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MINISTRY OF DEVELOPMENT
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WP6
D6.5 Scientific Articles

Spatially Explicit Digital Twin of the Greek Agro-Hydro-System



ID 14815

Greece 2.0
NATIONAL RECOVERY AND RESILIENCE PLAN



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Introduction

This deliverable presents the scientific publications produced with support from the DT-Agro project. All articles listed below acknowledge DT-Agro funding and contribute to the dissemination of the project's scientific advances in agro-hydrological modeling, Earth Observation integration, and soil data evaluation.

1. Peer-Reviewed Journal Articles Published

- A1. Soulis, K., Dosiadis, E., Nikitakis, E., Charalambopoulos, I., Kairis, O., Katsogiannou, A., Palli-Gravani, S., & Kalivas, D. (2025). Assessing AGERA5 and MERRA-2 Global climate datasets for Small-Scale Agricultural Applications. *Atmosphere*, 16(3), 263. <https://doi.org/10.3390/atmos16030263>
- A2. Soulis, K. X., Nikitakis, E. E., Katsogiannou, A. N., & Kalivas, D. P. (2024). Examination of empirical and Machine Learning methods for regression of missing or invalid solar radiation data using routine meteorological data as predictors. *AIMS Geosciences*, 10(4), 939–964. <https://doi.org/10.3934/geosci.2024044>
- A3. Gerontidis, S., Soulis, K. X., Nikitakis, E., Kalivas, D. P., Kairis, O., Kopanelis, D., & Palli-Gravani, S. (2025). Assessment of the accuracy of ISRIC and ESDAC soil texture data compared to the Soil Map of Greece: A statistical and spatial approach to identify sources of differences. *Soil Systems*, 9(4), 133. <https://doi.org/10.3390/soilsystems9040133>

2. Peer Reviewed Journal Articles Submitted for Publication, In Preparation, or Under Review

- A4. Kairis, O., Kolovos, C., Dimou, P., Kopanelis, D., Soulis, K., Kalivas, D. Conceptual disambiguation and systematic comparison of the PESERA and (R)USLE methodologies, applied in the NEMEA wine producing zone, Greece [**Manuscript Under Review in CATENA Journal**]
- A5. Palli-Gravani, S., Soulis, K., Wałęga, A. (2025). Simplified Approach to consider Watersheds Heterogeneity in Direct Runoff Estimation using SCS–CN Model [**Manuscript Under Review in Hydrological Sciences Journal**]
- A6. Palli-Gravani, S., Soulis, X., Soulis, K., Kalivas, D. The development of DT-Agro model and results of its first application [In preparation]

3. Articles in Conference Proceedings

- B1. Dosiadis, E., Katsogiannou, A., Nikitakis, E., Valiantza, E., Gerontidis, S., Soulis, K., and Kalivas, D. (2024). Assessing Global Climate Datasets for Small-Scale Agricultural Applications: The Case of Nemea, Greece, EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-3839, <https://doi.org/10.5194/egusphere-egu24-3839>.
- B2. Gerontidis, S., Soulis, K. X., Kairis, O., Palli-Gravani, S. Kopanelis, D., Kalivas, D. P. & Stavropoulos, A. (2025). Assessing the impact of uncertainty in global soil property datasets on soil erosion predictions. [Poster presentation]. XIIth Scientific Assembly of the International Association of Hydrological Sciences (IAHS 2025), Roorkee, India. https://iahs2025.com/pdf/IAHS2025_Program_Book.pdf
- B3. Kalivas, D., Dosiadis, E., and Soulis, K. (2025). Estimating top-soil moisture at high spatiotemporal resolution in a highly complex landscape, EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-11864, <https://doi.org/10.5194/egusphere-egu25-11864>.
- B4. Palli-Gravani, S., Gerontidis, S., Kopanelis, D., Kairis, O., Soulis, K., and Kalivas, D. (2025) Evaluation of digital maps of top-soil properties compared to large-scale laboratory soil data and synergies towards a better European soils' delineation. , EGU General Assembly 2025, Vienna, Austria, 27 Apr–2 May 2025, EGU25-15613, <https://doi.org/10.5194/egusphere-egu25-15613>.
- B5. Soulis, K., Palli Gravani, S., and Kalivas, D. (2024) SCS-CN parameter determination from observed rainfall runoff data. A critical review., EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-4058, <https://doi.org/10.5194/egusphere-egu24-4058>.
- B6. Δοσιάδης, Ε., Κατσογιάννου, Α., Νικητάκης, Ε., Βαλιάτζα, Ε., Γεροντίδης, Σ., Σούλης, Κ., & Καλύβας, Δ. (2024). Αξιολόγηση παγκόσμιων κλιματικών συνόλων δεδομένων για γεωψργικές εφαρμογές μικρής κλίμακας: Η περίπτωση της Νεμέας. *Στα Πρακτικά Συνεδρίου του “5ου Συνεδρίου Γεωγραφικών Πληροφοριακών Συστημάτων και Χωρικής Ανάλυσης στη Γεωργία και στο Περιβάλλον”*, Γεωπονικό Πανεπιστήμιο Αθηνών, 21-23 Μαΐου 2024, Αθήνα, Ελλάδα.
- B7. Σούλης, Κ., Καλύβας, Δ., Ψωμιάδης, Ε., Καΐρης, Ο., Πάλλη-Γραβάνη, Σ., Γεροντίδης, Σ., Κοπανέλης, Δ., Αλεξανδρή, Σ. (2024). Χωρικά Καθορισμένο Ψηφιακό Δίδυμο του Αγρο-Υδρο Συστήματος της Ελλάδας (DT-Agro). *Στα Πρακτικά Συνεδρίου του “5ου Συνεδρίου Γεωγραφικών Πληροφοριακών Συστημάτων και Χωρικής Ανάλυσης στη Γεωργία και στο Περιβάλλον”*, Γεωπονικό Πανεπιστήμιο Αθηνών, 21-23 Μαΐου 2024, Αθήνα, Ελλάδα.

4. Submitted Conference Abstracts

- B8. Palli Gravani, S., Soulis, K.X., Soulis, X.K., & Kalivas, D. (2026) DT-Agro, a digital twin of the Greek AgroHydroSystem, development and testing. EGU General Assembly 2026, Vienna, Austria, 3-8 May 2026 [Submitted]

- B9. Soulis, X.K., Karabetsou E., Soulis, K.X., Palli-Gravani S., Nikitakis E., & Kalivas, D. (2026) Investigation of the Spatial and Temporal Variability of the Precipitation and Temperature Lapse Rates in Greece and its Application in Evaluation and Calibration of Metanalysis Meteorological Data. EGU General Assembly 2026, Vienna, Austria, 3-8 May 2026 [Submitted]

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