Newsletter No. 19, 6/15

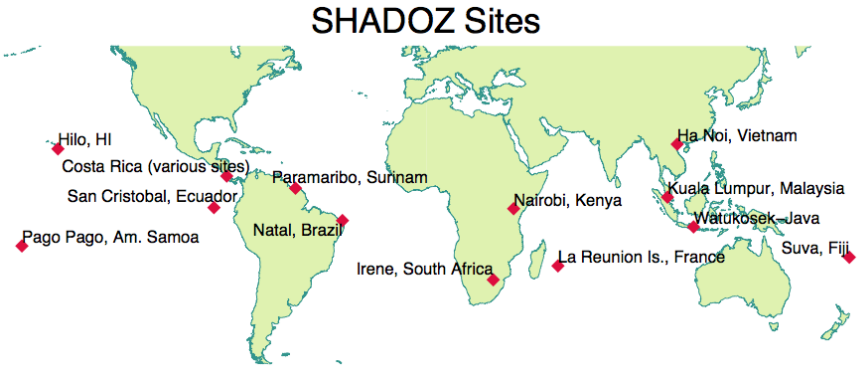
SHADOZ Notes

Southern Hemisphere Additional Ozonesondes

A NASA public archive of tropical ozonesonde profile data for for remote sensing research, model studies and education

Data are public <http://croc.gsfc.nasa.gov/shadoz>

SHADOZ is a NASA project to augment and archive balloon-borne ozonesonde launches and to archive data from tropical and sub-tropical 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 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 Reprocessing Activity

As part of the SPARC/IGACO-O3/DQA initiative, SHADOZ is committed to re-processing its ozone records to provide the highest-quality data possible. Since the mid-1990s the sonde community has actively participated in experiments and campaigns to understand and assess uncertainties in the sonde measurement. These include the JOSIE (Juelich OzoneSonde Inter-comparison Experiment) series of chamber tests at Forschungszentrum in Germany, with results summarized in *Smit, Herman GJ, et al. "Assessment of the performance of ECC-ozonesondes under quasi-flight conditions in the environmental simulation chamber: Insights from the JOSIE." J. Geophys. Res., 112,* D19306, doi:10.1029/2006JD007308, 2007. Sponsors of these activities are the WMO (World Meteorological Organization) Ozone Secretariat and WMO's Global Atmospheric Watch (GAW) program. The most recent evaluation of techniques and recommendations appear in the GAW Report No. 201: www.wmo.int/pages/prog/arep/**gaw**/documents/ **GAW_201**.pdf. Best practices in sonde operations are given, with re-processing guidelines to account for differences in solution composition differences and instrument type. The SHADOZ project is in the middle of re-processing our archive with a goal of producing a record that is homogeneous with respect to ozone technical variations. The following stations are fully re-processed: Hilo, Hawaii; Pago Pago, Am. Samoa; Suva, Fiji. Corrections to ozone data in these records include corrections of pressure offsets where GPS measurements are included (refer to *R. M. Stauffer, G. A. Morris, A. M. Thompson, E. Joseph, G. J. R. Coetzee, N. R. Nalli, Propagation of radiosonde pressure sensor errors to ozonesonde measurements, Atmos. Meas. Tech., 7, 65-79. 2014. doi:10.5194/amt-7-65-2014.*) Efforts to report a full uncertainty in the ozone readings within each SHADOZ sounding will bring us closer to the GAW recommendations and to GRUAN (GCOS Reference Upper Air Network; gruan.org) protocol. Station Managers are now being requested to furnish meta-data for all launches.

SHADOZ Site: San Cristobal, Ecuador

Contribution by Bryan Johnson (NOAA/GMD)

San Cristobal, Galapagos (1S, 90W) is one of the meteorological network sites operated by INAMHI (Instituto Nacional de Meteorología e Hidrología) of Ecuador. The site began ozonesonde balloon launches in March, 1998 as part of the Soundings of Ozone and Water Vapor in the Equatorial Region (SOWER) field campaign and later became a SHADOZ site. Regular ozone soundings continued up until 2009. In May 2012, NOAA visited INAMHI headquarters in Quito, as well as the met site at San Cristobal, for permission to launch ozonesondes (one every 2 weeks) using their new Vaisala Digicora radiosonde system and also to meet with new field personnel on ozonesonde procedures. A second visit in May, 2014 was especially beneficial as additional collaboration was established with the Universidad San Francisco de Quito (USFQ). Professor María Cazorla, founder of the Institute of Atmospheric Research at USFQ and a PhD graduate of Penn State University, greatly improved NOAA's communications and shipping procedures to Quito and San Cristobal. Bryan Johnson and Patrick Cullis (with NOAA) in return assisted Dr. Cazorla's group with the setup and first balloon launches for their new ozonesonde program in Quito to investigate PBL height and vertical structure of the atmosphere over Quito and San Cristobal. This collaboration has shown how logistics with easier communications can facilitate ozonesonde launches at one of the most remote SHADOZ sites. USFQ recently dedicated the Galapagos Science Center in San Cristobal through a partnership with the University of North Carolina for research related to the island's ecosystems. SHADOZ looks forward to more interaction with INAMHI and USFQ as ozone research in Ecuador moves forward.

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The station managers are responsible for the original data processing and should be consulted for details of their launch procedures, scheduling, and appropriate references to their data record. The SHADOZ homepage includes the contact information.