WORKSHOP ON EARLY DETECTION OF STRATOSPHERIC OZONE

GUIDANCE FROM PAST ANALYSIS EFFORTS

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Past analyses indicate that representative trends may be obtained from a relatively spare data network. As an example, the 63-station global radiosonde network used by Angell and Korshover has yielded temperature variations which are compatible with the variations obtained from a network of hundreds of stations. In this case it is clear that averaging in the vertical (determining the mean temperature through a layer) compensates to a large extent for the lack of large amounts of data in the horizontal. As another example, the total-ozone variations determined from the relatively sparse Dobson network have been shown to be generally compatible with the variations determined from satellite data with essentially global coverage. As a corollary, the total-ozone variations estimated from integration of layer-mean ozone changes obtained from the very sparse ozonesonde network in the north temperate zone, are in generally good agreement with the total-ozone variations estimated for this zone from the much greater number of total-ozone stations. Results obtained from a sparse network are more robust than one might think.

Another question involves the relative merits of a few good stations and a larger number of fair stations. This problem is about to arise with regard to the 7-station automated Dobson network. Will more representative results be obtained by using only this network to estimate ozone variations in the stratosphere by means of the Umkehr technique, or will more representative results be obtained by integrating these good stations with frequent observations together with the fair stations with infrequent observations, i.e., how does one balance increased spatial coverage with increased coverage in time? Probably as

a surprise to some, our impression has been the more the merrier, that is, it is better to include all the stations even though the records of some stations are not very good. Errors at such stations tend to be random and "come out in the wash".

Ozone variations are once more a matter of concern. Not only is there the startling ozone decrease indicated for Antarctica, but there is the observation that global total ozone was as low in 1985 as during early 1983, and without the excuse of El Chichon and El Nino. In the north temperate zone in 16-24 and 24-32 km layers the ozone amount is even lower in 1985 than in early 1983. Something appears to be going on, and it behooves us to get cracking on the envisaged multi-instrumented network so that we may understand what this something is. The stations of the automated Dobson network should be considered for this multi-instrumented network.