

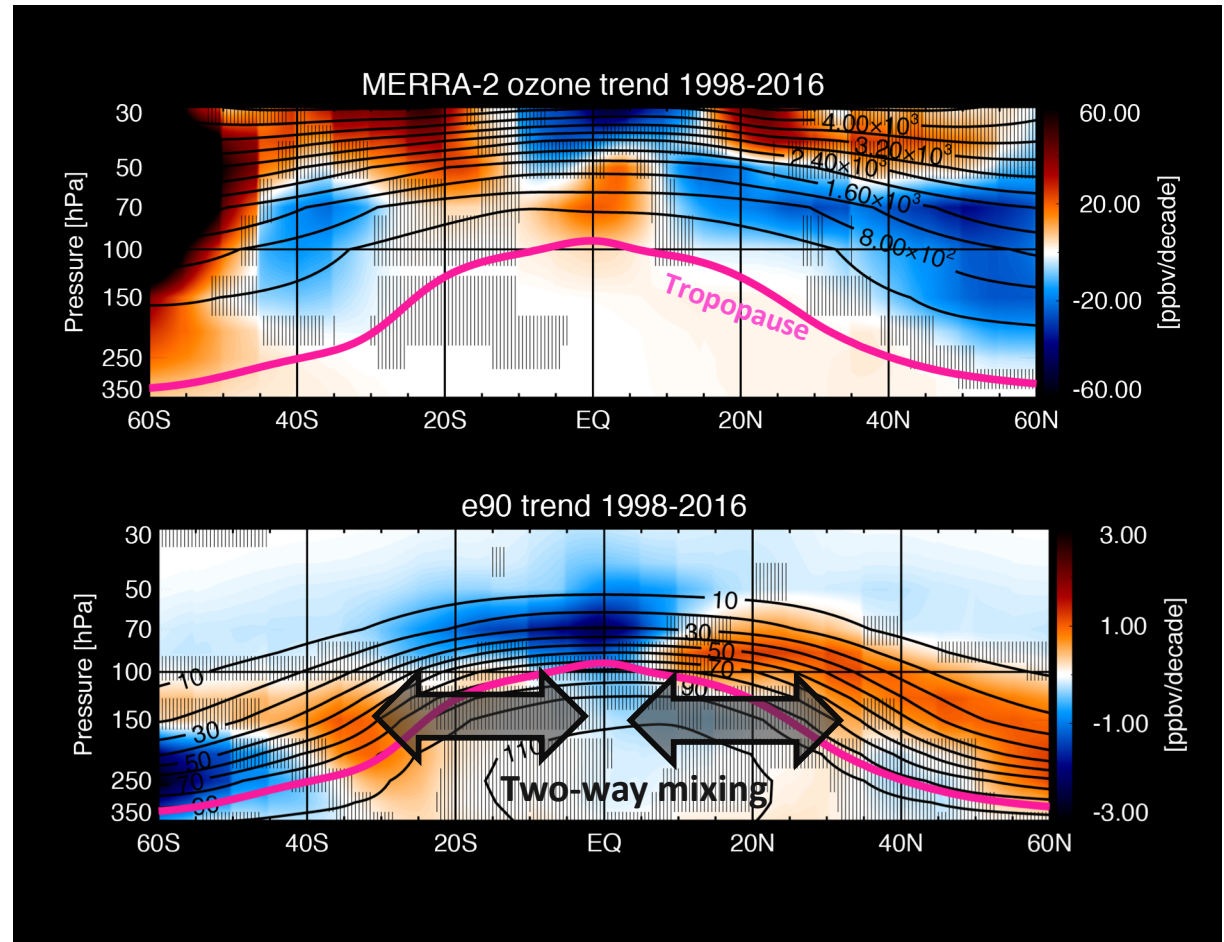
Important Trends in Extratropical Lower Stratospheric Ozone

Science Question: What causes the recently reported decline in lower stratospheric ozone?

Finding: In the GMAO's Modern-Era Retrospective Analysis for Research and Applications, Version 2 (MERRA-2), ozone just above the tropopause has continued to decline at midlatitudes between 1998 and 2016 (blue shading in top panel). An idealized tracer reveals enhanced tropical-extratropical mixing during the same period (bottom panel).

Impact: Transport changes between 1998 and 2016 most likely caused this small decline of ozone concentrations; it is not known if this is a signal of long-term change or decadal-scale variations.

Why It Matters: Stratospheric ozone shields our biosphere from harmful ultraviolet radiation and affects the Earth's radiative budget.



Wargan, K, C. Orbe, S. Pawson, J. R. Ziemke, L. D. Oman, M. A. Olsen, L. Coy, and K. E. Knowland, 2018. Recent decline in extratropical lower stratospheric ozone attributed to circulation changes. *Geophys. Res. Lett.* <https://doi.org/10.1029/2018GL077406>