

HOW DO TROPICAL PEATLAND GREENHOUSE GAS EMISSIONS RESPOND IN THE IMMEDIATE AFTERMATH OF A FIRE?

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FIELD SITES

11 field sites (so far)

- 5 oil palm on peat [OP]
- 3 annual crops on peat [V]
- 3 forest on peat [F]

Each site experienced a peat fire (10 weeks at most before first sampling campaign in August 2019).

Second sampling campaign in January 2020.

2 more campaigns planned for 2020 and 2021.



CO₂ & CH₄ CHAMBER MEASUREMENTS

- Picarro Gas Scouter & Los Gatos Research gas analysers used to determine CO₂ and CH₄ flux rates.
- Measurements made at the burn site and at a neighbouring control site (often within 10s of meters from the burn site)
- Co-incidental T/EC/SM measurements as well as soil sampling for physicochemical and microbial analysis.



TAKE-HOME MESSAGES (SO FAR)

- Post-fire emissions of methane in the weeks and months following a peat fire, on average, are elevated (**84% higher**) compared with control sites for all of our land-cover types (burnt forest, oil palm plantations, and annual crop sites).
- Post-fire emissions of CO₂, on average, are suppressed (**46% lower**).
- This agrees with the findings of Lupascu *et al.* (also in this EGU session) who determine a longer-term effect at a burn site in Brunei, in the years following a fire.
- We find significantly higher soil temperatures and electrical conductivity at our burn sites compared with the control sites.
- Ongoing analysis of samples for microbial DNA will investigate communities of methanotrophs and methanogens at our burnt and control sites.



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