



Supplement of

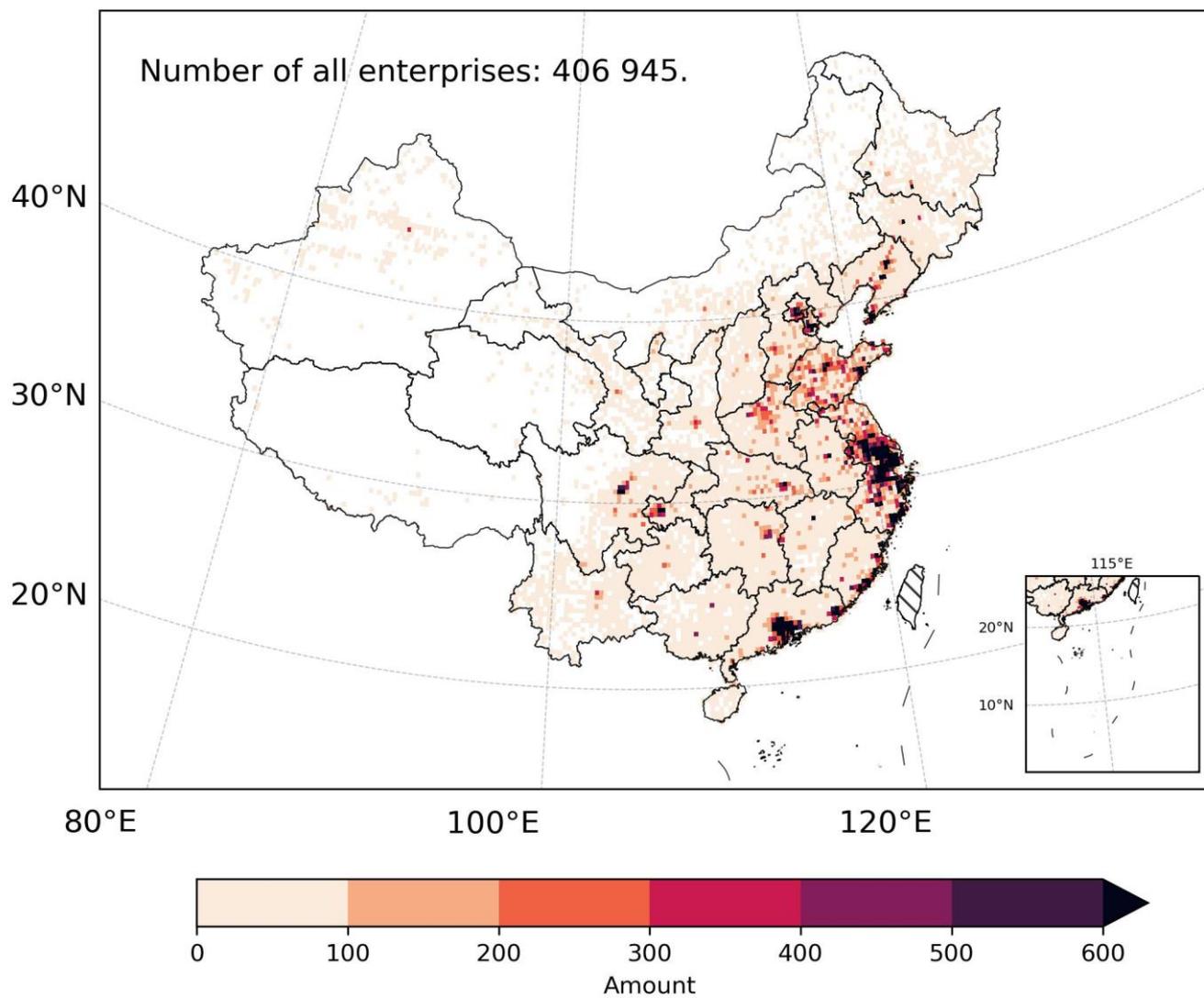
High-resolution mapping of monthly industrial water withdrawal in China from 1965 to 2020

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Figure S1



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Figure S1 Spatial distribution of the number of industrial enterprises in China at 0.25°

Figure S2

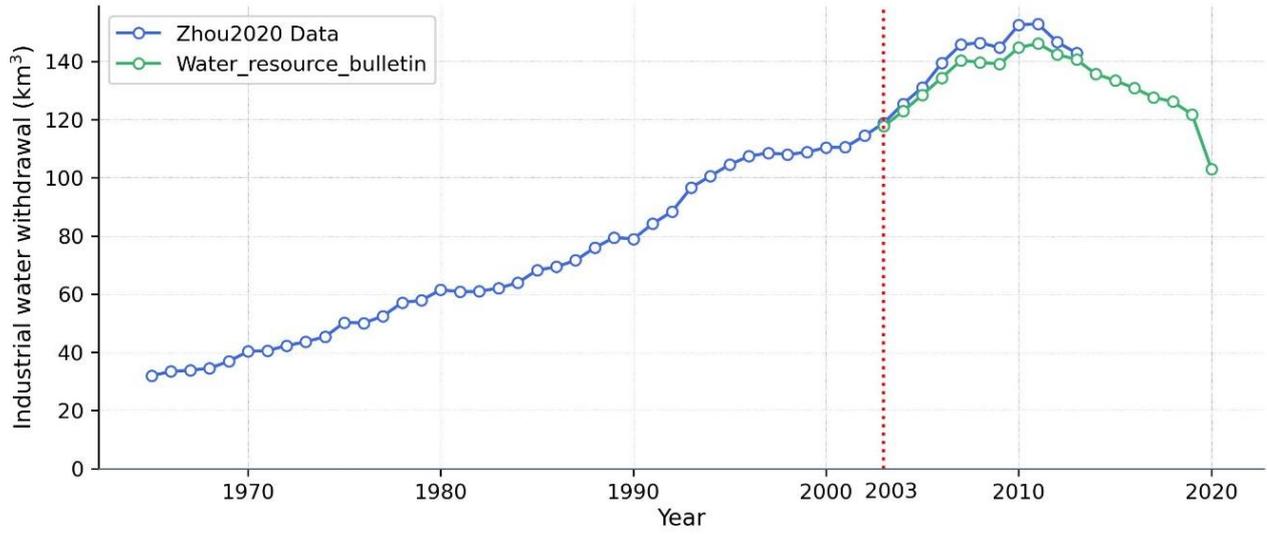


Figure S2 The national IWW from two statistical data sources

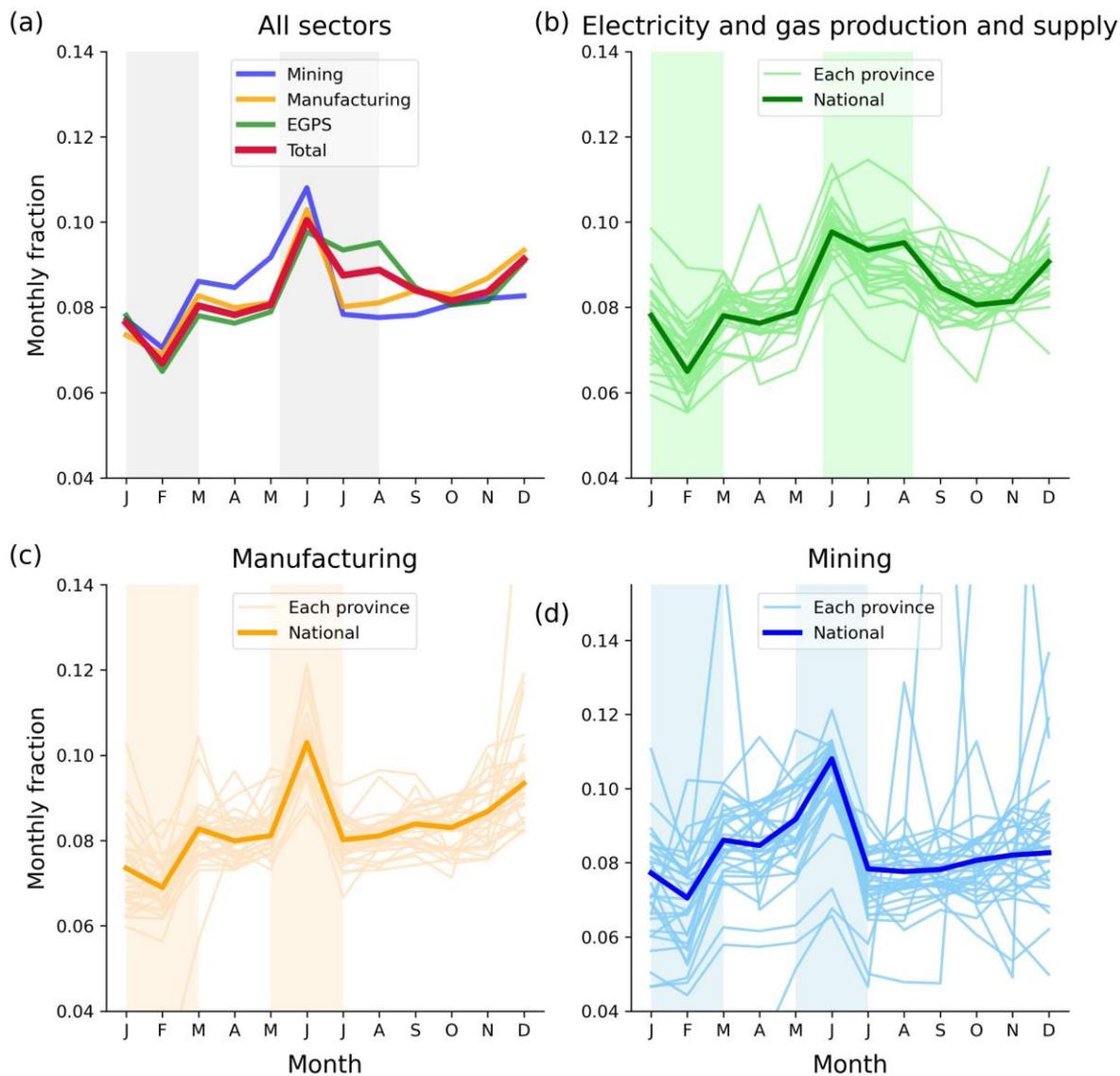


Figure S3 Seasonal variations in the national total IWW (a) and provincial IWW for separate industrial sectors, including the electricity and gas production and supply (EGPS) (b), manufacturing (c), and mining sectors (d). The seasonal variations are represented as the fraction of monthly IWW to the annual total during 2006-2010. The thick lines represent the water withdrawal of sectors, and the thin lines represent provinces. The shadows represent the seasons with peak and low water withdrawals in a year.

Figure S4

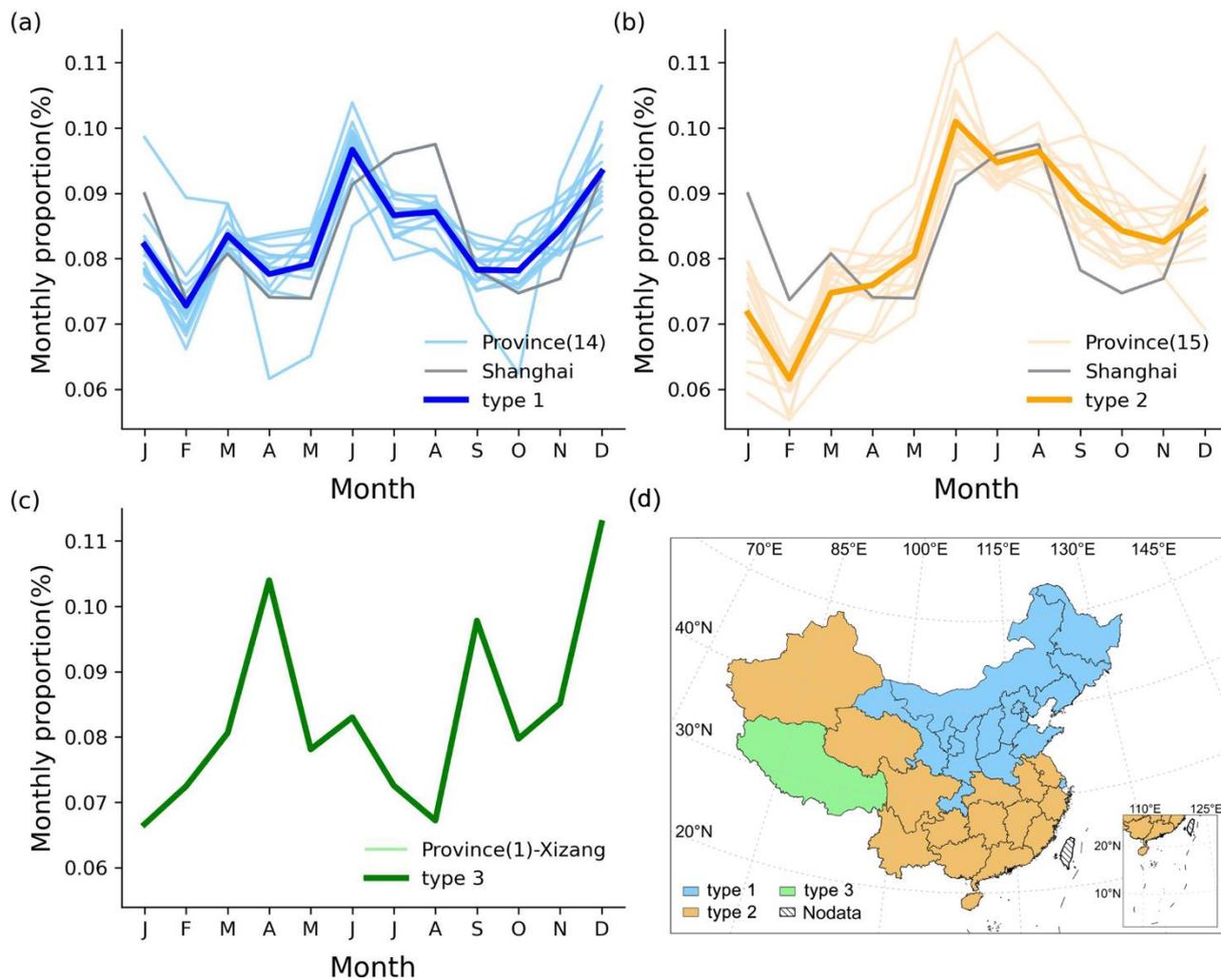
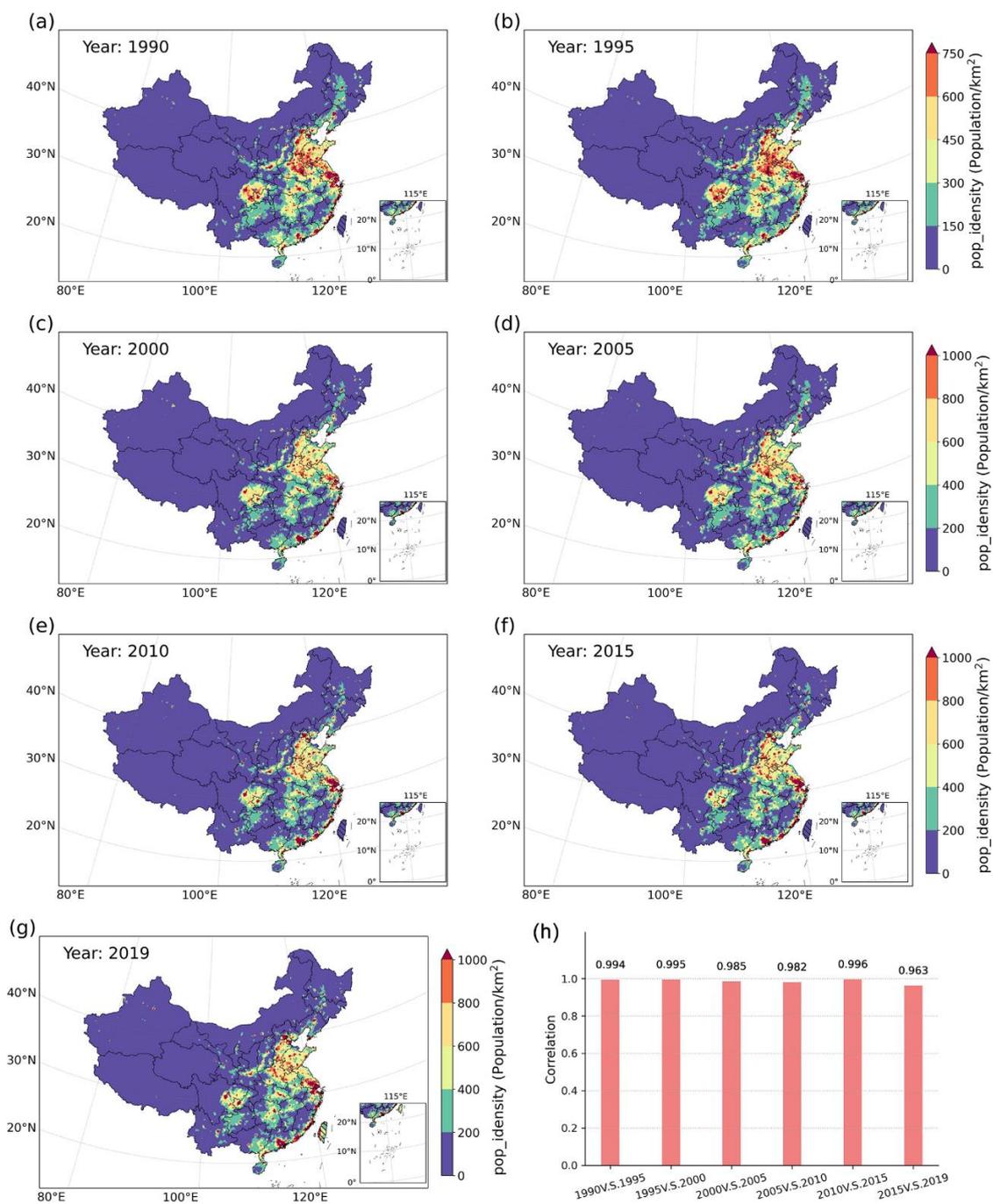


Figure S4 Classification of seasonal variations of provincial water withdrawal of Electricity and Heating Power Production and Supply to type 1 (a), type 2 (b), type 3 (c), and d. map of three types. The seasonal variations are the fraction of monthly IWW to the annual total during 2006-2010. The thick color lines show the mean seasonally of the cluster, and the thin color lines show the seasonally of each province.

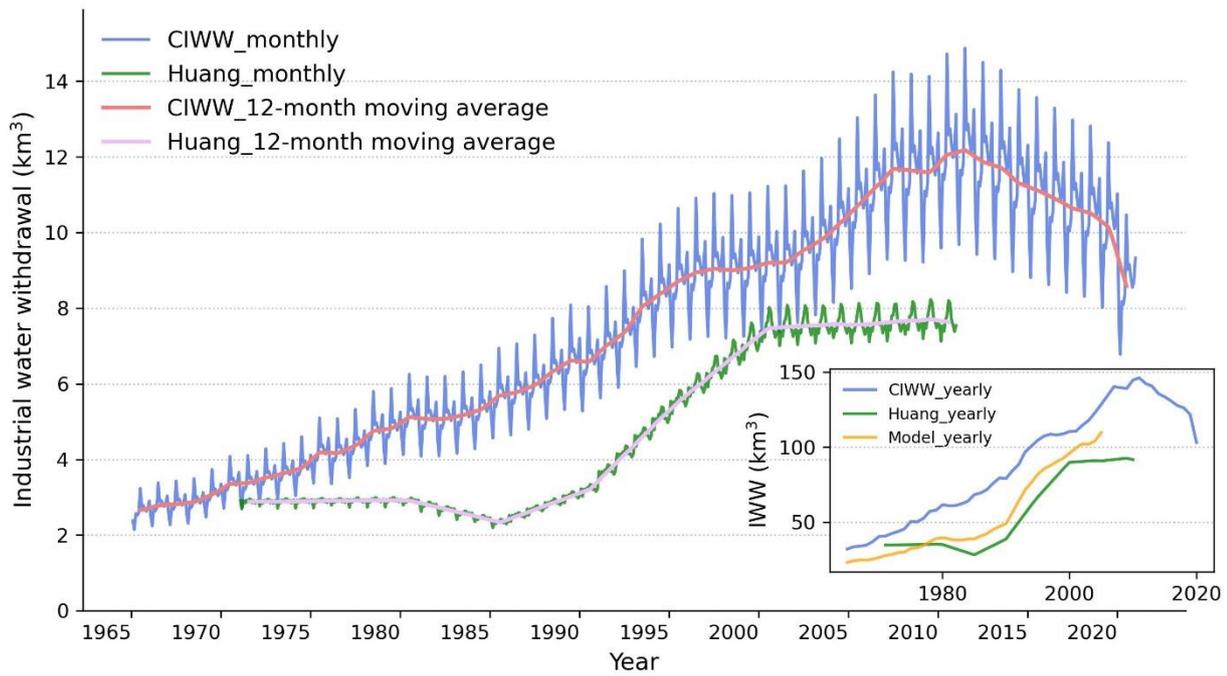
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Figure S5



30 **Figure S5.** The distribution pattern of population density in China from 1990 to 2019 (a-g) and Spearman's rank correlation coefficients of population density spatial pattern from 1990 to 2019 (h). Data source: China population spatial distribution kilometer grid dataset (<https://www.resdc.cn/DOI/DOI.aspx?DOIID=32>). Resource and Environment Science and Data Center, National Science & Technology Infrastructure of China (<http://www.resdc.cn/DOI:10.12078/2017121101>)

Figure S6



35 **Figure S6 Monthly and yearly IWW in China from 1965 to 2020 from the CIWW, Huang and model data.**

Figure S7

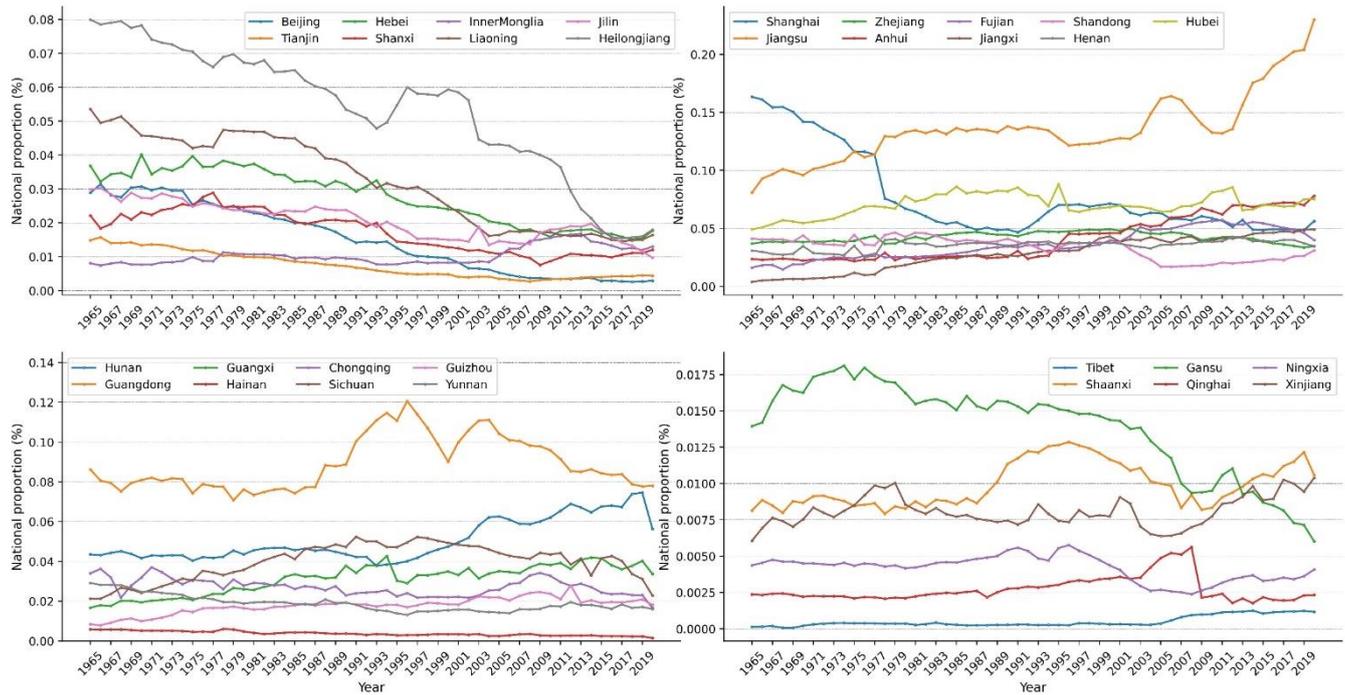


Figure S7 The changing proportion of provincial IWW to national total from 1965 to 2020.

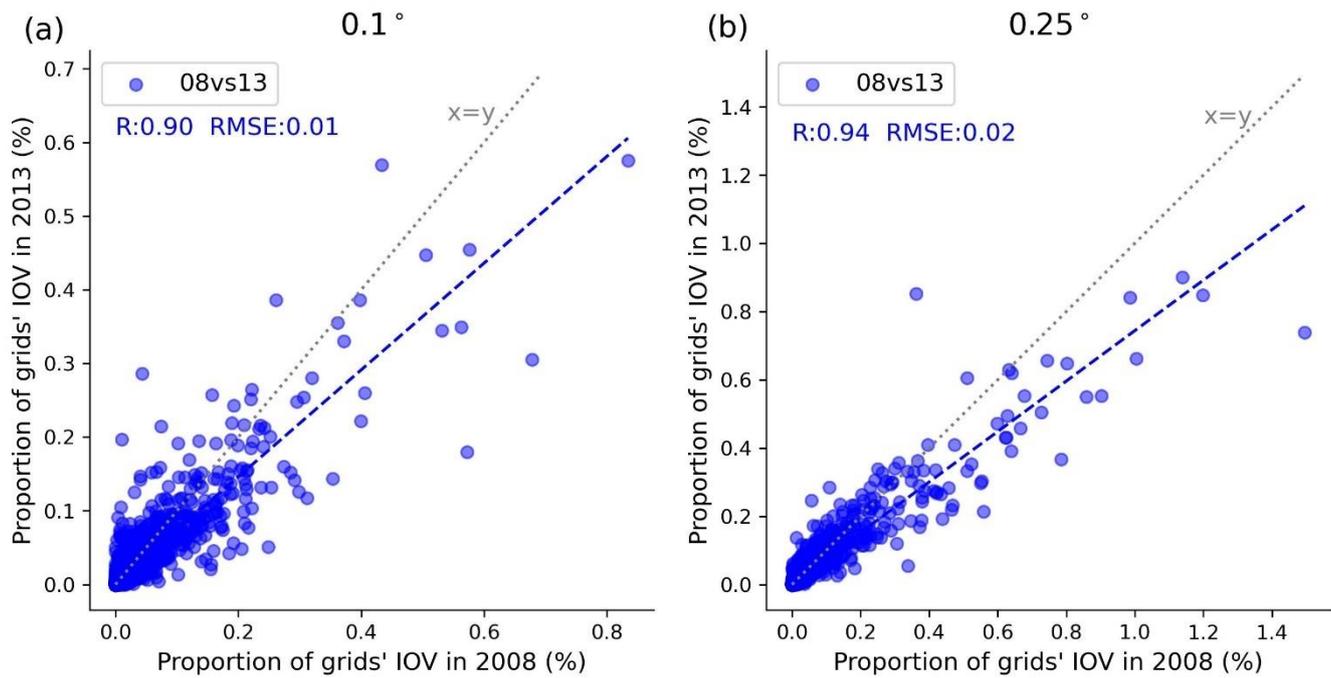


Figure S8 Comparison of the spatial pattern of the IOV between 2008 and 2013 from the gridded enterprise data at (a) 0.1° and (b) 0.25°. The gridded IOV was normalized as the proportion of the gridded IOV of the country for comparison. The grey dotted line indicates the 1:1 line, and the blue dashed lines indicate the fitted lines.

45 **Figure S9**

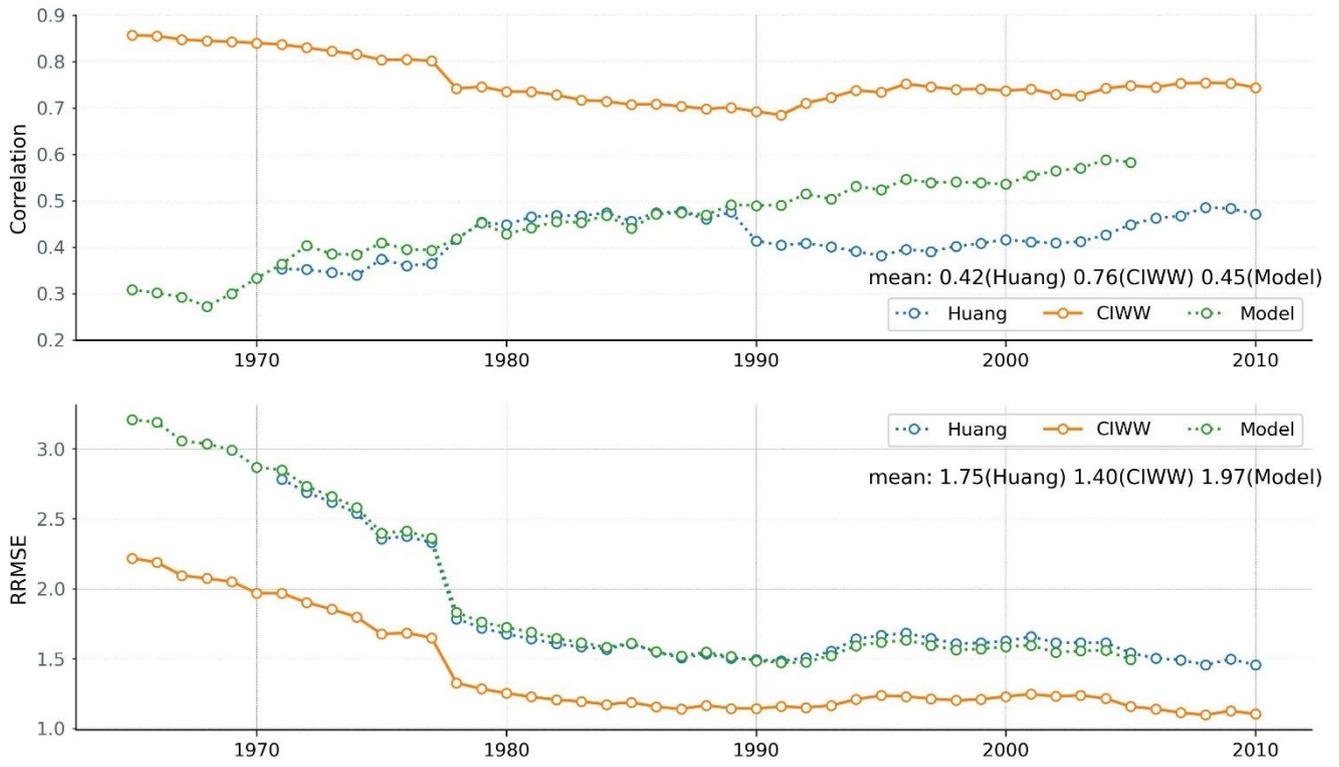


Figure S9 Comparing the three gridded IWW (CIWW, Huang data, and model data) against Zhou2020 data at the prefecture-level from 1965 to 2010. Higher is better for correlation, and lower is better for RRMSE (Relative Root Mean Squared Error, RMSE/mean).

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