Potenciais poluentes em reservatórios

Daniele Kasper
UFRJ
kasperdani@yahoo.com.br

Reservatórios – sistemas lóticos ou lênticos?

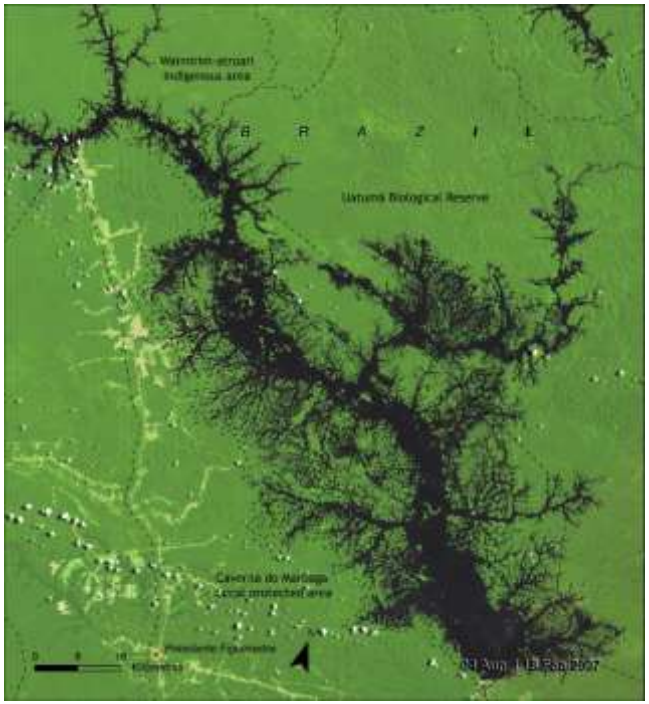
LÓTICO → LÊNTICO (semi)

Grandes modificações físicas, químicas e biológicas

LÓTICO → LÊNTICO (semi)

Grandes modificações físicas, químicas e biológicas

ZONAS LONGITUDINAIS DE UM RESERVATÓRIO



LÓTICO → LÊNTICO (semi)

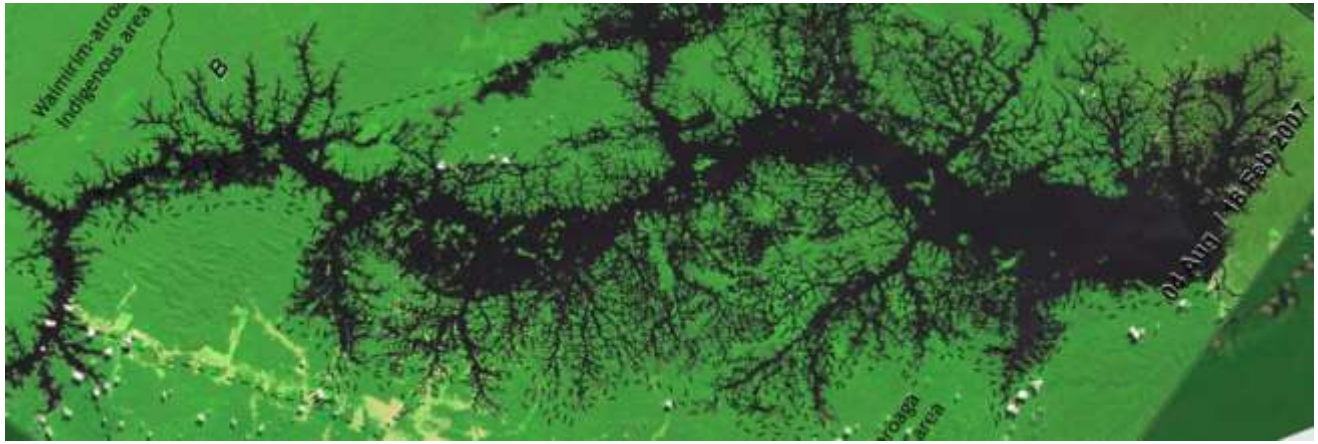
Grandes modificações físicas, químicas e biológicas

ZONAS LONGITUDINAIS DE UM RESERVATÓRIO

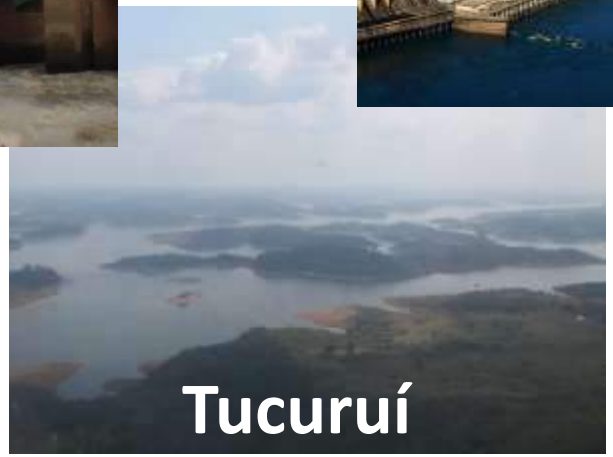
ZONA DE RIO
- Estreito
- Raso
- Velocidade da água maior

ZONA DE TRANSIÇÃO
- Longo
- Profundo
- Velocidade da água menor

ZONA LACUSTRE
- Mais largo
- Mais profundo
- Velocidade da água reduzida



“Tipos” de reservatório



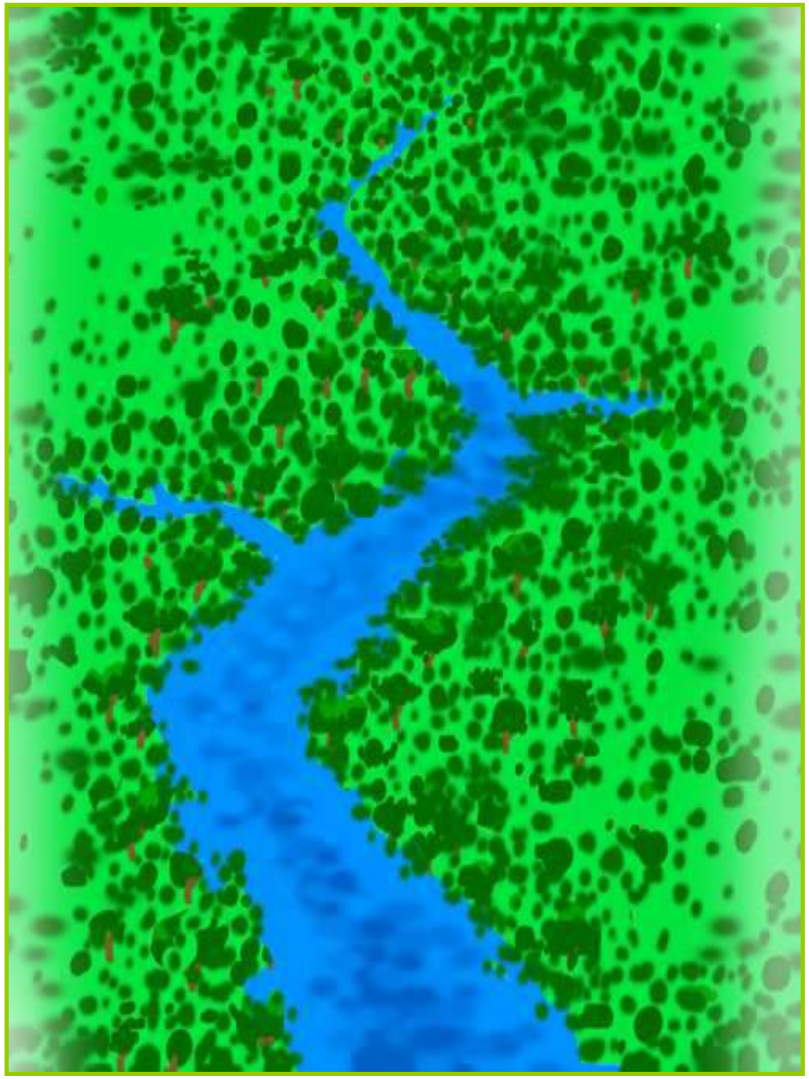
Área terrestre inundada

Disponibilidade: solo e vegetação → sistema aquático

Decomposição da matéria orgânica

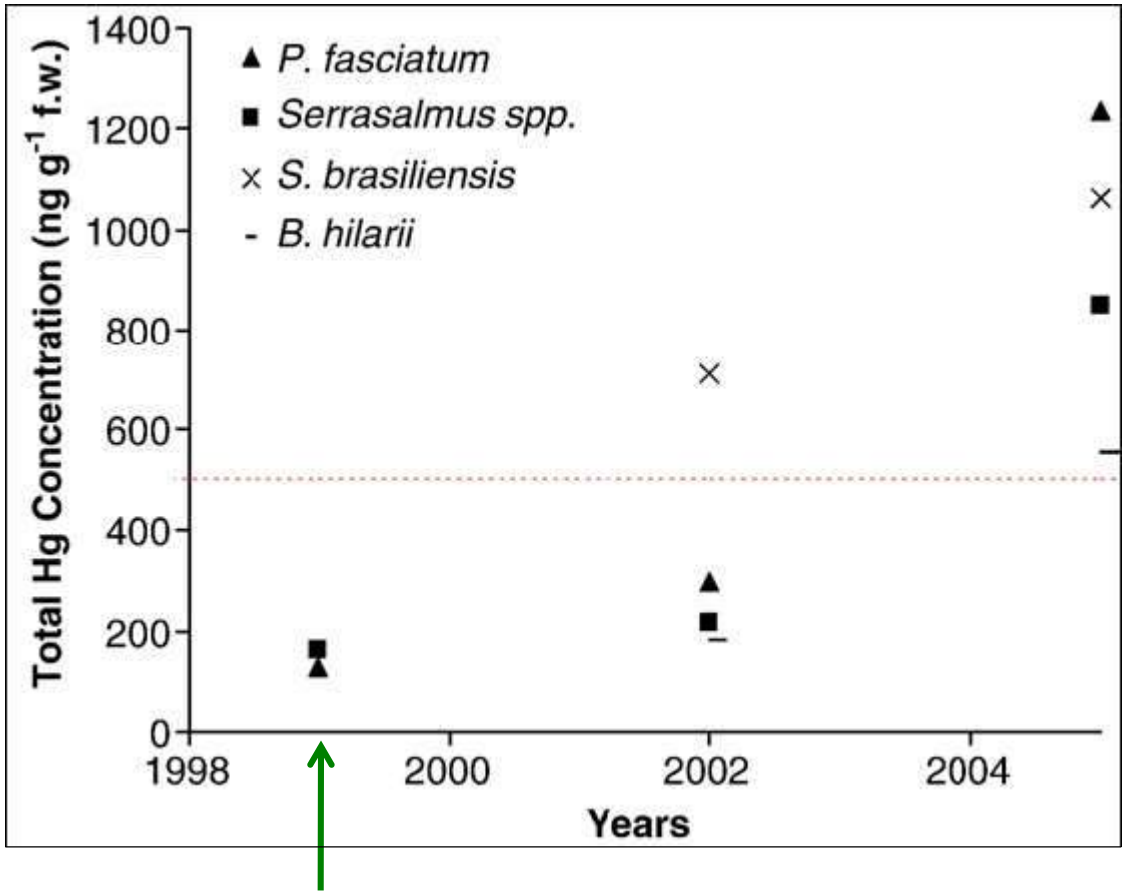
Consumo de O_2 da água

Uso (reservatório; bacia hidrográfica; entorno/poluição atmosférica)



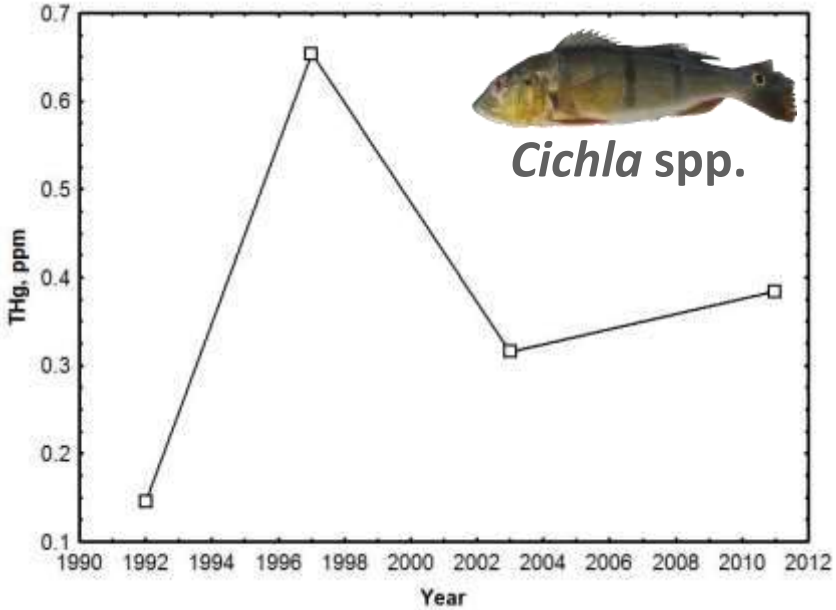
Mercúrio

Altas concentrações de mercúrio nos peixes ⟶ até ~30 anos

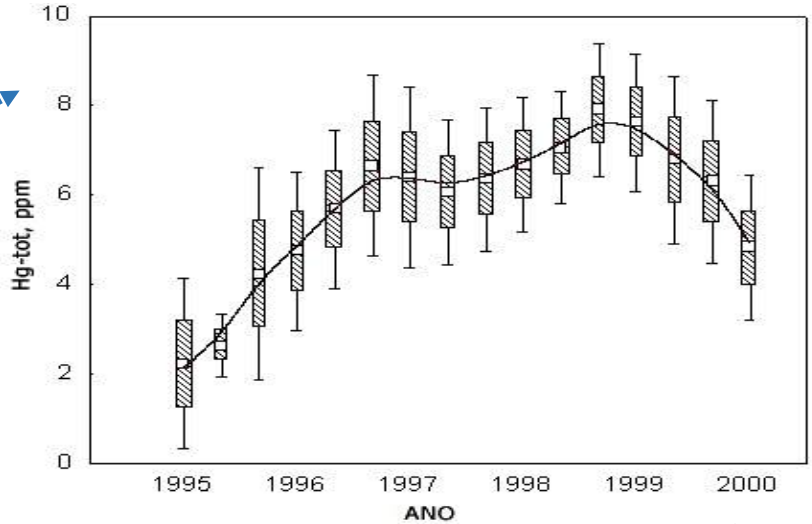


criado em 1999

Tuomola et al. (2008)

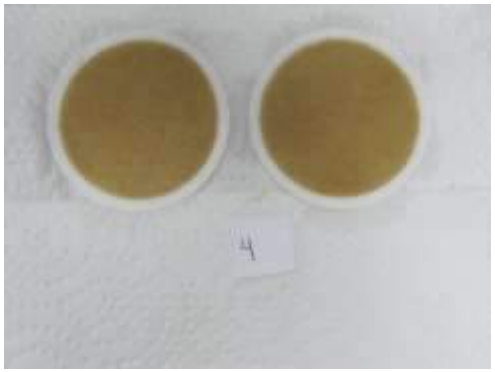


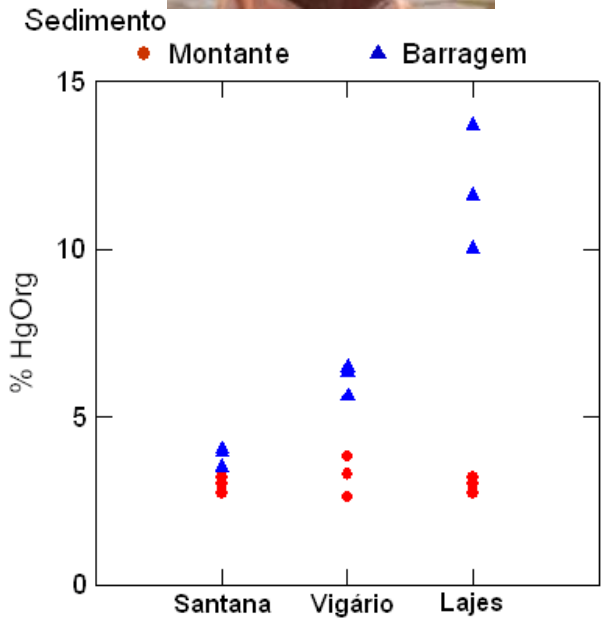
Formado em 1987

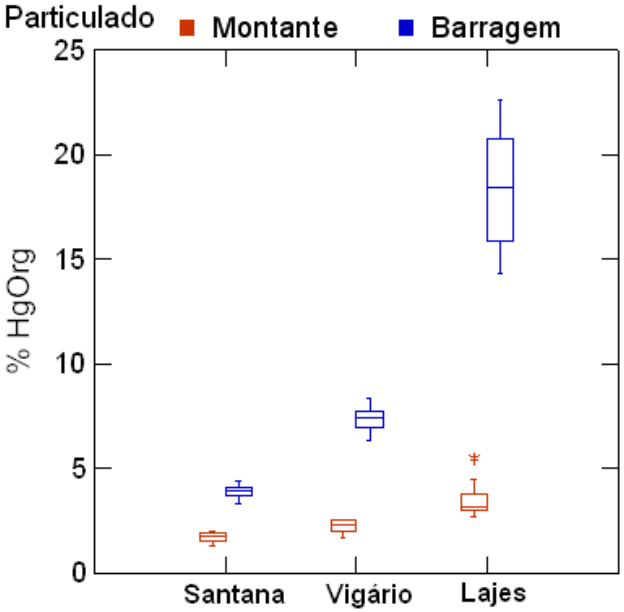


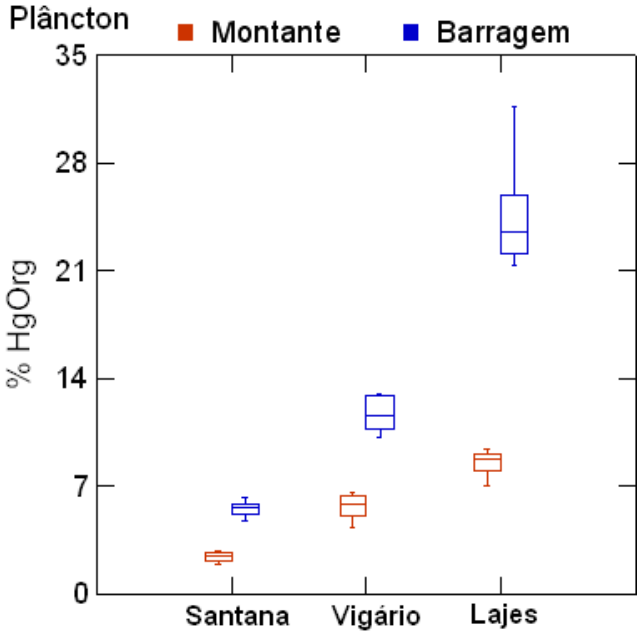
Forsberg et al. (2013)

Metila ao longo do reservatório





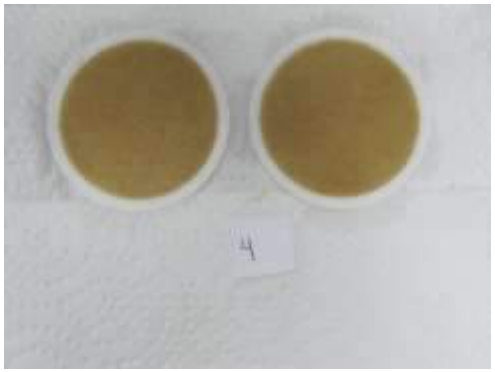


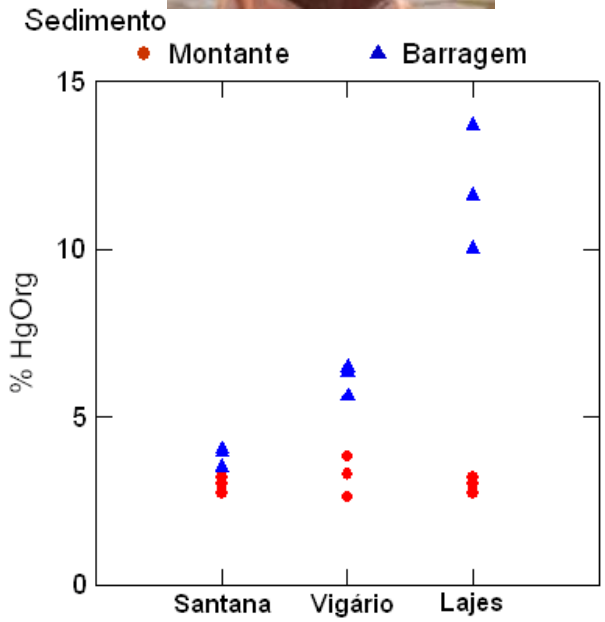


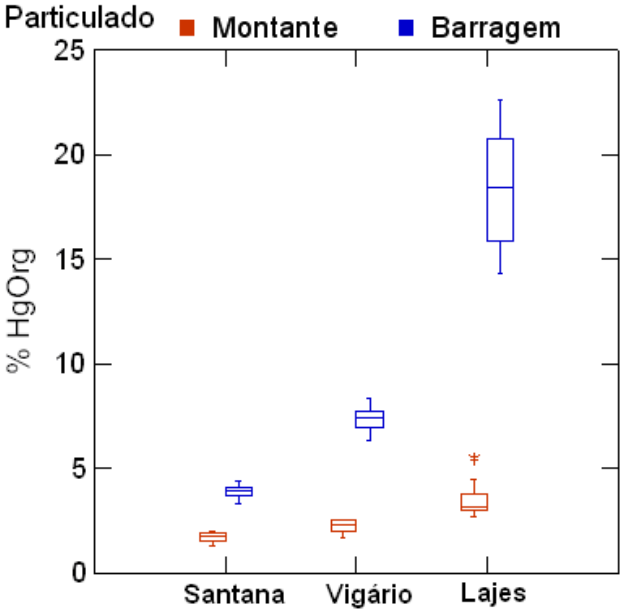
Palermo (2008)

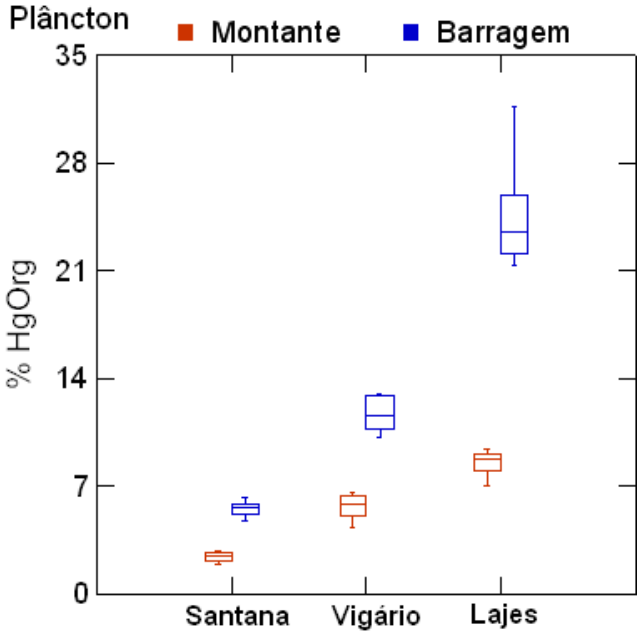
Reservatório de Vigário
Reservatório de Santana
Rio Guandu
Reservatório de Ribeirão das Lajes

Metila ao longo do reservatório

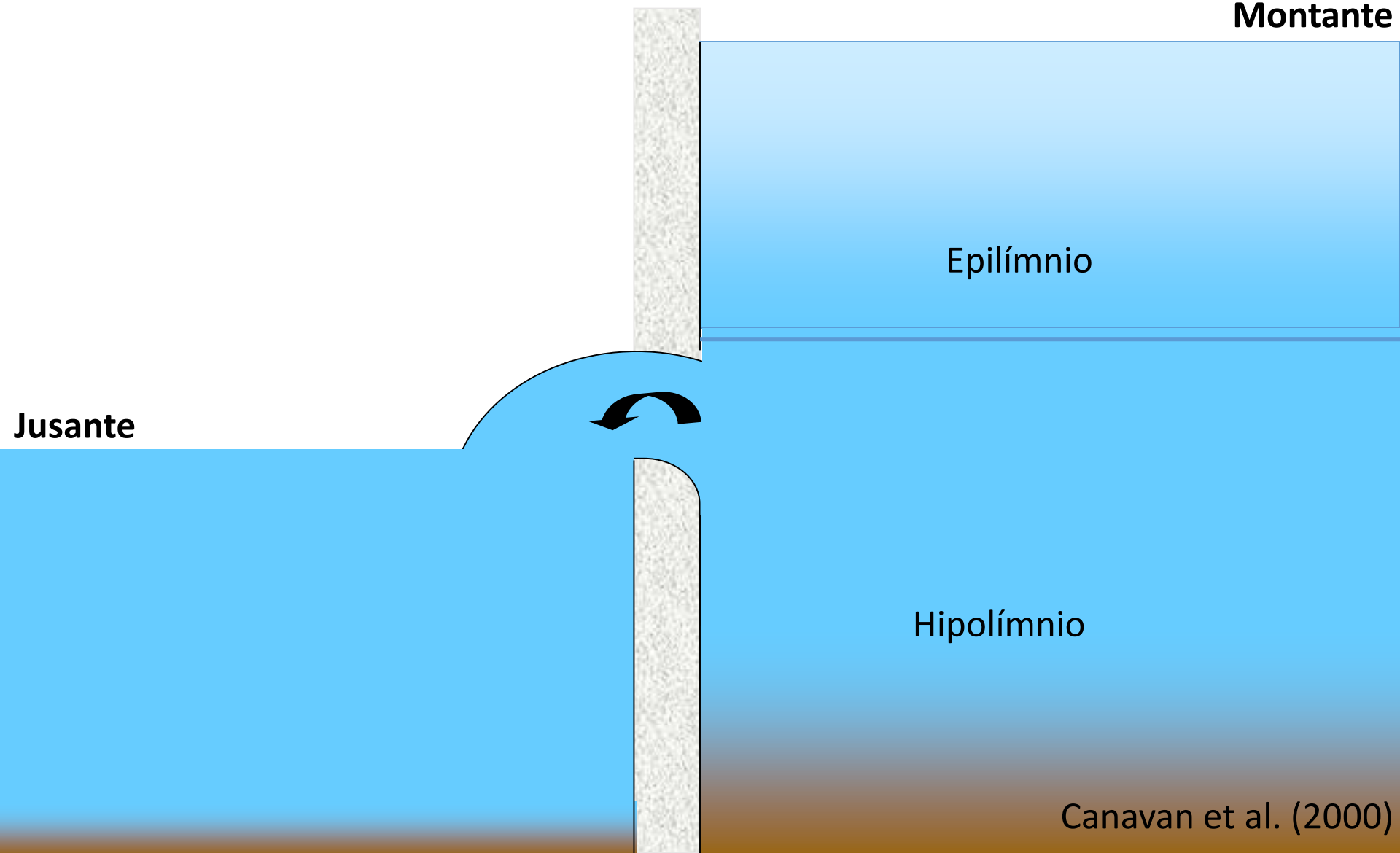




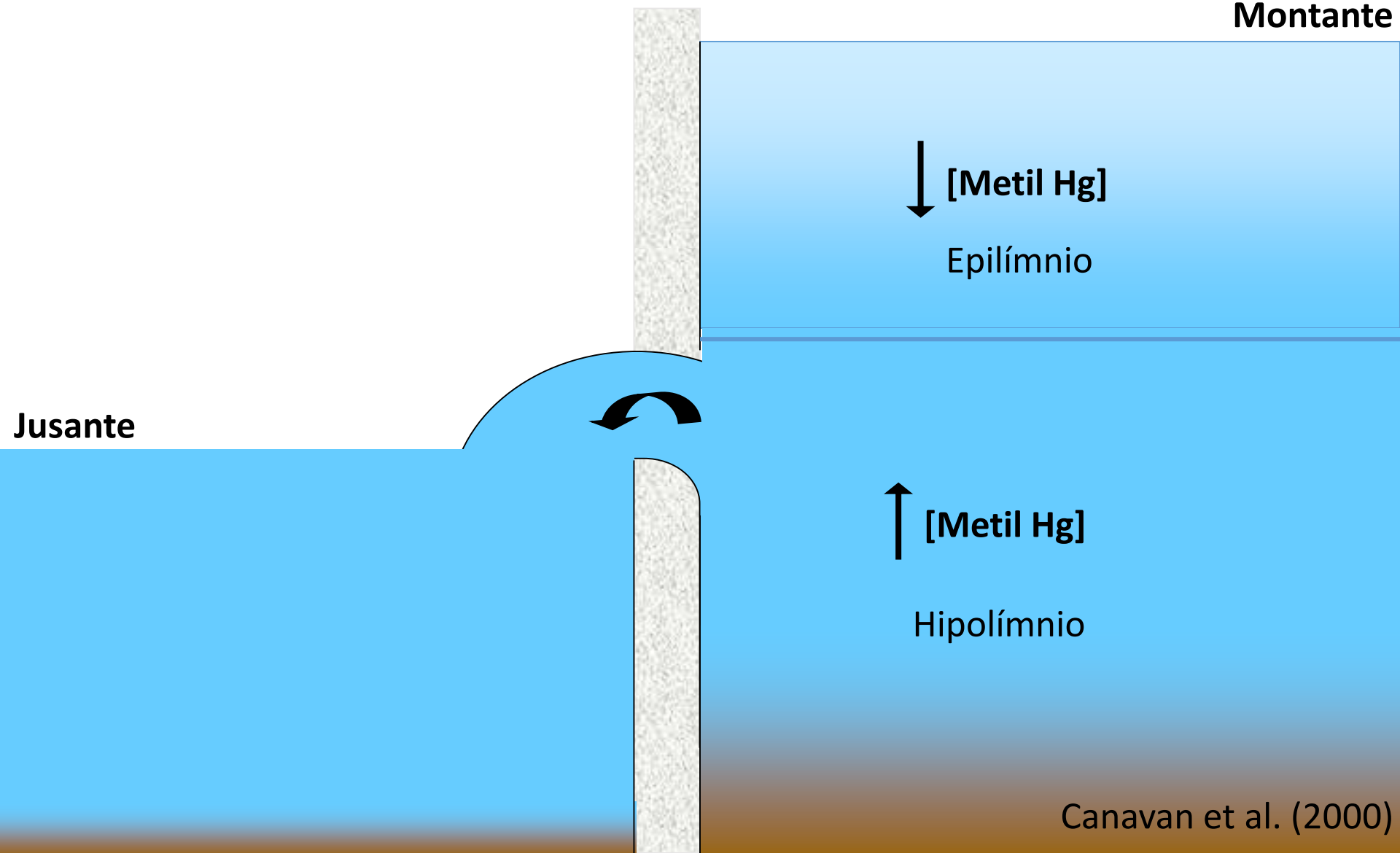




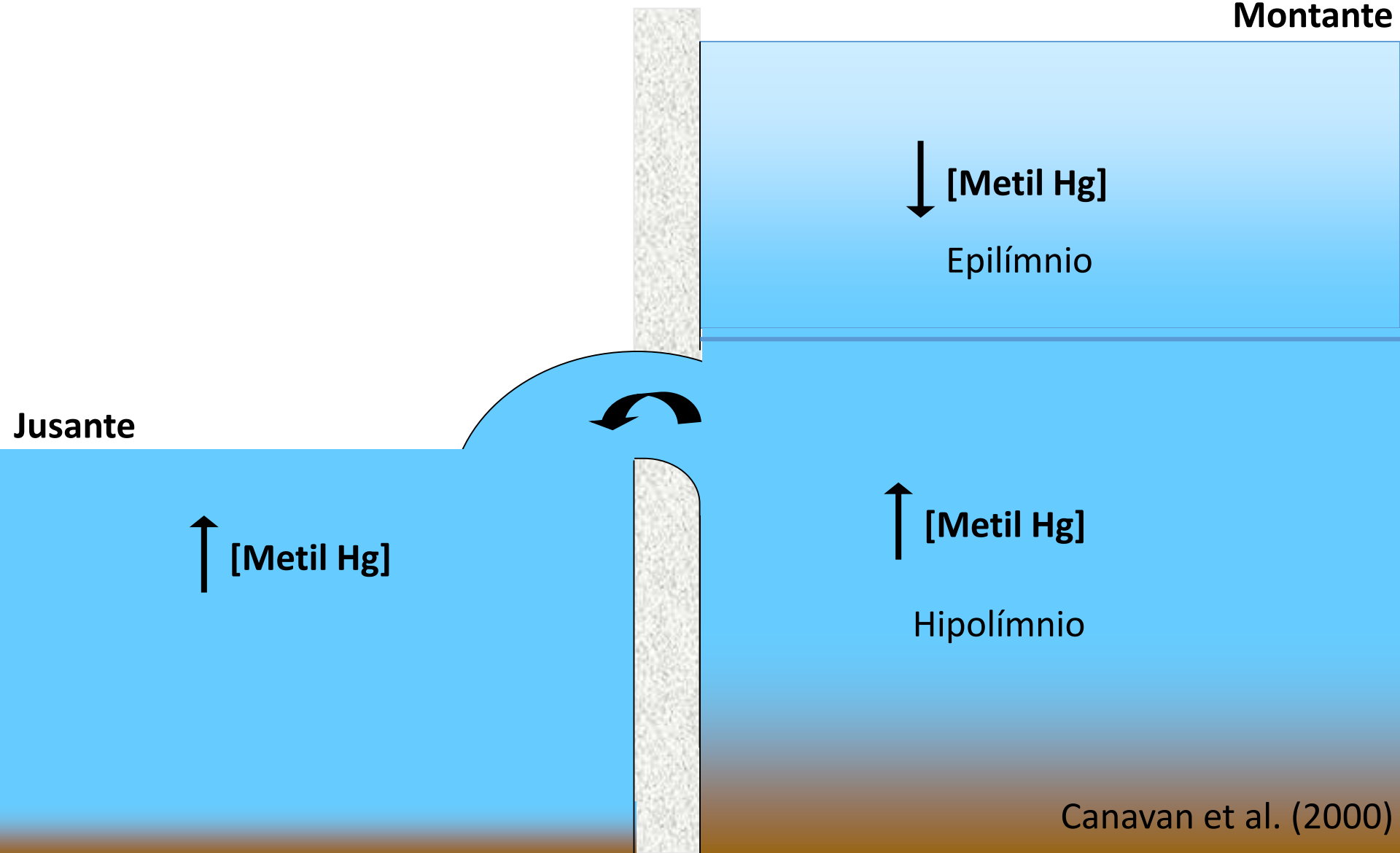
Palermo (2008)



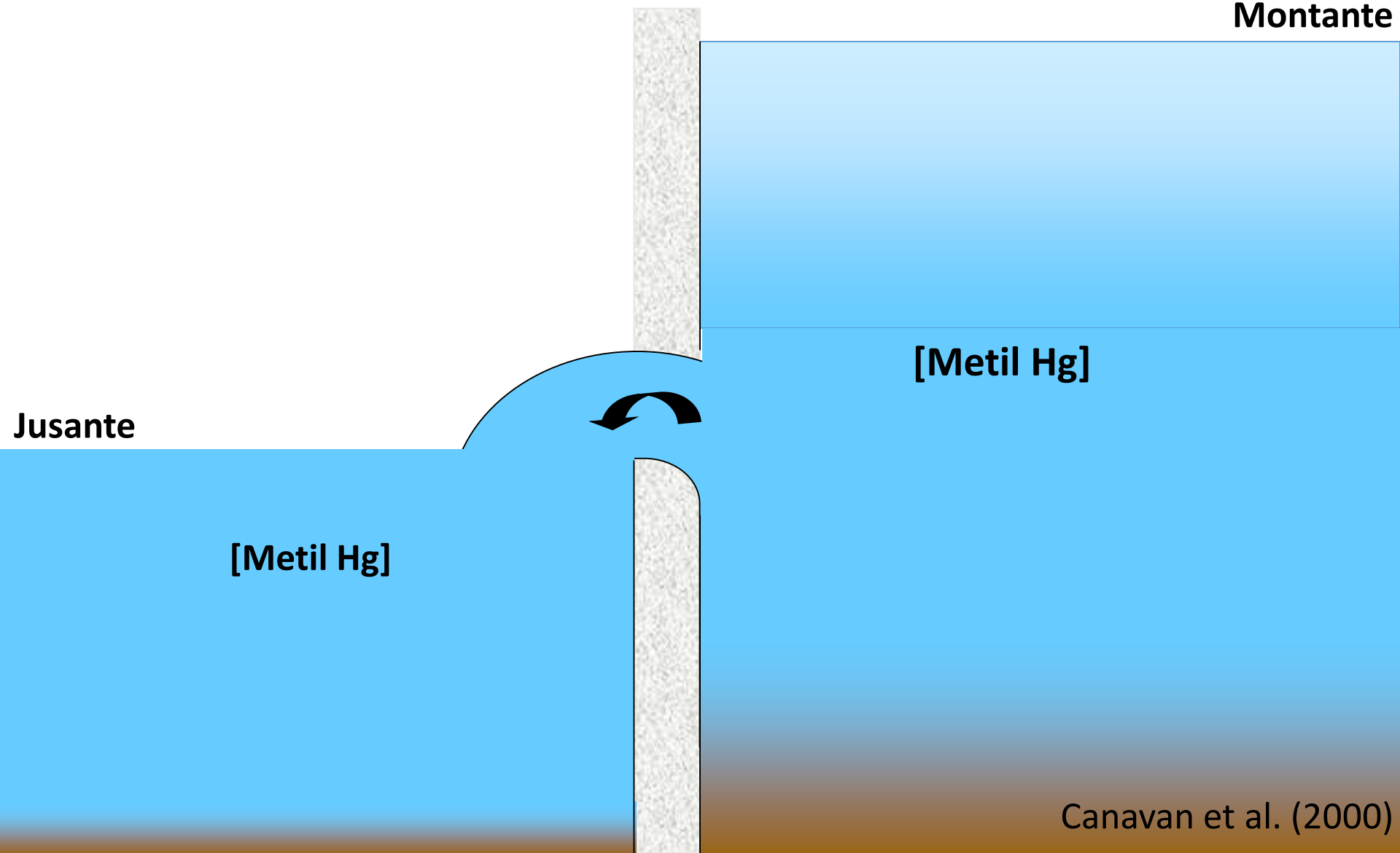
Canavan et al. (2000)



Canavan et al. (2000)

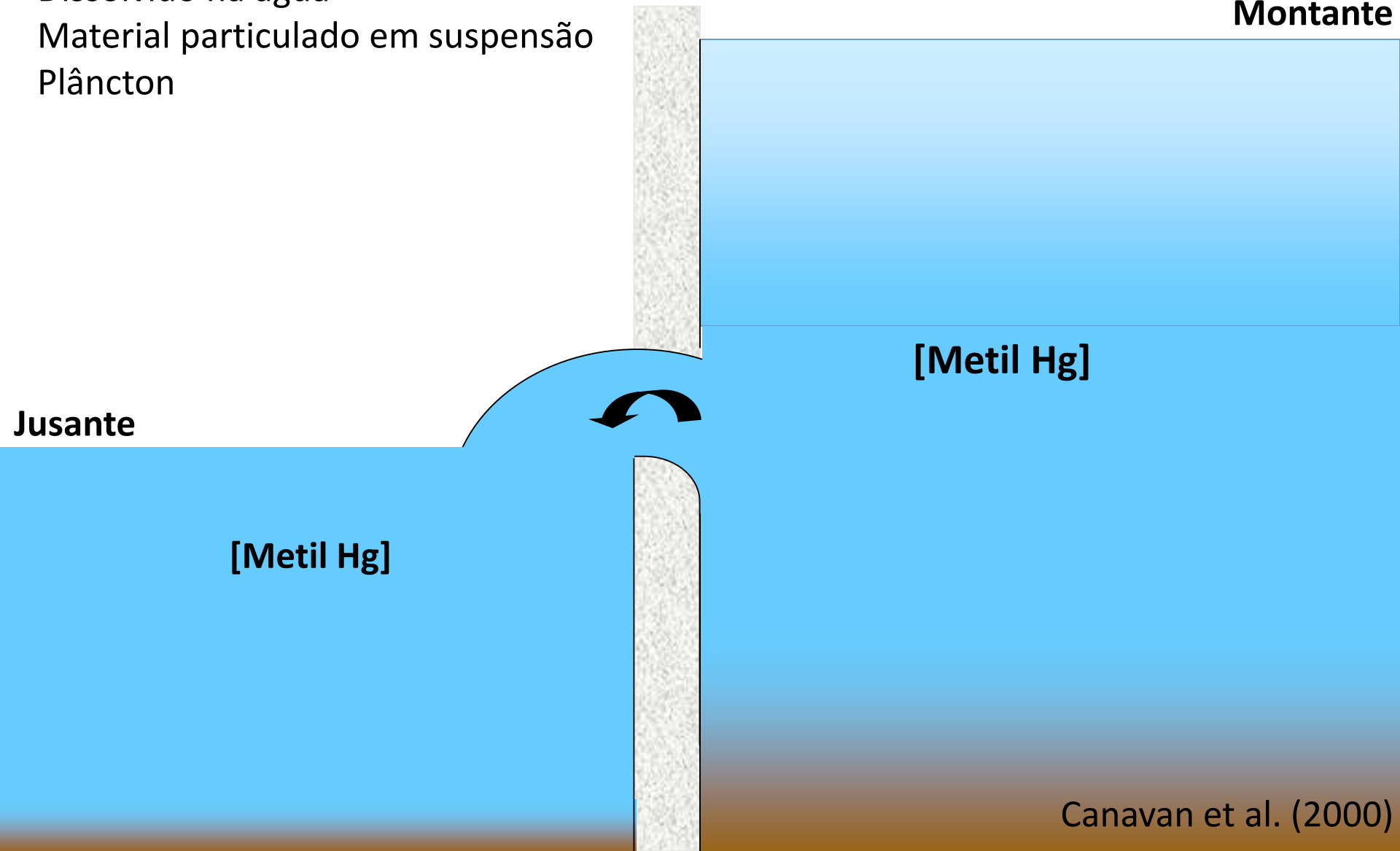


Canavan et al. (2000)

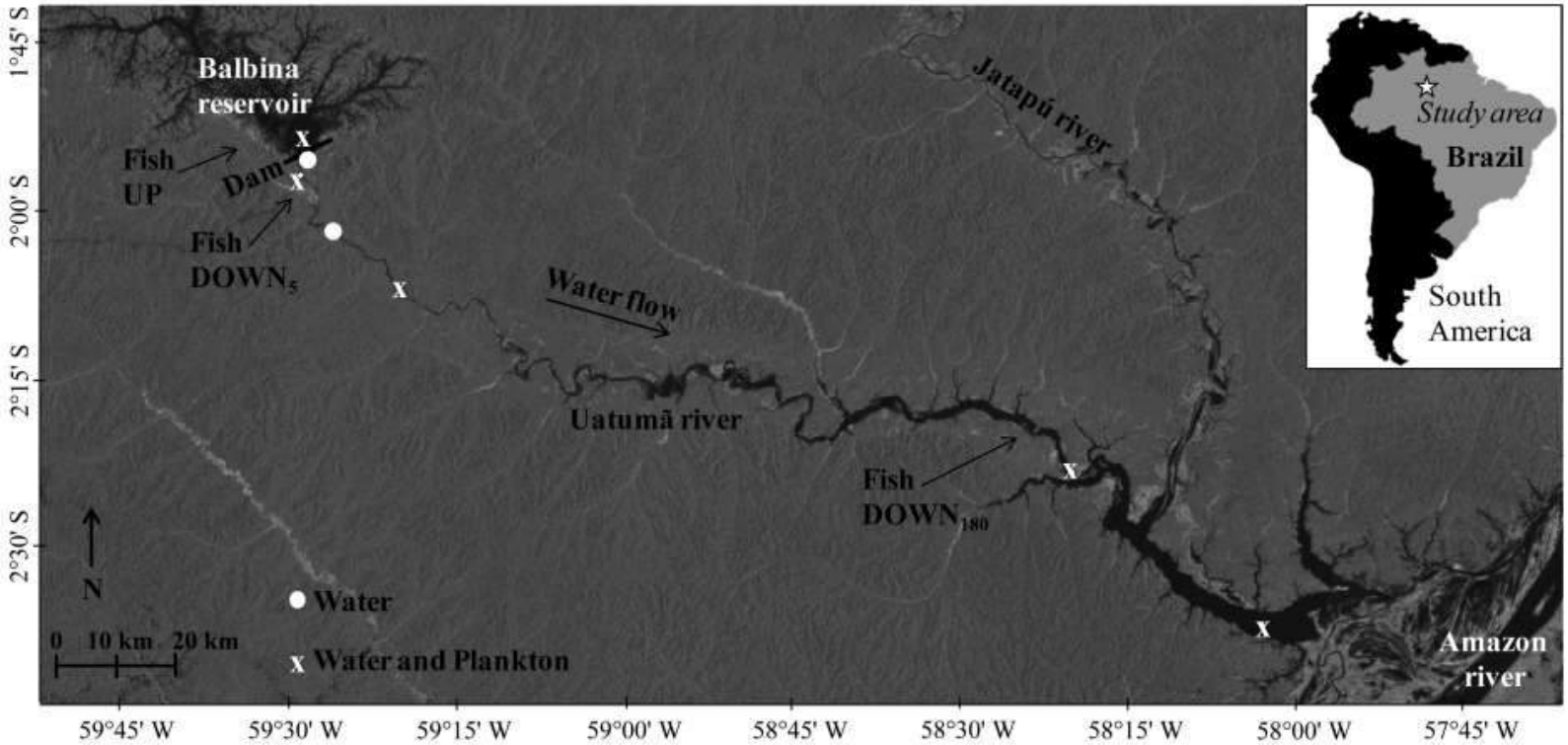


Canavan et al. (2000)

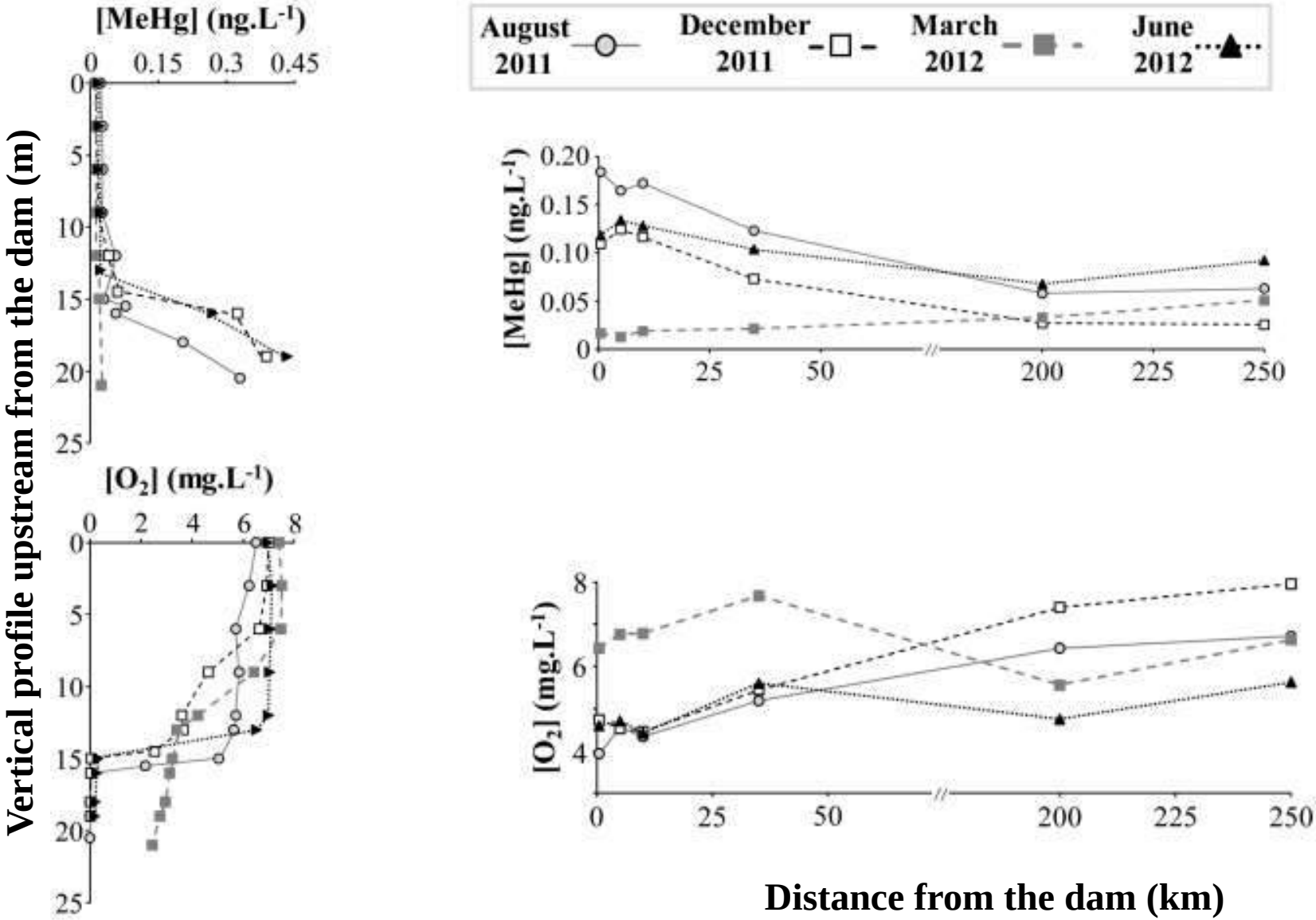
Dissolvido na água
Material particulado em suspensão
Plâncton



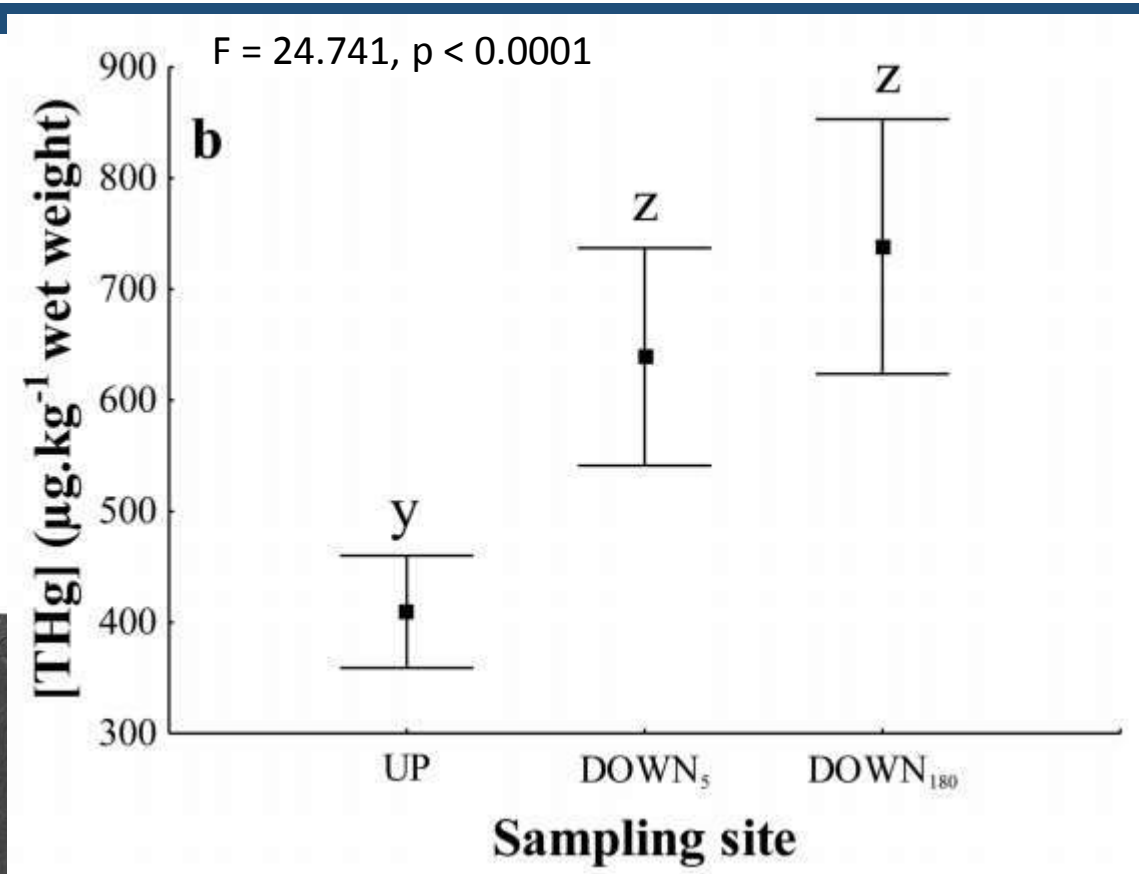
Canavan et al. (2000)

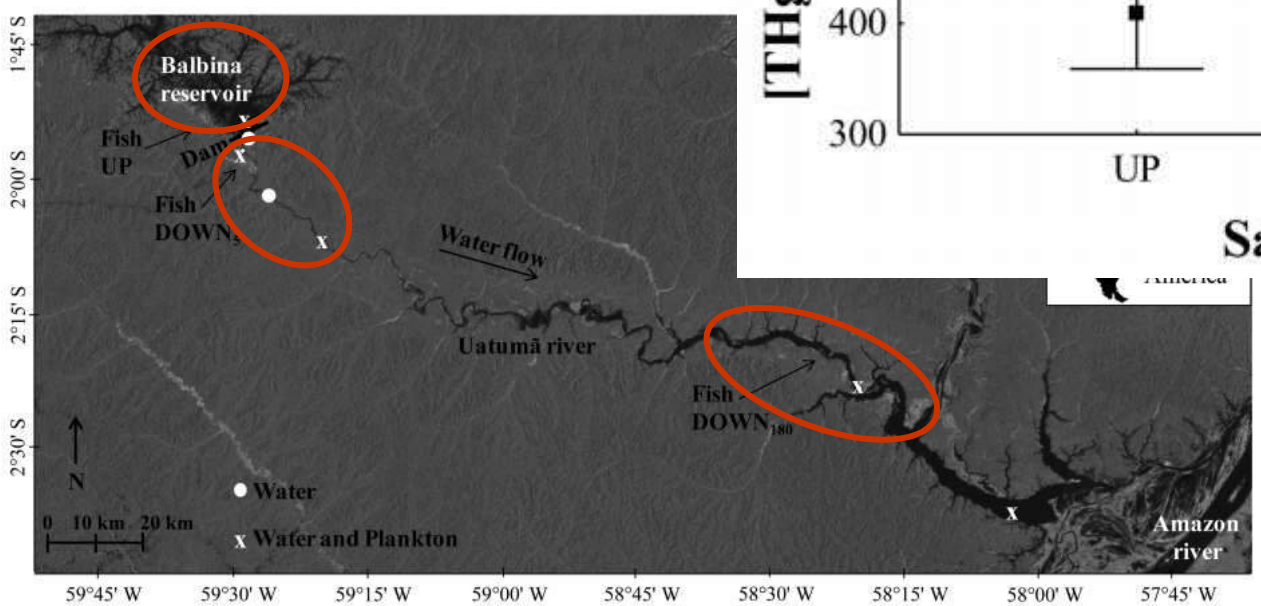


Kasper et al. (2014)

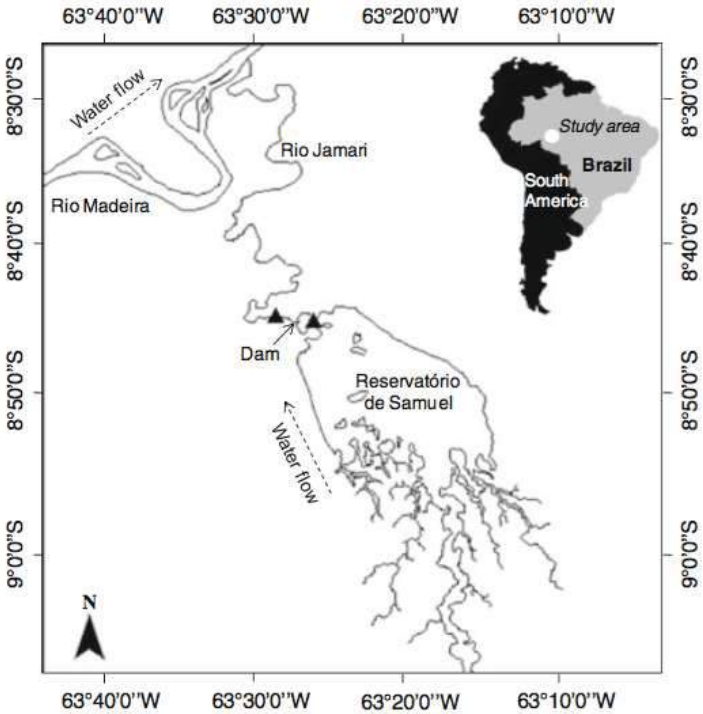


Kasper et al. (2014)

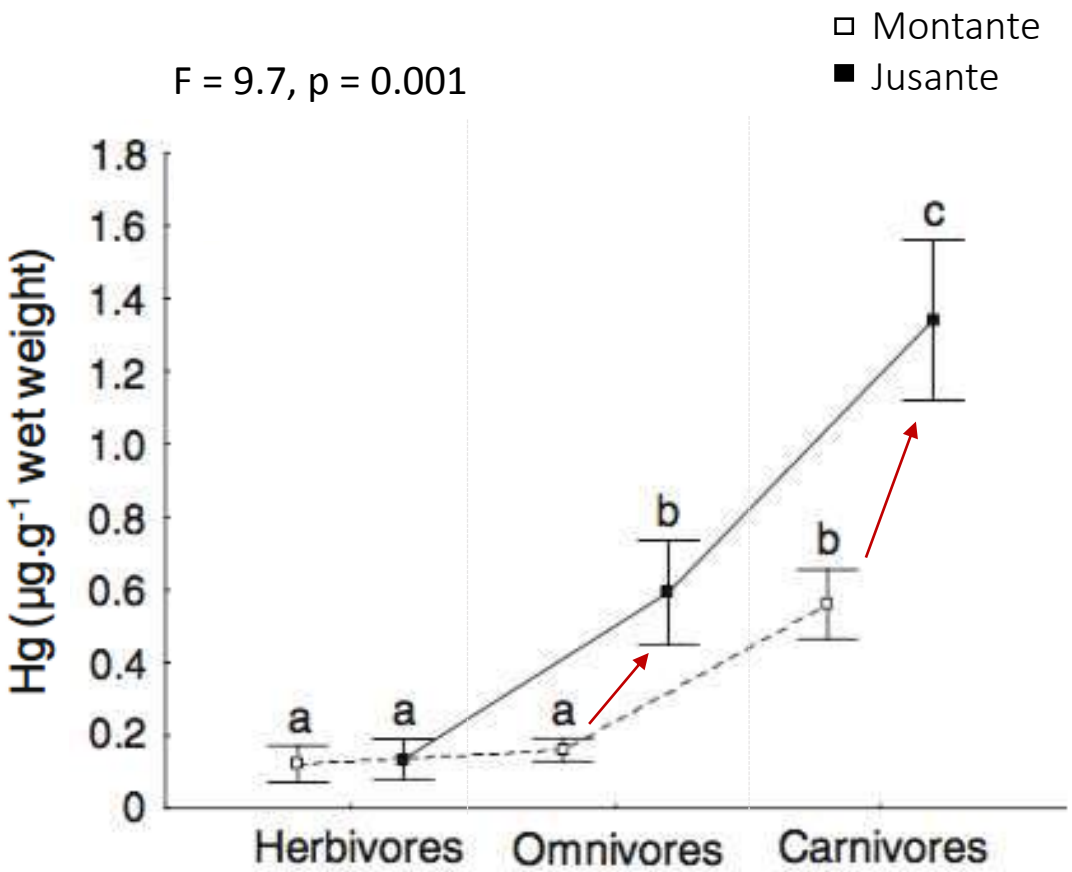




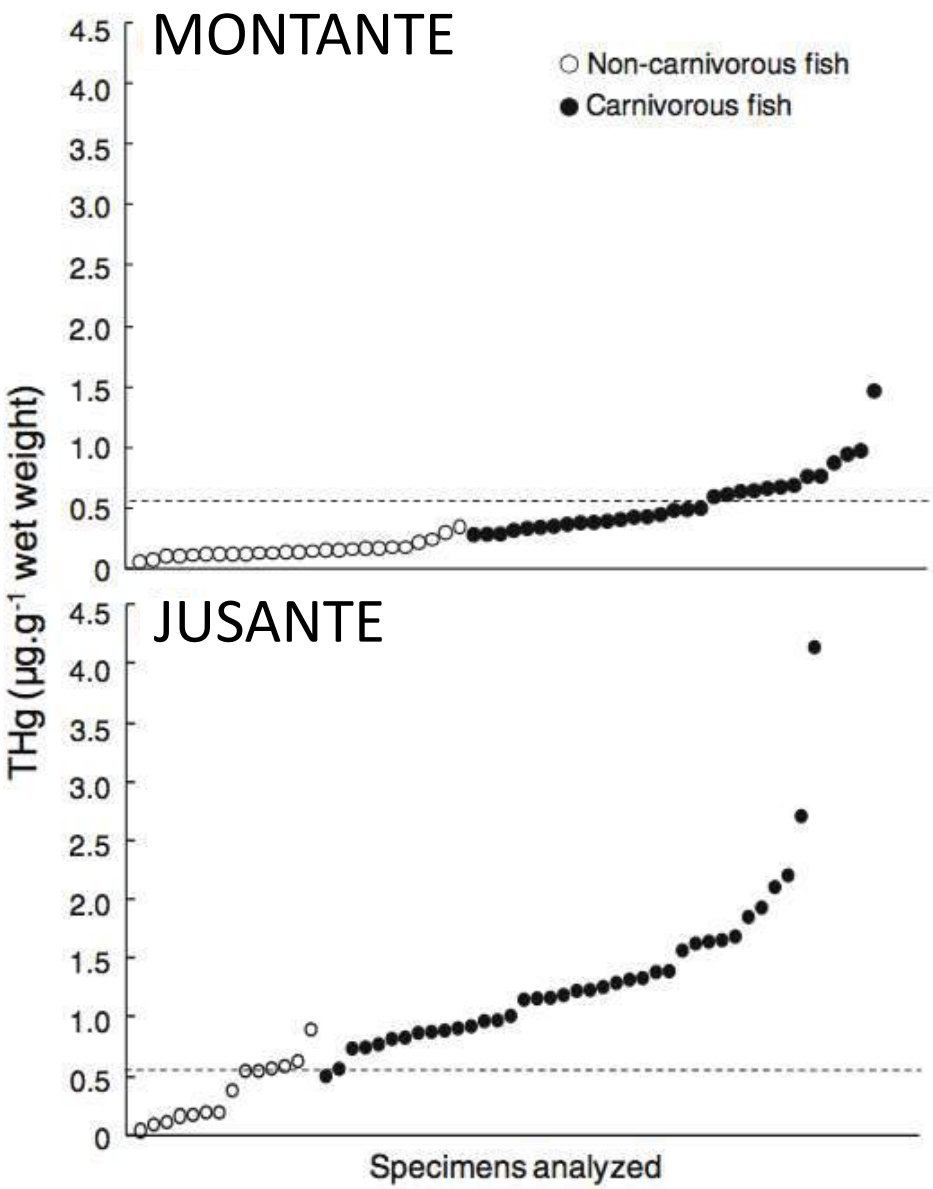
Kasper et al. (2014)



Efeito? Depende da dieta do peixe...



Kasper et al. (2012)



Limite recomendado pela OMS (consumo de peixe)

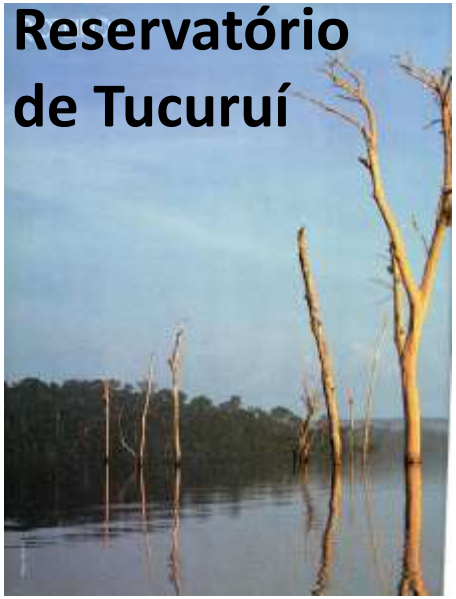
Limite recomendado pela OMS (consumo de peixe)

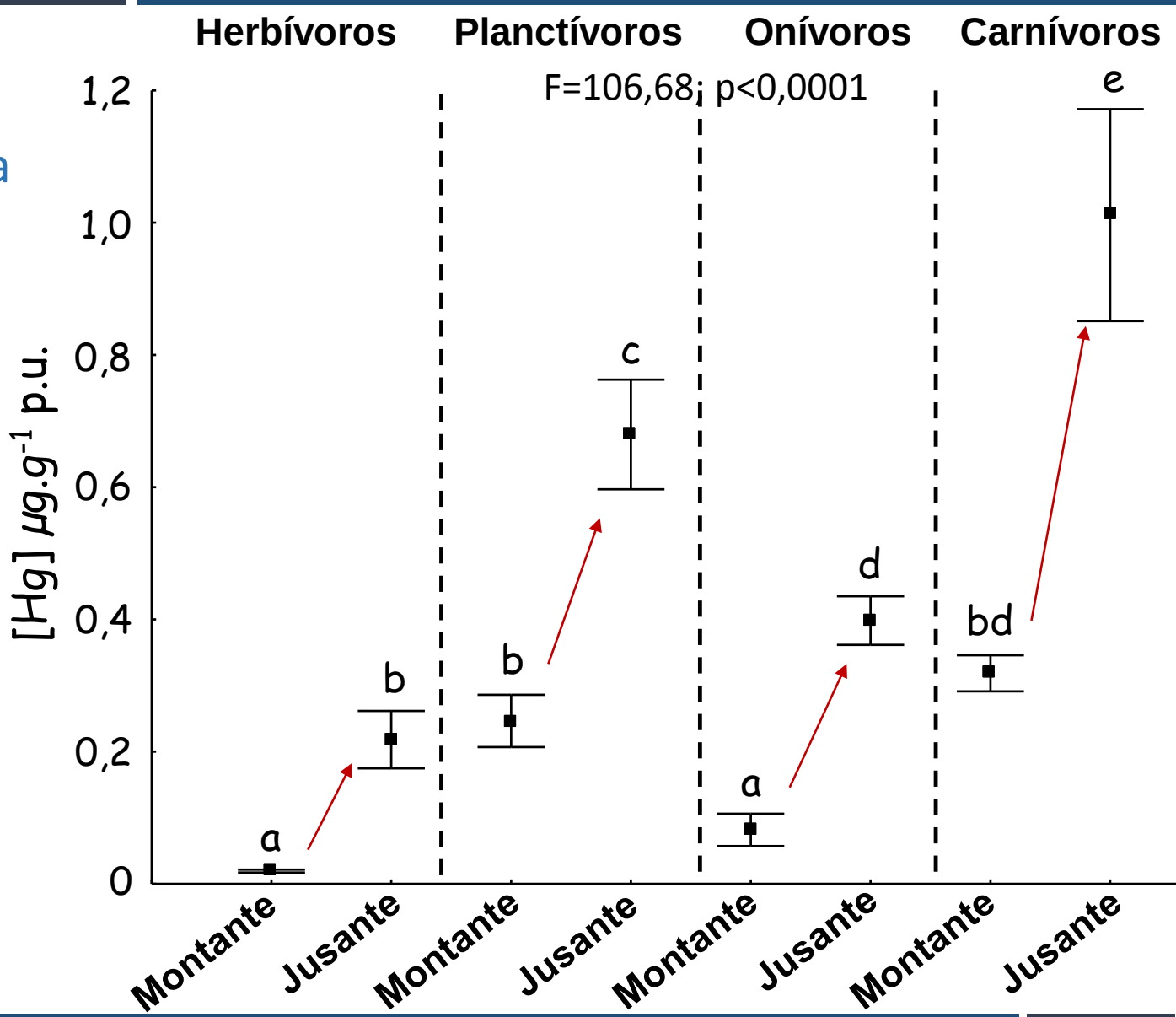
Kasper et al. (2012)

Efeito "barragem"

+

Dieta do peixe muda

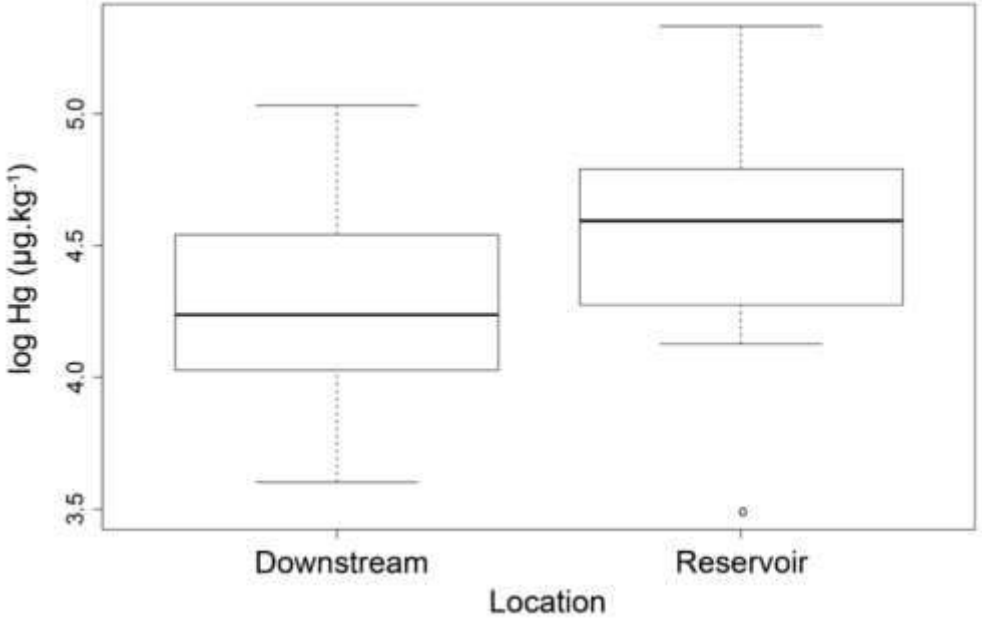


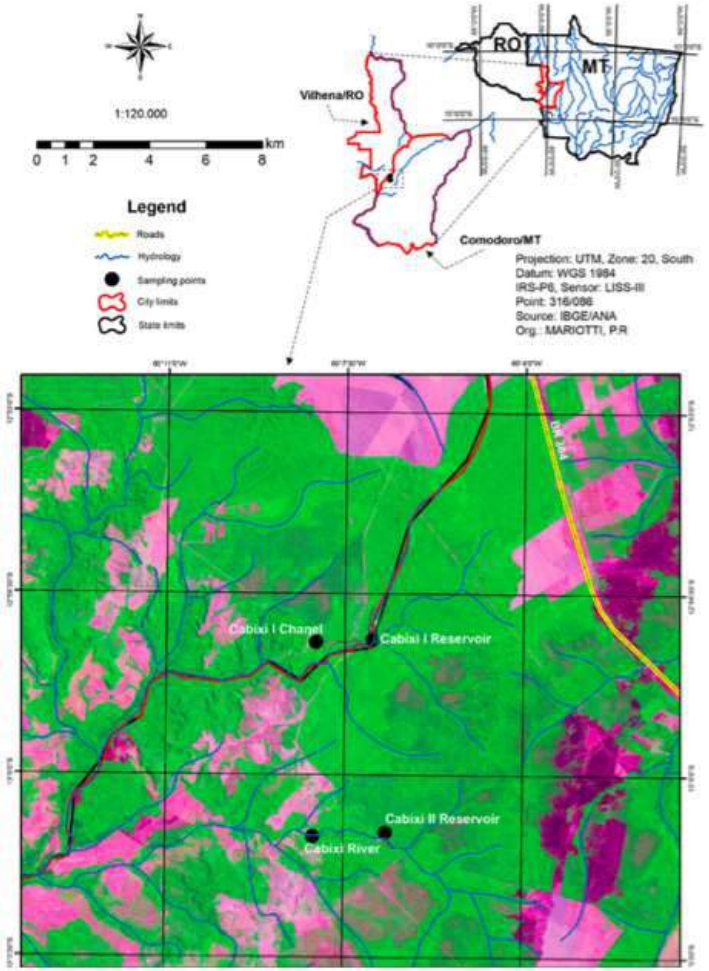


Palermo et al. (2004)

Efeito da barragem em PCH?

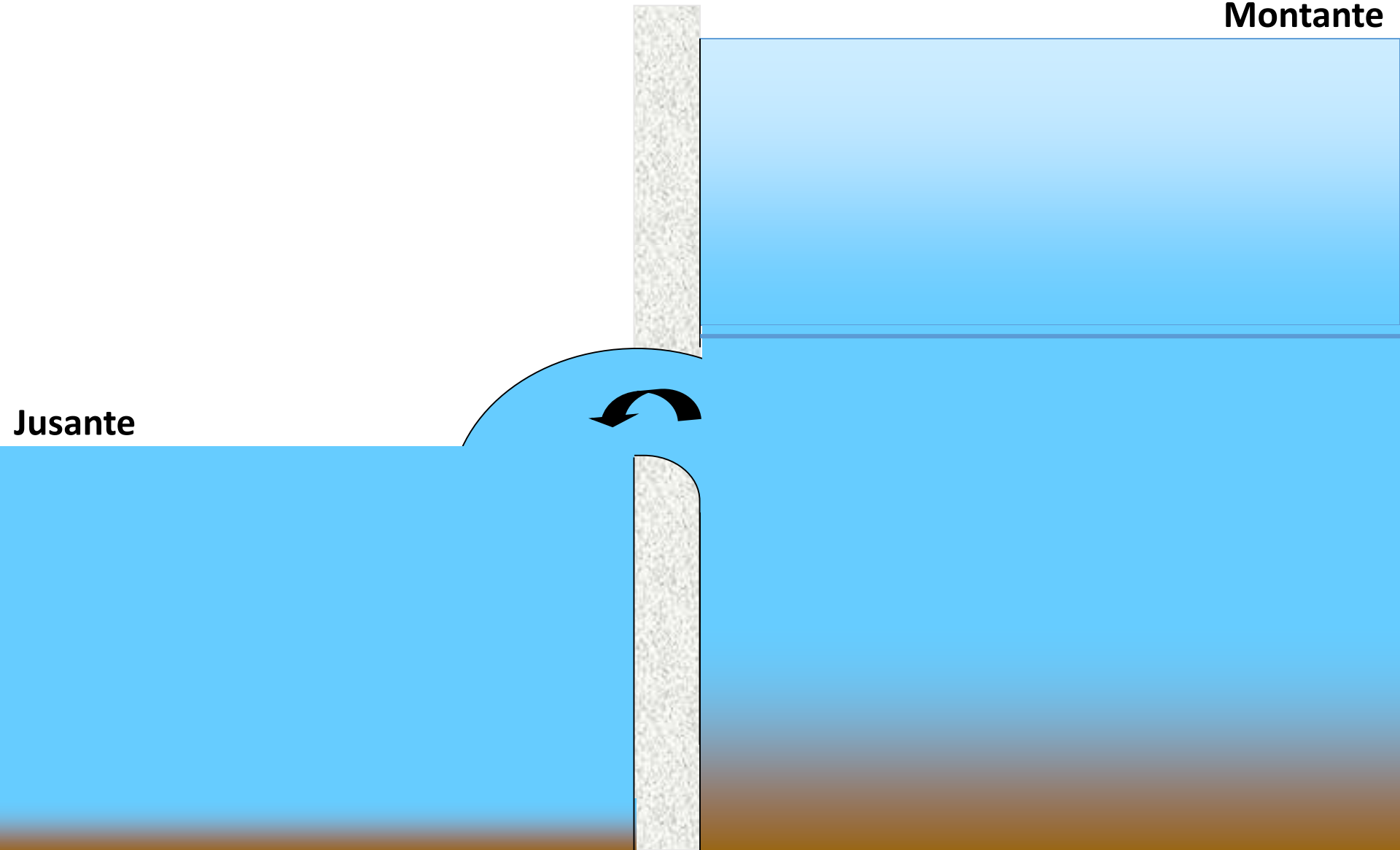
Altas concentrações de O_2 dissolvido
Reservatório oligotrófico
Ausência de estratificação



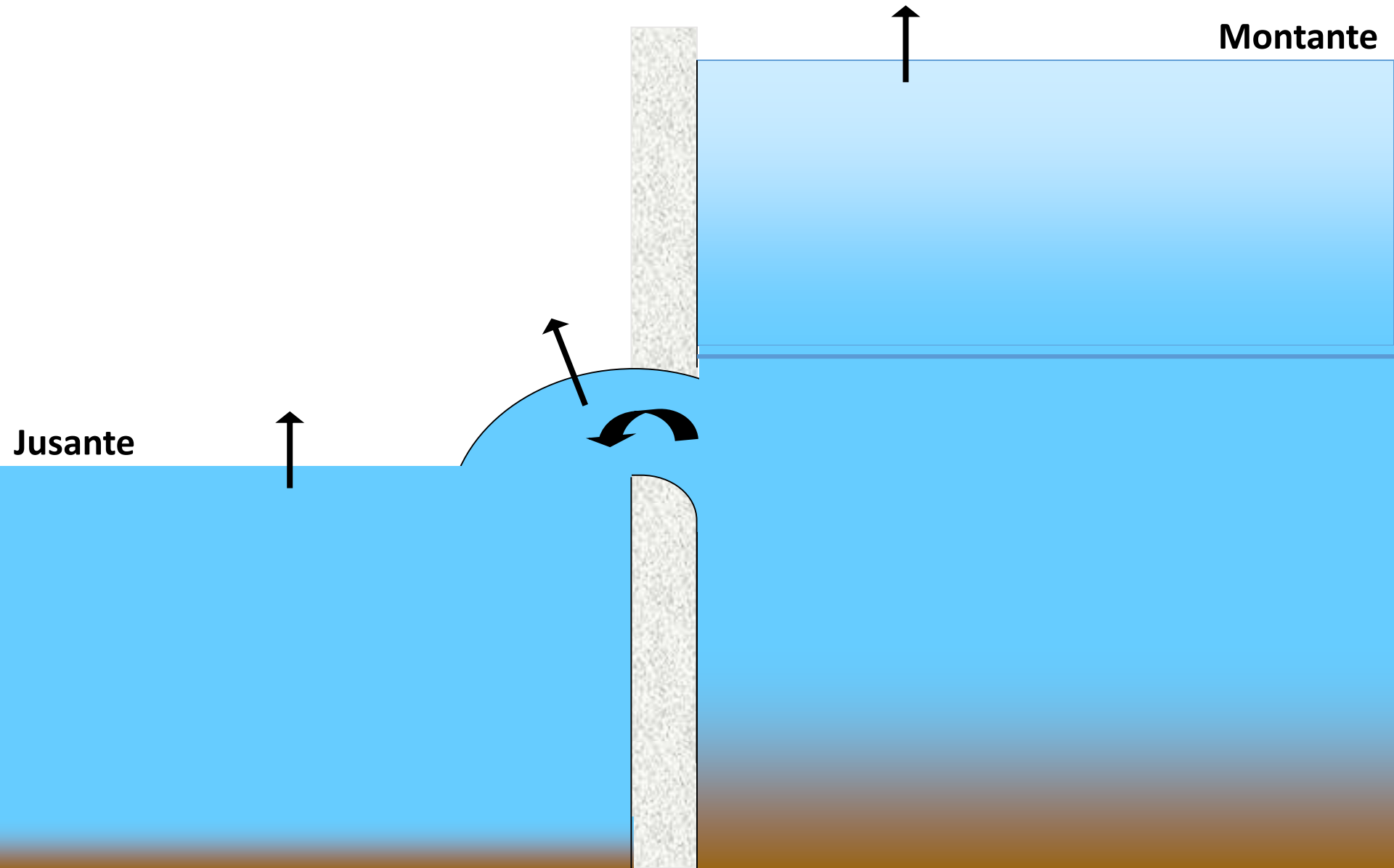


Cebalho et al. (2017)

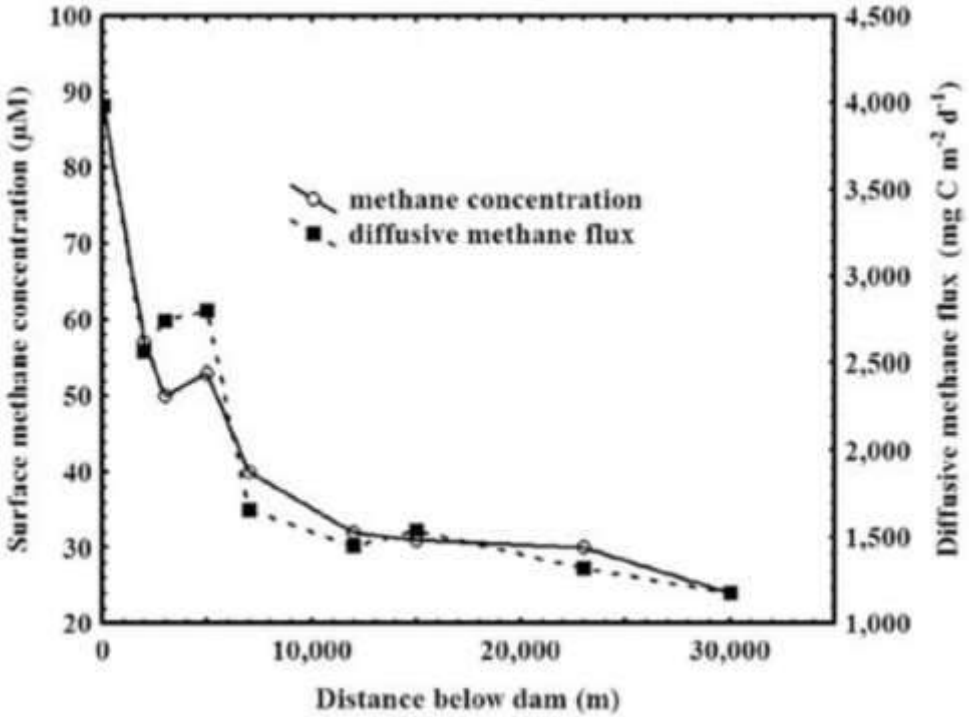
CO_2 e CH_4



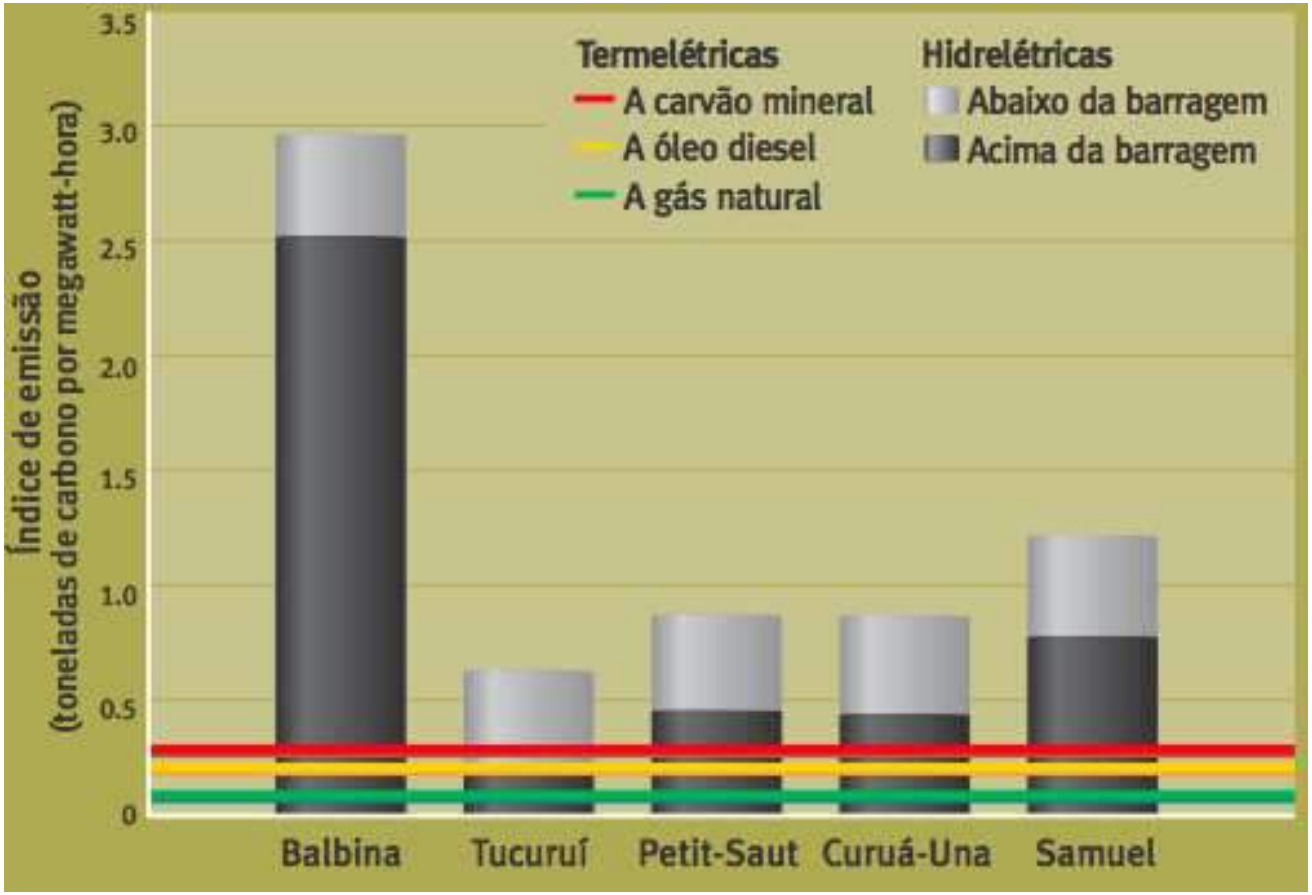
CO_2 e CH_4



Reservatório de Balbina

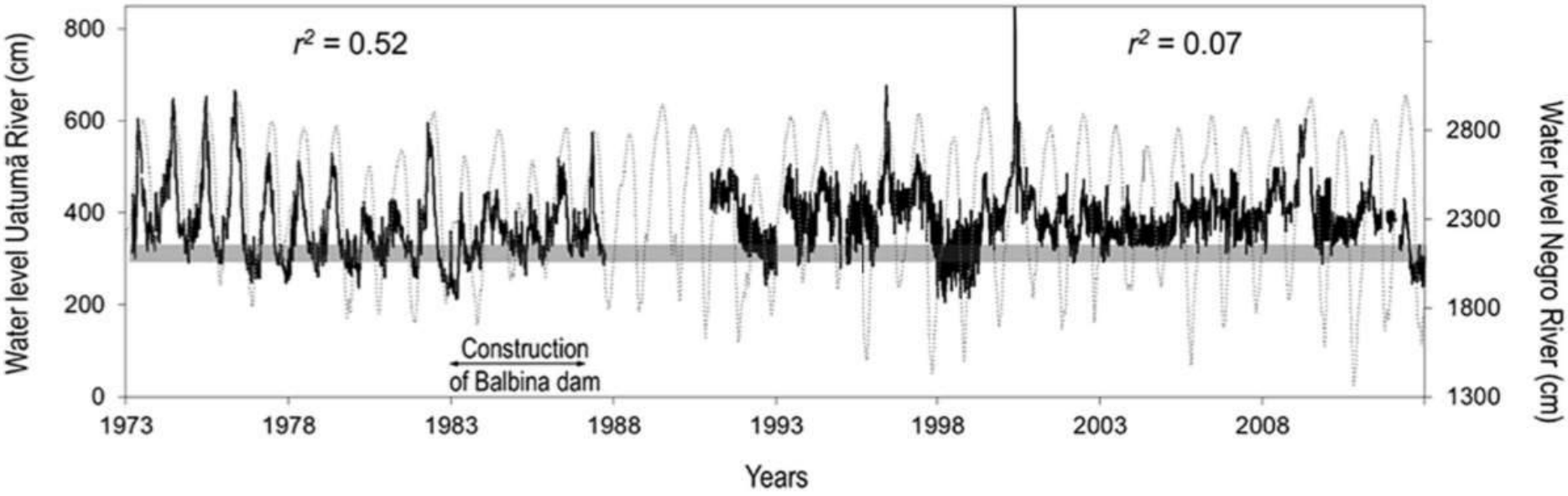


Kemenes et al. (2007)

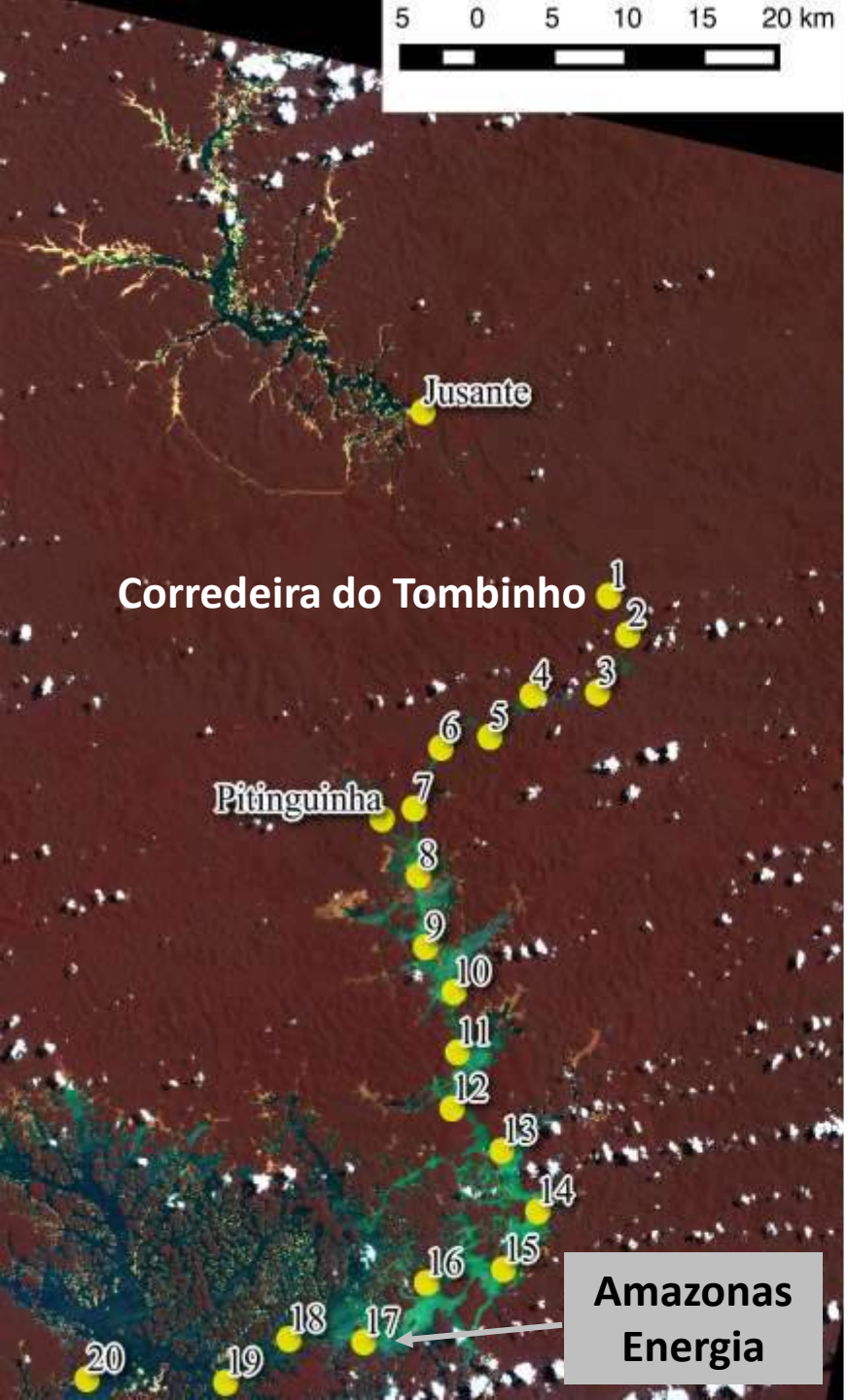


Kemenes et al. (2008)

Como fica a vazão a jusante de um reservatório?

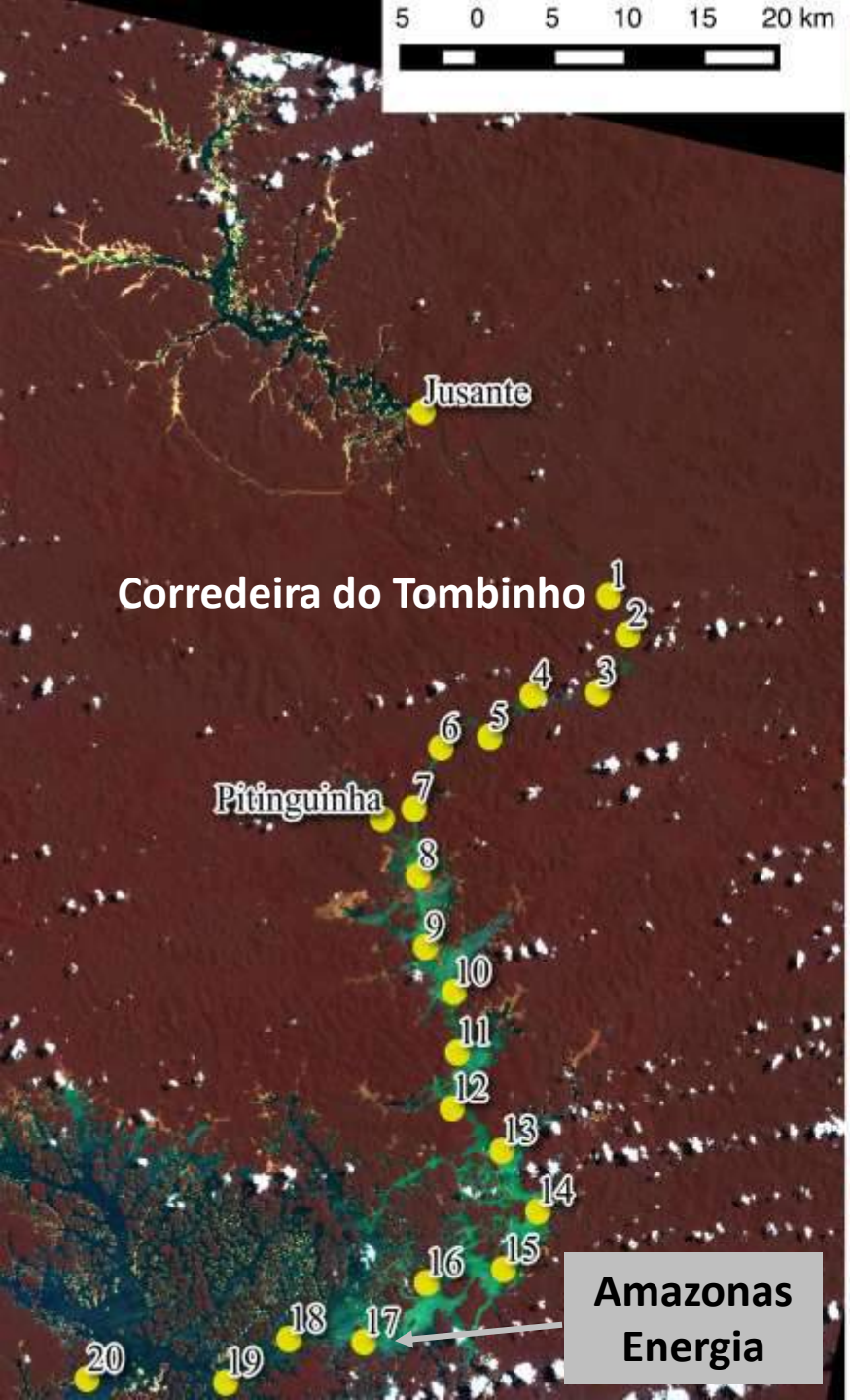


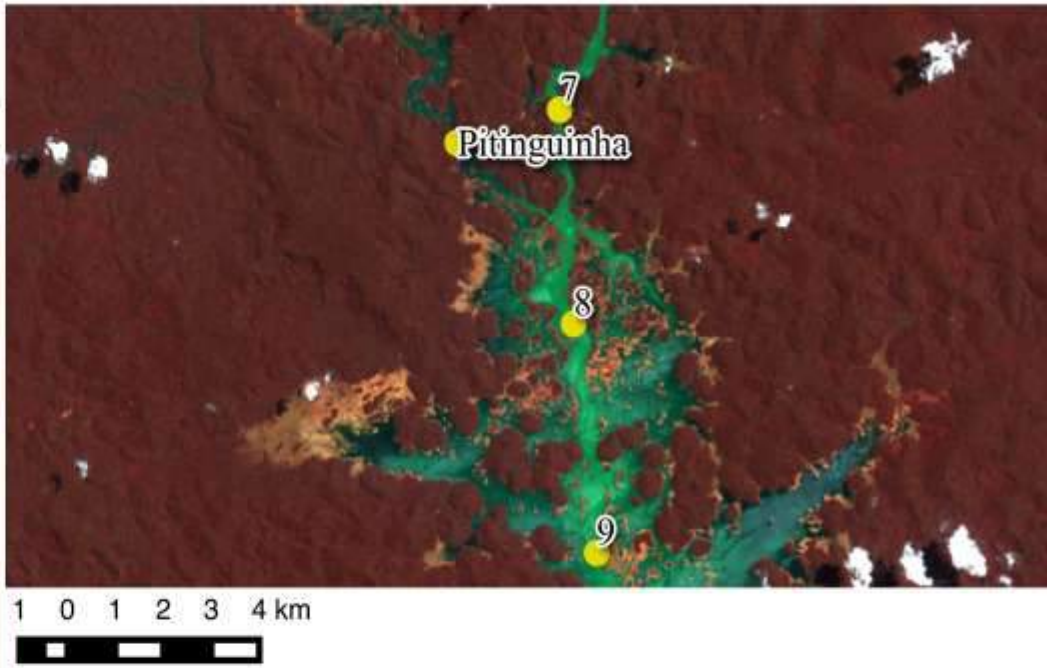
Assahira et al. (2017)

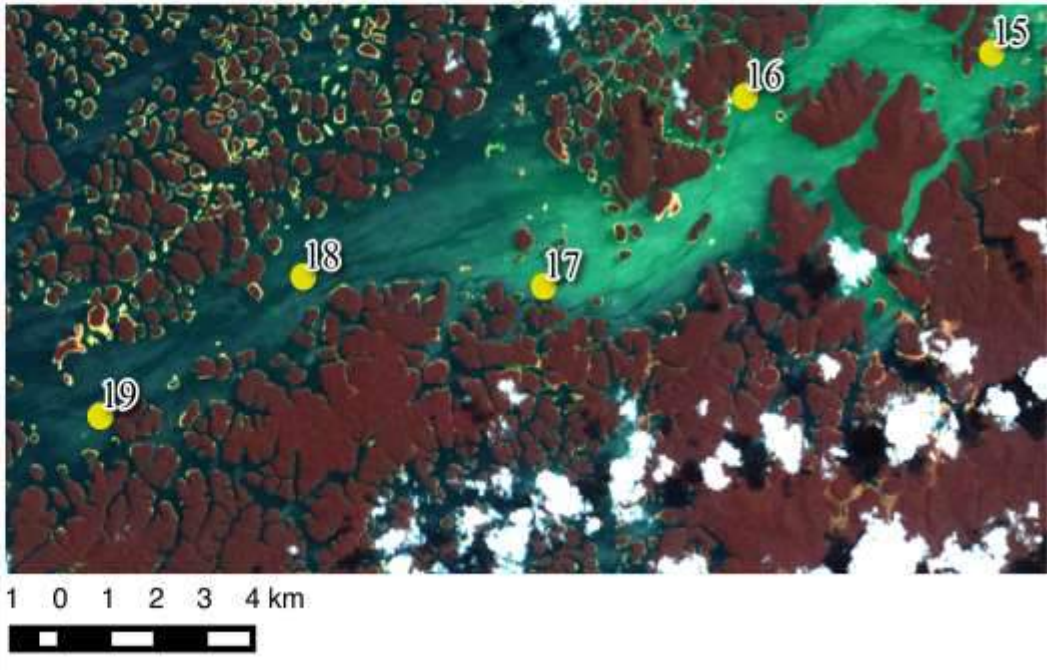


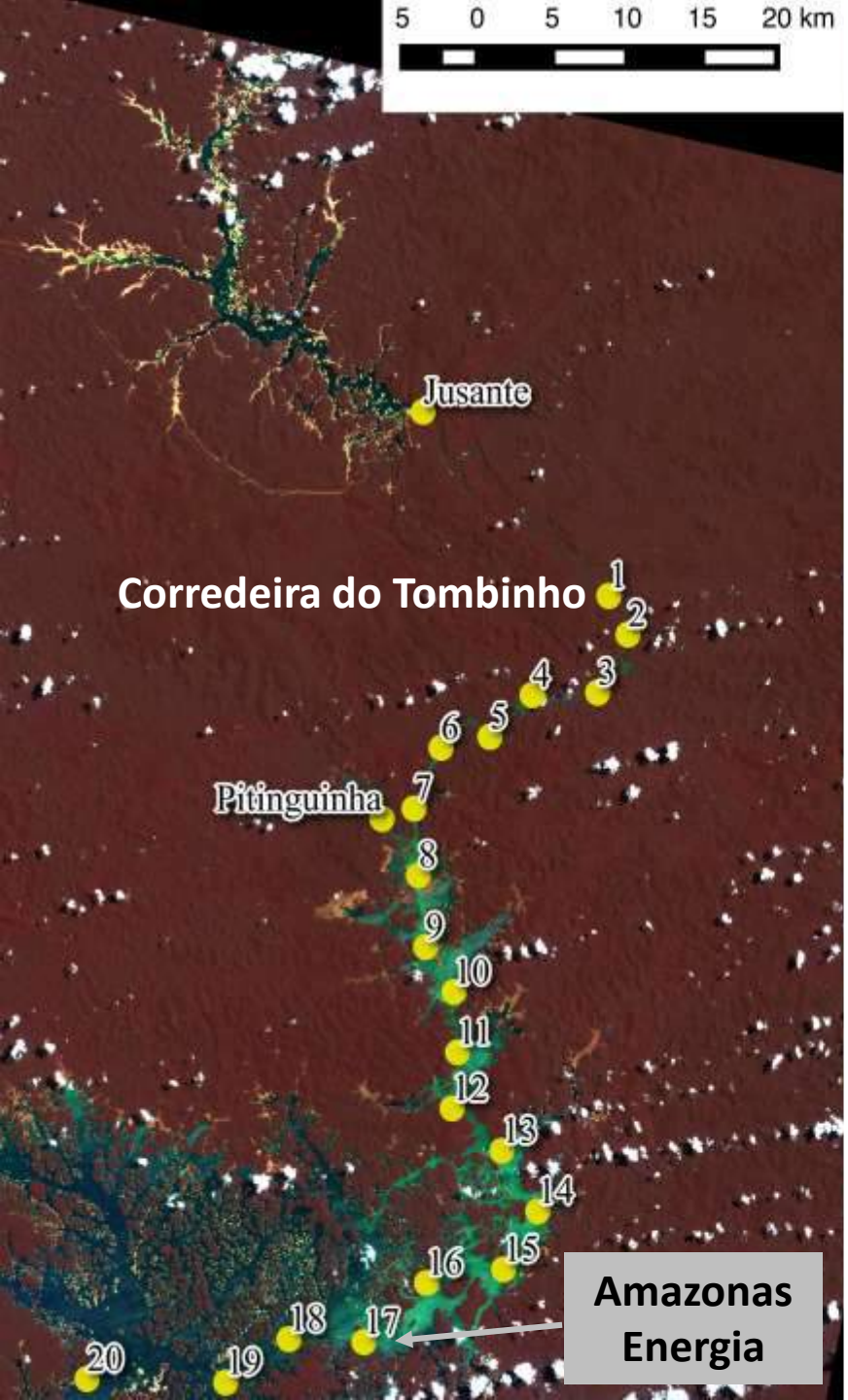
Pitinga (AM)

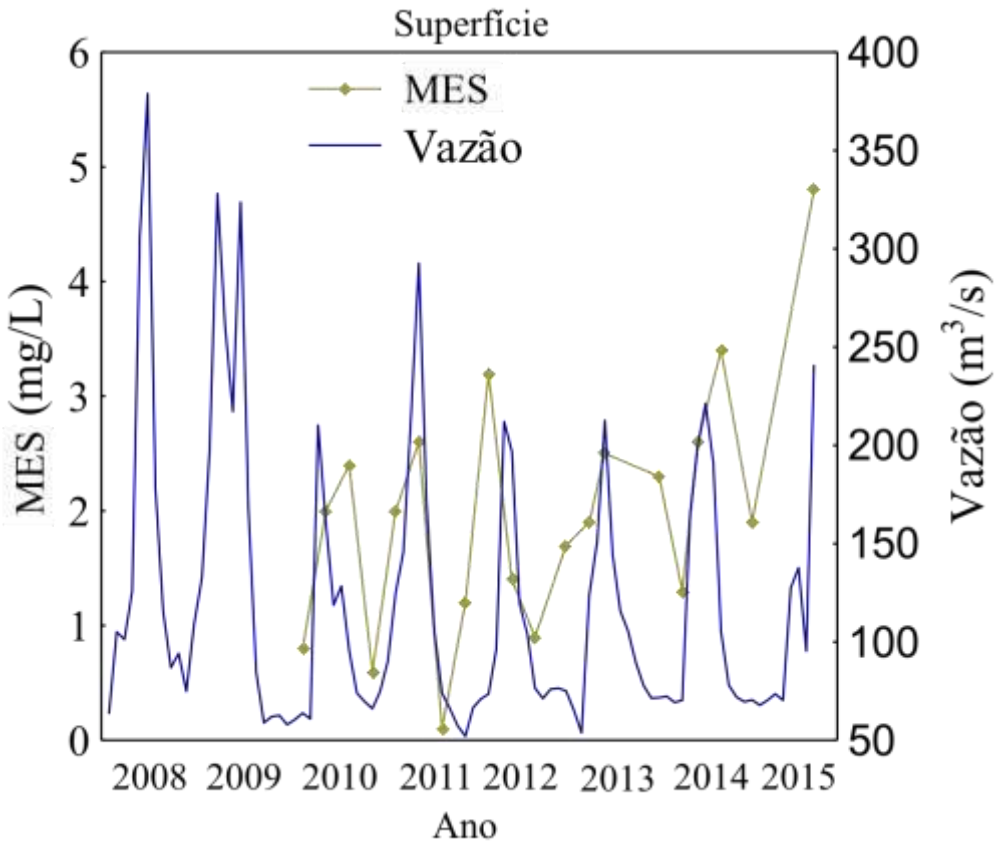
Agosto/2015


5 0 5 10 15 20 km
Jusante
Corredeira do Tombinho
1
2
3
4
5
6
Pitinguinha
7
8
9
10
11
12
13
14
15
16
17
18
19
20
Amazonas Energia


7
Pitinguinha
8
9
1 0 1 2 3 4 km


15
16
18
17
19
1 0 1 2 3 4 km

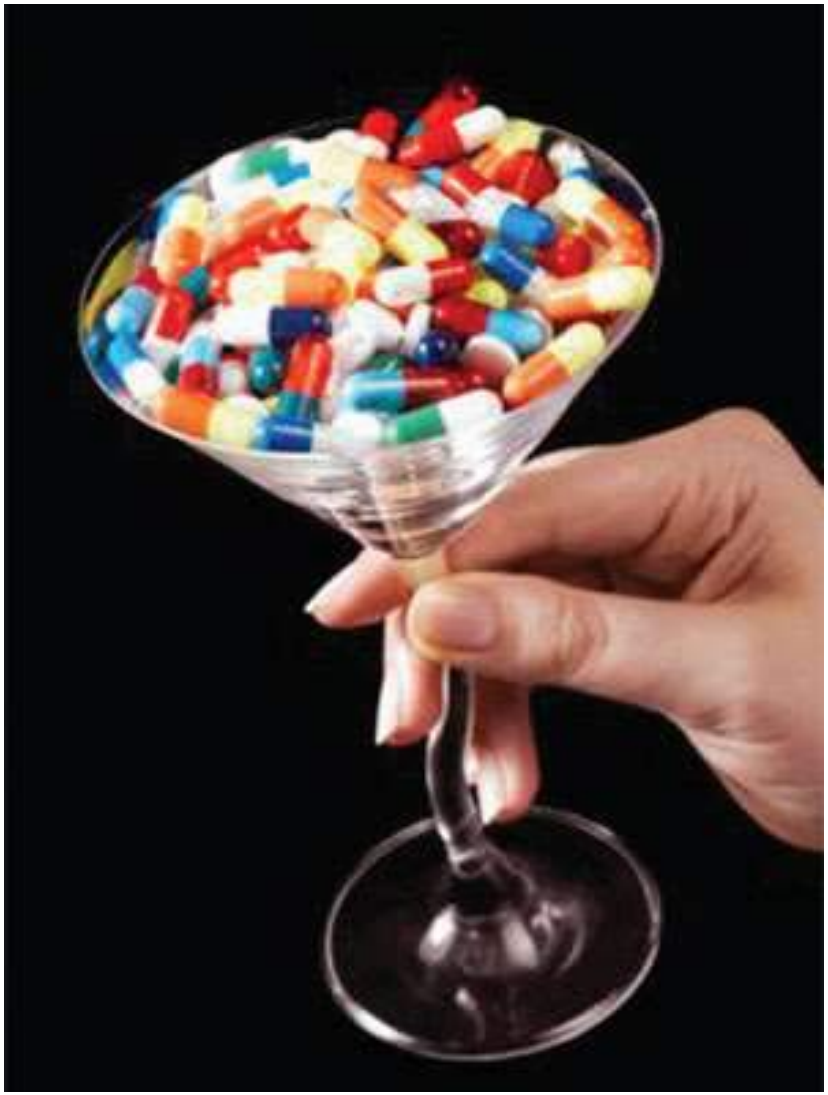




Correlação positiva

$r^2 = 0,29$; $p = 0,02$

Kasper et al. (2016)



Efeitos antagônicos
ou
Efeitos sinérgicos

Duração dos efeitos?

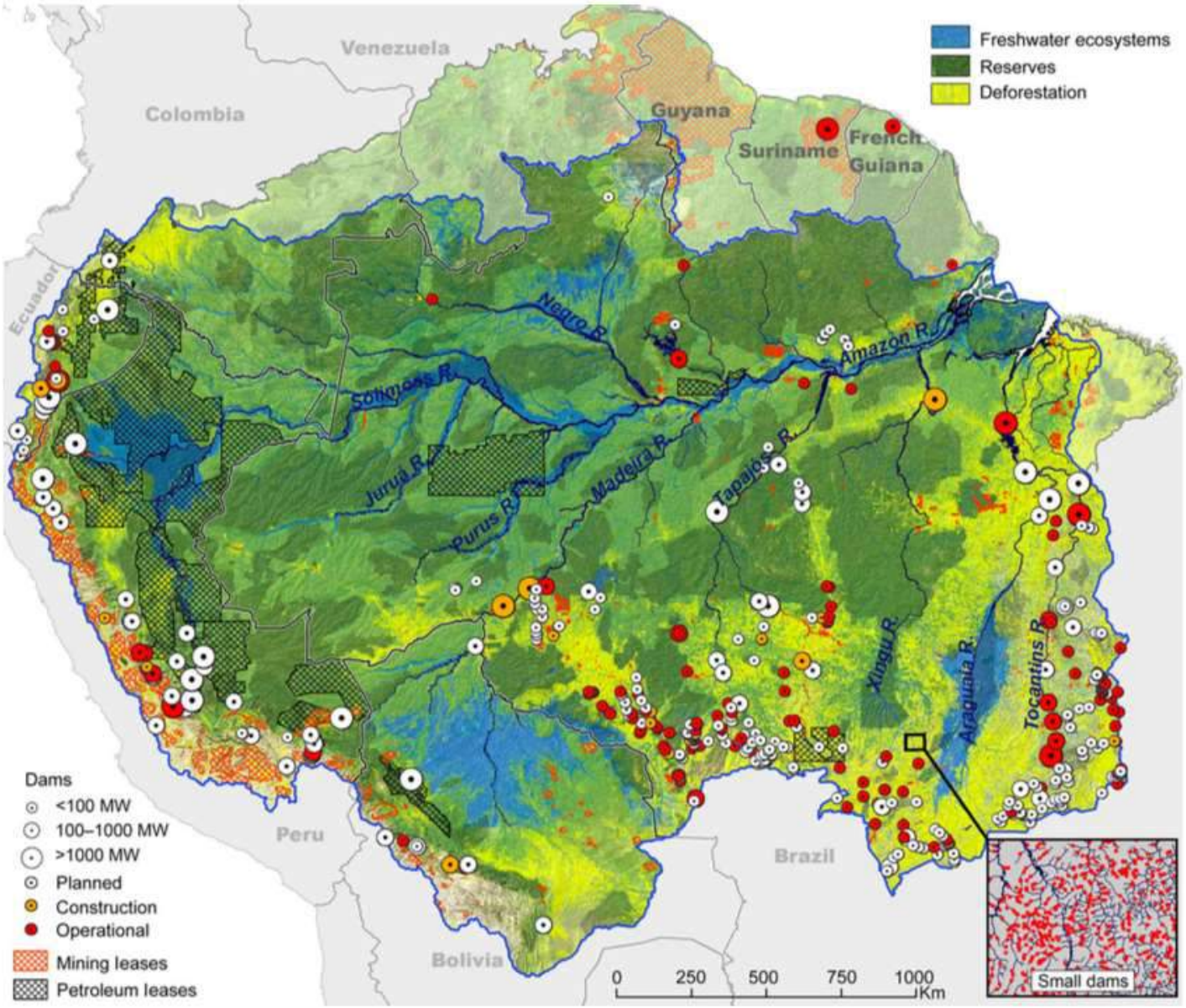
Duração dos efeitos?

Reservatórios em cascata?

Duração dos efeitos?

Reservatórios em cascata?

Alternativas?



Castello e Macedo (2016)

Duração dos efeitos?

Reservatórios em cascata?

Alternativas?

Energia limpa?