

CURRICULUM VITAE

1. ID No (for Turkish citizens): 21860704648
2. Family name : KAYA
3. First names : FUAT
4. Date of birth : 19/01/1994
5. Nationality : Turkish
6. Civil status : Married
7. Education : Master Degree (Msc.)



Institution [Date from - Date to]	Degree(s) or Diploma(s) obtained:
BACHELOR'S / SELÇUK UNIVERSITY [2011-2015]	Bachelor's diploma, Cumulative grade point average: 3.25 / 4.0
MASTER OF SCIENCE / ISPARTA UNIVERSITY OF APPLIED SCIENCES [2018-2021]	Master of Science diploma, Cumulative grade point average: 3.93 / 4.0
DOCTOR OF PHILOSOPHY / ISPARTA UNIVERSITY OF APPLIED SCIENCES [2021-]	Continued.

8. **Language skills:** Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
English	4	3	4

9. **Membership of professional bodies:**

European Geosciences Union (EGU, Student Member, 2021 and 2023 years)

Soil Science Society of Türkiye (SSST) (Member) (2019-...)

10. **Other skills:** (e.g. Computer literacy, etc.)

Advanced Geographic Information Systems Knowledge, Process Execution Ability in Commercial and Open-Source Software

Overcoming Complex Challenges in Data Modelling with Open-Source R Programming Language Integration

Advanced Experience in Open-Source Cloud Environments Such as Google Earth Engine for Pre-Analysis Use of Remote Sensing Data

11. **Present position: Research Assistant**

12. **Years within the firm: 6 (six)**

13. **Key qualifications:**

Data Modelling

Use of Geographic Information Systems Procurement, pre-processing and analysis of Remote Sensing data

Climate Change and Crop-Growth Simulation Modelling

14. **Professional experience**

02/06/2025 – THE UNIVERSITY OF SYDNEY – VISITING SCHOLAR

09/04/2018 - ISPARTA UNIVERSITY OF APPLIED SCIENCES - RESEARCH ASSISTANT

Duty and responsibilities: To carry out supporting activities in the execution of Department activities within the framework of the Higher Education Law No. 2547.

15. **Other relevant information** (e.g., Publications)

DUTIES IN PROJECTS:

Project title: **Comparison of different approaches used in digital soil mapping and researching the relationship between digital variables and soil properties: A case study of Atabey plain**, Scientific

Research Project Supported by Higher Education Institutions, Researcher: Fuat Kaya, Executive: Levent Başayığit, 27/10/2019 - 27/05/2021 (National)

Project title: **UAV-based remote sensing data and machine learning integration to determine nitrogen fertilizer requirements for apple trees**, The Scientific and Technological Research Council of Türkiye (TÜBİTAK), Researcher, 30/10/2023- Expected ending date: 30/12/2024.

Project title: **A comparison of soil sampling methods and the use of geographical information systems to identify soil management zones**, The Scientific and Technological Research Council of Türkiye (TÜBİTAK), Researcher, 30/05/2024- Expected ending date:30/05/2025.

Project title: **Assessment of Climate Change Impacts on Food Safety and Enhancing the Resilience of Rural Communities**, European Union Instrument for Pre-Accession (IPA), Expert, 13/12/2023-Expected ending date: 13/12/2025.

AWARDS/GRANTS/SCHOLARSHIPS:

TÜBİTAK Directorate of Science Fellowships and Grant Programs in the Priority field of Artificial Intelligence and Machine Learning within the Scope of the 2211-C National PhD Scholarship Program (Grant Number: 1649B032309783). From October 2023 to October 2026.

TÜBİTAK Directorate of Science Fellowships and Grant Programs 2214-A - International Research Fellowship Programme for PhD Students(Grant Number: 1059B142401332). From May 2025 to November 2025.

Pan-European Network of Green Deal Agriculture and Forestry Earth Observation Science (PANGEOS)-CA22136- COST ACTION Inclusiveness Target Countries (ITC) Conference Grant. Title: **Machine learning models for pedotransfer functions and an insight into transferability: Use of open access LUCAS dataset** Conference: *Centennial Celebration and Congress of the International Union of Soil Sciences, Italy*.

Staff mobility for training within the framework of ERASMUS+ (2023-2023), Staff mobility for training within the framework of ERASMUS+ visited and completed training between 16 April 2023 and 23 April 2023 in Università di Pisa.

Staff mobility for training within the framework of ERASMUS+ (2024-2024), Staff mobility for training within the framework of ERASMUS+ visited and completed training between 22 May 2024 and 25 May 2025 in Università di Firenze.

Roland Schlich Travel Support, European Geosciences Union General Assembly, Austria, 2023.

Incentive Program for International Scientific Publications - 2024-0180- Application of Machine Learning Algorithms for Digital Mapping of Soil Salinity Levels and Assessing Their Spatial Transferability in Arid Region.

Incentive Program for International Scientific Publications - 2024-0489 - Spatial variability of some heavy metals in arid harrats soils: Combining machine learning algorithms and synthetic indexes based-multitemporal Landsat 8/9 to establish background levels.

Incentive Program for International Scientific Publications - 2024-0489- Towards site-specific management of soil organic carbon: Comparing support vector machine and ordinary kriging approaches based on pedo-geomorphometric factors.

Incentive Program for International Scientific Publications - 2023-0699- Spatial prediction of soil micronutrients using machine learning algorithms integrated with multiple digital covariates.

Incentive Program for International Scientific Publications - 2023-0192- Digital Mapping of Soil Texture Classes for Efficient Land Management in The Piedmont Plain of Iran.

Incentive Program for International Scientific Publications - 2023-0378-Predictive Mapping of Electrical Conductivity and Assessment of Soil Salinity in A Western Türkiye Alluvial Plain.

Incentive Program for International Scientific Publications - 2023-0192-Digital Mapping for Soil Texture Class Prediction in Northwestern Türkiye by Different Machine Learning Algorithms.

Incentive Program for International Scientific Publications - 2023-0699-Spatial Prediction of Soil Micronutrients Using Machine Learning Algorithms Integrated With Multiple Digital Covariates.

Incentive Program for International Scientific Publications -2023-0699- Combining Digital Covariates and Machine Learning Models to Predict the Spatial Variation of Soil Cation Exchange Capacity.

Incentive Program for International Scientific Publications- 2022-0501-Machine Learning for Cation Exchange Capacity Prediction In Different Land Uses.

Conference participation scholarship for 2022 IEEE Mediterranean and Middle-East Geoscience and Remote Sensing Symposium (M2GARSS), IEEE Geoscience and Remote Sensing Society (IEEE GRSS), USA, 2022.

ARTICLES PUBLISHED IN INTERNATIONAL PEER-REVIEWED JOURNALS:

Musa, M., Elsheikh, M.A., Siddig, M.M.S., Omar, M.M., Kaya, F., Brevik, E.C. (2025). Integrating machine learning and environmental-soil variables for estimating soluble and exchangeable potassium in dryland regions: agronomical implications. *Plant Soil*. <https://doi.org/10.1007/s11104-025-07717-8> - Q1

De Caires, S. A., Martin, C. S., Atwell, M. A., Kaya, F., Wuddivira, G. A., Wuddivira, M. N. (2025). Advancing soil mapping and management using geostatistics and integrated machine learning and remote sensing techniques: a synoptic review. *Discover Soil*, 2(1), 53. <https://doi.org/10.1007/s44378-025-00082-z>

Suliman M. Magboul, Kaya Fuat, Al-Farraj Abdullah S, Brevik Eric C. (2025). A novel method to determine background concentrations and spatial distributions of heavy metals in soil at large scale using machine learning coupled with remote sensing-terrain attributes. *MethodsX*, 14, 103180. Doi: 10.1016/j.mex.2025.103180 - ESCI- Q2

Kaya Fuat, Ferhatoglu Caner, Başayığit Levent. (2025). Multi-Temporal Normalized Difference Vegetation Index Based on High Spatial Resolution Satellite Images Reveals Insight-Driven Edaphic Management Zones. *AgriEngineering*, 7, 92. Doi: 10.3390/agriengineering7040092 - ESCI- Q2

Schillaci Calogero, Scarpa Simone, Yunta Felipe, Lipani Aldo, Visconti Fernando, Szatmári Gábor, Balog Kitti, Koganti Triven, Greve Morgens, Bondi Giulia, Kargas Georgios, Londra Paraskevi, **Kaya Fuat** Lo Papa Giuseppe, Panagos Panos, Montanarella Luca, Jones Arwyn. (2025). Corrigendum to “Empirical estimation of saturated soil-paste electrical conductivity in the EU using pedotransfer functions and Quantile Regression Forests: A mapping approach based on LUCAS topsoil data” [Geoderma 454 (2025) 117199]. *Geoderma*, Doi: 10.1016/j.geoderma.2025.117253-Q1

Schillaci Calogero, Scarpa Simone, Yunta Felipe, Lipani Aldo, Visconti Fernando, Szatmári Gábor, Balog Kitti, Koganti Triven, Greve Morgens, Bondi Giulia, Kargas Georgios, Londra Paraskevi, **Kaya Fuat** Lo Papa Giuseppe, Panagos Panos, Montanarella Luca, Jones Arwyn. (2025). Empirical estimation of saturated soil-paste electrical conductivity in the EU using pedotransfer functions and Quantile Regression Forests: A mapping approach based on LUCAS topsoil data. *Geoderma*, 454, 117199. Doi: 10.1016/j.geoderma.2025.117199-Q1

Keshavarzi Ali, De Caires Sunshine A., Sintim Henry Y., **Kaya Fuat**, Kusi Nana Yaw O, Agyei, Yeboah Gyasi, Kumar, Vinod. (2025). Spatial Variability and Management Zones: Leveraging Geostatistics and Fuzzy Clustering. *Journal of Soil Science and Plant Nutrition*, Doi: 10.1007/s42729-025-02357-4- Q1

Suliman Magboul, **Kaya Fuat**, Keshavarzi Ali, Hussein Abdullahi M., Al-Farraj Abdullah S., Brevik Eric C. (2024). Spatial Variability of Some Heavy Metals in Arid Harrats Soils: Combining Machine Learning Algorithms and Synthetic Indexes Based-Multitemporal Landsat 8/9 to Establish Background Levels. *Catena*, 107579, 234, Doi: 10.1016/J.Catena.2023.107579 – Q1

De Caires Sunshine A., Keshavarzi Ali, Bottega Eduardo Leonel, **Kaya Fuat** (2024). Towards Site-Specific Management of Soil Organic Carbon: Comparing Support Vector Machine and Ordinary Kriging Approaches Based on Pedo-Geomorphometric Factors. *Computers And Electronics In Agriculture*, 216, 108545, Doi: 10.1016/j.compag.2023.108545 – Q1

Mohammed Musaab A. A., **Kaya Fuat**, Mohamed Ahmed, Alarifi Saad S., Abdelrady Ahmed, Keshavarzi Ali, Szabó Norbert P., Szűcs Péter (2023). Application of GIS-Based Machine Learning Algorithms for Prediction of Irrigational Groundwater Quality Indices. *Frontiers In Earth Science*, 11, Doi: 10.3389/feart.2023.1274142– Q2

Suliman Magboul, Kaya Fuat, Elsheikh Mohammed A., Başayığit Levent, Francaviglia Rosa (2023). Application Of Machine Learning Algorithms for Digital Mapping of Soil Salinity Levels and Assessing Their Spatial Transferability in Arid Regions. *Land*, 12(9), 1680, Doi: 10.3390/land12091680 – Q2

Keshavarzi Ali, **Kaya Fuat**, Başayığit Levent, Gyasi-Agyei Yeboah, Rodrigo-Comino Jesús, Caballero-Calvo Andrés (2023). Spatial Prediction of Soil Micronutrients Using Machine Learning Algorithms Integrated with Multiple Digital Covariates. *Nutrient Cycling In Agroecosystems*, 127, 137–153, Doi: 10.1007/s10705-023-10303-y – Q2

Kaya Fuat, Mishra Gaurav, Francaviglia Rosa, Keshavarzi Ali (2023). Combining Digital Covariates and Machine Learning Models to Predict the Spatial Variation of Soil Cation Exchange Capacity. *Land*, 12(4), 819, Doi: 10.3390/land12040819 – Q2

Kaya Fuat, Başayığit Levent, Keshavarzi Ali, Francaviglia Rosa (2022). Digital Mapping for Soil Texture Class Prediction in Northwestern Türkiye by Different Machine Learning Algorithms. *Geoderma Regional*, Doi: 10.1016/j.geodrs.2022.e00584 – Q2

Kaya Fuat, Schillaci Calogero, Keshavarzi Ali, Başayığit Levent (2022). Predictive Mapping of Electrical Conductivity and Assessment of Soil Salinity In A Western Türkiye Alluvial Plain. *Land*, 12(11), 2148, Doi: 10.3390/land11122148 – Q2

Keshavarzi Ali, Del Árbol Miguel Ángel Sánchez, **Kaya Fuat**, Gyasi-Agyei Yeboah, Rodrigo-Comino Jesús (2022). Digital Mapping of Soil Texture Classes for Efficient Land Management in The Piedmont Plain of Iran. **Soil Use and Management**, 38(4), 1705-1735., Doi: 10.1111/sum.12833 – Q2

Mishra Gaurav, Sulieman Magboul, **Kaya Fuat**, Francaviglia Rosa, Keshavarzi Ali, Bakhshandeh Esmail, Loum Macoumba, Jangir Abhishek, Ahmed Ibrahim, Elmobarak Abdelmagid, Basher Abdelrahim, Rawat Deepa (2022). Machine Learning for Cation Exchange Capacity Prediction in Different Land Uses. **Catena**, 216, Doi: 10.1016/j.catena.2022.106404 – Q1

Kaya Fuat, Keshavarzi Ali, Francaviglia Rosa, Kaplan Gordana, Başayığit Levent, Dedeoğlu Mert (2022). Assessing Machine Learning-Based Prediction Under Different Agricultural Practices for Digital Mapping of Soil Organic Carbon and Available Phosphorus. **Agriculture**, 12(7), 1062, Doi: 10.3390/agriculture12071062 – Q1

Dedeoğlu Mert, Başayığit Levent, Yüksel Mahmut, **Kaya Fuat** (2020). Assessment of the Vegetation indices on Sentinel-2A Images for Predicting the Soil Productivity Potential in Bursa, Turkey. **Environmental Monitoring and Assessment**, 192(1), Doi: 10.1007/s10661-019-7989-8 – Q3

PAPERS PRESENTED IN INTERNATIONAL SCIENTIFIC MEETINGS AND PRINTED IN PROCEEDINGS:

Kaya Fuat, Adeniyi Odunayo David (2024). The spatial variability of different levels of electrical conductivity (EC) in croplands remains poorly captured by various remote sensing-based indices. In *Salt-affected soils: threats and potentials Proceedings of the joint meeting of INSAS and SUSTAIN. 27–31 May, Rome, FAO.*

Kaya Fuat, Başayığit Levent (2024). Machine learning models for pedotransfer functions and an insight into transferability: Use of open access LUCAS 2015 data in the Mediterranean biogeographic region for pH and CaCO₃. *Centennial Celebration and Congress of the International Union of Soil Sciences*, 19-21 May, Florence.

Schillaci C., Scarpa S., Mezquita F. Y., Lipani A., Visconti F., Szatmári G., Balog K., Greve M. H., Koganti T., Bondi G., Kargas G., Londra P., **Kaya Fuat**, Panagos P., Jones A., Montanarella L. (2024). Soil Electrical Conductivity (ECe) Mapping in the EU Based on Lucas 2018 Soil Properties. *Centennial Celebration and Congress of the International Union of Soil Sciences*, 19-21 May, Florence.

Kaya Fuat, Başayığit Levent (2023). Digital Mapping of WRB Soil Classes Using Linear and Non-Linear Classification-Based Machine Learning Algorithms and Integration of Confusion Index in Knowledge Discovery. European Geosciences Union (EGU) General Assembly 2023, Doi: 10.5194/egusphere-egu23-510 (Abstract Proceedings /Oral Presentation)

Kaya Fuat, Schillaci Calogero, Kaplan Gordana, Başayığit Levent (2023). Review Of the Usage of Lucas Soil Data for Soil Modeling and Mapping via Bibliometric Analysis. European Geosciences Union (EGU) General Assembly 2023, Doi: 10.5194/egusphere-egu23-13165 (Abstract Proceedings /Oral Presentation)

Kaya Fuat, Başayığit Levent (2022). Spatial Predictability of Salinity Hazard with Machine Learning Algorithms and Digital Data in the Irrigation Plain - https://www.fao.org/fileadmin/user_upload/GSP/GSAS21/day1/PS1_01_Fuat.pdf, Global Symposium on Salt-Affected Soils (GSAS21), 63-64, 20 to 22 October 2021, Rome, Italy. (Full Text Proceedings /Oral Presentation)

Kaya Fuat, Başayığit Levent (2022). The Effect of Spatial Resolution of Environmental Variables on The Performance of Machine Learning Models in Digital Mapping of Soil Phosphorus. IEEE Mediterranean and Middle-East Geoscience and Remote Sensing Symposium 2022 (M2GARSS 2022), 169-172, Doi: 10.1109/m2garss52314.2022.9840325 (Full Text Proceedings /Oral Presentation)

Kaya Fuat, Başayığit Levent (2021). Digital Mapping of Soil Organic Matter Using Open-Source Accessible Products of ESA@ in Arable Plain. ESA-ECMWF Workshop Machine Learning for Earth System Observation and Prediction - https://events.ecmwf.int/event/291/attachments/1518/2742/17_Kaya.pdf, ESA-ESRIN, Frascati, Rome, Italy. (Abstract Proceeding /Poster Presentation)

Kaya Fuat, Başayığit Levent (2021). Digital Mapping of Soil Particle Size Distribution in An Alluvial Plain Using the Random Forest Algorithm. European Geosciences Union (EGU) General Assembly 2021, Doi: 10.5194/egusphere-Egu21-7828 (Abstract Proceeding / Oral Presentation)

CHAPTERS IN WRITTEN NATIONAL/INTERNATIONAL BOOKS:

Akça E., Aldrian U., Alewell C., Anzalone E., Arcidiacono A., Arias N. C., Auclerc A., Aydinşakir K., Ballabio C., Balog K., Baragaño D., Baritz R., Beltrandi D., Bernatek-Jakiel A., Bøe F., Borrelli P., Breure T., Briones M., Broothaerts N., Burton V., Buttafuoco G., Cagnarini C., Cherlinka V., Chevallier T., De L. T. A., De M. D., De R. D., Di L. S., Dmytruk Y., Dragovic S., Erpul G., Evrard O., Frank S., García F. N., Gascuel C.,

Gezgin S., Hackenberger D. K., Havenga C., Hinsinger P., Jones A., **Kaya F.**, Köninger J., Labouyrie M., Lamandé M., Liakos L., Lugato E., Madenoğlu S., Martin J. J., Mason E., Matthews F., Maurischat P., Melpomeni Z., Mimmo T., Monokrousos N., Jimenez M. E., Munafò M., Orgiazzi A., Ortaş İ., Ozcan H., Öztaş T., Panagos P., Peiro A., Piccini C., Poch R. M., Poeplau C., Poesen J., Polat A., Reiff T., Rienks F., Romanova S., Ronchi S., Ros G., Öztürk H. S., Saggau P., Salata S., Sandén T., Sanz F., Scammacca O., Scarpa S., Schillaci C., Serpa D., Silva V., Sonmez B., Spalevic V., Van D. H. M., Van E. E., Van L. M., Vanmaercke M., Vidojević D., Vieira D., Virto I., Wojda P., Mezquita F. Y., Zdruli P., Zhang C., Zupanc V. (2024). The state of soils in Europe fully evidenced, spatially organised assessment of the pressures driving soil degradation. Publications Office of the European Union. <https://dx.doi.org/10.2760/7007291>

Kaya Fuat, Başayığıt Levent (2023). Using Machine Learning Algorithms for Mapping Soil Macronutrient Elements Variability with Digital Environmental Data in An Alluvial Plain. In Artificial Intelligence and Smart Agriculture Applications, Editors: Kose, Utku; Prasath, Surya V.B.; Mondal, Rubaiyat Hossain M.; Podder, Prajoy; Bharati, Subrato., CRC Press- Auerbach Publications (Taylor & Francis Group), ISBN:9781032223575, English.

Kaya Fuat, Başayığıt Levent (2022). Spatial Prediction and Digital Mapping of Soil Texture Classes in A Floodplain Using Multinomial Logistic Regression. In Intelligent and Fuzzy Techniques for Emerging Conditions and Digital Transformation, Editors: Kahraman Cengiz, Cebi Selcuk, Onar Sezi Cevik, Oztaysi Basar, Tolga A. Cagri, Sari Irem Ucal, Springer Nature Switzerland Ag, ISBN:978-3-030-85576-5, English

COURSES:

Modelling And Mapping Soil Nutrients and Associated Soil Properties, ***GSNmap- Global Soil Nutrient and Nutrient Budget Maps - Phase I. Mapping Current Status of Soil Nutrients at National Scale.** Online implemented by FAO May 8 - 12, 2023.

4th International Course Climate Change and Modelling, 25 April- 6 May 2022, Niğde Ömer Halisdemir University.

SUSTAIN Training School 1-Trainings on “**Salt-Affected Soils and Halophytes**” (2024), Training School within the COST ACTION-CA22144 Sustainable use of salt-affected lands visited and completed training school between 29 May 2024 and 31 May 2024 in Facultat de Geografia i Història, Universitat de València.

SUSTAIN Training School 2-Trainings on “**Knowledge exchange and sharing best practices for sustainable use of salt-affected lands**” (2024), Training School within the COST ACTION-CA22144 Sustainable use of salt-affected lands visited and completed training school between 9 September 2024 and 11 September 2024 in Faculty of Production and Management, University of East Sarajevo.

FAO ELEARNING ACADEMY, Measures for coping with soil salinity.

EU-funded SMART4ENV project 2nd Summer School on “**Strategies for adapting to and mitigating the effects of climate change in the agricultural sector**” (2024). Summer School within the EU-funded Enhancing the Scientific Capacity of MAM in the field of Smart Environmental Technologies for Climate Change Challenges (SMART4ENV) online completed summer school between 24 April 2024 and 26 April 2024

PARTICIPATED TO INTERNATIONAL WORKSHOP IN COST ACTIONS

In **Forest Fire in Centra Europe an increase Awareness is Borning** titled Workshop 5-7 June 2023 at International Institute for Applied Systems Analysis (IIASA) at Laxenburg, Austria, presentation was made titled “**Exploring epistemological challenges in geoinformatics-based machine learning for forest fire risk analysis: A systematic review and bibliometric analysis**”.

In International workshop on salt-affected soils: SALT-AFFECTED SOILS: THREATS AND POTENTIALS 27-31 May 2024 at Facultat de Geografia i Història, Universitat de València, Spain presentation was made “**The spatial variability of different levels of electrical conductivity (EC) in croplands remains poorly captured by various remote sensing-based indices**”.

REFERENCES

<p>Calogero SCHILLACI, PhD, Researcher European Commission JRC Directorate D - Land Resources and Supply Chain Assessments Via E. Fermi, 274-21027 Ispra (VA) ITALY</p>	<p>Contact Information Calogero.SCHILLACI@ec.europa.eu</p>
<p>Kabindra Adhikari, PhD,</p>	<p>Contact Information</p>

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