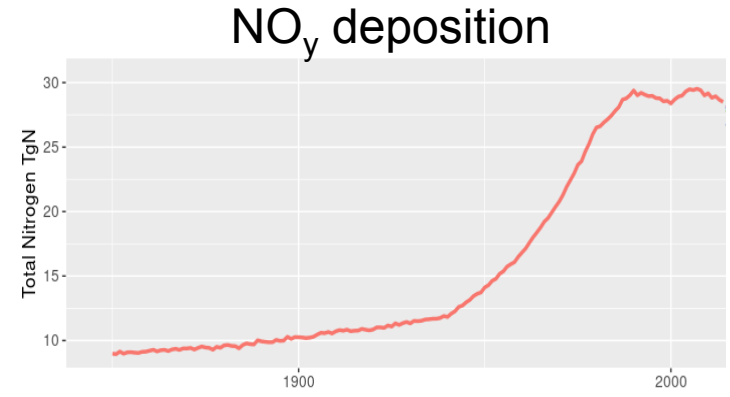
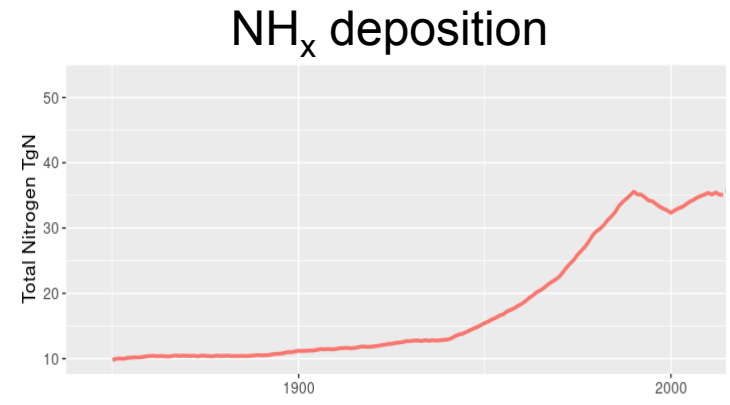
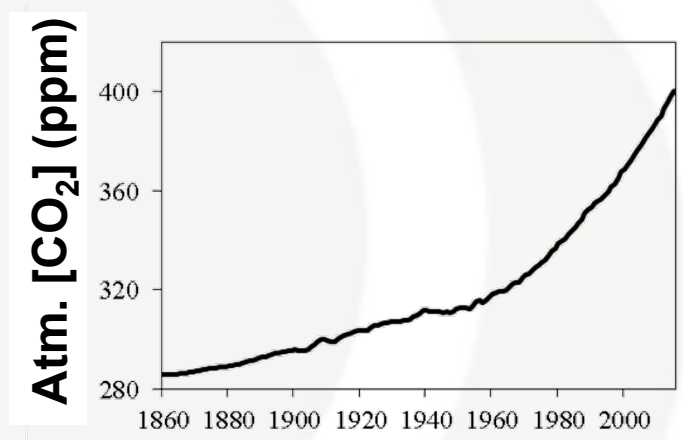


# Climate & CO<sub>2</sub> are not the only drivers of land sink !

- Nutrients play a role
  - Work on the contribution of Nitrogen deposition - PhD of Jaime Riano
  - With ORCHIDEEv3 with N cycle



# Disentangling the contributions of CO<sub>2</sub> & N<sub>dep</sub> on NBP

- A set of factorial simulations

	<b>Ndep</b>	<b>1850</b>	<b>1850-2014</b>
<b>CO2</b>			
<b>1850</b>		<b>CfNf</b>	<b>CfNd</b>
<b>1850-2014</b>		<b>CdNf</b>	<b>CdNd</b>

**CdNd** - **CfNf** => contribution of CO<sub>2</sub> and N<sub>dep</sub>

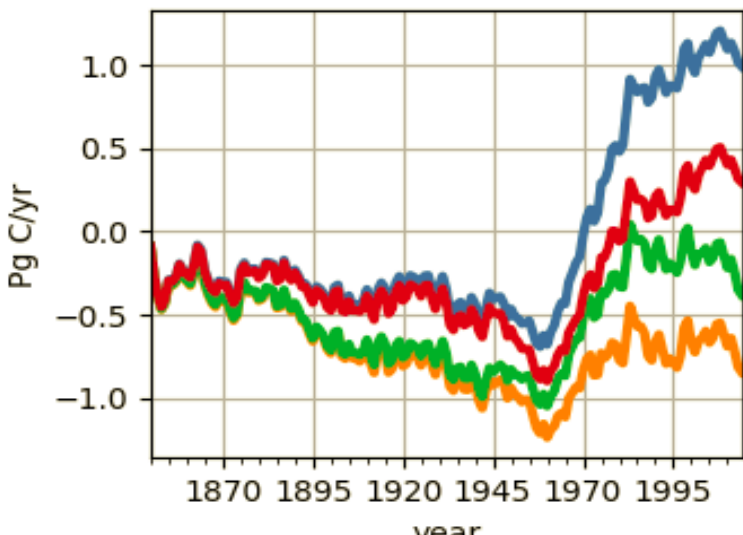
**CdNf** - **CfNf** => contribution of CO<sub>2</sub> in a pre-industrial N world

**CdNd** - **CfNd** => contribution of CO<sub>2</sub> in a historical N world

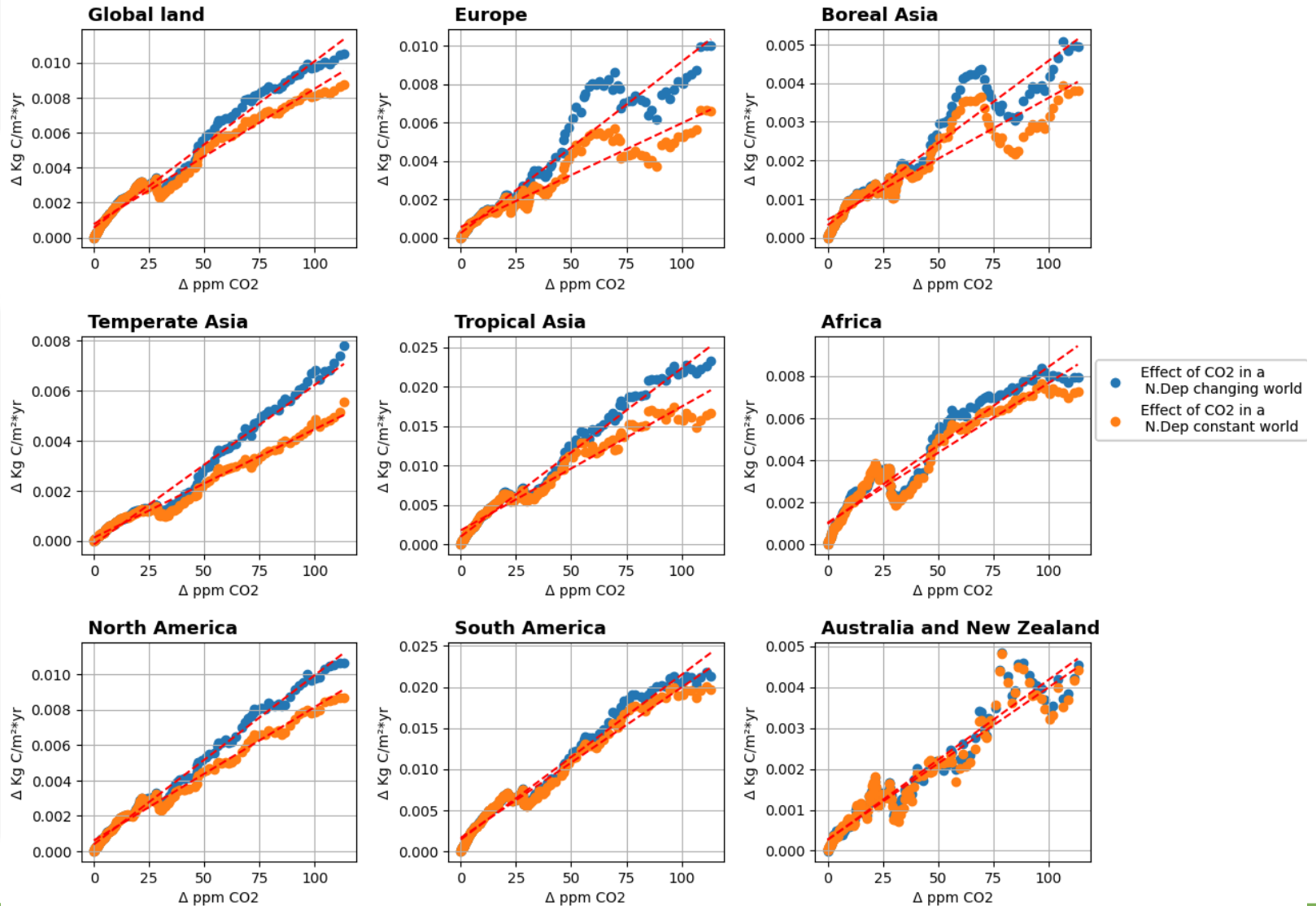
**CfNd** - **CfNf** => contribution of N<sub>dep</sub> in a pre-industrial CO<sub>2</sub> world

**CdNd** - **CdNf** => contribution of N<sub>dep</sub> in a historical CO<sub>2</sub> world

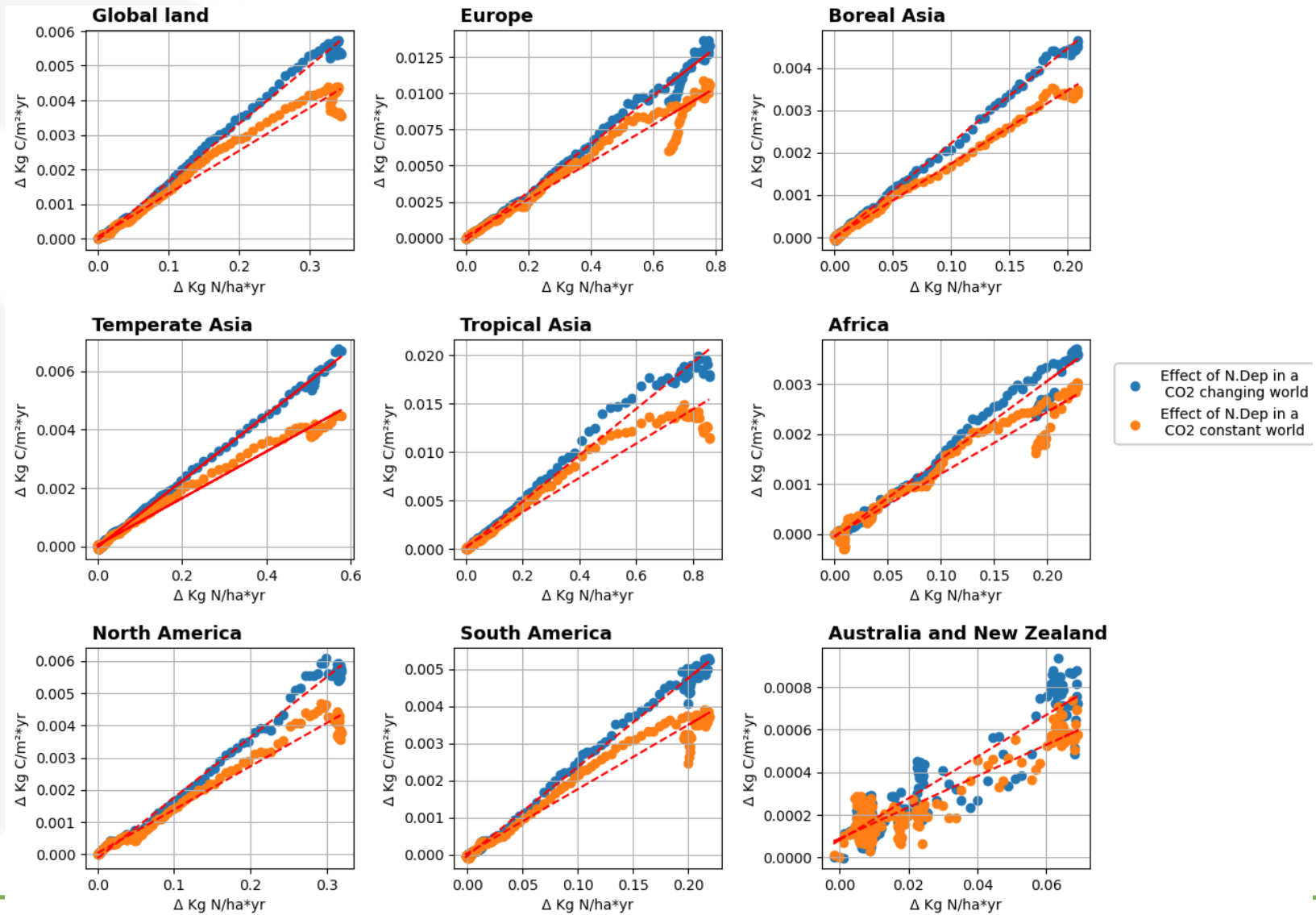
Global NBP



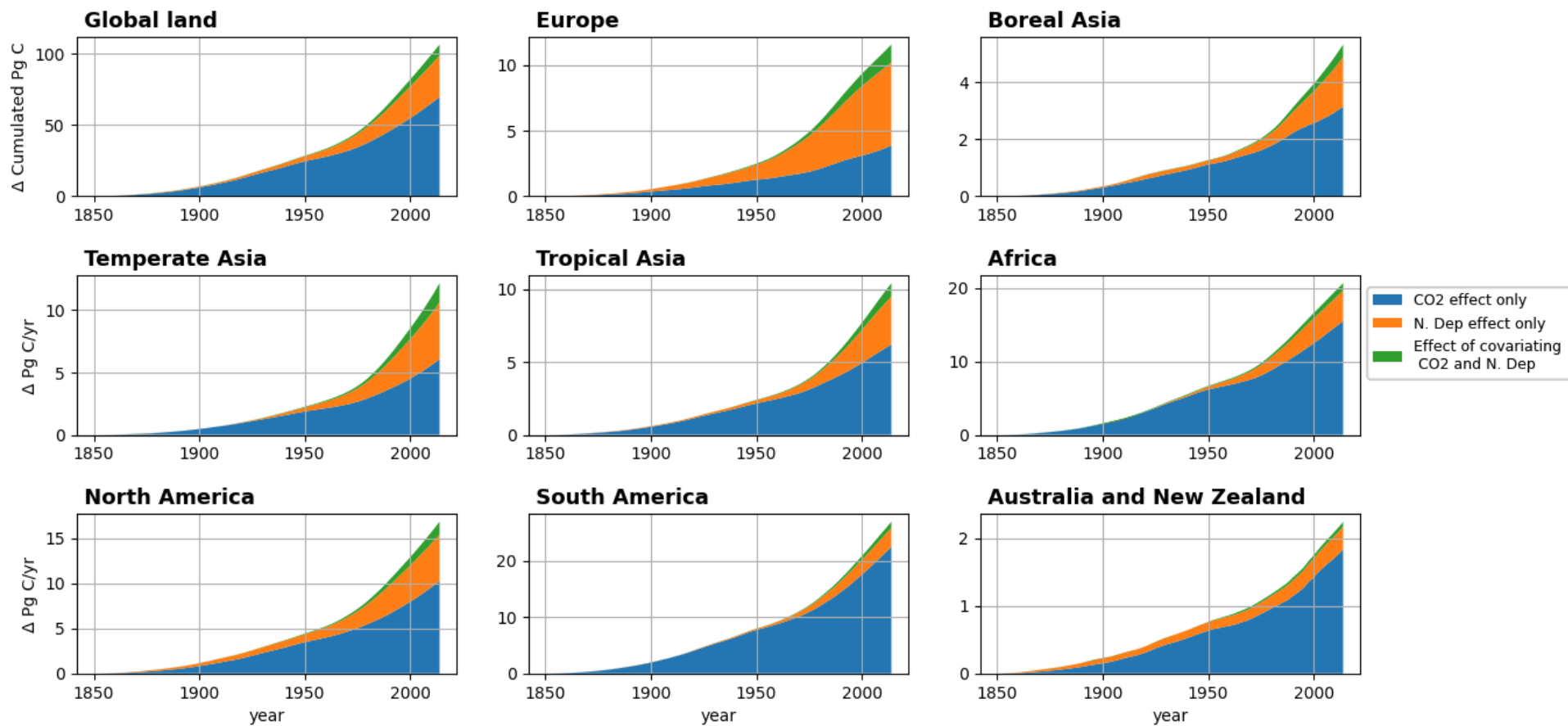
# CO<sub>2</sub> contribution to NBP as a function of CO<sub>2</sub>



# $N_{dep}$ contribution to NBP as a function of $N_{dep}$



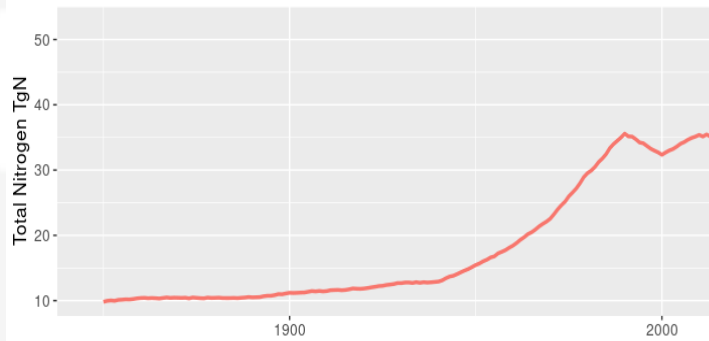
# Respective contributions of CO<sub>2</sub> and N<sub>dep</sub> to cumul. NBP



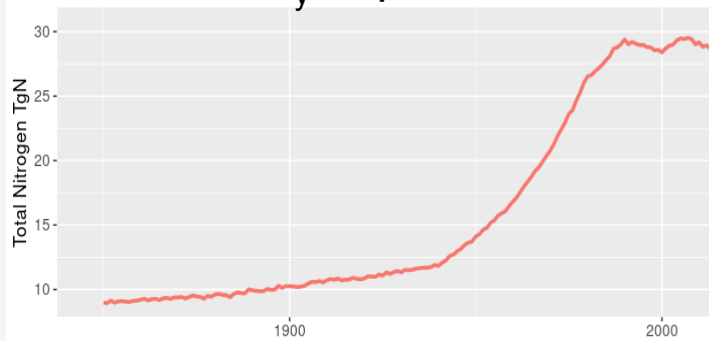
# And for the future ?

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## NH<sub>x</sub> deposition

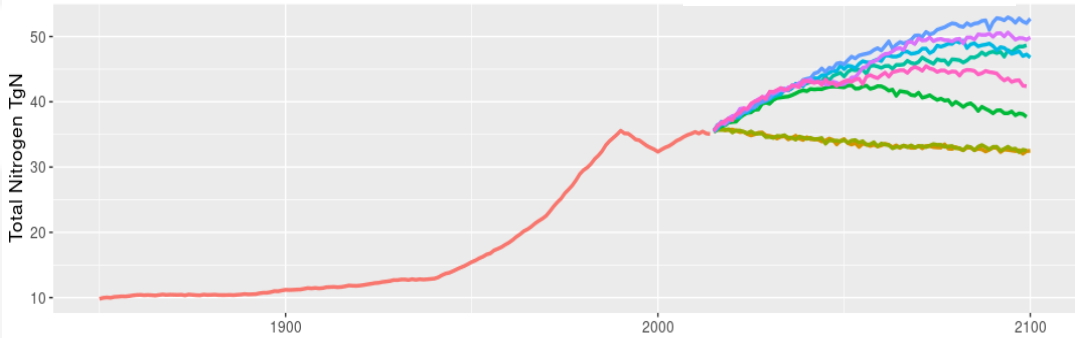


## NO<sub>y</sub> deposition



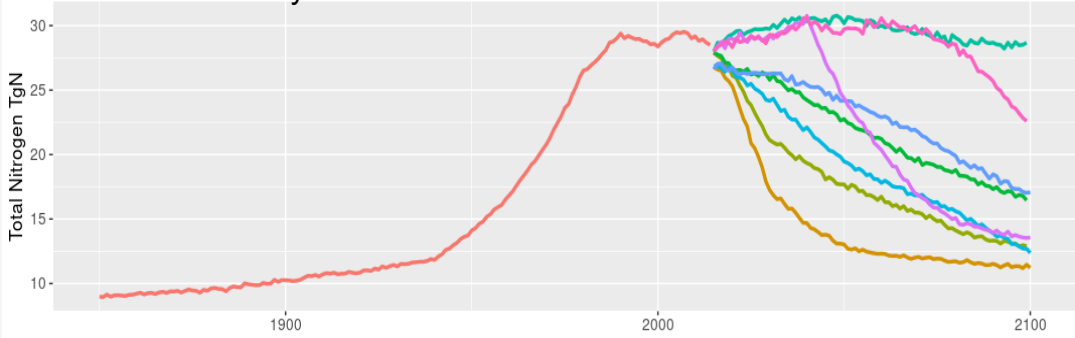
# And for the future ?

## NH<sub>x</sub> deposition



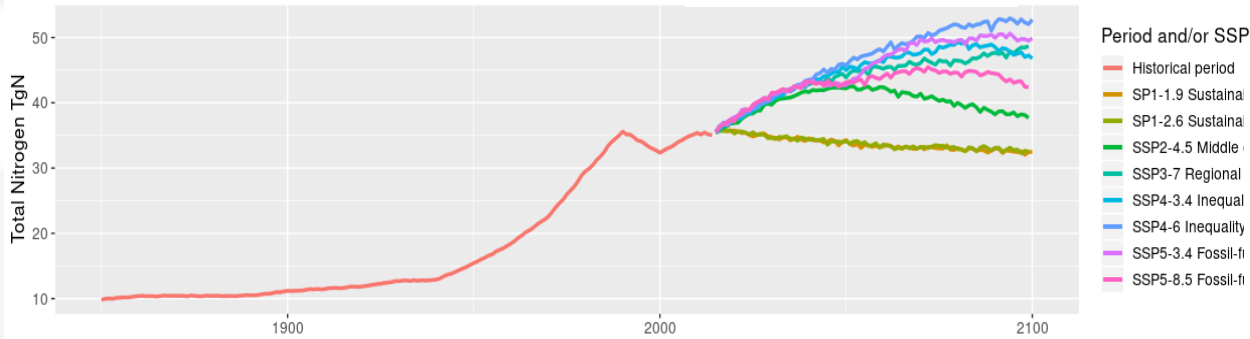
- Period and/or SSP
- Historical period
  - SP1-1.9 Sustainability
  - SP1-2.6 Sustainability
  - SSP2-4.5 Middle of the road
  - SSP3-7 Regional rivalry
  - SSP4-3.4 Inequality
  - SSP4-6 Inequality
  - SSP5-3.4 Fossil-fueled development
  - SSP5-8.5 Fossil-fueled development

## NO<sub>y</sub> deposition

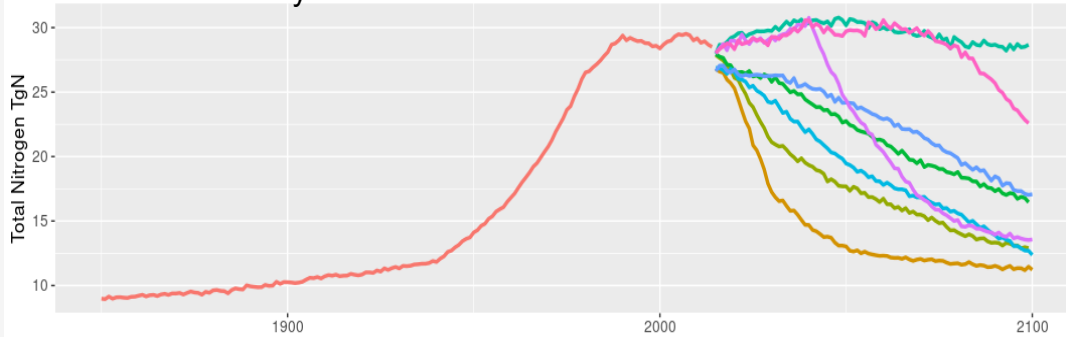


# And for the future ?

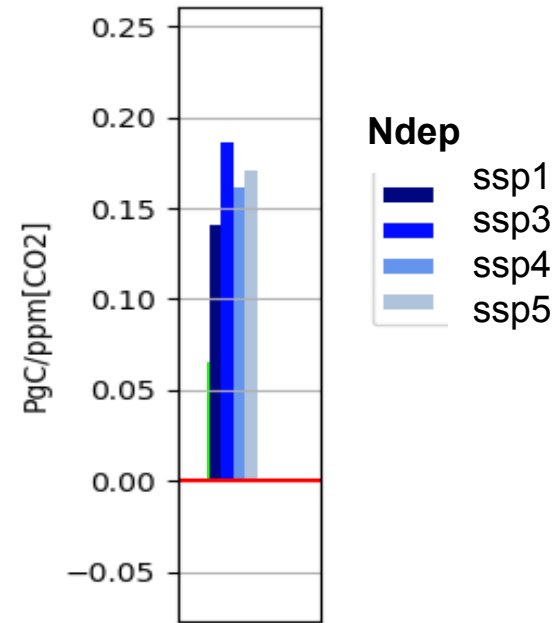
## NH<sub>x</sub> deposition



## NO<sub>y</sub> deposition



## “Beta” factor for CO<sub>2</sub> ssp585

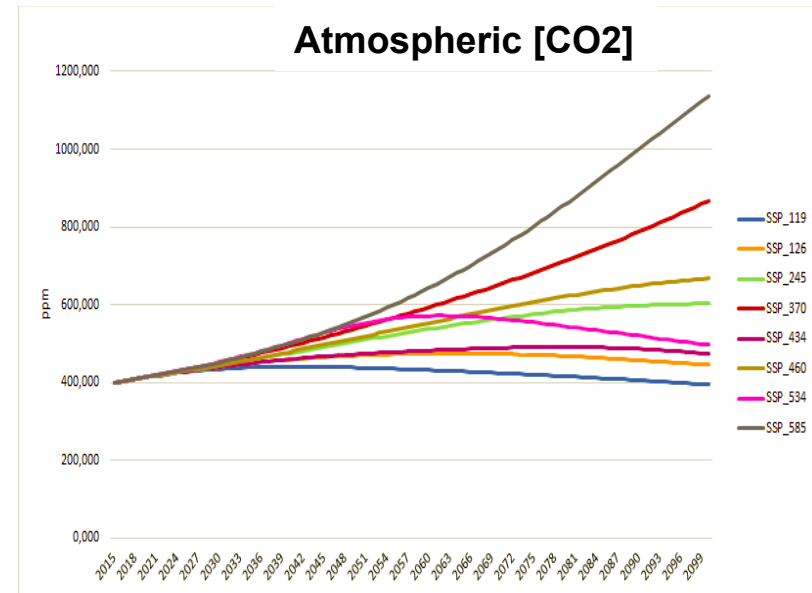
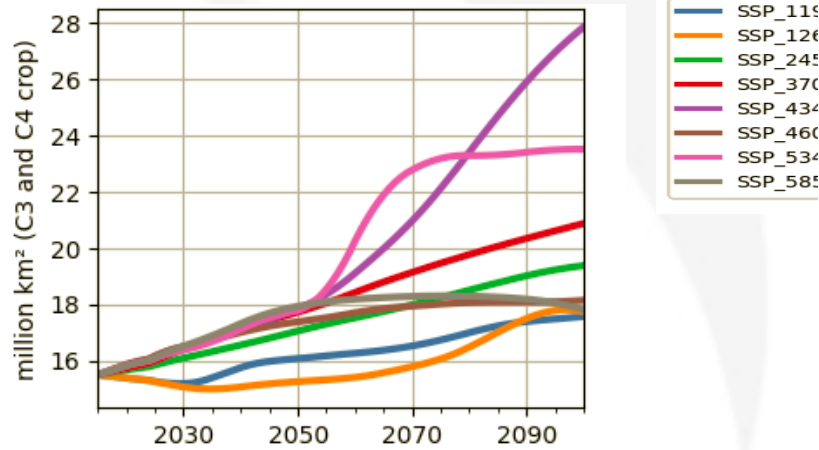




# And for the future ?

- How does it compare with the impact of [CO<sub>2</sub>] and Land-use change (LUC) on NBP

### Cropland area



# Relative contribution of CO<sub>2</sub>, LUC and N<sub>dep</sub> to NBP uncertainty

