Tropical Peatland Conservation in Indonesia as a Nature-based Climate Solution

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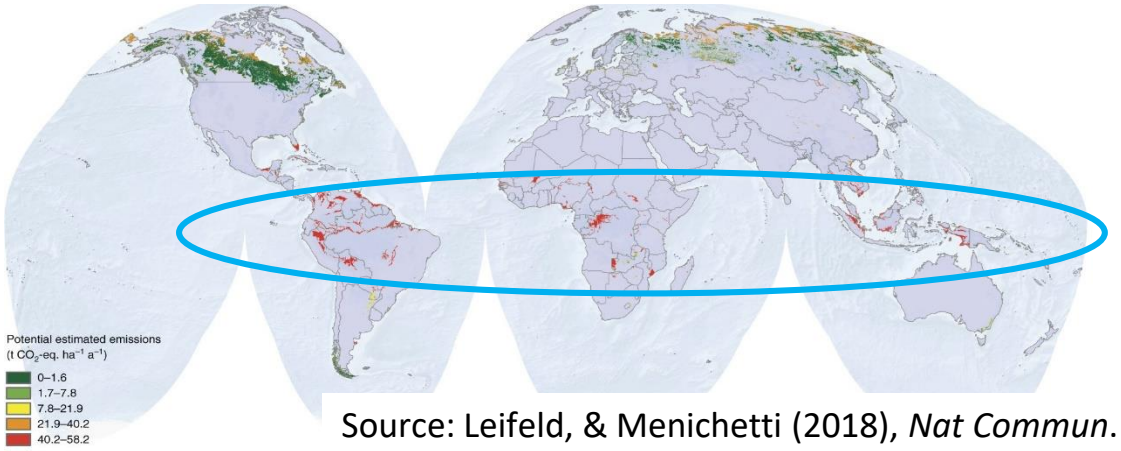
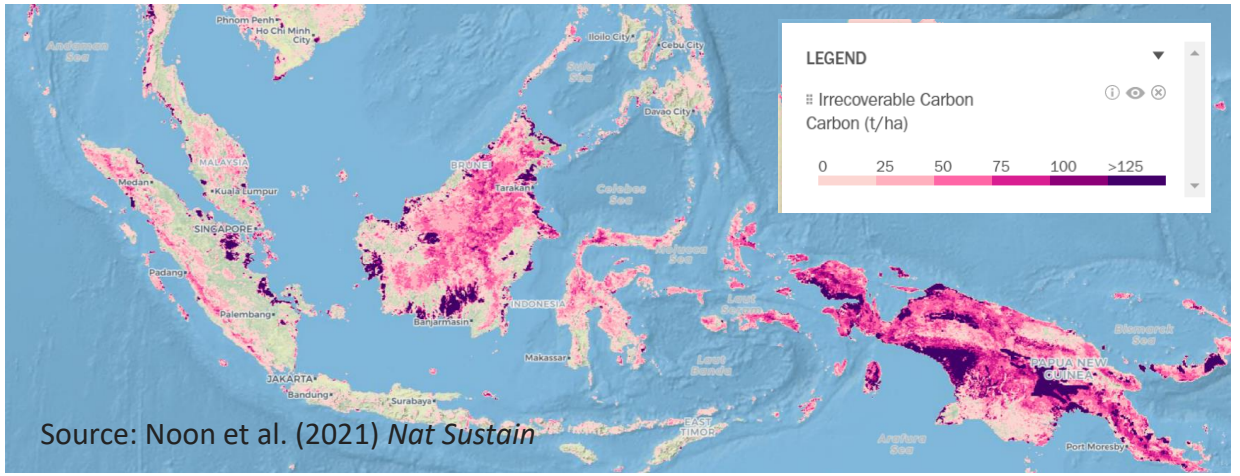
Tropical Peatlands and Greenhouse Gas Emissions



Source: Leifeld, & Menichetti (2018), *Nat Commun*.

Tropical Peatlands Hold >125 tC/ha as Irrecoverable Carbon



Source: Noon et al. (2021) *Nat Sustain*

- Draining remaining natural peatland would lead to high potential emissions due to intensive land use and warm climate
- If lost, this carbon could not be recovered by mid-21st century, by when we need to reach net-zero emissions to avoid the worst climate impacts

Contribution of the land sector to a 1.5 °C world

Stephanie Roe, Charlotte Streck, Michael Obersteiner, Stefan Frank, Bronson Griscom, Laurent Drouet, Oliver Fricko, Mykola Gusti, Nancy Harris, Tomoko Hasegawa, Zeke Hausfather, Petr Havlík, Jo House, Gert Jan Nabuurs, Alexander Popp, María José Sanz Sánchez, Jonathan Sanderman, Deborah Lawrence

Nature Climate Change **9**, 817–828 (2019) | Cite this article

Natural climate solutions

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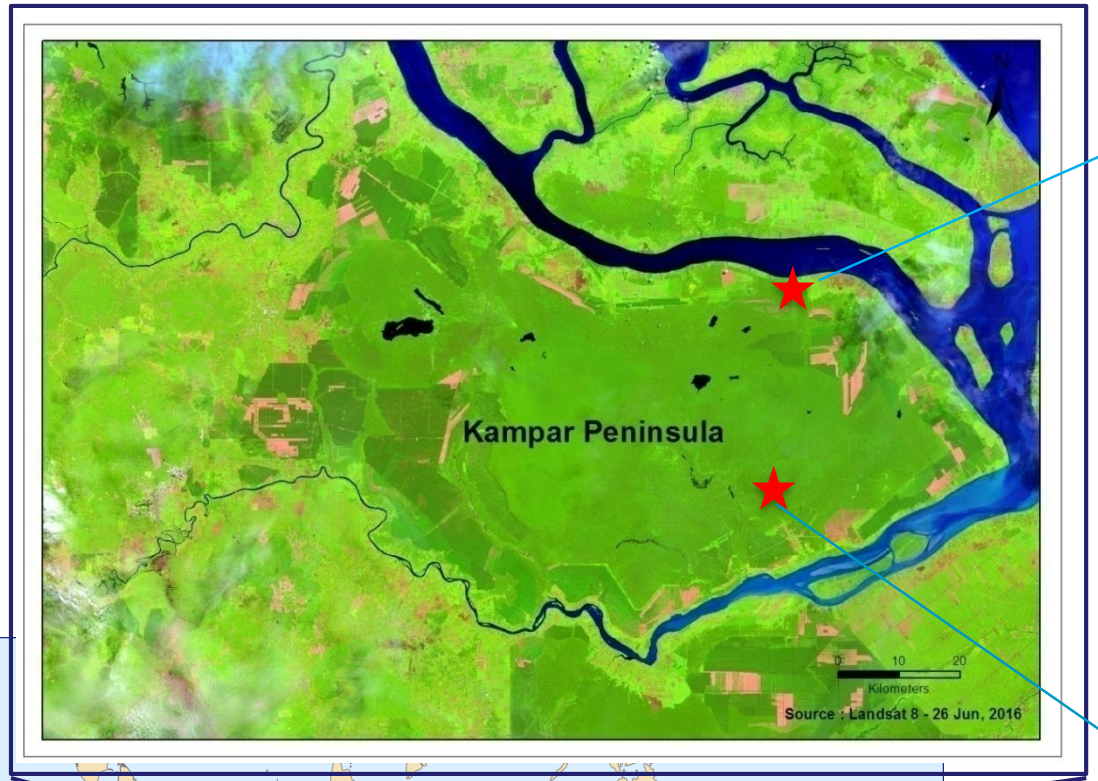
PNAS October 31, 2017 114 (44) 11645-11650; first published October 16, 2017;

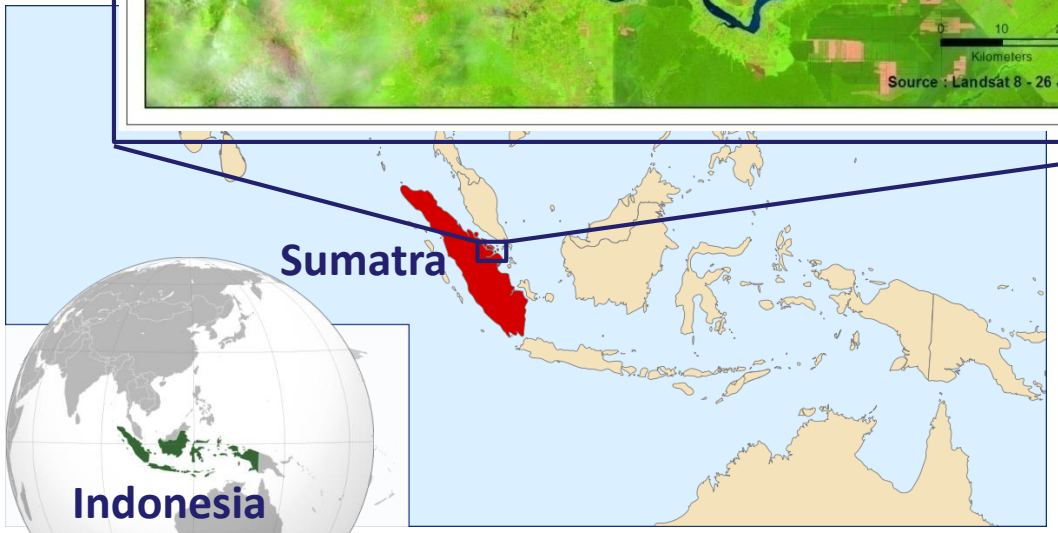
The underappreciated potential of peatlands in global climate change mitigation strategies

J. Leifeld & L. Menichetti

Nature Communications **9**, Article number: 1071 (2018) | Cite this article

Eddy Covariance Measurements of CO_2 and CH_4 Exchanges over a Coastal Peatland in Sumatra

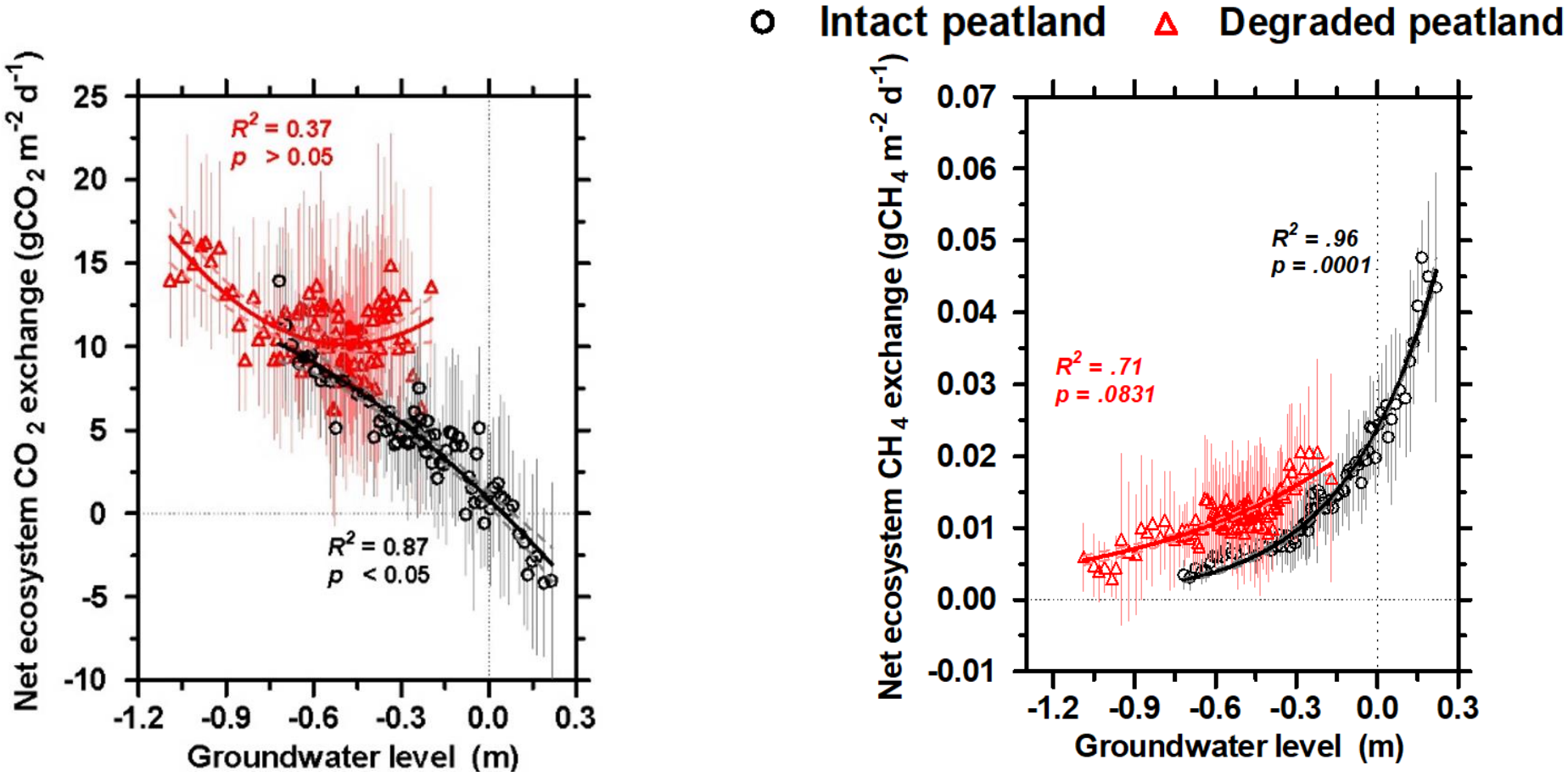




Degraded peatland (selectively logged and drained)

Intact peatland (undisturbed forest cover and undrained)

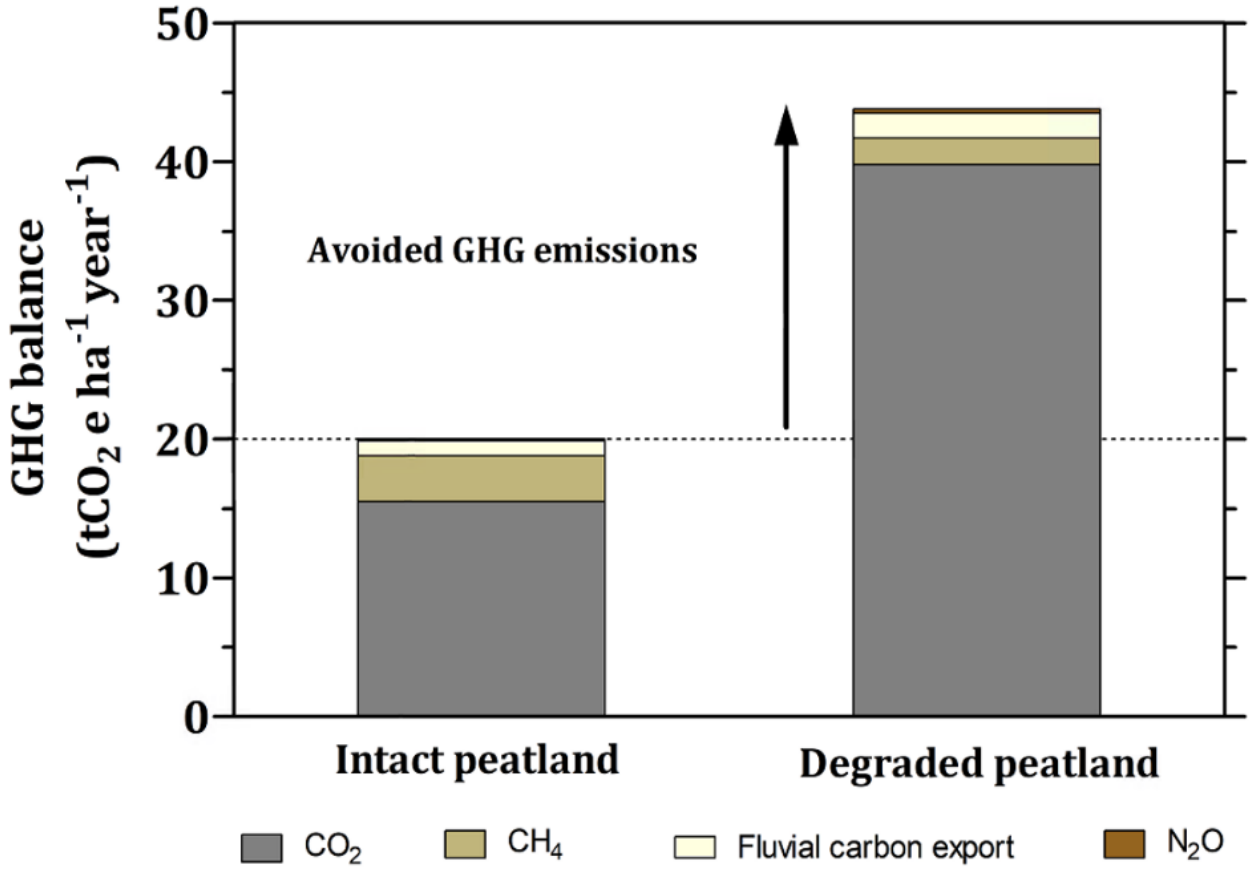
Groundwater Level Controls the Net Ecosystem Exchanges of CO_2 and Methane



- Lower groundwater level enhances peat aeration and thereby oxidative peat decomposition;
- Shallow groundwater level supports vegetation-mediated CH_4 emissions;
  - dissolved CH_4 can be taken up by root system and emitted to the atmosphere via transpiration;

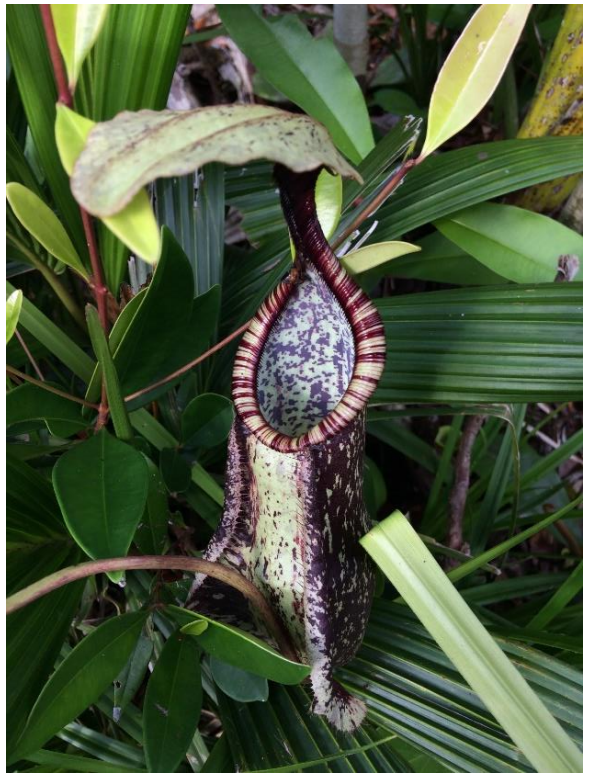
Deshmukh, C.S. et al. (2021) *Nature Geoscience*. *https://doi.org/10.1038/s41561-021-00785-2*

Tropical Peatland Conservation as a Natural Climate Solution Provides Avoided Emissions



- Conservation of the remaining intact tropical peatland from degradation provides significant avoided emissions, 24 tCO_2e ha^{-1} yr^{-1} at the study site in Indonesia;

Deshmukh, C.S. et al. (2021) *Nature Geoscience*. *https://doi.org/10.1038/s41561-021-00785-2*

- Tropical peatland conservation is powerful and cost effective natural climate solution;
- Also support unique biodiversity and deliver social and ecological services.

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Want to learn more? Check out Deshmukh et al. (2021) *Nature Geoscience*. https://doi.org/10.1038/s41561-021-00785-2