

LSNReviews

From: Brittain Hill [bhill@cnwra.swri.edu]
Sent: Tuesday, June 22, 2004 5:18 PM
To: John Trapp; James Rubenstone; Donald Hooper
Subject: Winds
Attachments: pres_alt.JPG

I've taken a quick read through appendix III of the DOE ashplume report. Their raw data are very different from ours, in that they have pressure in kPa and wind speed in knots. Our pressure is in mbar and speed in m/s.

I've churned through the 0-13km AGL (above ground level) data a bit, and several things emerge:

1) their correction for height of YM (1495m) is nonsense - you cannot simply substitute one base level (Desert Rock, 1007m) for another! In addition, near-surface (e.g., <500m) speeds and directions are strongly controlled by surface topography. In our approach, I've simply subtracted the mean sea level elevation of Desert Rock from the altitudes listed in the data file, to get altitude AGL.

2) page III-2 talks about the 1994-95 data having erroneous pressure-altitude relationships, so they toss those data from the compilation. I parsed the 1994-5 data from my 0-13km AGL file, and plotted them up (attached). There is no difference in our data for the pressure-altitude relationships between 1994-5 (white triangles) and the rest of the data (black circles). So I have no idea why the DOE's data are screwy.

When I get rid of the records with either blanks or nulls (999..) for speed/direction/altitude, I end up with about 480k records from 5/16/78 to 12/31/97. Didn't see how many actual records DOE used for that interval.

Here's the summary stats for our DR data. Int is interval above ground, Alt_AGL= average altitude above ground level, Stdev's are the 1 sigmas on the averages, DIR_DEG = wind direction in degrees, and SPD_MS is wind speed in m/s

Int	Alt_AGL	Alt_Stdev	Dir_deg	Dir_stdev	Spd_ms	Spd_stdev
0-1k	290	319	157	92	5	3
1-2k	1466	276	186	94	7	5
2-3k	2498	292	212	94	9	6
3-4k	3500	283	227	89	11	7
4-5k	4463	312	229	84	13	8
5-6k	5510	242	237	79	16	10
6-7k	6477	263	239	77	18	11
7-8k	7449	253	241	77	20	12

You can see that our averages are about 50-80% higher than the average values used by DOE in table on page III-55.

I don't know what they did, but I know what I did, and I've checked it twice for parsing errors etc. If these variations are real due to our inclusion of 1996-97 data, then there are serious problems with data variability and uncertainty that DOE has not addressed.

Britt

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