

Trends and seasonal cycles in the isotopic composition of nitrous oxide since 1940

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Cheng Lu

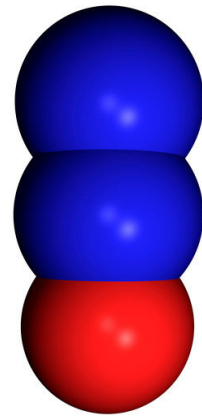
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Background Information

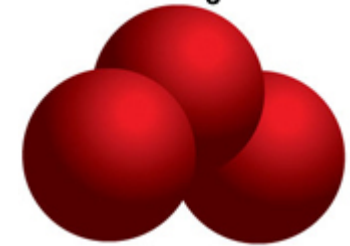
- Why care about N₂O



Potent green house gas



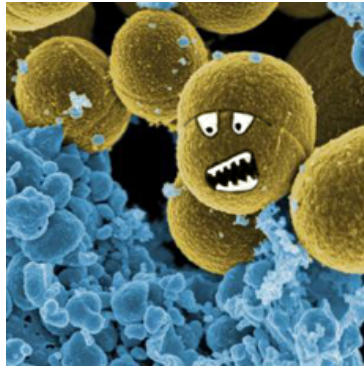
NO_x



ozone chemistry

Background Information

- Sources



microbial
nitrification
& denitrification
processes in soils
and water

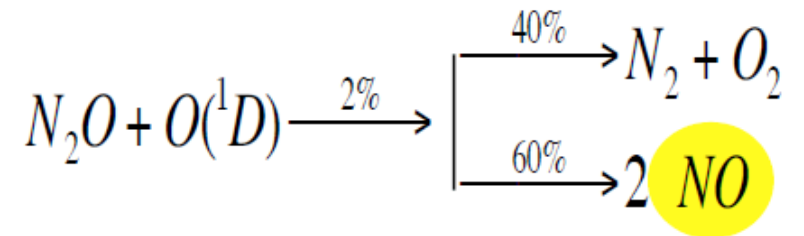
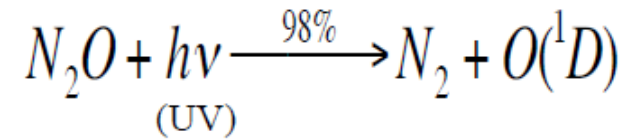


Burning
Fertilizer
Industry
agriculture



- Sink

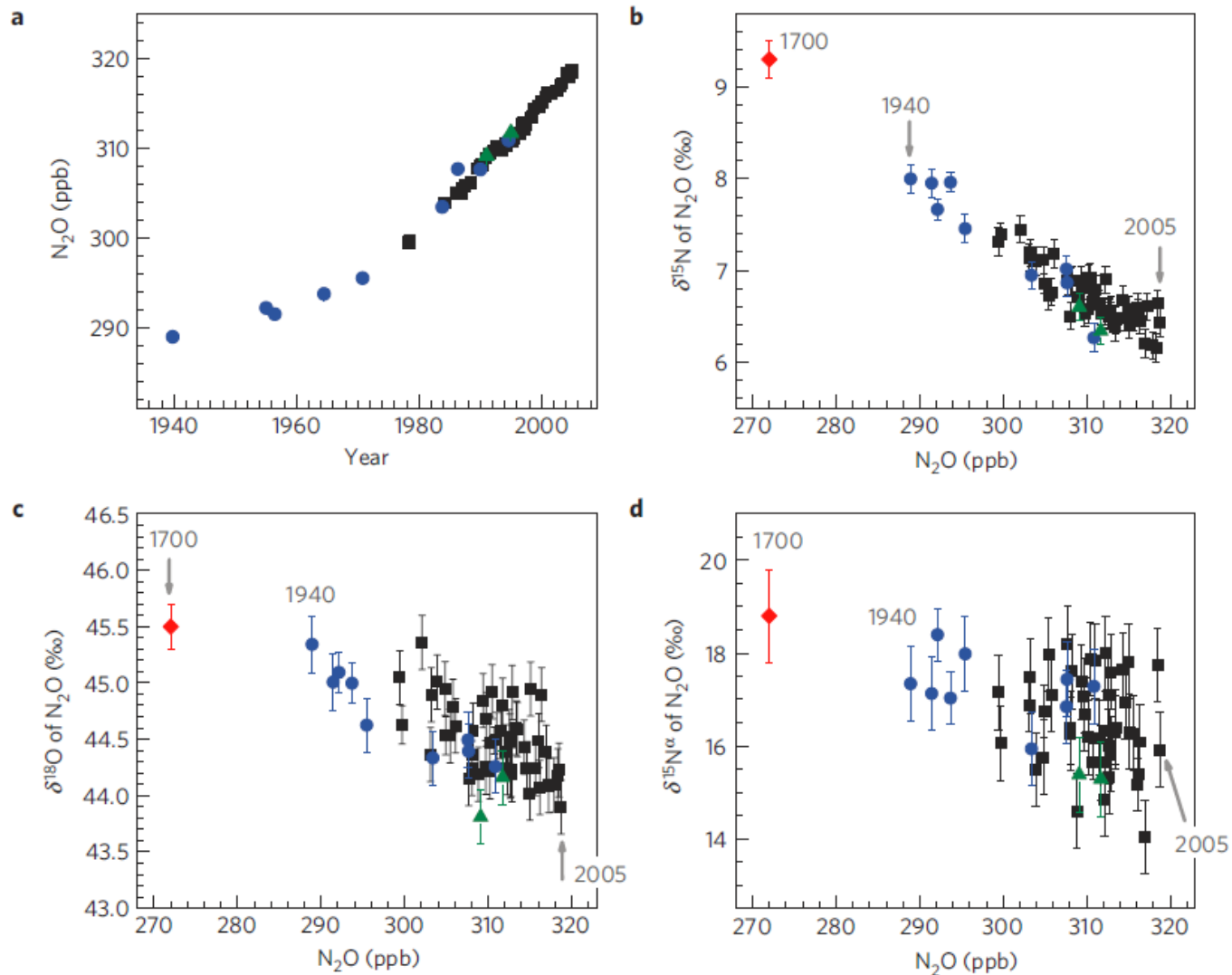
Stratospheric
photochemistry



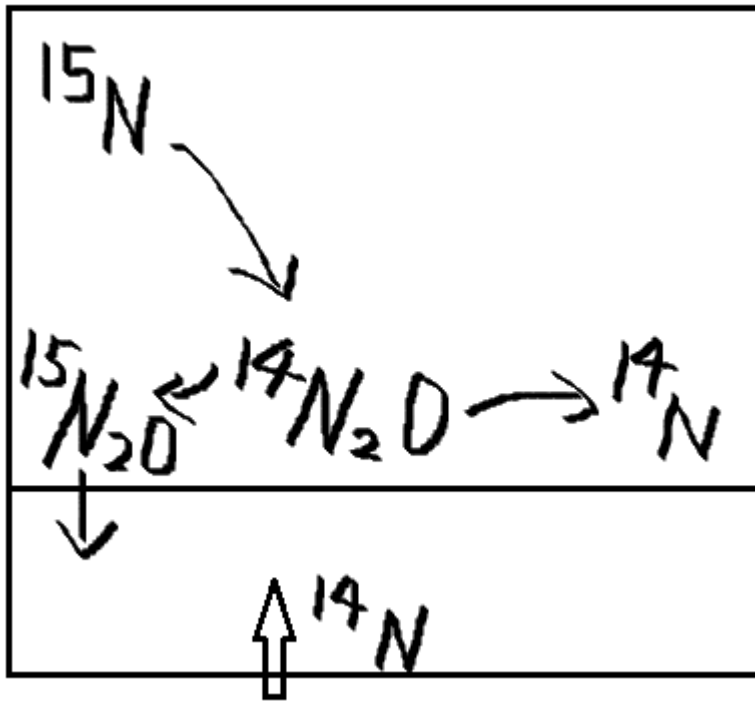


11 firn sample & 50 archived air sample

Changes in N₂O since 1940

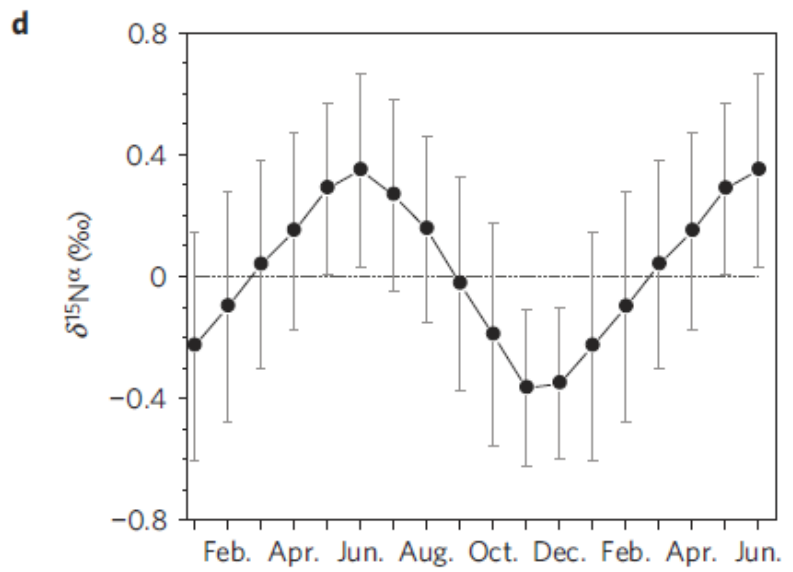
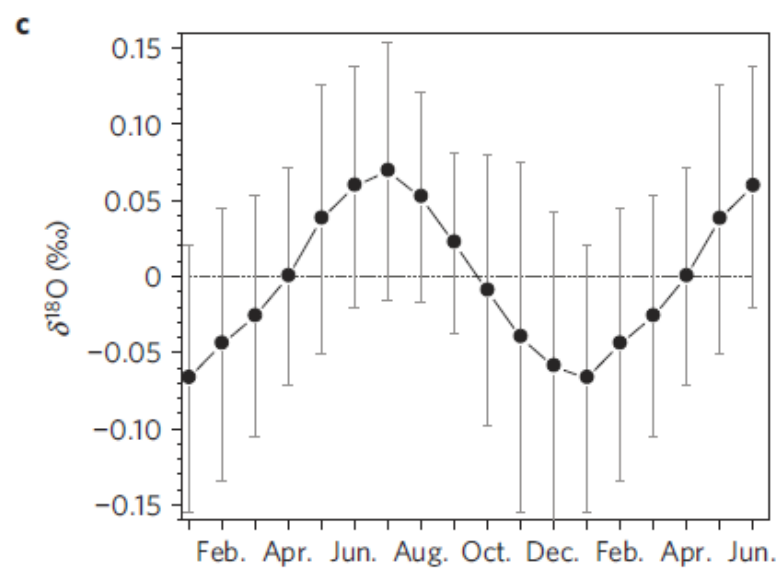
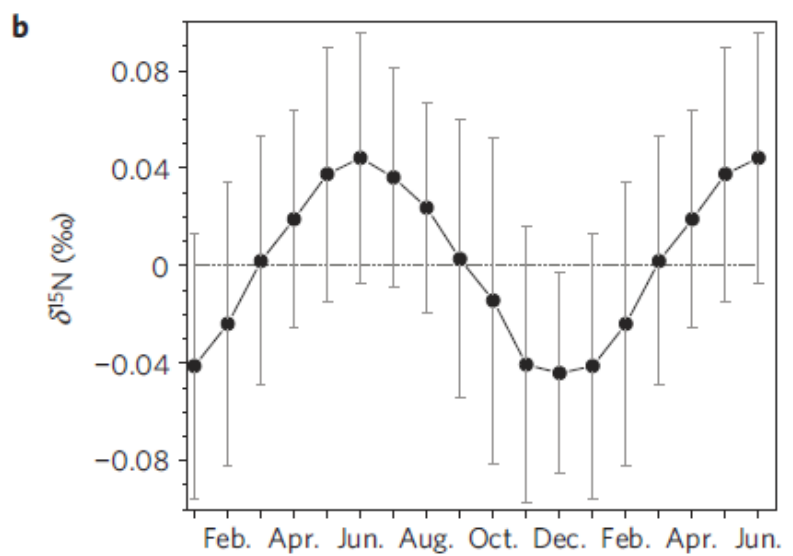
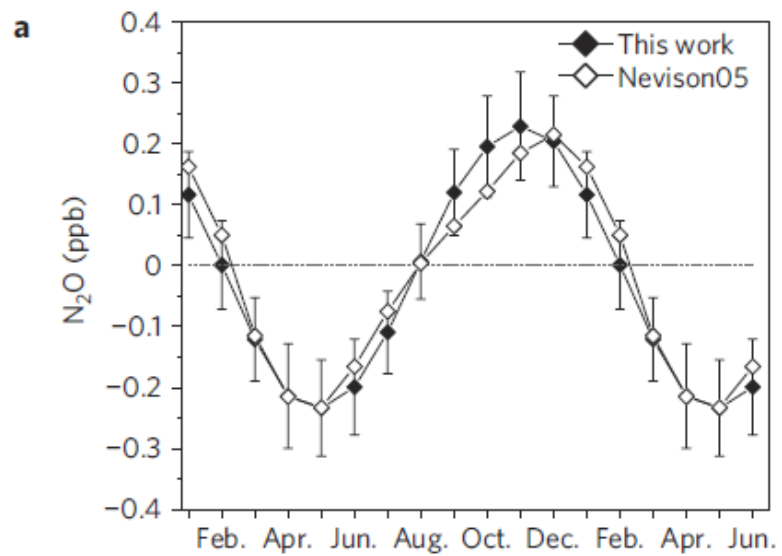


Box Model & Explanation

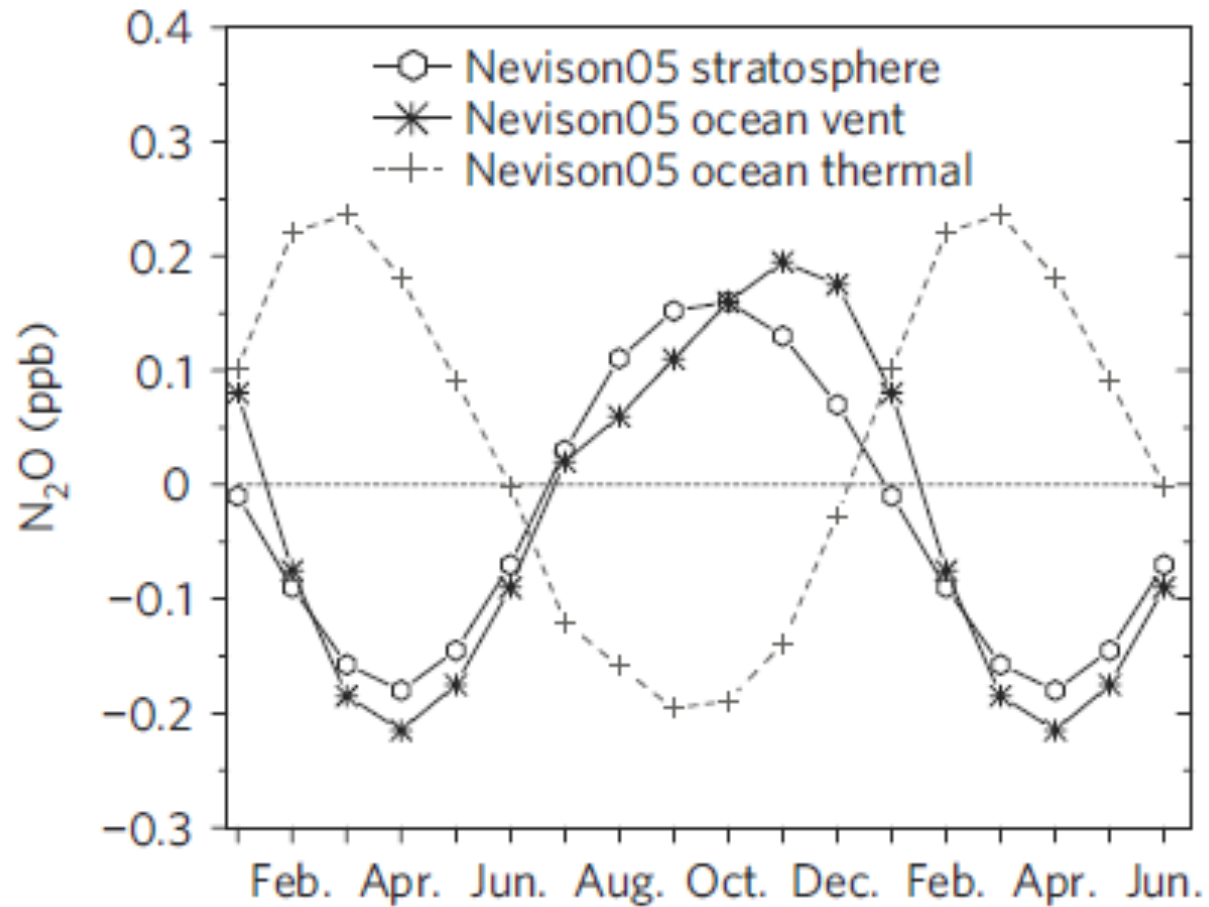


	$\delta_{\text{ANT}}(\text{‰})$	Model results $\delta_{\text{NAT}}(\text{‰})$
$\delta^{15}\text{N}$	-15.6 ± 1.2	-5.3 ± 0.2
$\delta^{18}\text{O}$	32.0 ± 1.3	32.0 ± 0.2

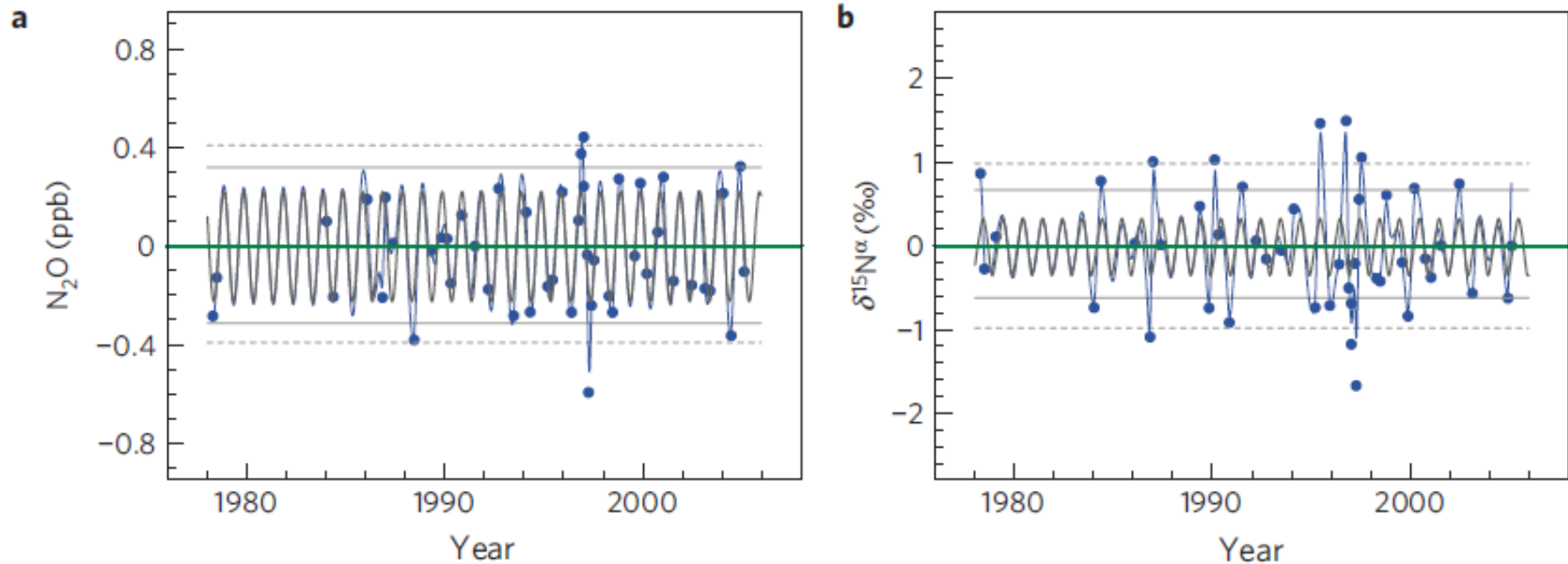
Mean Seasonal Cycles for 1978-2005



Mean Seasonal Cycles for 1978-2005



Large Interannual Variations in the Mean Seasonal Cycles for 1978-2005



Questions ?

Thank you !!