60L training set, TIGR-3, ozonesondes from 8 NOAA Climate Monitoring and Diagnostics Laboratory (CMDL) sites, and radiosondes from 2004 in the Sahara desert. Quality checks were applied to all the profiles along with the following saturation criteria: for clear sky conditions, the relative humidity (RH) value of the profiles must be less than 99 % at each level below the 250 hPa pressure level. In addition to adding the new radiosondes and ozone profiles, it is required that the original top of sounding pressure be no greater than 30 hPa for temperature and moisture profiles and 10 hPa for ozone. A technique to extend the temperature, moisture, and ozone profiles above the level of existing data that insures physically consistent behavior near the top of the troposphere was implemented. Where ozone data were not included with the original profiles, a regression-based algorithm for deriving ozone profiles was used (personal communication with Paul van Delst). For each profile in the data set a physically based characterization of the surface skin temperature and surface emissivity are assigned.

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**Created by Eva E Borbas and Suzanne Wetzel Seemann, University of Wisconsin-Madison**

**Contact:** [Eva.Borbas@ssec.wisc.edu](mailto:Eva.Borbas@ssec.wisc.edu)  
[Suzanne.Seemann@ssec.wisc.edu](mailto:Suzanne.Seemann@ssec.wisc.edu)

**Record number:15,704**

**Record length: 338**

**Datatype: real\*4**

### RECORD FIELDS

1:101	temperature profile [K]
102:202	mixing ratio profile [kg/kg]
203:303	ozone profile [ppmv]
304	latitude
305	longitude
306	surface pressure [hPa]
307	skin temperature [K]
308	wind speed (m/s) - value used for finding seawater emissivity (equal to 1 2 3 4 5 6 7 8 9 10 12.5 or 15) ** For Land, this field is -999
309	tpw [cm]
310	ecosystem, igbp classification
311	elevation [m]
312	fraction land
313	year
314	month
315	day
316	hour
317	profile type 1 NOAA-88b 2 TIGR-3 3 Radiosondes 4 Ozonesondes 5 ECMWF

318:327	frequency (wavenumber) of emissivity at 10 BF emis hinge points
328:337	emissivity spectra
338	spare

**Pressure levels (hPa):**

data pressure/0.005,.016,.038,.077,.137,.224,.345,.506,.714,  
 & .975,1.297,1.687,2.153,2.701,3.340,4.077,4.920,  
 & 5.878,6.957,8.165,9.512,11.004,12.649,14.456,16.432,  
 & 18.585,20.922,23.453,26.183,29.121,32.274,35.651,39.257,  
 & 43.100,47.188,51.528,56.126,60.989,66.125,71.540,77.240,  
 & 83.231,89.520,96.114,103.017,110.237,117.777,125.646,133.846,  
 & 142.385,151.266,160.496,170.078,180.018,190.320,200.989,212.028,  
 & 223.441,235.234,247.408,259.969,272.919,286.262,300.000,314.137,  
 & 328.675,343.618,358.966,374.724,390.893,407.474,424.470,441.882,  
 & 459.712,477.961,496.630,515.720,535.232,555.167,575.525,596.306,  
 & 617.511,639.140,661.192,683.667,706.565,729.886,753.628,777.790,  
 & 802.371,827.371,852.788,878.620,904.866,931.524,958.591,986.067,  
 & 1013.948,1042.232,1070.917,1100.000/

**NOTES:**

- Number of NOAA88 profiles: 6137  
 Number of TIGR-3 profiles: 1387  
 Number of Radiosonde profiles: 570  
 Number of Ozonesonde profiles: 1595  
 Number of ECMWF profiles: 6015  
**Total number profiles: 15704**
- emissivity spectra is derived from UW-Madison Global Gridded IR Emissivity Dataset (<http://cimss.ssec.wisc.edu/iremis/>)
- saturation criteria for clear sky profile selection is RH 99 %.

**Reference:**

Borbás, E. E., Suzanne Wetzel Seemann, Hung-Lung Huang, Jun Li, and W. Paul Menzel, 2005: Global profile training database for satellite regression retrievals with estimates of skin temperature and emissivity. *Proceedings of the XIV. International ATOVS Study Conference*, Beijing, China, University of Wisconsin-Madison, Space Science and Engineering Center, Cooperative Institute for Meteorological Satellite Studies (CIMSS), Madison, WI, 2005, pp.763-770.