

ACTIVITY REPORT:

LOTUS

(Long-term Ozone Trends and Uncertainties in the
Stratosphere)

Activity leads:

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28th SPARC SSG meeting

Part II: Activity reporting

February 2021

- Goal: assessment of stratospheric ozone trends and uncertainties in observed ozone records with unified statistical approach
- Attribution of ozone changes and verification of the CCMI model hindcasts
- Detection of drifts and sampling anomalies in observational records
- This activity contributes to the WMO/UNEP 2022 Ozone assessment.

Milestones

- Detection of ozone trends separated by season (SAGE-CCI-OMPS, SAGE-OSIRIS-OMPS, GOZCARDS, and SWOOSH)
- Inter-relation of ozone and temperature trends
- Updated and extended GB and combined satellite records, including homogenization, drift corrections, and detection of step changes
- Gridded satellite datasets for trend analyses

Publications

- Szeląg et al. (2020), Seasonal stratospheric ozone trends over 2000–2018 derived from several merged data sets, ACP
- Maillard Barras et al. (2020), Study of the dependence of long-term stratospheric ozone trends on local solar time, ACP
- Bernet et al. (2020), Validation and Trend Analysis of Stratospheric Ozone Data from Ground-Based Observations at Lauder, New Zealand, MDI Remote Sensing

- Other activities
 - Tutorial and training session by J. Alsing (March 2020) to use the Dynamical linear model for trend analyses (github.com/justinalsing/dlmmc)
 - 3rd online LOTUS Phase2 workshop, May 28-30, 2020
 - Dedicated Postdoc in 2021 for trend analyses (at CNRS, Sophie Godin-Beekmann)
 - Additional postdocs are under consideration

- Collaborations with SPARC activities:
 - OCTAV-UTLS, TUNER, S-RIP, DAWG, SOLARIS/HEPPA
- Invited presentations from OCTAV-UTLS, TOAR, CCMI communities at 2020 LOTUS workshop
- IGAC's TOAR-2 and OCTAV-UTLS: to produce trends for ozone in lowermost stratosphere and troposphere
- WMO GAW, expert groups and Ozone/UV SAG
- IO3C and Parties of Montreal Protocol: presentation at QOS21 and contribution to the Ozone assessment

- Hold 4th LOTUS 2 workshop (Feb/March)
- Publish article in the SPARC newsletter
- Collect all GB, satellite, model datasets by the end of March 2021 (delays due to OMPS LP reprocessing, 2020 updates)
- Trend analyses in line with the methods used for the LOTUS Report (2019)
- Submit trend paper in 2021

- Publish paper on Umkehr homogenized record and comparisons with SBUV and SAGE in 2021
- Publish section on ozone trends in the BAMS State of the Climate report 2021.
- Contribute to the writing of Chapter 3 for the 2022 WMO/UNEP Ozone Assessment

- COVID19 related delays in data updates
- TOAR-2, 4-year schedule aligned with IPCC:
no finalized tropospheric O₃ datasets in 2021
- Ozone-sonde drop off changes at some station
 - Pls advise users to not use data after 2014
for trend analyses
- CCMI models: DI hindcast will be available
through 2018, but not clear how many models

This year's presentation is based on last year's format. It is intended to give a concise overview of your activity's goals, achievements, and plans. The slides you provide will form the basis for the discussions during the upcoming Activity reporting meeting. This is the template for the **ONLINE-ONLY** version of your presentation.

INSTRUCTIONS:

- On the title page slide, please fill in your activity information.
- As a guideline, the following slides should contain:
 - exactly 1 slide introducing the main goals of your activity
 - max. 3 slides on progress and achievements of your activity in 2020.
 - exactly 1 slide on current collaborations and further collaboration possibilities
 - max. 2 slides on future plans of your activity. (Focus on clear ideas and plans that have been agreed on within your activity)
 - exactly 1 slide on emerging issues requiring the immediate attention of the SPARC SSG
- outline of the talk and thank you slides are not necessary.
- Additional slides in support of any of the main slides can be added at the end of the presentation.
- Unless otherwise requested, all submitted presentations will be made available on the password-protected SSG meeting website. This way the information you provide is available to all meeting participants.
- **Please send the final version of your slides, and a recorded presentation to the SPARC office until 26 January 21**