Anthropogenic ozone – a global risk for climate, forests and feeding of mankind? "

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Conclusions

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Ozone, a complex and hidden threat to agroecosystems

- Ozone = a secondary air pollutant and a highly reactive gas; complex chemistry; large spatial (km) and temporal (hour) variations
- Ozone = a strong oxidant → impacts on ecosystems with different targets: cuticle, stomata, photosynthesis, roots, …
- Research on ozone → a range of disciplines, from cell physiology to atmospheric modelling at regional/global scale with more or less interdisciplinarity
- Lots of progress in the past decades: *e.g.* from AOT40 to POD/DO3SE, impact modelling at plant/leaf metabolism scale, model coupling for impact assessment
- Lots of process experiments over a range of plants (lab, open top chambers) but data still lacking at ecosystem scale (and process scale???)

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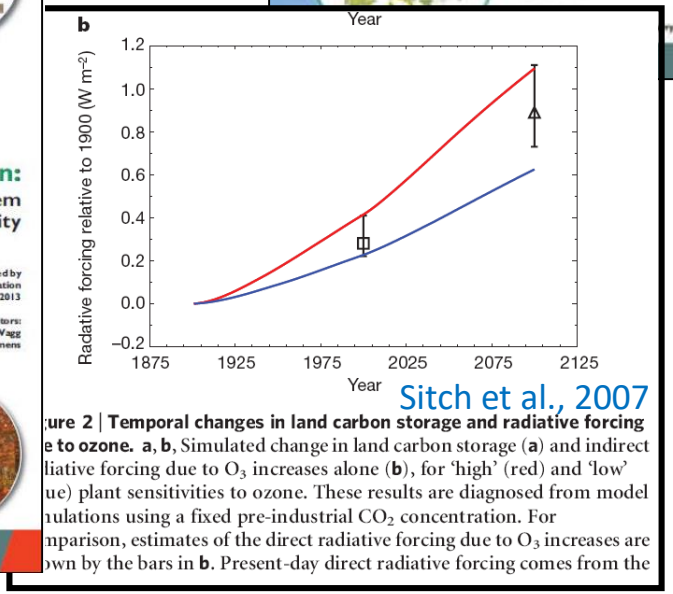
New insight and new focus on ozone and agroecosystems services

From forest decline and impact on health

to the impact of ozone on

- *Food security*
- *Climate change*
- *Biodiversity*
- …

→ Last decade



Sitch et al., 2007

ure 2 | Temporal changes in land carbon storage and radiative forcing
e to ozone. a, b, Simulated change in land carbon storage (a) and indirect
liative forcing due to O_3 increases alone (b), for 'high' (red) and 'low'
ue) plant sensitivities to ozone. These results are diagnosed from model
ulations using a fixed pre-industrial CO_2 concentration. For
nparison, estimates of the direct radiative forcing due to O_3 increases are
own by the bars in b. Present-day direct radiative forcing comes from the

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Air pollution, ozone and agriculture/forestry: which relationships and prospects?

From air pollution scientists and decision makers points of view

- Conventions and international protocols : CLRTAP, Gothenburg protocol …
- Support and assessment structures: EMEP (scientific and policy driven programme), different task forces, working groups on effects, economic assessment → experts from a range of disciplines, from atmospheric modelling to ecology and economy

From agriculture and forestry stakeholders points of view

- What about the awareness of ozone impacts in agricultural and forestry sciences and economic activity? Is it really a concern? Why ? Why not ?
- Do we need to make more precise assessment of ozone impacts? How ? At which scales?
- Should the agronomists be more involved in ozone impact assessment ?
- Which solutions could be investigated (agricultural practices, genetics …)

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Other issues …

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