



SHADOZ Notes

Southern Hemisphere Additional Ozonesondes:

A Data Set for Remote Sensing Research,
Global Models, and Education.



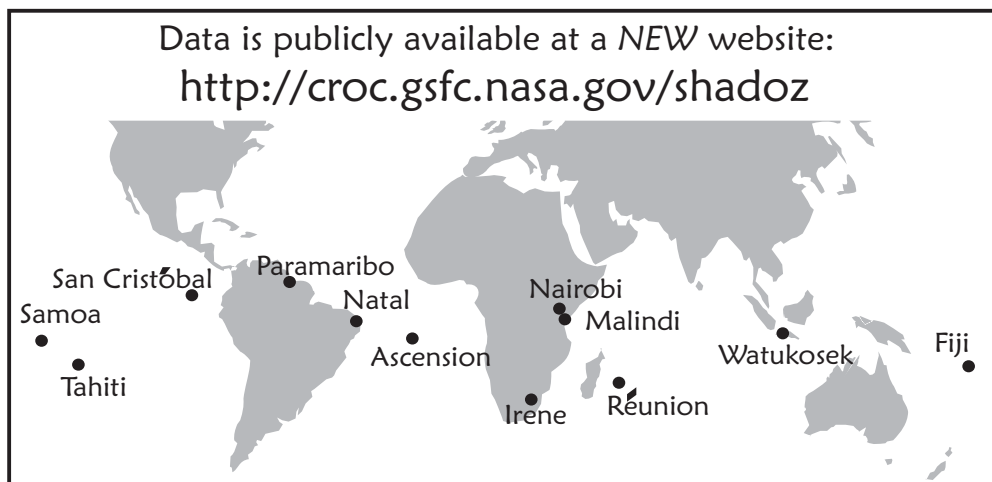
The Archive



SHADOZ is a project to augment balloon-borne ozonesonde launches and to archive data from tropical and subtropical operational sites. The project was initiated in 1998 by NASA/Goddard Space Flight Center with other US and international co-investigators. There are currently eleven stations in the SHADOZ network. The collective data set provides the first profile climatology of tropical ozone in the equatorial

region, enhances validation studies aimed at improving satellite remote sensing techniques for tropical ozone estimations, and serves as an educational tool for students, especially in the participating countries.

SHADOZ initial focus was on establishing and maintaining long-term collaborations with tropical and sub-tropical southern hemisphere stations that were already operational or recently established. In 1999 SHADOZ acquired a new station in the northern tropical hemisphere, namely Paramaribo, Surinam (6°N, 55°W): a cooperation with the Royal Dutch Meteorological Institute (KNMI) and the Meteorological Service of Surinam (MDS). SHADOZ is expecting to add selected stations in the northern tropics in the coming year.



Noteworthy: A New URL



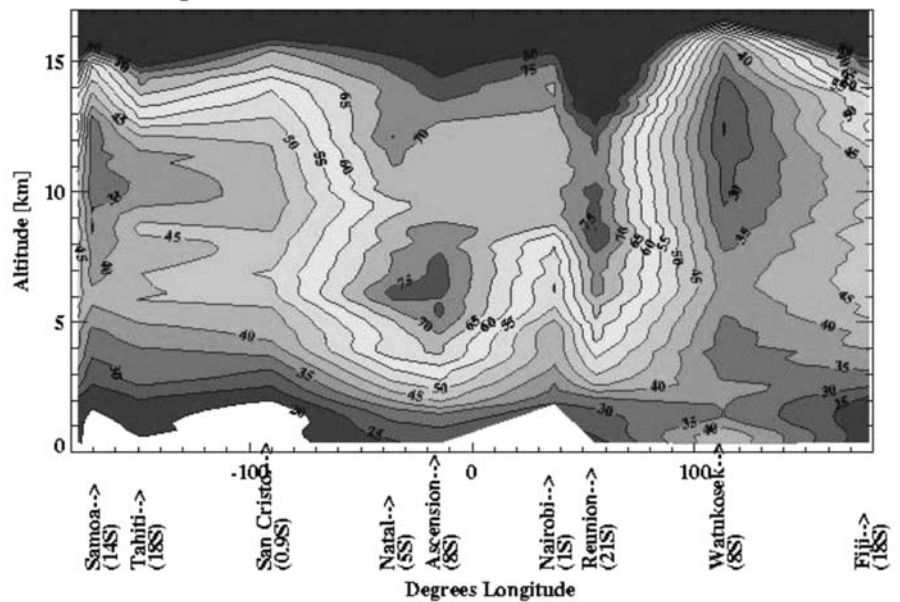
The SHADOZ website has relocated to a new address: <http://croc.gsfc.nasa.gov/shadoz>. It is shorter and easier to memorize. As always, we remind the users that the data are subject to revision and re-processing at any time. Be sure to check dates of creation and download the most recent data version.

Data for year 2002 is now complete for all stations. There are nearly 2000 profiles in the archive (as of May, 2003) with new supplemental launches from the SAFARI-2000 campaign (see website under "Campaign Data"). With 2003 profiles already archived, the SHADOZ project has entered its fifth year.

☞ Spotlight 1: Tropical Wave-One ☜

A unique zonal view using SHADOZ data for 1998-2000 shows a wave-one present all year in the tropical troposphere, even when seasonal biomass burning is a minimum. The figure to the right shows tropospheric O_3 higher over Atlantic/Africa stations (i.e. Natal-Ascension-Nairobi-Reunion) and lower over Pacific stations (i.e., Watukosek-Samoa-Fiji-Tahiti). Total and tropospheric column O_3 show a 10-15 DU (1 DU = 2.69×10^{12} molec/cm²) wave-one meridional amplitude at all times of the year. Dynamical variability, e.g. large-scale circulation, convection, pollution transport, and tropopause height are factors contributing to the tropospheric wave-one. The sondes reveal no statistically significant wave in the lower

Contoured Mixing Ratio [ppbv]
September/October/November 1998-2000 0.25km Means



stratosphere. These results and other figures have been published under THOMPSON ET AL., 2003 (see below for reference). An interactive HTML version can be viewed via SHADOZ or the AGU journals website at <http://www.agu.org>, and a PDF version is downloadable (AGU members only).

☞ SHADOZ Publications ☜

* When publishing data from the SHADOZ archive, please cite:

Southern Hemisphere Additional Ozonesondes (SHADOZ) 1998-2000 tropical ozone climatology. **1.** Comparison with Total Ozone Mapping Spectrometer (TOMS) and ground-based measurements, A. M. Thompson, J. C. Witte, R. D. McPeters, S. J. Oltmans, F. J. Schmidlin, J. A. Logan, M. Fujiwara, V. W. J. H. Kirchhoff, F. Posny, G. J. R. Coetzee, B. Hoegger, S. Kawakami, and T. Ogawa, *Journal of Geophysical Research*, 108(D2), 8238, doi: 10.129/2001JD000967, 2003.

Southern Hemisphere Additional Ozonesondes (SHADOZ) 1998-2000 tropical ozone climatology. **2.** Tropospheric variability and the zonal wave-one, A. M. Thompson, J. C. Witte, S. J. Oltmans, F. J. Schmidlin, J. A. Logan, M. Fujiwara, V. W. J. H. Kirchhoff, F. Posny, G. J. R. Coetzee, B. Hoegger, S. Kawakami, T. Ogawa, J. P. F. Fortuin, and H. M. Kelder, *Journal of Geophysical Research*, 108(D2), 8241, doi: 10.129/2002JD02241, 2003.

Lusaka, Zambia, during SAFARI-2000: Convergence of local and imported ozone pollution, A. M. Thompson, J. C. Witte, M. T. Freiman, N. A. Phahlane, and G. J. R. Coetzee, *Geophysical Research Letters*, 29, 1976, doi: 10.1029/2002GL015399, 2002.

SHADOZ (Southern Hemisphere Additional Ozonesondes): A new source of ozone and temperature data from a tropical network, A. M. Thompson, J. C. Witte, S. J. Oltmans, and F. J. Schmidlin, newsletter n° 20, January, 2003. ([Http://www.aero.jussieu.fr/~sparc/Newsletters.html](http://www.aero.jussieu.fr/~sparc/Newsletters.html)).

* Requests for reprints can be made to Anne Thompson via email at thompson@gator1.gsfc.nasa.gov. *

☞ Spotlight 2: BESOS Campaign ☜

The **B**alloon **E**xperiment on **S**tandards for **O**zonesondes (BESOS) campaign goal is to establish a set of standard operating procedures (SOP) for launching electrochemical concentration cell (ECC) ozonesondes at WMO's GAW (World Meteorological Organization, Global Atmospheric Watch) sites. A follow-on to a series of ECC chamber simulations conducted in Juelich, Germany ("JOSIE-2000" in SHADOZ Newsletter 4), BESOS will use a single gondola with 18-24 sonde packages and a uv-photometric ozone instrument with a large balloon. The University of Wyoming in Laramie (Prof. Terry Deshler) will host BESOS in June 2003. Ascent of the BESOS package is planned to ~10 hPa; a specially designed on-board electronic system will collect all the data. Like JOSIE, BESOS will compare sondes of two different manufacturers and sensing solutions of various composition. All the techniques used with SHADOZ ECC sondes will be tested. A BESOS website has been set-up at <http://croc.gsfc.nasa.gov/BESOS>.

BESOS is sponsored by WMO's GAW under the leadership of Dr Michael Proffitt, the Ozone Officer at WMO Headquarters in Geneva, Switzerland. The goal of the GAW Program is to foster a network of atmospheric measurement observatories at well-distributed locations around the earth. Data from GAW stations is collected to facilitate assessment of ozone and other climate-related gases and aerosols. Ozonesondes are still the only instrumentation routinely available for evaluating trends in ozone profiles. A GAW emphasis on initiating ozonesonde launches at stations in developing countries has motivated BESOS. The need for sonde preparation and launching procedures that are readily taught and duplicated underlies the Laramie campaign. For more information on GAW, see <http://www.wmo.ch>.

SHADOZ Science Team

Anne Thompson - Principal Investigator
 Gert Coetzee (SAWS, S. Africa)
 Bertrand Calpini (Aero. Sta., Swit.)
 Hennie Kelder (KNMI, Netherlands)
 Volker Kirchhoff (INPE, Brazil)
 Giovanni Laneve (Univ. Rome, Italy)
 Richard McPeters (NASA/GSFC, US)
 Toshihiro Ogawa (NASDA, Japan)
 Samuel Oltmans (NOAA/CMDL, US)
 Françoise Posny (Univ. La Réunion, Fr.)
 Francis Schmidlin (NASA/WFF, US)
 Archiver/Webmaster: Jacquelyn Witte
 (SSAI at NASA/GSFC)

SHADOZ Notes is published for and about the data archive, tropical ozone research, remote sensing validation and education. SHADOZ is supported by NASA's ACPMAP Program and the TOMS project. Individual SHADOZ sites are also supported by in-country agencies and universities.

Editor: Jacquelyn Witte.

The newsletter welcomes contributions from the Co-investigators and all data users. Send items to:

Jacquelyn Witte

Fax : (301) 614-5903

Email : witte@gavial.gsfc.nasa.gov



For more information about SHADOZ or to access the data archive, visit our web site.

➤ Attention Data Users ◀

Questions about SHADOZ should be directed to the PI, Anne Thompson: thompson@gator1.gsfc.nasa.gov. SHADOZ data sets are products of evolving research by the site Co-Investigators and ongoing community collaboration. As you work with the data, please keep us posted on issues that will help us improve the value of the data.

The SHADOZ homepage also gives technical information for each station, and addresses of the Co-Investigators. The Co-I's are responsible for the original data processing and should be consulted for details of their methods and appropriate references to their work. Questions about the data should be directed to Jacquelyn Witte.