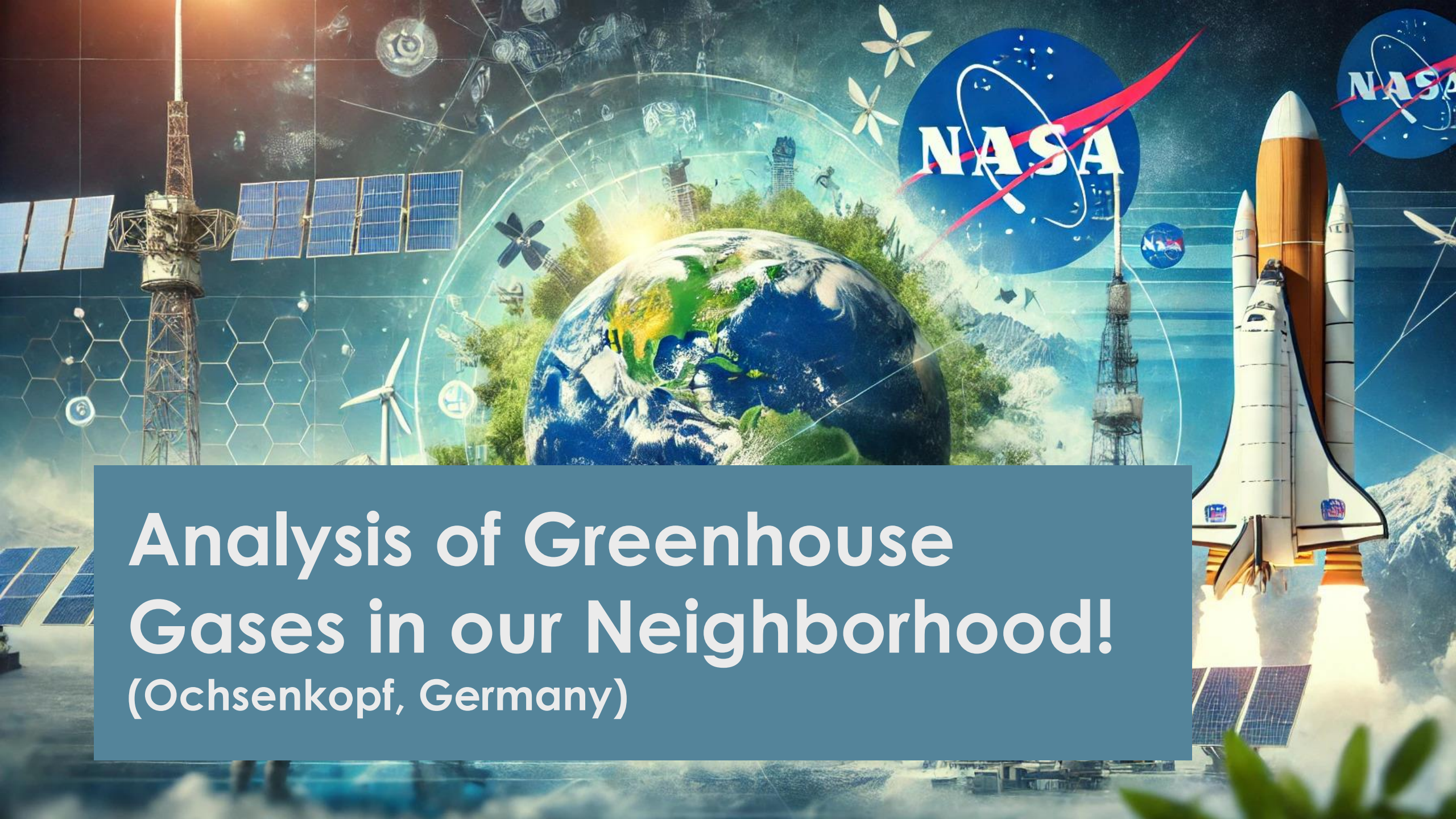
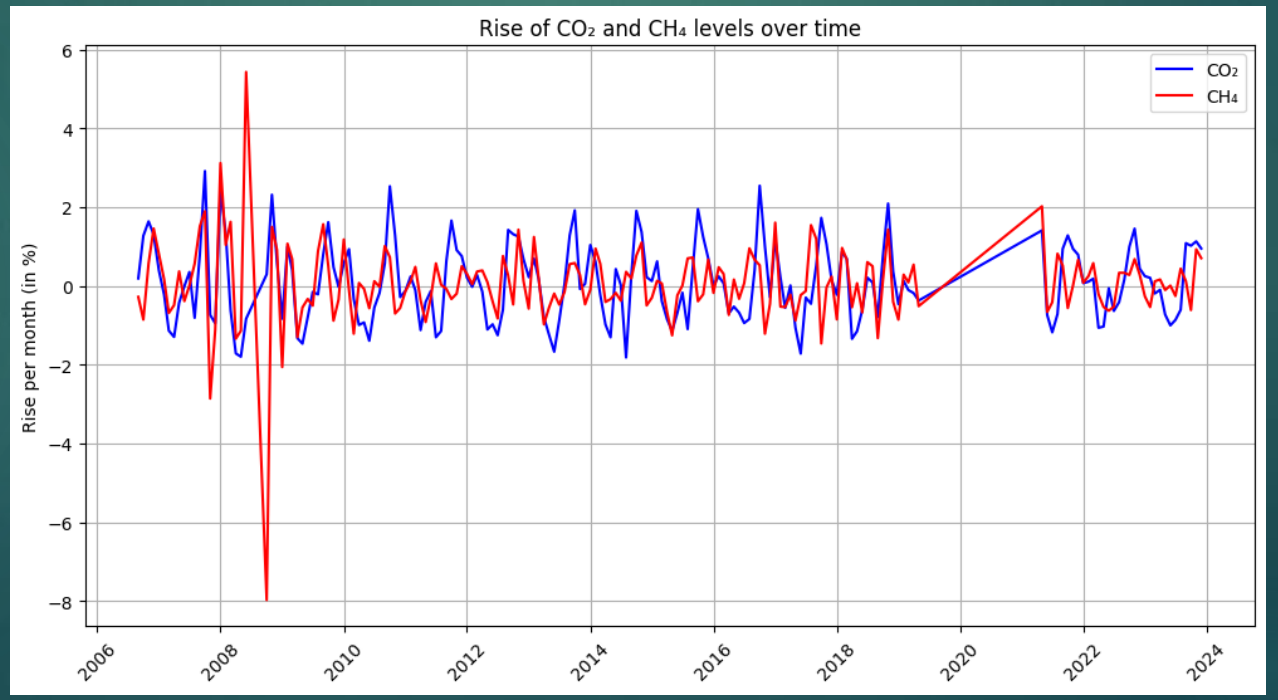


Analysis of Greenhouse Gases in our Neighborhood!

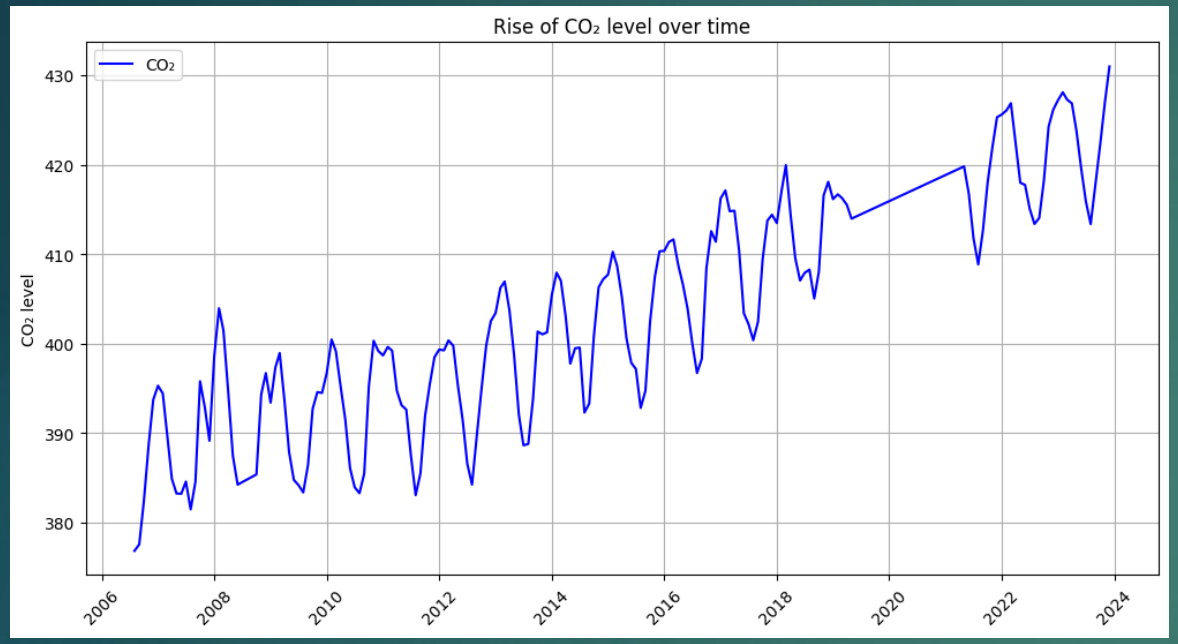
(Ochsenkopf, Germany)

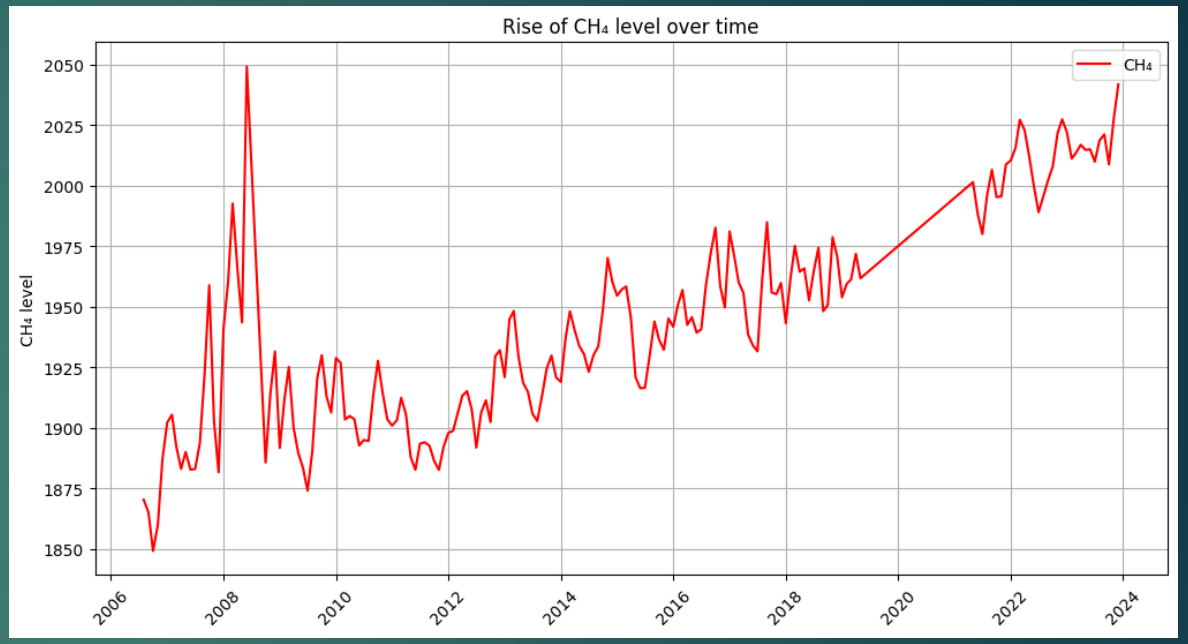
Our project

- We created a Jupyter Notebook and analyzed the atmospheric carbon dioxide and methane concentrations from NOAA Global Monitoring Laboratory for Ochsenkopf, Germany
- While on the first view the **percentual rise** doesn‘t look that concerning, the following slides show the full story



Rise of Co2 and Ch4 levels over time

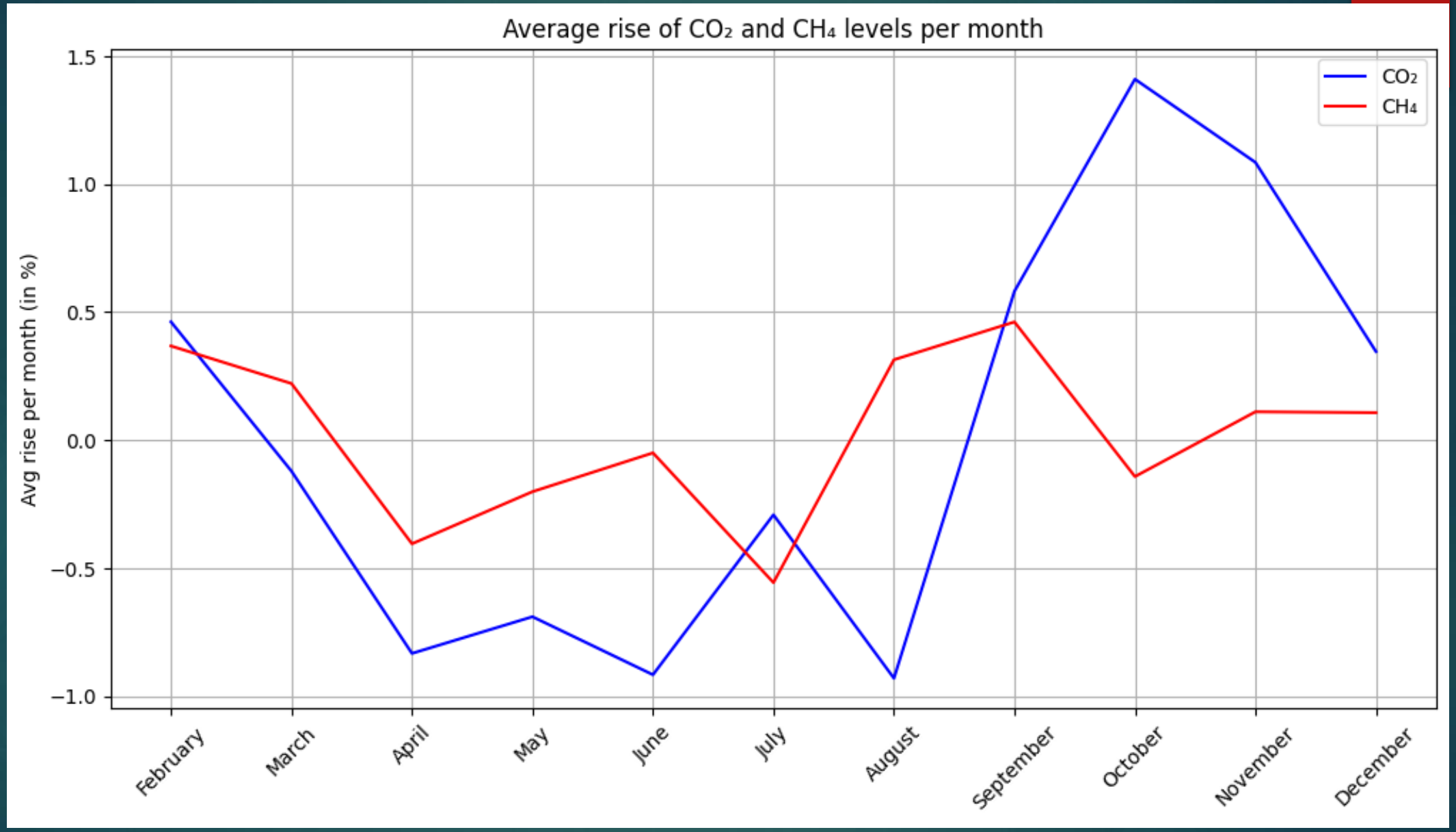




- Total rise of the CO_2 level over time [last - first value]: **12.56 %** in 183 months → On average **0.82 % per year**
- Total rise of the CH_4 level over time [last - first value]: **8.4 %** in 183 months → On average **0.55 % per year**

Average rise of Co2 and Ch4 levels per month

- Another interesting finding is that the rise of the Co2 level reaches it‘s yearly peak in October (on average), while the Ch4 level fluctuares more
- Possible reasons for that on the next few slides


Average rise of CO₂ and CH₄ levels per month
Avg rise per month (in %)
1.5
1.0
0.5
0.0
−0.5
−1.0
CO₂
CH₄
February
March
April
May
June
July
August
September
October
November
December

Possible reasons why Co2 Emissions rise in Ochsenkopf, Germany in October

- Increased Heating
  - Colder weather → Higher energy demand for heating.
- Agricultural Activity
  - Harvest season → More machinery & fuel usage.
- More Transportation
  - Crop logistics & holiday travel → More vehicles on roads.
- Reduced CO2 Absorption
  - Trees enter dormancy → Less CO2 absorbed by nature.
- Regional Events
  - Festivals & gatherings → Temporary energy and travel spikes.

Possible reasons why Ch4 Emissions rise in Ochsenkopf, Germany in October

- Agricultural Activity
  - Harvest season → Livestock farming increases methane from manure & digestion.
- Organic Waste Decomposition
  - Crop waste and organic matter decompose, releasing methane.
- Soil Disturbance
  - Tilling and harvesting → Disturbed soil releases stored methane.
- Landfills and Waste
  - Increased organic waste from harvests → Landfills emit more methane.
- Seasonal Animal Feeding
  - Livestock confined and fed → Increased methane from animal digestion (enteric fermentation).