
Subject: interpolation

Posted by [anil](#) on Wed, 07 Dec 2011 13:46:34 GMT

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Hi,

I have many ascii files which contain a header , 5 columns of data .
Number of rows for each data is different. Here is an example of the data:

```
7.5 14.552 17.698 14.551 12.7623
9.6 14.547 17.700 14.546 12.7648
14.6 14.462 17.713 14.460 12.7903
19.4 14.341 17.737 14.339 12.8307
24.4 14.161 17.780 14.158 12.8962
29.3 13.704 17.921 13.701 13.0851
34.6 12.313 17.986 12.309 13.3670
39.2 9.622 18.062 9.619 13.8134
44.5 8.659 18.165 8.655 14.0121
49.7 8.451 18.194 8.447 14.0590
54.3 8.221 18.257 8.217 14.1343
59.4 7.938 18.324 7.934 14.2180
64.8 7.808 18.441 7.803 14.3237
69.5 7.880 18.617 7.875 14.4536
74.5 7.923 18.924 7.917 14.6890
79.4 8.040 19.190 8.034 14.8840
84.3 8.100 19.372 8.093 15.0196
89.8 8.050 19.613 8.043 15.2137
94.6 8.069 19.781 8.062 15.3429
99.3 8.076 19.922 8.068 15.4524
109.7 8.235 20.314 8.226 15.7404
169.3 8.564 21.193 8.550 16.3880
179.3 8.602 21.269 8.587 16.4428
189.3 8.632 21.327 8.616 16.4844
199.1 8.659 21.378 8.642 16.5210
209.6 8.680 21.424 8.662 16.5544
219.3 8.708 21.482 8.689 16.5963
229.2 8.733 21.527 8.713 16.6283
239.4 8.755 21.570 8.734 16.6592
249.4 8.768 21.617 8.746 16.6944
259.3 8.777 21.649 8.754 16.7183
268.9 8.788 21.678 8.764 16.7397
278.9 8.796 21.700 8.771 16.7559
289.1 8.806 21.733 8.781 16.7805
298.9 8.834 21.764 8.808 16.8013
324.2 8.834 21.813 8.805 16.8398
349.1 8.854 21.864 8.823 16.8773
374.4 8.861 21.896 8.828 16.9017
399.5 8.861 21.916 8.825 16.9176
```

424.1	8.866	21.935	8.828	16.9321
449.1	8.871	21.958	8.831	16.9497
474.3	8.878	21.982	8.835	16.9678
499.5	8.881	22.005	8.836	16.9857
524.2	8.885	22.028	8.837	17.0034
549.1	8.889	22.048	8.839	17.0188
574.0	8.892	22.072	8.840	17.0375
599.0	8.895	22.100	8.840	17.0592
649.4	8.900	22.137	8.840	17.0881
699.5	8.907	22.169	8.842	17.1128
749.4	8.913	22.195	8.843	17.1329
799.3	8.921	22.215	8.847	17.1481
849.3	8.929	22.230	8.850	17.1595
899.5	8.938	22.246	8.853	17.1714
949.5	8.947	22.258	8.857	17.1803
999.3	8.954	22.266	8.859	17.1863
1049.6	8.965	22.276	8.865	17.1933
1099.1	8.971	22.282	8.866	17.1979
1149.0	8.980	22.288	8.870	17.2021
1198.9	8.989	22.294	8.873	17.2063
1249.3	8.996	22.297	8.875	17.2084
1299.4	9.003	22.301	8.877	17.2113
1349.4	9.011	22.304	8.879	17.2133
1399.0	9.018	22.305	8.881	17.2139
1449.1	9.025	22.308	8.882	17.2160
1499.2	9.033	22.309	8.885	17.2165
1549.2	9.040	22.311	8.886	17.2179
1551.8	9.041	22.311	8.887	17.2178

The columns are depth,temperature,salinity,potential temperature and density respectively. The depth values are changing in each data set (7.5 is 6.7 and 9.6 is 10 in the next data and so on...). In some data files, depth values end at 300 or 400 etc... . What I want to do is to interpolate these depth values and their corresponding temperature,salinity, etc.. to certain levels i assign [5,10,15,20,25.....200,210,220.... 300,325,350,.....] or to 1m depth levels starting from 5m, such as (5,6,7,.....50,....1550). The problem here is with the 2nd and 4th column where the data first descends to a certain level and then starts ascending again. Therefore i can not use function interpol. I have done such an interpolation earlier:

```

pval=100; depth value
ind=0
if (p[0] le pval) then begin
while (ind le (nrows-2) and p[ind] le 100) do ind=ind+1
tempx(i)=t[ind]-((p[ind]-100)/(p[ind]-p[ind-1]))*(t[ind]-t[in d-1]))
salx(i)=s[ind]-((p[ind]-100)/(p[ind]-p[ind-1]))*(s[ind]-s[ind -1]))

```

```
potempx(i)=q[ind]-((p[ind]-100)/(p[ind]-p[ind-1]))*(q[ind]-q[ind-1]))
denx(i)=d[ind]-((p[ind]-100)/(p[ind]-p[ind-1]))*(d[ind]-d[ind-1]))
endif
```

; *i* is the data index(1st file,2nd file etc..) and *nrows* is the number of rows, which are assigned earlier in the code.

with this, I interpolate the values and obtain temperature,salinity etc., for this case at 100m.

I think i can find all the values i want with this way, but there should be a much easier way I guess. I need help on this.
Regards
