

Biogenic Hydrocarbons and the Atmosphere: An European Perspective



Air Quality in Europe



From Regional to Local Scales



Radicals in Forest Air



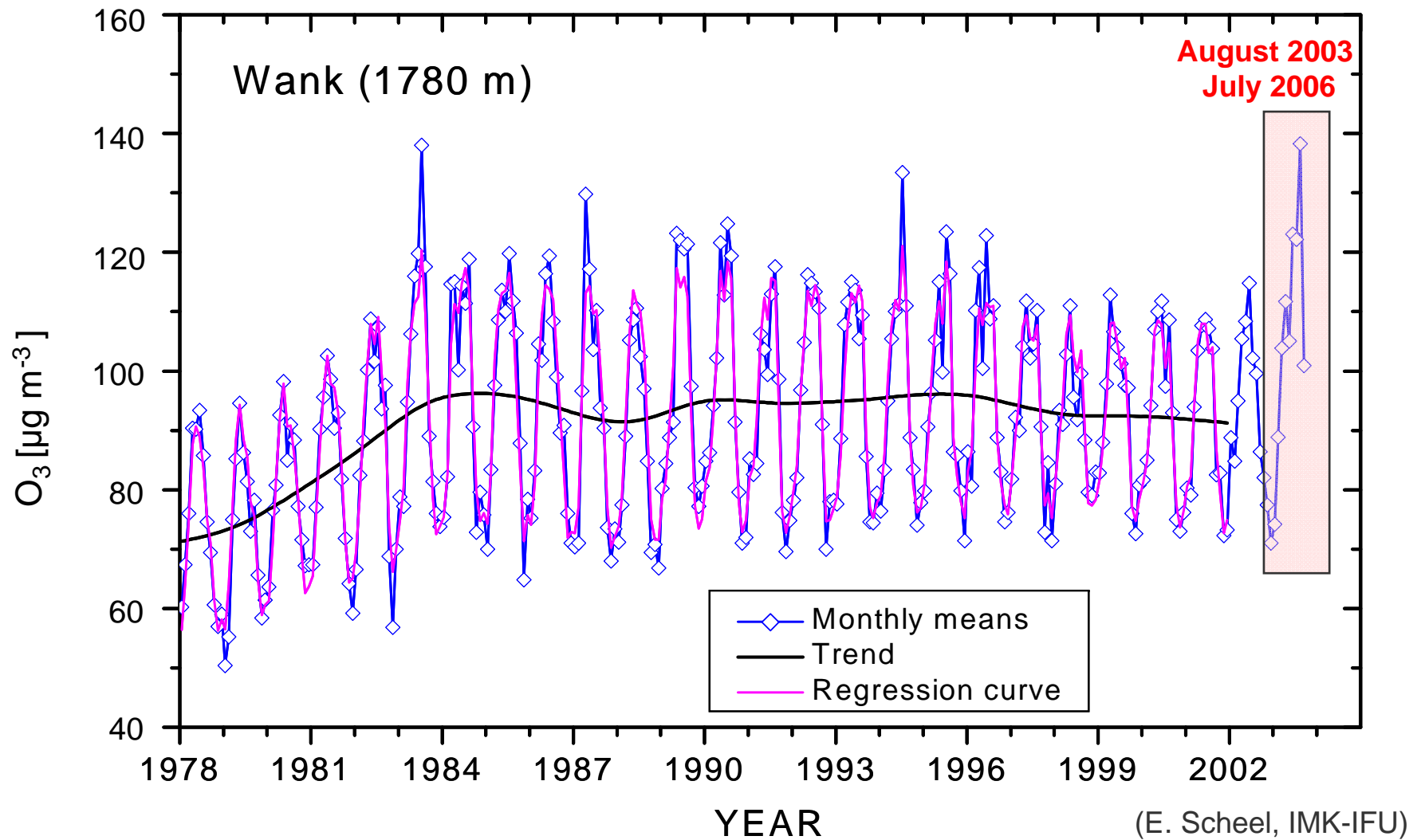
Outlook: Climate and BVOC

Rainer Steinbrecher



Air Quality in Europe

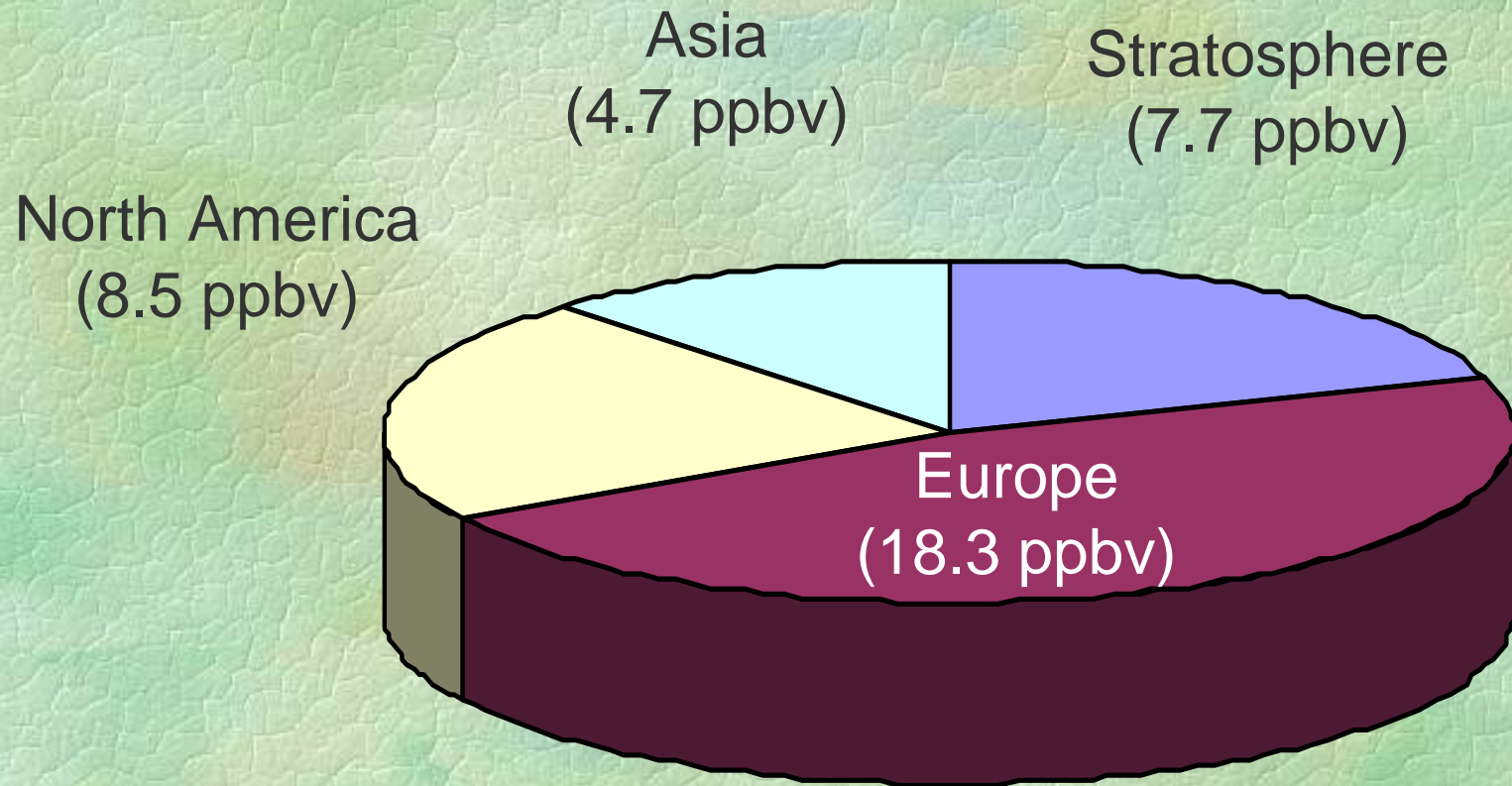
Ozone Wank (1780 m asl.), Garmisch-Partenkirchen



Air Quality in Europe

Surface Ozone: Sources

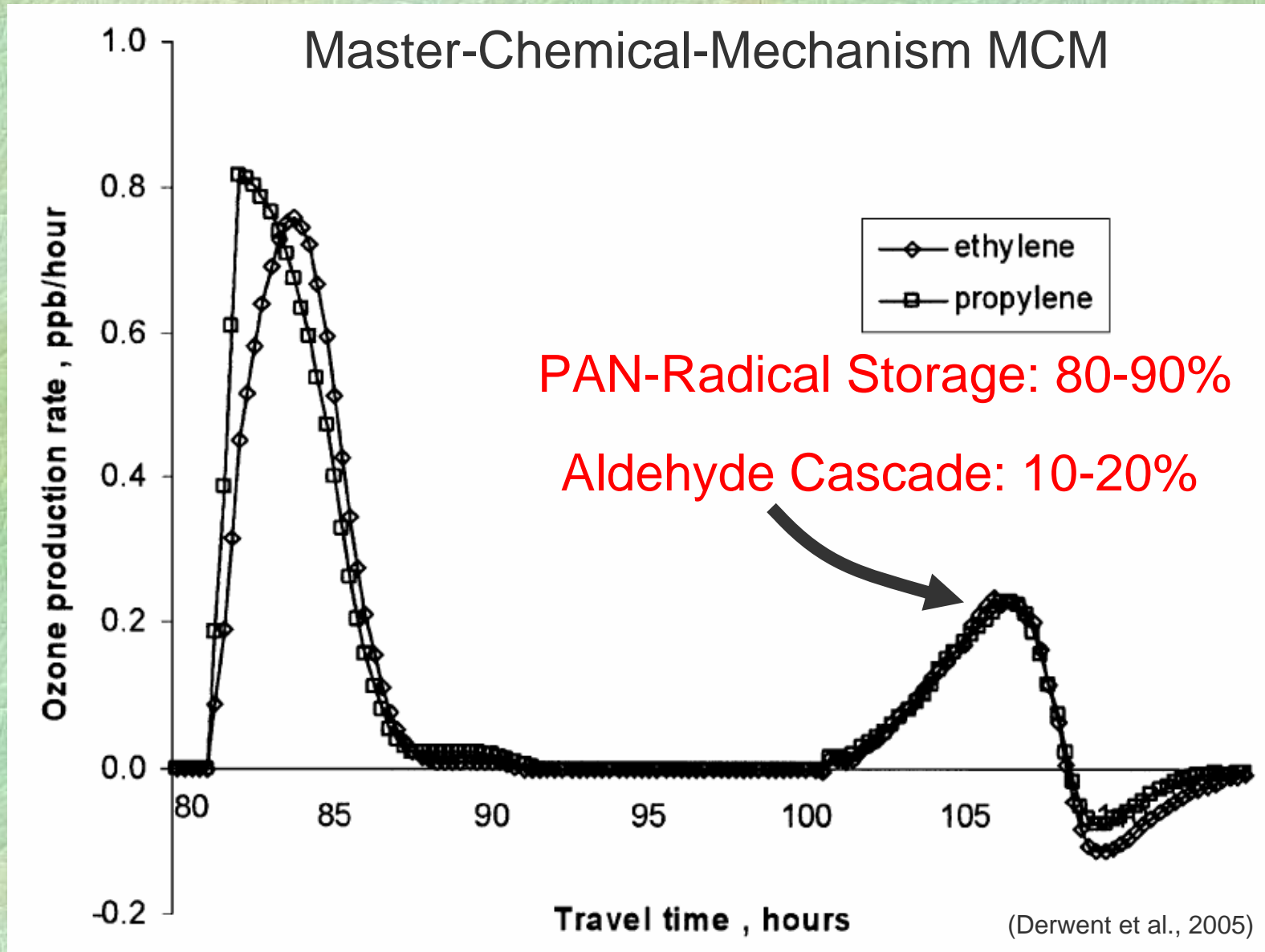
Waldhof, Germany (O_3 background 1998: 39,2 ppbv)



Transport or Production?

(Derwent et al., 2004)

Air Quality in Europe



Air Quality in Europe

Surface Ozone: Trends

- Mace Head, Ireland (background ozone)
- 12-months running mean
- 1990 to 2003
- Increase

+ 0.48 ppbv per year

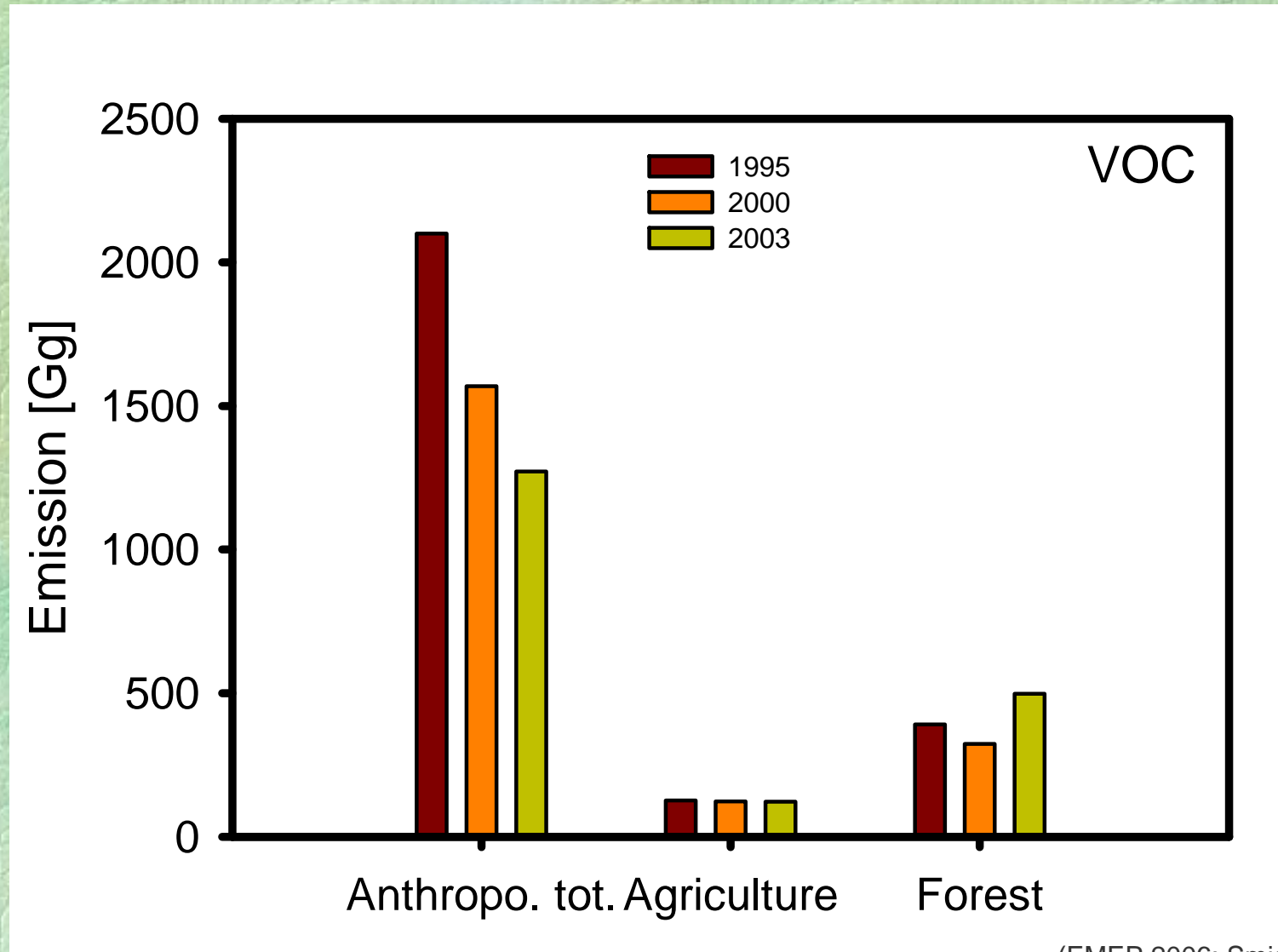
- Will continue at a similar rate!

What are the Reasons for that?

(Derwent et al., 2006)

From Regional to Local Scales

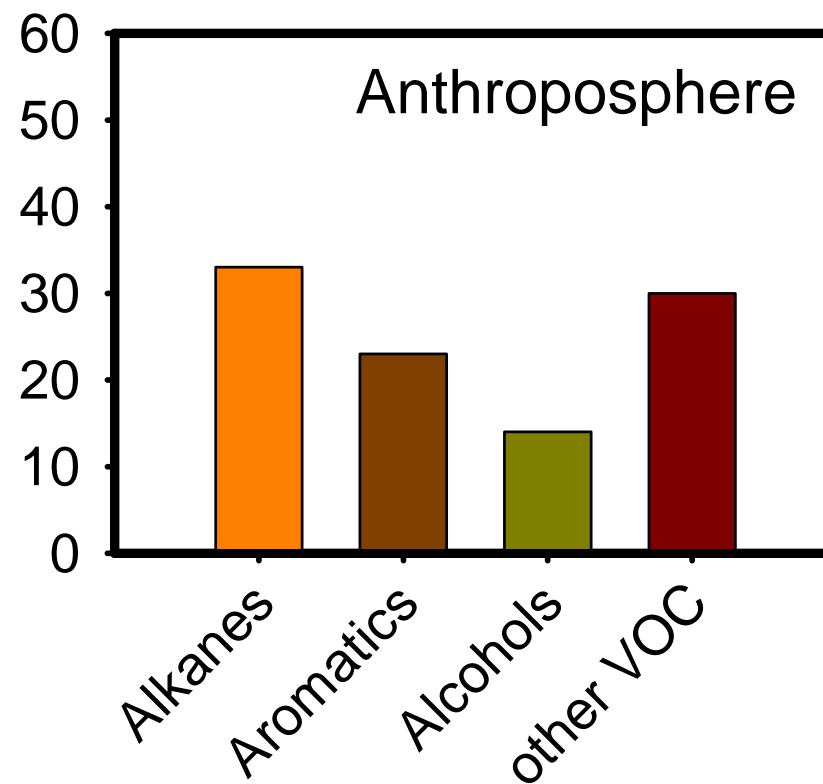
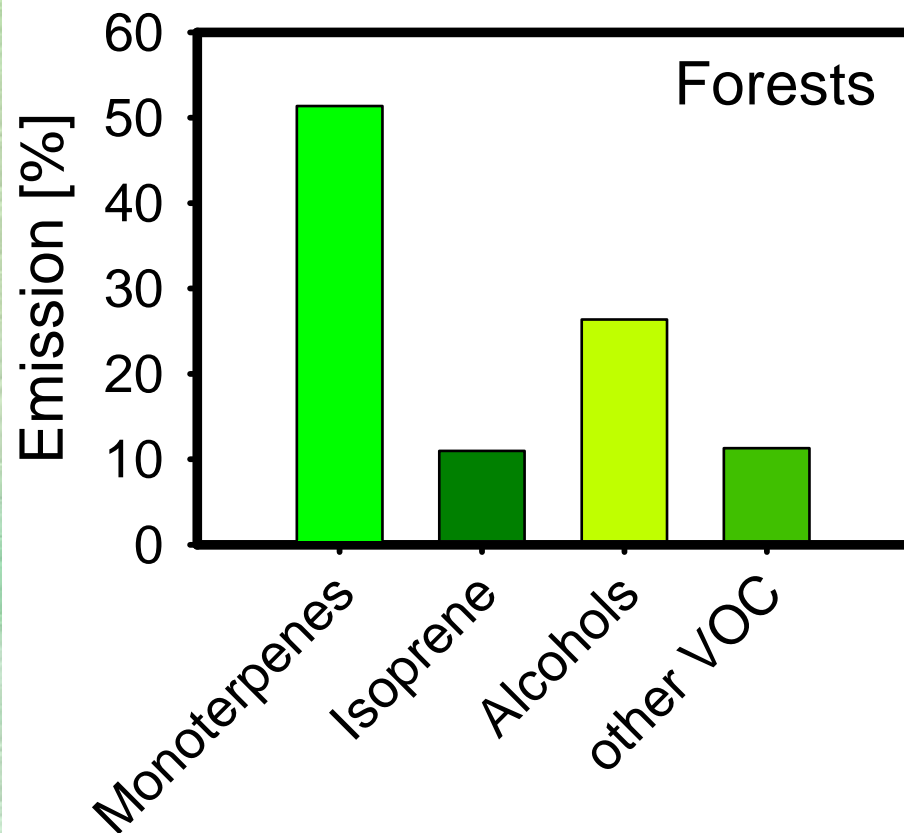
Emissions in Germany: Sources and Trends



(EMEP 2006; Smiatek, Steinbrecher 2006)

From Regional to Local Scales

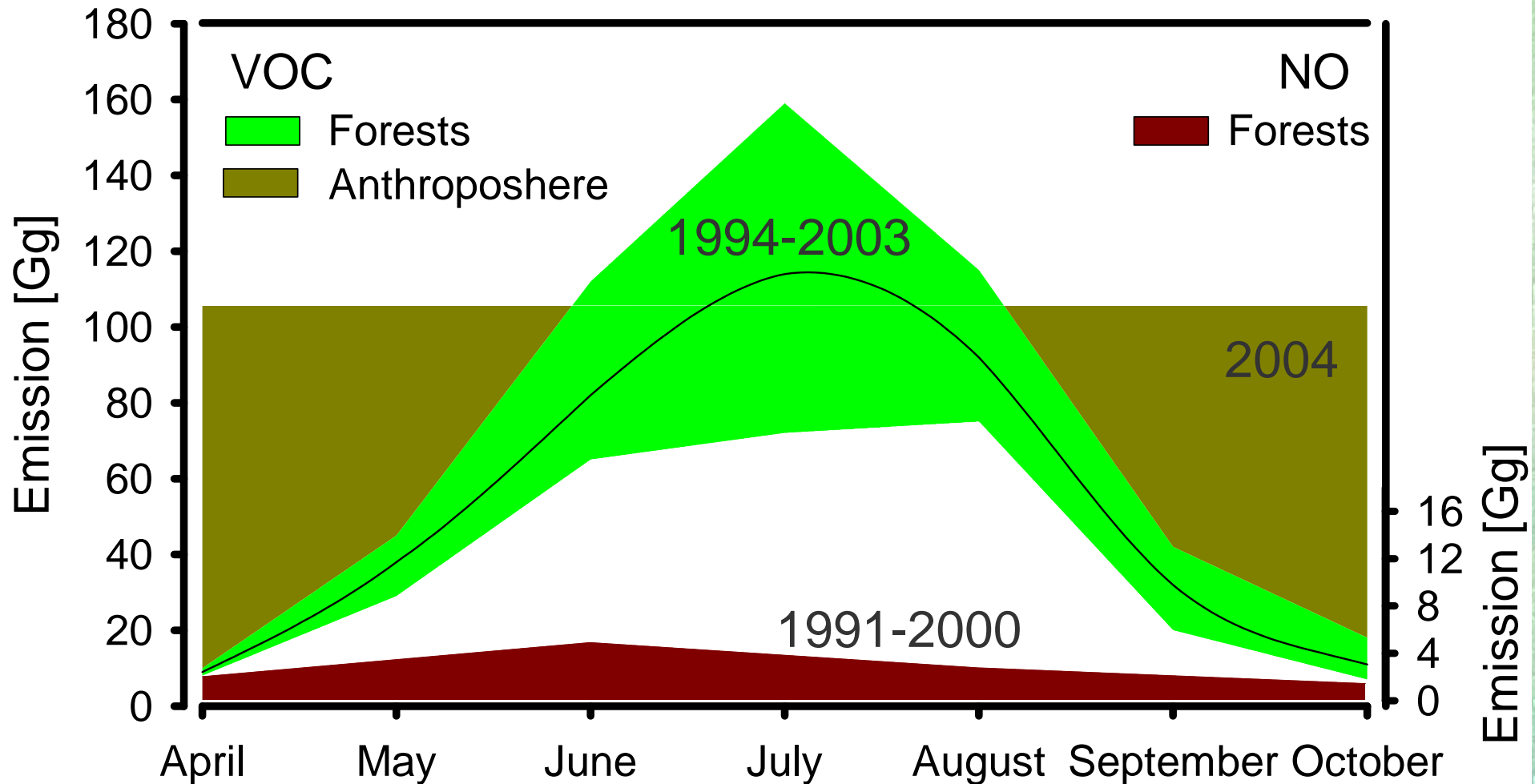
Emissions in Germany: Source Split



(Smiatek, Steinbrecher 2006; Theloke, Friedrich 2007)

From Regional to Local Scales

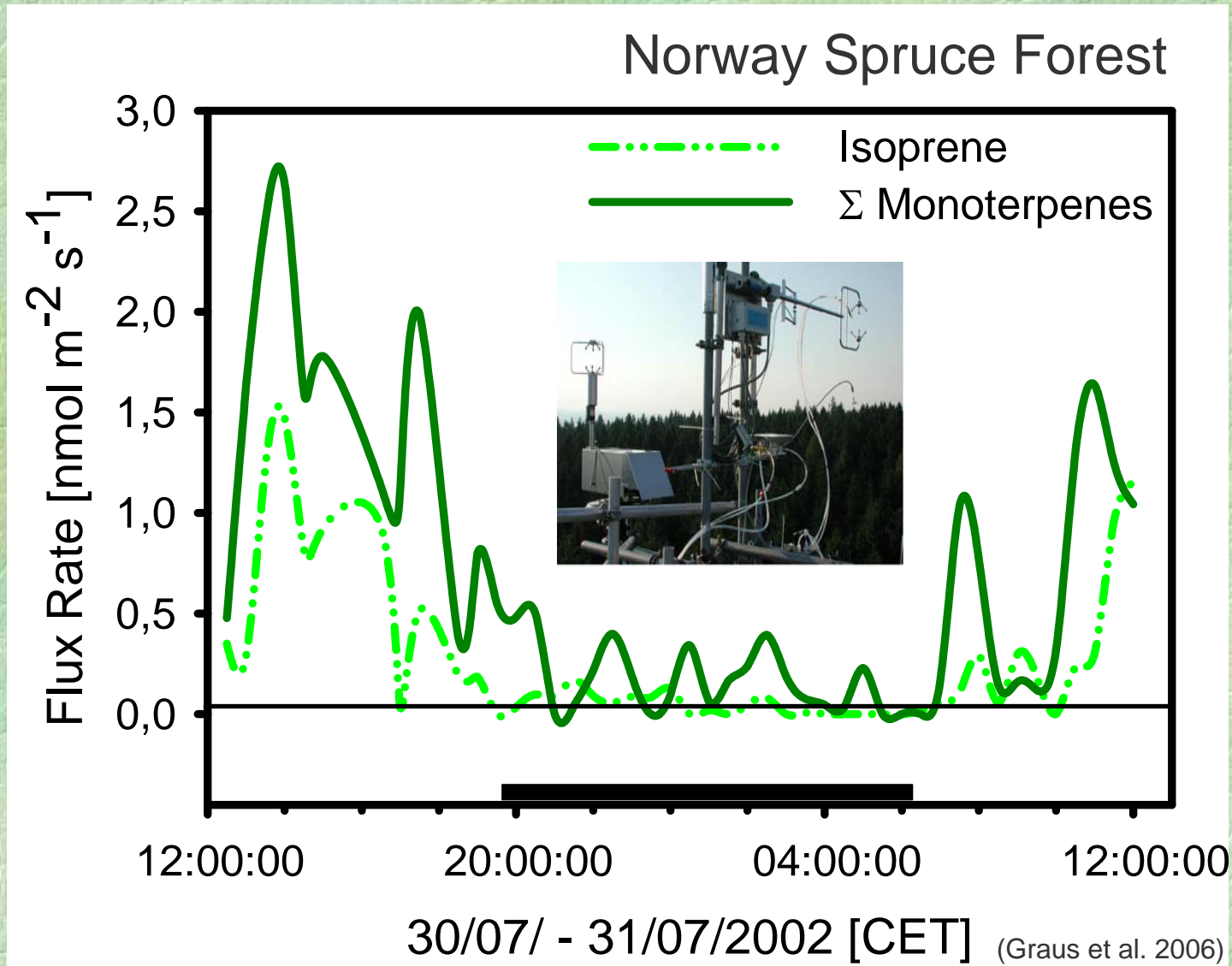
Emissions in Germany: Monthly and Annual Variability



(EMEP 2006; Smiatek, Steinbrecher 2006)

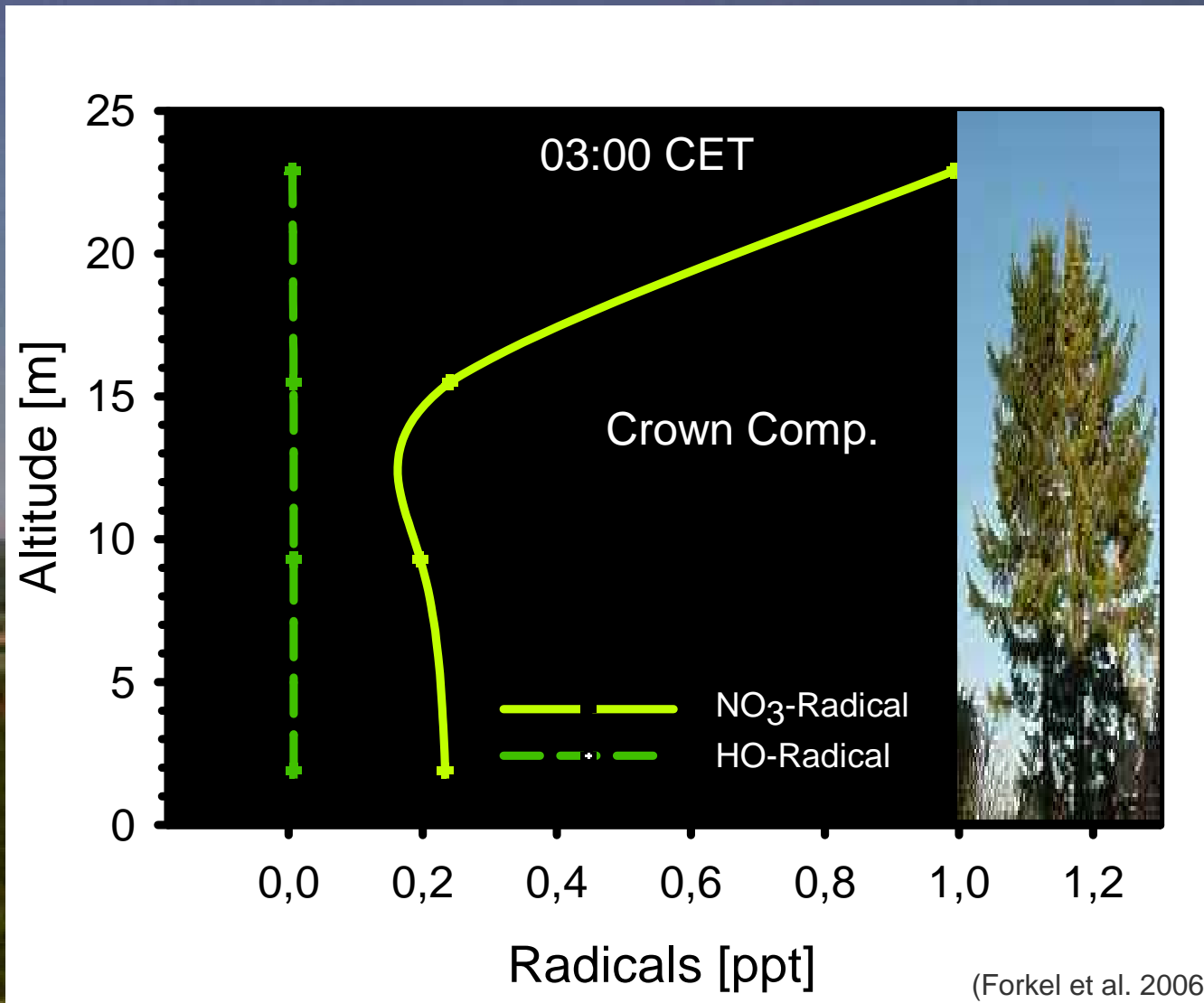
From Regional to Local Scales

Emissions of in Germany: Hourly Variability



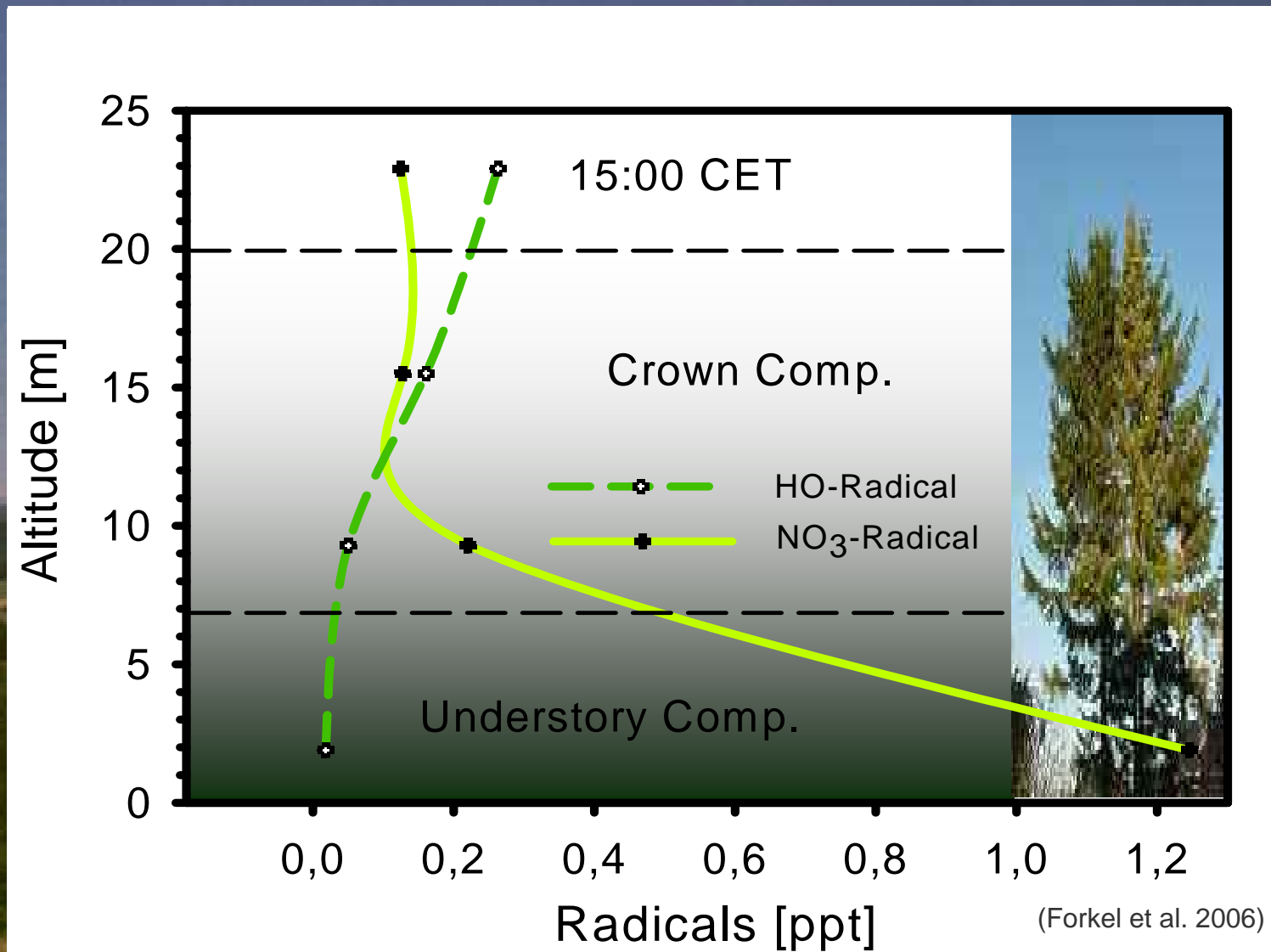
Radicals in Forest Air

Norway Spruce Forest: Night Time



Radicals in Forest Air

Norway Spruce Forest: Day Time

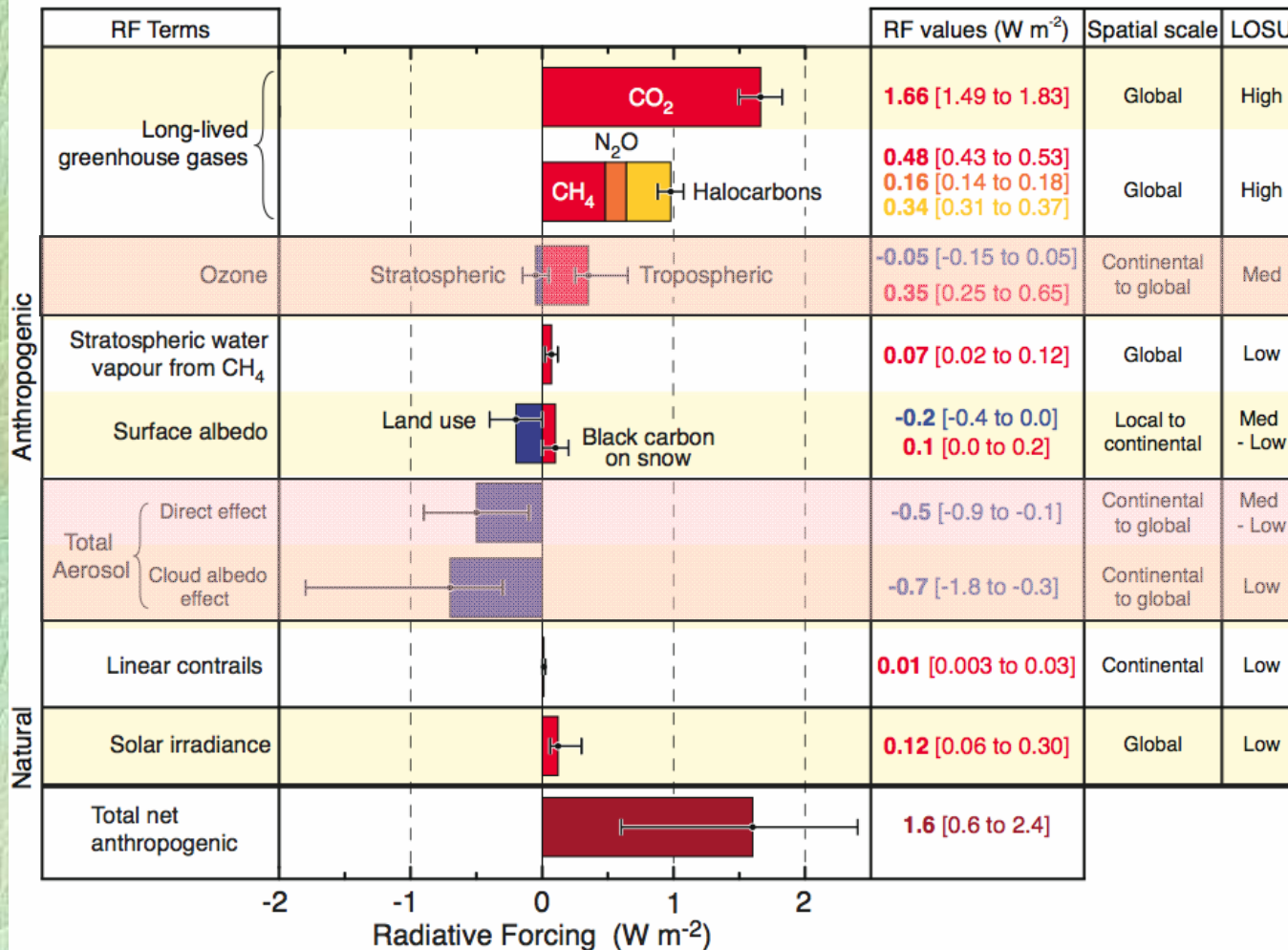


(Forkel et al. 2006)

Global Change and VOC

VOC Oxidation in the Atmosphere

Radiative Forcing Components



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References:

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