



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 thirteen 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.

Data is publicly available at:

<http://croc.gsfc.nasa.gov/shadoz>



BESOS and JOSIE Follow-ups

In April 2004 the Balloon Experiment for Standards on Ozone Sondes (BESOS) was conducted at the University of Wyoming, USA, to test 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. Participants from Canada, Europe and the USA conditioned and prepared 18 sondes of differing solution strength and manufacturer brand. Sonde preparations followed SOPs established by the Jülich Ozone Sonde Intercomparison Experiment (JOSIE) in 2000. The sonde gondola compared the sondes to a standard profile from the Jülich UV photometer. Results are currently being analyzed for publication.

Two publications based on JOSIE-2000 and its implications for SHADOZ are in press: Smit et al., *J. Geophys. Res.*, doi:10.129/2006JD007308; Thompson et al., *J. Geophys. Res.*, doi:10.129/2005JD007042. Preprints are available at the SHADOZ website or from the prime author.

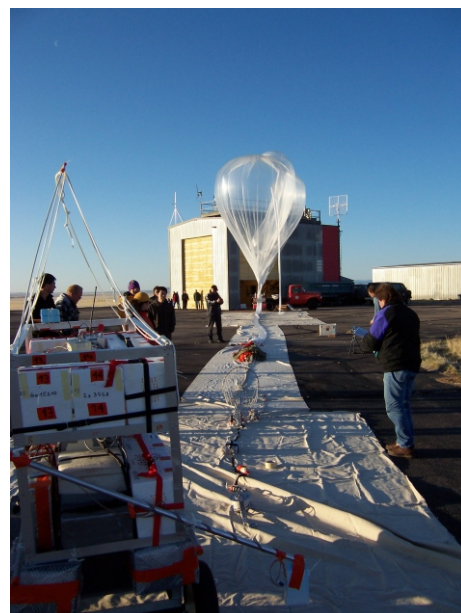


Photo of 18-sonde gondola outside University of Wyoming Hanger after sunrise on April 13, 2004

SHADOZ Inspires IONS Campaign

In 2004, NASA's North American Intercontinental Transport Experiment (INTEX) was a segment of a large multi-national, multi-platform mission called ICARTT (International Consortium for Atmospheric Research) to study pollution outflow from North Eastern US during the June-August 2004 period. Our IONS (INTEX Ozone-sonde Network Study) Campaign, operated by US and Canadian researchers, was patterned after SHADOZ with 11 stations and the NOAA research vessel concentrated on the NE US-Canadian coast. Nearly 300 soundings were submitted soon after launch and posted online, along with 4 day forecast trajectories from each station to contribute to the planning the aircraft sampling routes portion of the mission. Profile images and trajectories can be found at the IONS homepage: <http://croc.gsfc.nasa.gov/intex/ions.html>. A number of IONS papers are appearing in special INTEX issues of the Journal of Geophysical Research -Atmospheres. Preprints and data will be available at the ION-2004 website after publication.

Building on the success of IONS, an IONS-2006 three-phase North American sonde network was designed for Aura satellite validation (<http://aura.gsfc.nasa.gov>) and to complement the multi-national, multi-platform Milagro over Mexico (March 2006; <http://catalog.eol.ucar.edu/milagro>), INTEX-B (western Pacific and North America; April-May 2006) and the August-September 2006 TEXAQS Air Quality study (TEXAQS/GOMACCS/MONA). IONS-06 comprised more than 20 sites over Canada, the US, Mexico, and the Research Vessel Ronald H Brown oceanographic ship. More than 600 profiles were archived, coverage never before achieved. Profiles and trajectories can be viewed at <http://croc.gsfc.intexb/ions06.html>. Southern Canadian sites were essential in IONS and in IONS-06, launches were added in Mexico City where IONS PI Anne Thompson and Penn State students, with National Autonomous University of Mexico (UNAM) students in August, made the measurements. Data reside at the NASA Tropospheric Chemistry Integrated Data Center: <http://www-air.larc.nasa.gov/missions/intex-b/dataaccess.htm> under INTEX-B.

An IONS workshop in November 2006 was hosted by the Meteorological Service of Canada, David Tarasick, IONS Co-I, and another workshop is planned for 2007. The agenda and abstracts are at the IONS06 homepage.



Penn State and UNAM students at the UNAM sounding facility.



IONS06 Sites

- 1 - Kelowna, BC
- 2 - Stonyplain, AB
- 3 - Bratt's Lake, Sask.
- 4 - Egbert, ON
- 5 - Walsingham, ON
- 6 - Paradox, NY
- 7 - Narragansett, RI
- 8 - Yarmouth, NS
- 9 - Sable Is. NS
- 10 - Valparaiso, IN
- 11 - Beltsville, MD
- 12 - Wallops Is., VA
- 13 - Trinidad Head, CA
- 14 - Table Mountain, CA
- 15 - Holtville, CA
- 16 - Boulder, CO
- 17 - Socorro, NM
- 18 - Huntsville, AL
- 19 - Houston, TX
- 20 - R/V Ron Brown
- 21 - Barbados
- 22 - Tecamec/UNAM, Mexico

☞ CACGP/IGAC/WMO Meeting ☜

The International Commission on Atmospheric Chemistry and Global Pollution (CACGP) with International Global Atmospheric Chemistry (IGAC) and the World Meteorological Organization (WMO) had its first quadrennial Symposium in the southern hemisphere from 18-23 September 2006. Held in Cape Town, SHADOZ was featured in a number of presentations. Gert Coetzee, head of SHADOZ activities at the South African Weather Service (SAWS), was on the local organizing committee of the CACGP/IGAC(International Global Atmospheric Chemistry)/WMO Symposium. Attendees were treated to a tour of the Cape Point Global Atmospheric Watch site. Prior to the CACGP/IGAC/WMO Symposium, Prof. Roseanne Diab of the University of KwaZulu-Natal in Durban hosted a Workshop on Ozone over Africa at the Franschoek Inn near Cape Town. Twenty-five researchers and students from Africa, Réunion Island, Europe and the US discussed the latest analyses, model results, measurements.



From the left: Anne M. Thompson (SHADOZ PI, Penn State, USA), Gert J. R. Coetzee (South African Weather Service) PI of the Irene, SA ozonesonde site and Agnes Phahlane (South African Weather Service) Sonde launcher and data manager for the Irene, SA site.

☞ SHADOZ References Publications ☜

**** The 1998-2004 data record has been reprocessed to the latest format. Please refer to the SHADOZ homepage <<http://croc.gsfc.nasa.gov/shadoz>> for the latest news.****

Thompson, A. M. et al., Southern Hemisphere ADditional Ozonesondes (SHADOZ) 1998-2000 tropical ozone climatology. 1. Comparison with Total Ozone Mapping Spectrometer and ground-based measurements, J. Geophys. Res., 108, 8238, doi: 10.1029/2001JD000967, 2003.

Thompson, A. M., et al., Southern Hemisphere ADditional Ozonesondes (SHADOZ) 1998-2000 tropical ozone climatology. 2. Tropospheric variability and the zonal wave-one, J. Geophys. Res., 108, 8241, doi: 10.1029/2002JD002241, 2003.

Thompson, A. M. et al., Southern Hemisphere Additional Ozonesondes (SHADOZ) 1998-2004 tropical ozone climatology. 3. Instrumentation, station-to-station variability, evaluation with JOSIE-2000 results, J. Geophys. Res., doi:10.1029/2005JD007042, in press, 2006

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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.

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.