

# **MOSAICC: An inter-disciplinary system of models to evaluate the impact of climate change on agriculture**

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## **ABSTRACT**

Climate change poses a great risk to agricultural production systems, threatening particularly those who depend on local food production for their livelihood. Information on the impact of climate change is a primary tool for policy makers to cope with climate change. In the recent years, scientists have developed a range of different models, which monitor, evaluate and predict the effect of climatic change. However, information is often scattered, incomplete or specifically focused on one scientific domain. An innovative multidisciplinary approach combining all knowledge from the different domains would therefore be an ideal tool to evaluate the sustainability of our agricultural systems.

The Food and Agriculture Organization of the United Nations (FAO) in partnership with European research institutes has developed an integrated package of models for assessing the impact of climate change on agriculture at a national level. The MOdelling System for Agricultural Impacts of Climate Change (called MOSAICC) is based on a generic methodology defined to assess the impact of climate change on agriculture, covering climate data downscaling, crop yield projections, water resource estimations and economic models. All models are connected through a common spatial database and interconnected in terms of input and output. All models and databases are platform independent and can be hosted on a central server. Multiple users can access the MOSAICC toolbox at a time through a web interface, making data exchange easier, transparent and more efficient.

MOSAICC is unique and innovative as it combines a web-based interactive and integrated model environment with capacity building and technology transfer for institutions and scientists. The specific design allows for interdisciplinary working groups to stimulate cooperation and foster knowledge exchange. Currently, the MOSAICC toolbox is under validation in Morocco and will be implemented afterwards in other countries.

**Keywords:** climate change, agriculture, integrated environmental modeling, policy