

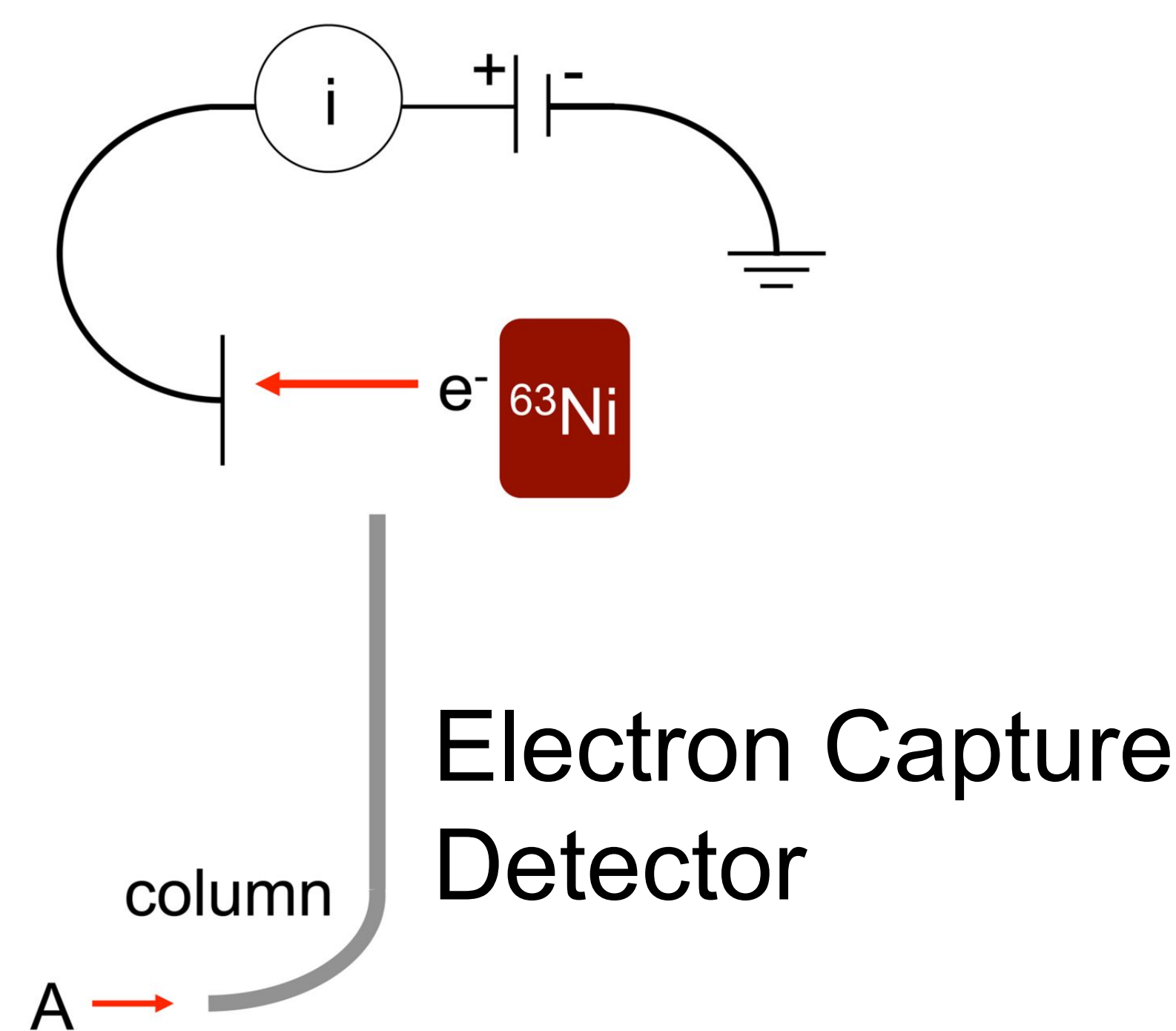
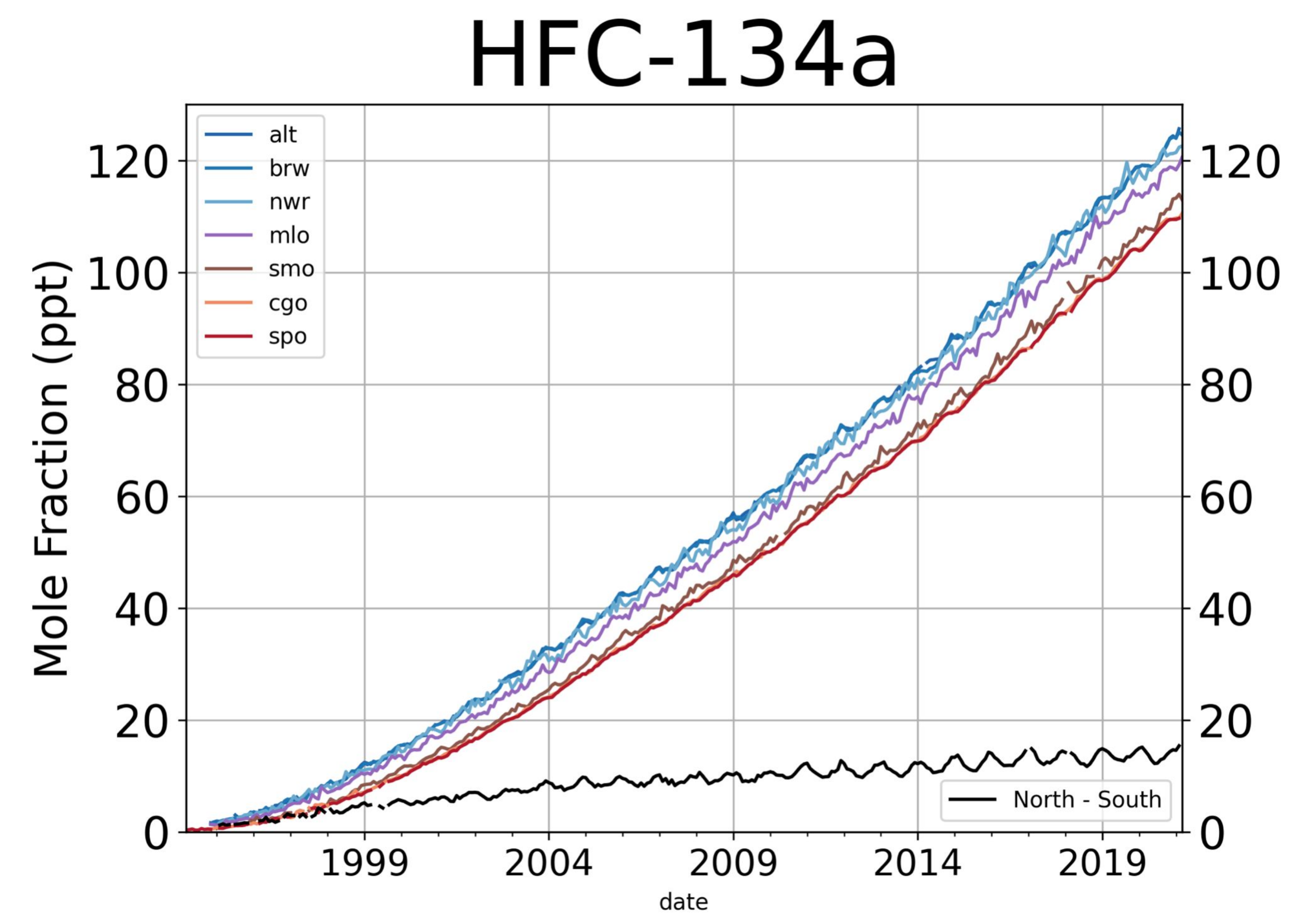
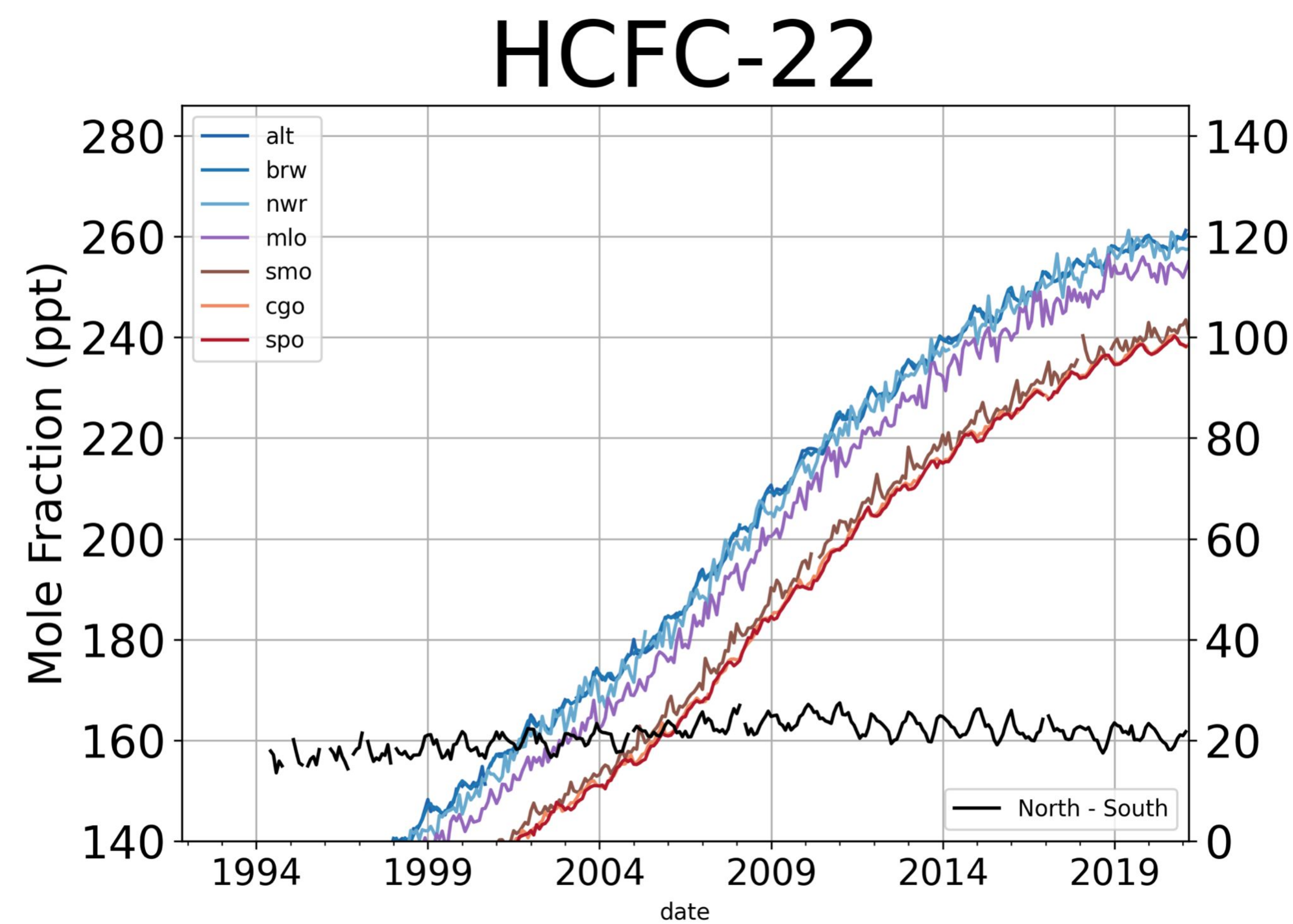
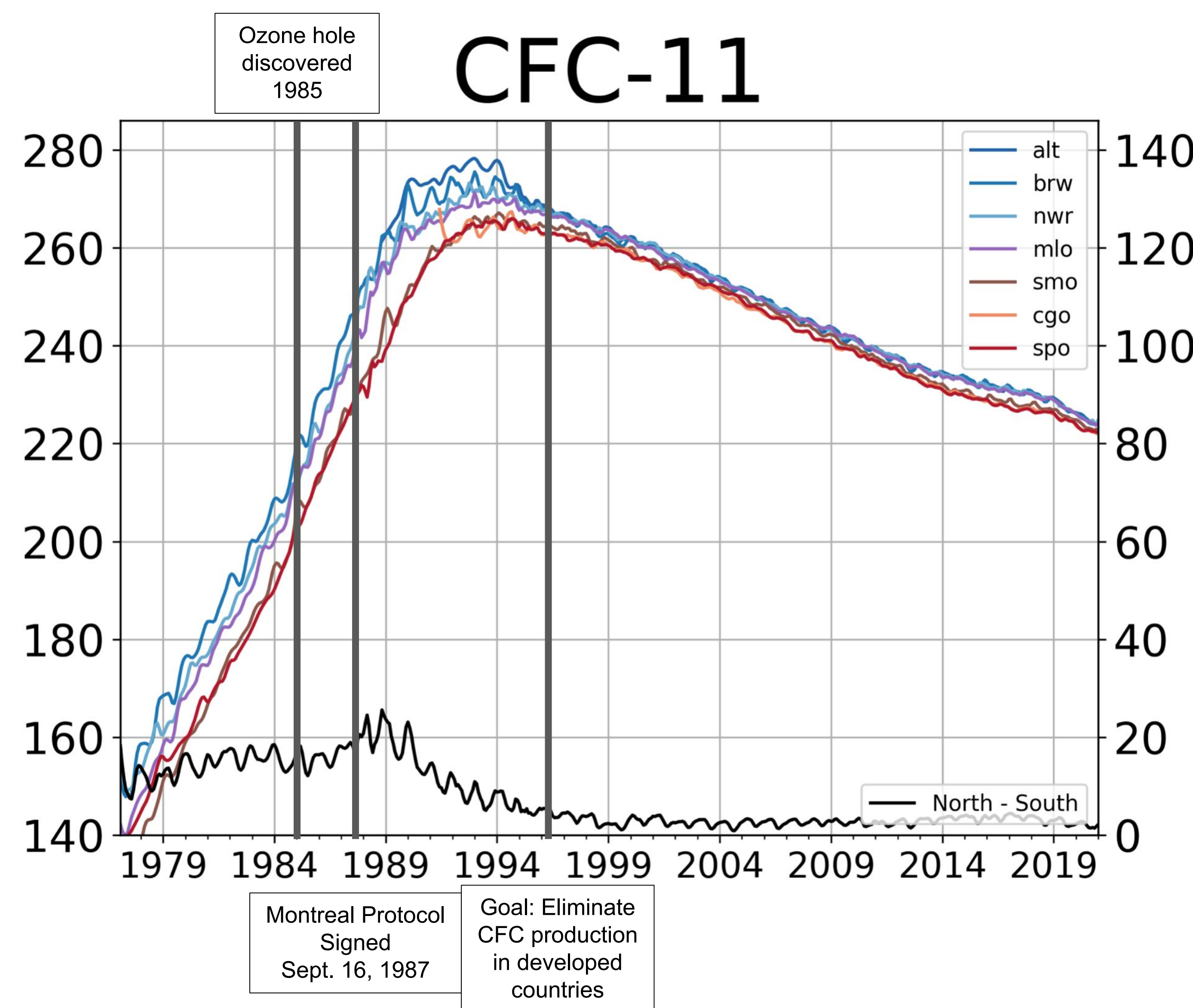
# What can you learn from measurements of a trace gas?



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Halocarbons and other Atmospheric Trace Species



Ozone Depleting Halocarbons are gradually being replaced by less harmful compounds pursuant to the Montreal Protocol.



New GC-ECD Instrument for Flask Analysis (David, Geoff, Fred, Me)

Inverse modeling for understanding regional emissions (Lei)

Aircraft Campaign w/ NASA this Summer (Eric, Fred, Jim)  
NASA Dynamics and Chemistry of the Summer Stratosphere (DCOTSS)  
ER-2 Aircraft



NASA ER-2

Examples of measured gases:  
N<sub>2</sub>O, CFC-12, CFC-113, SF<sub>6</sub>, OCS, CH<sub>3</sub>CCl<sub>3</sub>, CCl<sub>4</sub>, C<sub>2</sub>Cl<sub>4</sub>

Flask Measurement Sites:

- South Pole
- Palmer Station, Antarctica
- Cape Grim, Australia
- American Samoa
- Mauna Loa, HI, USA
- Cape Kumukahi, HI, USA
- Niwot Ridge, CO, USA
- Trinidad Head, CA, USA
- Wisconsin, USA
- Harvard Forest, MA, USA
- Mace Head, Ireland
- Utqiagvik (Barrow), AK, USA
- Alert, Canada
- Summit, Greenland
- Negev Desert, Israel
- Anmyeon-do, Republic of Korea

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Explore Trace Gas Measurements at <https://www.esrl.noaa.gov/gmd/hats/data.html>