Response to Reviewer -1 (egusphere-2026-3032)

General comment#1: The manuscript presents a comprehensive, year-long study of surface O_3 in the Trans-Himalaya (Ladakh), combining in situ measurements, satellite data, and atmospheric modelling. I found the manuscript very well written and worth publication.

Response#1: We thank the reviewer for valuable comments, which helped us to improve the manuscript. Please see response to subsequent comment. Line number mentioned here are corresponding to the manuscript file in track-change mode. Note that a minor correction factor, which was missed previously, is applied to the in situ data which has increased the ozone values slightly (~1-1.5 ppbv) and figures/text are revised accordingly. This does not change any conclusions.

General comment#2: The only weakness of this manuscript is that the ground-level sampling is based solely on one station in Leh, Ladakh. The concentration of surface ozone may be influenced by the local surroundings, not the regional background, compared to satellite data and atmospheric modelling. I suggest the author address this issue in their manuscript.

Response#2: We agree with the reviewer's comment. However, there remains a lack of systematic measurements in the Trans-Himalaya. Considering this scenario, we have established a relatively background station at Leh, Ladakh to provide the insights into ozone variability. As suggested by the reviewer, additional measurements from the region would be needed to better pinpoint the local versus regional influences. This aspect is discussed in the revised version of manuscript (Line # 362-385, 477-487, 738-743).

We have considered possible role of the precursor emissions from nearby region based on the analysis of wind direction and satellite observed NO_2 and CO (new figures 4 and 5). Chemical as well as dynamical tendencies derived from regional model have also been analysed. We suggest that the local processes could have an influence on O_3 especially over shorter timescales; nevertheless, the seasonal cycle would represent mainly the role of regional-scale processes.