Agro-Climate Changes over East Asia in the CO_2 Doubled Climate Induced by PNU CGCM

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In this study, an analysis of simulated future agro-climate indices in response to doubled atmospheric carbon dioxide over East Asia using a dynamical downscaling is presented. The models used are Pusan National University Coupled General Circulation Model (PNU CGCM) of T42 spectral resolution and Weather Research and Forecasting (WRF) Model of 27-km horizontal grid spacing in the domain of East Asia (105-150°E, 21-50°N). East Asia agro-climate change in the CO_2 doubled climate is analyzed focused on the agro-climate indices such as vegetable and crop periods, frost days, climatic production index (CPI). Changes in the future agro-climatic indices are discussed for March to September of the 10-year-period of 51-60 after running experiment.

According to our results, increasing in the CPI is found throughout, the northern China and Mongolia, while the index is decreasing in the southeast China in the CO2 doubled climate. Expansion in the vegetable and crop periods is also projected in Korea and Japan. Last frost date is expected to be early in the eastern China and frost days decrease in higher latitudes of the analysis region.

Acknowledgments

This work is funded by the Rural Development Administration Research and Development Program.

Keywords: Climate change; Doubled CO_2; Dynamical downscaling; Agro-climatic indices

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