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
