

Re: Simple question

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- *From:* "Ray Koopman" <koopman@xxxxxx>
 - *Date:* 26 Jul 2006 15:32:39 -0700
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Enrique Cruiz wrote:

Again, many thanks for the answer.

On 2006-07-25 23:17:05 +0100, "Ray Koopman" <koopman@xxxxxx> said:

Look at plots of the row means and column means (of the new data).
They are far from flat.

True, but it's sufficiently flat for me to ignore the variations. For instance, along the X dimension (181 data), the values slowly changes from 19.5 to 21.5 and back. A change like that over the 360 degrees (180 angles recorded) of azimuth is very small, and even more so when compared to the values the central peak (not shown in the data) can achieve, i.e. 20000. Furthermore, the rise in the middle is probably due to me not deleting the whole area of the central peak, hence causing a little rise in the middle.

As for the variations along the Y dimension, there is indeed a change when elevation reaches 35 and more. But I am dubious whether the sharp drop really exists, or if it is the instrument that fails to record properly at these angles.

Anyway, the changes along the X dimension are negligible, and similarly for those along the Y dimension for $1 < Y < 35$ (range of Y is [1,41]). Especially compared to the central peak, that is why I consider this surface as mostly flat. I agree that it is an approximation, but as a first attempt to model this process, it will serve my purpose well enough. That is why I am trying to prove that it can be statistically be modelled by a flat surface as a first approximation.

Thanks again,

Enrique

Statistically, it is clear that the surface is not flat, even if you

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look at only $1 < Y < 35$. The departures from flatness of both the X and Y averages are far too big, compared to the interaction, to be attributed to random error, whatever "error" may mean in your context. (Note that this test procedure, comparing main effects to the interaction, is biased against finding significant main effects.)

Here are the anova summary tables -- first for all the data, then considering only $1 < Y < 35$.

Source df SS MS F p

X 180 2822.93 15.6829 10.4576 7.33×10^{-244}

Y 40 42200.8 1055.02 703.502 1.83×10^{-2439}

XY 7200 10797.6 1.49967

Total 7420 55821.