Comments on “Multi-model assessment of impacts of the 2022 Hunga eruption on stratospheric ozone and its chemical and dynamical drivers ” by Ewa M. Bednarz et al.

General comments:

The manuscript investigate uncertainties regarding the extent to which the unprecedented injection of water vapor into the stratosphere, alongside with aerosol precursors influenced the stratospheric ozone layer. The authors claim that the chemical contribution was as important as the dynamical contribution in determining the overall ozone response to the Hunga eruption in the southern extra-tropics, with anomalous chemical (chlorine, bromine and nitrogen) processing on aerosol surfaces under. The manuscript is well written and contains some interesting material, which should be published. I recommend publication after minor revisions of the following minor and specific points:

Minor comments:

1. Recently the APARC HTHH report has been published and it is nice overview about the effort that scientists have put into the evaluation of HTHH impact. This report needs to be discussed.

2. It is important to consider that significant variability in wave and vortex dynamics in mid and high latitudes requires large ensembles to negate their impact on the ensemble means. While an ensemble size of 10 is larger than in most previous single-model volcanic studies, it may still be insufficient for unambiguously identifying significant high-latitude responses to volcanic forcing. This introduces additional uncertainty to the response. Ideally, we would compare the difference in the HTHH response between 3 and 10 members in order to test the uncertainties associated with sample size. However, a more accurate result would require an ensemble size of over 50 members.

Reference:

APARC, 2025: The Hunga Volcanic Eruption Atmospheric Impacts Report. Yunqian Zhu, Graham Mann, Paul A. Newman, and William Randel (Eds.), APARC Report No. 11,

WCRP-10/2025, doi: 10.34734/FZJ-2025-05237, available at www.aparc-climate.org/publications/