



Southern Hemisphere Additional OZonesondes:
A Data Set for Remote Sensing Research,
Global Models, and Education.

SHADOZ Notes

Data is available to the scientific community at the following website:
http://code916.gsfc.nasa.gov/Data_services/shadoz



Data Archive Update

As of the beginning of year 2001, the SHADOZ database had collected over 1100 sonde profiles from the eleven stations and three campaigns. The website averages 500 unique hits per month with many users coming from the education sector. All stations currently contain profiles up to the end of the year 2000 and most will contribute data to the archived through till the year 2003.

The latest addition to the network is Paramaribo, Surinam (6N, 55W) which is the first northern tropical latitude station in the archive. Started by the Royal Netherland Meteorological Institute (KNMI) in cooperation with the Surinam Meteorological Service, the station officially started launches since September 1999. The database currently holds the 1999 profiles with more data forthcoming.

Do not forget to check the website for any updates and additions to the station data. Campaign data from SOWER (5 profiles), INDOEX Kaashidhoo Station in the Maldives (54 profiles) and the Aerosols99 Atlantic Cruise (26 profiles) are publically available at the website under "SHADOZ Campaign Data". An updated reference for the Aerosols99 publication is: A. M. Thompson, B. G. Doddridge, J. C. Witte, R. D. Hudson, W. T. Luke, J. E. Johnson, B. J. Johnson, S. J. Oltmans and R. Weller, A tropical Atlantic ozone paradox: Shipboard and satellite views of a tropospheric ozone maximum and wave-one in January-February 1999, *Geophys. Res., Lett.*, 27, 3317-3320, 2000.

History

SHADOZ is a project to augment balloon-borne ozonesonde launches and archive data from 11 tropical and sub-tropical southern hemisphere operational sites. The project was initialized in 1998 by NASA/Goddard Space Flight Center with other US and international co-investigators.

SHADOZ was created to:

- ① Provide the first profile climatology of tropical ozone in the equatorial zone.
- ② Validate and improve satellite remote sensing techniques for estimating tropical ozone.
- ③ Supplement field project observations.
- ④ Provide research topics to scientists and educate students, especially in participating countries.

The data are *preliminary*: subject to revision and re-processing. Check dates of creation & download the most recent version of the data.

Spotlight

JOSIE Experiment and Workshop

Many of the SHADOZ Co-Investigators participated in the JOSIE-2000 (Jülich Ozone Sonde Intercomparison Experiment) held at the Jülich Research Center in Germany in September 2000. The objective of JOSIE-2000 was to compare ozone profiles measured by various techniques in a chamber that simulates a balloon ascending through a standard atmosphere (pressure, temperature, ozone) from the surface to ~30 km. Seven of the eight sonde types tested in JOSIE-2000 were ECC sondes and all methods of sonde preparation and data processing currently used at the SHADOZ sites were tested. Mid-latitude, tropical and subtropical profiles were simulated.

A workshop sponsored by the World Meteorological Organization/Global Atmospheric Watch (WMO/GAW) program was held at WMO Headquarters in Geneva in May 2001 for the JOSIE-2000 participants and invited ozone data users. The workshop established a set of standard operating procedures (SOPs) to be easily implemented at new GAW stations for collection of consistent high-quality data. Uniform procedures were recommended for pre-flight and day-of-flight preparation, sensor type, background signals measured, sensing solution, pump efficiency corrections and other sources of data uncertainties.

For more details see the JOSIE-2000 website: <http://www.fz-juelich.de/icg/icg2/forschung/Josie>.



Four sonde sensors tested in the world standard chamber at the Jülich Research Center, Germany. Raw measurements of Pressure, Temperature and Ozone Partial pressure are recorded under conditions that simulate a balloon ascent through an idealized atmosphere.



Group photo of the JOSIE participants. SHADOZ sites represented included Nairobi, Kenya; the Pacific stations; the Atlantic stations and La Réunion Island. See more photos on the JOSIE-2000 website.

SHADOZ Reference & Citation Information

When publishing data from the SHADOZ archive, please cite:

The 1998-2000 SHADOZ (Southern Hemisphere Additional OZonesondes) Tropical Ozone Climatology: Comparison with 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, T. Ogawa, B. J. Johnson, H. Voemel, and G. Labow, *Journal of Geophysical Research - Atmospheres*, submitted, 2001.

Highlight: SAFARI/SAVE 2000 Ozonesonde Launches in Zambia.

CAMPAIGN → SAFARI/SAVE 2000 (Southern African Research Initiative/Southern African Validation for EOS) - A multidisciplinary, multinational, multi-site campaign to explore and study biogeophysical interactions. Intensive ground-based, airborne, and remotely sensed measurements took place during the wet (February-March 2000) and dry seasons (August-September 2000) throughout participating southern African countries. SHADOZ participation involved augmenting ozonesonde launches three to four times per week during both seasonal periods at the Irene, South Africa site (organized by Co-Investigator Gerrie Coetzee and group from SAWB) and during the dry season intensive at the Lusaka, West Zambia site (Principal Investigator-Anne Thompson, NASA/GSFC).

Besides seasonal burning, urban fires were observed to produce serious ground-level pollution due to charcoal production and trash burning. Surface ozone in excess of 70ppbv was recorded in the vicinity of intense smoke haze and smog. Integrated tropospheric ozone column amounts from the ozonesonde profiles ranged 40-50 DU with high ozone concentrations above the boundary layer transported from rural burning regions in western Zambia. TOMS satellite images and air-parcel trajectories confirm pollutant recirculation over south central African fires and buildup of tropospheric ozone and elevated smoke aerosol amounts in western (Angola) and eastern (Mozambique & Tanzania) central Africa.

Refer to the NASA/GSFC URL press release about the campaign: http://www.gsfc.nasa.gov/gsfcearth/viron/safari2000_1final.htm to learn more about the SAFARI 2000 activities and view images and photos of the southern African fires.

SHADOZ Science Team

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

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**For more information about SHADOZ
 or to access the data archive, visit
 our web site:**
http://code916.gsfc.nasa.gov/Data_services/shadoz

➤ *Attention Data Users* ◀

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 the datakeeper and webmaster: Jacquelyn Witte: witte@gavial.gsfc.nasa.gov.

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.

We would like to keep a record of research using the database. Please send references of published work using the SHADOZ data to the editor. Thank-you.

Attention Reader

If you would like to be added to our mailing list please send your name and address to: witte@gavial.gsfc.nasa.gov