CEOS AC-VC-22

SRON, Leiden 2026-06-04

# Greenhouse Gas Observations

# 6.1 Welcome & Session Opening

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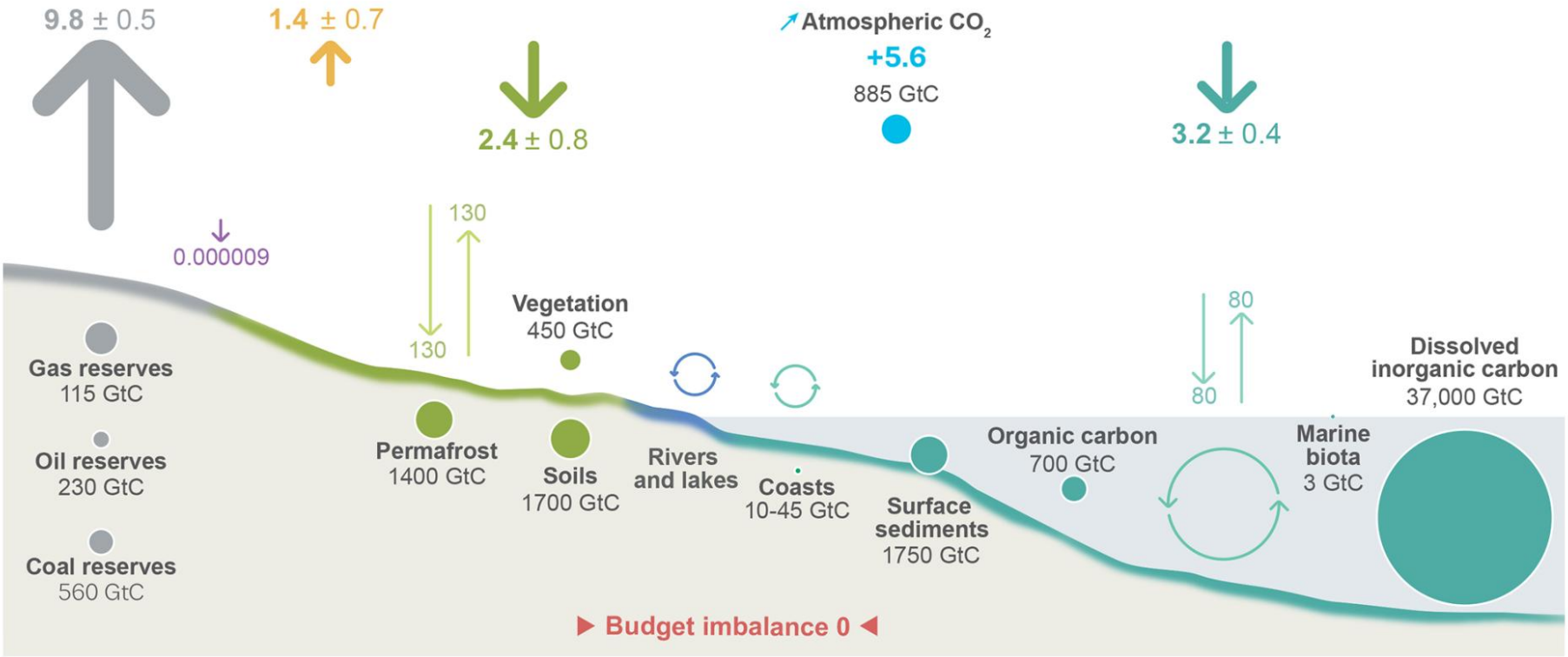
# The global carbon cycle

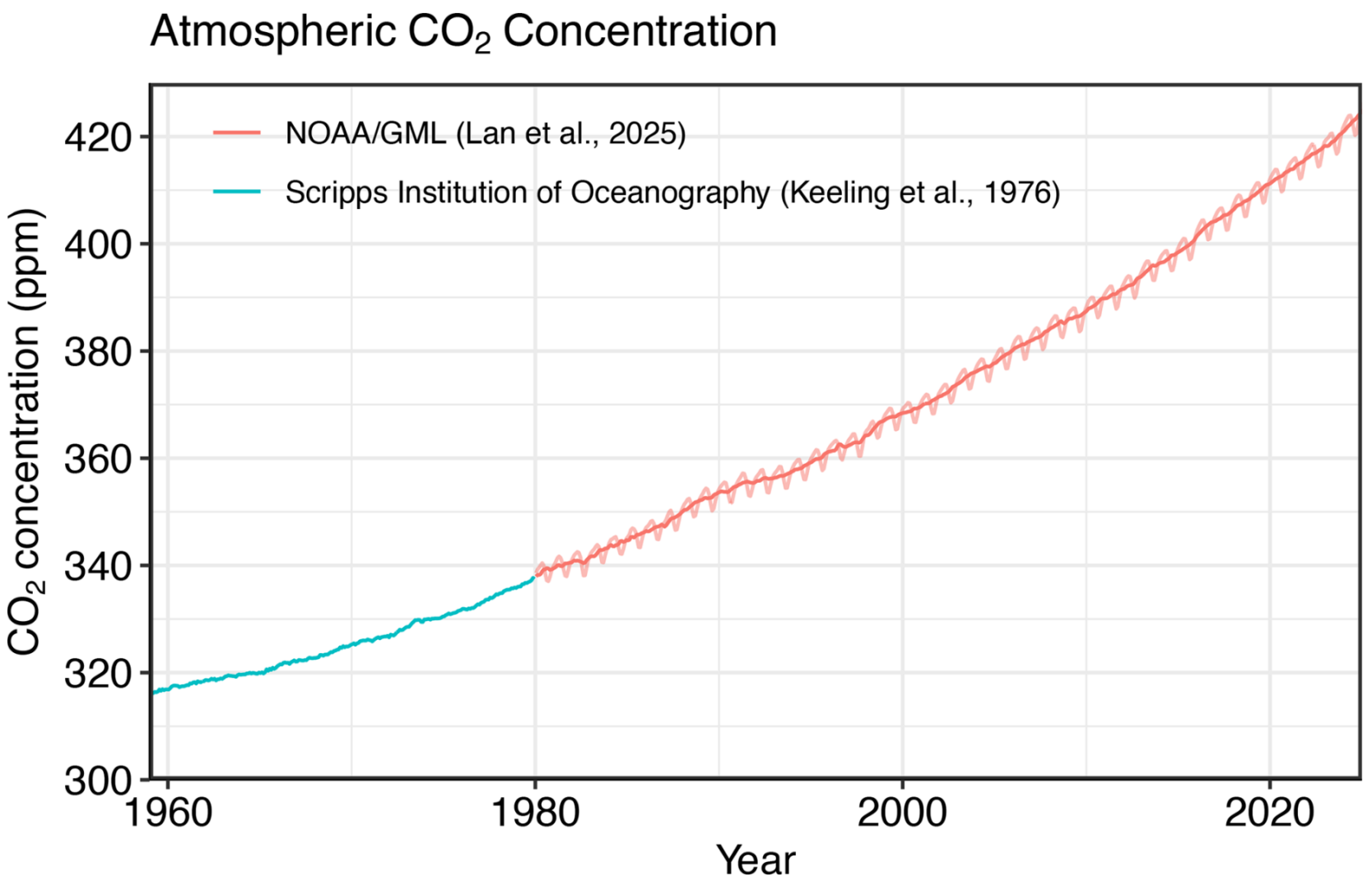



**Anthropogenic fluxes**
**2015-2024 average**
**GtC per year**

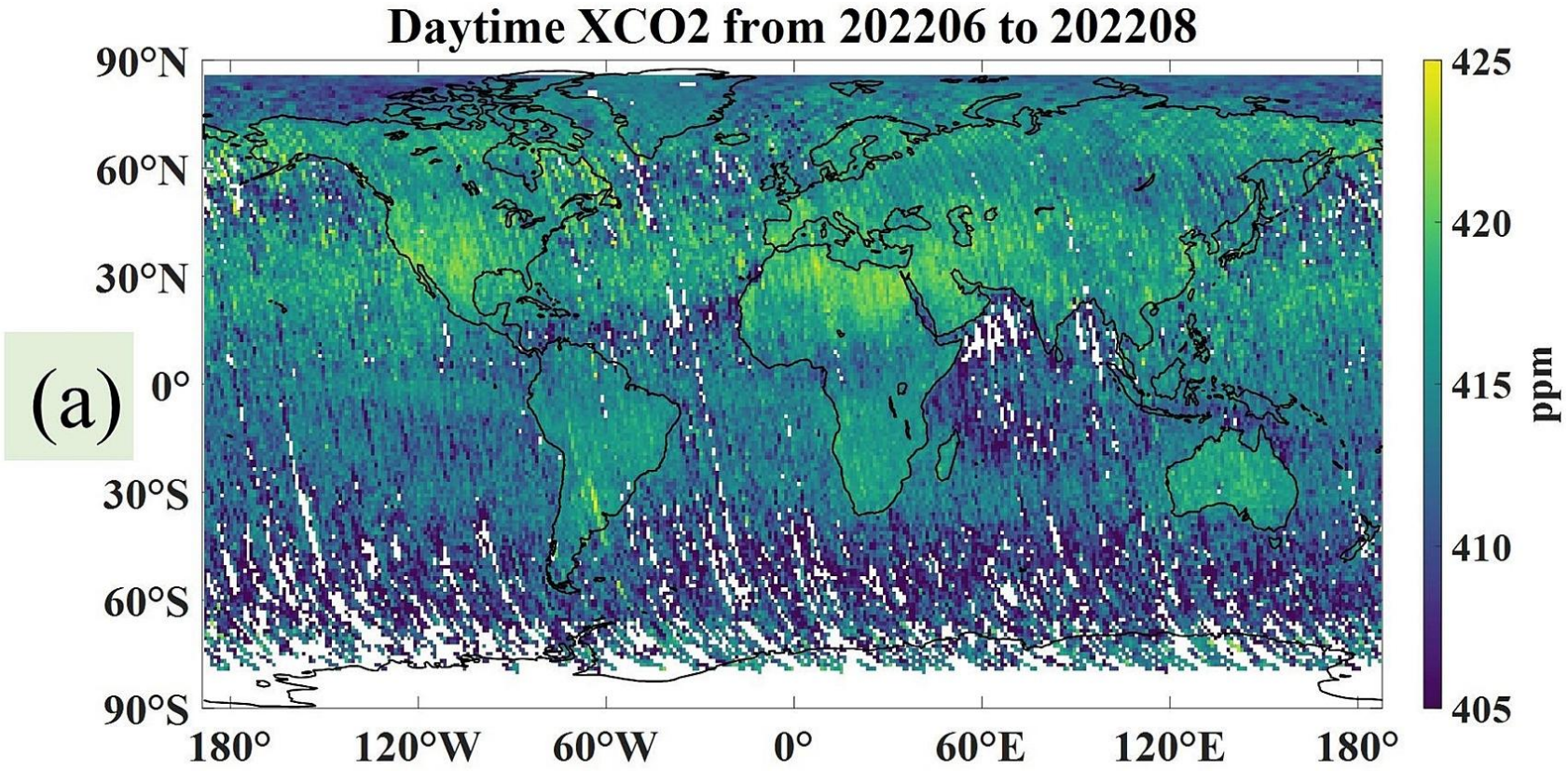
- Fossil $CO_2$ $E_{FOS}$
- Land-use change $E_{LUC}$
- CDR not included in $E_{LUC}$
- Land uptake $S_{LAND}$
- Ocean uptake $S_{OCEAN}$
- Atmospheric increase $G_{ATM}$
- Budget Imbalance $B_{IM}$
- Stocks GtC
- Natural carbon fluxes in GtC

*Friedlingstein et al., ESSD (2026)*

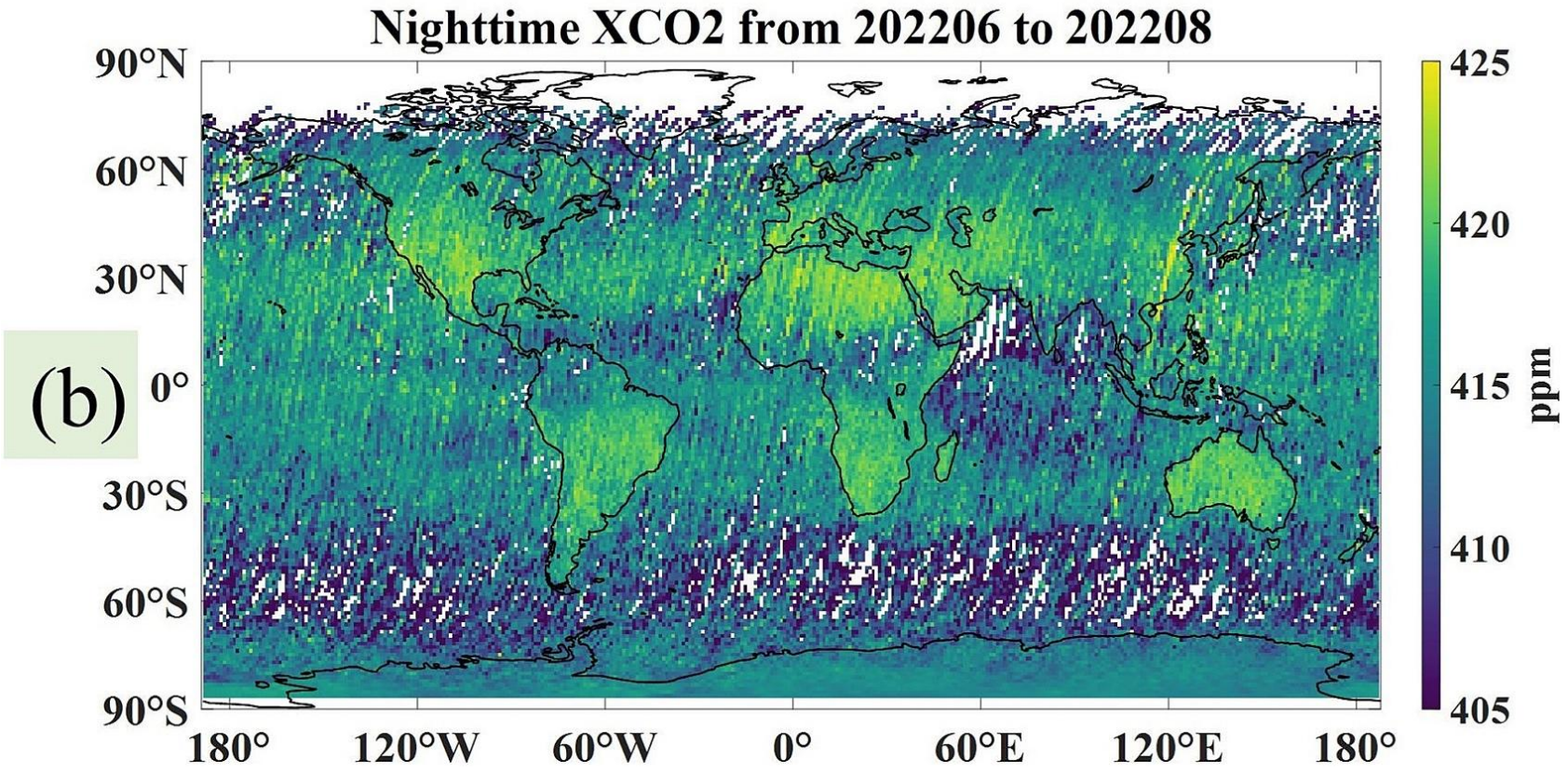
PL




*Friedlingstein et al., ESSD (2026)*




*First global XCO2 observations from spaceborne lidar*
*Ge et al., RSE (2025)*

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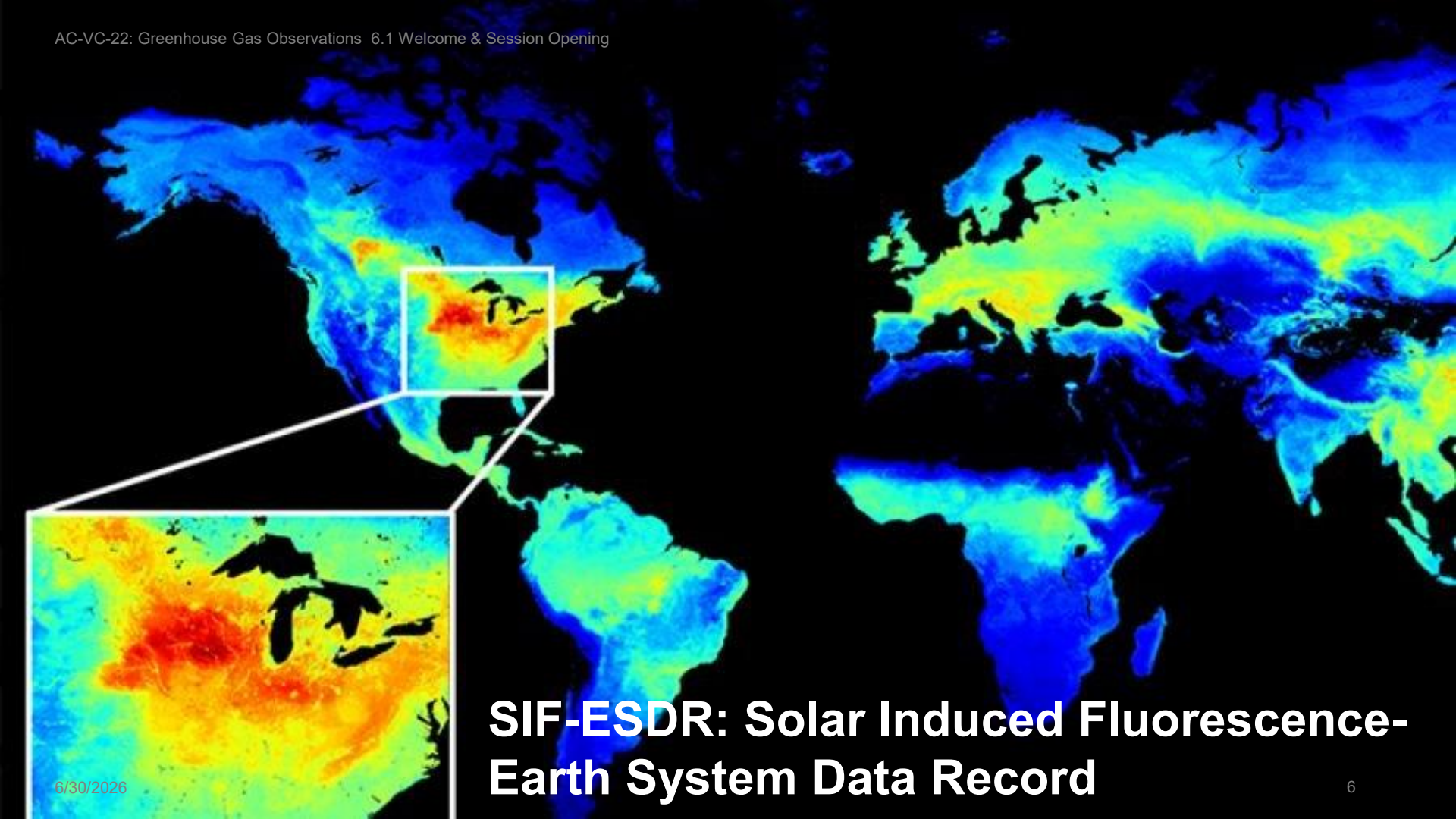
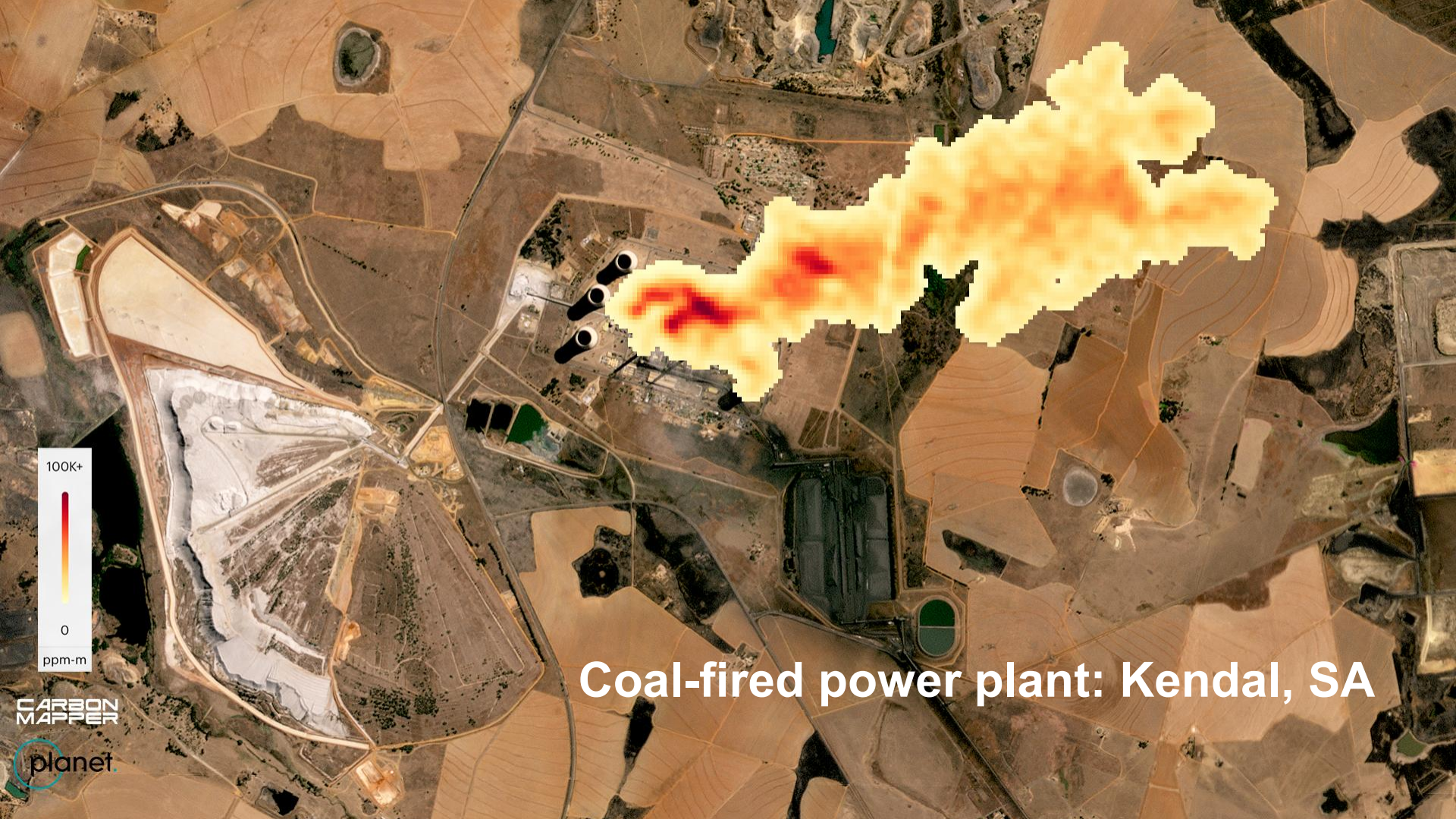
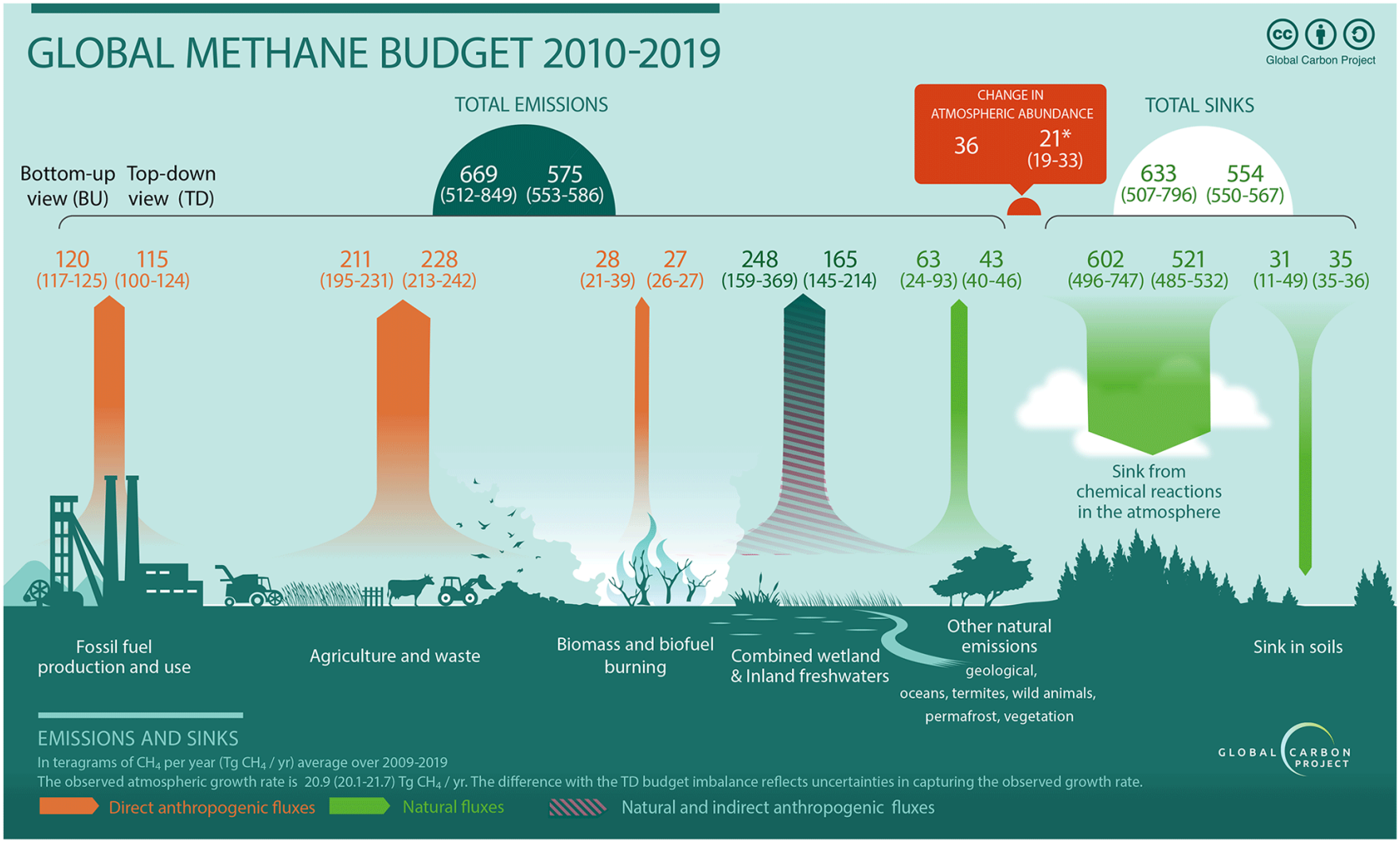


# SIF-ESDR: Solar Induced Fluorescence-Earth System Data Record

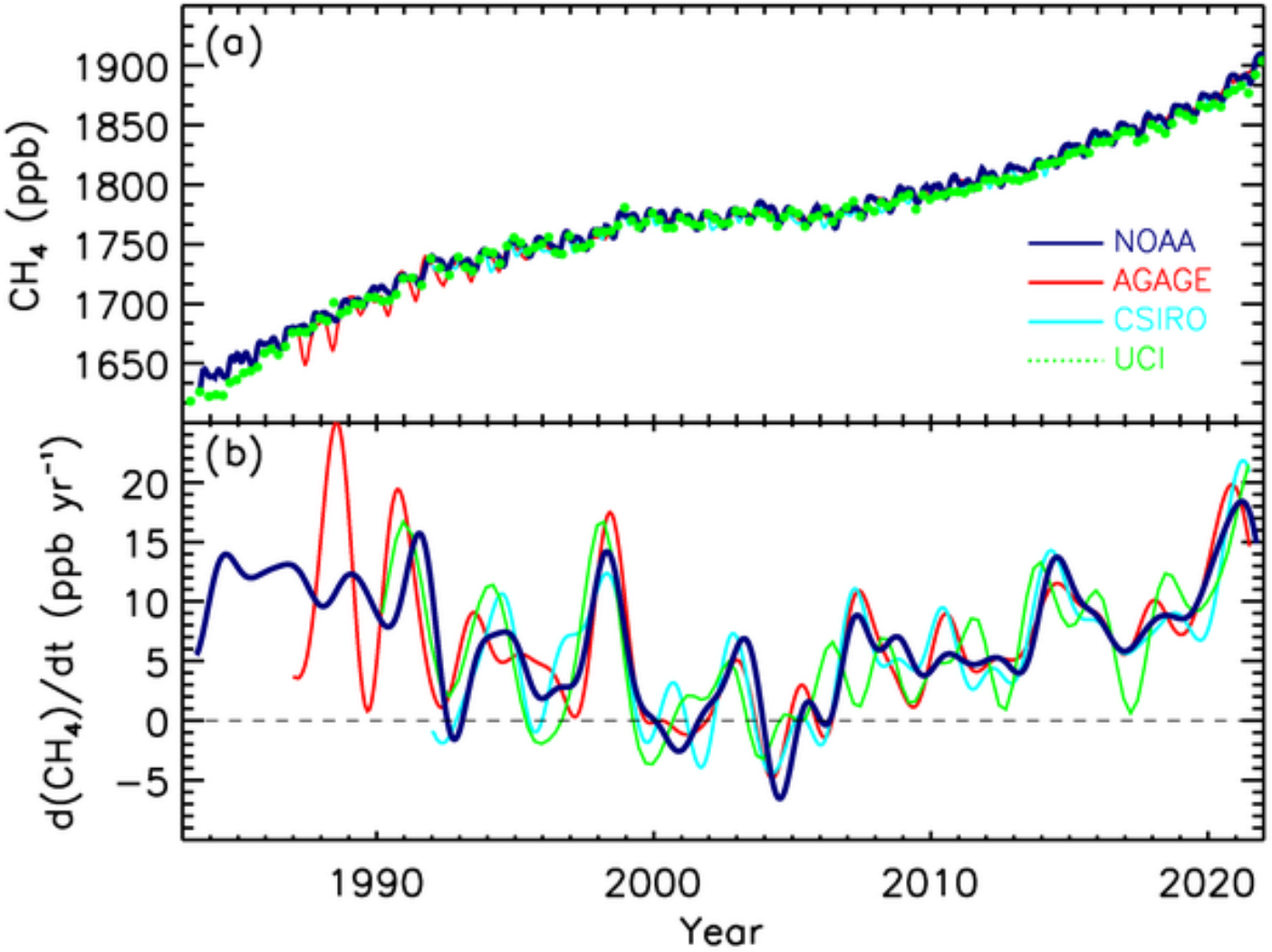

100K+
0
ppm-m
CARBON MAPPER
planet.
Coal-fired power plant: Kendal, SA



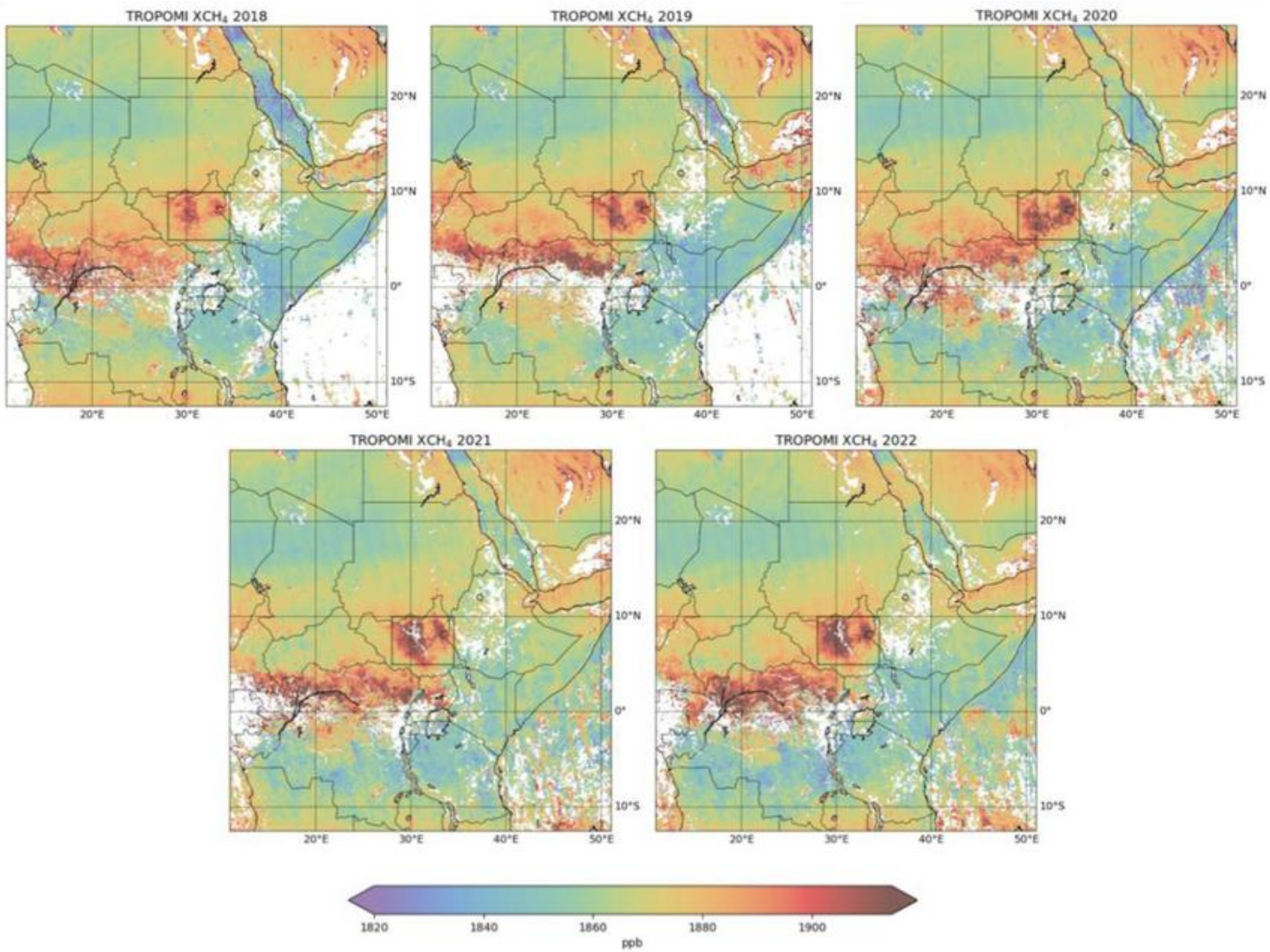

*Saunois et al., ESSD (2025)*



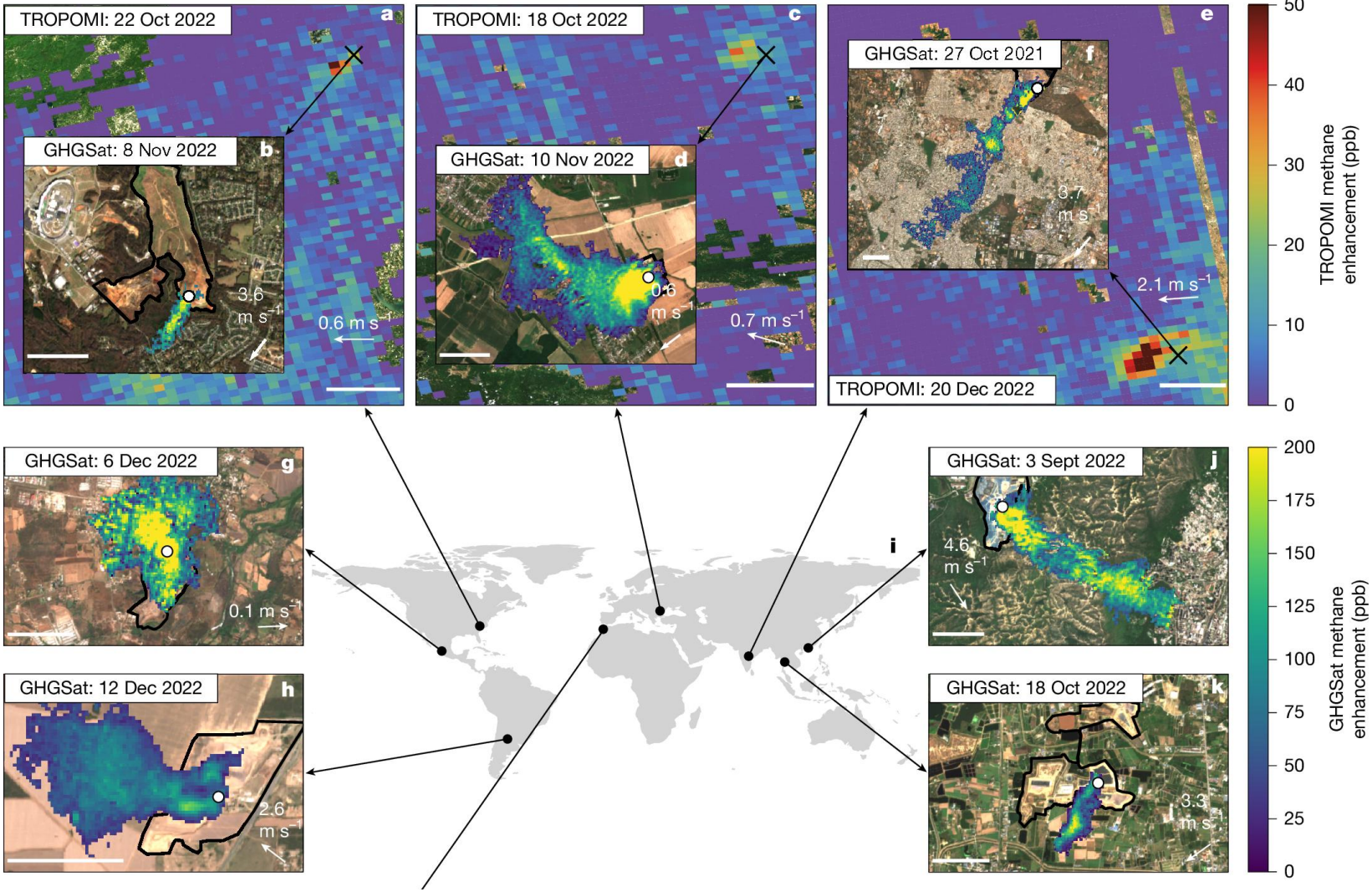
JPL




*Saunois et al., ESSD (2025)*




*TROPOMI Methane Emissions in South Sudan Wetlands*
*Albuhaisi et al., Remote Sensing (2024)*




*Global satellite survey reveals uncertainty in landfill methane emissions*
*Dogniaux et al., Nature (2025)*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