

**Water and nutrients circle
response to long term agricultural
development and soil response**

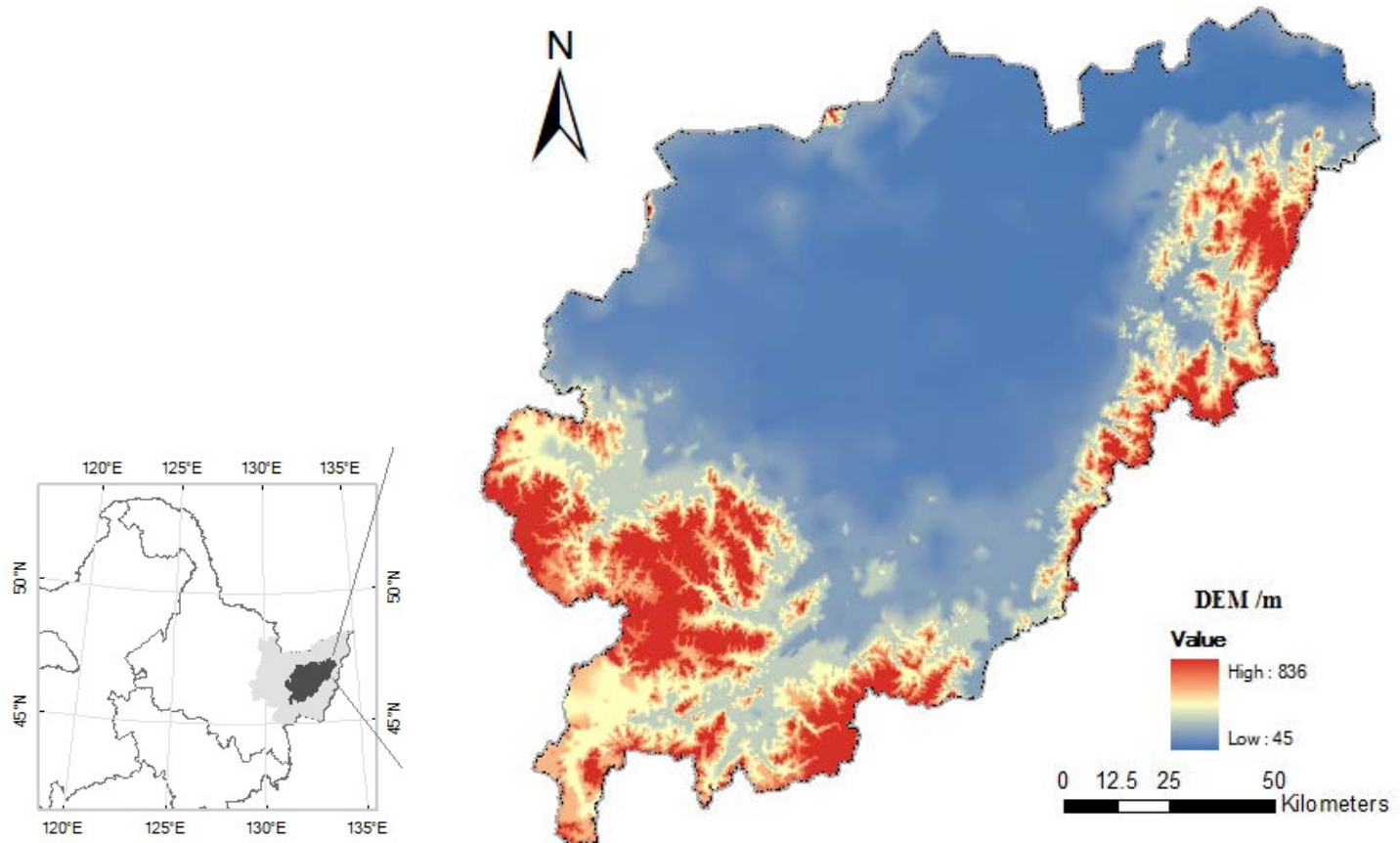
Wei Ouyang

Beijing Normal University

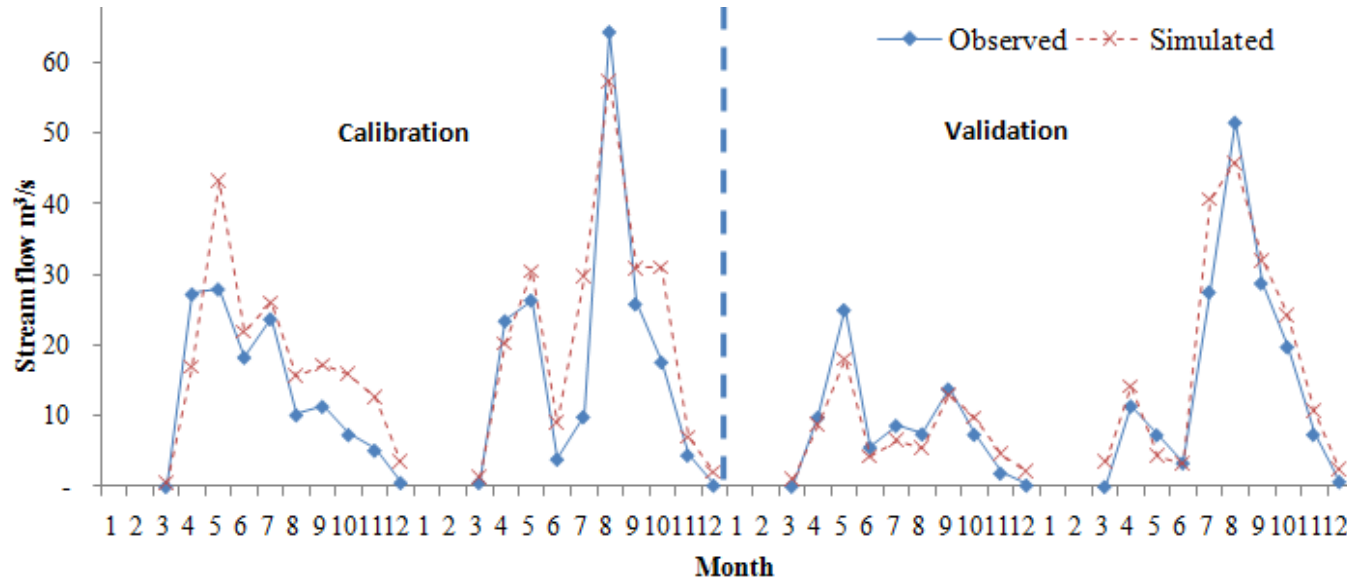
wei@bnu.edu.cn

Water and nutrients circle response to long term agricultural development

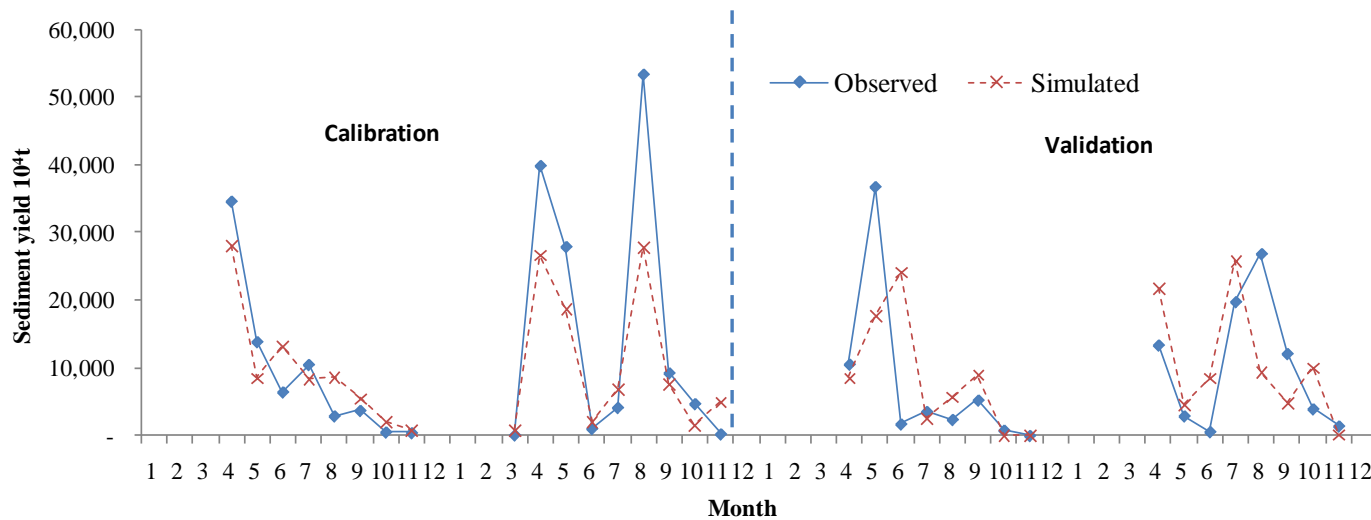
- Location and topography of study area



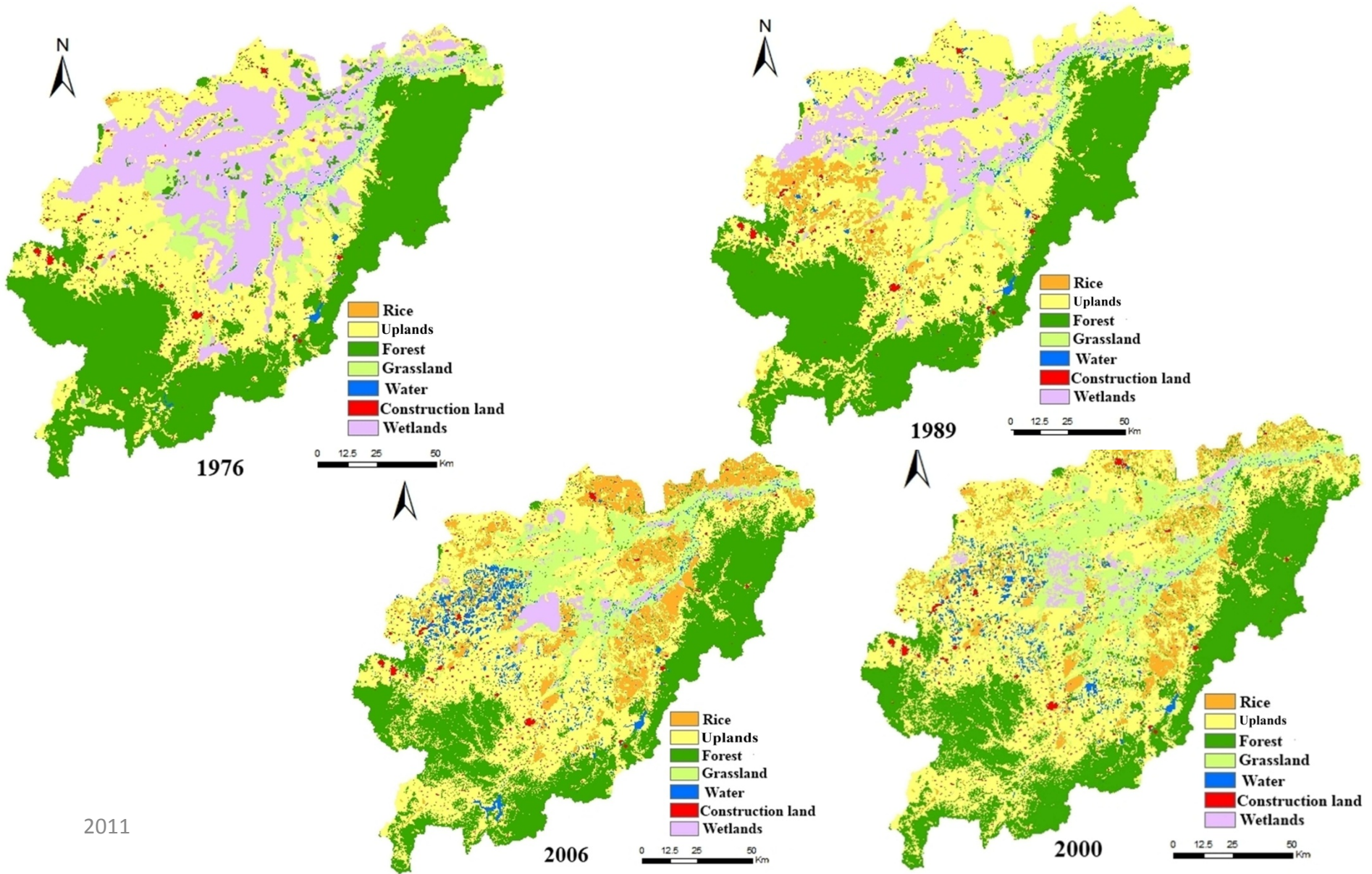
Calibration and validation of steamflow



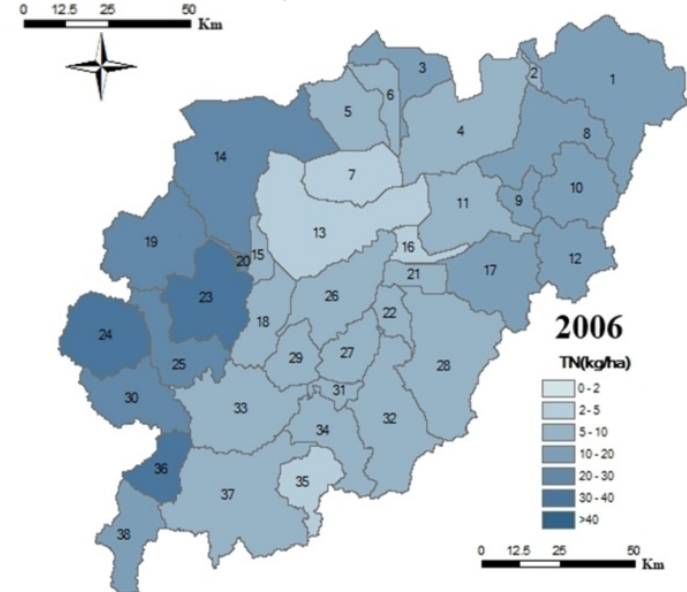
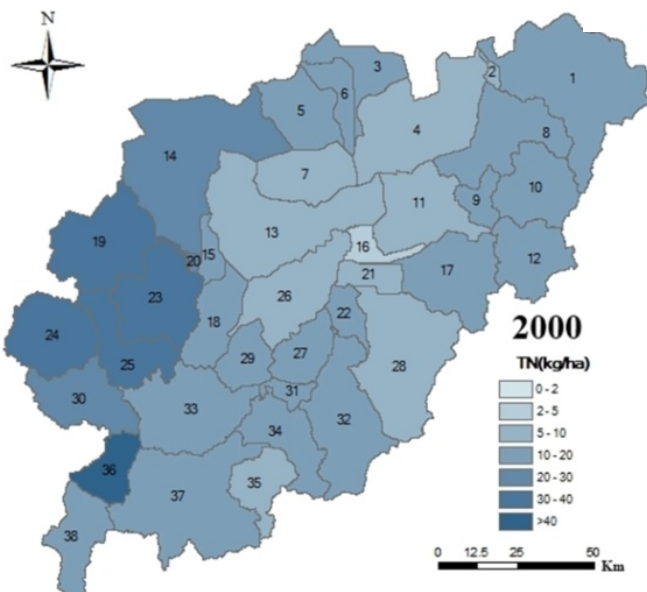
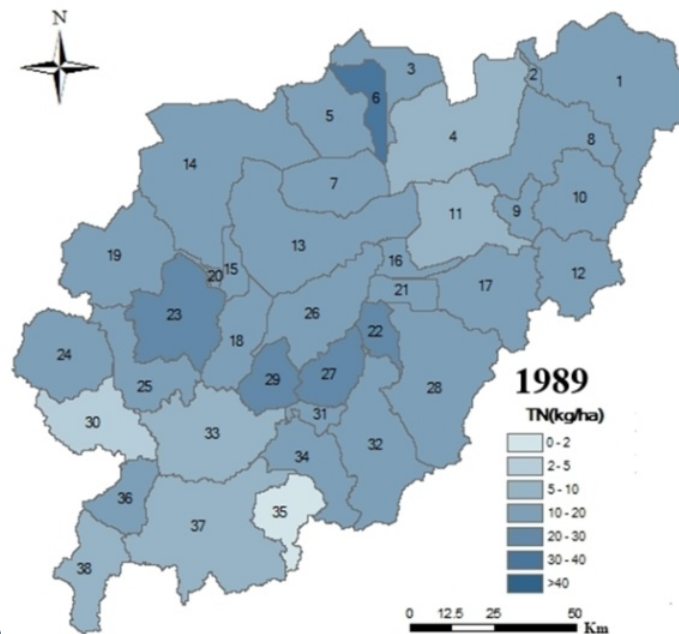
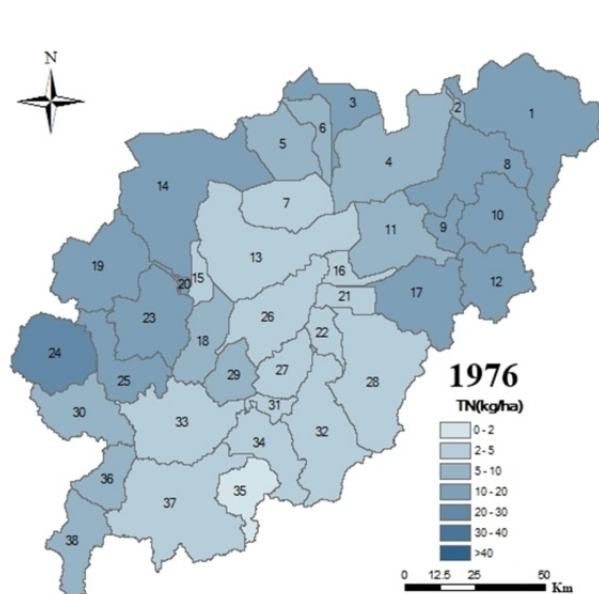
Calibration and validation of sand concentration



Watershed land cover distributions in four observed years

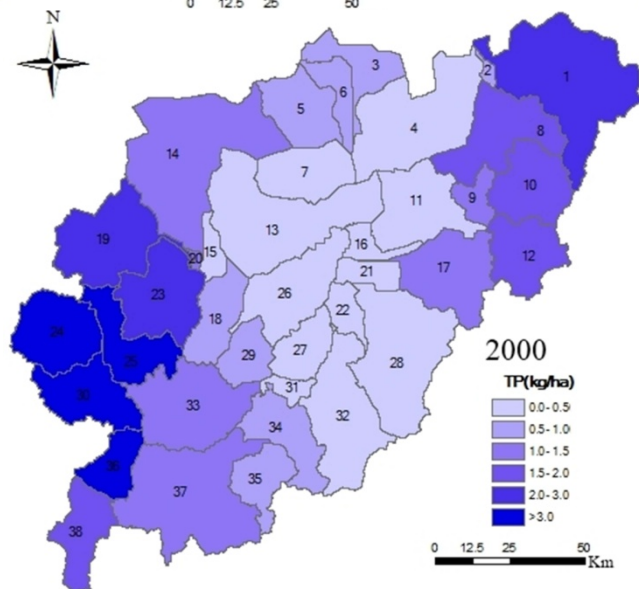
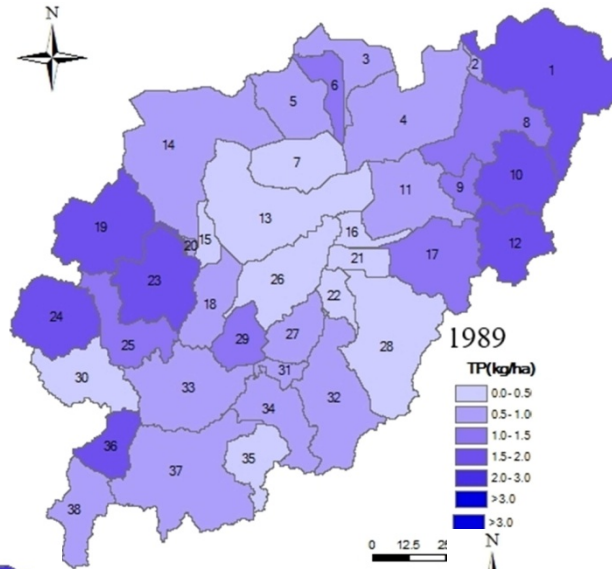
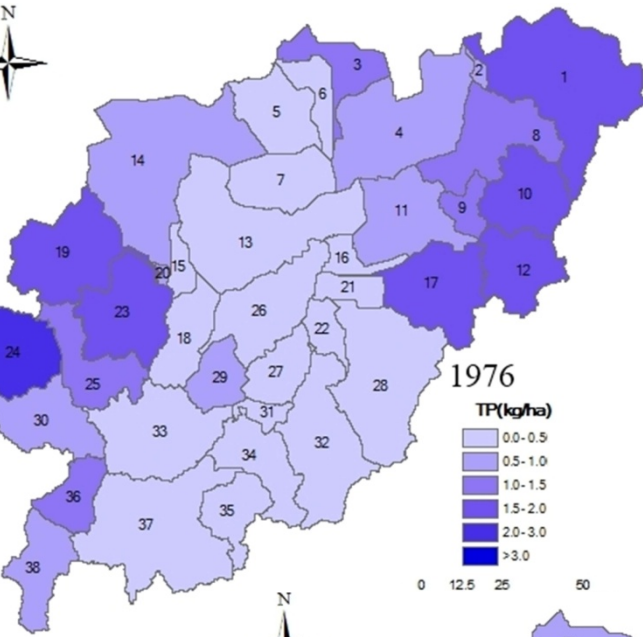


Total nitrogen loading distributions in four observed years

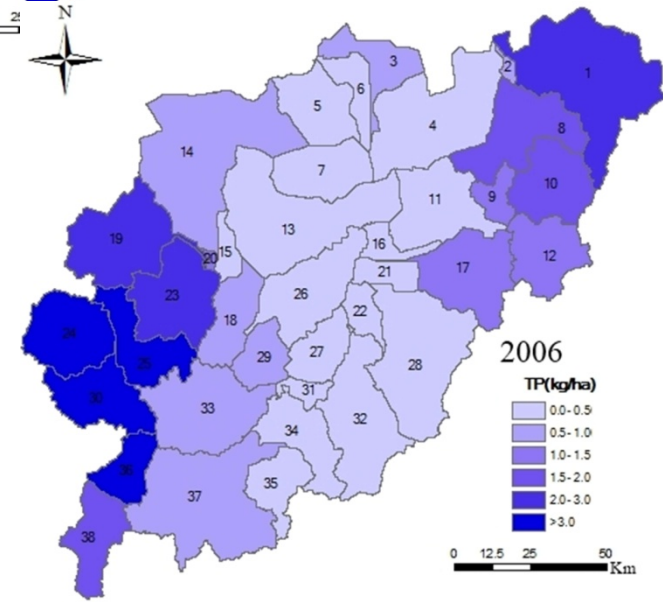


2011

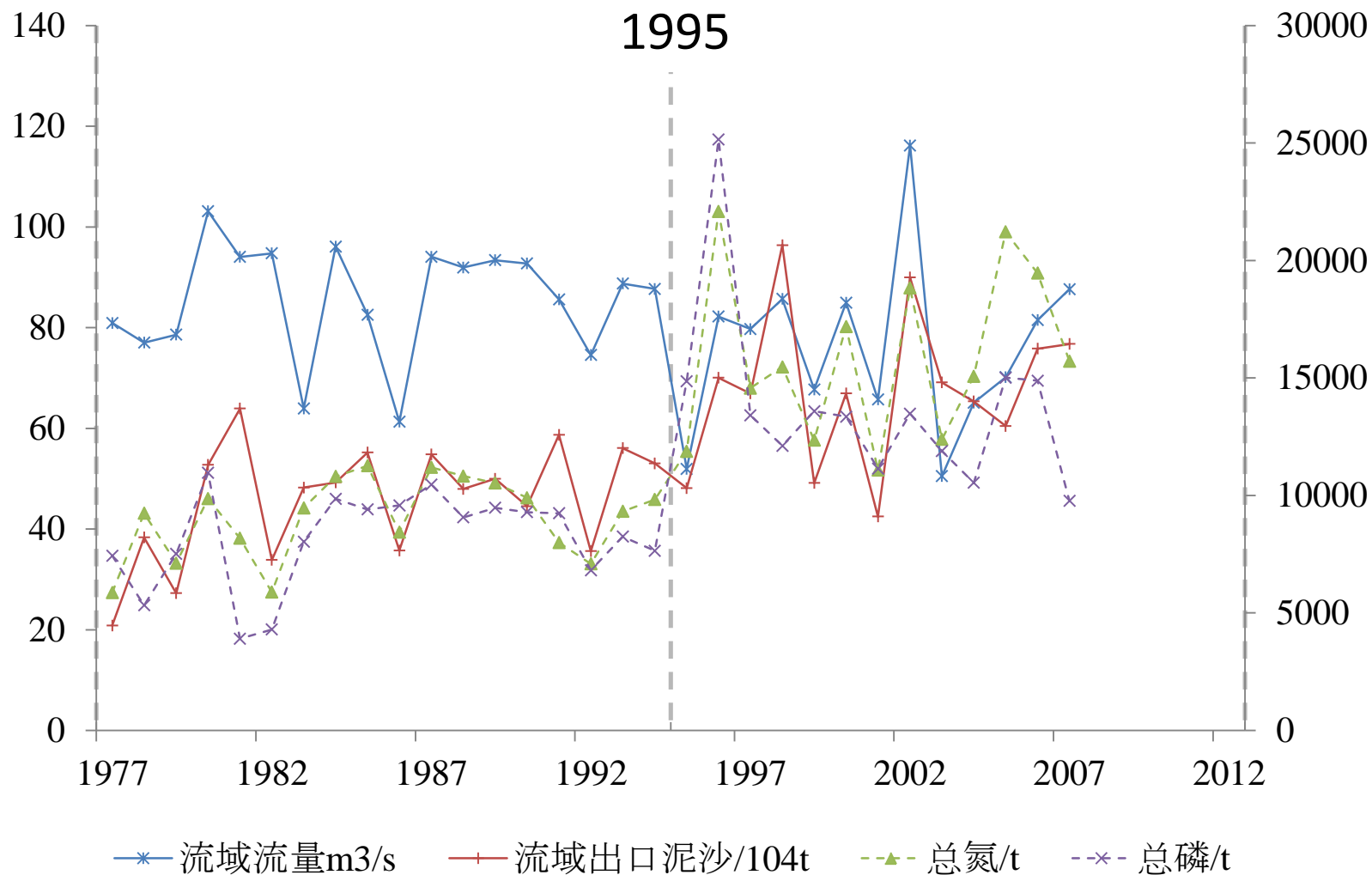
Total phosphorus loading distributions in four observed years



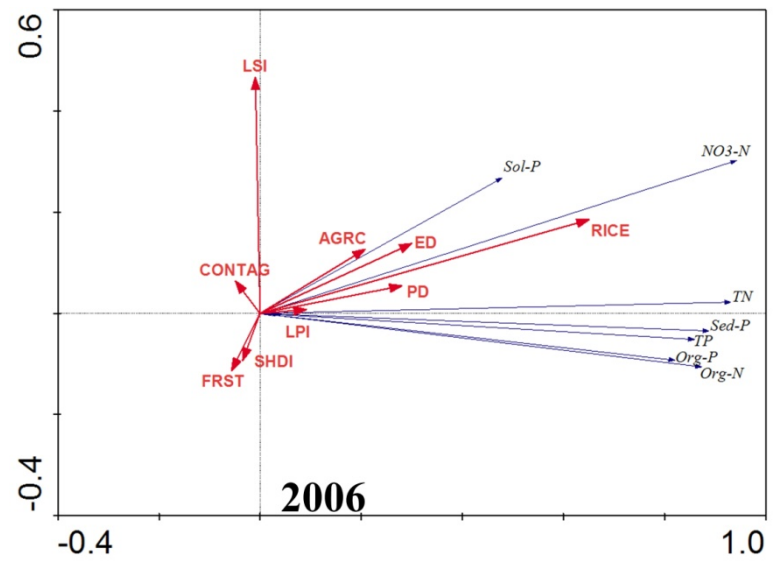
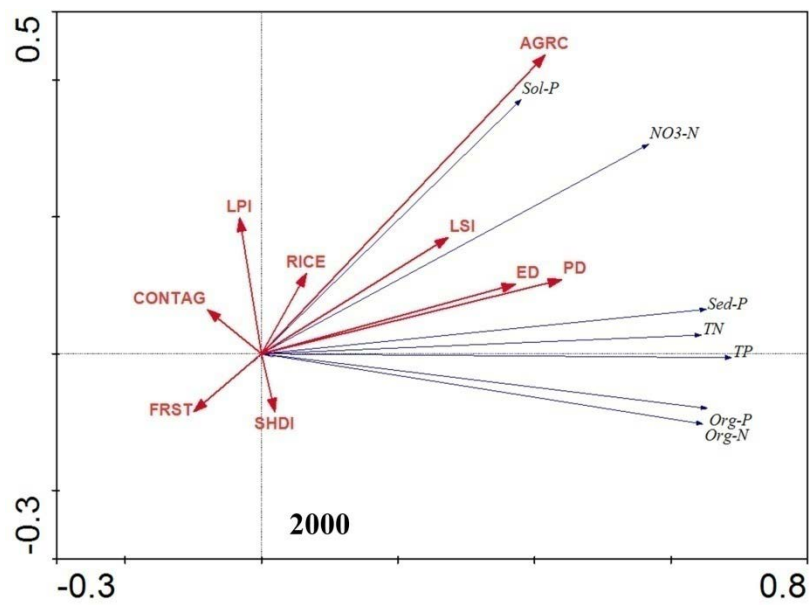
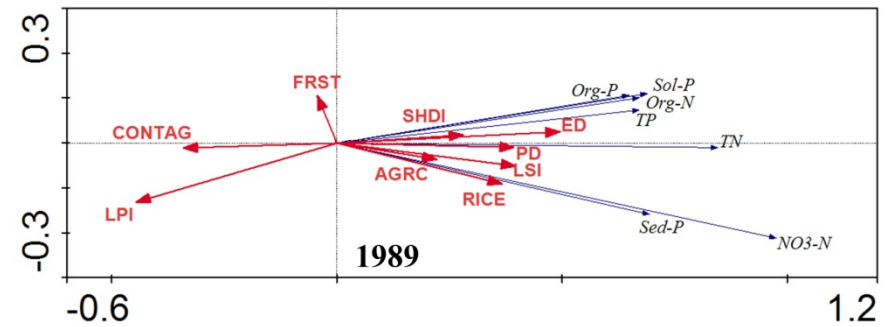
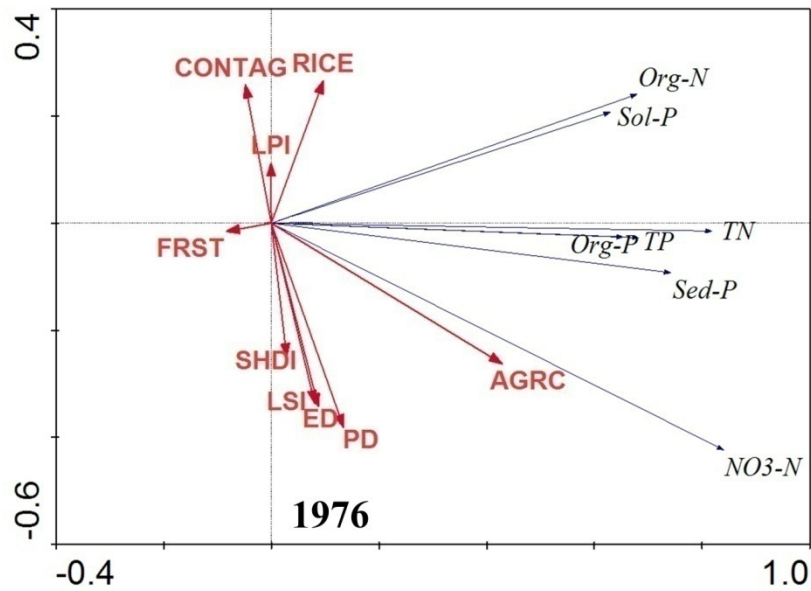
2011



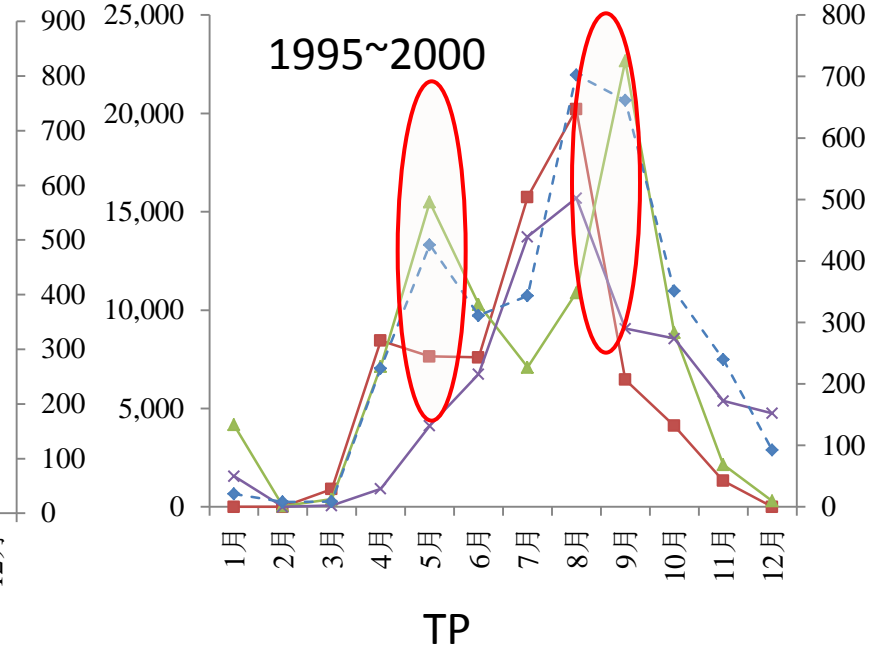
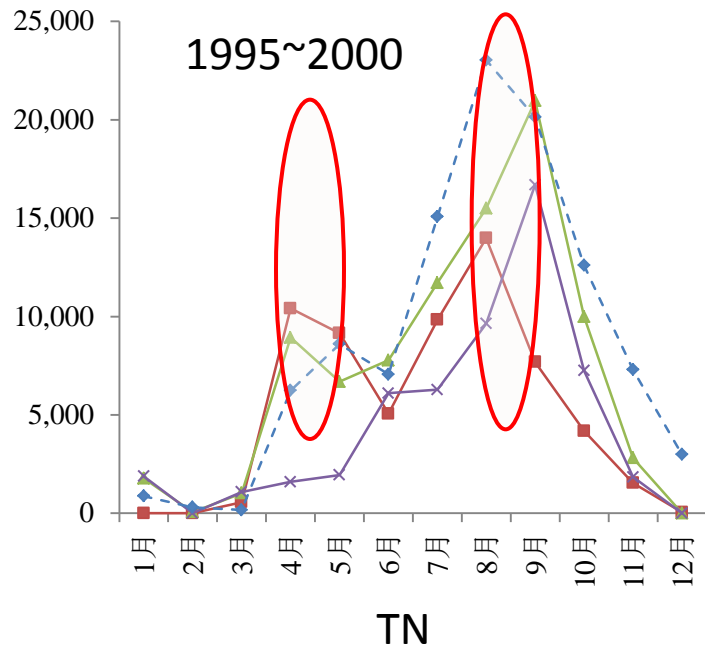
Temporal trend



Interaction of NPS pollution with land use and landscape pattern

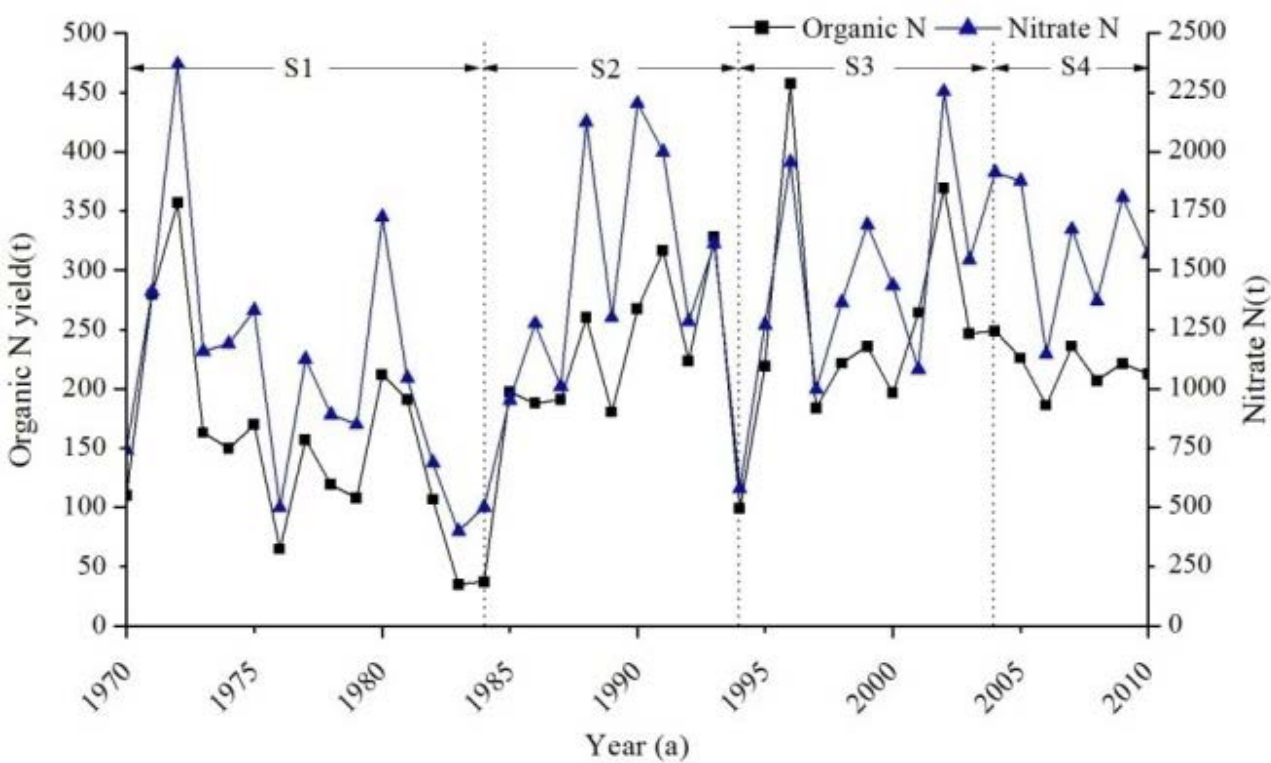


Monthly trend

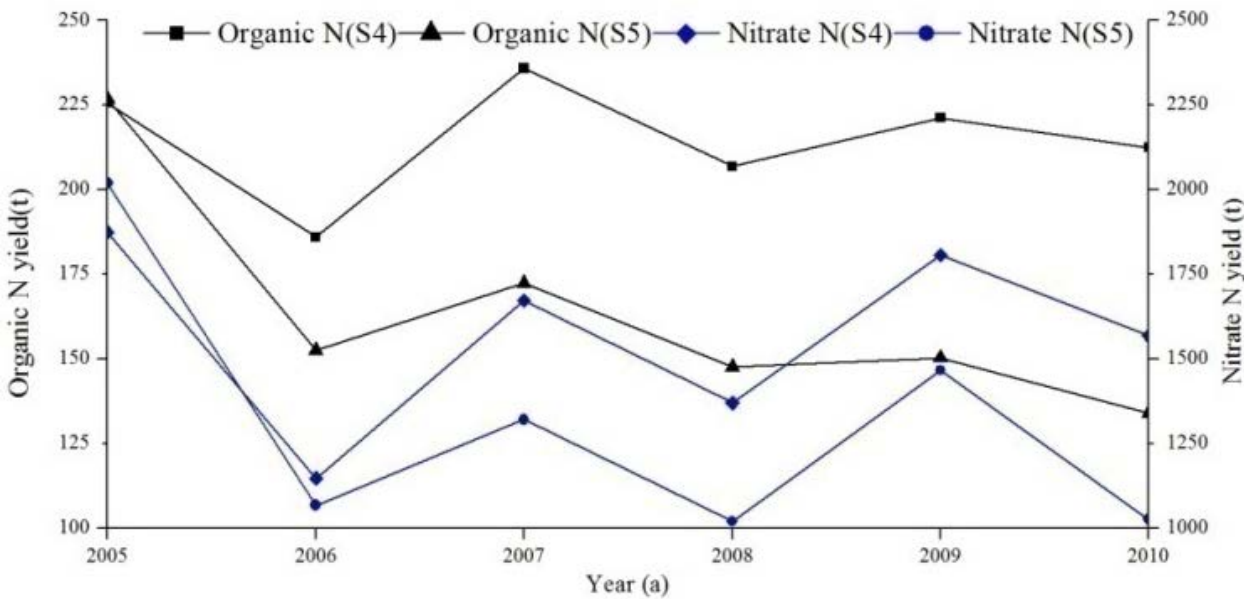


Synergistic impacts of land-use change and soil-property variation on non-point source nitrogen pollution

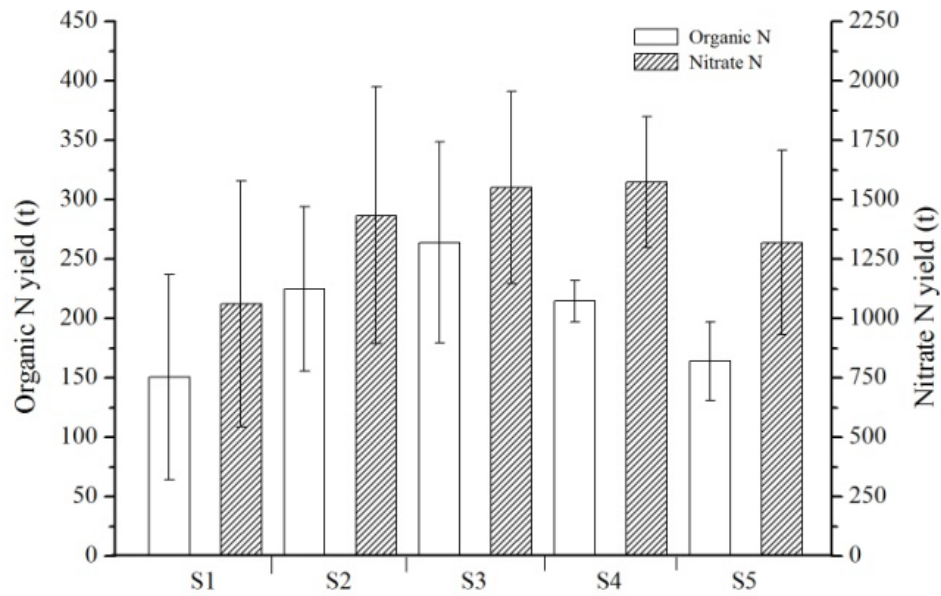
Simulation (S)	Simulation period	Year of land use	Year of soil properties
S1	1970-1984	1979	1979
S2	1985-1994	1992	1979
S3	1995-2004	1999	1979
S4	2005-2010	2009	1979
S5	2005-2010	2009	2010



Annual watershed NPS nitrogen load from 1970 to 2010

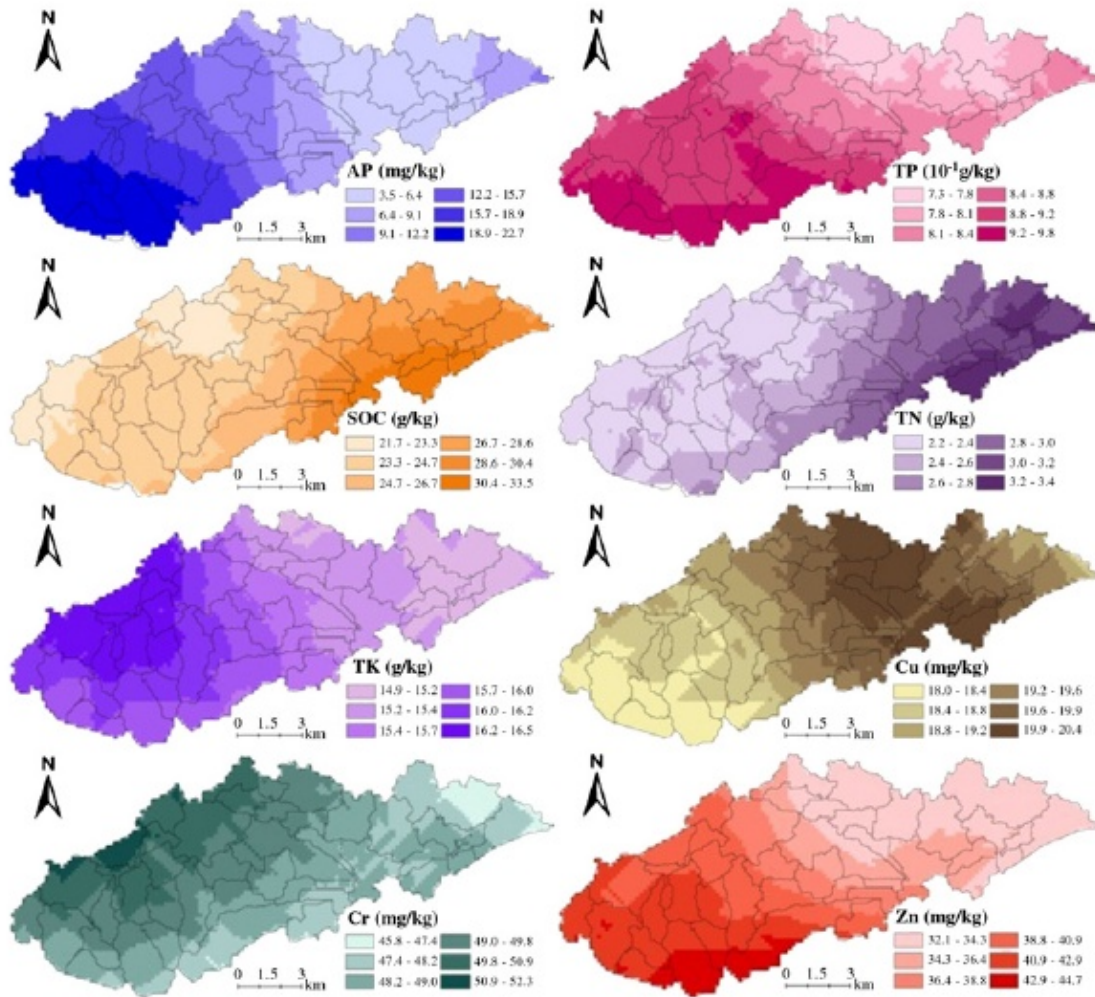


Interannual change of NPS nitrogen loading within two soil properties

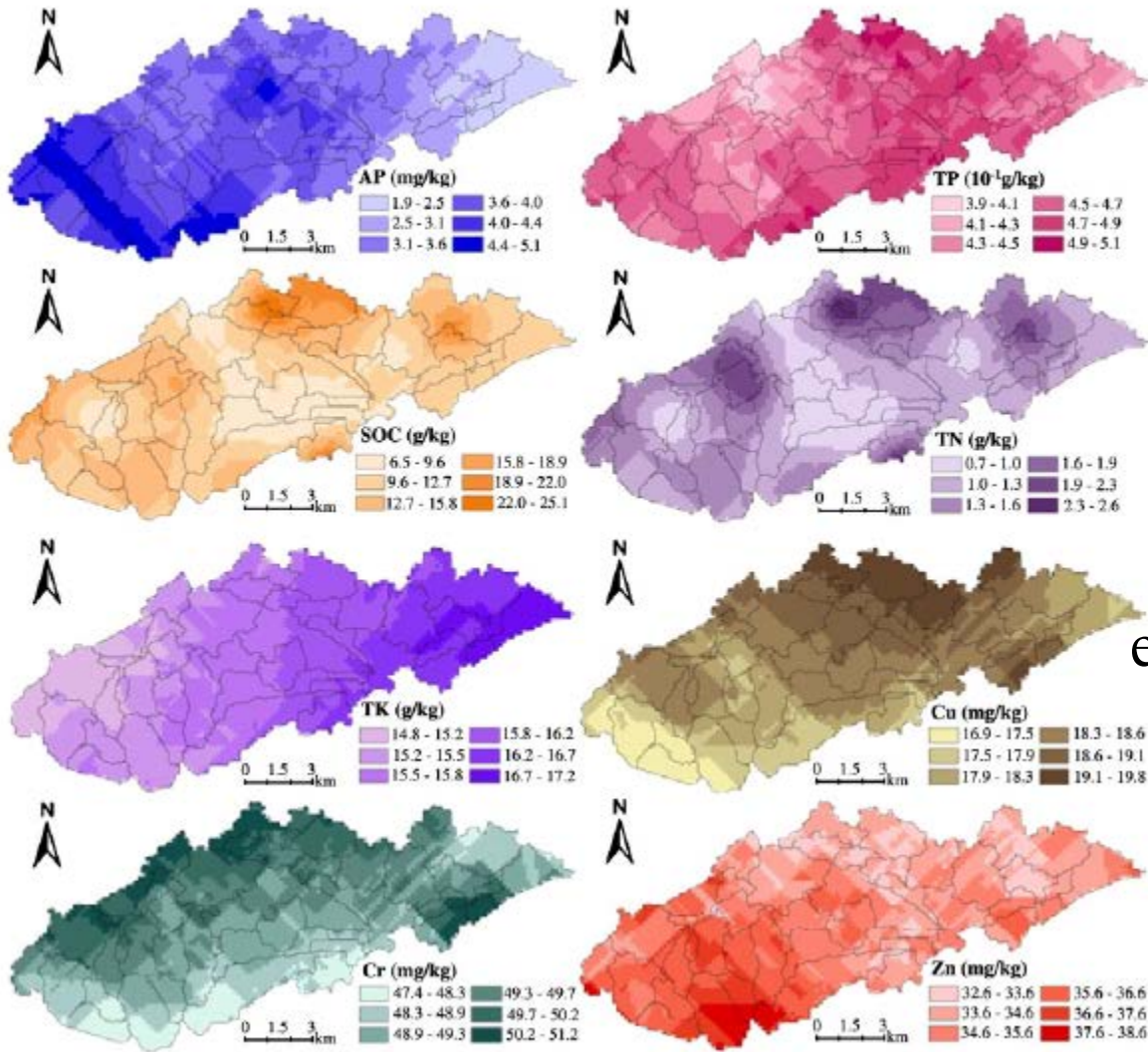


Averages and error bars of yearly simulated of NPS organic N and nitrate N in each simulation

Evaluating spatial interaction of soil property with non-point source pollution at watershed scale: The phosphorus indicator in Northeast China

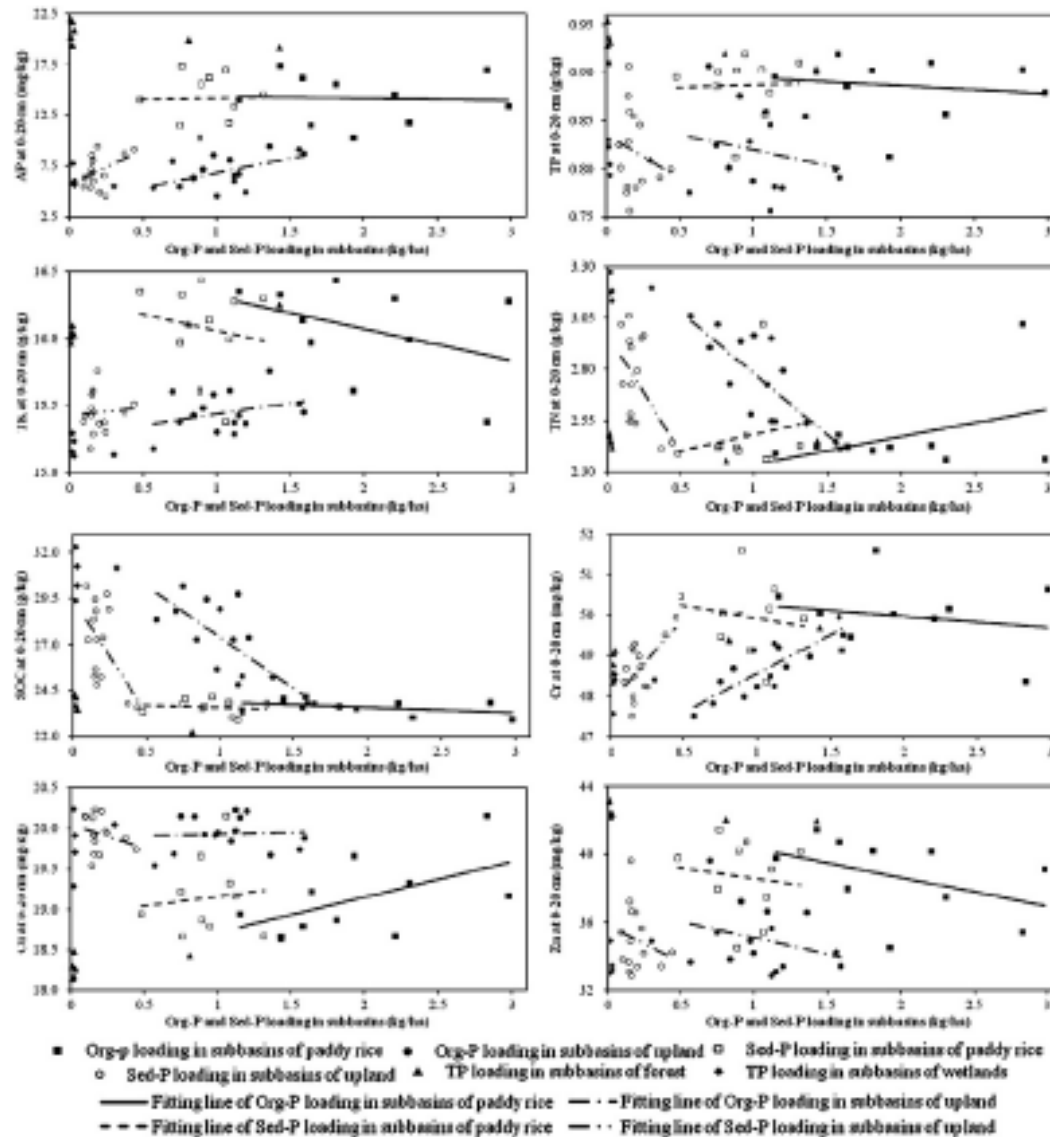


Spatial distributions of eight soil properties indexes at top 20 cm surface

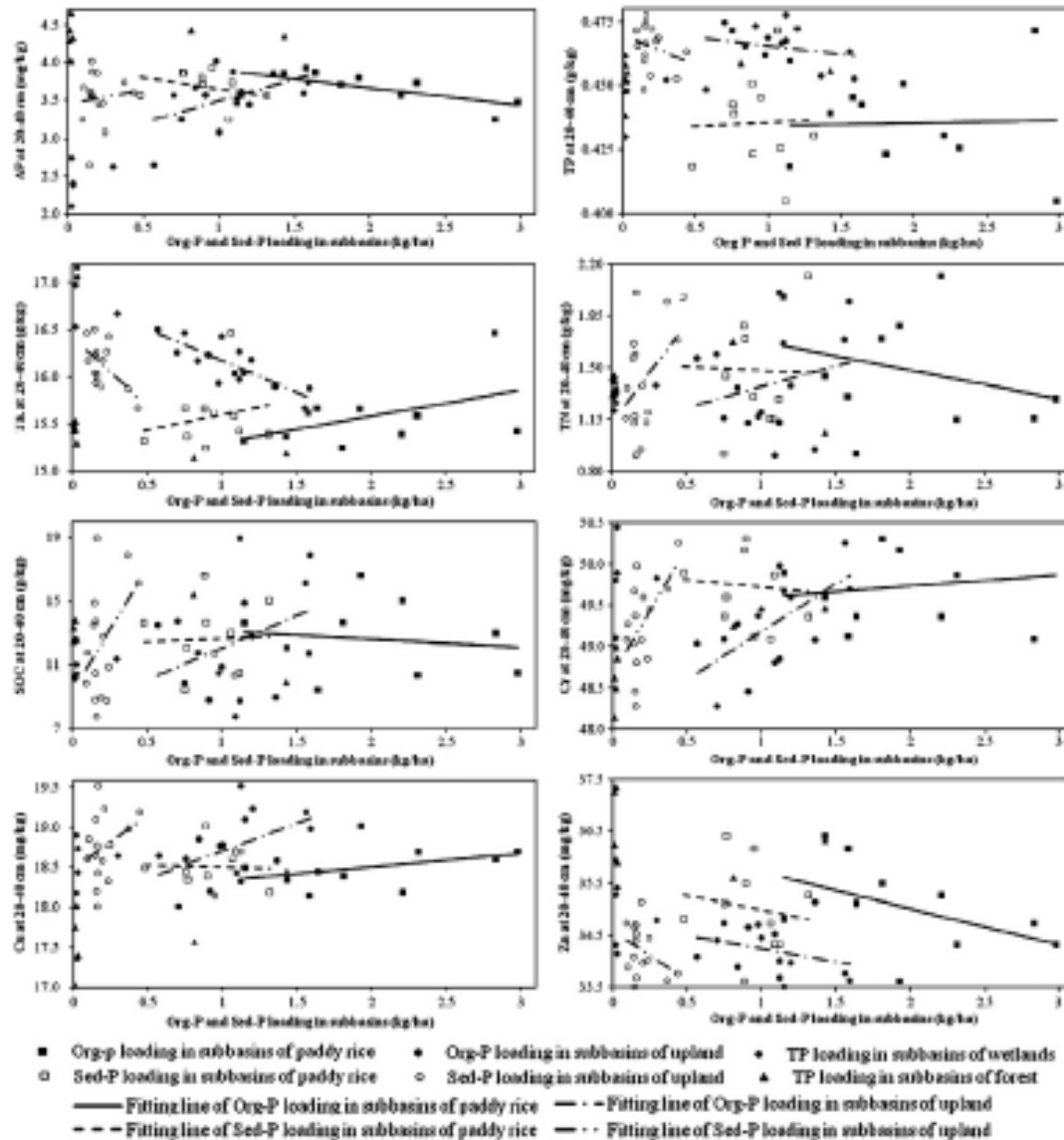


Spatial distributions of eight soil properties indexes at 20-40 cm surface

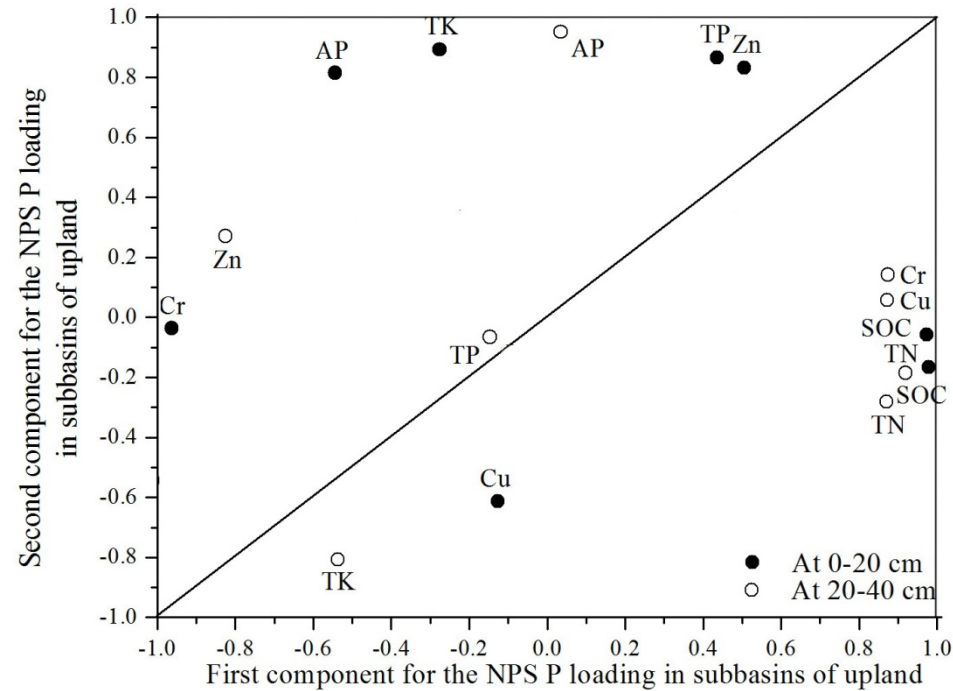
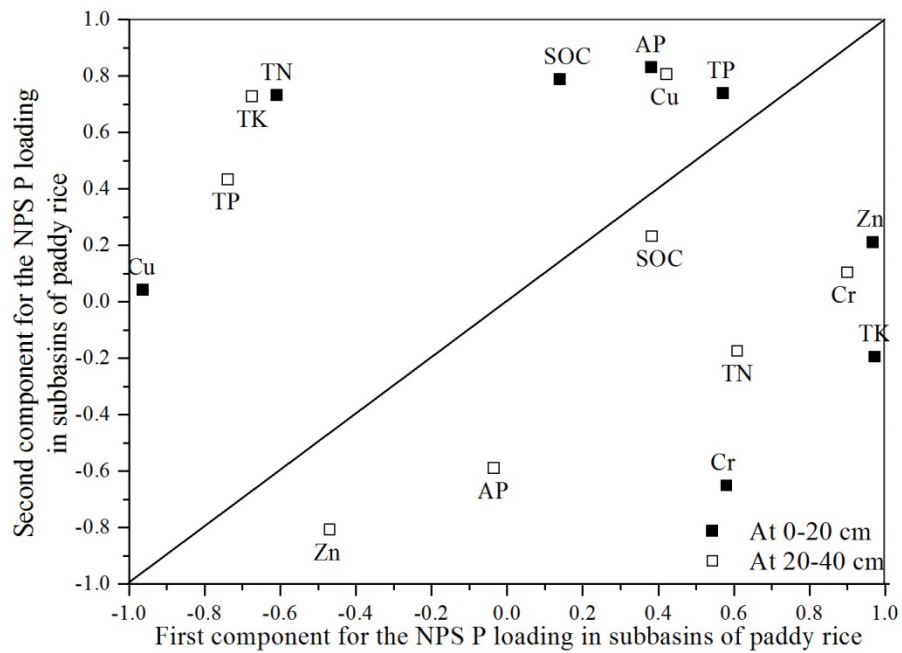
Spatial interactions of NPS sediment P (Sed-P) and organic P (Org-P) with soil parameters of 0-20 cm surface at subbasins with four kinds of landuses



Spatial interactions of NPS sediment P (Sed-P) and organic P (Org-P) with soil parameters of 20-40 cm depth at subbasins with four kinds of landuses



Contribution of soil indexes to NPS phosphorus loading assessment from the subbasins of upland and paddy rice



Thanks!