Atmospheric nitrogen deposition in a subtropical hydroelectric reservoir (Nam Theun II case study, Lao PDR)

↳ First assessment of nitrogen deposition budget **following the impoundment** of a subtropical hydroelectric reservoir (Nam Theun II, Lao PDR)

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Poster #73

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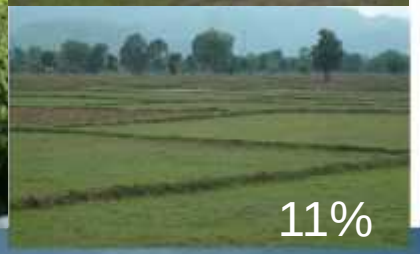
Objectives

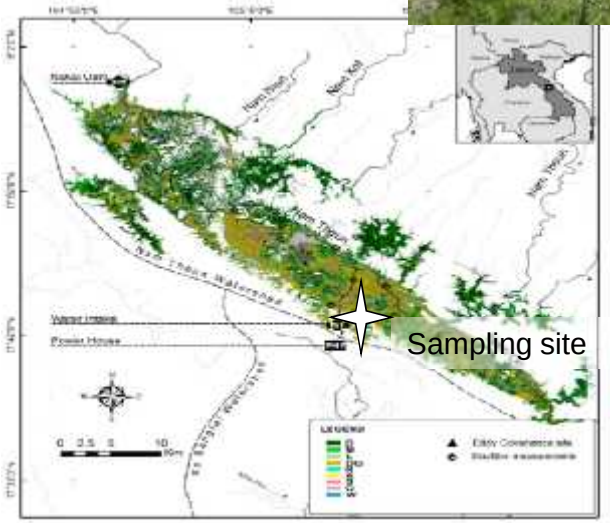
- Estimation of both the dry and wet nitrogen atmospheric deposition budget following the NT2 reservoir impoundment (two-year monitoring)

- Assess nitrogen (and carbon) budgets, greenhouse gas emissions (CO_2, CH_4 & N_2O) and net GHG footprint of NT2R (beyond the scope of this presentation).

Study site

Nam Theun 2 reservoir





NT2R (17°59’ 49 ‘’N, 104° 57’ 08’’E, Lao PDR), **490km²** @ full water level operation, impounded in **2008**, subtropical climate (wet season: May to October)

Methodology

Wet and Dry deposition fluxes

Water chemistry

Wet-only automated sampler

Gas conc.

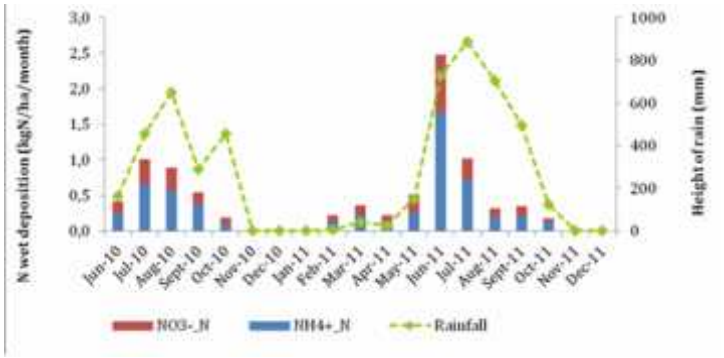
Passive samplers

+

Zhang et al 2010 inferential model to assess deposition velocity V_d and (bi-directional) dry deposition fluxes

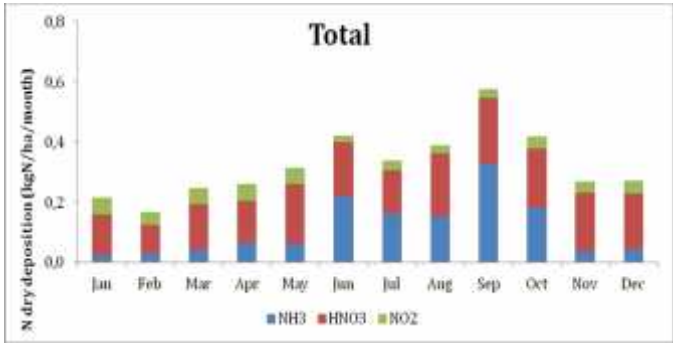
Some results…

Wet deposition

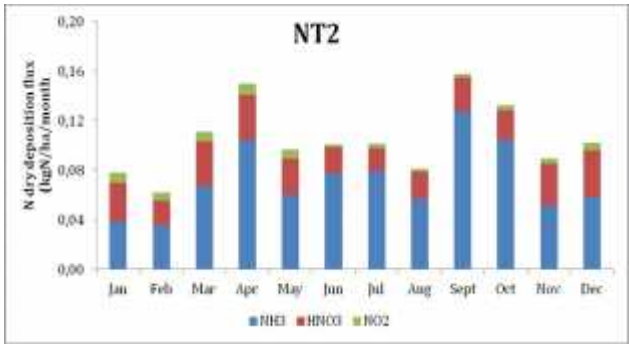


NH_4^+: 3.13 kgN/ha/yr (62%)
NO_3^- : 1.88 kgN/ha/yr
Total: 5.01 kgN/ha/yr

Dry deposition: from pre to …… post impoundment

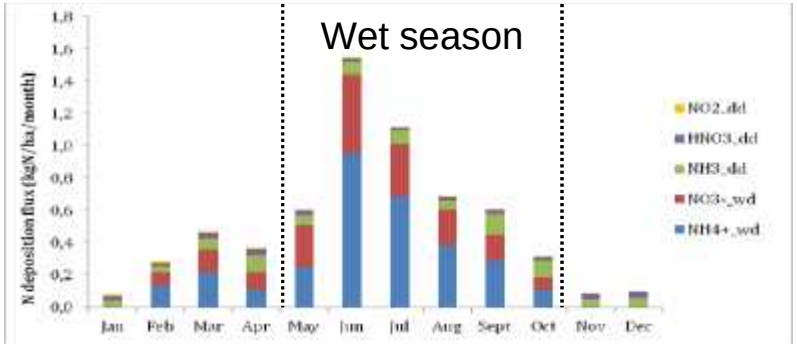


NH_3: 1.34 kgN/ha/yr
HNO_3: 2.05 kgN/ha/yr (53%)
NO_2: 0.49 kgN/ha/yr
Total: 3.88 kgN/ha/yr



NH_3: 0.86 kgN/ha/yr (68%)
HNO_3: 0.34 kgN/ha/yr
NO_2: 0.06 kgN/ha/yr
Total: 1.26 kgN/ha/yr

Total deposition (after impoundment)



- Wet season

⇒ **78%** of total deposition after impoundment (**75%** before)

- Wet deposition

⇒ **80%** of total deposition after impoundment (**56%** before)

- Total deposition

⇒ **30%** decrease from 8.89 to 6.27 kgN/ha/yr; impacts on N_2O?