erc IMBALANCE P

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ter:labs TERRESTRIAL ECOSYSTEM RESEARCH, universität wien, Universiteit Antwerpen, CREAF, INPA INSTITUTO NACIONAL DE PESQUISAS DA AMAZÔNIA, PUCP

Controls over gross phosphorus mineralization and immobilization in different tropical soils

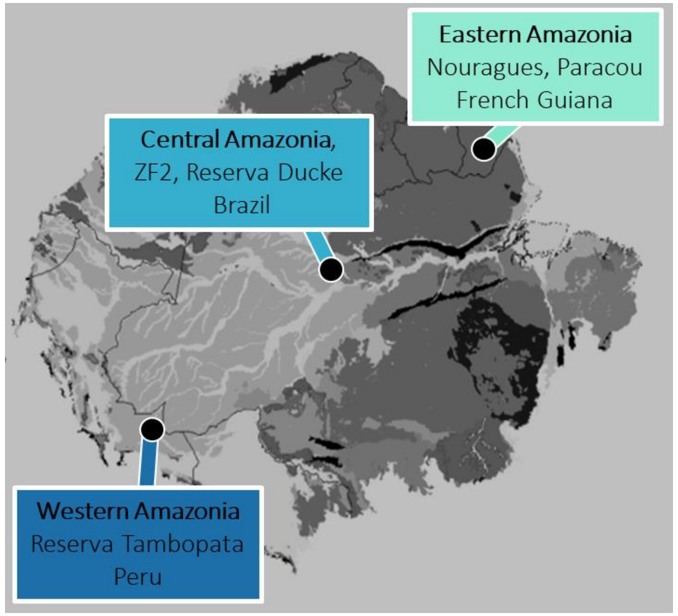


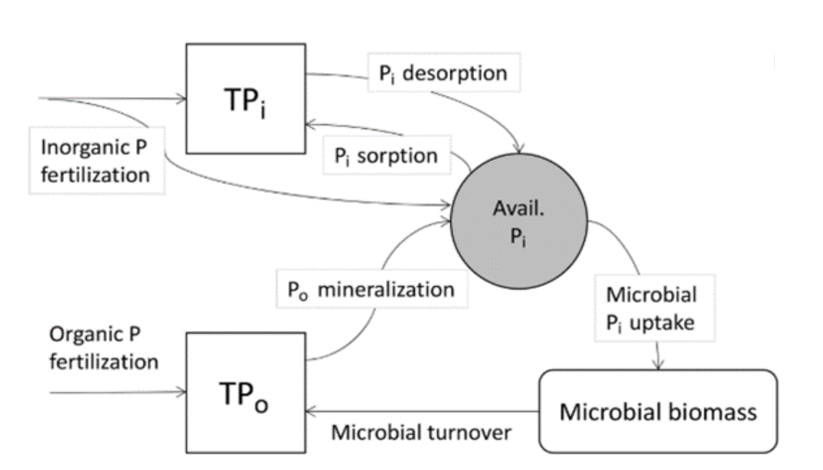
Fig. 1: Study sites across Amazonia

Disentangling abiotic and biotic controls over P mineralization in tropical forest soils from the Amazon Basin covering a range of soil texture and P concentrations.

- Organic P turnover dominates Pi cycling in P poor soils.
- Despite of high P sorption capacity of clayey soils, microbes are strong competitors for available Pi.

Sandy and silty soils: gross Pi influx rates (i.e. the sum of Pi desorption and organic P mineralization) > efflux (i.e. sorption or biotic Pi uptake rates)
Clayey soils: gross Pi influx < efflux rates indicating a high soil matrix Pi sorption capacity.

Methods:
- Soil sampling 0-5 cm, 5-15 cm
- ^{33}P isotope pool dilution
- Acid phosphatase activity
- Microbial biomass C and P



Wanek et al. 2019 Biogeosciences

Gross Pi influx and efflux rates were not related to total or dissolved (Olsen) P.

Microbial biomass P accounted for up to 40 % of total P in low P soils.

Microbial biomass and acid phosphatase activity, normalized to microbial biomass C, were highest in sites with low total P.