Arctic Ozone Depletion

Is there an impact of climate change ?

J. P. Pommereau,

LATMOS, CNRS, UVSQ, Guyancourt

European ozone campaigns

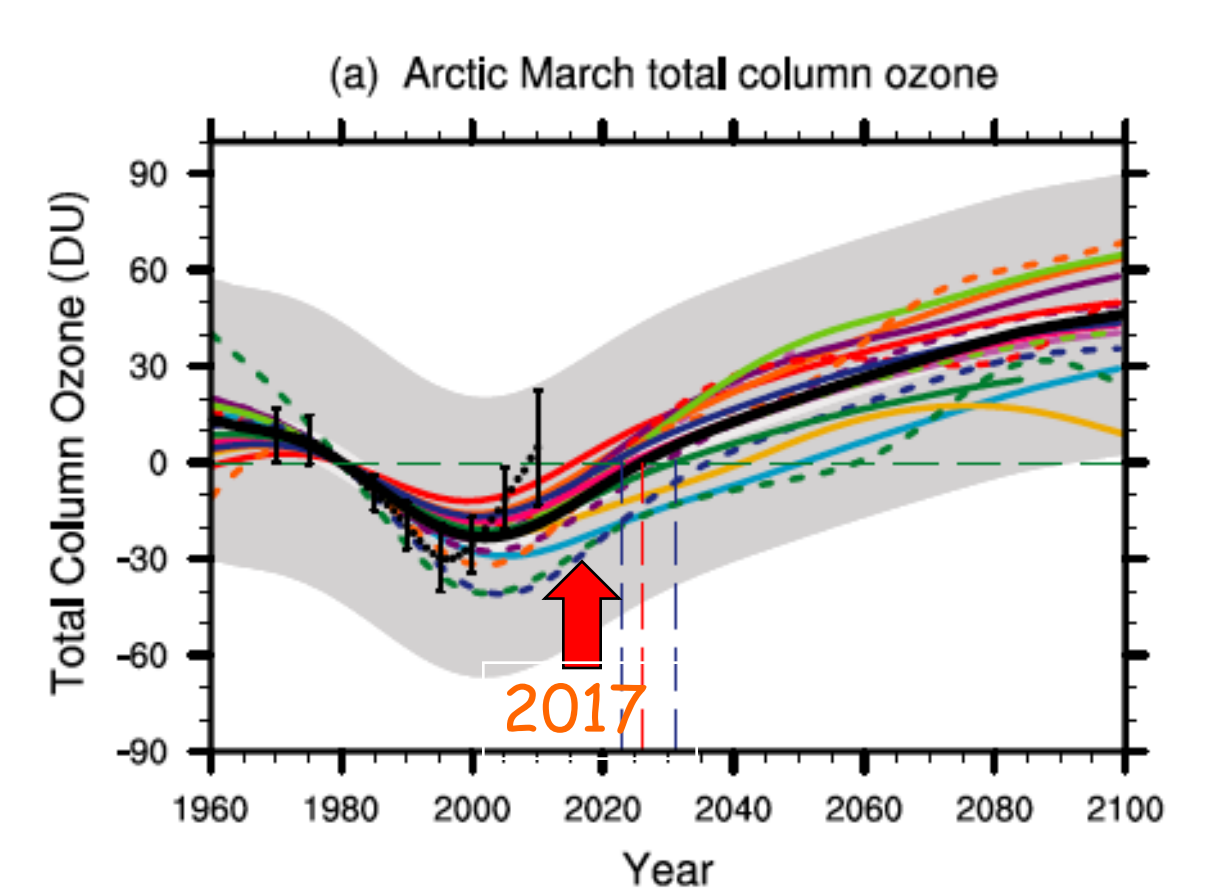
Ozone Loss mechanism fully understood

See J.A. Pyle and N. Harris

But what about the future ?

WMO/UNEP Arctic prediction

Stratosphere Warming: No more PSCs after 2020-2030

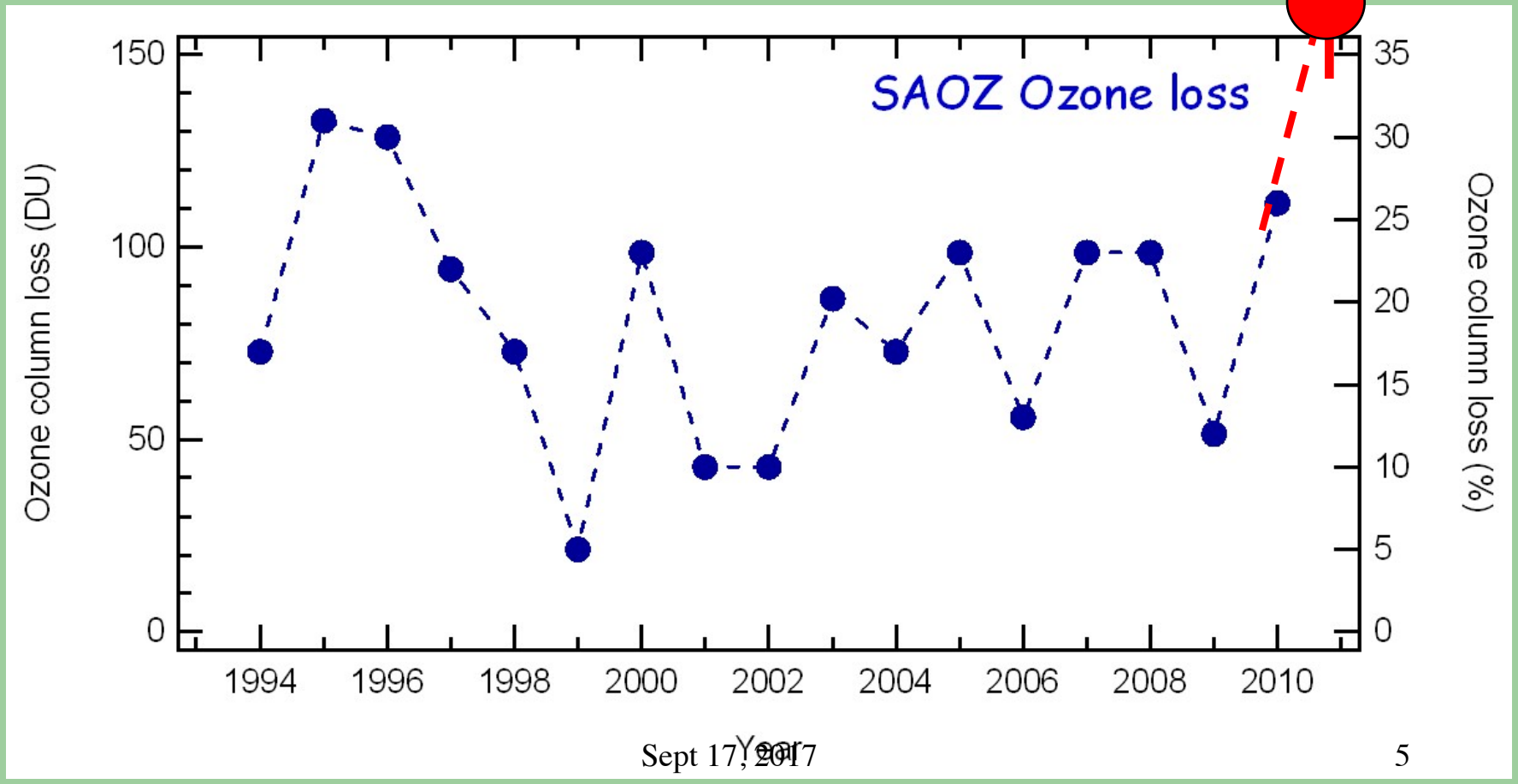


Ozone recovery at 1980 level in 2020-2030

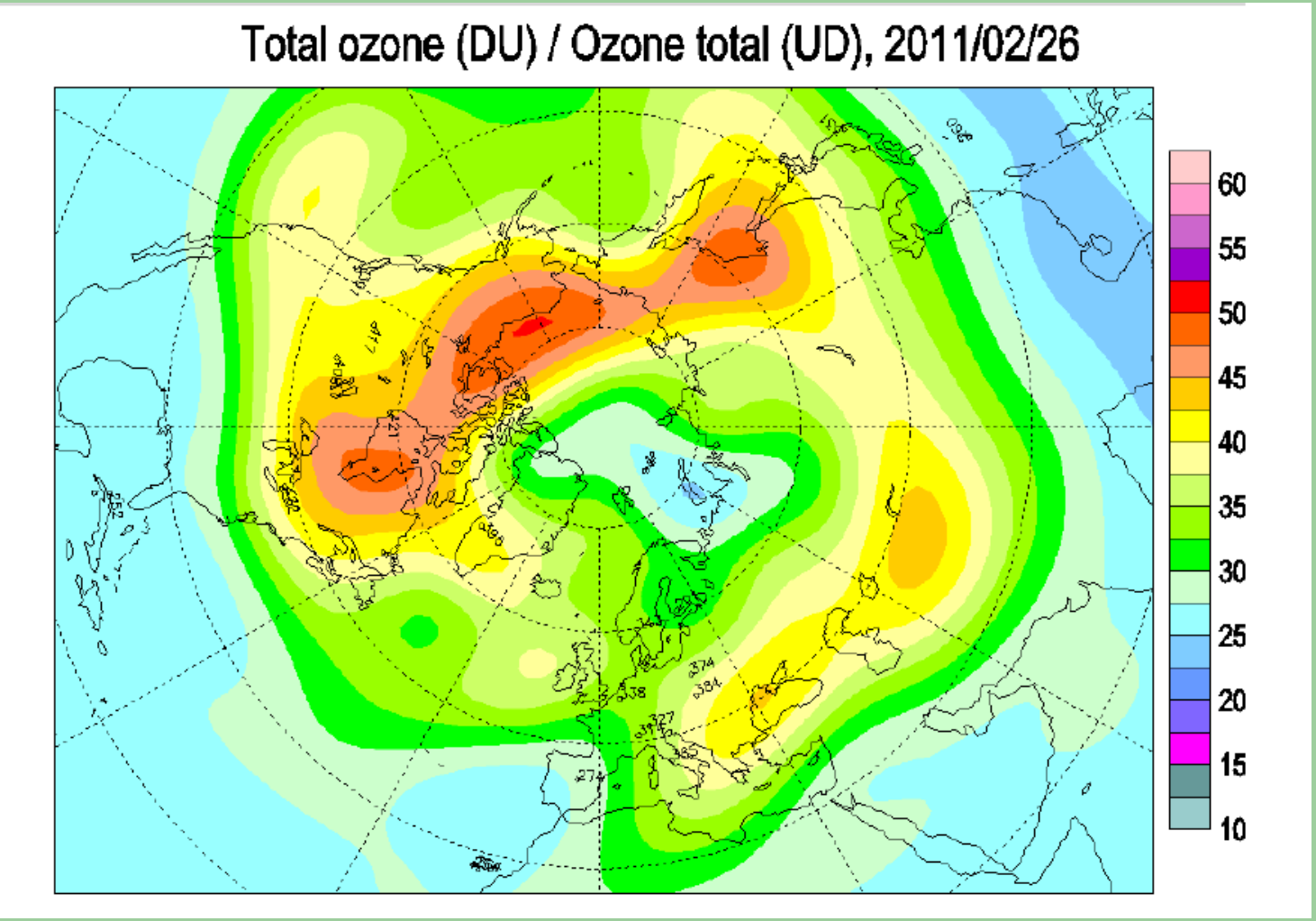
Is there an indication of recovery?

Arctic Ozone monitoring with SAOZ network

Unprecedented 37% ozone loss in 2011
Close to Antarctic value
Never seen before



Environnement Canada 26 Feb

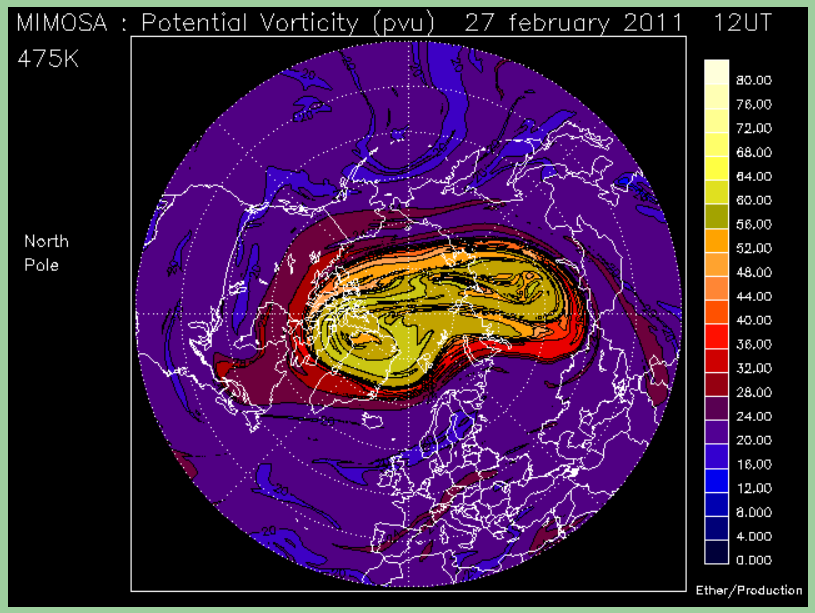


Minimum: 250-275 DU above New Zemblia

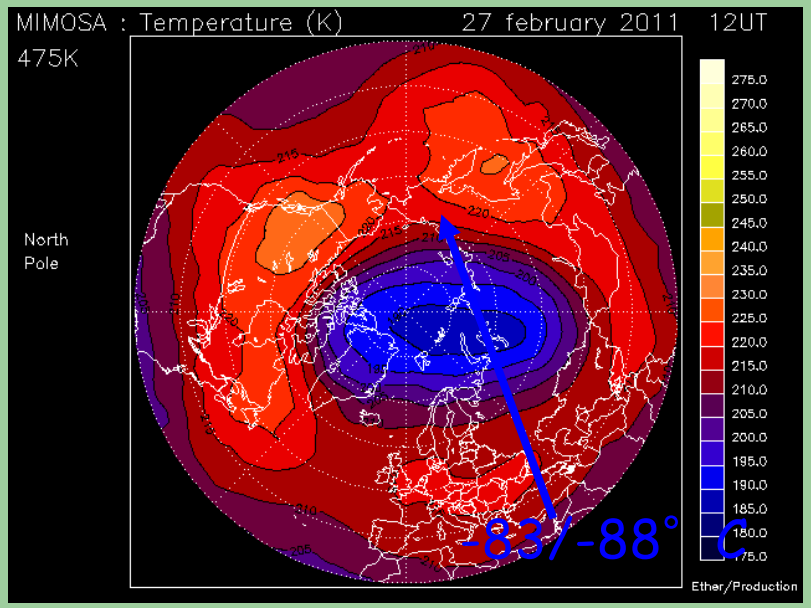
DUE TO

- Unusually long lasting polar vortex until Mar 15,
- Cold temperature until late Feb

Pontial Potential Vorticity

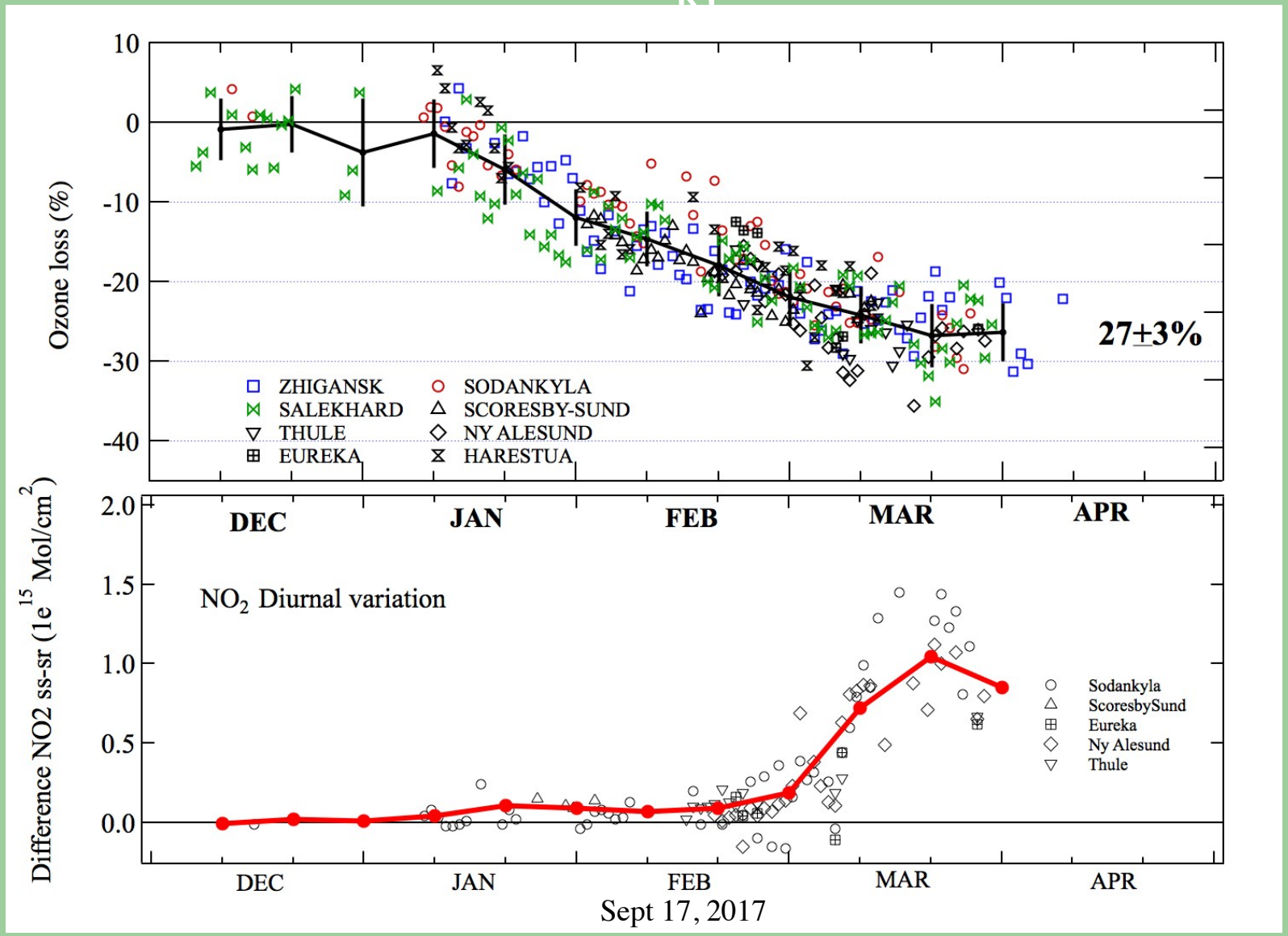


Temperature

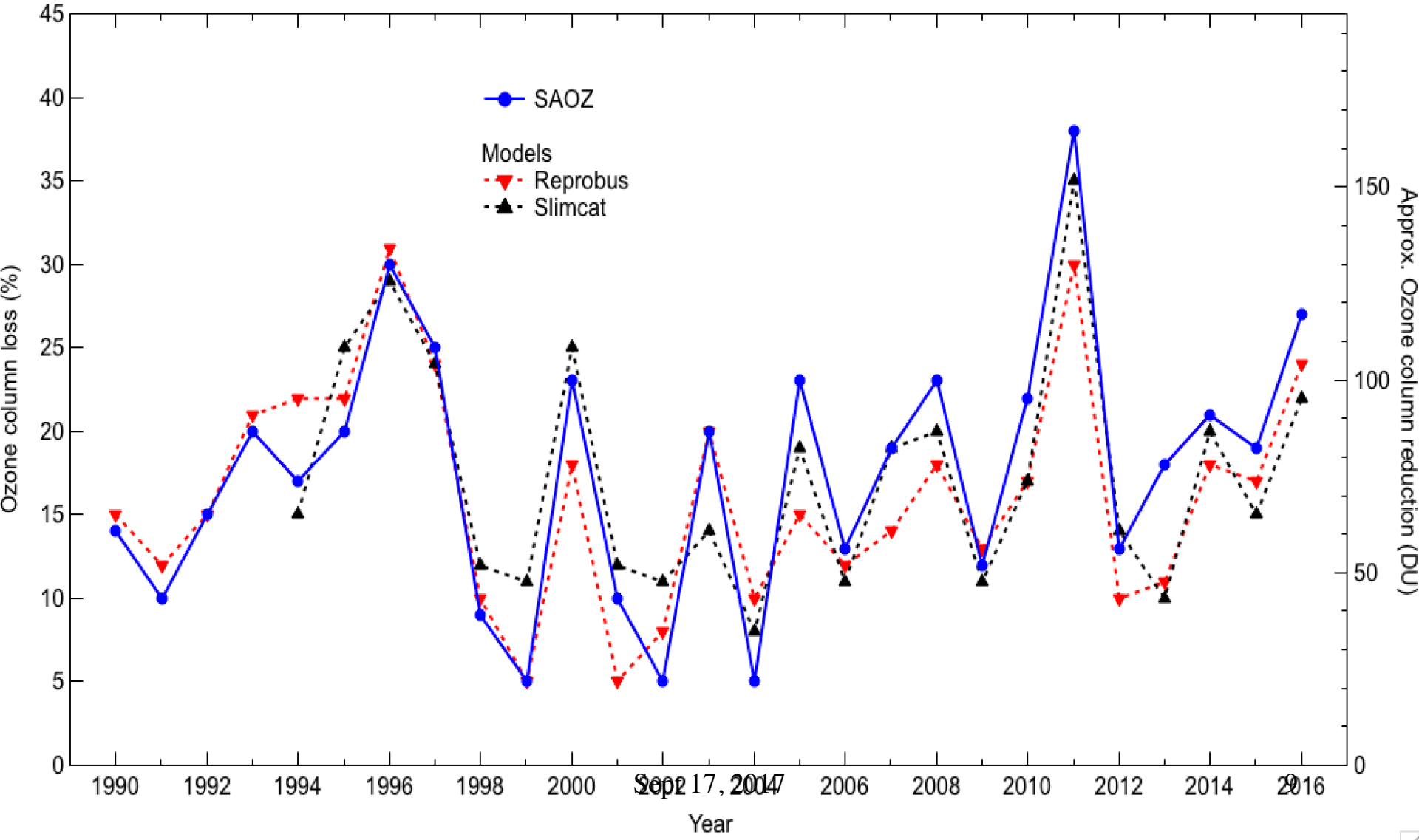


Deepest, coldest and most isolated vortex since 1992

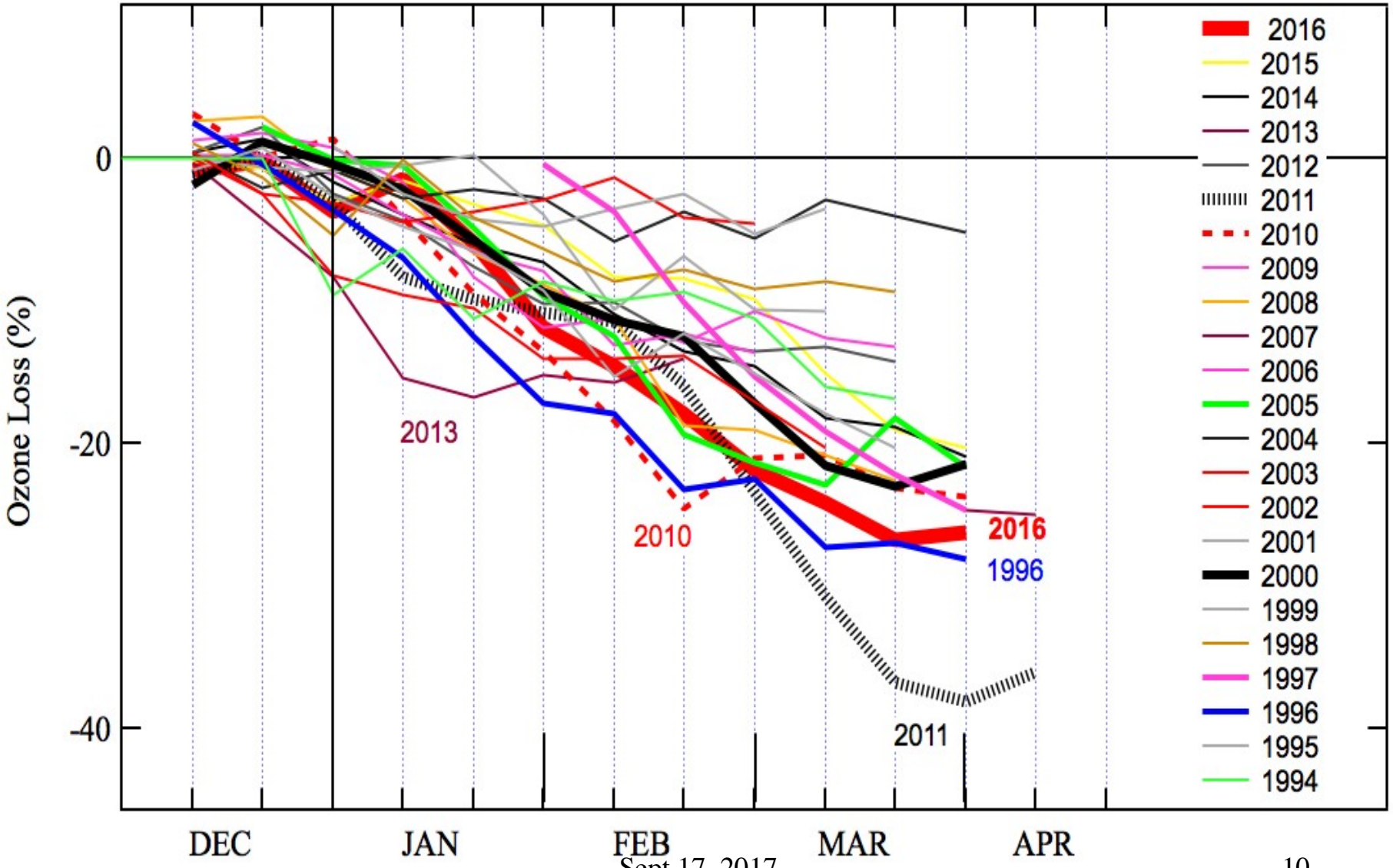
Unusual 27% ozone depletion again in 2016UNEP



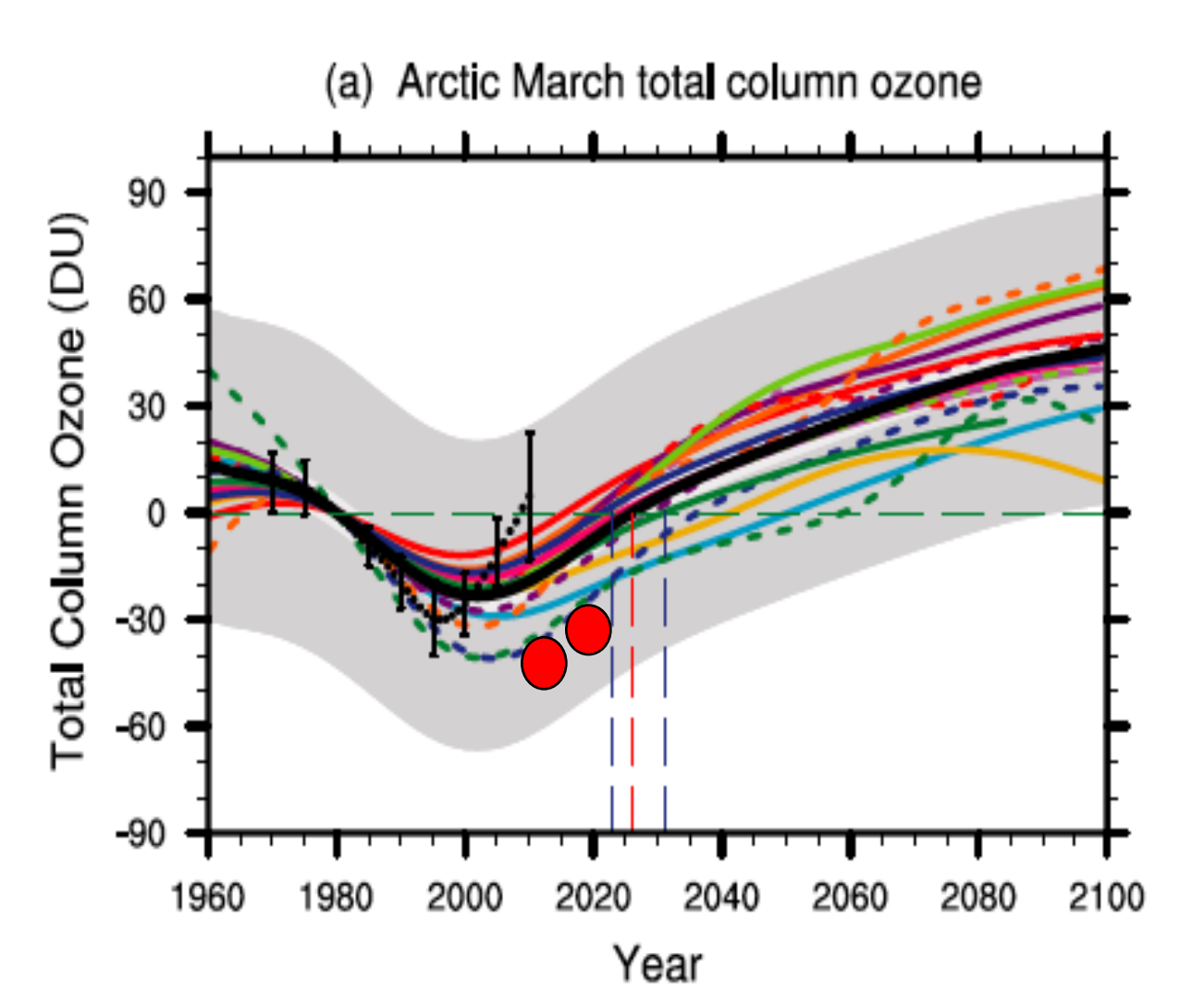
WELL CAPTURED BY REPROBUS AND SLIMCAT



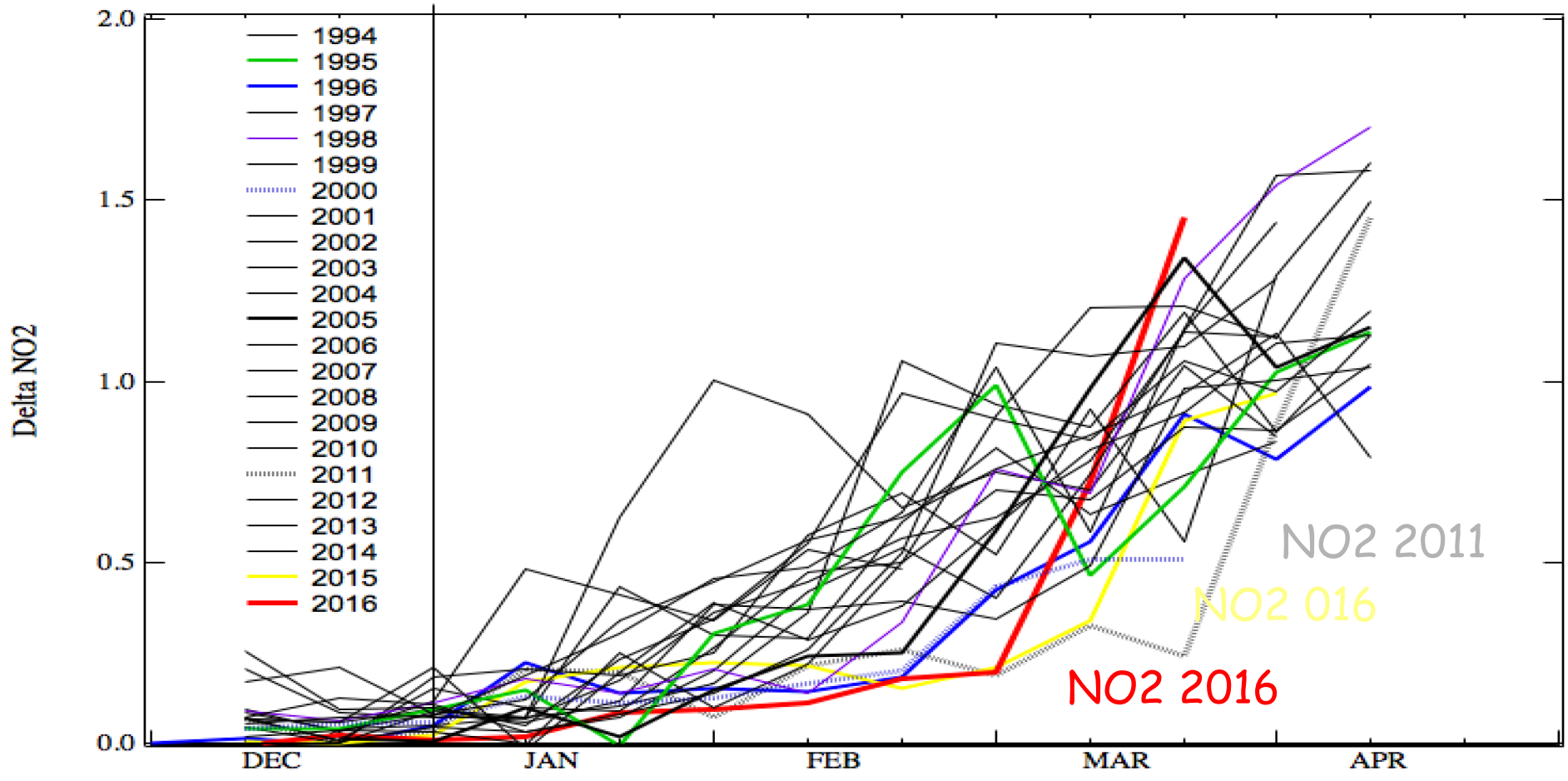
Amplitude similar to volcanic aerosol rich 1996



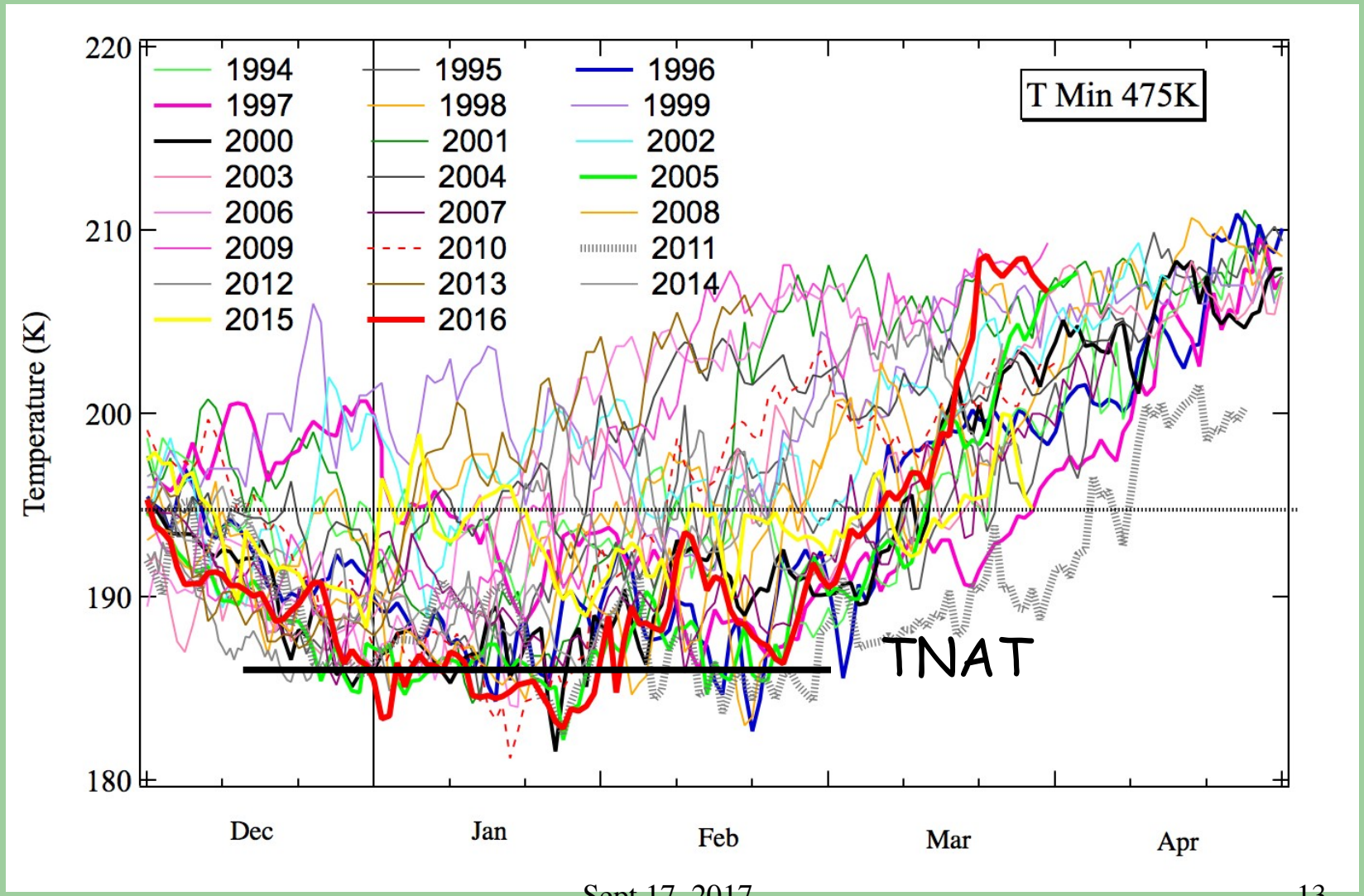
Ozone loss stronger than predicted



Strong detoxification until 20 Mar in 2011, 25 Mar in 2015 and late Feb in 2016

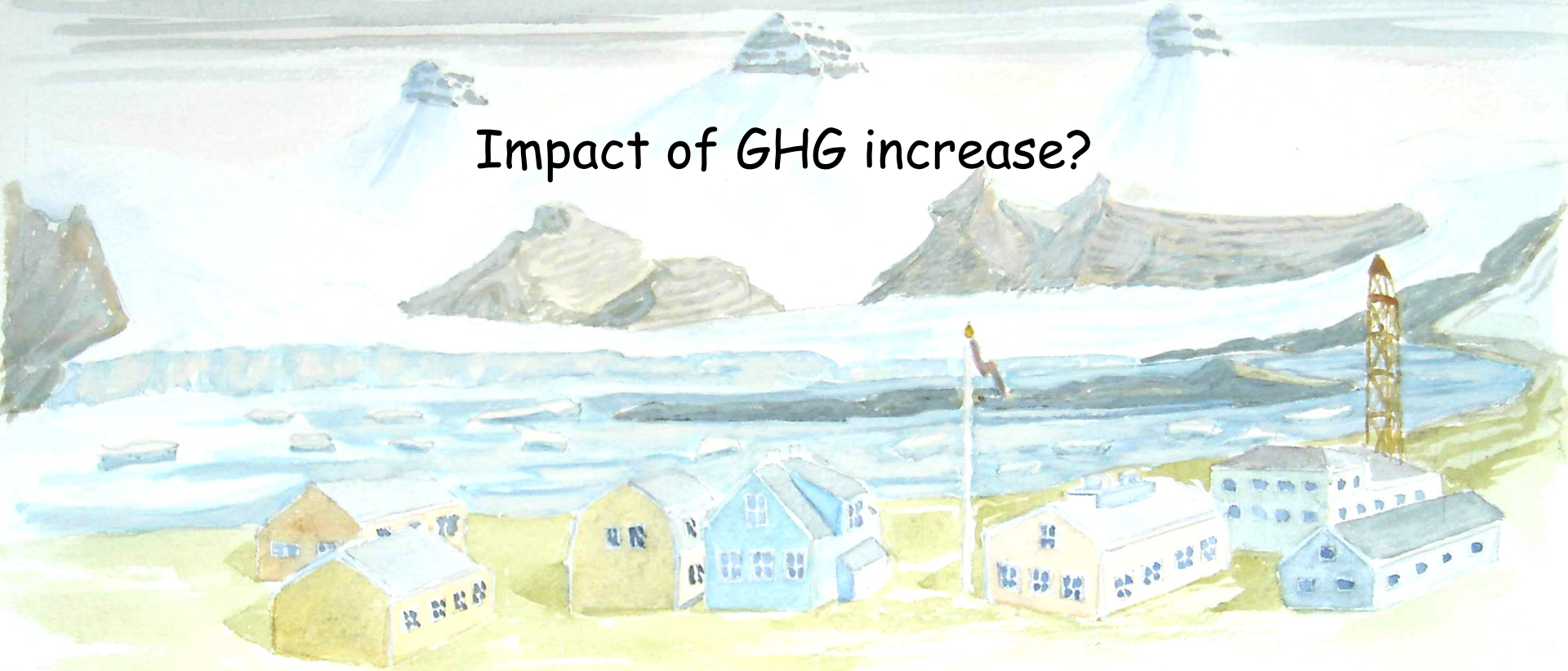


Temperature below TNAT until late Feb in 2011, 10 Feb in 2015, and during full month in Jan 2016



Recent stratosphere cooling in contradiction with prediction,
Vortex longer duration
Stronger denitrification

Impact of GHG increase?



If right: Ozone recovery delayed

THANKS FOR LISTENING