

MEMBER SELECTION FROM A CLIMATE MODEL ENSEMBLE FOR CROP MODEL IMPACT ASSESSMENT IN NORTH GREECE

Melpomeni Nikou^{1,2*}, Aristeidis K. Georgoulas¹, Vassilis G. Aschonitis², Dimitris M. Papamichail³,
Theodoros Mavromatis¹

¹Department of Meteorology and Climatology, School of Geology, Aristotle University of Thessaloniki, Greece,
*melinanikou@gmail.com

²Soil and Water Resources Institute, Hellenic Agricultural Organization (ELGO) - “DEMETER”,
Thessaloniki, Greece

³Department of Hydraulics, Soil Science and Agricultural Engineering, Faculty of Agriculture, Forestry and Natural
Environment, Aristotle University of Thessaloniki, Greece

Abstract: Climate change poses significant challenges to crops, including wheat, a crucial crop to Greek agriculture. Rising temperatures, extreme weather, and altered precipitation patterns reduce wheat yield. A region in northern Greece, known for its diverse elevation and climate, was analyzed using data from eight meteorological stations (2006-2023) and 11 EURO-CORDEX models under the RCP4.5 scenario. When the calibrated CERES-Wheat model was driven by the most suitable members, identified using the sRPI index, as compared to the whole ensemble, it improved predictions of wheat anthesis, maturity, and potential yield, thereby supporting adaptation strategies for sustainable wheat production.

Key words: Ensemble model evaluation, Climate change, Wheat production, CERES-Wheat, Simulation scenarios, Greece