Newsletter No. 27, 08/2019

SHADOZ Notes

Southern Hemisphere ADditional OZonesondes

A NASA/Goddard Space Flight Center public archive of tropical and remote ozonesonde profile data

SHADOZ is a NASA project to augment and archive balloon-borne ozonesonde launches and to archive data from tropical and remote operational sites. The project was initiated in 1998 by NASA/Goddard Space Flight Center, the NOAA/Global Monitoring Division, and international co-investigators. There are currently thirteen stations launching ozonesondes in the SHADOZ network. The collective data set provides the first 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 to students, especially in participating countries.

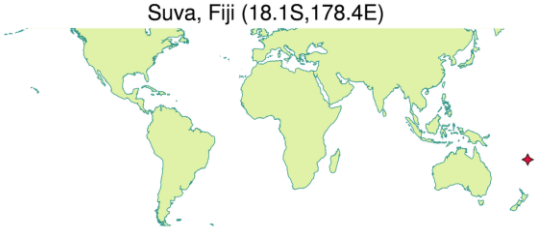
SHADOZ Sites: https://tropo.gsfc.nasa.gov/shadoz

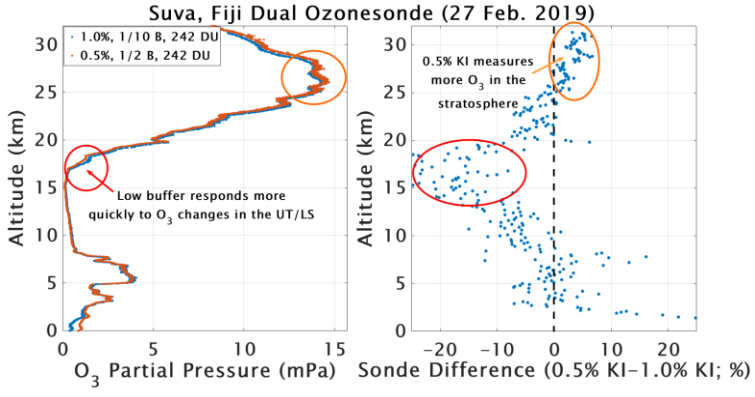
SHADOZ Site	Principal Investigator (PI), Station Chiefs and Operators
Ascension Is., U.K.	Anne Thompson (PI; anne.m.thompson@nasa.gov) & Ryan Stauffer (NASA/GSFC) Peter Crane & Patrick Benjamin, Amy Hill & James Bates (US Air Force AFSPC E-ROS/Wolf Creek)
San Pedro, Costa Rica	Henry Selkirk (PI; henry.b.selkirk@nasa.gov; NASA/USRA), Holger Vömel (NCAR), Jorge Andres Diaz & Ernesto Corrales (UCR)
Hanoi, Vietnam	Shin-Ya Ogino (PI; ogino-sy@jamstec.go.jp; JAMSTEC), Nguyen Thi Hoang Anh, Tran Thu Huang & Lai Thanh Nga (AMO)
Hilo, HI, USA	Bryan Johnson (PI; bryan.johnson@nasa.gov; NOAA/GMD), David Nardini & Darryl Kuniyuki (NOAA/MLO)
Irene, South Africa	Gert J. R. Coetzee (PI; gerrie.coetzee@weathersa.co.za; SAWS), Tshidi Machinini (SAWS)
Kuala Lumpur, Malaysia	Maznorizan Mohamad (PI; maz@met.gov.my), Nur Aleesha Abdullah & Ab Rahman Buang (MMD)
La Réunion Is., France	Françoise Posny (PI; francoise.posny@univ-reunion.fr), Jean-Marc Metzger (U. Réunion)
Nairobi, Kenya	Christian Félix (PI; christian.felix@meteoswiss.ch), Réné Stübi & Gonzague Romanens (Meteoswiss), Kennedy Thiongo (KMD)
Natal, Brazil	Francisco R. da Silva, Tercio L. B. Penha & Maria Paulete (INPE)
Paramaribo, Surinam	Ankie Piters (PI; ankie.piters@knmi.nl) & Marc Allart (KNMI), Sukarni Mitro & George Paiman (MDS)
Pago Pago, Am. Samoa	Bryan Johnson (PI; NOAA/GMD), LTJG Diane M. Perry (NOAA/ASO)
San Cristóbal, Ecuador	Bryan Johnson (PI; NOAA/GMD), Manuel Carvajal, (INAMHI), Maria Cazorla (USFQ)
Suva, Fiji	Bryan Johnson (PI; NOAA/GMD), Matakite Maata, Francis Mani & Miriama Vuiyasawa (USP)

❖ Spotlight on Suva, Fiji Site ❖

From 24 February to 1 March 2019 Patrick Cullis (NOAA/CIRES) visited the SHADOZ operation at the Univ. of the South Pacific, Suva, Suva, Fiji, where Prof. Matakite Maata has been in charge for many years. On 27 Feb. 2019 a dual ozonesonde was launched with 2 EnSci instruments connected to one iMet radio-sonde. One ozonesonde used the "WMO Report 201" sensing solution recipe, 0.5% KI, ½ buffer and the other used the low buffer NOAA variant that is normally flown at Suva: 1%, 0.1 buffer (see photo of the sonde package with Prof. Maata).

Profiles from the dual sonde launch compare very well in total ozone (Figure at right). The raw signal comparisons are in the right panel; note biases. With processing appropriate for each instrument, the profiles are nearly coincident (left panel, in lower right figure).



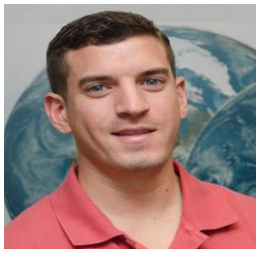


❖ Updates: New SHADOZ Personnel ❖

I am delighted to announce that NASA's contractor SSAI hired Dr. Debra E. Kollonige as the SHADOZ Archiver and Webmaster. Dr. Kollonige began her duties in June 2019; her email is debra.e.kollonige@ nasa.gov. Debra has worked with SHADOZ, IONS and DISCOVER-AQ sonde data and has been a Reseach Associate at the Univ. of Maryland's Earth System Science Interdisciplinary Center (UMCP/ ESSIC) since 2013. Debra received her PhD in Physics from the Univ. of Maryland-Baltimore County in 2011. Debra is at NASA/ Goddard's Atmospheric Chemistry and Dynamics Lab (Code 614, "Ozone Lab") co-located with me and Dr. Ryan Stauffer, (ryan.m.stauffer@nasa.gov). Dr. Stauffer, a NASA/Postdoc since 2016, is taking a Research Associate Position at UMCP/ ESSIC starting October 2019. Ryan will continue to spearhead our ozonesonde lab and Air Quality field work. All three of us will be working on SHADOZ and interfacing with the NASA/Wallops Ozone team (right photo shows us and the WFF team).

~ Anne Thompson, SHADOZ PI anne.m.thompson@nasa.gov

Debra Kollonige **Ryan Stauffer** **Anne Thompson** **GSFC 614 & Wallops Ozone Teams**



❖ Upcoming Relevant Meetings ❖

SHADOZ will be represented at the following Workshops and Meetings:

27-29 Aug. 2019: Aura Science Team Meeting, host, JPL, Pasadena, California USA
17-19 Sept. 2019: WMO/ASOPOS Workshop on Ozonesonde Practices & 50th Anniversary of the Uccle Ozonesonde Program, Brussels & Uccle, Belgium
1-3 Oct. 2019: WMO Data Centres Meeting, NASA/Langley Res. Center, Hampton, Virginia USA
14-18 Oct. 2019: Annual NDACC Steering Committee Meeting, NIES host, Tsukuba, Japan
29-31 Oct. 2019: ISS/SAGE III Science Team Meeting, NASA/Langley Res. Center, Hampton, Virginia USA
9-13 Dec. 2019: American Geophysical Union Meeting, San Francisco, California USA
12-16 Jan. 2020: American Meteorological Society Meeting, Boston, Massachusetts USA

Recent noteworthy ozonesonde publications

Stauffer, R. M., A. M. Thompson, L. D. Oman, and S. E. Strahan (2019). The effects of a 1998 observing system change on MERRA-2-based ozone profile simulations. J. Geophys. Res., 124. https://doi.org/10.1029/2019JD030257

Witte, J. C., Thompson, et al. (2019). The NASA Wallops Flight Facility digital ozonesonde record: Reprocessing, uncertainties, and dual launches. Journal of Geophysical Research: Atmospheres, 124. https://doi.org/10.1029/2018JD030098

Thompson, A. M., et al. (2019). Ozonesonde Quality Assurance: The JOSIE-SHADOZ (2017) Experience. Bull. Amer. Meteor. Soc. https://doi.org/10.1175/BAMS-D-17-0311.1

Tarasick et al. (2019). Quantifying stratosphere-troposphere transport of ozone using balloon-borne ozonesondes, radar windprofilers and trajectory models, Atmospheric Environment, 198, https://doi.org/10.1016/j.atmosenv.2018.10.040

Stauffer, R. M., Thompson, A. M. & Witte, J. C. (2018). Characterizing Global Ozonesonde Profile Variability from Surface to the UT/LS with a Clustering Technique and MERRA-2 Reanalysis. J. Geophys. Res., 123. https://doi.org/10.1029/2018JD028465

Sterling, C. W., et al. (2018). Homogenizing and estimating the uncertainty in NOAA's long term vertical ozone profile records measured with the electrochemical concentration cell ozonesonde. Atmos. Meas. Tech. https://doi.org/10.5194/amt-2017-397

Witte, J. C., A. M. Thompson, H. G. J. Smit, H. Vömel, R. Stübi, and F. Posny (2018). First Reprocessing of Southern Hemisphere ADditional OZonesondes (SHADOZ) Profile Records. 3. Uncertainty in Ozone Profile and Total Column. J. Geophys. Res., 123. https://doi.org/10.1002/2017JD027791

Thompson, A. M. et al. (2017). First Reprocessing of Southern Hemisphere ADditional OZonesondes (SHADOZ) Ozone Profiles (1998-2016). 2. Comparisons with Satellites and Ground-based Instruments. J. Geophys. Res., 122. https://doi.org/10.1002/2017JD027406

Witte, J. C., A. M. Thompson, et al. (2017). First reprocessing of Southern Hemisphere ADditional OZonesondes (SHADOZ) profile records (1998-2015) 1: Methodology and evaluation. J. Geophys. Res., 122. https://doi.org/10.1002/2016JD026403