SUPPLEMENTARY DATA

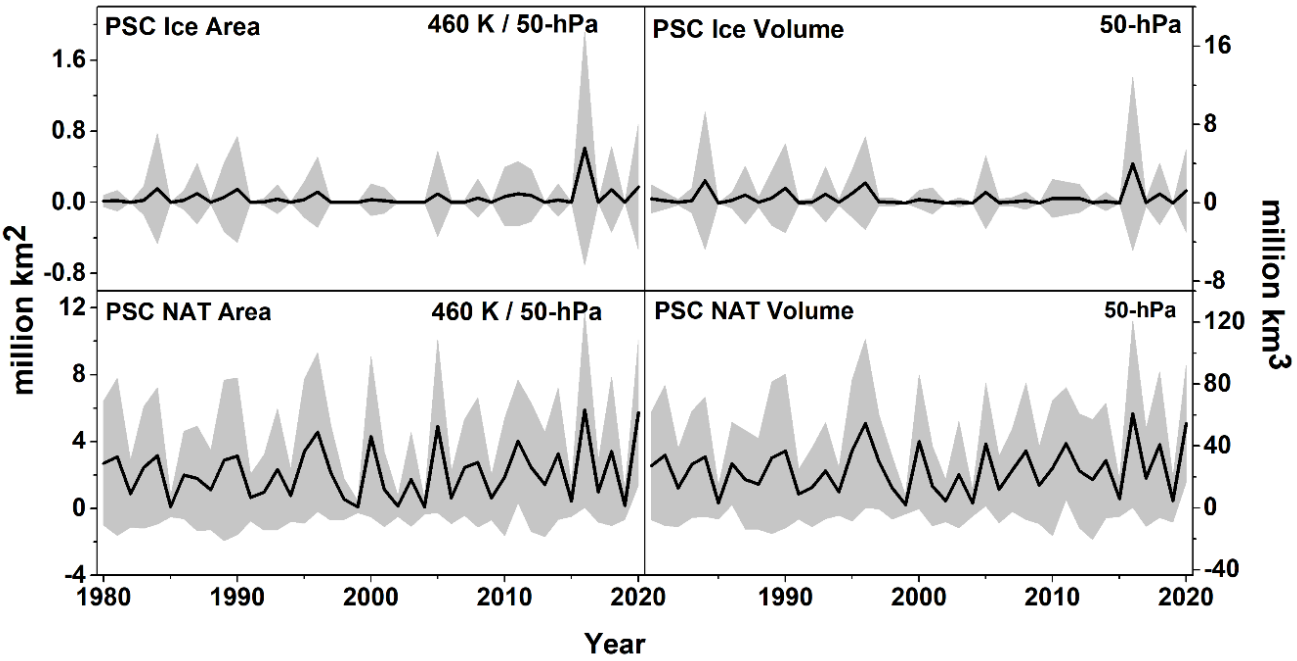

Figure S1: The temporal evolution of area of PSC (million km^2) and volume of PSC (million km^3) in the Arctic winters from 1979 to 2020 at 50 hPa as estimated using the MERRA-2 data. The average for the whole winter (December through April) is shown. The average value are shown in solid lines and the grey background is the standard deviation from the mean.

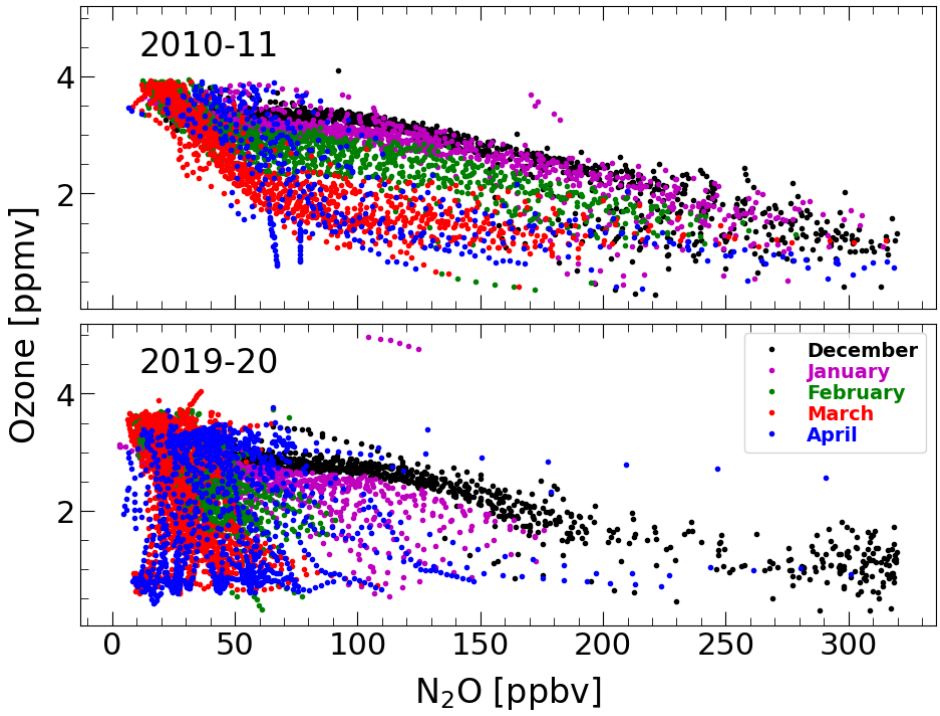

Figure S2: The time evolution correlation between ozone and N_2O in the Arctic winter 2020. The measurements selected inside the vortex.

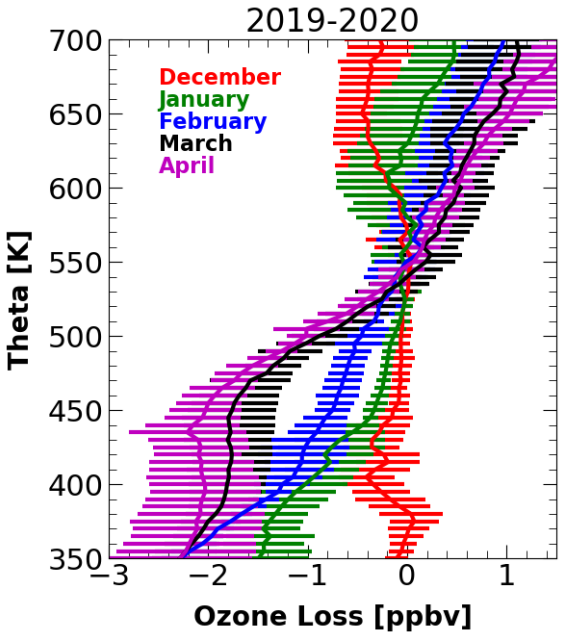

Figure S3: The monthly averaged ozone loss and the standard deviation (horizontal bars) computed using the tracer descent method.

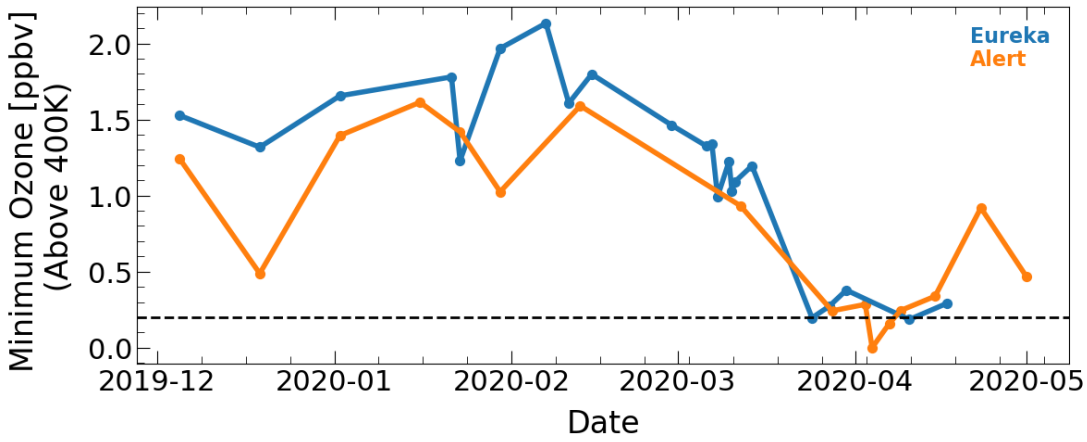

Figure S4: The temporal evolution stratospheric ozone as observed by the ozonesonde measurements at Eureka and Alert stations in the Arctic. The ozone mixing rations shown are the minimum ozone observed at any altitude between 400 K and 700 K.

Table S1: OZONE HOLE DAYS (TCO LESS THAN 220 DU ANYWHERE IN THE VORTEX REGION) OBSERVED IN DIFFERENT DATA SETS

OMPS (24 Days)

- Dec 01 – 05 (5 Days)
- Jan 01 – 02 (2 Days)
- Jan 23, 25 – 30 (7 Days)
- Mar 05, 12 – 19, 28 (10 Days)

MERRA-2 (19 Days)

- Dec 01 – 05 (5 Days)
- Jan 25 – 26 (2 Days)
- Mar 05, 12, 17 – 22 (8 Days)
- Apr 06 – 07 (2 Days)