We thank the reviewers for the thorough reading of the manuscript and the insightful comments, which clearly helped to improve the manuscript. We addressed all points in the revised version as described below. A more detailed response to each reviewer is submitted in the discussion of the preprint as replies to the comments.

- The title of the manuscript has been revised to more accurately reflect its content, including the requested modifications.
- In response to Reviewer 2's suggestion, we refined the scale-based separation to distinguish between planetary, synoptic-scale, and mesoscale waves. The separation is now presented in sect. 2.2, and discussed with the new Fig. 3 in sect. 3.
- A decomposition into more physical atmospheric wave phenomena was requested by the reviewer 1. In response, the relation between wave scales and physical wave types is discussed at the end of sect. 2.2: planetary waves are associated with quasi-stationary Rossby waves, synoptic-scale waves represent a mixture between Rossby and gravity waves, and mesoscale waves are associated with gravity waves.
- As requested by Reviewer 3, we conducted additional analysis of upwelling trends to examine whether separating the ozone recovery period from the post-ozone recovery period improves the statistical significance of the trends.
- More information from reanalyses other than ERA5 was added to the sect. 3 and 4 of the manuscript as requested by Reviewer 2
- As requested by Reviewer 2 and 3 rewriting and restructuring of several text parts throughout the entire manuscript was done to improve clarity and readability eg. sect. 2.2, sect. 3 and sect. 4.
- The comparison of resampled ERA5 data with original fine resolution ERA5 data was expanded (see Sect. 5), as requested by reviewer 2.