

Description JOSIE Data Sets

The **Julich Ozone Sonde Intercomparison Experiment (JOSIE)** data are archived in six different data sets:

1. JOSIE 1996 Data-set
2. JOSIE 1998 Data-set
3. JOSIE 2000 Data-set
4. JOSIE 2002 Data-set
5. JOSIE 2009 and 2010 Data-set
6. JOSIE 2017 Data-set

Plus the **Balloon Experiment on Standards for Ozonesondes (BESOS 2004)** data:

7. BESOS 2004 Data-set for the original processed data by Deshler et al. (2008)

1. JOSIE 1996 Data-set

Sub-folders:

- I. **JOSIE 1996 Data (GAW Report No.130):**
Original processed data as described by Smit and Kley, 1998, in WMO/GAW Report No.130.
- II. **JOSIE 1996 Data (Used by Smit et al. 2023 for TRCC)**
Original processed data as used by Smit et al. in 2023 to develop and test the Time Response Correction and Calibration (TRCC) method to resolve fast and slow time responses inherent in the measured cell current of the ECC-sonde.

2. JOSIE 1998 Data-set

Sub-folders:

- I. **JOSIE 1998 Data (GAW Report No.157):**
Original processed data as described by Smit and Sträter, 2004a, in WMO/GAW Report No.157.
- II. **JOSIE 1998 Data (Used by Smit et al. 2023 for TRCC)**
Original processed data as used by Smit et al. in 2023 to develop and test the Time Response Correction and Calibration (TRCC) method to resolve fast and slow time responses inherent in the measured cell current of the ECC-sonde.

3. JOSIE 2000 Data-set

Sub-folders:

- I. **JOSIE 2000 Data (GAW Report No.158):**

Original processed data as described by Smit and Sträter, 2004b, in WMO/GAW Report No.158.

II. JOSIE 2000 Data (Used by Smit et al. 2023 for TRCC)

Original processed data as used by Smit et al. in 2023 to develop and test the Time Response Correction and Calibration (TRCC) method to resolve fast and slow time responses inherent in the measured cell current of the ECC-sonde.

4. JOSIE 2002 Data-set

Sub-folders:

I. JOSIE 1998 Data (GAW Report No.157):

Original processed data after WMO/GAW Report No.158.

II. JOSIE 1998 Data (Used by Smit et al. 2023 for TRCC)

Original processed data as used by Smit et al. in 2023 to develop and test the Time Response Correction and Calibration (TRCC) method to resolve fast and slow time responses inherent in the measured cell current of the ECC-sonde.

5. JOSIE 2009 and 2010 Data-set

Sub-folder:

I. JOSIE 2009 and 2010 Data (Used by Smit et al. 2023 for TRCC)

Original processed data as used by Smit et al. in 2023 to develop and test the Time Response Correction and Calibration (TRCC) method to resolve fast and slow time responses inherent in the measured cell current of the ECC-sonde.

6. JOSIE 2017 Data-set

Sub-folder:

I. JOSIE 2017 Data (Used by Smit et al. 2023 for TRCC)

Original processed data as used by Smit et al. in 2023 to develop and test the Time Response Correction and Calibration (TRCC) method to resolve fast and slow time responses inherent in the measured cell current of the ECC-sonde. These are the same original data processed according ASOPOS 2.0 (WMO/GAW Report No. 268) as used and described in Thompson et al. (2019).

7. BESOS 2004 Data-set

Sub-folder:

I. BESOS 2004 Data

Original processed data as used and described by Deshler et al. (2008)

Specifications of JOSIE data as used by Smit et al. (2023) for the TRCC method

Header data:

1. Date=2017-10-11	Date of the Simulation
2. Sim_Nr=171	Simulation Number
3. Manifold_Port_Nr=1 (*)	Port Number of Ozone Manifold in ESC: i=1..4
4. Sonde_Type=SPC-6A	Sonde Type
5. Sonde_Code=6A33216	Sonde Code
6. SST=SST1.0/1.0	Sensing Solution Type
7. Pump_Flow_Rate_M=4.01	Measured Pump Flow Rate (No wet correction: sccm)
8. Pump_Flow_Rate_Gnd=3.91	Dry Pump Flow Rate (Incl.wet correction: sccm)
9. SS_Weight_Losses_Ascent=1.2	Losses of weight of sensing solution during ascent (g)
10. IB0=0.02	Background current (GC, before ozone exposure: μA)
11. IB1=0.08	Background current (GC, after ozone exposure: μA)
12. IB2=0.06	Background current (launch: just before simulation: μA)
13. Time_Response_Fast=21	Fast 1/e response time (seconds)
14. Time_Response_Slow=1500	Slow 1/e response time (minutes)
15. Stoichiometry_Slow=0.051	Stoichiometry factor (I_2/O_3) of slow reaction pathway

(*) In JOSIE 1998 this number is the rising number of the sondes involved.

Profile data:

A. Sim_Time	Simulation Time (seconds)
B. Data_Index	Status Index
C. Pair_Pressure_ESC	Pressure air inside the test room of the ESC (hPa)
D. Tair_Temperature_ESC	Temperature air inside the test room of the ESC (K)
E. IM_Cell_Measured	Measure Cell Current (μA)
F. Pump_T_Ext	External Pump Temperature (K)
G. Pump_T_Int	Internal Pump Temperature (K)
H. Pump_T_Cor	Corrected Pump Temperature (K)
I. Absorption_Eff	Absorption efficiency $\text{O}_3(\text{gas})$ into $\text{O}_3(\text{liquid})$
J. Pump_Eff_Conv	Pump efficiency
K. Conversion_Eff_Conv	Conversion efficiency $\text{O}_3(\text{liquid})$ into iodine (I_2)
L. PO3_Conv	Ozone partial pressure sonde by conventional method (mPa)
M. PO3_OPM	Ozone partial pressure by O_3 reference (OPM) (mPa)
N. Unc_PO3_Conv	Uncertainty of PO3_Conv (mPa)
O. Unc_PO3_OPM	Uncertainty of PO3_OPM (mPa)

Sensing Solution Types (SSTZ) of Cathode Cell of ECC-Sonde (GAW Report No.268)

I. SST 1.0/1.0	1.0% KI and Full Buffer
II. SST 0.5/1.0	0.5% KI and Half Buffer
III. SST 1.0/0.1	1.0% KI and $1/10^{\text{th}}$ Buffer
IV. SST 2.0/0.1	2.0% KI and $1/10^{\text{th}}$ Buffer
V. SST 2.0/0.0	2.0% KI and No Buffer (No KBr)

Note: Conventional data that data were processed after ASOPOS 2.0 Guidelines (WMO/GAW Report No. 268)

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