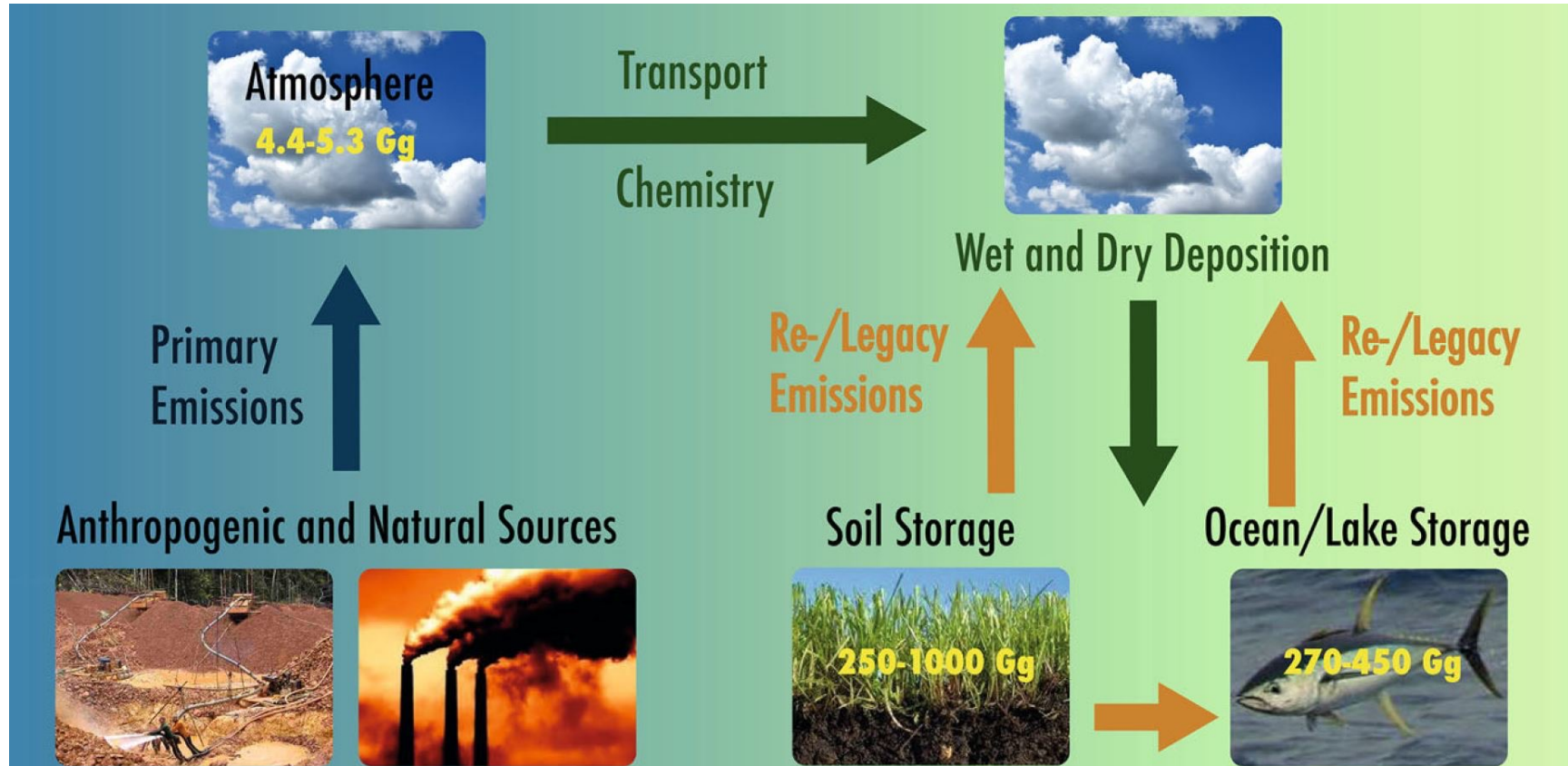


Foliar uptake of gaseous elemental mercury by European forests

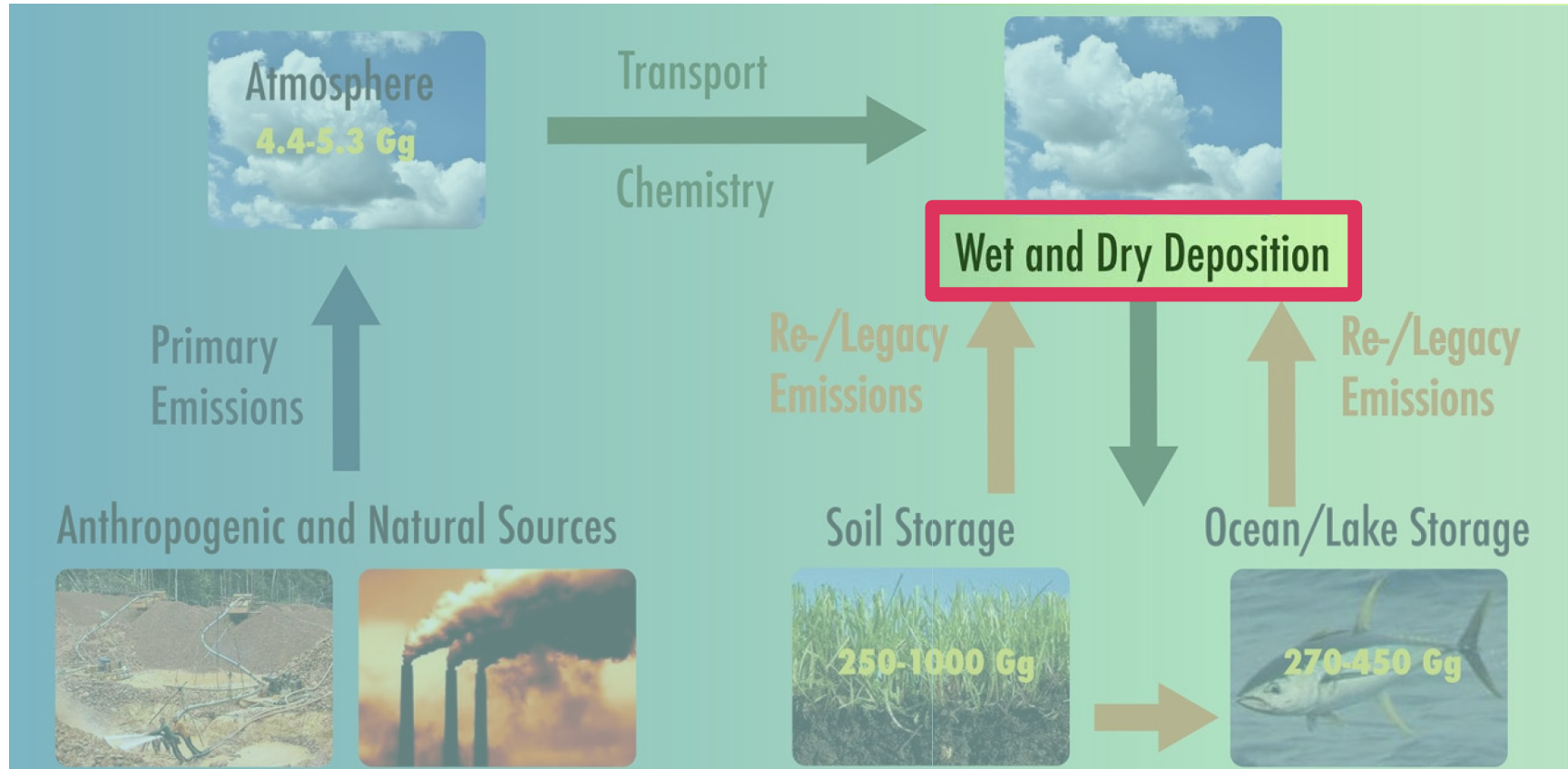
Lena Wohlgemuth, 09.06.2021

The global mercury (Hg) cycle



Obrist et al. 2018, *Ambio*

The global mercury (Hg) cycle

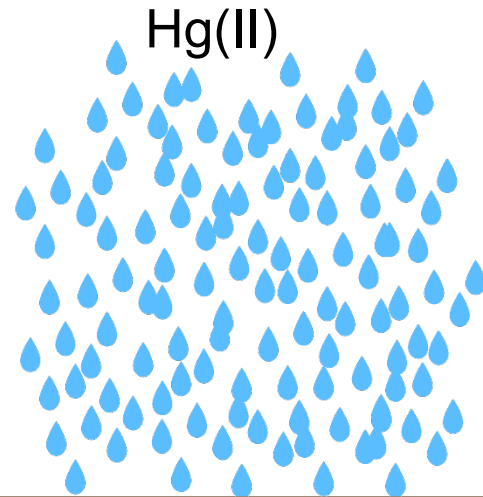


Obrist et al. 2018, *Ambio*

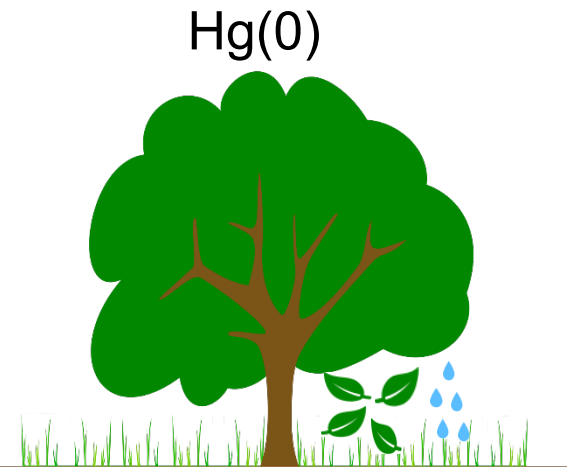
Mercury wet deposition and foliar Hg uptake flux

long-range atmospheric transport of Hg(0)

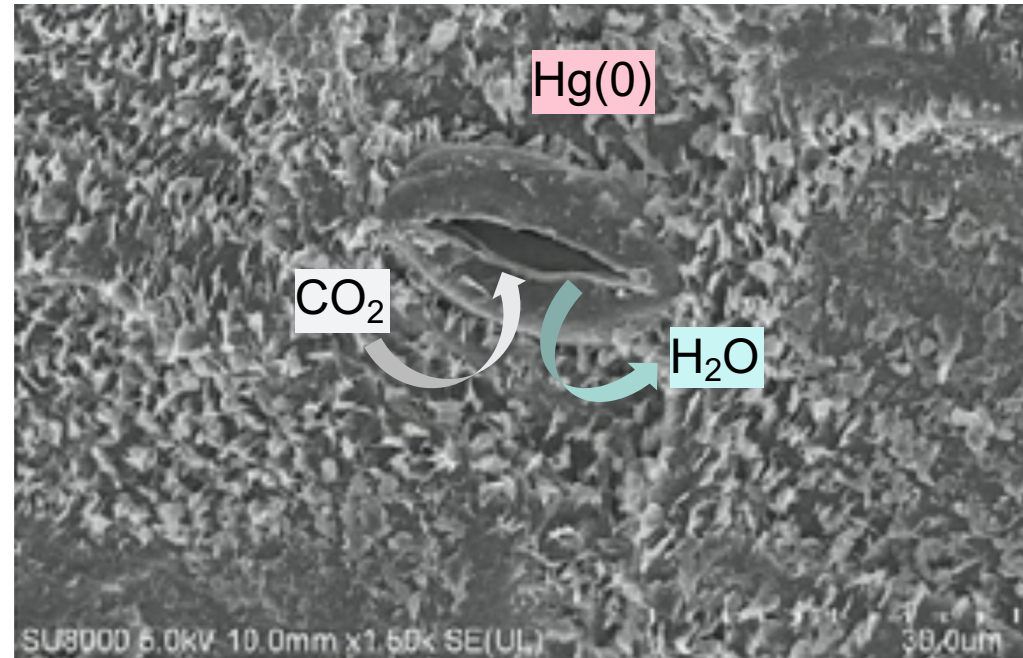
wet deposition



foliar uptake

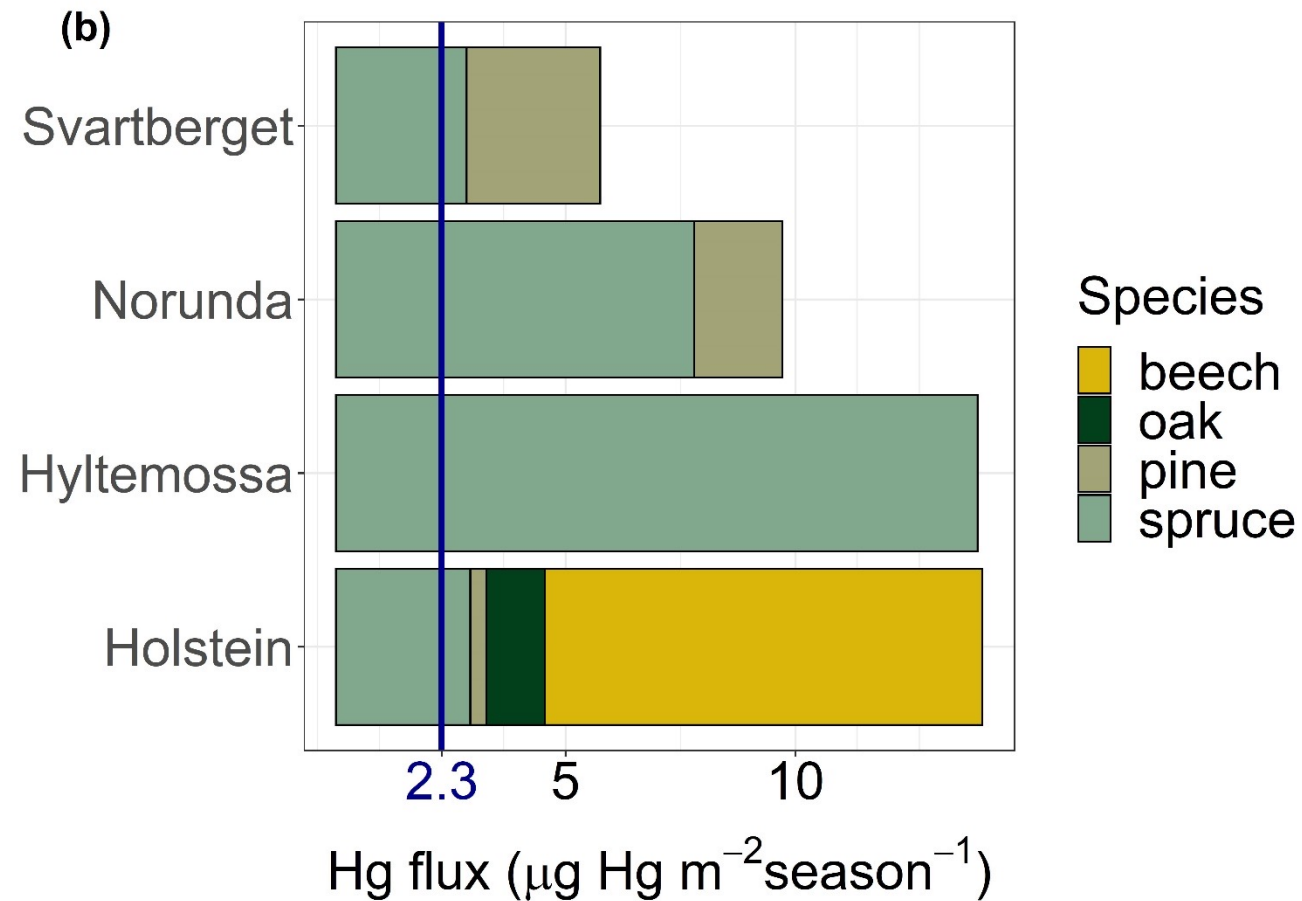


Stomatal foliar Hg(o) uptake



Ali et al. 2020, *Microsc Res Techniq*

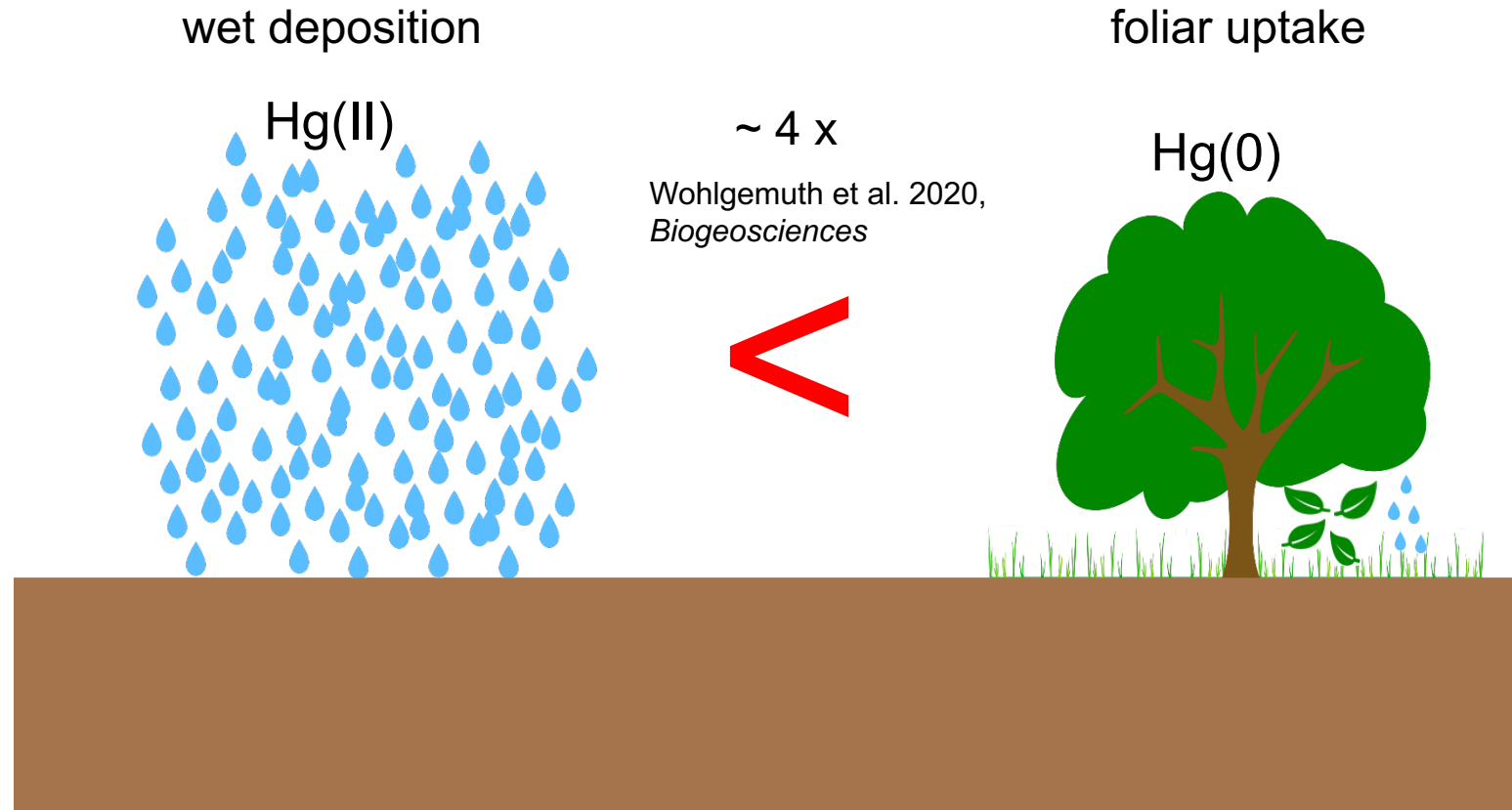
Observations: Hg wet deposition vs. foliar Hg uptake



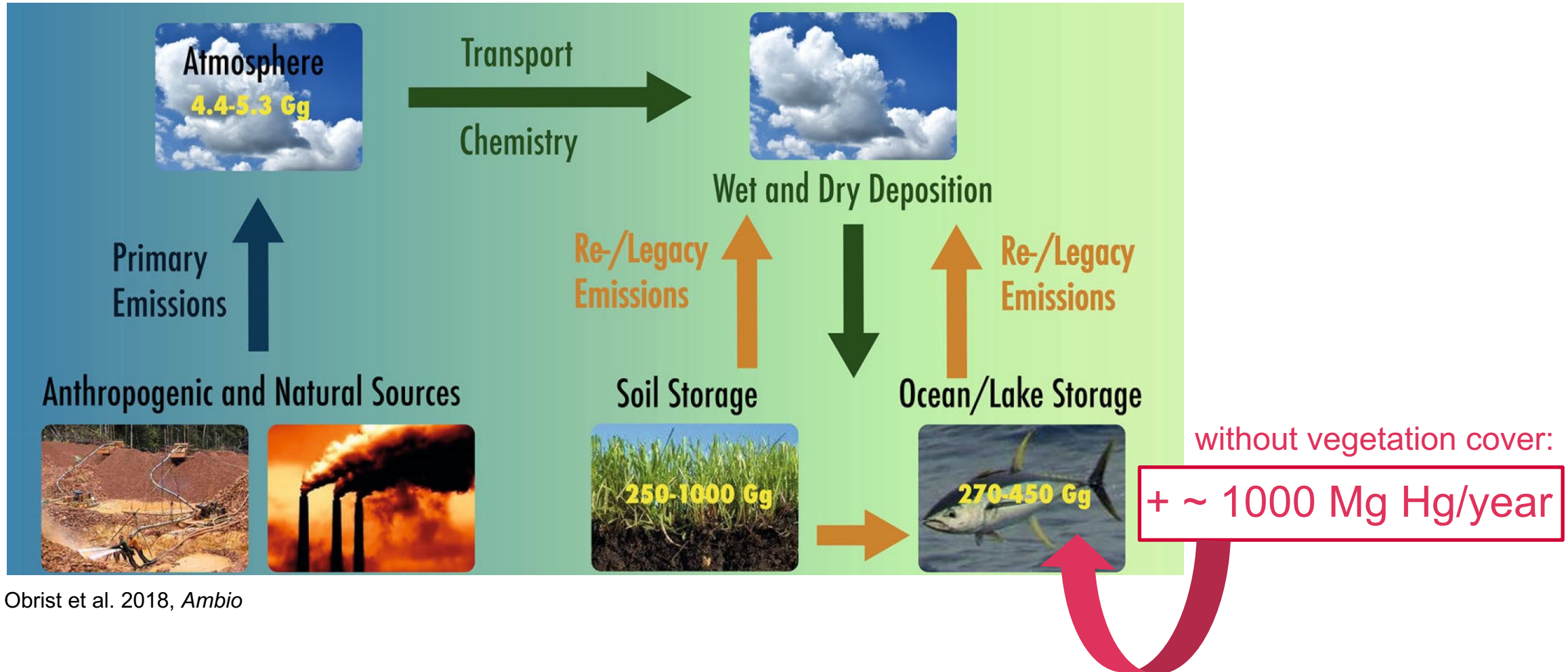
Wohlgemuth et al. 2020, *Biogeosciences*

Mercury (Hg) wet deposition and foliar Hg uptake flux

long-range atmospheric transport of Hg(0)



The global mercury cycle without vegetational mercury uptake



Obrist et al. 2018, *Ambio*

Zhou et al. 2021, *Nature Reviews*

Hg litterfall and throughfall monitoring

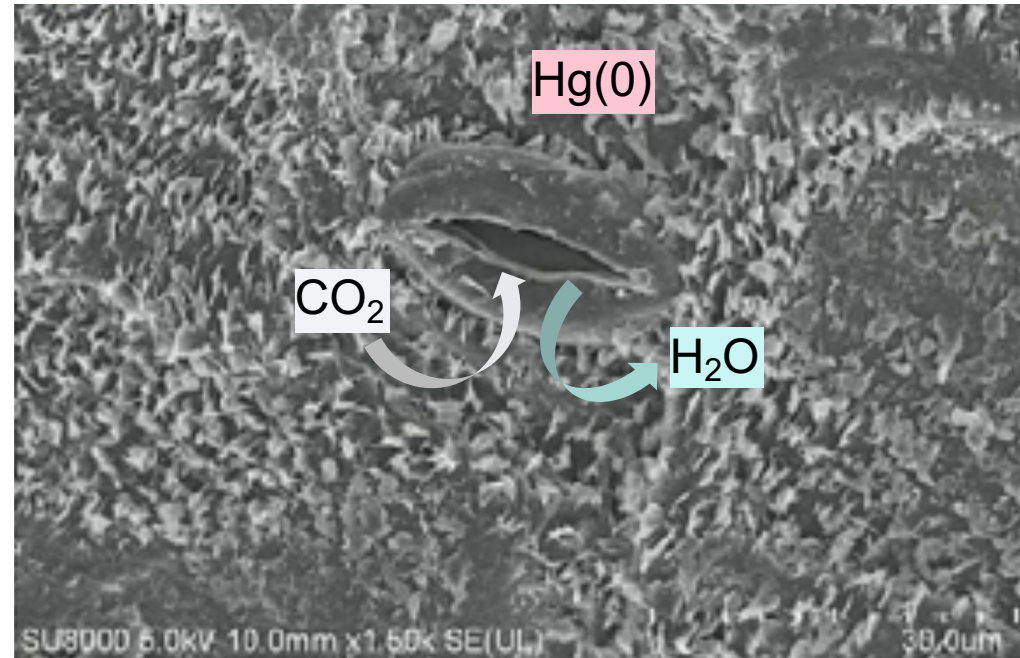


Sonian Forest Belgium, INBO
Site Manager: Arne Verstraeten, Kris Vandekerkhove

Parameters possibly influencing stomatal foliar Hg(o) uptake

Tree species-specific prerequisites:

- Foliar physiological activity
- Foliage structure
- (Needle) age



Ali et al. 2020, *Microsc Res Techniq*

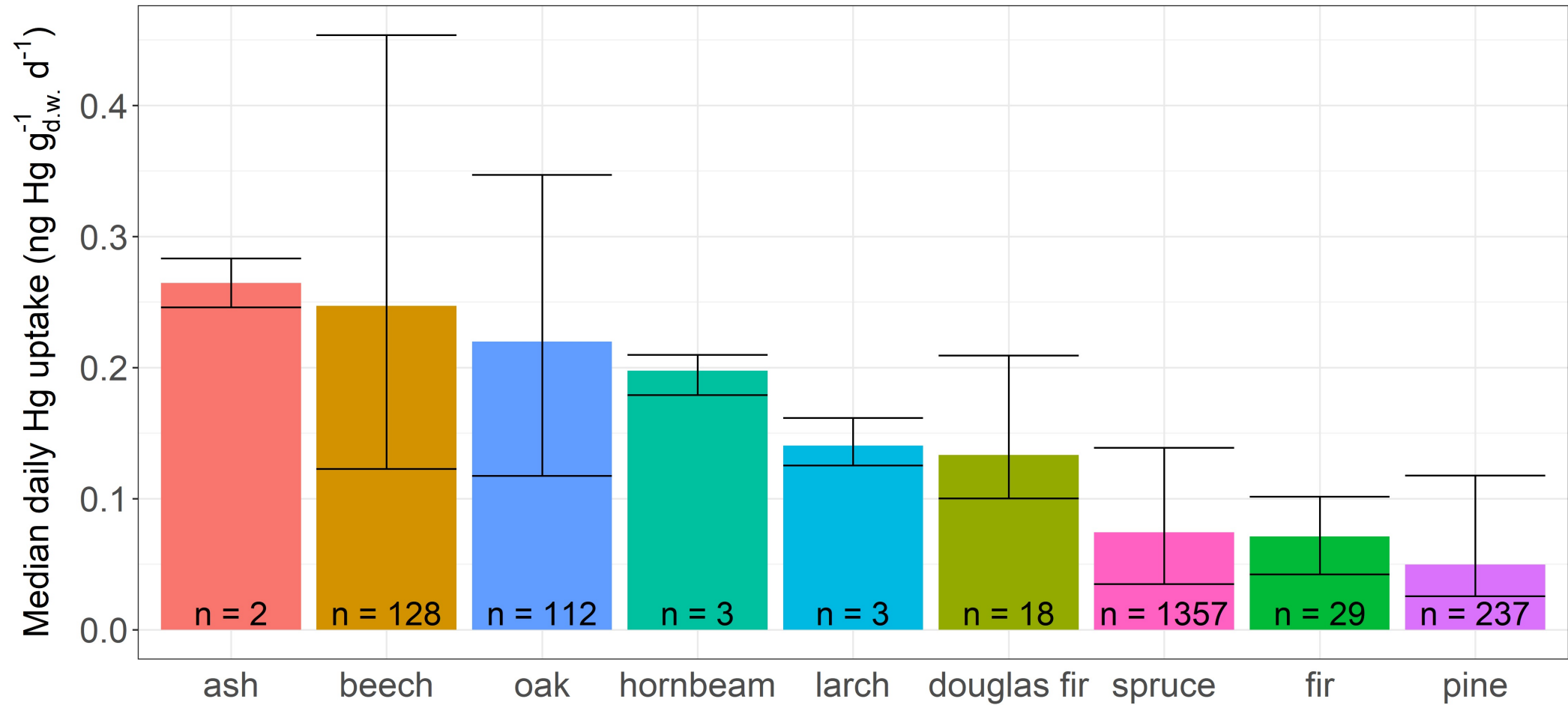
Environmental conditions:

- Vapor pressure deficit
- Soil moisture

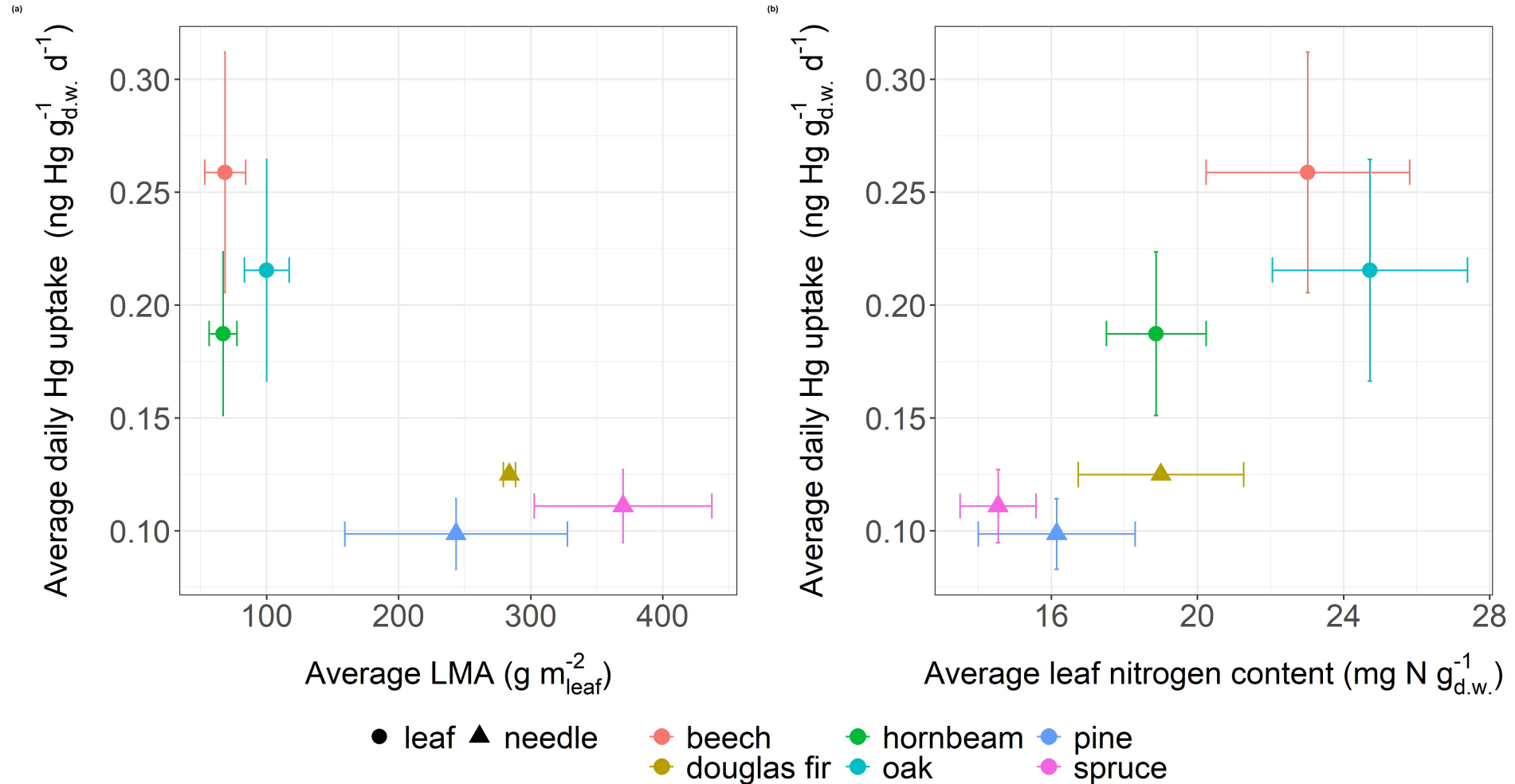
Geographic variables:

- Latitude
- Altitude

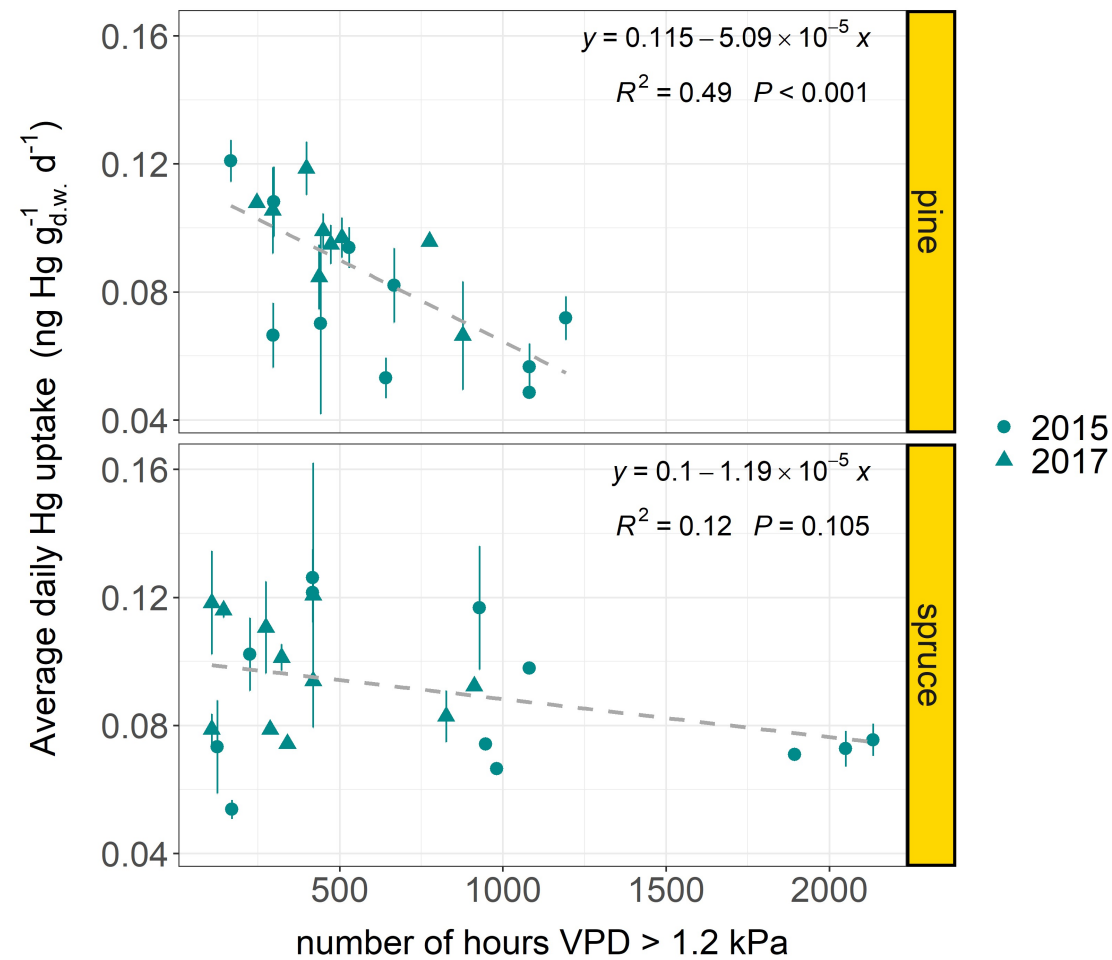
Foliar Hg uptake resolved by tree species



Foliar Hg uptake in the context of plant functional trait



Foliar Hg uptake and vapor pressure deficit (VPD)



Conclusions and Outlook

- Leaf physiological activity determined by leaf functional traits impacts stomatal foliar Hg(0) uptake
- VPD probably influences needle Hg uptake
- Foliage Hg, litterfall Hg and LMA monitoring is crucial in order to constrain foliar Hg uptake fluxes
- Finalization of ICP Forests publication

Comparability between foliar Hg values of different forest sites

