A new estimation of water and nutrients (N & P) discharge to the Mediterranean Sea from the LPJmL model: modelling the dynamics of the land-sea nutrient transfer

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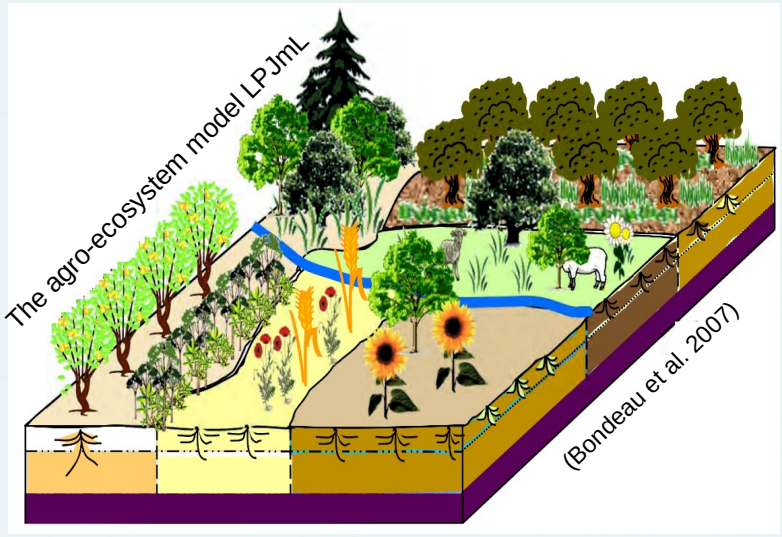
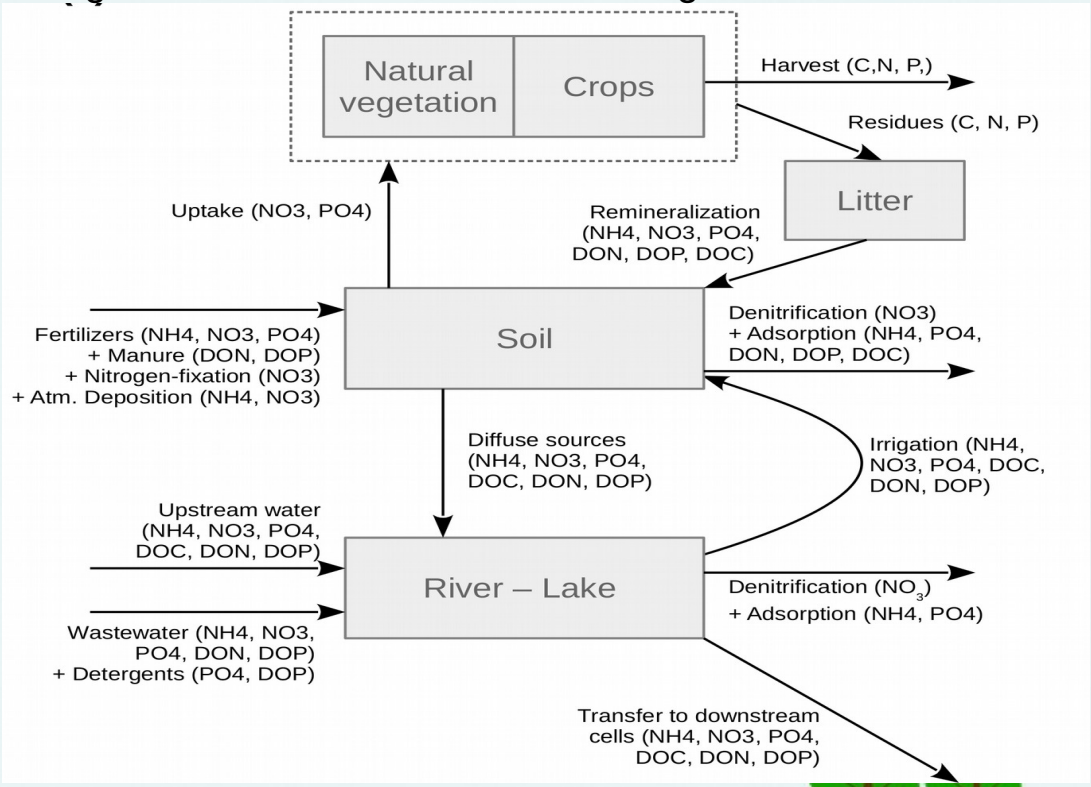
Model presentation

Climat, Soil, CO2



Runoff, water discharge, Nutrients ...

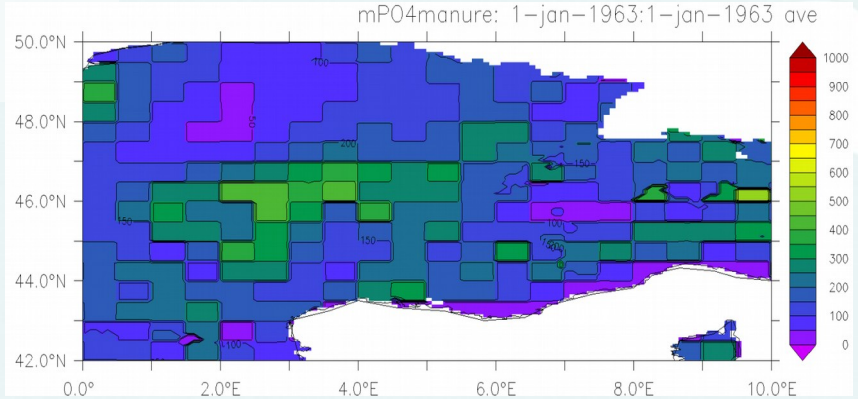
Figure 1. Transfer of nutrients in a gridcell of LPJmL.



Inputs and boundary conditions : Rhône

Fertilizer (N & P)

Manure (N & P)



Climat

Input Fertilizer Manure

Soil
Leaching of nutrients

Runoff
Max dams

Lakes

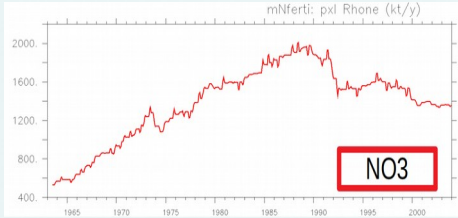
Max Lakes

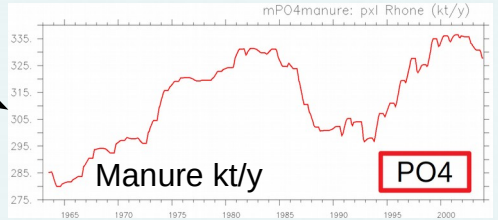
Runoff

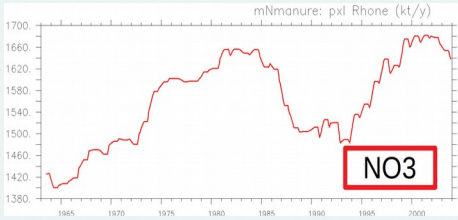
Input Wastewater

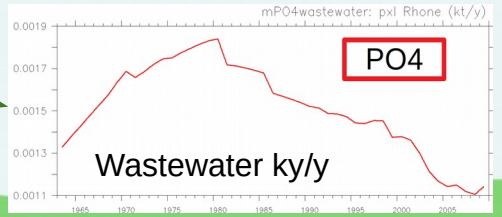
Rivers

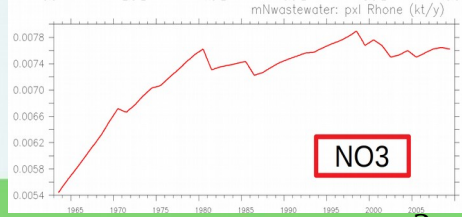
Wastewater (N & P)





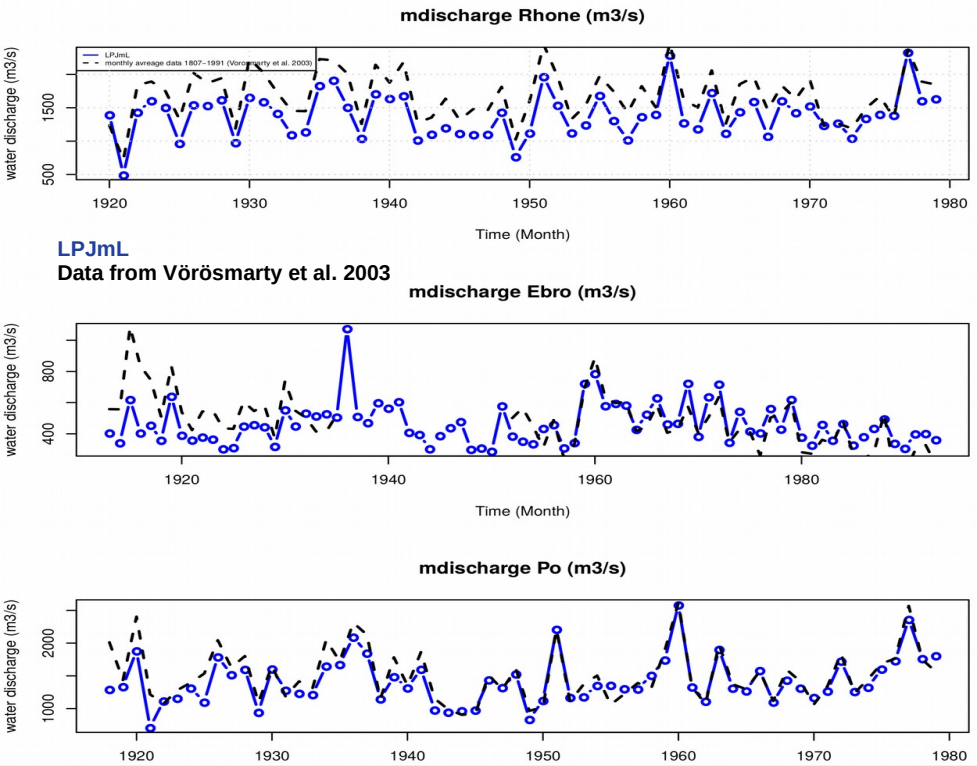






Evaluation of waters discharge (m3/s)

The model succeeds in simulating the temporal variations of water discharge for the main rivers of the Mediterranean Sea (Rhone, Ebro and Po)



LPJmL
Data from Vörösmarty et al. 2003

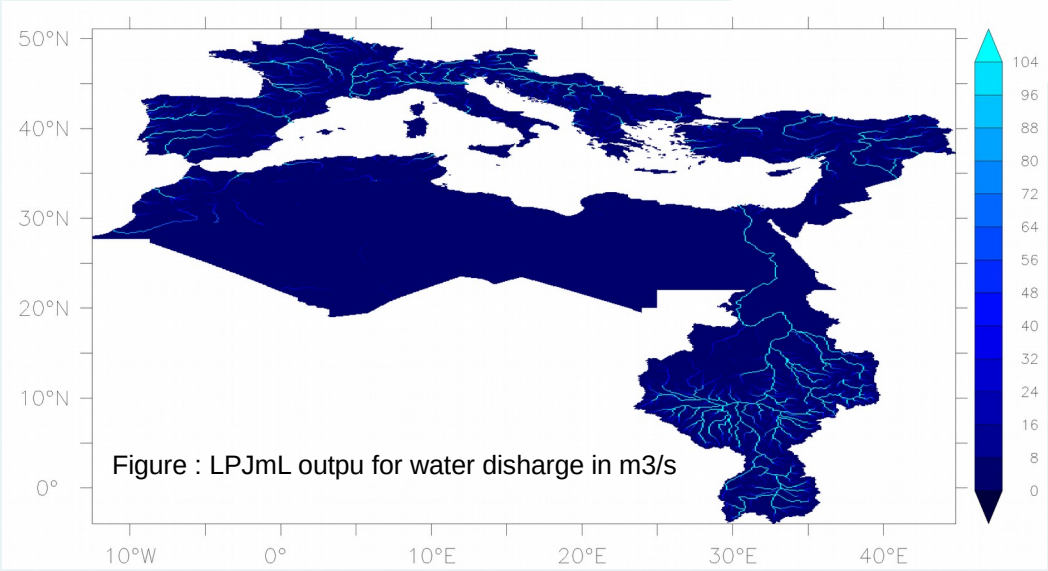
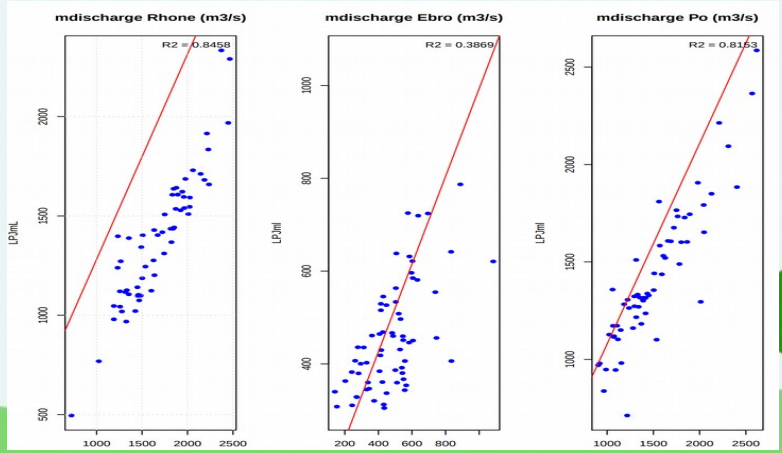


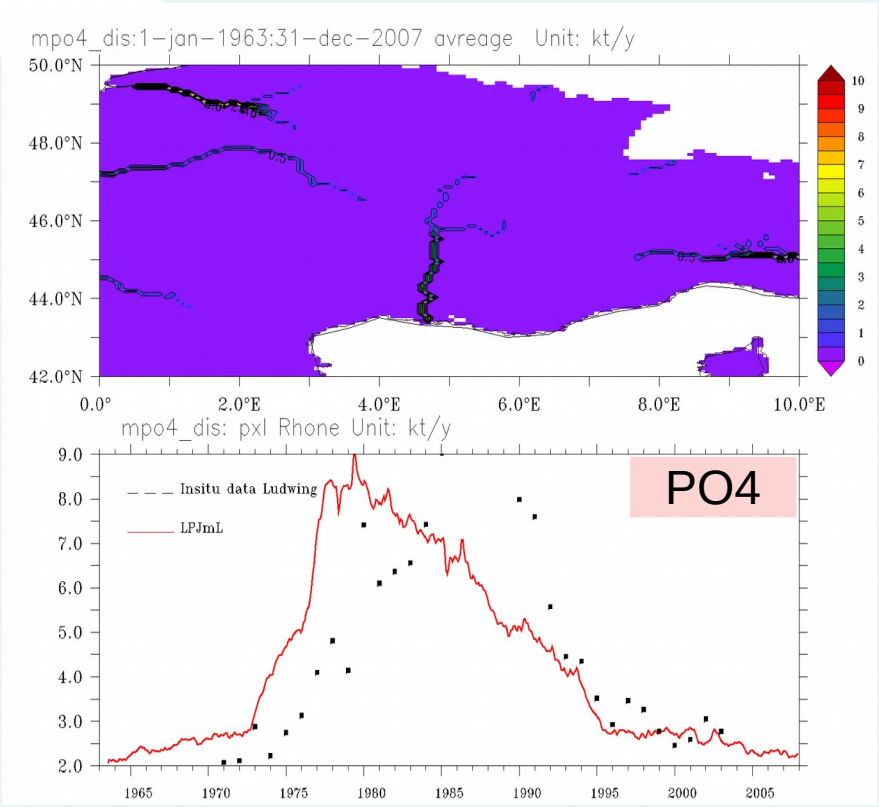
Figure : LPJmL outpu for water disharge in m3/s

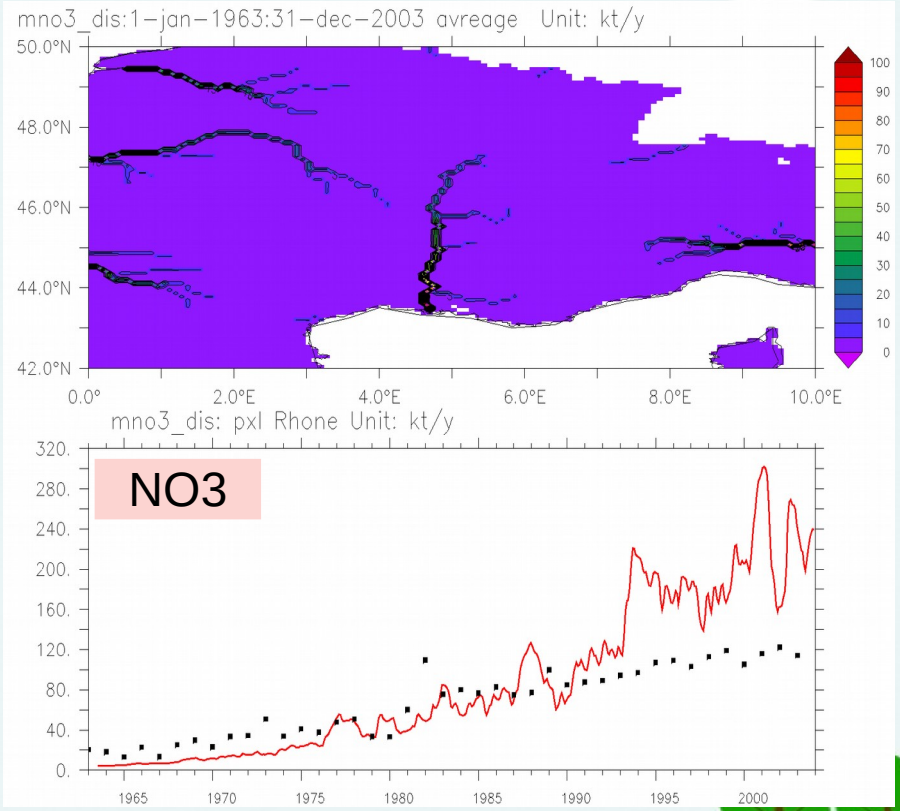


Ayache et al., in prep

Evaluation of nutrients : NO3, PO4 (kt/y) Rhône

First basin-wide LPJmL simulation at 1/12° shows a good consistency between the simulated nutrients concentration (NO3 and PO4) and available in-situ data.





Ayache et al., in prep