



Paris, December 8 2016

WARNING! Embargo date and time: December 12 2016, 1am CET

Atmospheric methane concentrations are rising faster since 2007.

An international group of researchers led by LSCE (CEA-CNRS-UVSQ) has published a thorough budget of methane sources and sinks¹ over the last decade in the *Earth System Science Data (ESSD)* journal, complemented by an editorial in *Environmental Research Letters*, both to be published on December 12 2016. These studies show that none of the scenarios of the 5th IPCC² report correspond to the observed increase in methane concentrations. The published results highlight the contribution of methane on the climate change.

Methane is the third anthropogenic greenhouse gas after carbon dioxide (CO₂) and water vapor.

After a period of stabilization in the early 2000s, methane concentrations are rising again since 2007, and faster than at any time in the past two decades since 2014.

The methane budget published in *ESSD* shows that:

- **Natural emissions:** Adding-up the individual estimates of all natural sources of methane using process-based approaches leads to much larger total emissions than expected from atmospheric observations.
- **Anthropogenic emissions** (excluding fossil fuel emissions) represent about 60% of total methane emissions, more than a third of which (36%) come from agriculture (rice cultivation and livestock) and waste management.
- **Fossil related emissions:** Emissions of methane produced more than 50,000 years ago, could represent about 30% of total methane emissions, though this is still the subject of debate. Among them, 9% are natural (geological seepages) and 21% are anthropogenic (coal, oil and gas production and use).

Changes in methane sources still not well known

The reasons for the changes in methane concentrations and its rapid increase since 2007 are still unexplained. The rise in global methane concentrations is most likely of biogenic origin, probably from agriculture. However, a potential contribution from fossil fuel production and use cannot be ruled out.

Discrepancies with the scenarios from the last IPCC² report

None of the climate scenarios proposed in the last IPCC report properly reflects the actual methane concentration and its increase in the atmosphere: three are too optimistic and the last one is too pessimistic³.

Towards a global methane budget

This study (ESSD article) presents existing knowledge on each single source of methane from the largest (wetlands) to the smallest (hydrates) thanks to the collaboration of more than 70 international researchers, who have specific expertise on the different methane sources or sinks.

The lead authors also warn “we must continue to update the methane budget regularly, as is the case for CO₂. Methane has a shorter lifetime than carbon dioxide. Therefore, methane mitigation offers rapid climate benefits as well as economic, health and agricultural advantages that are highly complementary to CO₂ reduction... and necessary to keep the temperature change below 2 degree Celsius.”

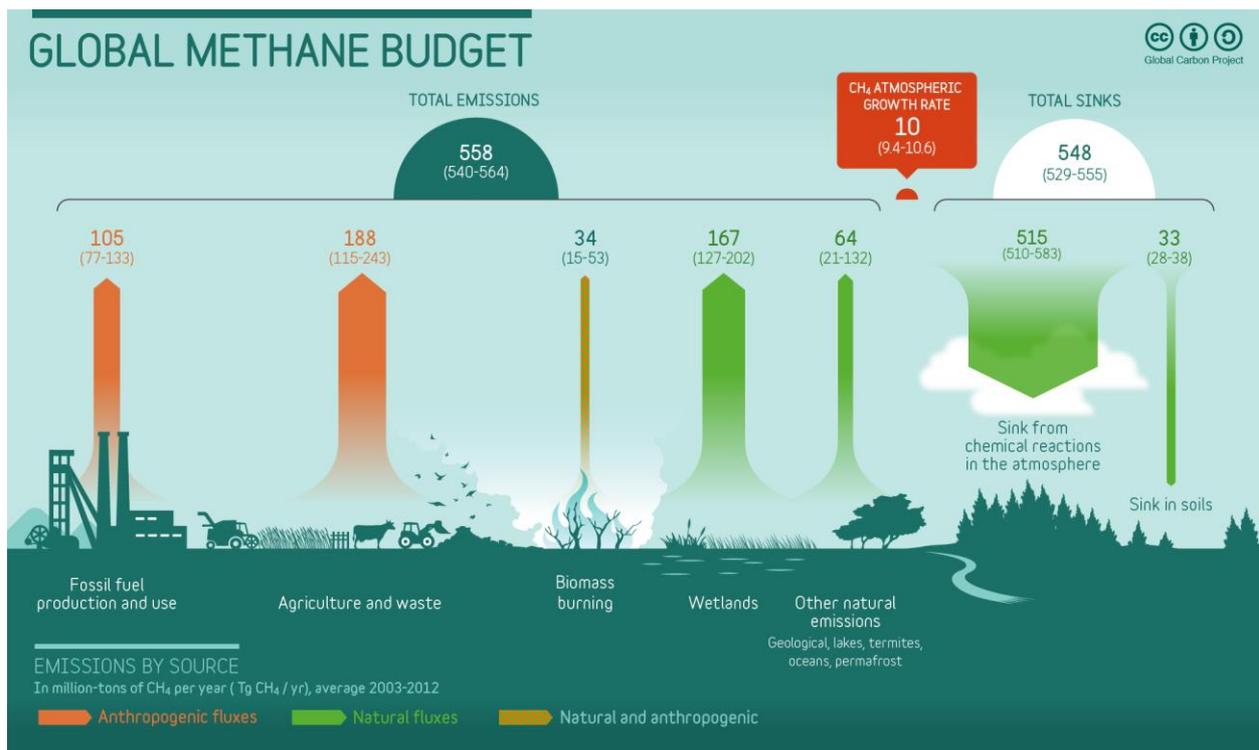


Image copyright: Global Carbon Project

The study was led by Laboratoire des Sciences du Climat et de l'Environnement (LSCE – CEA-CNRS-UVSQ, France) as part of the Global Carbon Project. The data will be published on the Global carbon Atlas: www.globalcarbonatlas.org

¹ sinks: chemical destruction in the atmosphere and soil uptake

² Intergovernmental Panel on Climate Change

³ Representative Concentration Pathways corresponding to 8.5 Wm⁻² additional radiative forcing and about +4°C temperature increase in 2100 – RCP8.5

References

The Global Methane Budget 2000-2012, Saunio et al., *Earth System Science Data*, 8, 1-55, December 12 2016

The growing role of methane in anthropogenic climate change, Saunio M., Jackson R., Bousquet P., Poulter B. and Canadell J. G., *Environmental Research Letters*, December 12 2016

About the Global Carbon Project and the Global carbon Atlas

The Global Carbon Project aims to assist the international scientific community to collaborate on the carbon budget through a partnership between the International Geosphere-Biosphere Programme and Future Earth. It produces an annual report on the data regarding the carbon sources and sinks linked to human activity and how they affect the environment. Each year, the data set is made available through the Global carbon Atlas with the support of Fondation BNP Paribas. Available in five languages (English, French, Spanish, Chinese and Russian) at [www. Globalcarbonatlas.org](http://www.Globalcarbonatlas.org).

Press Contacts

CEA – François Legrand francois.legrand@cea.fr T : + 33 6 77 38 57 97

CNRS – Priscilla Dachet priscilla.dacher@cnrs-dir.fr T : + 33 1 44 96 46 06

Université de Versailles Saint-Quentin-en-Yvelines – Annelise Gounon-Pesquet annelise.gounon-pesquet@uvsq.fr
T : + 33 1 39 25 41 75



**FONDATION
BNP PARIBAS**