



SHADOZ (Southern Hemisphere Additional Ozoneondes) Network Report: Updates and Station Activities (68-170407B)



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- SHADOZ is a NASA project in collaboration with NOAA/GMD and international partners to collect profiles from ozone sondes in tropical environments. Data are available at <http://tropo.gsfc.nasa.gov/shadoz>. SHADOZ is affiliated with NDACC (Network for Detection of Atmospheric Composition Change; ndacc.org). SHADOZ data reside at NASA's Aura Validation Data Center & WMO's WOUDC (World Ozone and UV Data Centre). **SHADOZ DATA RECORD SPANS 1998-PRESENT.**
- SHADOZ is a backbone of satellite and model validation and have been used in selected trends studies. **Using SHADOZ data?? Don't forget to credit JGR papers below. This is a NASA data protocol! See below. ****

Major Re-processing of SHADOZ data has taken place, 2015-2017. Five stations were re-processed by NOAA/GMD (Sterling et al, GMAC-2017) and nine by NASA/GSFC (J. C. Witte et al, JGR, doi: 10.1002/2016JD026403, & GMAC-2017). Analyses with re-processed data below illustrate:

- Figs 1 & 2. Comparisons of Sonde, Satellite & Ground-Based total ozone (Samoa)
- Figs 3 & 4. Near uniformity of Ozone Column in Tropopause Transition Layer (TTL)
- Figs 5 & 6. Wave-one in Tropospheric Column Ozone and Zonal Wave-One

SHADOZ WHERE, WHO & SITE DATA RECORD



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

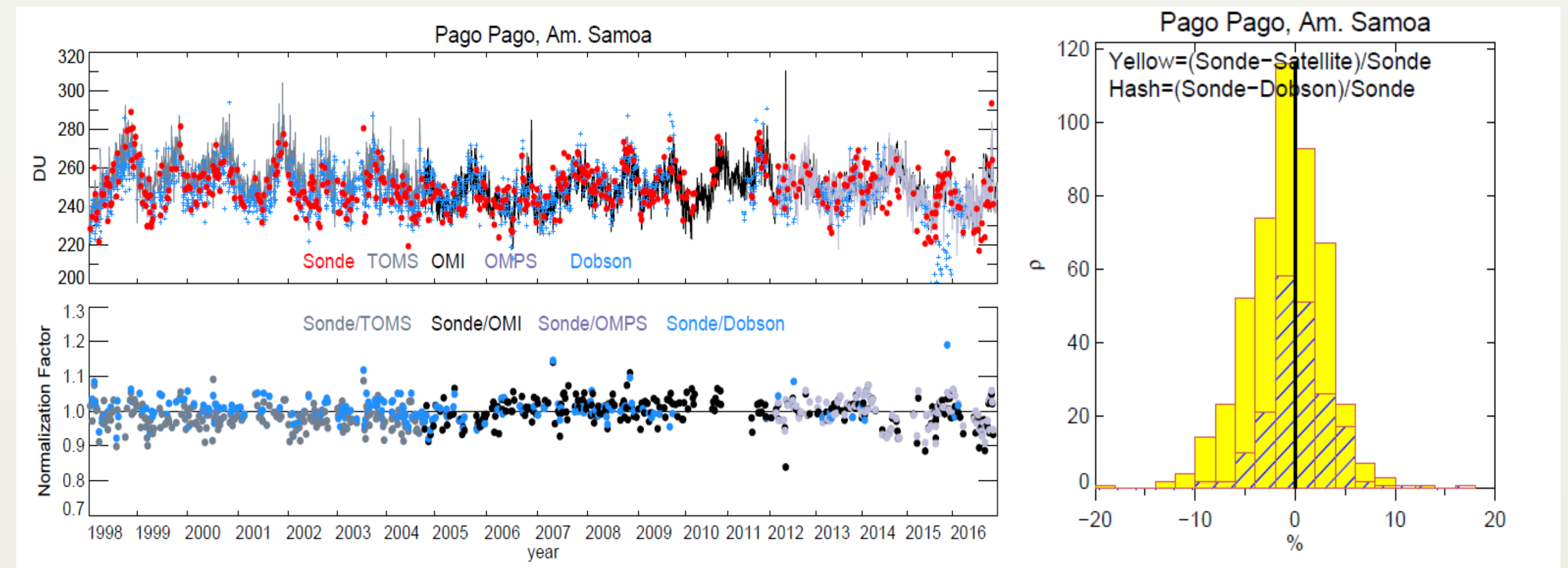
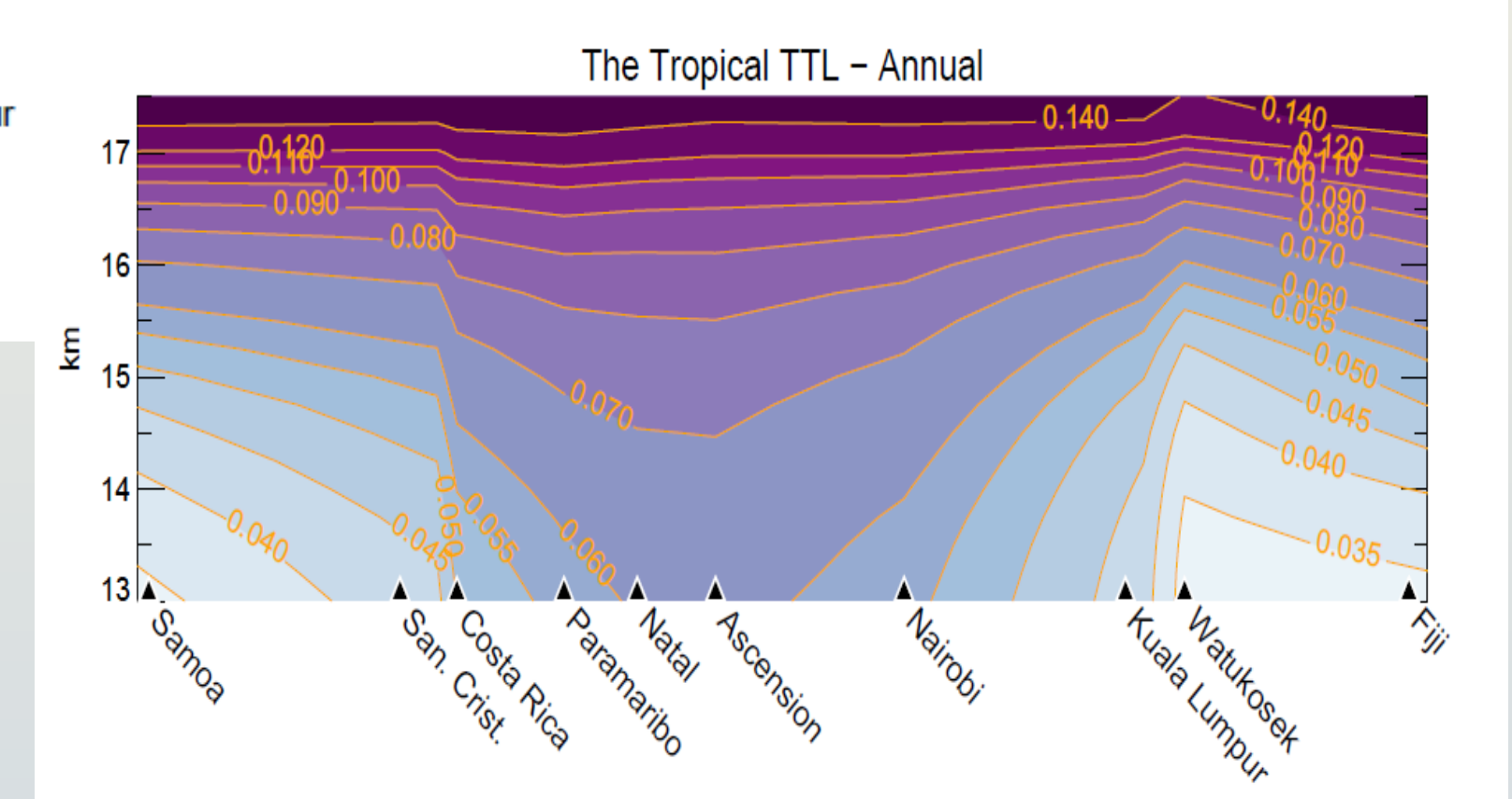
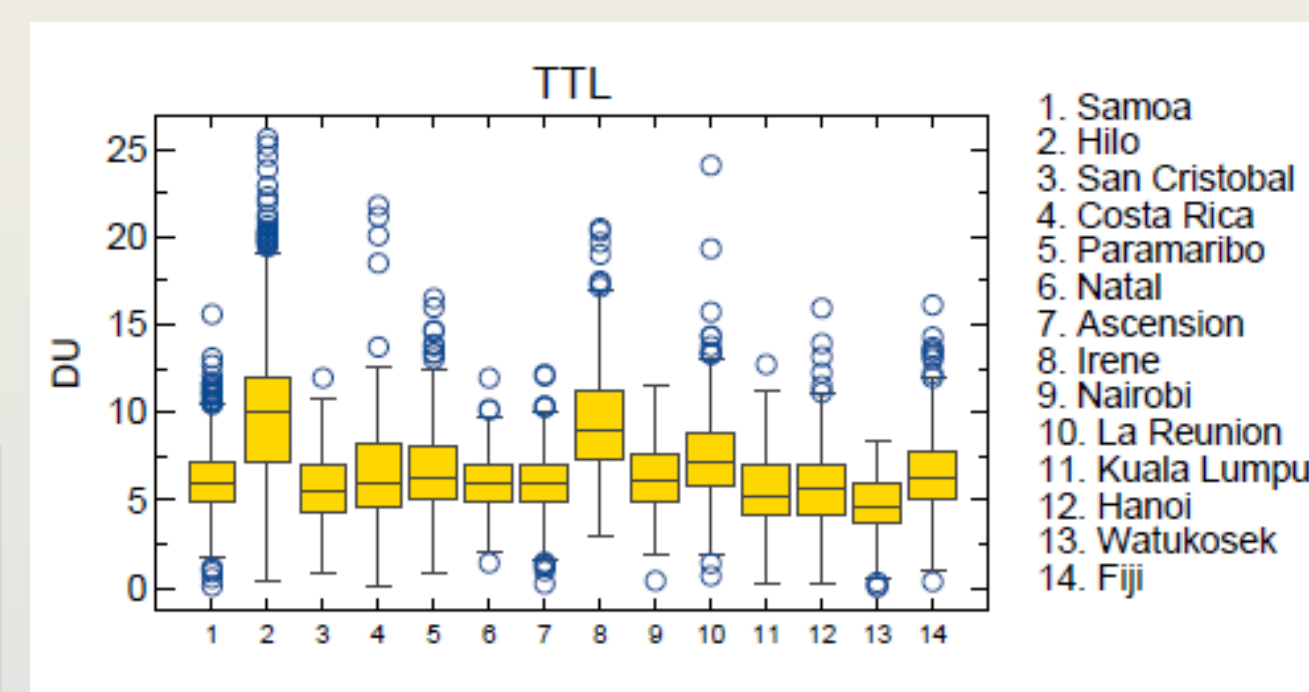
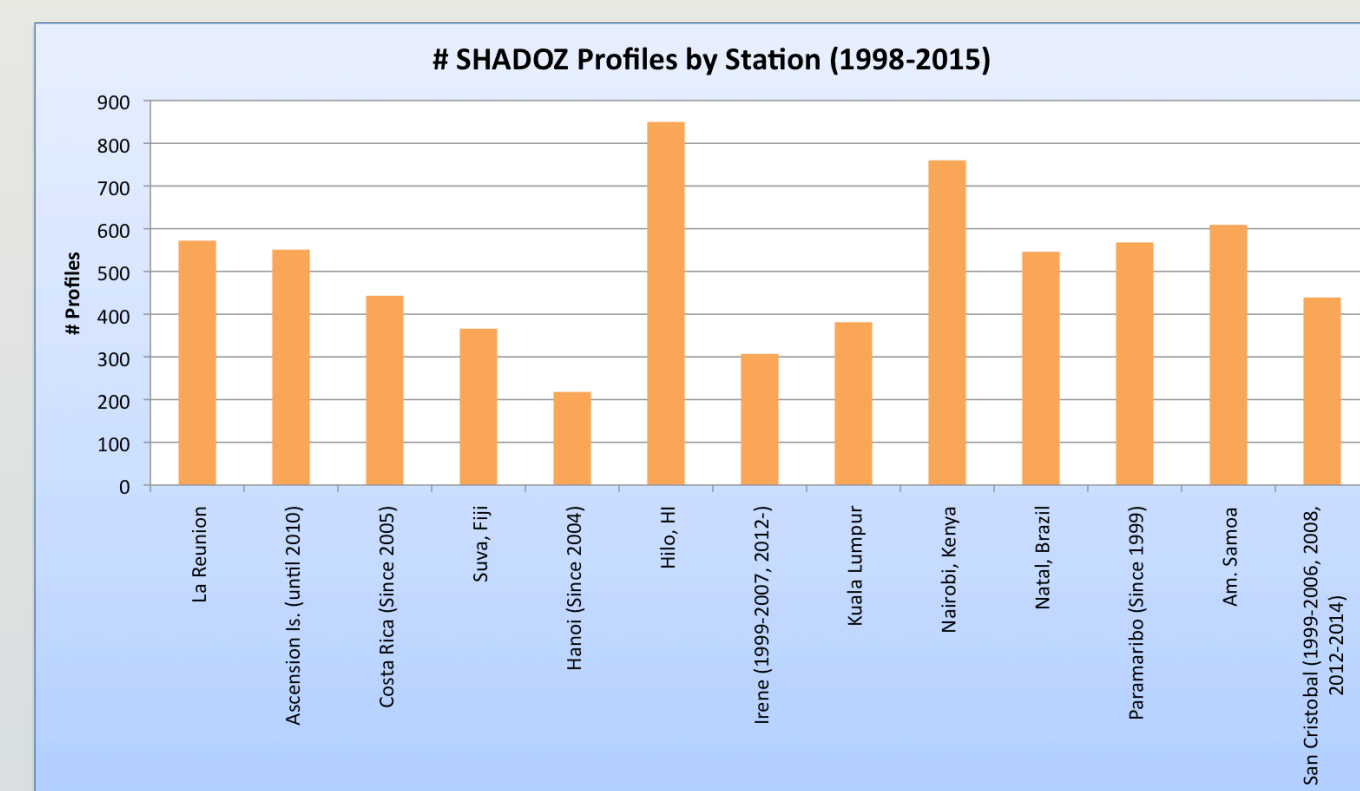


Figure 1. Samoa Total O₃ Comparisons. Figure 2. Summary Histograms of Total O₃ Differences.

SHADOZ Site	Principal Investigator (PI), Station Chiefs and Operators
Ascension, U.K.	Anne Thompson (PI: anne.m.thompson@nasa.gov; NASA/GSFC), Andrew Avery, Bill Clark, Peter Crane, & Patrick Benjamin (US Air Force AFSPC E-ROS/Wolf Creek)
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Pago Pago, Am. Samoa	Bryan Johnson (PI: NOAA/GMD), LTJG Diane M. Perry (NOAA/ASO)
San Cristobal, Ecuador	J. Olmedo (INAMHI), B. Johnson (Data PI), Manuel Carvajal & Jimmy Paredes (INAMHI)
Suva, Fiji	Bryan Johnson (PI: NOAA/GMD), Matakie Maata, Francis Mani, and Miriama Vuyiasawa (USP)

Record Sonde Number in 2016
More than 450 profiles from 13 Sites! Total > 7000 profiles

SITE DATA DISTRIBUTION



MAJOR 2016-2017 ACTIVITIES

- Visits to INAMHI (Quito, for San Cristobal) and Suriname Meteorological Services in Paramaribo (Photos Below)
- Represented at 9th Ozone Research Managers Mtg
- Planned JOSIE-2017 Sonde Intercomparison, Germany, Oct-Nov 2017 (Test Sonde Types Below)

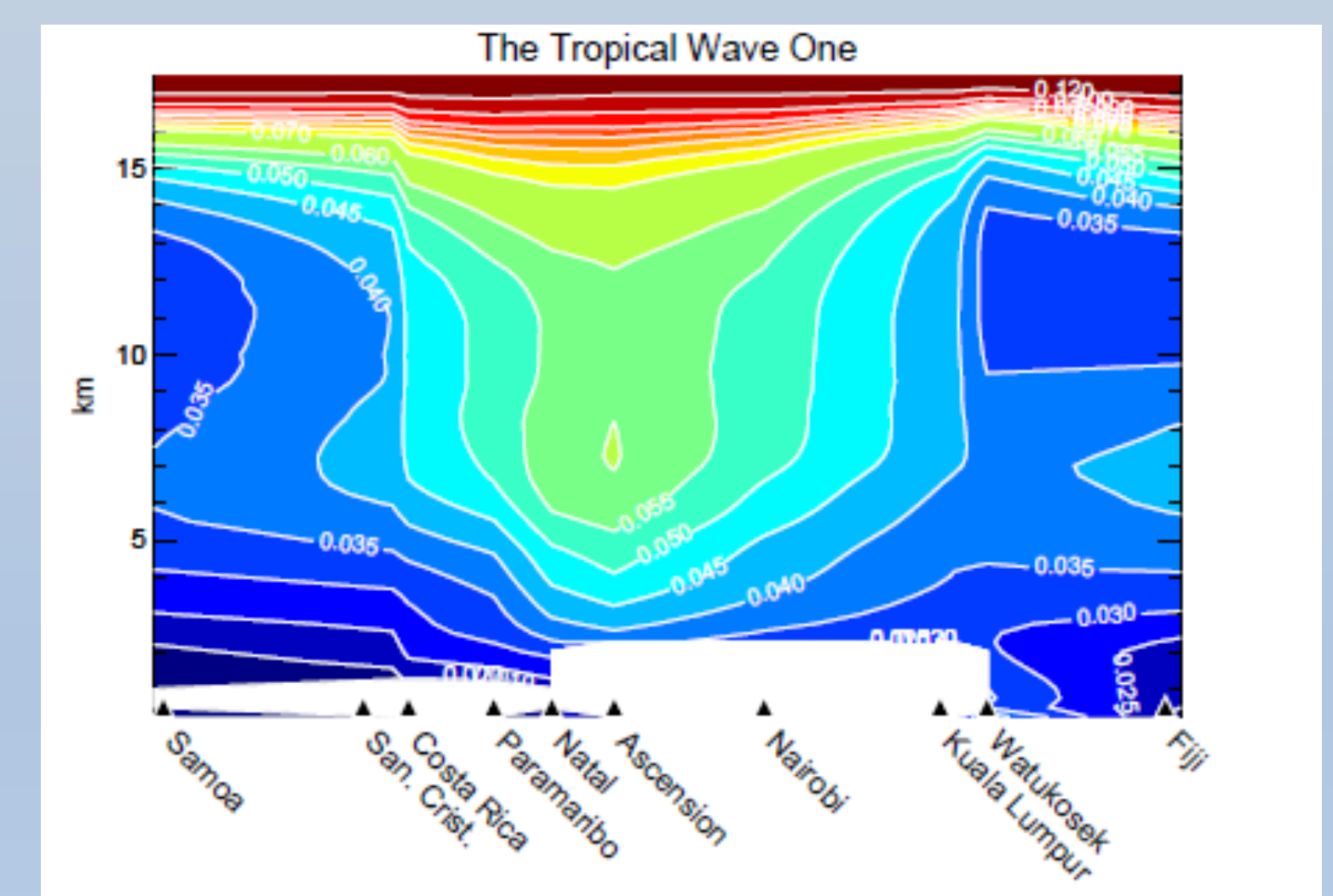
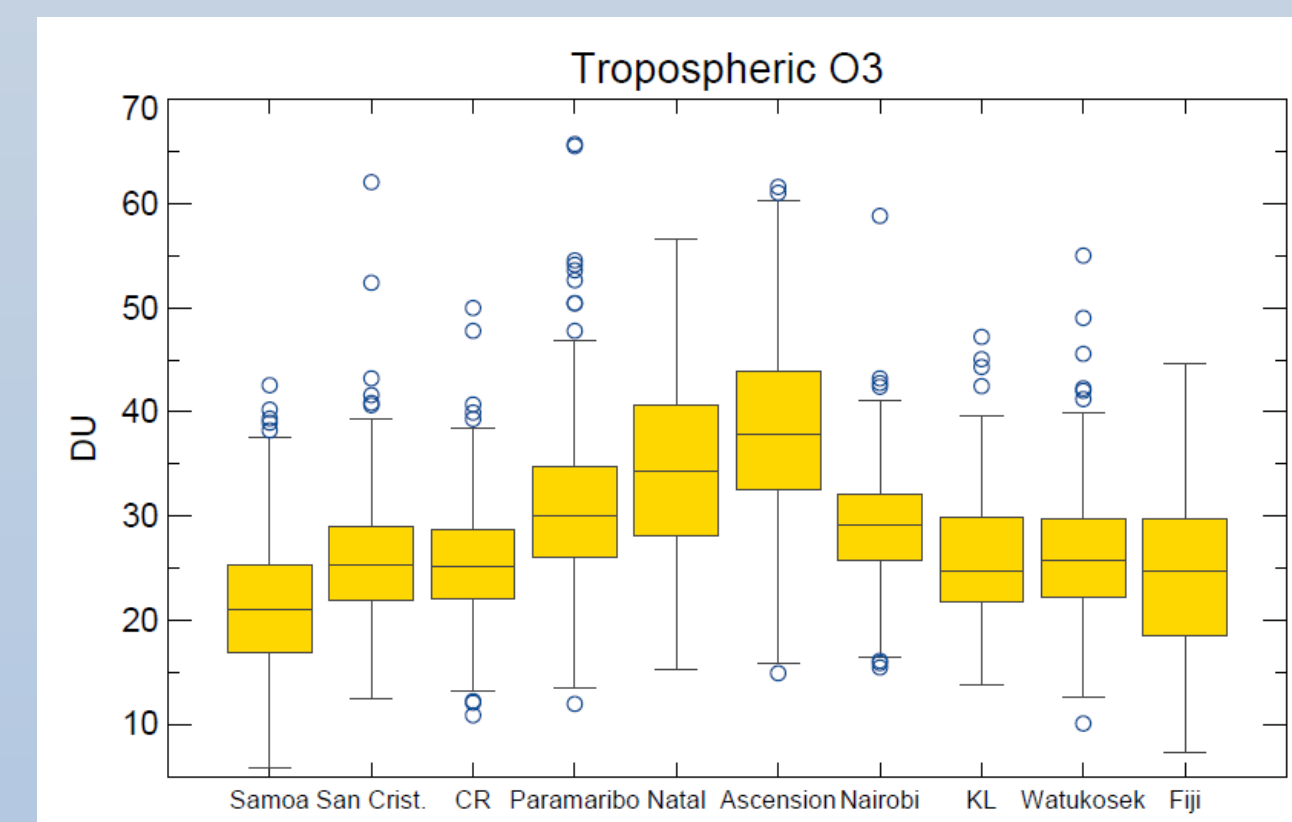


Paramaribo Launch



SHADOZ @ INAMHI

Figures 3 & 4. Most SHADOZ stations display remarkably similar column ozone amount in tropopause transition region (TTL). Mean value in boxes, with 25-75 percentile range box edges, and whiskers denoting 1.5x interquartile range, **Left**. TTL ozone thickness is statistically uniform for stations within +/- 18 degrees latitude, but cross-section shows longitudinal variability, **Right**.



Figures 5 & 6. Tropospheric Wave-One (Thompson et al., 2003b) appears in column ozone, from surface to tropopause, **Left**, and in O₃ mixing ratio cross-section, **Right**.

Acknowledgments: Support for SHADOZ comes from NASA's Aura Validation and Upper Atmosphere Research Programs (UARP: Dr. Kenneth W. Jucks) in partnership with NOAA/Global Monitoring Division and a dozen international partners.

Primary SHADOZ Papers



Station	Solution(s)	*= Current	ECC
Ascension	1% Full Buffer, 0.5% Half Buffer*		SPC, ENSCI*
Costa Rica (various loc)	0.5% Half Buffer, 1% 1/10 th *		ENSCI
Fiji (Suva)	1% Full Buffer, 2% Unbuffered, 1% 1/10 th Buffer*		ENSCI
Hanoi	1% Full Buffer, 2% Unbuffered, 1% 1/10 th Buffer 0.5% Half Buffer*		SPC, ENSCI*
Hilo	2% Unbuffered, 1% 1/10 th Buffer*		ENSCI
Irene	1% Full Buffer		SPC
Kuala Lumpur	1% Full Buffer, 0.5% Half Buffer*		SPC, ENSCI*
Lauder	0.5% Half Buffer		ENSCI
Nairobi	1% Full Buffer		ENSCI
Natal	1% Full Buffer		ENSCI, SPC*
Paramaribo	1% Full Buffer		SPC
Reunion	0.5% Half Buffer		SPC, ENSCI*
Samoa (Pago Pago)	1% Full Buffer, 2% Unbuffered, 1% 1/10 th Buffer*		ENSCI
San Cristobal	2% Unbuffered, 1% 1/10 th Buffer*		ENSCI
Watukosek-Java	2% Unbuffered		ENSCI