

From the Critical Zone to decision support tools for China's agriculture

MIDST uses critical zone science to improve decision making on land and water use in a broad range of regions in China through the development and deployment of decision support tools (DSTs) aligned to the needs of farmers, advisors and policy-makers.

Issue 5

Newsletter

February 2021

Working through COVID-19

MIDST-CZO was affected since January 2020 by restrictions due to COVID-19. Planned knowledge exchange activities in China in 2020 were replaced by online activities. From April 2020, UK partners have been working remotely from home. NERC/Newton Fund provided a no-cost extension to the project of 12 months, so it will now complete in March 2022. We were still active over 2020, with updates shown below.

Research Progress

A desk study on decision support tool (DSTs) use in China's agriculture found over 400 working examples. Weaknesses included a focus on yield, without consideration of environmental and economic impacts. The data are analysed and a paper will be submitted this year by the University of Aberdeen team.

The science and policy needs for DST use in China were further informed by KE surveys conducted on several visits to China and via online surveys. This work is currently being written up in several papers led by the University of Glasgow team. A new online survey has been commissioned (see later) to build on previous work.

UK Partners



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Research Progress - continued

Rothamsted Research and their partners in China worked with a DST to predict the interaction between soil carbon storage and crop yield for the Loess Plateau. This couples agricultural output with environmental impacts. Further work needs face-to-face interaction, but a paper is expected this year.

Dr Boyi Liang from Peking University completed a visiting fellowship at the University of Exeter that was aligned to MIDST. He continues to conduct CZO research complementary to the project and produced a paper using neural networks to predict crop yield.

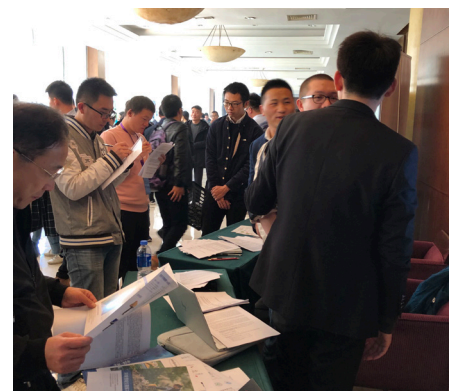
Liang, B.Y., Liu, H.Y., Quine, T.A., Chen, X.Q., Hallett, P.D., Cressey, E.L., Zhu, X.R., Cao, J., Yang, S.H., Wu, L. & Hartley, I.P. 2020. Analysing and simulating spatial patterns of crop yield in Guizhou Province based on artificial neural networks. Progress in Physical Geography-Earth and Environment.

A new postdoctoral scientist will join the team at the University of Exeter in 2021 to bring together agricultural, environmental and economic modelling to drive a new class of DSTs.

Research continued at the Peri-Urban CZOs. Nanjing University and Leeds University furthered their partnership with joint PhDs as part of the Belt and Road Initiative. Chemical (Queens University Belfast) and microbial (Sheffield University) analyses continues with some delays due to restricted lab and field access. A CSC funded PhD student working at the University of Sheffield for 1 year is exploring fertiliser impact, including the use of composted manure on environmental impacts.

Social Media Platform

The UK-China CZO WeChat public account has been established to disseminate scientific findings and policy recommendations to Chinese audiences in January 2021. The potential audiences include academics, policymakers, and industry partners. Up to date, we have posted 13 WeChat articles and subscriber numbers are growing. WeChat articles cover the animations, summary Sheets, the published academic papers and dissemination of DST survey. The WeChat articles have been viewed over 1000 times.



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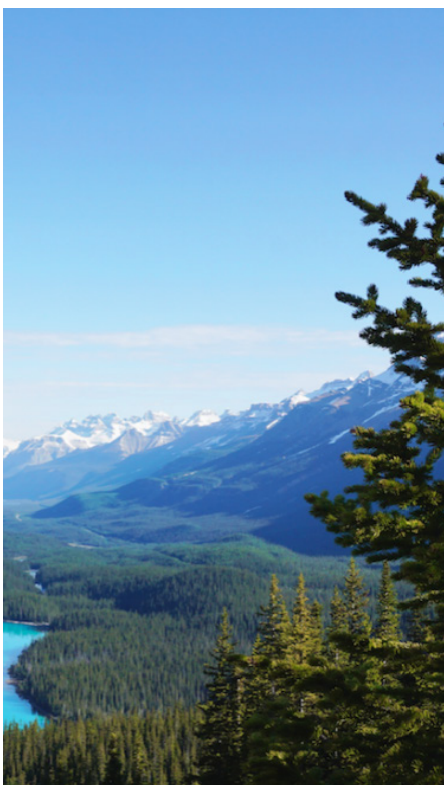
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Online DST Survey

An online survey about agricultural decision support tools was launched on Feb 1st on Wenjuan.com. Here is the link to the survey (<https://www.wenjuan.com/s/em2ENfU/>). This questionnaire aims to understand the needs, habits and preference in the use and development of DST to support evidence-based decision making and promote decision support tools for agricultural management in China. We hope that civil servants, researchers, and relevant personnel engaged in agricultural work will participate in the survey. This survey was also disseminated via the growing WeChat Platform (<https://mp.weixin.qq.com/s/ev1324PYQwbFSd5jehvgYA>).

Please try to share this with your network.

This builds on previous surveys that we were able to conduct face to face in China, including at two stakeholder focussed visits on MIDST and in-field surveys that occurred at a number of the CZO sites.



运用地球关键带知识研发决策支持工具调查问卷



长按图片扫码

Animation

The project animation production has been completed and the outputs include English Version Animation, Chinese Version Animation and 6 editable illustrations. The animation in both English and Chinese have been released on WeChat Platform to help increase the subscribers.

The link to Chinese Version Animation (This can open via website without installation of WeChat App):

https://mp.weixin.qq.com/s/gjflKzjKHz0Cl_1RB5FRlA

The link to English Version Animation (This can open via website without installation of WeChat App): <https://mp.weixin.qq.com/s/5oDvy0qVTQxdvzEXdxvAhw>



Summary Sheet

A new summary sheet on the topic of 'Science-Policy-Practice Interface' has been produced based on the knowledge exchange research of Phase 1 project. This summary sheet has been published on Project WeChat Platform together with the summary sheet of 'Deep Nitrogen Accumulation and Sources' and 'Analysing and Simulating Spatial Patterns of Crop Yield in Guizhou'.

NERC Knowledge exchange Fellowship Application

Our RA Weikai Wang applied for the NERC Knowledge exchange Fellowship building on the MIDST- CZ Project last December. During the application, we contacted our Chinese Partners and got 9 Support Letters from them. The sifting process has been delayed because of the COVID-19. The support from the Chinese colleagues and their affiliated institutes will benefit the future work of MIDST, e.g., Stakeholder visit in China (potentially after July 2021), workshop delivery, surveys and development and deployment of DST.

MIDST Staff

Dr Weikai Wang joined the group at the University of Glasgow, replacing Dr Ying Zheng as the Knowledge Exchange expert. He is a social scientist with specific expertise on land use and economic growth in China.

Dr Boyi Liang from Peking University completed his academic visit at the University of Exeter in June 2020. He is still contributing to CZO modelling activities.

David Edwards, completed a short-term contract with the University of Glasgow team. Some of you will remember him from a survey he completed of the CZO projects for his MSc project at the University of Oxford. As a fluent Mandarin speaker, David provided continuity in the knowledge exchange activities, driving the analysis of surveys we have conducted across China.

Dr Huiyi Yang, who was the DST Modeller at Rothamsted Research, joined the University of Greenwich as a Fellow in Agri-environmental Modelling.

Dr Ying Zheng and Dr Joe Oyesiku-Blakemore are completing MIDST papers but have moved to new projects.

Prof Susan Waldron from the University of Glasgow joined NERC in 2020 as Director of Research and Skills. Prof Jeroen Meersmans from Cranfield University moved to the University of Liege in Belgium.

