

Understanding the contemporary global carbon balance and its implications for monitoring emissions

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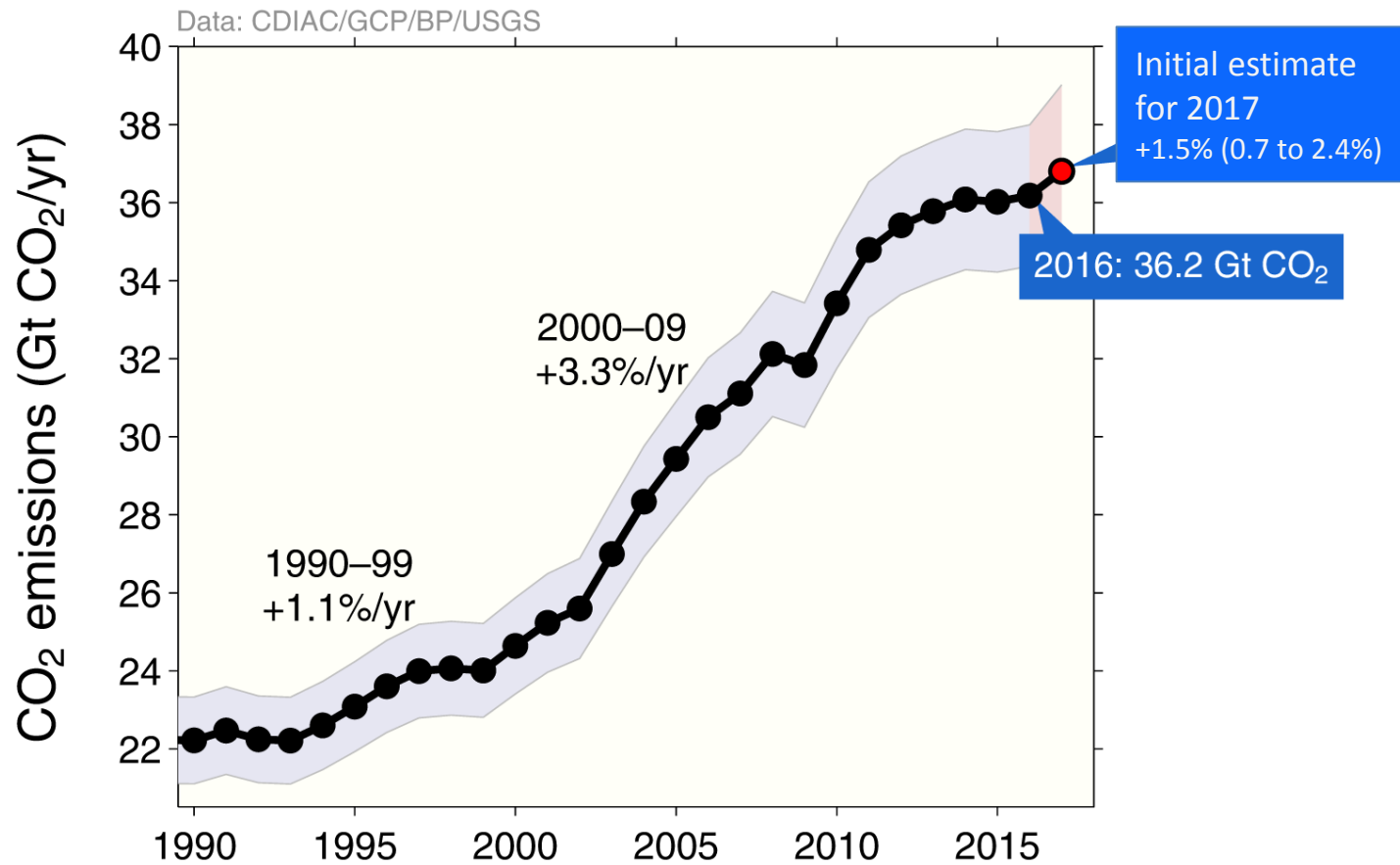
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on behalf of the Global Carbon Budget 2017 team

<http://www.globalcarbonproject.org/carbonbudget/>

Emissions from fossil fuel use and industry

Global emissions for 2017: 36.6 ± 2 GtCO₂

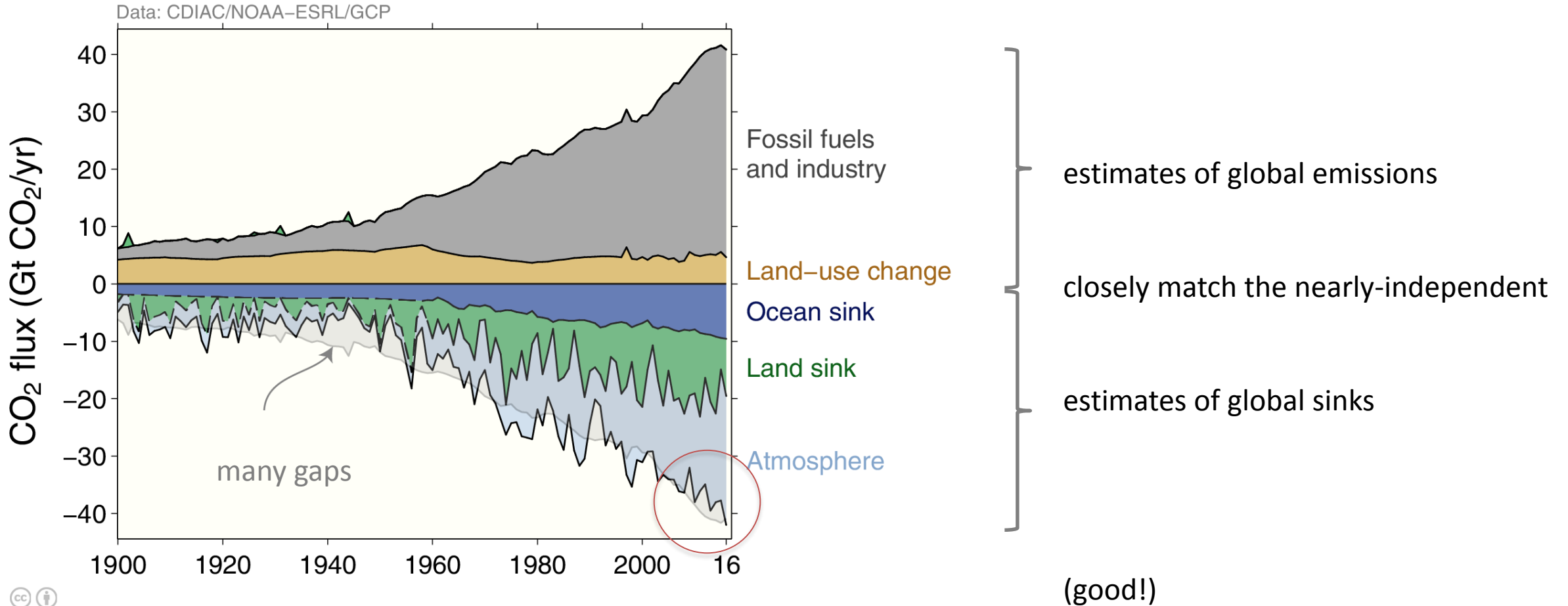


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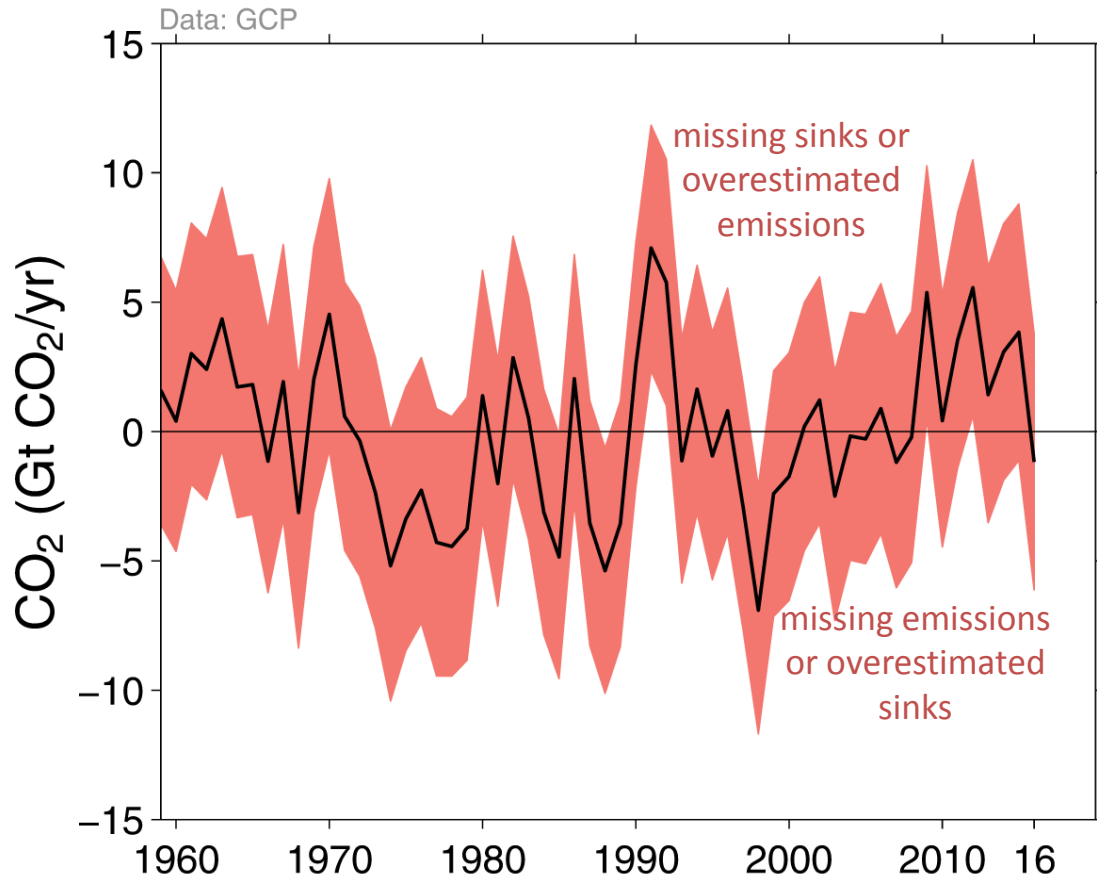


Estimates for 2015-2017 are preliminary. Growth rate is adjusted for 2016 leap year. Uncertainty of ± 1 -sigma. Source: [CDIAC](#); [Le Quéré et al 2017](#); [Peters et al. 2017](#); [Global Carbon Budget 2017](#); Fig. R. Andrew CICERO

Global carbon budget



Carbon budget imbalance (the 'gaps')



Major data & understanding issues to be resolved:

- better energy statistics incl. carbon content of coal
- better land-cover/change statistics incl. sub-country transitions, harvest, peat burning, **consistent definitions!**
- more data on vegetation biomass incl. soils, **rainfall access!!** and understanding ecosystem responses
- more data on ocean pCO₂ with smart sensors, higher model resolution for better physics
- **continuous atmospheric CO₂ data essential**

Next steps: 5-year Carbon Budget to inform the stocktake;
3 GHGs

The budget imbalance is the carbon left after adding estimates for total emissions, minus the atmospheric growth rate and estimates for the land and ocean carbon sinks using models constrained by observations

Source: [Le Quéré et al 2017](#); [Global Carbon Budget 2017](#)