

Comments by Rodrigo J. Seguel on behalf of the TOAR-II Steering Committee on:

Fingerprints of the COVID-19 economic downturn and recovery on ozone anomalies at high-elevation sites in North America and Western Europe

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This review is by Rodrigo Seguel, member of the TOAR-II Steering Committee. The primary purpose of these reviews is to identify any discrepancies across the TOAR-II submissions, and to allow the author teams time to address the discrepancies. Additional comments may be included with the reviews.

General comments

The manuscript addresses the impact of the COVID-19 pandemic on the ozone mixing ratio measured at 41 high-altitude surface monitoring stations, mainly in the United States and Western Europe, during 2020 (downturn) and 2021, as the beginning of the global economic recovery. The paper adopts the guidelines suggested by TOAR-II. In this regard, the authors applied quantile regression to estimate trends (Chang et al., 2023), facilitating future comparisons with ongoing papers to be submitted in this special issue. The study also analyzes the variability in the ozone column (3-6 km) from the IASI satellite products. Surface negative anomalies, especially in 2020, are consistent with IASI observations and previous publications (Ziemke et al., 2022). Additionally, the study relates wildfires to positive anomalies observed in the Western US. Therefore, the paper is a valuable contribution to the TOAR-II Community Special Issue.

Minor comments

Table 1: The Denali National Park (DEN) station is not exactly a high-elevation site (663 m a.s.l.). However, there is no explicit definition to classify high-elevation sites provided, at least by TOAR-II. Can the authors indicate or clarify the motivation to include this station?

Line 33: "non-methane volatile organic carbons (NM-VOCs)". Please substitute "carbons" by "compounds," which is the standard definition. Alternatively, one finds in the literature non-methane hydrocarbons (NMHC), which is not accurate because do not involve other heteroatoms present in the chemical structures, such as oxygen and nitrogen, among others.

Line 104, 108: I assume that most of the 41 stations meet the 75% threshold. Is it possible, for instance, to indicate those stations with data availability lower than 75% in Table 1?

To what extent are the MKN, MBO, or PDI critical to the analysis? In this regard, I suggest rewording the sentence: "which might suffer from issues that prevented complete data sampling in each month."

Line 208: Can the authors check the reference WMO (2021)? WMO 2021 describes the intense wildfire season of 2020, not "Western North America in 2021".

Line 221, 228, 264: The term "bump" is a positive anomaly probably due to transport processes, as stated by the authors. I suggest not using "bump" because it is unclear and can be described using standard terms.