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COMPARISON OF TOMS AND DOBSON TOTAL OZONE MEASUREMENTS FOR VERNADSKY STATION REGION

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We compare the Total Ozone Mapping Spectrometer (TOMS) satellite observations and the ground-based total ozone measurements at Ukrainian Vernadsky Station with the Dobson spectrophotometer. The 8th version of the TOMS data is used. The differences between satellite and ground-based measurements have been obtained for 1996-2005. The statistics for cloudy and clear skies is presented separately to compare cloudiness influence on the difference between satellite and ground-base measurements. The TOMS data overestimate ground-based ones in cloudy and underestimate in cloudless conditions. In the table the percent TOMS-Dobson differences, standard deviations and number of days (in parenthesis) for 10 observational seasons at Vernadsky Station are shown.

	Clear sky		Cloudy sky		All data
1996-1997	8.6±4.5	(21)	-3.8±6.5	(107)	0.4±6.5 (301)
1997-1998	6.3±4.2	(21)	-3.9±5.7	(96)	-0.6±5.7 (292)
1998-1999	4.4±2.9	(7)	-3.8±7.7	(144)	-1.9±6.4 (276)
1999-2000	3.9±4.2	(24)	-3.8±4.8	(152)	-1.1±5.9 (299)
2000-2001	4.8±4.1	(18)	-3.0±5.3	(126)	-0.4±5.4 (305)
2001-2002	0.3±7.2	(10)	-9.2±6.9	(76)	-5.0±7.0 (305)
2002-2003	1.3±5.1	(6)	-3.2±5.6	(185)	-1.7±5.7 (286)
2003-2004	2.7±3.2	(17)	-6.0±7.6	(108)	-2.5±6.4 (298)
2004-2005	-1.6±3.7	(13)	-8.8±6.3	(54)	-5.4±5.4 (263)
1996-2005	4.1±5.1	(137)	-4.5±6.4	(1048)	-2.0±6.4 (2625)

Right column gives the differences for total days of measurements. It is seen, that the 1996-2005 difference for all data equals -2.0%, whereas in cloudless and cloudy conditions the difference is 4.1% and -4.5%, respectively. In comparison with previous, 7th version of satellite algorithm, these results show improvement of TOMS data for clear sky over Vernadsky Station (about 8% in Version 7) and difference increase for cloudy sky (about -1% in Version 7).