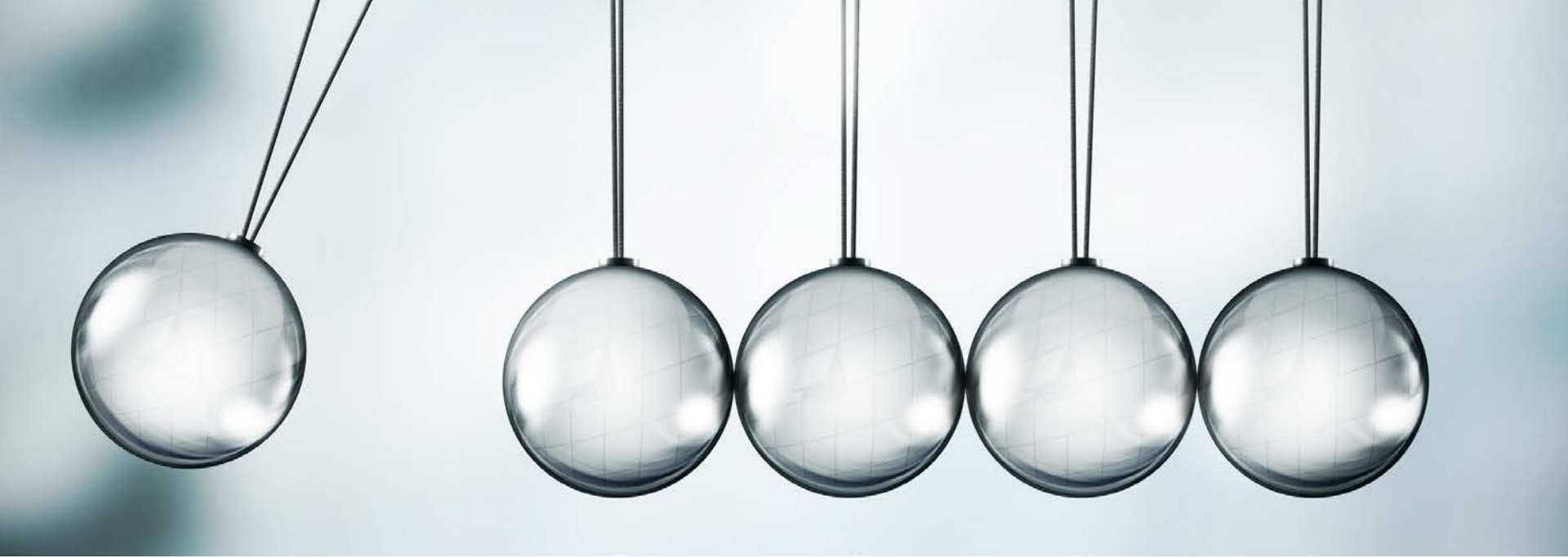


Perspectives on the VERIFY data products from the Austrian inventory team

VERIFY GENERAL ASSEMBLY, PARIS

10 MAY 2022

PERSPEKTIVEN FÜR UMWELT & GESELLSCHAFT umweltbundesamt

Background

- At Environment Agency Austria (EEA) we have a dedicated and ISO/IEC 17020 accredited **I**nspection **B**ody for **E**missions Inventories (IBE)
  - QMS that aims to maintain and improve inventory standards that fulfill (and go beyond) international reporting requirements

- Topic of utilization of remote and in situ observations for GHG emissions monitoring is gathering momentum and is a topic that EEA is actively working on:
  - VERIFY and CoCO2
  - European Topic Centres
  - National projects e.g. upcoming project within the FFG ASAP 18 call

FFG ASAP 18 Call

- Together with the Austrian Research Promotion Agency (FFG), a call was developed within FFG Austrian Space Applications Programme (ASAP)

  Integrated Greenhouse Gas Monitoring in Austria with Copernicus

- Aim - Flagship project to deliver methods and prototypes for utlising current and emerging Copernicus data to support national emissions monitoring

https://www.ffg.at/ausschreibung/Leitprojekt-18-asap-ausschreibung

Sep 2021	Call announced
Jan 2022	Deadline for applications
Decision pending	

→ Stimulus to elaborate **perspectives** (and *requirements*) on the added-value of inverse modelling (and other EO data) to support national emissions monitoring

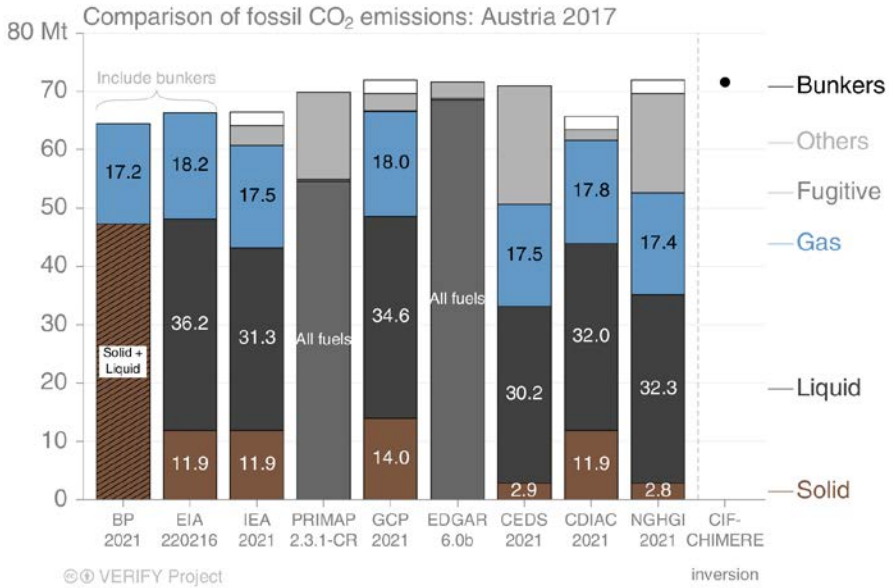
Validation of inventory emission levels and trends; *Nowcast* function

- *IM-uncertainties must be comparable to inventory uncertainties*
- *Net flux estimate of limited value; estimate of anthropogenic emissions and biogenic fluxes essential (reporting requirements need to be considered)*

Identification of errors in the inventory

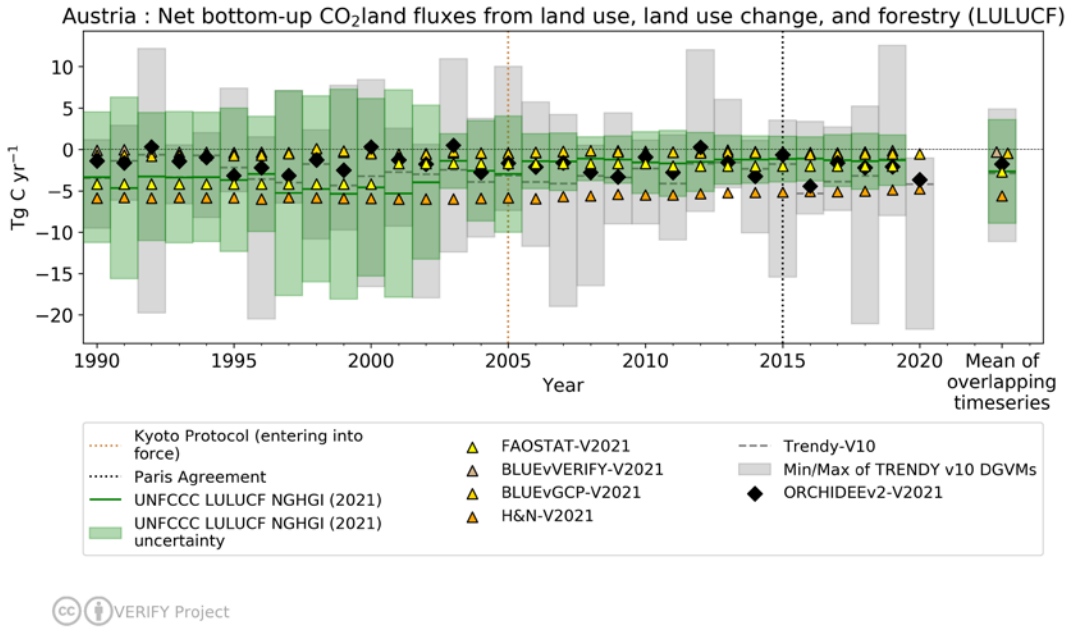
- *Identifications of errors/issues at sector level needed; Prior-Posterior discrepancies need to be analysed and explained*

Perspectives on VERIFY data products: Comparison of fossil fuel CO_2 inventories



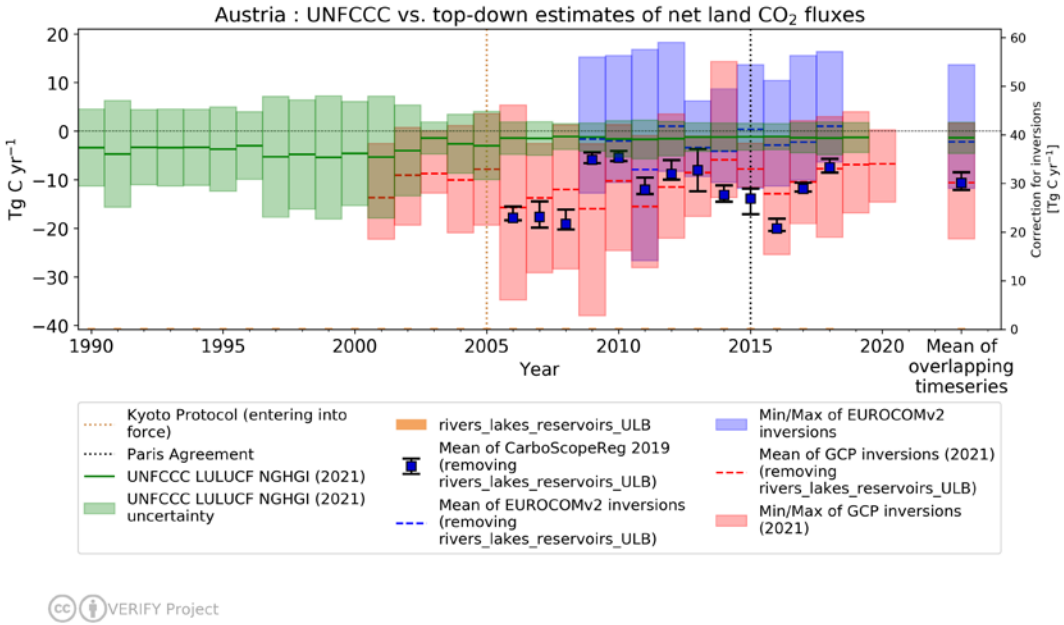
- Good agreement between inventory estimates in terms of levels when accounting for respective source inclusions/exclusions
  - Also reflected in the agreement with the CO_2 inversion, though this should be judged with caution.
- Good agreement in terms of trends in the inventories
- Agreement appears to verify national fossil fuel CO_2 emission estimates (level and trend) and furthermore appears to verify the low uncertainty estimate for national fossil fuel CO_2 emissons
- However, estimates are not completely independent

Perspectives on VERIFY data products: Comparison of BU land CO_2 fluxes and LULUCF



- Relative agreement between estimate levels with respect to large sector uncertainty
- No agreement between the estimates in terms of trend
- Variation between the VERIFY estimates and uncertainties appear to verify the national uncertainty estimate

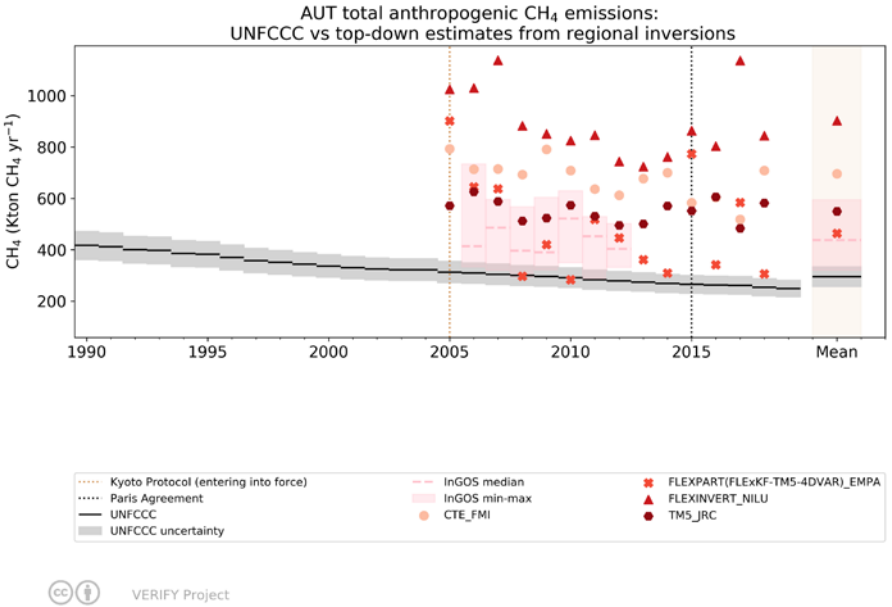
Perspectives on VERIFY data products: Comparison of TD land CO_2 fluxes and LULUCF



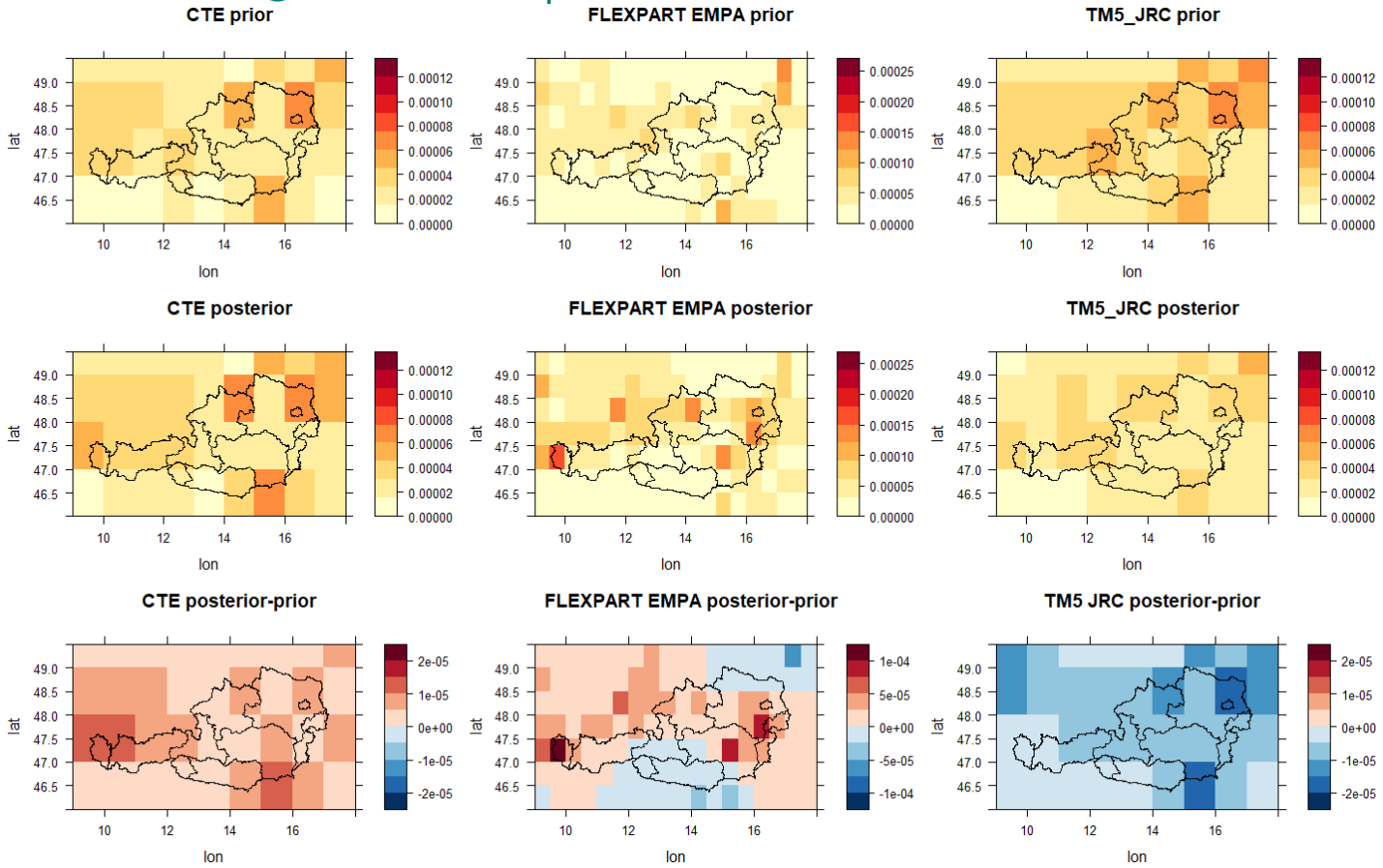
- High national uncertainty estmate also reflected in the range in TD estimates
- Generally higher uptake according to the TD and only partial correlation with the national inventory in terms of trend:
- Potentially due to the temporal and spatial differences between LULUCF carbon balances and biogenic CO_2 fluxes

Perspectives on VERIFY data products: Comparison of CH_4 inventory with global and regional invesions

- No clear agreement in terms of trend. Inventory reports declining CH_4 emissions over time, while inversions show large year-to-year variations but do not indicate a clear long term trend
- Despite large variations in the TD estimates, both the global and regional inversions produce systematically higher CH_4 fluxes than the national inventory emissions estimates
- TD estimates do not verify the national CH_4 inventory
  - What are the causes for the discrepancies?

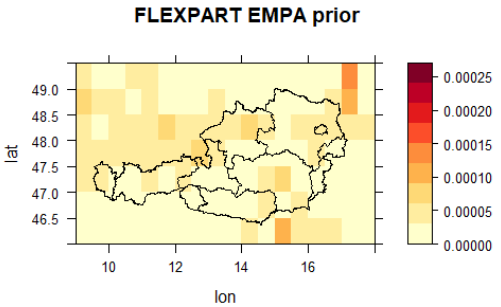


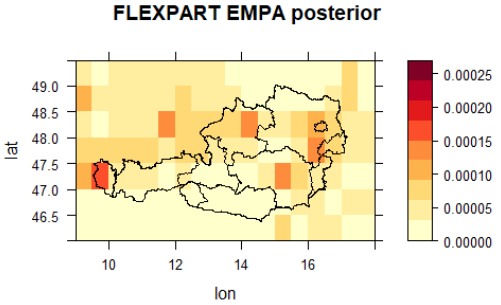
Closer look at regional CH_4 invesions

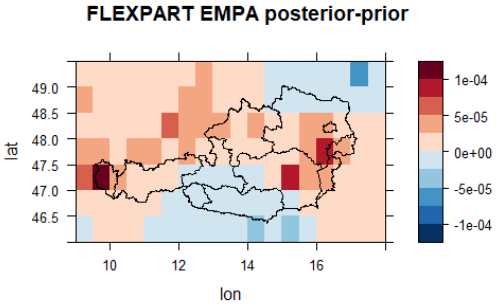


Conclusions and Outlook

- VERIFY has produced a really impressive synthesis of estimates of Austrian GHG emissions and removals
  - The datasets are welcomed and we would look forward to further syntheses in the future!
- Such datasets could indeed by used for verifying inventories in terms of emission levels and trends
- Utilisation for verification likely varies depending on the gas, sectors included/exlcuded and the type of independent method (bottom-up vs top down)
- Verification needs to go beyond the aggregate comparison and investigate the reasons for deviating estimates







THANK YOU FOR YOUR ATTENTION

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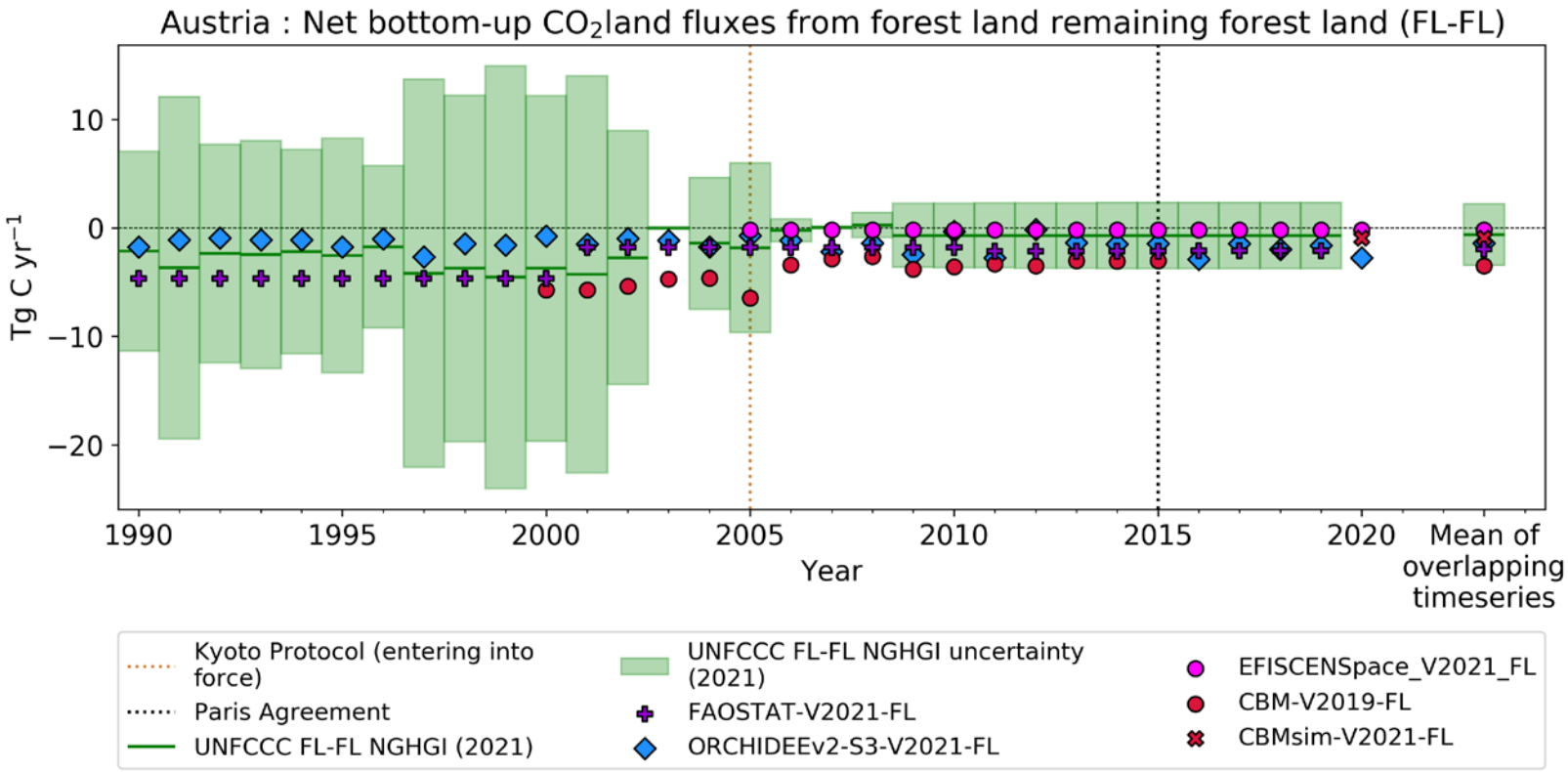
Umweltbundesamt
www.umweltbundesamt.at

VERIFY General Assembly
09.05.2022-11.05.2022

PERSPEKTIVEN FÜR UMWELT & GESELLSCHAFT umweltbundesamt

ANNEX



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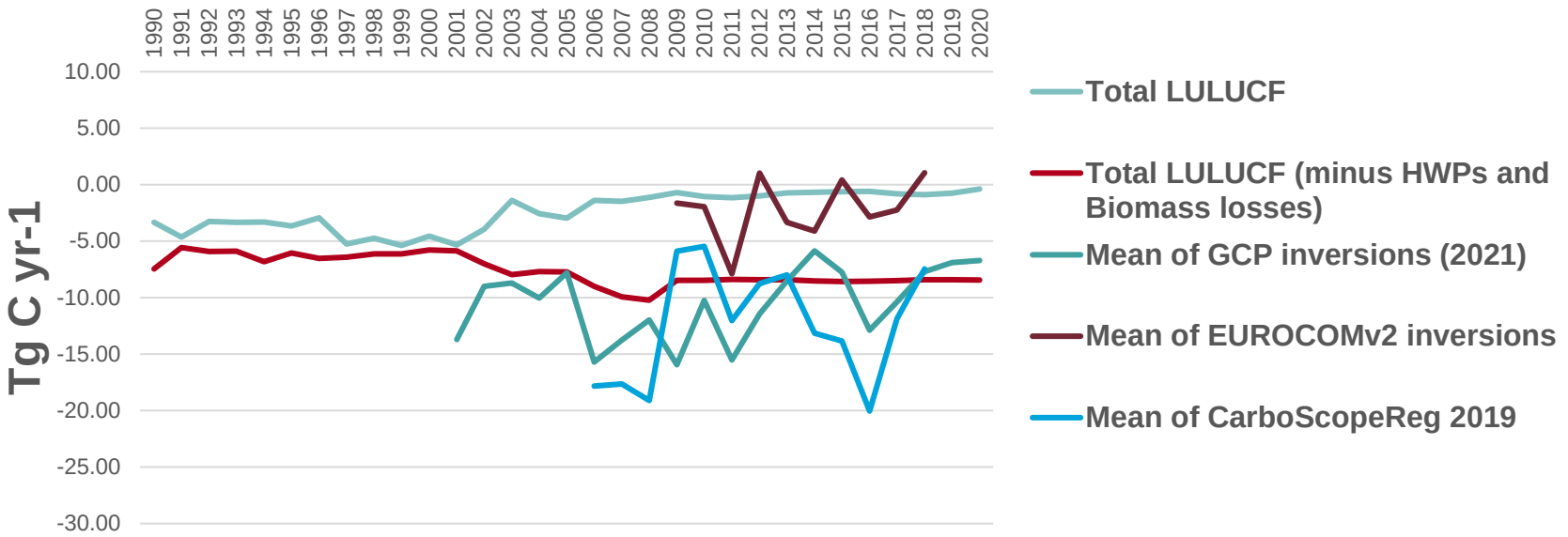
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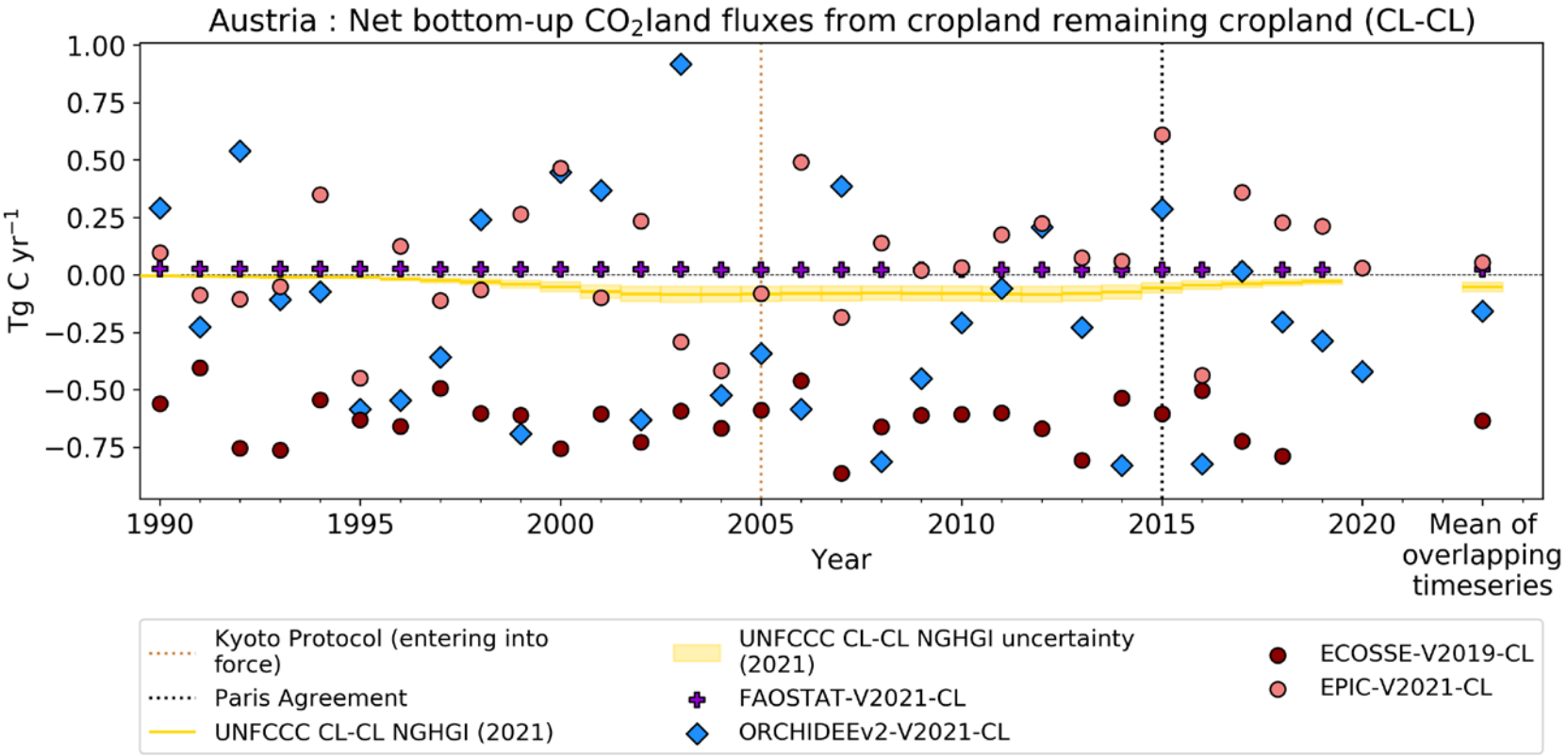
Tg C yr-1
Total LULUCF
Total LULUCF (minus HWPs and Biomass losses)
Mean of GCP inversions (2021)
Mean of EUROCOMv2 inversions
Mean of CarboScopeReg 2019

ANNEX



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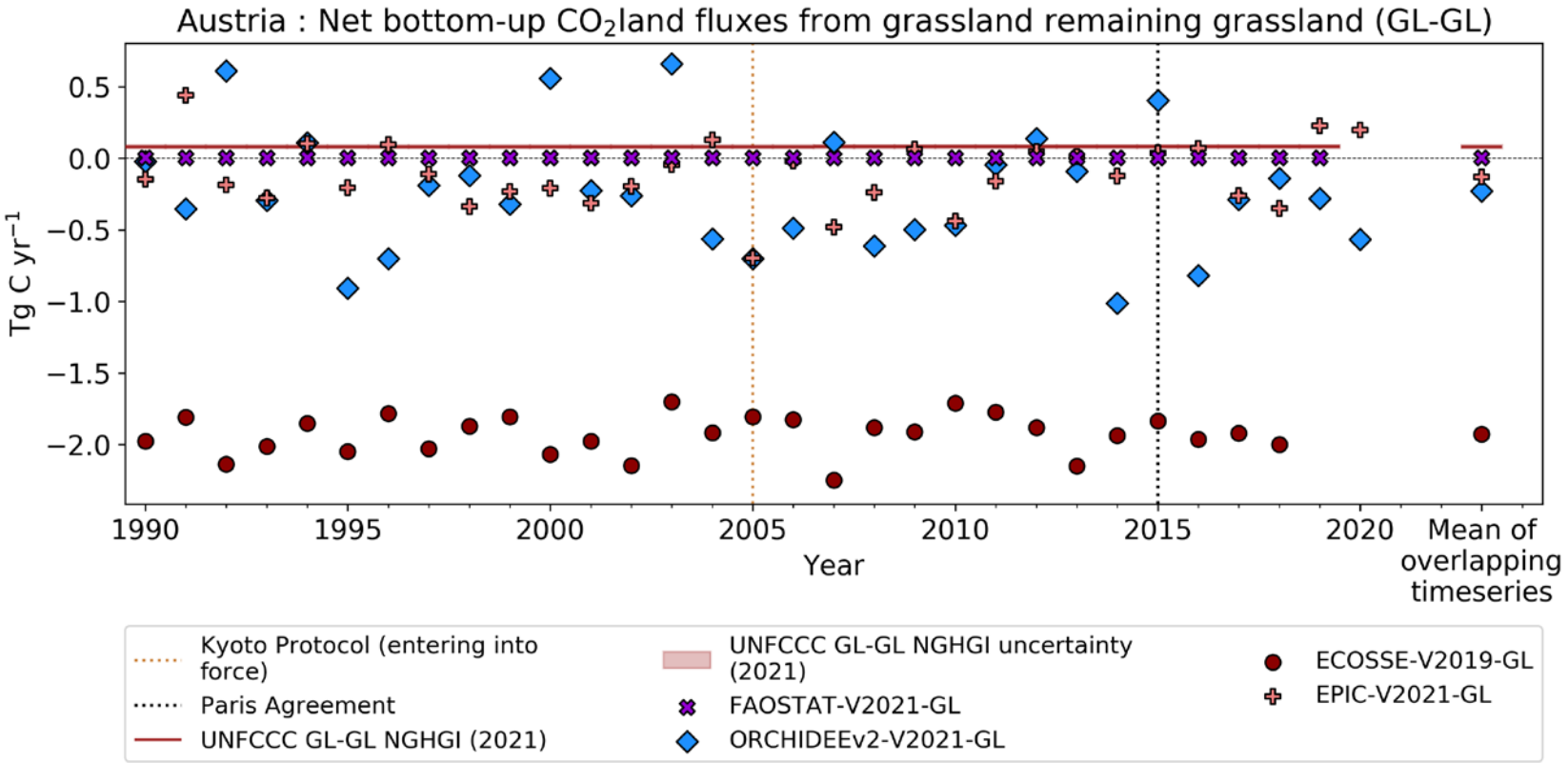

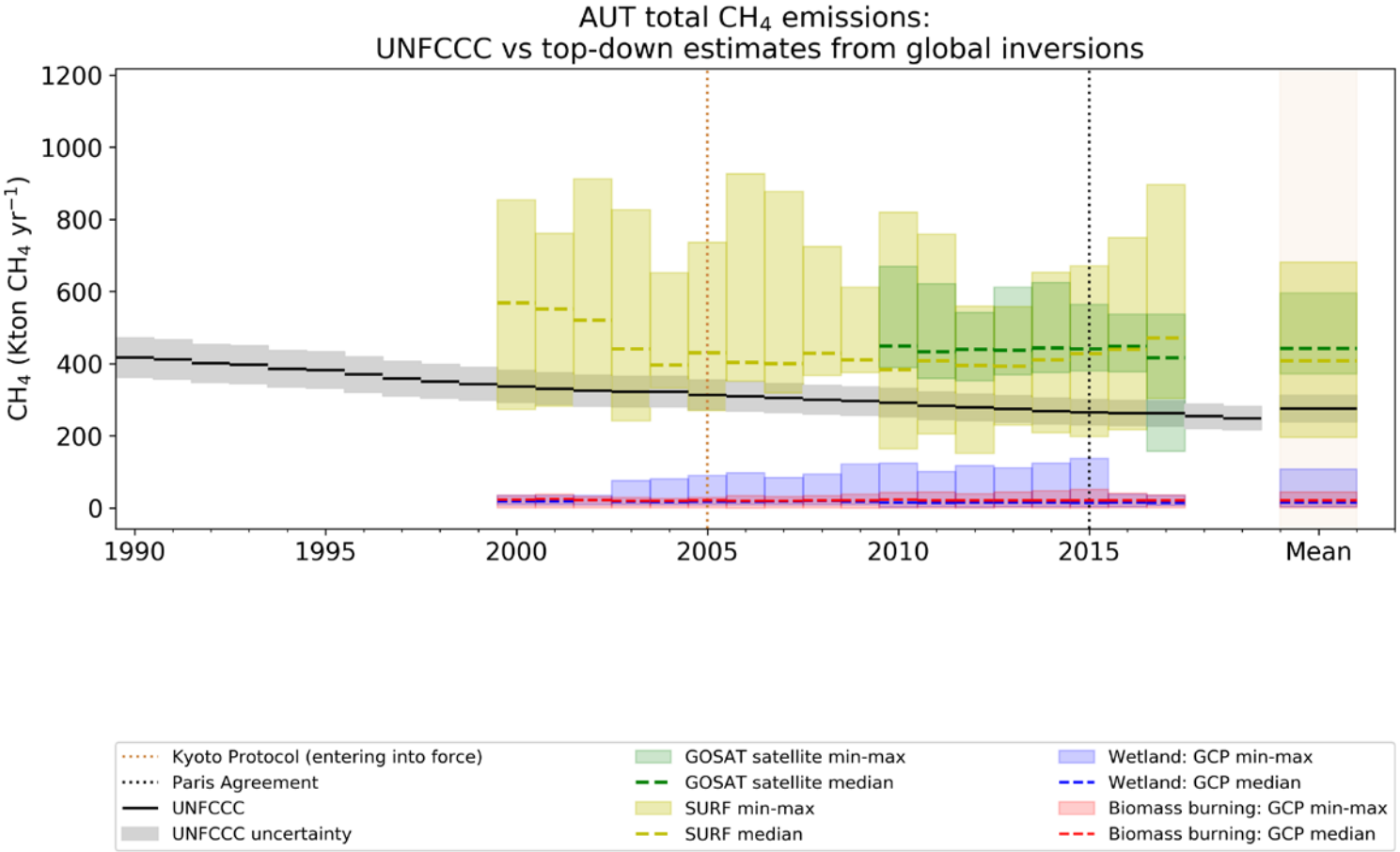

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