NASA/GSFC/Atmospheric Chemistry and Dynamics Branch

Newsletter n°1, 2000

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

SHADOZ Notes

History

SHADOZ is a project to augment ozonesonde launches and archive data from ten 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:
❶ Provide the first profile climatology of tropical ozone in the equatorial zone.
❷ Validate and improve satellite remote sensing techniques for estimating tropical ozone.
❸ Supplement field project observations.
❹ Provide research topics to scientists and educate students, especially in participating countries.

The data are *preliminary* : subject to revision and re-processing. A distribution for years 1998-1999 is planned via CD-ROM near the end of 2000.

SHADOZ Related Websites

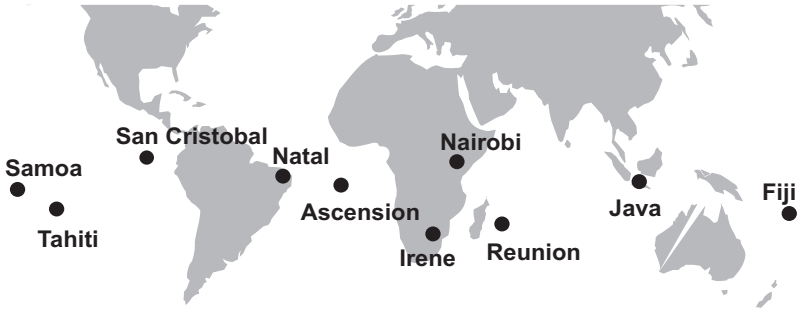
TOMS
http://toms.gsfc.nasa.gov/

Upper Air Instrumentation Research Projects at NASA/Wallops Flight Facility
http://uairp.wff.nasa.gov/

CMDL/Ozone & Water Vapor Group
http://cmdl.noaa.gov/owv/

WOUDC
http://www.tor.ec.gc.ca/woudc/

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



Data Archive Update

There are currently over 600 sonde profiles in the SHADOZ archive. In addition to the network of ten sites, data have been taken from the Kaashidhoo Observatory in the Maldives (5°N, 74°E) during the January - March 1999 Indian Ocean Experiment (INDOEX); Christmas Island (2°N, 157°W) during the February - March 1999 part of the Sounding of Ozone and Water in the Equatorial Region /Pacific Mission (SOWER/Pacific) project. SOWER (F. Hasebe, PI) started in March 1998 as a four year program to collect ozone and water soundings. Most sites have been updated until the end of 1999. As of March 2000, it is expected that data will be collected and archived from most SHADOZ sites through September 2000.

In August 1999, the Java station (8°S, 113°E), managed by Japan's National Space Development Agency (NASDA), switched over to an Electro-Chemical Concentration Cell [ECC] ozone sensor interfaced to a digital Väisälä radiosonde. Pump efficiency corrections are provided by NOAA/Climate Monitoring and Diag. Lab. After large data gaps in the Java archive for 1998-1999, the station has started operating regularly. Any additional sonde data from the Java site for the year 2000 will be put on the archive.

In 2000, the SHADOZ archive will welcome another addition to the data base: 27 profiles taken during the Aerosols99 ship cruise. Daily ozonesondes were launched from January to mid-February 1999 on-board the NOAA Ron Brown reserve vessel as it traveled from Norfolk, Virginia to Cape Town, South Africa and on to Saint Louis, Mauritius.

Spotlight
SHADOZ workshop

The Institute for Space Research (INPE) in São José dos Campos, Brazil was the setting of the first SHADOZ workshop. The three day event on November, 1999 was hosted by Dr. Volker Kirchhoff, Head of the INPE ozone group and the SHADOZ Co-Investigator responsible for the Natal, Brazil station (5°S, 35°W). Seven of the ten SHADOZ sites were represented: American Samoa, Fiji, San Cristóbal, and Tahiti (Co-Investigator Samuel Oltmans), Ascension Is. (Francis Schmidlin), Natal (V. Kirchhoff), and Réunion Island (Françoise Posny).

The workshop covered synopses of ozone climatology at the stations represented at the meeting, ozonesonde techniques, preparation and data treatment, comparisons between total ozone from sondes and TOMS satellite; some Dobson ozone comparisons.

Several recommendations were made to improve the SHADOZ data base:

❶ A data process check for each station.

❷ Expand the SHADOZ data base to the northern tropics. Possibilities include Kwajalein Island (9°N, 167°E), the Kaashidhoo Observatory (5°N, 74°E) in the Maldives and a newly established ozone station in Paramaribo, Surinam (see station highlight ➔).

❸ JOSIE (Jülich Ozone Sonde Intercomparison Experiment) Participation (May 2000) to better understand the differences among ECC operations at SHADOZ sites.

The workshop report is on the SHADOZ website. Following the workshop, NASA-Goddard and Wallops Island SHADOZ team members flew to Natal to tour the INPE/Ozone Laboratory run by station manager, Francisco da Silva and his group. Besides observing the station set-up and ozonesonde data processing techniques, NASA visitors were also briefed on the the INPE Brewer and Dobsons spectrometers.

Group photo of the SHADOZ workshop attendees at INPE campus.

Natal, NASA/Goddard and Wallops Group in front of the Natal Ozone Laboratory with station personnel, including Francisco da Silva (second from the left).

Station Highlight ➔ Paramaribo Ozone Observing Station

The Royal Netherlands Meteorological Institute (KNMI) and the Meteorological Service of Suriname (MDS) are funding a four year research initiative dubbed RADChiS (Research on Atmospheric Dynamics and Chemistry in Suriname) through the establishment of an atmospheric observing station to study the dynamics and chemistry of tropical air. The Paramaribo ozone station (6°N, 55°W) was installed in the fall of 1999 and also houses a Brewer spectrophotometer (no. 159). A location on the southwestern outskirts of this capital city, in close proximity to the ocean and the Amazon, makes this site a relatively clean region. Since its opening, ozonesondes have been launched on a weekly basis. Preparations are underway for an April 2000 inaugural tour and celebration of the now fully operational site. For more information and background on the station, visit their web site:

http://www.knmi.nl/~fortuin/radchis/html

Upcoming Activities

WORKSHOP & SPRING AGU ➔ The SHADOZ team will convene for a second workshop at the time of the Spring 2000 AGU meeting: 30 May - 3 June, Washington DC, Special Session: A11 Analyses, Model Studies, and Satellite Comparisons with SHADOZ 1998-1999 Ozonesonde data. The agenda of the workshop will include further discussion of the data calibration and re-processing strategies for the release of the SHADOZ CD with 1998-1999 soundings. Presentations of technical issues regarding ozonesondes and scientific papers using SHADOZ data will be made at the AGU meeting. We encourage the larger scientific community of SHADOZ data users to show results.

WORKSHOP ➔ SHADOZ Co-Investigators will take part in the next JOSIE (Jülich Ozone Sonde Intercomparison Experiment) whose main objective is to compare operating procedures and data processing methods for the various types of ozonesondes in use (ECC, Brewer Mast hybrids, KC79). Although all SHADOZ sites use ECC type sensors, the model, preparation techniques, and processing methods vary. Because of these differences it was agreed that SHADOZ member participation in the JOSIE activity would be mutually beneficial. JOSIE-2000 will perform intercomparison experiments to look at background signal, sensing solutions, pump efficiency and other sources of data uncertainties.

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 will take place during the wet (February-March 2000) and dry seasons (August-September 2000). SHADOZ participation involves coordinated 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 Mongu, West Zambia site (Principal Investigator Anne Thompson, NASA/GSFC). For more information about the campaign visit the web site: http://safari.gecp.virginia.edu

➢ *Attention Data Users* ➢

The SHADOZ homepage 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 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.

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

Citation Information

An overview publication by the SHADOZ team is in preparation. In the meantime, a report in last years NASA Earth Observer Newsletter should be cited when using SHADOZ data, along with the web site: SHADOZ (Southern Hemisphere Additional Ozonesondes): A new data set for the Earth Science Community, A. M. Thompson and J. C. Witte, *Earth Observer*, **11**(4), 27-30, 1999.