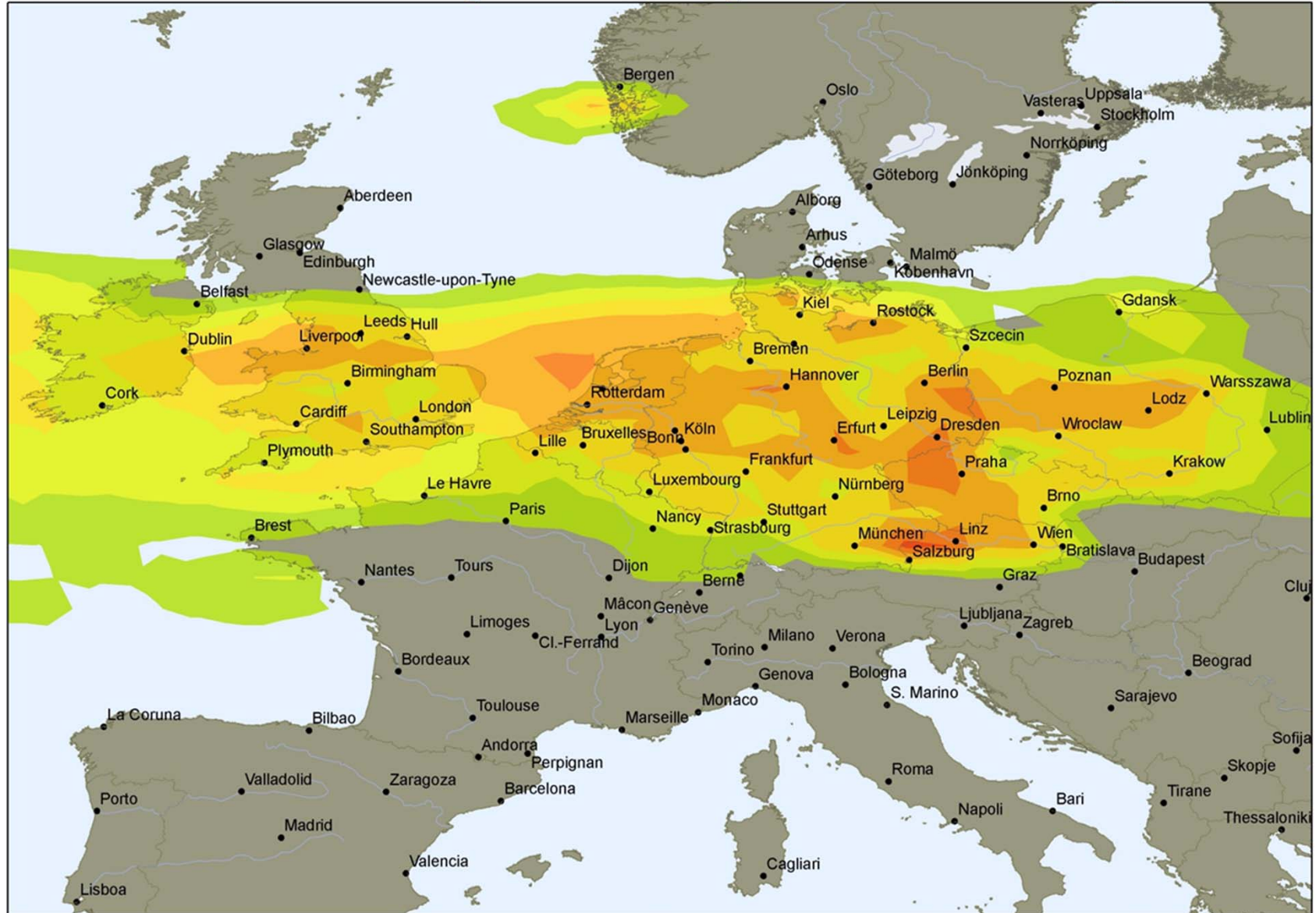




Net ecosystem exchange of CO₂ in a wind-throw-disturbed upland spruce forest ecosystem – first results

M. Lindauer, H.P. Schmid, M. Mauder, B. Wolpert, R. Steinbrecher

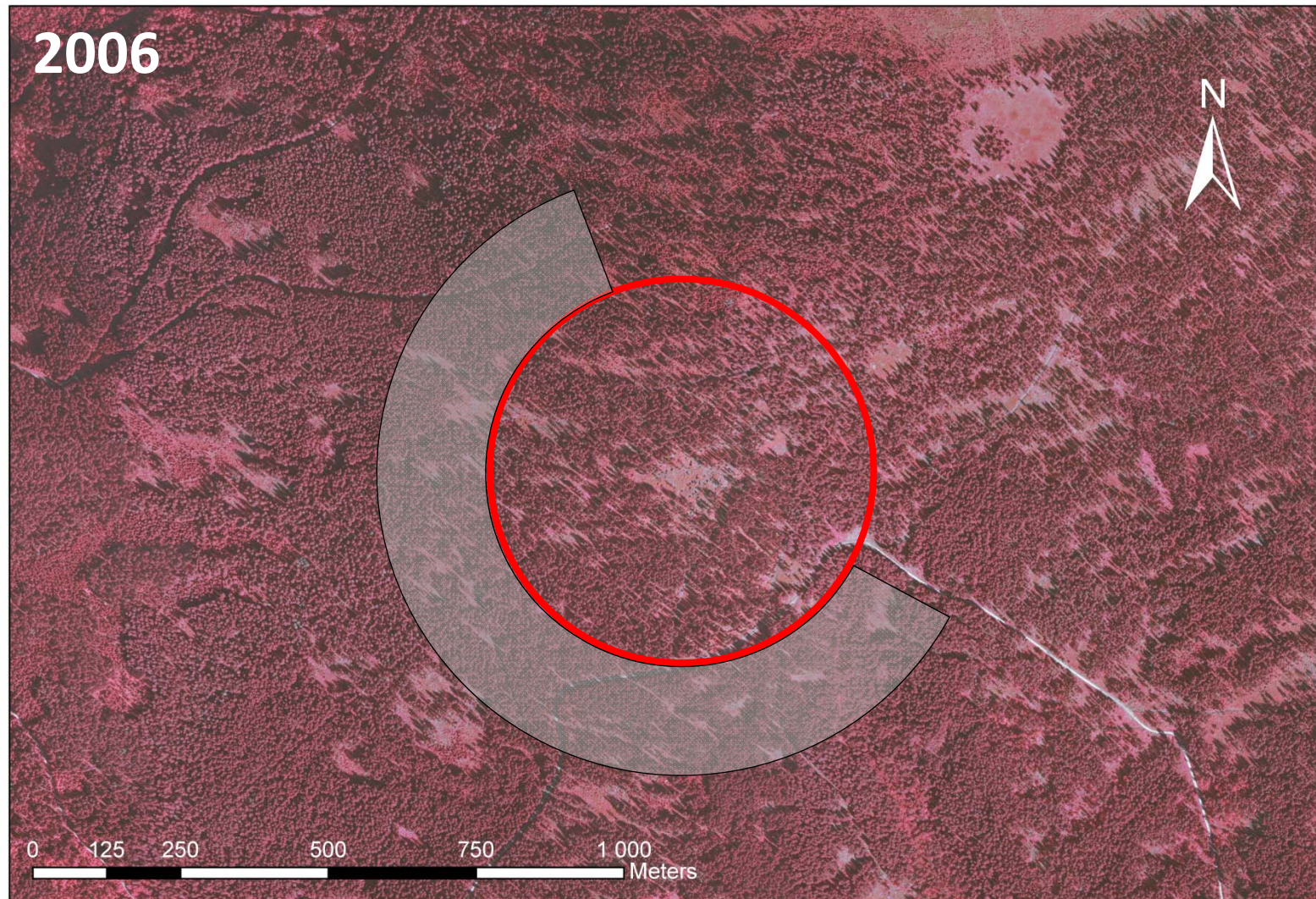
Winterstorm Kyrill 18th/19th January 2007



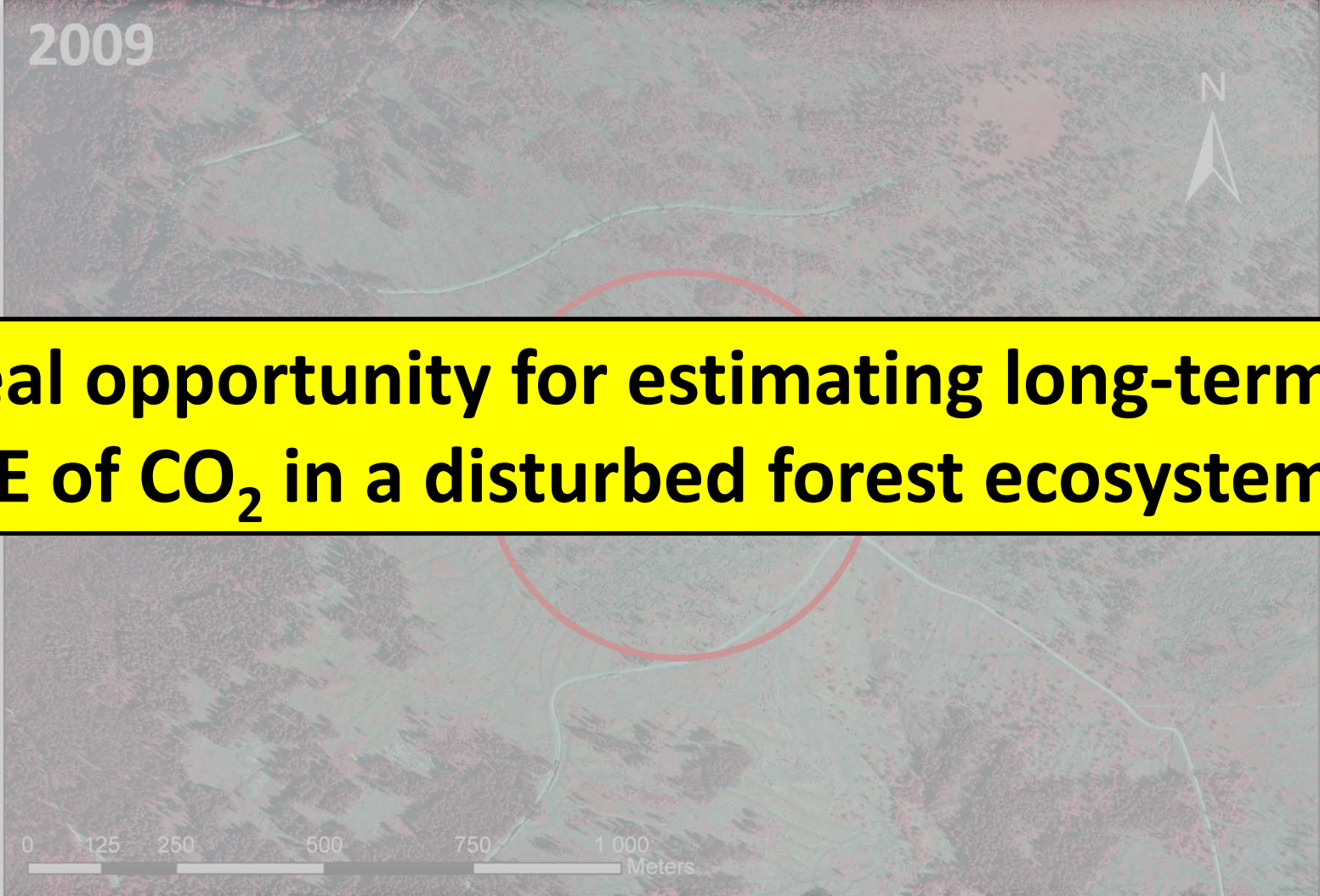
“Bavaria – that’s somewhere near Germany”



Study site: Bavarian Forest National Park



Study site: Bavarian Forest National Park



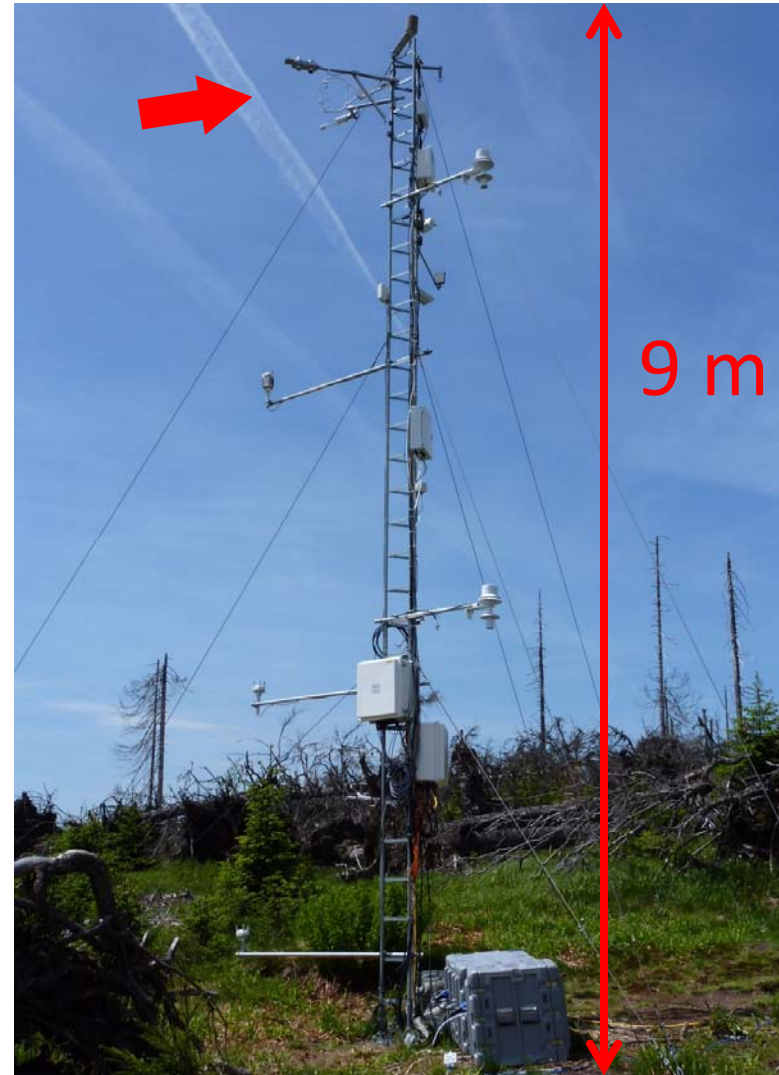
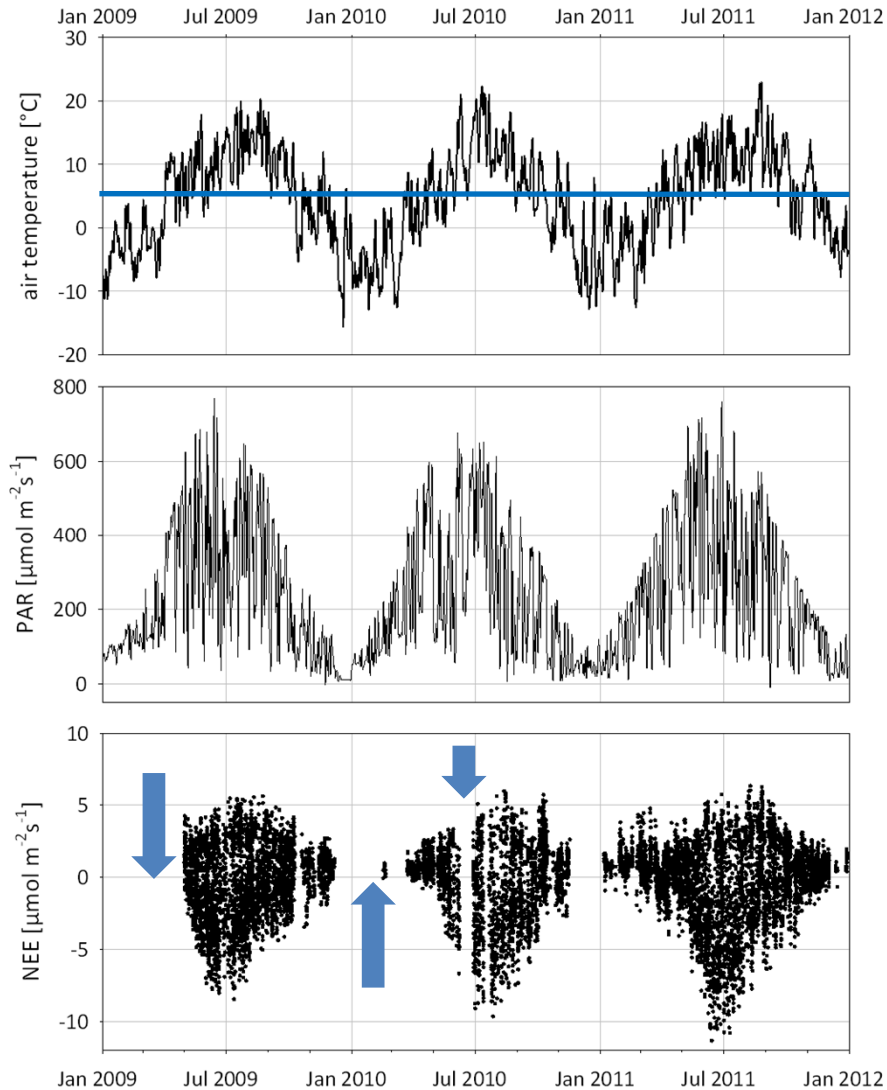
Ideal opportunity for estimating long-term NEE of CO₂ in a disturbed forest ecosystem

Lead Questions

- How does the ecosystem behave after disturbance?
 - **How large are the CO₂ fluxes from the wind-throw area up to four years after the storm event?**
- NEE = GEP – R_{eco}; Two opposing fluxes/processes
- **How large are the magnitudes of these component fluxes?**
- **How sensitive are they to environmental forcings?**



Eddy Covariance Flux Tower

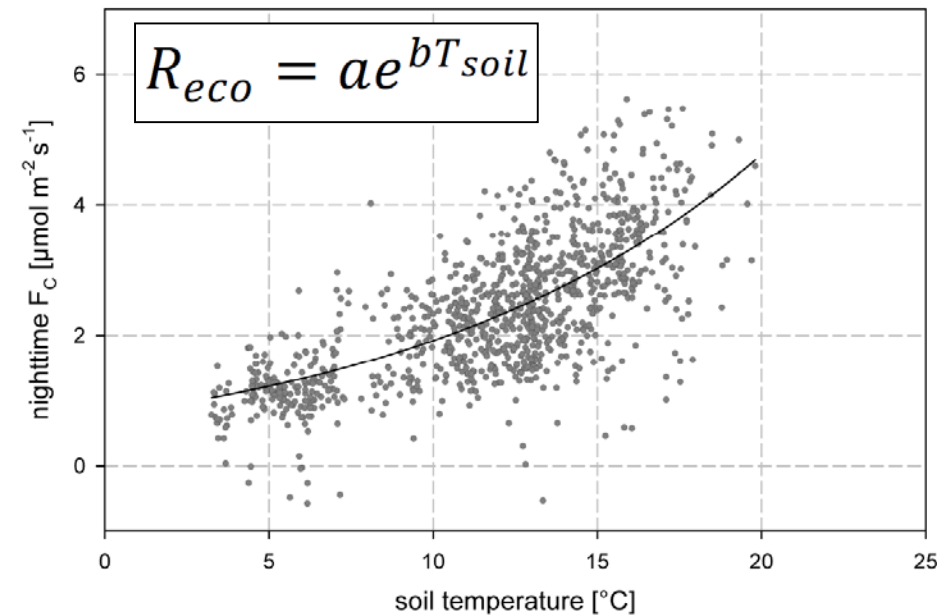


From raw fluxes to annual NEE

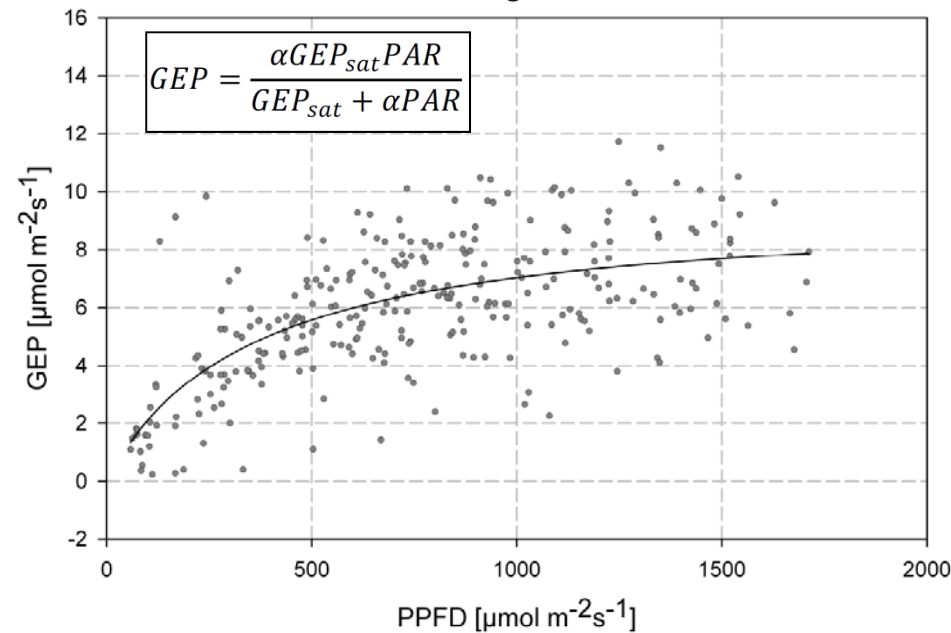
biophysical information for gap-fill modeling

$$GEP = -NEE + R_{eco}$$

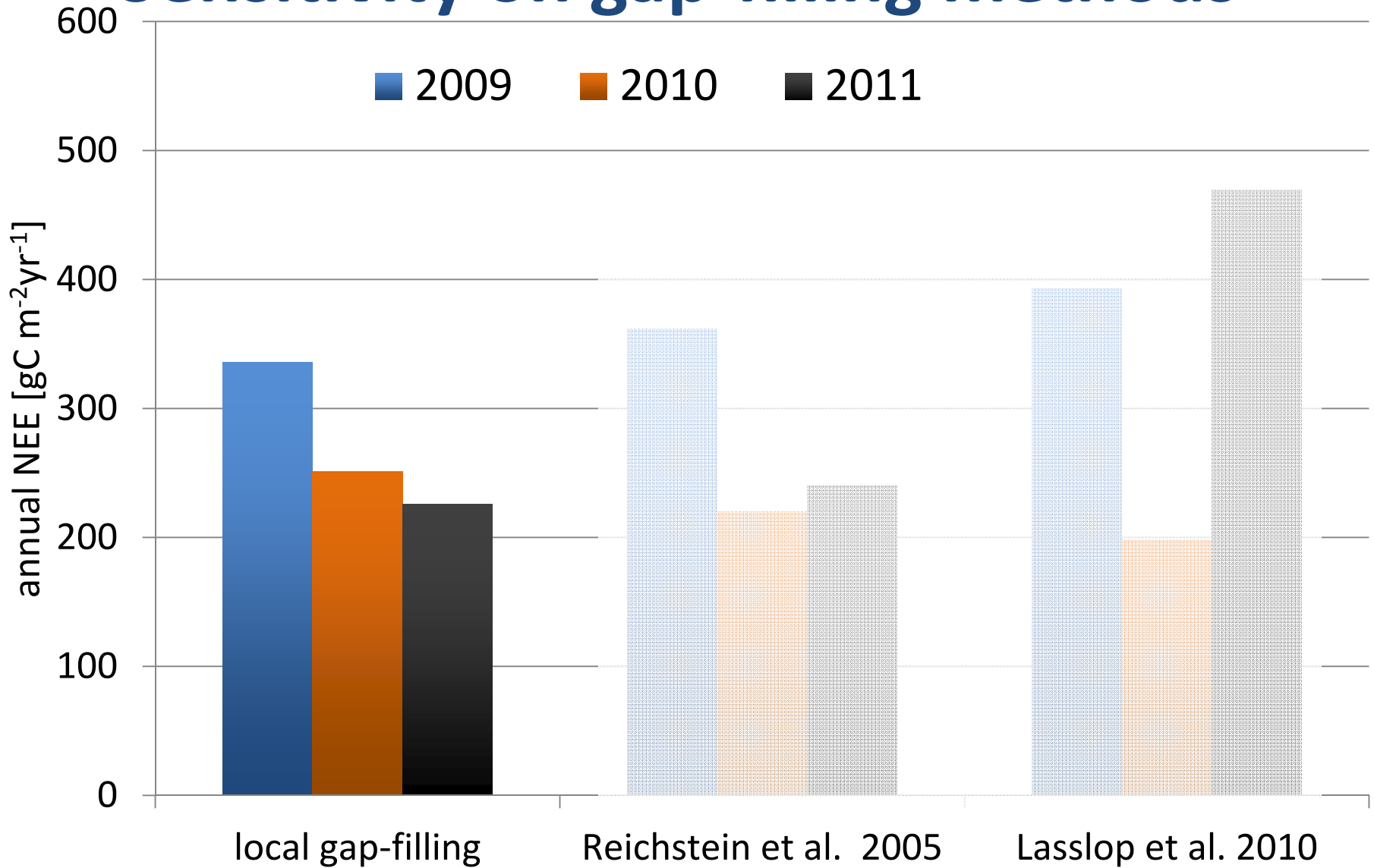
nighttime respiration 2009



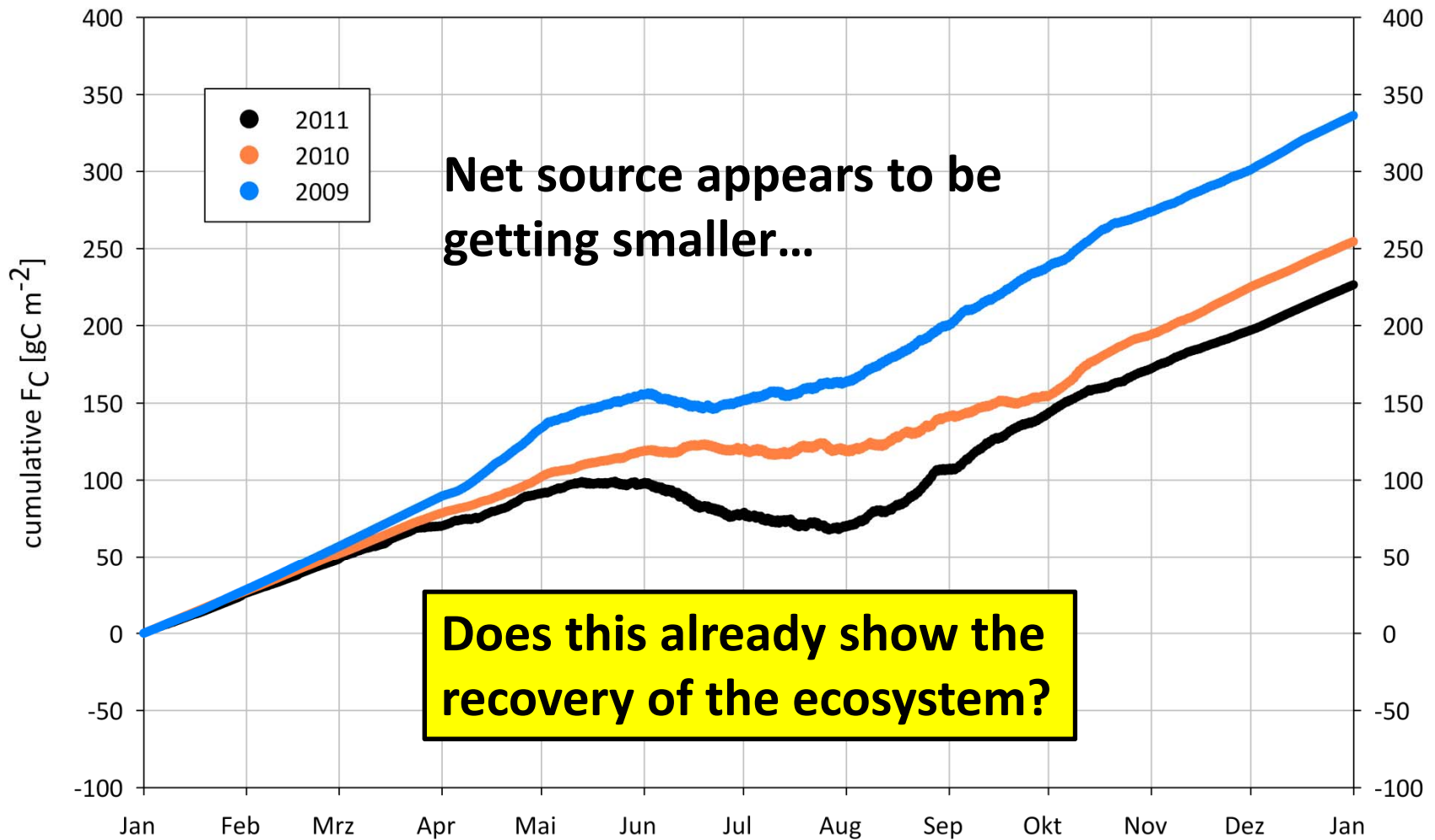
GEP August 2010



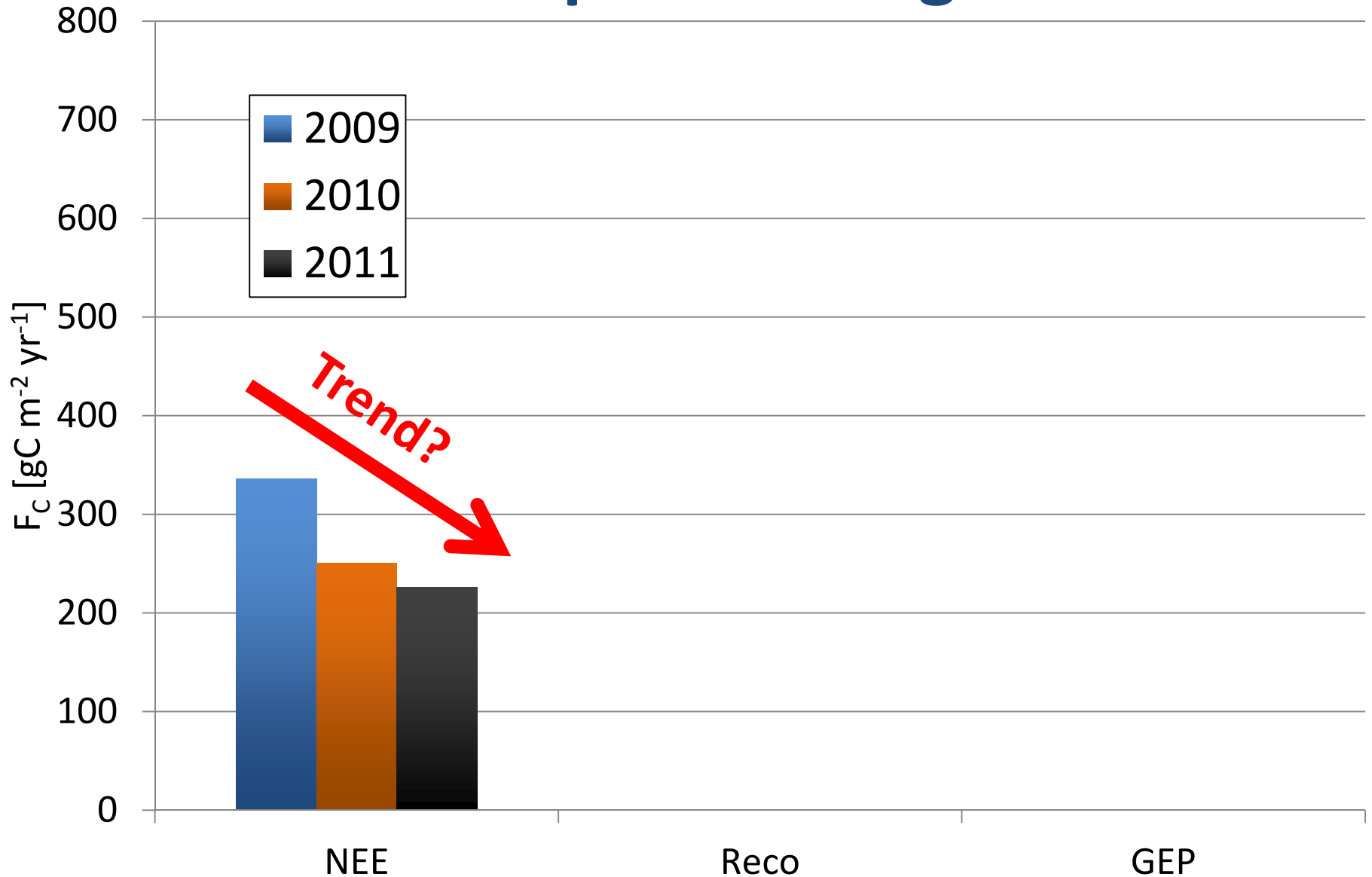
Sensitivity on gap-filling methods



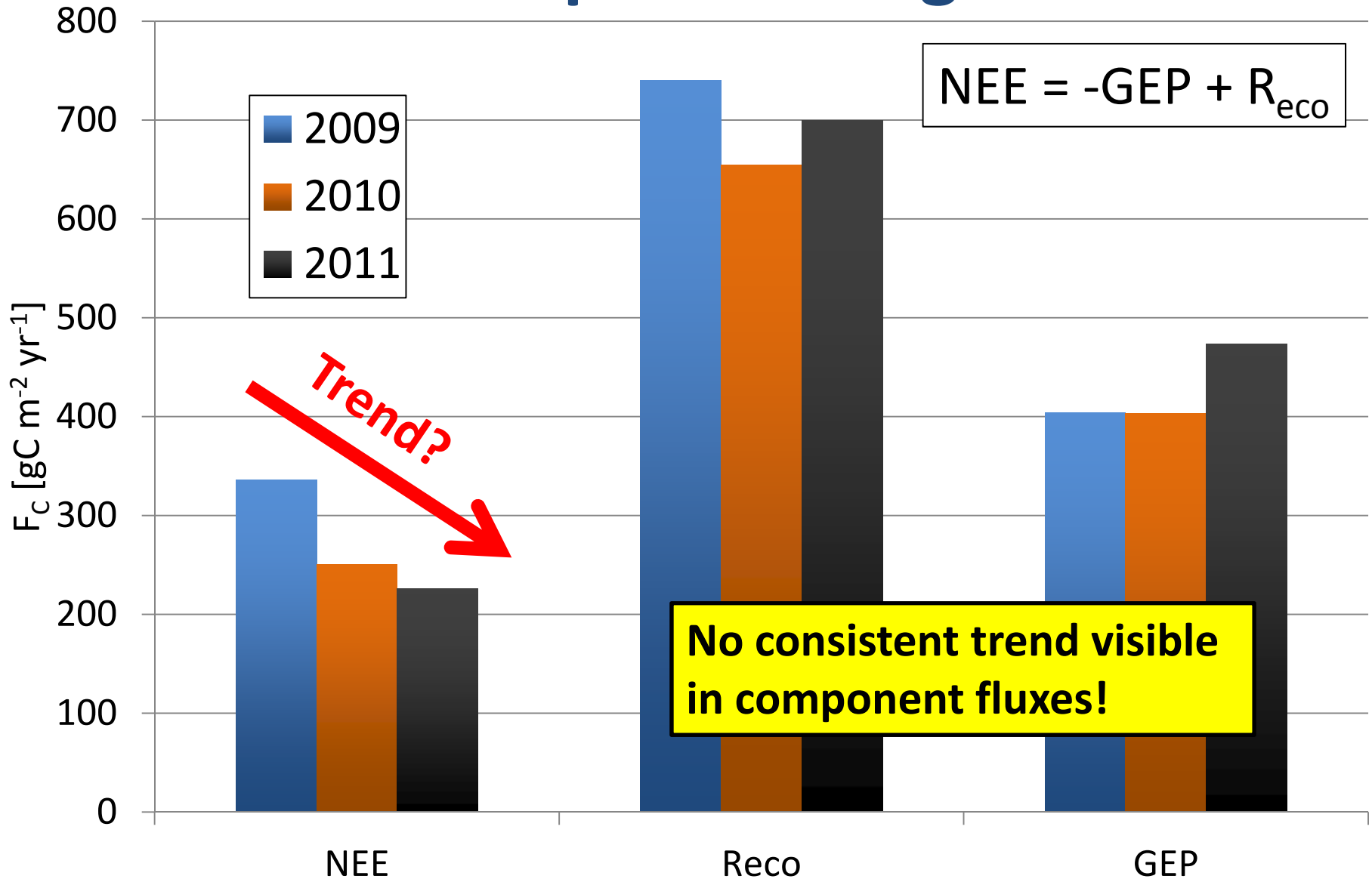
Cumulative NEE




Flux partitioning



Flux partitioning



Conclusions

- How large are the CO₂ fluxes from the wind-throw area up to four years after the storm event?
 - **NEE: positive -> net carbon source!** (226 - 336 gC m⁻²yr⁻¹)
 - **GEP: important already two years after storm** (403 - 474 gC m⁻²yr⁻¹)
 - **R_{eco}: dominant but variable**
- How sensitive are the component fluxes to environmental forcings?
 - **temperature and radiation are main drivers (no surprise!)**
 - **chrono-trend (post disturbance)  masked by environmental drivers**

Thank you
for your
attention



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