

GRUAN Ozonesonde Data Product

Update

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Under Review!

GRUAN OZONESONDE TECHNICAL DOCUMENT

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Version 1.1.0.4

Purpose of this Guide

This Document of GCOS Reference Upper Air Network (GRUAN) ozonesonde operations provides both mandatory operating protocols and non-mandatory recommendations for measurements of vertical ozone profiles using ozonesondes within GRUAN. This Document relies on the standard operating protocols, instrument selection, and uncertainty estimates and calculations from the WMO/GAW Report #201 [Smit et al., 2014], Assessment of Standard Operating Procedures for Ozone Sonde (ASOPOS) panel recommendations, and the large body of peer-reviewed literature on ozonesondes. This Document also builds on the GRUAN *Manual* and *Guide to Operations* (herein referred to as GCOS-171). As in the GRUAN Manual and Guide, mandatory operating protocols are distinguished by the words ‘shall’ or ‘must’ while guidelines are distinguished by the words ‘could’ or ‘should’.

The primary goal of GRUAN is to provide vertical profiles of reference measurements suitable for reliably detecting changes in global and regional climate on decadal time scales. GRUAN’s goals have been agreed to by GCOS (Global Climate Observing System) and WMO (World Meteorological Organization). Ozone is classified as a priority 2 essential climate variable (ECV) within GRUAN. GRUAN ozonesonde measurements will provide a traceable reference standard for global satellite-based measurements of atmospheric ozone. GRUAN ozonesonde measurements will also ensure that potential gaps in satellite measurement programmes do not invalidate the long-term ozone record, and will provide data to fully characterize the properties of the atmospheric column. Because ozone is a key radiatively active gas, vertically resolved measurements of the ozone profile are essential for characterizing radiative transfer through the atmospheric column.

Homogenization Guidelines

O3S-DQA Activity: Guide Lines for Homogenization of Ozone Sonde Data
(Version 2.0: 12 October 2012)

SI2N/O3S-DQA Activity: Guide Lines for Homogenization of Ozone Sonde Data

(Version 2.0: 19 November 2012)

Prepared
by

O3S-DQA panel members on homogenization of O3S-data
(Herman Smit, Sam Oltmans, Terry Deshler, David Tarasick, Bryan Johnson,
Frank Schmidlin, Rene Stuebi, Jonathan Davies)

Activity as part of

SPARC-IGACO-IOC Assessment

(SI2N)

“Past Changes in the Vertical Distribution of Ozone“



GAW Report No. 201

Quality Assurance and Quality Control for
Ozone Sonde Measurements in GAW

Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2016-415, 2017
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1 Methods to homogenize ECC ozonesonde measurements across changes in 2 sensing solution concentration or ozonesonde manufacturer

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Homogenized Ozonesonde data sets

- Witte et al., JGR, 2017 (in typesetting)
 - SHADOZ (Southern Hemisphere ADditional OZonesondes) network
- Tarasick et al., AMT, 2016
 - Canadian Ozonesonde Network
- Van Malderen et al., Atmos.-Oc., 2015
 - Uccle, de Bilt, Paramaribo
- Sterling et al., in preparation
 - NOAA network

JOSIE-2017

Jülich Ozone Sonde Intercomparison Experiment

A tropical ozonesonde intercomparison campaign

Jülich, Germany 09 Oct – 03 Nov 2017

- SHADOZ PI/operators will participate.
- Various ECC/solution pairs will be tested under tropical environment simulations.
- Coaching will be provided on best practices and SOPs.



WCCOS (World Calibration Center for Ozone Sondes)

Ozonesonde data product: to-do...

- Review of ozonesonde technical document underway
- Finalize document, share on GRUAN website
- Ozonesonde raw data stream is active (through regular RsLaunchClient). Sites uploading to GRUAN LC.
- The GRUAN LC already has raw ozonesonde data and (most) metadata, and process radiosonde data, so it makes sense that they might process the ozonesonde data product, but...
- GRUAN Ozonesonde data product still needs:
 - A PI / host institute responsible for the data product
 - Ozonesonde community support of centralized processing
 - A validated processing algorithm (several examples available)
 - Automated QA/QC checks and feedback to sites
 - Peer-reviewed description & validation publication

Thanks!