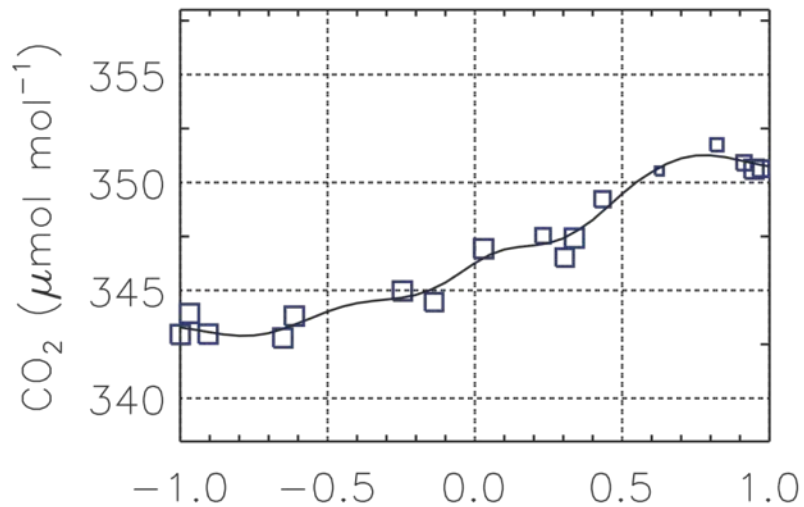


**Spatial/temporal patterns in the atmosphere:
The carbon cycle revealed.**

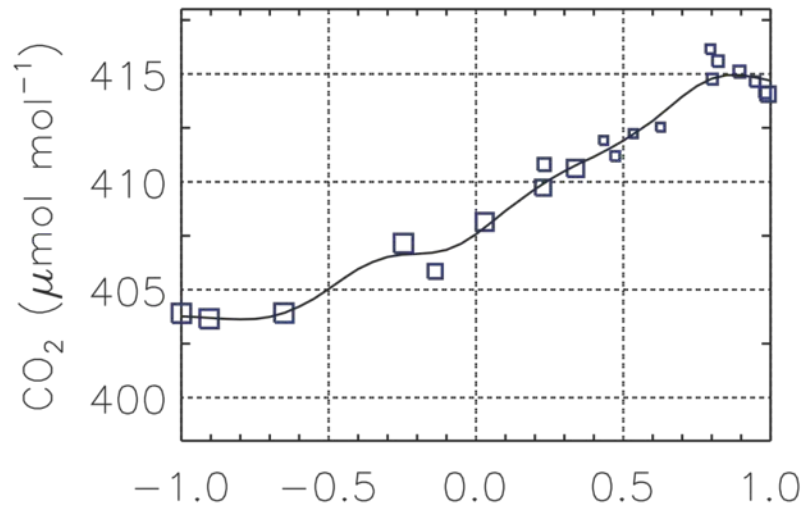
*Pieter Tans
NOAA ESRL GMD
Boulder, CO 80305*

**Global Annual Monitoring Conference
21 May 2019**

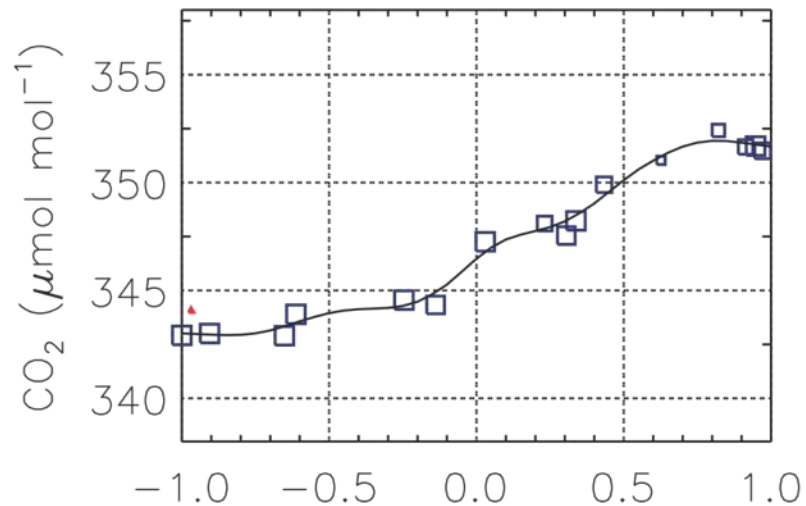
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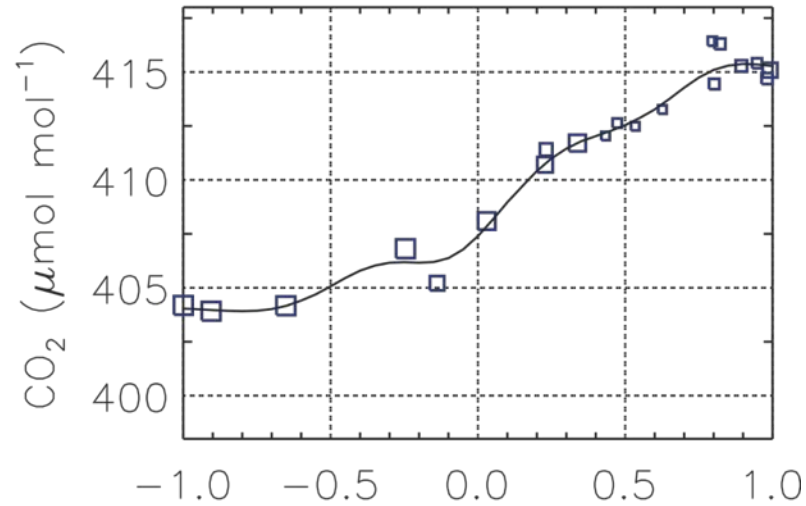
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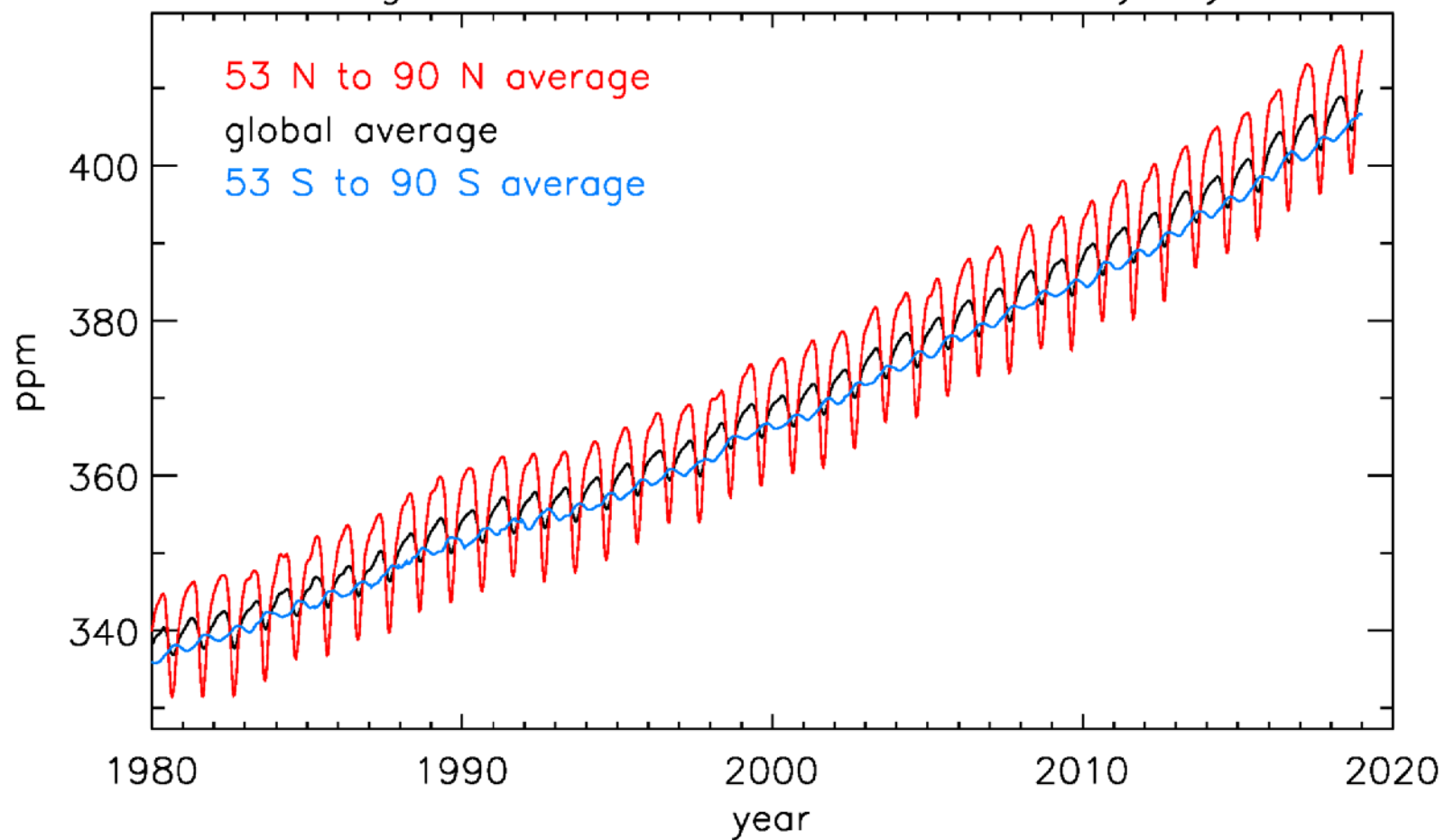
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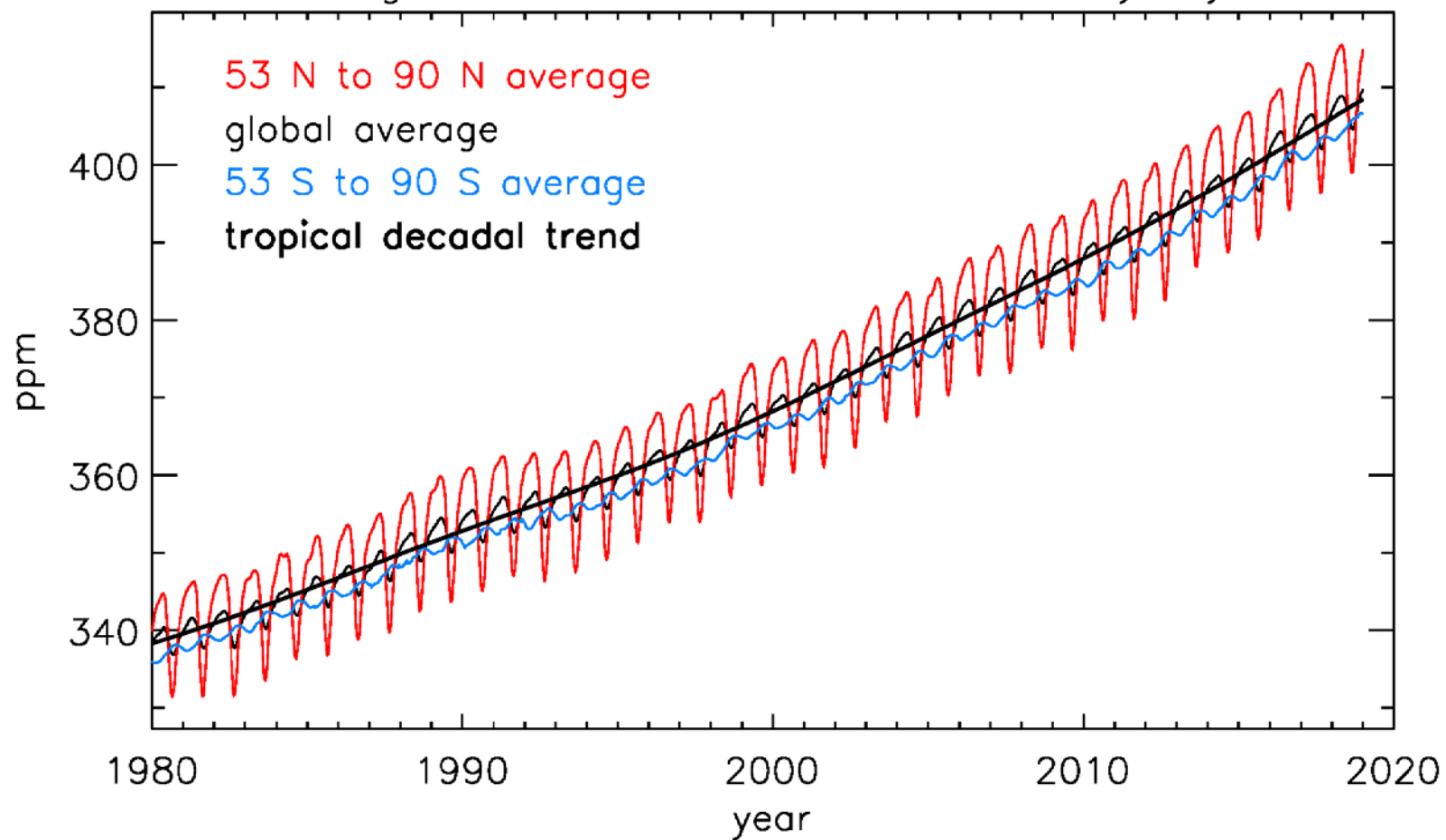
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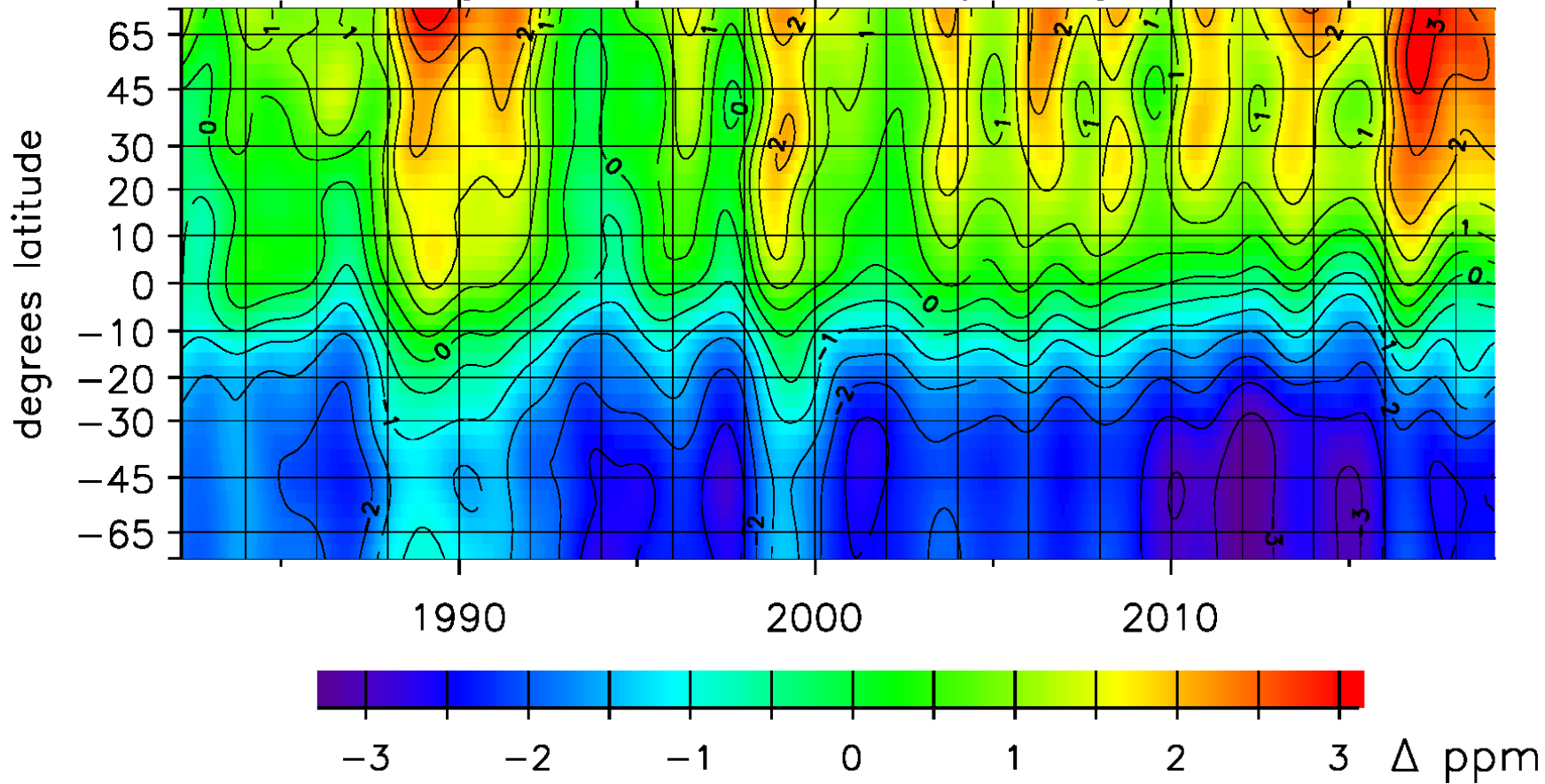
background CO2 in marine boundary layer



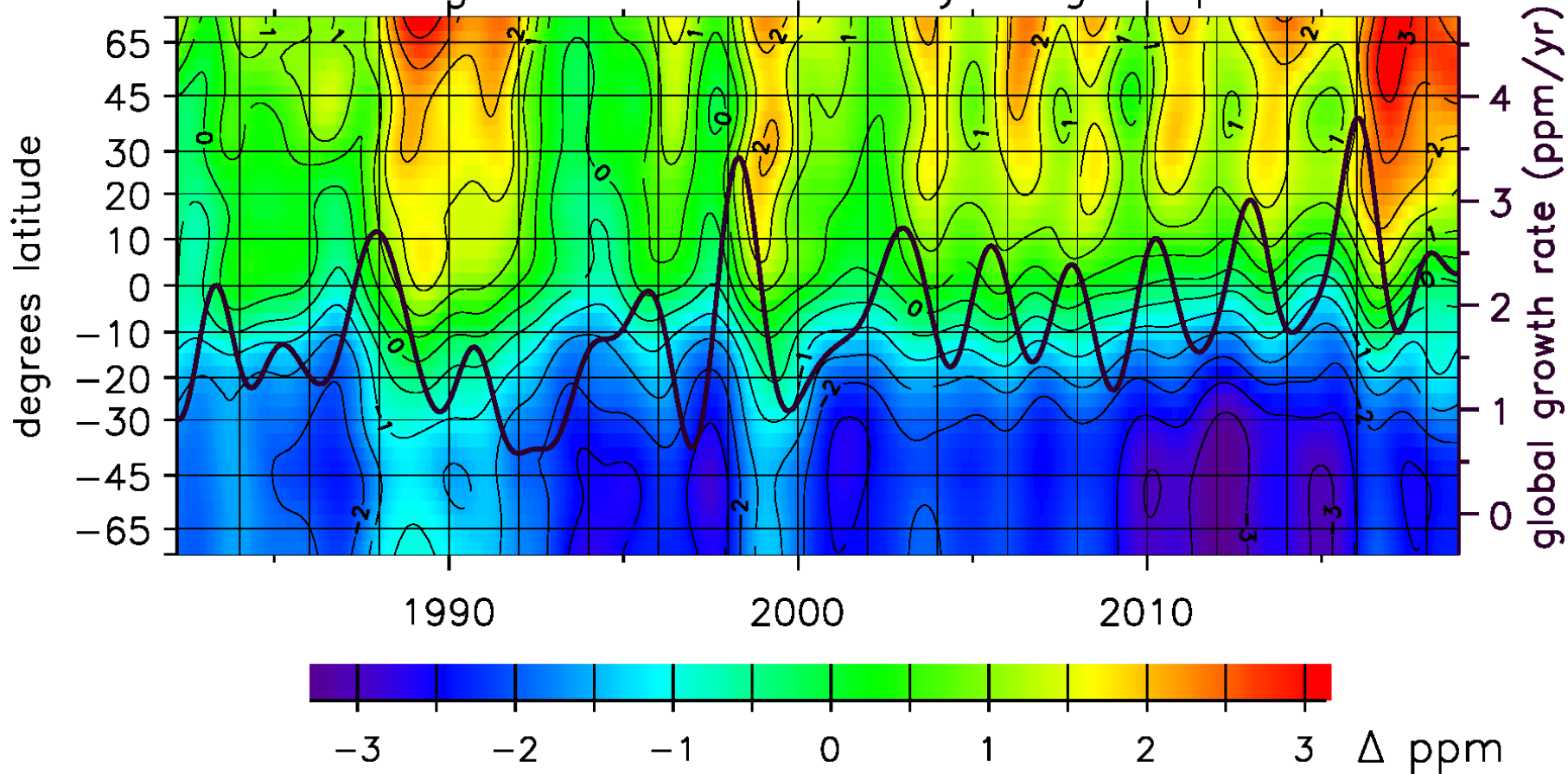
background CO2 in marine boundary layer



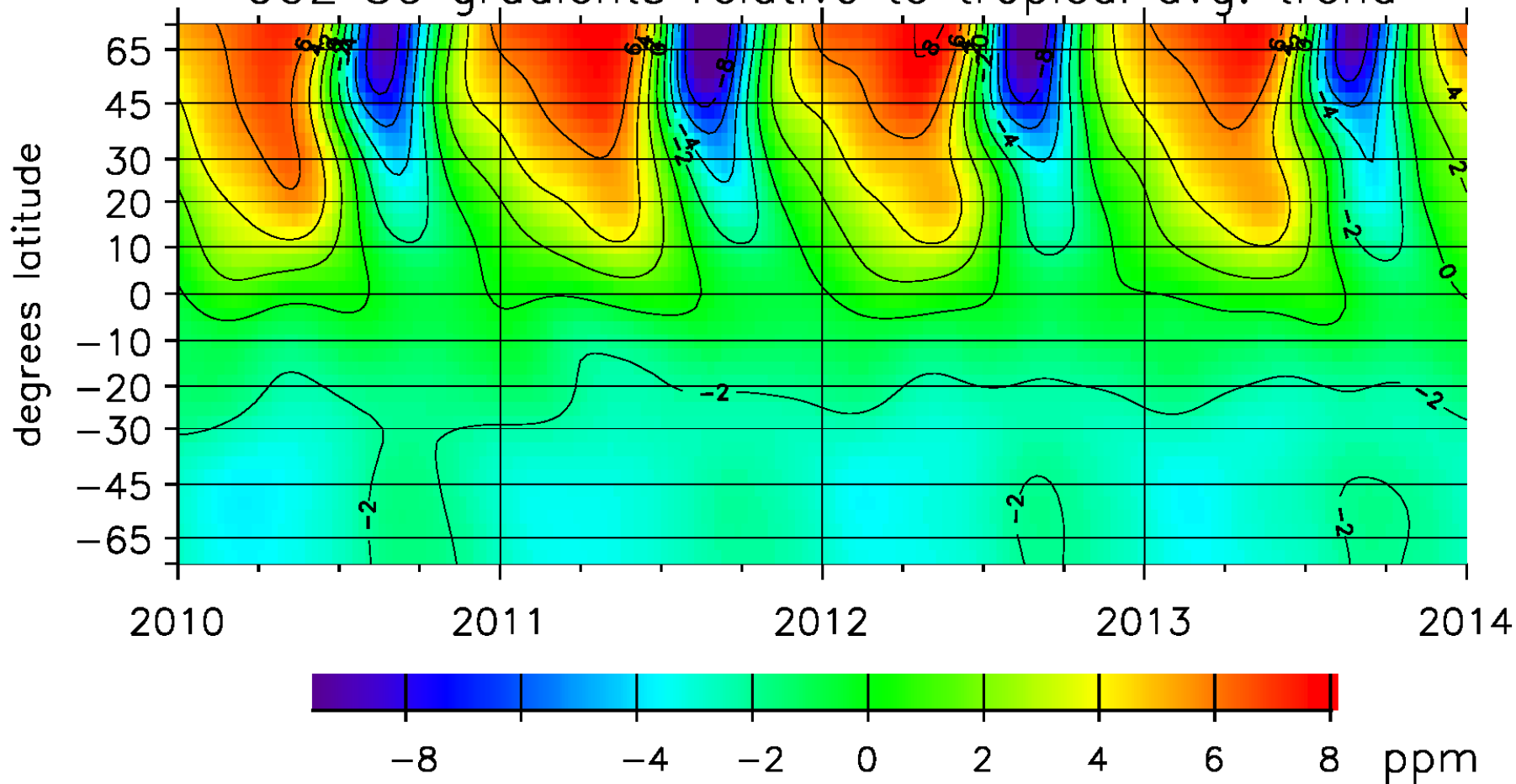
CO2 ann. gradients minus 9-yr avg. tropical zone



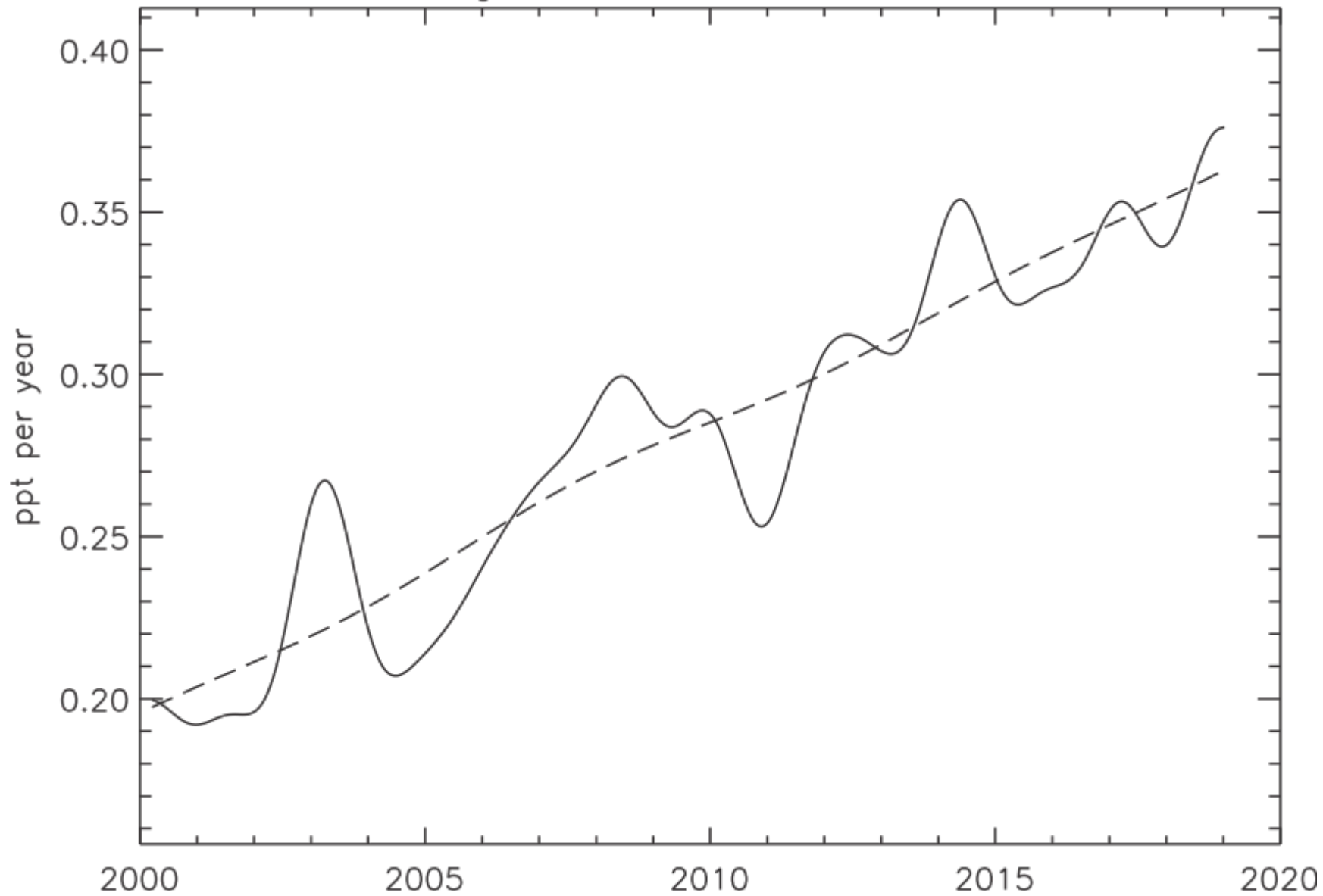
CO2 ann. gradients minus 9-yr avg. tropical zone



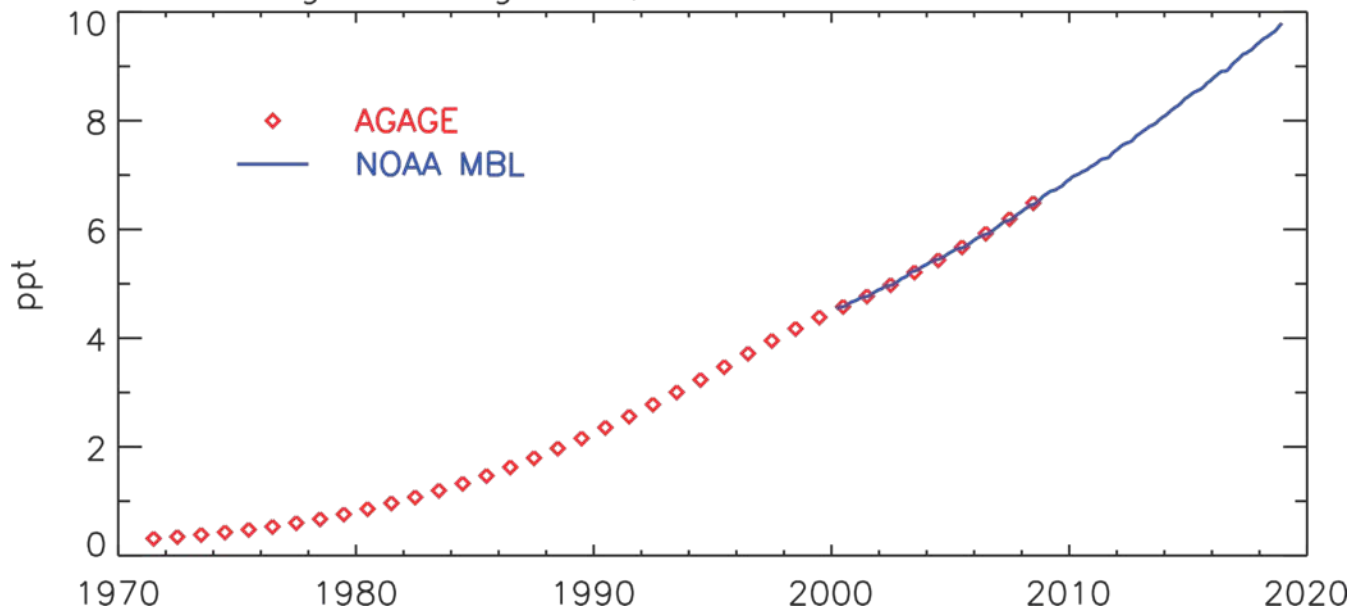
CO2 SC gradients relative to tropical avg. trend



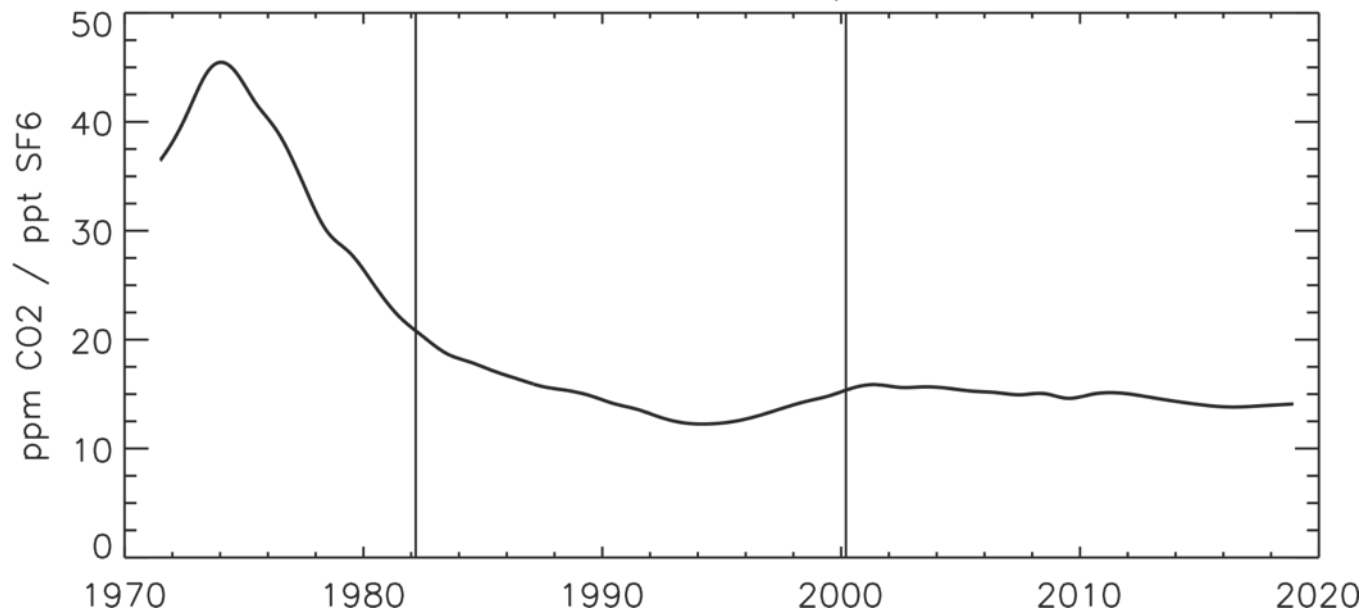
Annual growth rate Sulfur Hexafluoride



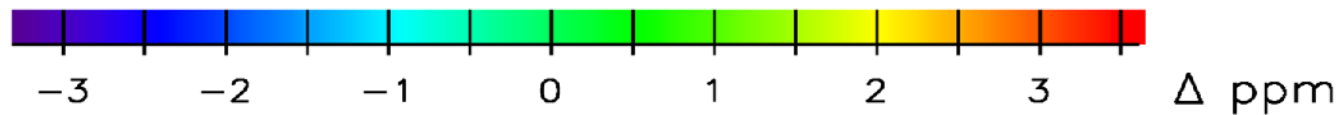
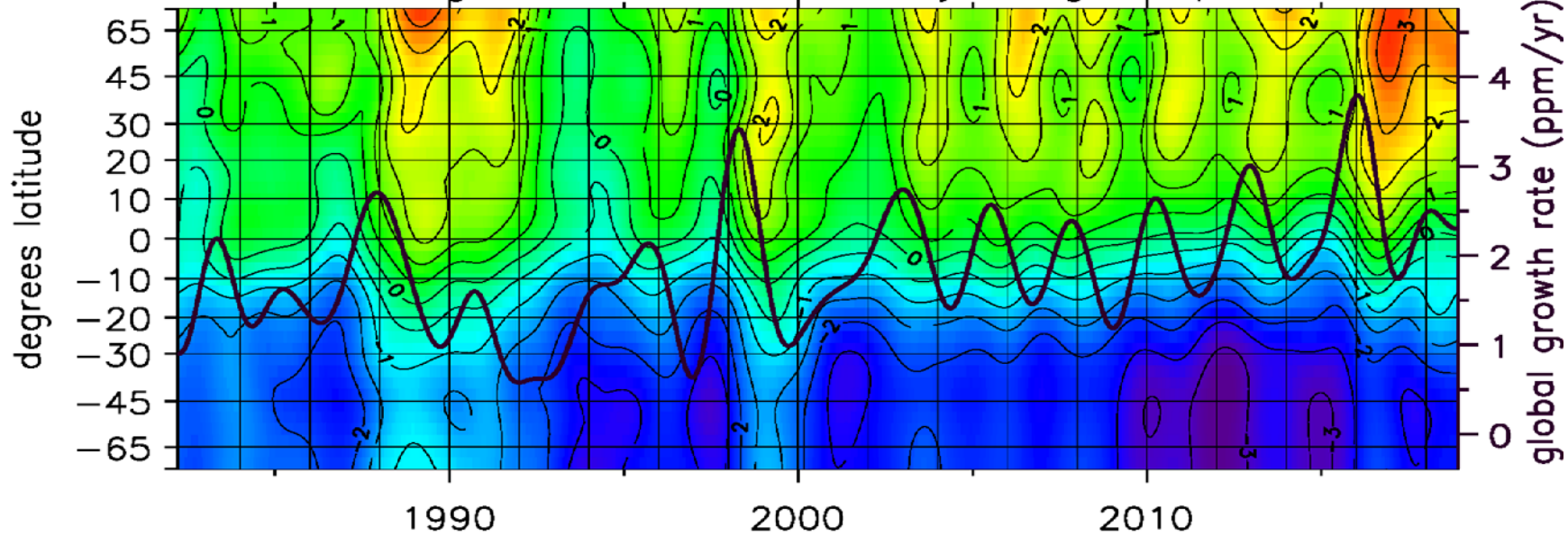
global avg. SF6, AGAGE and NOAA MBL



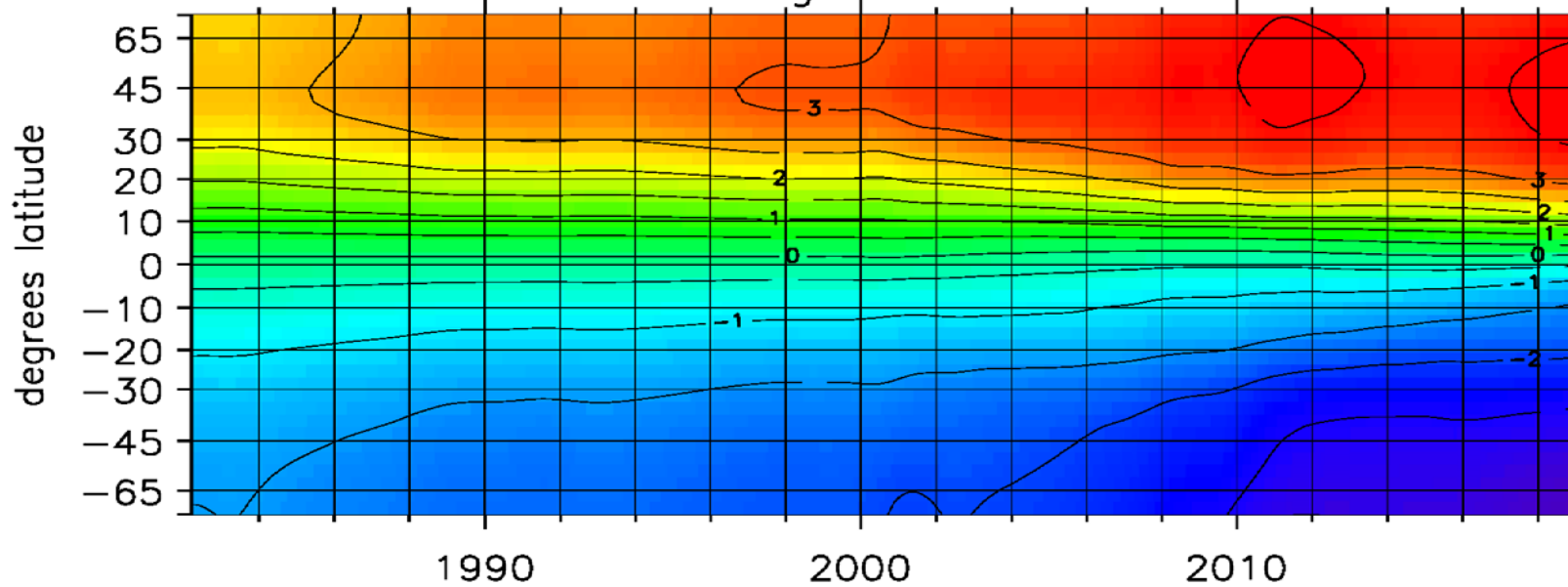
emissions molar ratio, FF to SF6



CO2 ann. gradients minus 9-yr avg. tropical zone



FF north-south gradients based on SF6



CO2 1.0-yr DS diff. from tropics, FF removed

