

Fig. S1 Observed and simulated surface runoff (a), sediment yield (b), particulate nitrogen (N) loss (c), and total N losses (d) of the lysimetric plot from 2004 to 2006. Total N is referred to as the total amount of  $\text{NH}_4^+$ ,  $\text{NO}_3^-$ , dissolved organic N and particulate N. The vertical bars indicate the standard error of three spatial replicates. The results were derived from Li et al. (2022).

## Reference

Li, S., Li, Y., Zhang, W., Zheng, X., Hu, P., Fan, J., Wang, T., Zhu, B., 2022. Simulation of water-induced erosion and transport of particulate elements in catchment by extending the CNMM-DNDC model. *Chinese Journal of Eco-Agriculture*, (Accepted).

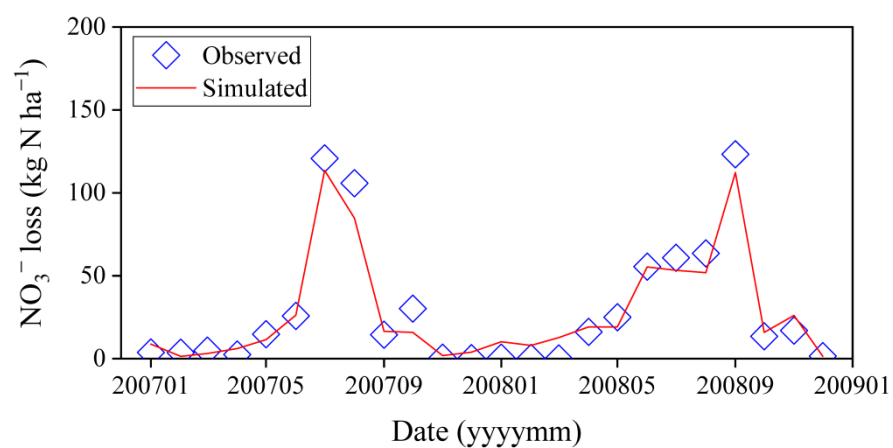


Fig. S2 Monthly observed and simulated NO<sub>3</sub><sup>-</sup> at the outlet of the Jieliu catchment from 2007 to 2008. The observed data cited from Deng et al. (2011) and Zhang et al. (2018) were provided by Bo Zhu.

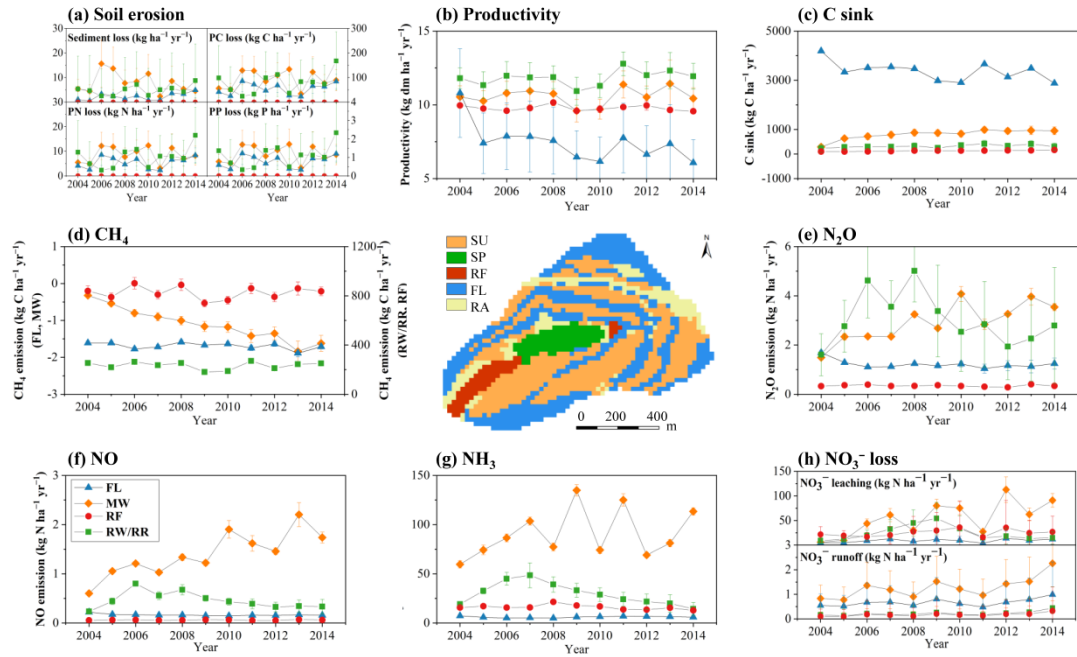


Fig. S3 Simulated productivity, soil erosion and losses of carbon and nitrogen of different land uses from 2004 to 2014. The PC, PN and PP are the abbreviation of the particulate carbon (PC), nitrogen (PN) and phosphorus (PP) losses, respectively. The land use types are the sloping uplands with the summer maize–winter wheat rotation (SU), seasonally waterlogged paddy with the paddy rice–winter wheat rotation or paddy rice–rape rotation (SP), the winter-flooding paddy with the paddy rice-flooding fallow regime (RF) and the forest land (FL).

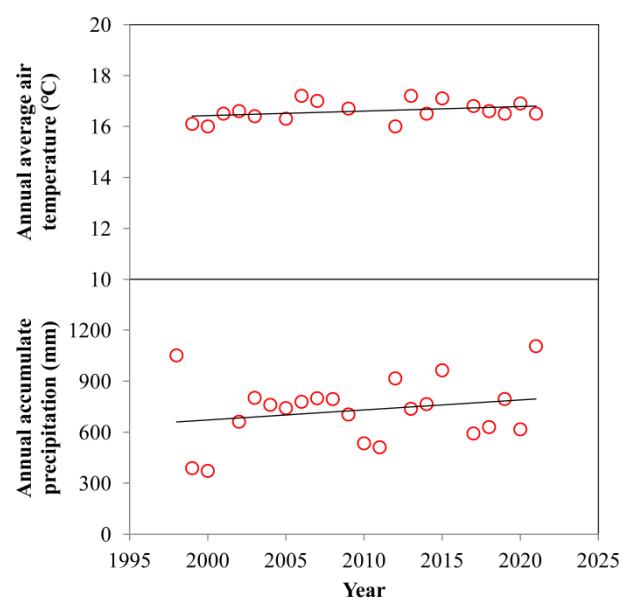


Fig. S4 The annual average air temperature and annual accumulate precipitation in Jieliu catchment from 1998 to 2021 (extracted from the openly accessible online database of <http://yga.cern.ac.cn>).