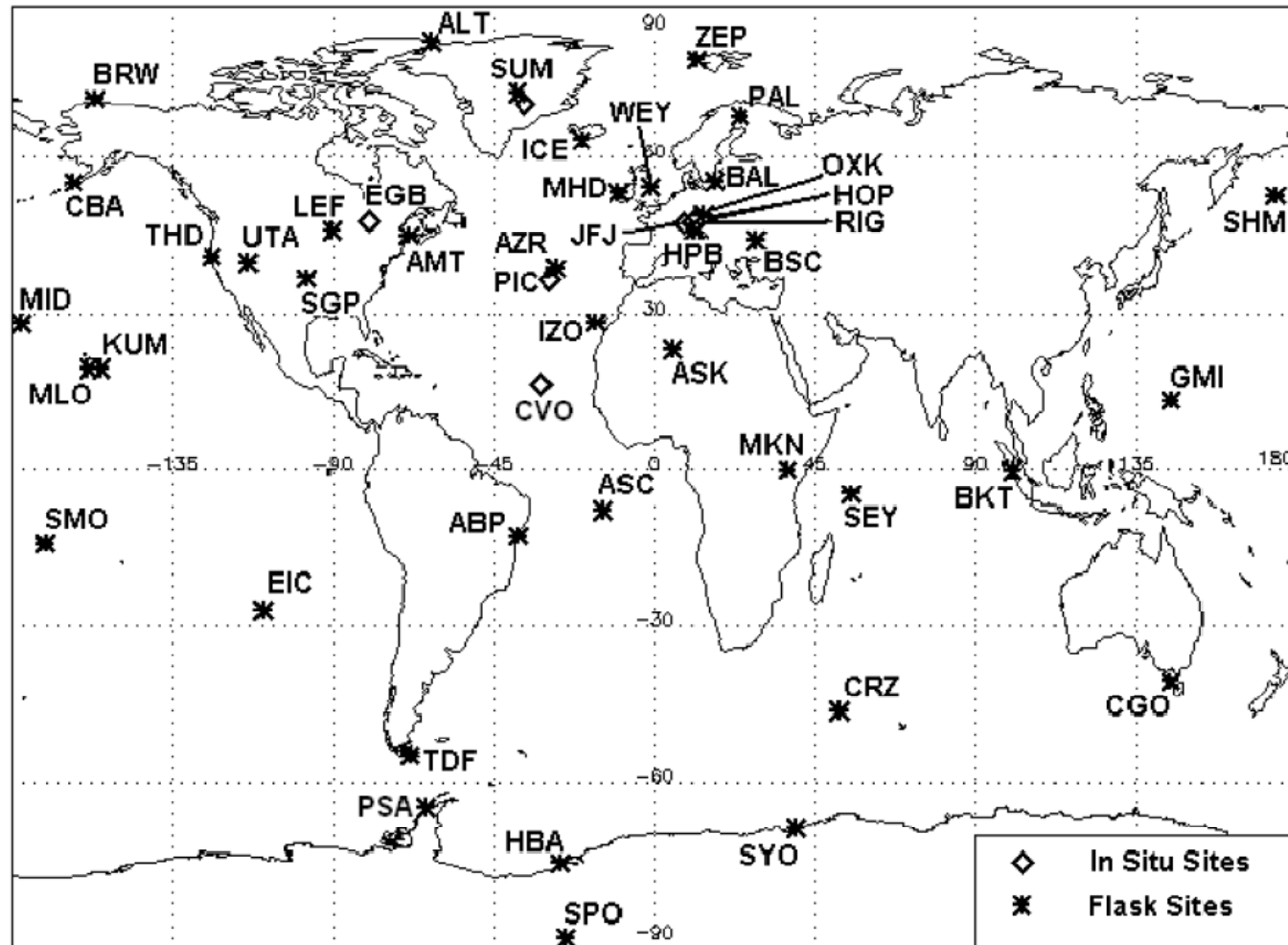


QA/QC in the VOC-Network in WMO GAW: The WCC-VOC

The GAW-VOC Network in 2010



Rainer Steinbrecher
Elisabeth Weiß

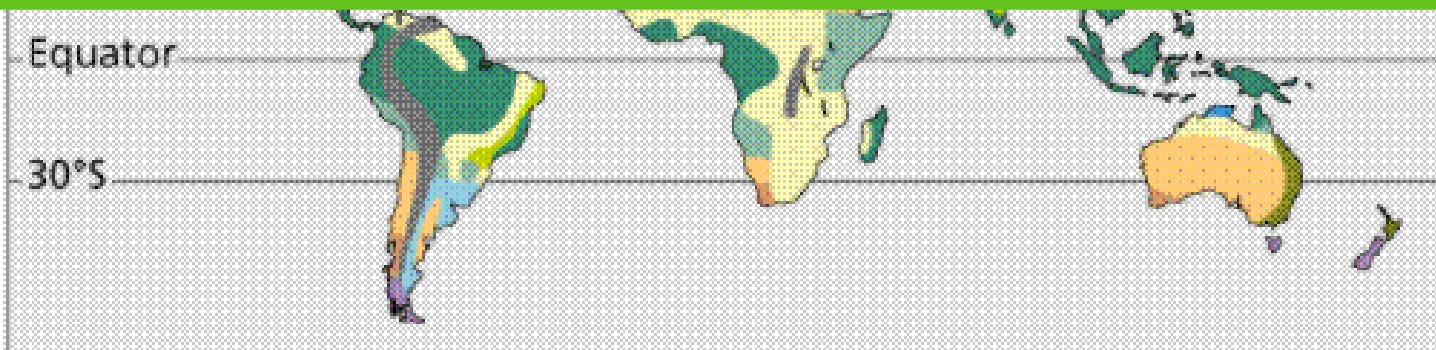
<http://imk-ifu.fzk.de/wcc-voc/>

Helmig, D., Bottenheim J., Galbally I.E., Lewis A., Milton M., Penkett S., Plass-Duelmer C., Read K. Reimann S., Steinbrecher R., Tans P., Thiel S. (2009): The WMO-GAW Volatile Organic Compound Program *Eos Trans. AGU*, 90(52), 513–514.

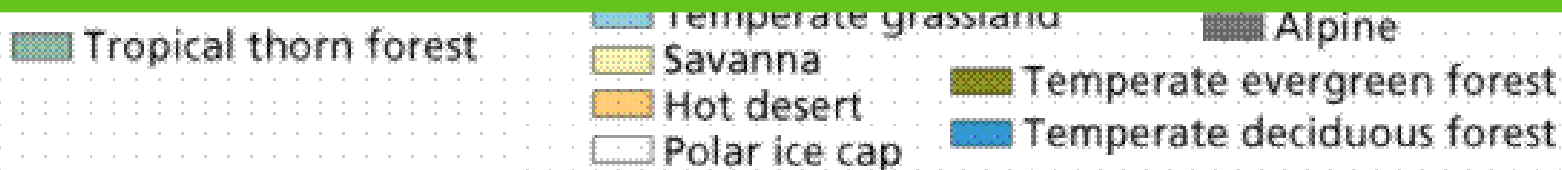
Multifaceted Compounds in Environmental Research: The Biogenic Volatile Organic Compounds (BVOC)

The Biosphere is emitting ca. 1 ± 0.5 Gt carbon per year in form of volatile organic compounds (VOC).

That is about 80% of the global total VOC emission.



70% of VOC are emitted in tropical latitudes.



e.g. Plant/Animal Interaction

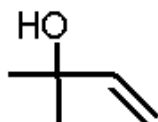
➤ Life cycle of bark beetles



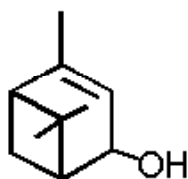
(-) α -Pinene and (+)-Limonene or?



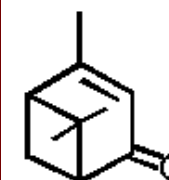
(Bayers, 1989)



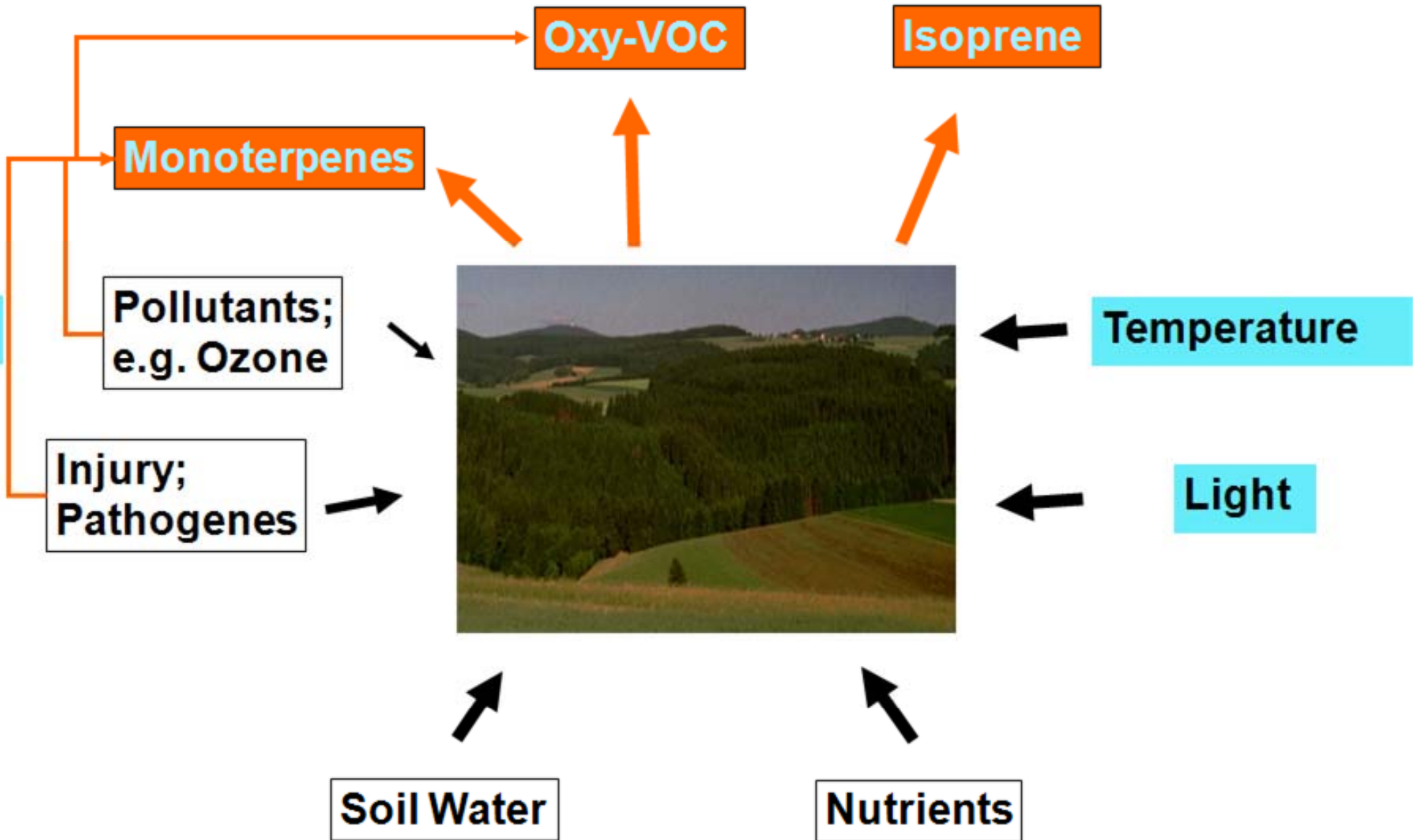
MBO



Verbenol

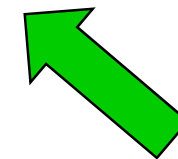
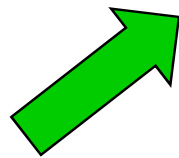


Verbenone, leaf alcohols like 1-Hexanol, (Z)-3-Hexen-1-ol and (E)-2-Hexen-1-ol



Emission Modelling

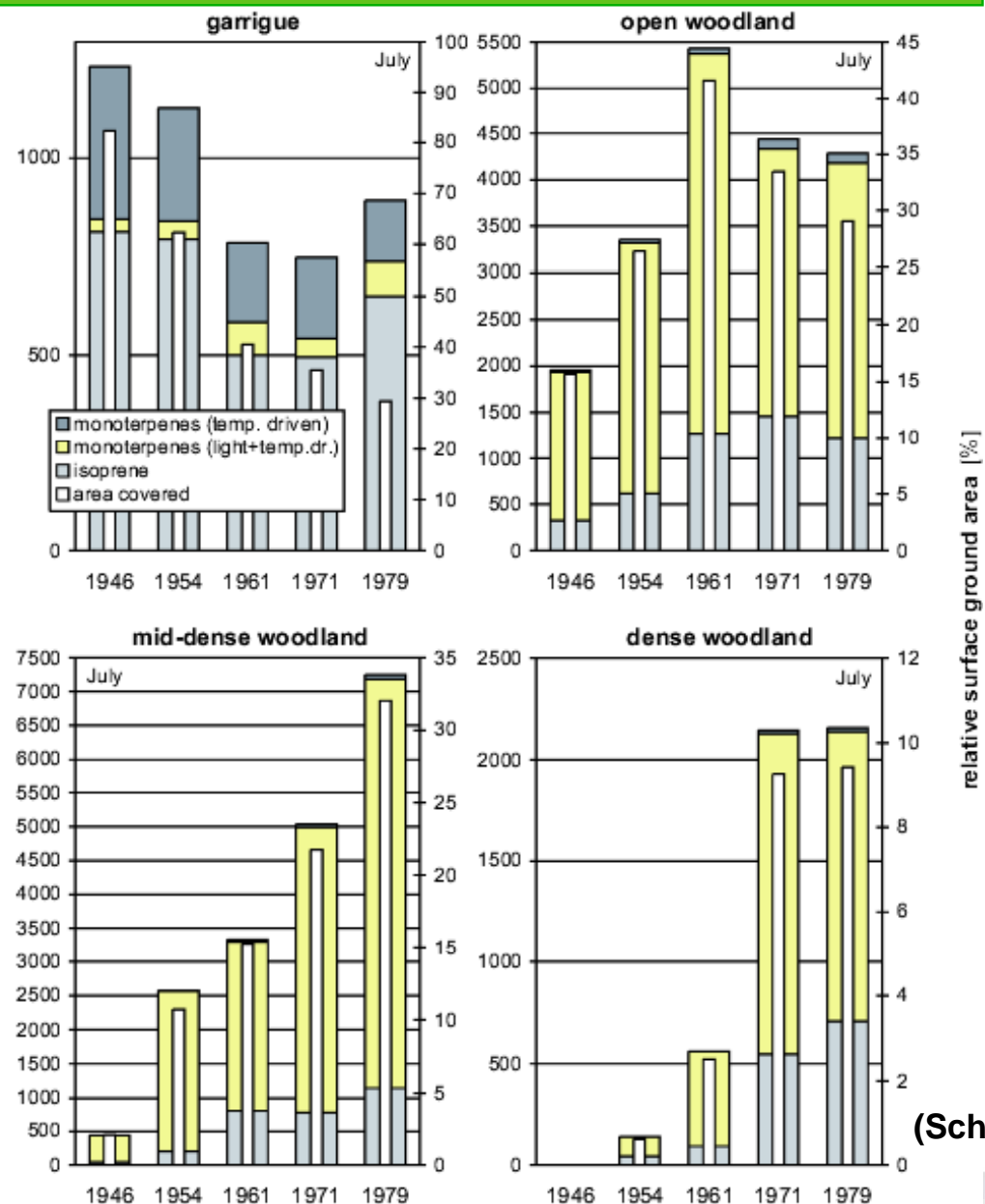
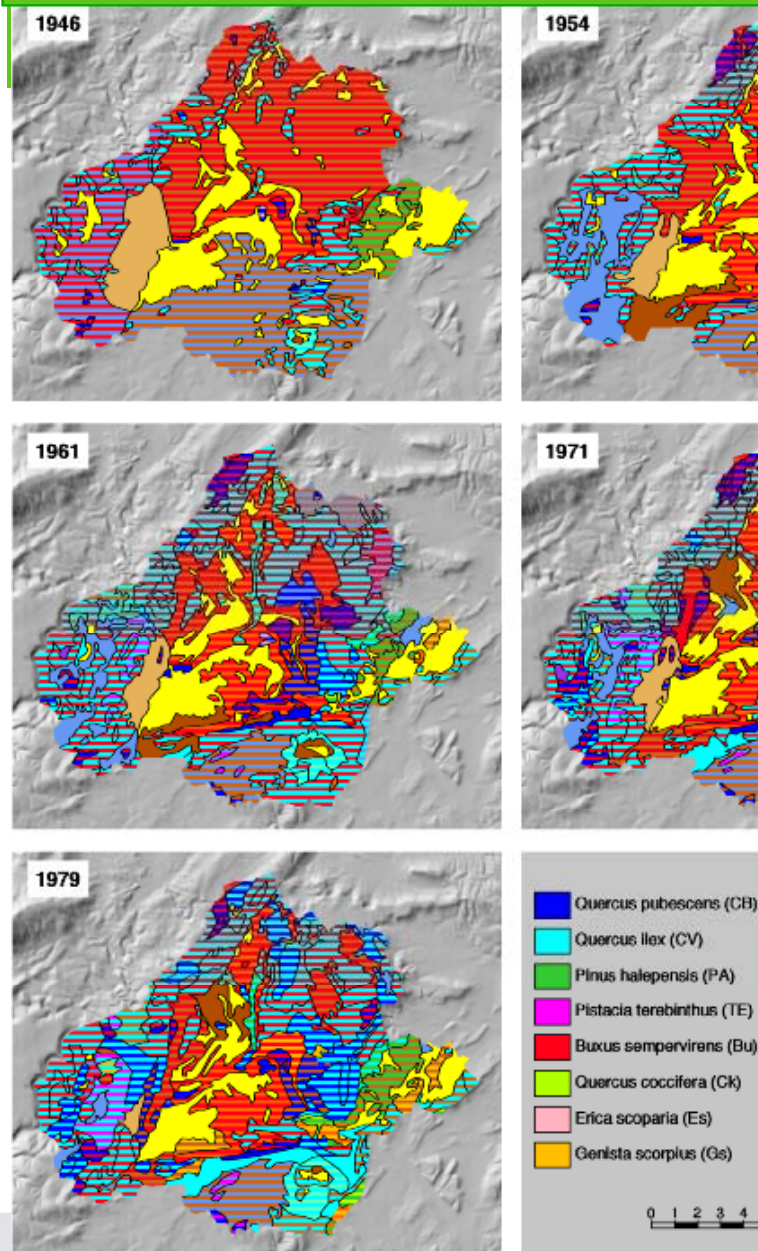
$$E(\text{iso}_i, T, \text{PAR}) = E(\text{iso}_i, T)_{\text{Pool}} + E(\text{iso}_i, T, \text{PAR})_{\text{Synthese}}$$



$$E(\text{iso}_i, T) = E_{\text{iso}_i} \times e^{(\beta(T - T_s))}$$

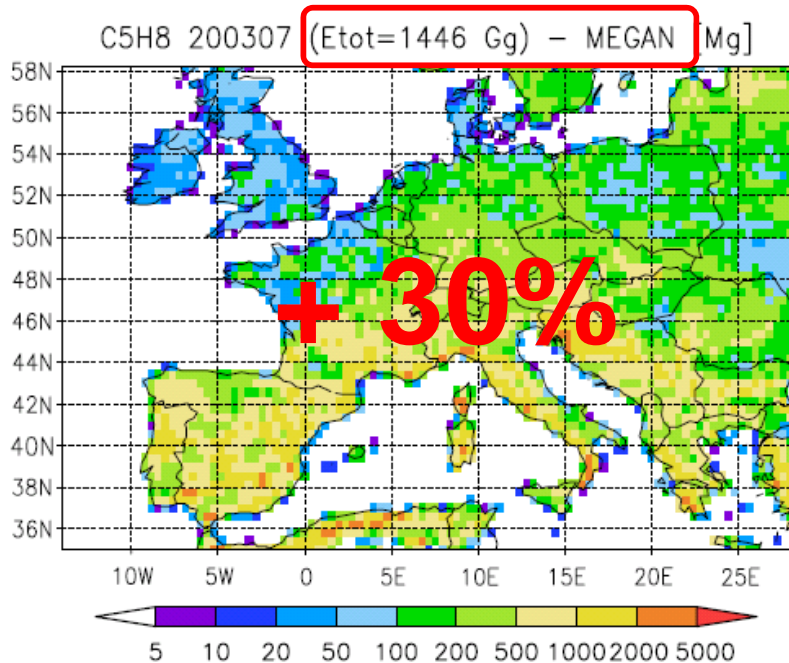
$$E(\text{iso}_i, T, \text{PAR}) = E_{\text{iso}_i} \times C_L \times C_T$$

Global Change and BVOC



(Schaab et al. 2000)

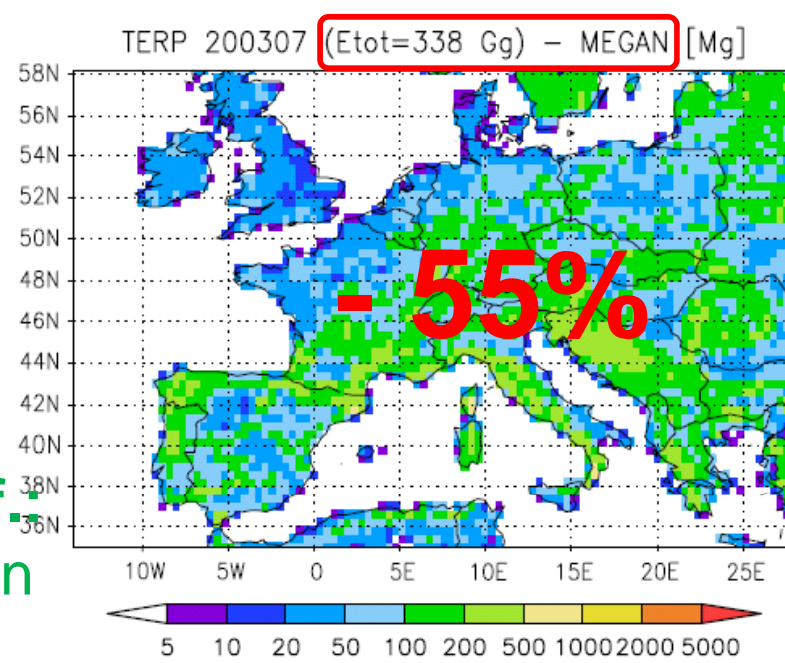
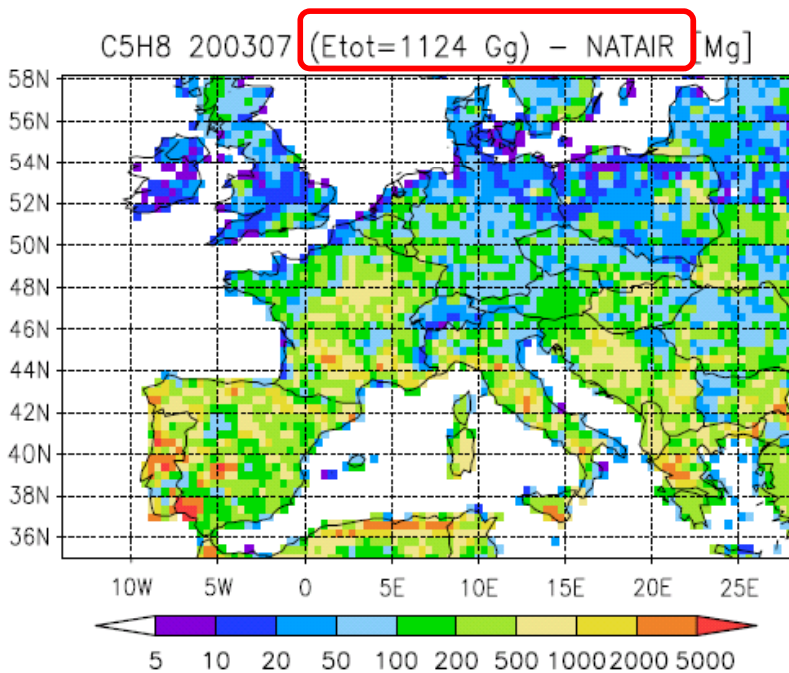
Regional (Europe)



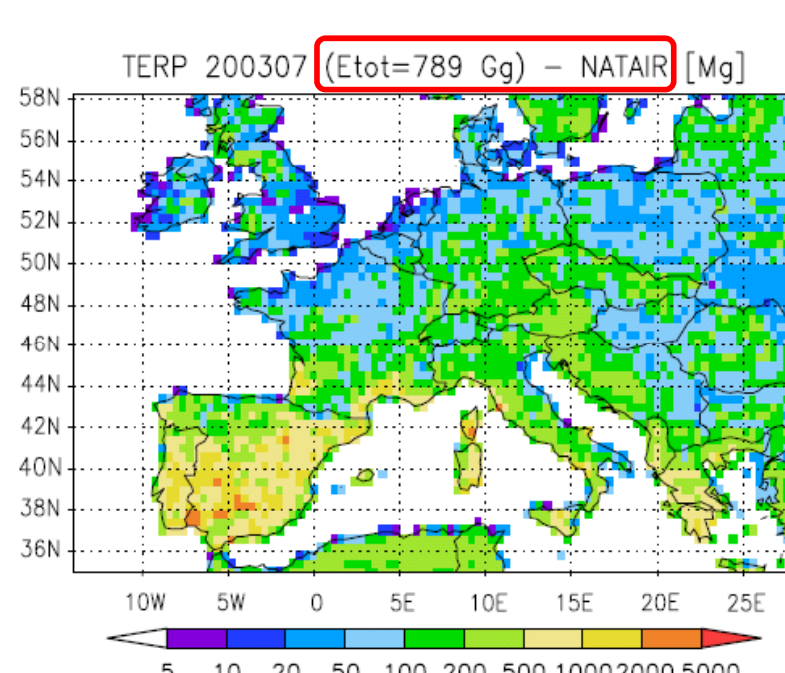
Isoprene:
major differences in
central Europe and
Spain

Likely reason for Diff:

- land-use classification
- assignment of emission factors



Terpene:
major differences;
Spain



Steinbrecher et al., (2009)