

coupling coordination were also consistent with this pattern. Since 2016, adjustments in national agricultural policies have prioritized the development of green agriculture and economic restructuring in the eastern and southern regions. Consequently, the coordination level in these areas has gradually transitioned towards a state of basic coordination.

Analysis of the Driving Factors Behind the Coupling Coordination Degree

Considering the limitations of the GWR model, which only allows for cross-sectional data [18], we have selected four time points, namely 2006, 2011, 2016, and 2021, to capture the average values of the influencing factors and the coupling coordination degree. Adaptive kernel type and bandwidth have been chosen accordingly. The parameter results of each influencing factor in the GWR model are presented in Table 4, with a model value of 0.6001, indicating a satisfactory fit of the twelve influencing factors in the GWR model.

The impact of green and low-carbon agricultural factors on the coupling coordination degree varies across different regions, as illustrated in Fig. 5. From an analysis of the factors influencing agricultural carbon emissions intensity, it becomes apparent that the eastern and

Table 4. Table of Statistical Tests for GWR Model Parameter Estimation.

Model Parameter	Value	Model Parameter	Value
bandwidth	2273396.68	AICc	62.2678
Sum of squared residuals	4.0467	Goodness of Fit	0.6001
Significant digits	12.7883	Adjust goodness of fit	0.3412
Sigma value	0.4714		

northern regions exhibit a notable positive effect, while the western and southern regions show a negative effect. This can be attributed to the inherent agricultural resource endowment and industrial structure characteristics in China. Provinces such as Jiangsu, Anhui, and Jiangxi predominantly engage in rice cultivation for grain production, which serves as the primary source of agricultural carbon emissions (accounting for over 45% of the total). In Shanghai and Zhejiang, the agricultural industry is primarily focused on cultivation. Production heavily relies on high inputs of energy and agricultural materials, resulting in higher carbon emissions intensity. In regions such as Beijing, Shanxi, Tianjin, and Liaoning, dryland areas are more prevalent, leading to a significant

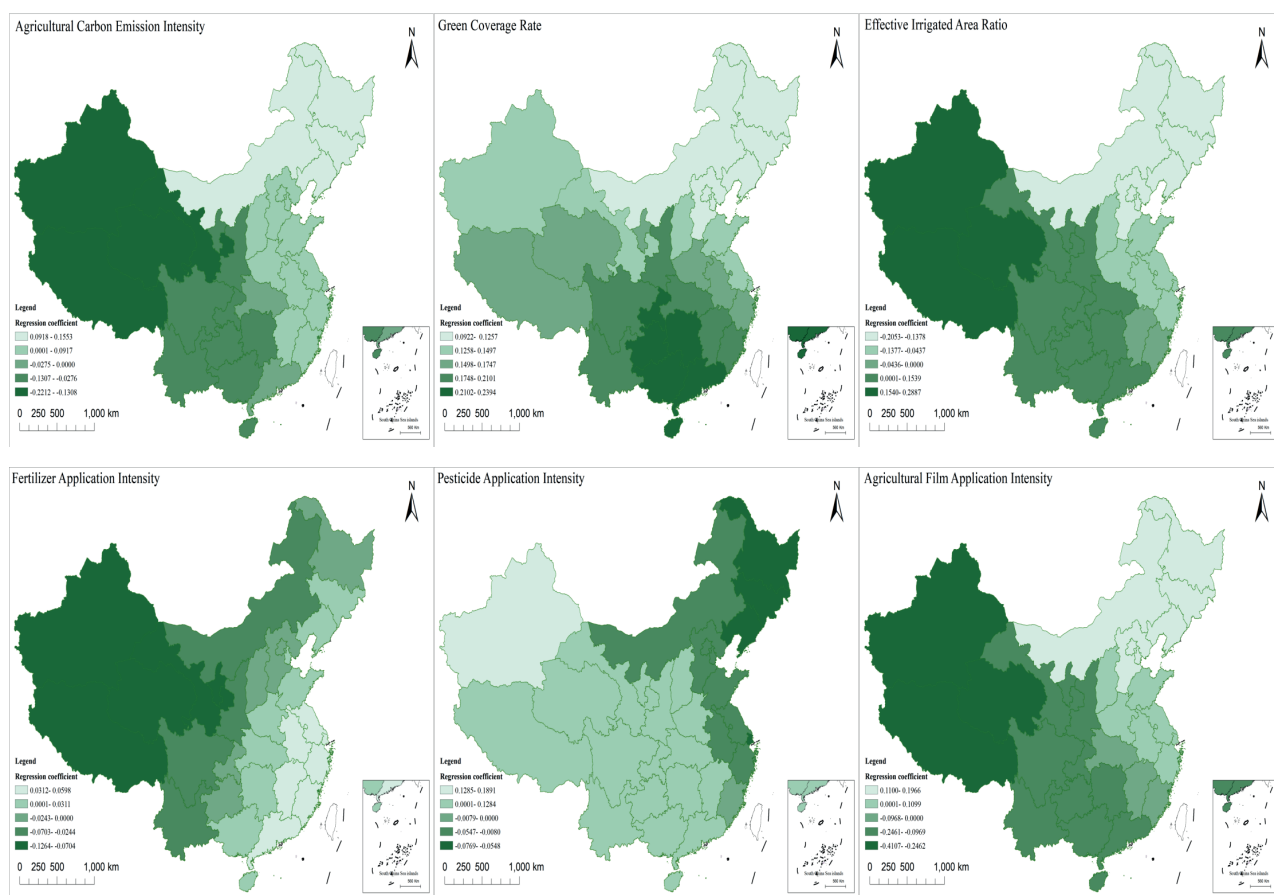


Fig. 5. Spatial Distribution of Regression Coefficients for Factors Influencing Coupling Coordination of Green Low-Carbon Agriculture from 2003 to 2021.

