

Inclusion of a crop model in a climate model

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Crop models are parameterization schemes that simulate the processes of crop development and production. Their inclusion in climate models can promote the simulation ability of climate models, according to Dr. Jing Zou at the Institute of Oceanographic Instrumentation, Qilu University of Technology.

Dr. Jing Zou and his co-researchers from the Institute of Atmospheric

Physics, Chinese Academy of Sciences/Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences/Zhejiang Institute of Meteorological Sciences, developed a new crop-climate coupled model and published their results on its evaluation in *Advances of Atmospheric Sciences*.

"Most previous studies coupled a single crop model into a climate model," explains Dr. Zou, "but we considered three crop types with different farming systems in this study. We chose rice, wheat and maize, which cover 81% of the cereal-crop planting area in China. We further distinguished these crops in terms of different farming systems to provide more detailed descriptions about the actual crop planting. For example, [winter wheat](#) and spring wheat are different in our model," he adds.

According to their findings, the new crop-climate model has an excellent ability in simulating crop phenology, and offers a slight correction of the bias in the original climate model in some typical areas.

"Our new model provides a good tool to investigate the relationship between crop development and [climate change](#) for global change studies," says Dr. Zou. "The expectation is that the model can be applied in food production or [agricultural research](#), if further promotion of the model's accuracy and parameter optimization is achieved in future work," he adds.

More information: Jing Zou et al, Coupling of a Regional Climate Model with a Crop Development Model and Evaluation of the Coupled Model across China, *Advances in Atmospheric Sciences* (2019). [DOI: 10.1007/s00376-018-8160-0](https://doi.org/10.1007/s00376-018-8160-0)

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