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VARIATIONS OF TOTAL OZONE IN THE NORTH POLAR REGION AS SEEN BY TOMS

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Data from the TOMS instrument has been used to follow the course of development of the Antarctic ozone springtime minimum since 1979. This paper addresses the question of possible north polar region changes which might be deduced from the nine years of TOMS measurements of total ozone. Total ozone is a much more variable quantity in the northern hemisphere than in the southern hemisphere. This makes the search for trends more difficult and the interpretation of results more uncertain. We have examined the nine-year time series of TOMS data at high latitudes in the northern hemisphere. Because the TOMS measurements have drifted by 3-4% with respect to closely collocated Dobson measurements, we have chosen in this study to adopt the Dobson normalization and adjust the TOMS measurements accordingly. The accompanying figure shows a simple difference between the last two years of the TOMS record, 1986 and 1987, and the first two years of the record, 1979 and 1980. The difference is shown in percent as a function of latitude and time of year. The Antarctic springtime decrease is clearly seen, as well as a smaller change which extends to about 50 degrees south latitude at all seasons. Changes in the northern hemisphere are less dramatic and are concentrated near the polar night where solar zenith angles are very large. These data are now being examined in more detail and updated results will be presented at the Workshop.

