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Dear John:

I'm revising my manuscript for the Radio Science special issue, and I need to ask you a question regarding the h't plots. The following page shows one I have from you (or Ian Grant) for December 8, 1993. I've overplotted the Eureka zenith 630.0 nm brightness (in rayleighs) on the 4.012 MHz h' panel. You can see that the rise in brightness and drop in h' are frequently simultaneous. This makes me think that the h' are determined from near-zenith returns; otherwise, you'd see the h' decreasing for a long time as the patch drew nearer, and finally the zenith brightness would rise as the patch passed the zenith. Is it the case that the h' shown in the plot are restricted to near-zenith returns? If so, can "near-zenith" be quantified?

Another question has been puzzling me, and perhaps you can shed some light for me. Sometimes, you can see brief upward excursions in the 4.012 MHz h' (e.g., 03:10, 03:20, 04:37). The last two do appear to correspond to small-scale dropouts in the 630.0 nm brightness, but the first one doesn't match the images from Eureka very well. (I'm sending a copy of 12 images from 03:00 to 03:30 on Dec. 8/93 in hopes that you'll be able to see something in them after the fax machine gets through with them.) Do you have any idea what these brief excursions in h' mean? I take for granted that the layer can't rise that fast (not in the polar cap), and I had been assuming that the CADI beam was too broad to resolve narrow gaps in the plasma distribution, i.e., specular reflection from the shoulders of the gap would dominate, and you wouldn't measure the actual h' overhead. Am I mistaken here? Are these real h' changes, or are they artifacts of something else?

Here's hoping that these questions have simple answers, and don't take up too much of your time.

How are you faring with your manuscript? It occurs to me that I should have sent you a copy of mine when I first submitted it; I'll put one in the mail when I submit the revised version.

Thanks for your help. Best regards to you and Margot.

Dave