

ASOPOS 2.0 Report (AR2): A Joint Effort of GAW-NDACC-IOC and GRUAN

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GRUAN-ICM 12 at 17.November 2020



ASOPOS 1.0 (2001-2009)



JOSIE

Jülich
Ozone
Sonde
Intercomparison
Experiment

*1996, 1998, 2000,
Smit et al., JGR 2007*

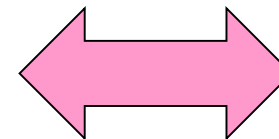
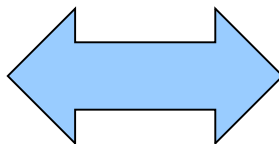
ASOPOS 1.0

Assessment for
Stand0ard
Operating
Procedures for
Ozone
Sondes

BESOS

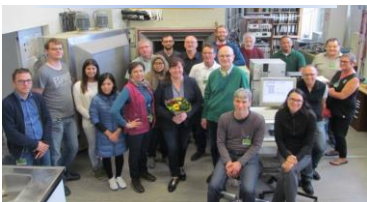
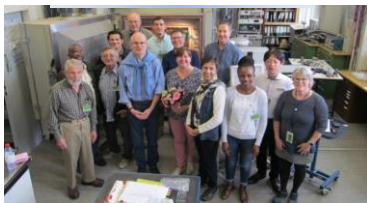
Balloon
Experiment on
Standards for
Ozone
Sondes

*April 2004, Laramie, USA,
Deshler, JGR, 2008*



- Sept.2001 WMO-Geneva: ASOPOS 1.0 Panel define preliminary SOP/GAW#1
- April.2004 BESOS field campaign at Laramie (WY, USA) to test/validate SOP/GAW#1
- Sept.2004 FZJ-Juelich ASOPOS 1.0 Panel agreed unamously on SOP/GAW#1
- May 2009 GAW Report # 201 approved by SAG-O3
- Jan. 2011 GAW Report # 201 published at WMO/GAW-web server
- Jan. 2014 GAW Report # 201 printed by WMO/GAW

ASOPOS 2.0 (2018-2020)



JOSIE

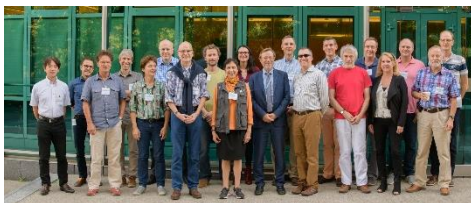
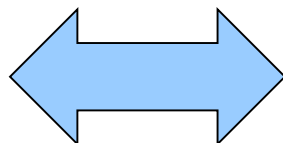
Jülich
Ozone
Sonde
Intercomparison
Experiment

2009 & 2010 on QA Manufacturers
2017-SHADOZ on QA-Operation

Publications on O3S Performance:

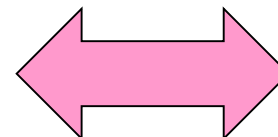
- JOSIE 2017-SHADOZ: Thompson et al., BAMS, 2019
- Uncertainty Budget: Tarasick et al., ESS, 2020 (in review)
- Resolving fast and slow time response: Voemel et al., AMT, 2020
- TCO-Drop : Stauffer et al., GRL, 2020

The here listed peer reviewed publications are the base and drive to prepare the ASOPOS 2.0 Report

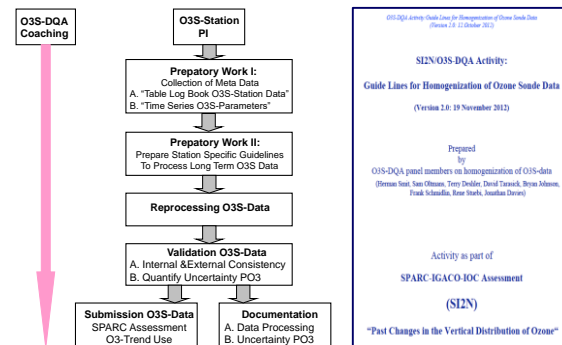


ASOPOS 2.0

Assessment for
Standard
Operating
Procedures for
Ozone
Sondes



Homogenisation O3S Data



O3S-DQA

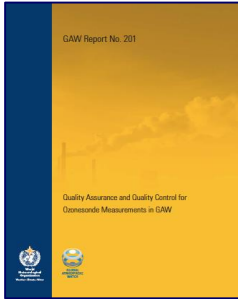
Ozone
Sonde-
Data
Quality
Assessment

Started 2011 in frame of SI2N
Status 2020: 40 O3S-Stations

Publications on Homogenisation:

- Tarasick et al., AMT, 2016
- Van Malderen et al., 2016
- Witte et al., JGR 2017, 2018-A & -B, 2019
- Thompson et al., 2017
- Deshler et al., AMT, 2017
- Sterling et al., AMT, 2018

ASOPOS 2.0 Report, AR2: Major Issues Addressed



Major Objective:

“Updating” WMO/GAW 201 with newer and broader goals on traceability, uncertainty chain, storage of data and adopting better practices for GAW stations waiting on guidance”

Key objectives that are addressed in the Report:

- i. Review Measurement principles
- ii. Evaluation of best practice in ozonesonde measurements
- iii. Traceability of post-flight processing from raw to evaluated profile data, inclusion of Meta Data
- iv. Uncertainty budget (traceability of uncertainty chain)
- v. Data storage of measured value, overall uncertainty, QA-data flagging scheme, meta data, this ensures re-processing the sonde profile data after new understandings.

From the very beginning of ASOPOS 2.0 it was decided that the Report is neither a complete Review Article on principles of the ECC measurement nor simply a new “SOPs” instruction set like WMO/GAW 201. The Lead Authors and the larger ASOPOS team attending 2018-2020 meetings agreed that AR2 is a combination of both. A peer reviewed journal publication with more “principle” details is planned for 2021.

AR2: Title and ToC

- Title of AR2 : **“Ozonesonde Measurement Principles and Assessment of Best Operational Practices”**
- Structure of AR2: Combine Chapter 2 & 3 and Chapter 4 + Annex A & B

Present ToC reflects the structure of the different components of the QA/QC system of WMO/GAW

Preface (to be written by WMO-GAW)

Chapter 1 Introduction

Chapter 2 Technical description of ECC-Ozonesonde

Chapter 3 Data Quality Objectives (DQO's) (incl. uncertainty budget) (= Scientific Base for SOP's)

Chapter 4 Standard Operating Procedures (SOP's)

(incl. traceability when processing from raw to evaluated profile data plus their uncertainties, quality flags and data storage) (Includes video clips for preparation of an ECC-Ozonesonde)

Chapter 5 Data Quality Indicators (DQI's)

Annex-A Measurement Guidelines (MG's) (= Practical guidelines to prepare and operate an O3-sonde)

Annex-B Meta Data (= Practical guidelines to collect and store the meta data)

ASOPOS 2.0 Report: Revision Approach and Final Report Timeline

- **28 October 2020** **Lead Authors Meeting**
>>> Preparation of workplan for November 2020
- 01-30 Nov. 2020 Based on Reviews preparation of revised AR2-V4 and approval by lead authors
- 01-15 Dec. 2020 Edit and format AR2-V4 for WMO printing style
- 15 Dec. 2020 Submission to GAW-Office at WMO for publishing
- Mid 2021 AR2 printed as GAW-Report, co-sponsorship of NDACC, SHADOZ & GRUAN (?)
- Fall 2021 Presentation AR2 at QOS 2021

- 2021 Preparation of scientific article on ASOPOS 2.0
- 2021/2022 Implementation into the O3S-network (incl. manufacturers, software etc.)