CURRICULUM VITAE



IOANNIS N. FARASLIS, Ph.D.

Lab Teaching Staff Member School of Technology Department of Environmental Science

University of Thessaly, Larissa Greece

Address: GAIOPOLIS, LARISSA 411 10, Greece

Email: faraslis@uth.gr cell: +306977482198

November 2019

PERSONAL

Country of birth: Greece
Date of birth: 22/07/1971
Citizenship: Greek

Address: Ikarias 77, Larissa 41335, Greece

Telephone: + 30 6977482198 Email: faraslis@uth.gr

1. DEGREES

- **1.1** Ph.D, in Spatial Planning based on GIS and Remote Sensing methods, (2012). Department of Planning, Urban and Regional Development, University of Thessaly.
- **1.2** Post-Graduate Diploma in Spatial Planning. Department of Planning, Urban and Regional Development, University of Thessaly, Greece, (1999-2000).
- **1.3** Environmentalist. Diploma in "Department of Environment", Aegean University, Mytilene, Greece, (1989-1993).

2. LANGUAGE SKILLS

- English: reading, speaking, writing (B2- Upper Intermediate)
- French: reading, speaking, writing (B2- Upper Intermediate)

3. EMPLOYMENT HISTORY

- **3.1 Nov.2019-present:** Lab Teaching Staff Member. Department of Environmental Science, School of Technology, University of Thessaly, Larissa Greece.
- **3.2 2014-Nov.2019:** Research and Teaching Associate (tenure). Department of Planning and Regional Development, UTH, Laboratories of (a) Rural Space, (b) Spatial Analysis, Geographic Information Systems and Thematic Mapping.

Research activities. Since 1998, Remote Sensing and GIS data analysis for Land-Use Land-Cover planning (image interpretation, classification analysis, change detection analysis, spatial modeling, DTM modeling). Environmental applications, terrain analysis in rural and field development, using advanced geo-informatic tools, Drone mapping and 3D virtual environment (fly simulator).

Teaching activities. (in section 5)

3.3 1998-2014: Researcher and Teaching Assistant, Department of Planning and Regional Development.

Same as above

- **3.4 1995-1998:** Employment in Bank of Piraeus, as computer Analyst.
- 3.5 1993-1995: Compulsory Military Service.

4. TEACHING EXPERIENCE

4.1 Undergraduate Program at the Department of Urban Planning and Regional Development (2001-2019).

- 1. Course "Informatics and Database", (2019-2020). First year fall semester. Technical assistant.
- 2. Course "Remote Sensing", (2001-2019). 3rd year fall semester. Technical assistant (2001-2014) & co-teaching (2015-present).
- 3. "Advanced Applications in Remote Sensing", (2014-2019). 4th year fall semester. Co-teaching.
- 4. "Geographic Information Systems I", (2013-2018). 2nd year fall semester. Technical assistant.
- 5. "Rural Development", (2015-2018). 3nd year fall semester. Technical assistant.
- 6. "Implementation of New Technologies in spatial planning", (2000-2003). 3nd year fall semester. Technical assistant.

4.2 Postgraduate Program at the Department of Urban Planning and Regional Development (2004-2018).

- 1. "Outils geo-informatiques de la représentation spatiale", 1st year fall semester (2004-2018) (UV5) Greek-French Master Program DYNTAR. Independent teaching.
- 2. "Geographic Information Systems", 2nd year-fall semester (2013-2018). Teaching assistant.
- 3. "Special Remote Sensing Topics", $3^{rd}-4^{th}$ year fall semester (2013-2018). Teaching assistant.
- 4. "Spatial Analysis" (2017-2018). 3rd year winter semester. Co-teaching.

4.3 Undergraduate Program at the Department of Forestry, Technological Educational Institution of Thessaly (2004-2006).

1. "Remote Sensing of the natural environment" & "GIS and Mapping of natural resources", (2004-2006). Full qualified teaching assistant.

4.4 Undergraduate Program at the Department of Management of Rural Environment and Natural Resources, University of Thessaly (2000-2003).

1. "Geographic Information Systems", (2000-2003). Teaching assistant.

4.5 Teaching in Seminars (2013-2019)

- 1. "Geographic information Systems Remote Sensing and Satellite Systems", (2013-2019). External instructor at the "School of Photogrammetry" at the Hellenic Air-force. 14-hour seminar each year (2013 2019).
- 2. "Introduction to QGIS", (Feb 2017). The seminar (45 hours) was implemented by the Technical Chamber of Greece, Regional Department of Central & Western Thessaly.

- 3. "Geographic Information Systems" & "Analysis and Interpretation of maps", (2002). Theoretical and practical training. Educational Seminar of the employees of the region of Thessaly.
- 4. "Spatial analysis and applied cartography", (1999). International Seminar in the framework of the Mediterranean Doctorate (Mediterranean Universities and IAMM- Mediterranean Agronomic Institute of Montpellier).

5. PROFESSIONAL AND RESEARCH EXPERIENCE

Participated in the following research programs (1997-present).

- 1. SUPROMED (2019-2022). Sustainable Production in the Mediterranean. Recently awarded a European (PRIMA) funded project with 12 partners coordinated by UCLM, Spain. Total budget is 2.1 Meuros and our budget is 270,000 euros. Our role is to develop and implement innovative methodologies based on new remote sensing data and methods for monitoring water and nitrogen requirements in precision agriculture, agroclimatic zoning and drought assessment in selected sites in Spain, Tunisia and Lebanon.
- 2. National Development Strategy of Troodos Mountain Communities, Cyprus (2017-2019). The study was funded by the Republic of Cyprus and was commissioned to the research team at the laboratory of Rural Space, Department of Planning and Regional Development, which I am a member.
- 3. "HNV-Link", High Nature Value Farming: Learning, Innovation and Knowledge (2016-2019). EC-Horizon 2020 research and innovations program (www.hnvlink.eu).
- 4. "LACTIMED", Promoting Mediterranean Dairy Products (2012-2015). Partners from 6 countries: France, Egypt, Greece, Italy, Lebanon, Tynisia. Financed by European Union.
- 5. "ENERSCAPES", TERRITORY, LANDSCAPE AND RENEWABLE ENERGIES (2011-2013). Financed by Region of Thessaly participated in the European project MED.
- 6. "NOVAGRIMED", Agricultural Innovations in the Mediterranean (2011-2012). Partners: PACA (France), Murcia (Espagne), Pouilles et Sardaigne (Italie), Thessalie (Grèce). European programme MED. Total Budget: 1,856,719.47 €.
- 7. "Proba-V Preparatory programme, Effectiveness for Land Use Change Detection Based on Proba V simulated Data (ProbaSim-LUC)", (2011-2012). Contract NR CB/XX/17'. Principal Investigator. Financed by Belgian State, Ministry for Science Policy.
- 8. "Georadar surveying of Archaeological site of Azoros in Thessaly region, Greece" (2012). A total of 10000 m² has been mapped using Ground Penetrating Radar (GPR). The project was financed by Municipality of Elassona, Greece.
- 9. "Operational Programme for the Development Area Othris", (2010-2011). Scientific and Technical Support. Financed by Development Company Limited OTHRYS SA, Greece.

- 10. "Operational Plan of Nessonas Municipality", (2008-2009). Financed by the Municipality of Farkadona, Greece.
- 11. "Creation of innovative proof-based experiences for the documentation of the possibility that the tobacco producers have to turn towards the cultivation of energy plants", (2008). Participation in the research project financed by OPEKEPE (Ministry of Agriculture), scientific responsible is Stelios Rozakis. Within the framework of the project "Detection of tobacco producing regions using remote sensing and geographical information systems".
- 12. "Strategic plan for the restructuring and development of agricultural crops in the Prefecture of Pieria", (2006-2007). Funding by Prefecture of Pieria, Greece.
- 13. "Mapping and Delimitation of aesthetic olive grove of high and medium productivity zones of South Corfu", (2006). Implementation of the project "Spatial planning and delimitation of the olive groves of the Prefecture of Corfu". Funded by the prefecture of Corfu, Greece.
- 14. "FORMDER", N-terminal circuit formation and multidisciplinary to rural development, (2004-2008). European Program TEMPUS. Participating Countries: France, Morocco, Egypt and Greece.
- 15. "Study of restructuring of the agro-environmental measures in cotton growing areas in the region of Thessaly ", (2003-2004). Financing by the Region of Thessaly.
- 16. "ACISA", Alternative crops integration in a Spatial Analysis" (2002-2003). programme ALTENER-SAVE. Funding by European Commission, Directorate General XVII. Participation as GIS and Remote sensing coordinator for the survey via multi-temporal analysis on satellite images.
- 17. "The problem of property segmentation. Terrain politics and regional planning interventions in the productivity structures of Mediterranean countries" (2000-2001). Responsible for the survey via multi-temporal analysis on satellite images, on «Consequences of GAT at the inner space of irrigate and non-irrigated productivity zones: The case of Karditsa and Farsala region». Project with the collaboration of IAMM/ laboratory of rural space, of the Department of Planning and Regional Development, University of Thessaly.
- 18. Research project LIFE-NATURE of the E.C. intitled "Implementations of management actions for Tavropos lake area in Greece", (1999-2003). Scientific Responsible of the part intitled "Monitoring the Riparian Ecosystems".
- 19. «Administration of Human and Natural Environment in South -East mountainous area of Region of Kortsa-Albania», (1999-2001). Participation to the research program DAC in collaboration with (a) Organisation for Economic Co-operation and Development (OECD) and (b) Ministry of Environment Physical Planning and Public Works, Greece.
- 20. "Project of United Nations for the development of rural space", (1999-2000). Responsible for surveying the mountainous areas (Bekaa valley) of Libanon.
- 21. "Strategic action program for sustainable development of mountainous areas" (1999-2000). Participation to the program funding by the Ministry of Environment Physical Planning and Public Works, Greece.

- 22. "Territorial partition of Greek agriculture based on economic efficiency and redefinition of problematic agricultural areas with emplasis on mountainous, frontarial and insular areas", (1999-2000). Program funding by Ministry of Agriculture, Greece.
- 23. "Aerial observation for the protection of physical environment at the Prefecture of Hlia", (1998-1999). Participation to the research program funding by Local Prefecture authorities of Hlia, Greece.
- 24. "Differentiation and reorganization of productive activities which are related with animal husbandry in mountainous areas" (1997-2000). European Union's research program FAIR III.
- 25. "Studies of population and biotopes of hare in Thessaly", (1997-1998). Funding by the Ministry of Agriculture, General Secretariat for Forest (code 2175), Greece.
- 26. Participation to the program «Record of monumental heritage and creation of monuments of Kefalonia and Ithaca» (1997-1998). The program was supported by Institute of Kefalonia & Ithaca and funding by the Ministry of Environment Physical Planning and Public Works, Greece.

6. PAPERS IN REFEREED JOURNALS

- 1. Panagiotis T. Nastos, Nicolas R. Dalezios, Ioannis N. Faraslis, Kostas Mitrakopoulos, Anna Blanta and Ana M. Tarquis, (2019). "Risk Management Framework of Environmental Hazards and Extremes in Mediterranean Ecosystems". NHESS. (under submission).
- 2. Dalezios, N.R., Saeid Eslamian, Nicholas Dercas, Ioannis N. Faraslis, Stavros Sakellariou, Katerina Trepekli and Olga Christopoulou, (2019). "Environmental Extremes affecting several sectors under climate uncertainty". Journal of Flood Engineering, (accepted, in press).
- 3. Spyropoulos, N.V., Nicolas R. Dalezios, Yannis Kaltsis and Ioannis N. Faraslis, (2019). "Very high-resolution satellite-based monitoring of crop (olive trees) evapotranspiration in precision agriculture". International Journal of Sustainable Agricultural Management and Informatics (accepted, in press). https://www.inderscience.com/info/ingeneral/forthcoming.php?jcode=ijsami
- 4. Redouane Boudjemaa, Nicolas R. Dalezios and Ioannis N. Faraslis, (2019). "GIS-based Multi-Criteria Objective Analysis for Optimal Weather Radar Site Selection". International Journal of Multicriteria Decision Making, Vol. x, No. x, pp.xxx–xxx., accepted in press. https://www.inderscience.com/info/ingeneral/forthcoming.php?jcode=ijmcdm
- 5. Juan José Martín-Sotoca, Antonio Saa-Requejo, Rubén Moratiel, Nicolas Dalezios, Ioannis Faraslis, and Ana María Tarquis, (2019). "Statistical analysis for satellite index-based insurance to define damaged pasture thresholds". Special Issue: Remote sensing, modelling-based hazard and risk assessment, and management of agro-forested ecosystems. Natural Hazards and Earth System sciences, Vol.19, Isuue 8. https://www.nat-hazards-earth-syst-sci.net/19/1685/2019/
- 6. Nicolas Dalezios, Nicholas Dercas, Anna Blanta, Ioannis Faraslis, (2019). "Remote Sensing in Water Balance Modelling for Evapotranspiration at a Rural Watershed

- in Central Greece". International Journal of Sustainable Agricultural Management and Informatics, Vol.4, Nos 3/4.
- 7. Nicolas Dalezios, Anna Blanta, Athanasios Loukas, Marios Spiliotopoulos, Ioannis Faraslis, Nicholas Dercas, (2019). "Satellite methodologies for rationalizing crop water requirements in vulnerable agroecosystems". International Journal of Sustainable Agricultural Management and Informatics, Vol.5, No1.
- 8. Demitris Stathakis, Vassilis Tselios, Ioannis Faraslis, (2019). "Concentration of populations and economic activities, growth and convergence in Europe using satellite-observed lighting". Geocarto International (TGEI), Published Online: 03 May 2019. https://doi.org/10.1080/10106049.2019.1581264.
- 9. Demetris Stathakis, Vassilis Tselios, Ioannis Faraslis, (2015). "Urbanization in European regions based on night lights". Remote Sensing Applications: Society and Environment. Volume 2, December 2015, Pages 26–34. http://www.sciencedirect.com/science/article/pii/S2352938515000208.
- 10. Stathakis D. and Faraslis I., (2014). "Monitoring urban sprawl using simulated Proba-V data". International Journal of Remote Sensing, Special Issue: SPOT-VEGETATION Fifteen years of success: What's next? Volume 35, Issue 7, 2014.
- 11. Christos Domenikiotis, Nicolaos R. Dalezios, Ioannis Faraslis, (2010). "GISbased weather radar siting procedure in mountainous terrain". Physics and Chemistry of the Earth, No 35 pp 35–42, Publishers Elseviers.
- 12. K. Perakis, I. Beriatos, N. Gkitsakis and I. Faraslis, (2005). "Change detection land use analysis using remote sensing techniques in mountains areas. The case study: Kozani region 1945 1995". Publication "Geografies" issue 9, 2005.
- 13. D. Goussios., F. Vallerand & I. Faraslis, (2005). "Méthodes et outils d'interventions participatives sur les pratiques collectives de gestion des pâturages en montagne méditerranéenne; recherches menées à Anavra Grèce". Animal production and natural resources utilization in the Mediterranean mountain areas. EAAP publication No.115,2005 pp 473-79, Publishers Wageningen Academic.

7. BOOKS AUTHORED

- 1. Perakis K., Faraslis I., Moisiadis Ath. (2015). Co-author at the book "Remote Sensing in 13 sections". KALLIPOS: Libraries of Hellenic Universities (also e-book), ISBN 978-960-603-295-0. Pages 231.
- 2. Goussios D., Faraslis G., Vallerand F., (2007). "Utilisation des nouvelles technologies et gestion participative de l'espace rural méditerranéen; Télédérection et SIG au service du diagnostic territorial; Elaboration d' une méthode et d'outils". Publication of educational material (French language). Under the research program FORMder TEMPU, ISBN 2-85352-384-5.

8. CHAPTERS IN BOOKS

- 1. S. Sreenath Kashyap, M.V.V. Prasad Kantipudi, Saeid Eslamian, Nicolas R. Dalezios and Ioannis Faraslis, (2019). Information Technology in Water Harvesting. Book chapter in Handbook of Water Harvesting (accepted, in press).
- 2. Dalezios, N.R. and Ioannis N. Faraslis, 2019. Remote Sensing in Agricultural Production Assessment. Book chapter in Special Issue.
- 3. Dalezios, N., G.P. Petropoulos & I. Faraslis (2019). Concepts and Methodologies of Environmental Hazards Affecting Agriculture and Agroecosystems. Chapter 1, pp: xx-xx, in "Techniques for Disaster Risk Management and Mitigation". Publisher AGU-Wiley. ISBN-10: 111935918X (accepted, in press).
- 4. Safieh Javadinejad, Saeid Eslamian, Kaveh Askari, Nicolas R. Dalezios and Ioannis N. Faraslis, (2019). Water harvesting for wildlife in semi-arid regions and water limited environments. Book chapter, Handbook of Water Harvesting, JFE (accepted, in press).

9. PAPERS IN COLLECTIVE VOLUMES

- 1. Faraslis G. and K. Perakis, (2008). "3D representation application and geoinformation tools for the collection of information in spatial planning, in A. Gospondini (edit.) Dialogoues for spatial planning and development, Kritiki, Athens (EL).
- 2. K. Perakis, I. Faraslis, Volos, (2000). "Applications of Remote Sensing in the analysis and management of the structural and the countryside area", Collective Volume for the 10 years anniversary since the foundation of the Department of Regional and Planning Development. University of Thessaly Press Gutenberg, pp. 427-446.
- 3. K. Perakis, I. Faraslis, (2000). "Remote sensing applications concerning the analysis and management of urban and rural space" in "Seventeen papers for planning, cities and development" University of Thessaly Press, Volos pp. 478 (in Greek).

10. CONFERENCES PROCEEDINGS AND PRESENTATIONS

- 1. Laurent RIEUTORT, Eric LANGLOIS and Giannis FARASLIS (2019). "Vers un regain du vignoble de Thessalie: renouvellement des acteurs et patrimonialisation". Revue en ligne, portée par la Chaire UNESCO "Culture et Traditions du Vin". https://preo.u-bourgogne.fr/territoiresduvin/index.php?id=1771
- 2. Letsios, V., Faraslis, I., Stathakis, D. (2019). "InSAR DSM Using Sentinel 1 and spatial data creation". 22th AGILE Conference 2019, 17-20 June, Limassol, Cyprus.
- 3. Dimitris Goussios, Dimitra Gaki, Prodromos Mardakis, Ioannis Faraslis, Dimitris Michalakis, (2018). "The interdependence of high nature value production systems and territorial development within LNG regions. The example of Pindos ", at the 5th Panhellenic Conference of "Urban Planning, Regional Planning and Regional Development", September 27-30, Volos Greece.

- 4. Letsios, V., Faraslis, I., Stathakis D., (2018). "Mapping city of Athens urban footprint using Sentinel-1 radar data". 38th Annual EARSel Symposium, 9-12 July, Chania, Crete, Greece.
- 5. Letsios, V., Faraslis, I., Stathakis D., (2018). "Athen's DSM using Sentinel-1 data and SNAP (ESA) software", in International Conference Geomapplica, 25-29 June, Syros Mykonos, Greece.
- 6. Leonidas Toulios, Ioannis Farasis, (2018). "GIS Applications and Remote Sensing in Agriculture", at the Special Thematic Symposium "Vulnerable Agriculture of Thessaly: Present-Prospects", on 2 March 2018, Larissa Greece.
- 7. Ioannis Farasis, Velessiotis Vasilis, (2017). "Mapping Applications in Thessaly using UAV" of the 1st Geomapplica Conference held in the framework of the Geomapplica II International Conference, on 31/3/2017 in Thessaloniki Greece. http://geomapplica.prd.uth.gr/workshops/program
- 8. Ioannis Faraslis, Dimitris Goussios, (2016). "Virtual reconstitution of an early nineteenth-century rice paddle in the area of Yperia Farsala and Lefkis, Karditsa, combining methods and tools of spatial analysis and representations", in 4th Ethnological Congress of Indigenous Thessalians-Karagounides, 8-10 September 2016, in Nikaia Larissa Greece.
- 9. Pr. Mardakis, Dimitris Gousios, Ioannis Faraslis, (2016). "The Farsala-Almyros route of 1809: Mapping the landscape through Leake's descriptions," in E' conference of Almiros Studies, 14 October 2016, in Almyros-Greece.
- 10. D. Gaki, I. Faraslis and I. Hadjigeorgiou, (2016). "Pastures valorisation: "Tools and effects" in 15th International Meeting og the FAO-CIHEAM Subnetwork on Mediterranean Pastures and Fodder Crops titled "Ecosystem services and socio-economic benefits of Mediterranean grasslands" (proceedings of OPTIONS MEDITERRANEENNES Series A: Mediterranean Seminars 2016-Number 114).
- 11. I. Faraslis, V. Spanos, D. Goussios, (2015). "Digital representation of Cultural and Natural Heritage Monuments using UAV: A Case Study" in 1st National Congress of Heritage Digitization, Euromed, 24-26 September, Volos, Greece.
- 12. I. Faraslis, (2013). "ENERSCAPES Outcomes & Capitalization Opportunities" in International Conference, "ENERSCAPES International Final Conference", Malta.
- 13. D. Stathakis. K. Perakis, I. Faraslis, (2012). 'Extracting Urban Areas on Simulated Proba-V Data Using ANFIS' in 32nd EARSeL Symposium 2012, Mykonos, Greece.
- 14. S. Papakonstantinou, I. Faraslis, D. stathakis, (2010). "Change Detection analysis of suburban land uses of Larissa" in 10 International Symposium of Kefalinia, "Cities and regions in Greece and the Mediterranean in the 21st century problems, attendance prospects", 2-4 July Argostoli Kefalonia.
- 15. D. Stathakis, K. Perakis, P. Baltas, I. Faraslis, (2010). 'Extensive interpolation based on land use' in 6 National Geographic Conference of Hellenic Society for GIS -HellasGIs, 2-3 December, Athens.

- 16. D. Gousios. P. Mardakis, I. Faraslis, (2010), "The spatio-territorial dimension in rural development planning: the case sudy of the Troodos area in Cyprus", 10 International Symposium of Kefallinia, Greece.
- 17. A. Katsara, I. Faraslis, A. Gospodini, K. Perakis, (2009). "Change Detection Analysis in urban sprawl of Athens using remote sensing data", in 2 International Conference on Urban Planning and Regional Development, 24-29 September, Volos.
- 18. A. Moysiadis, I. Faraslis and K. Perakis, (2009). "Multicriteria analysis by means of GIS for airport site selection; the case study of Trikala, Greece", in 20 International Conference on Environmental Management, Engineering, Planning and Economics (CEPEME) and SECOTOX Conference, 21-26 June Mykonos.
- 19. K. Perakis, I. Faraslis St. Rozakis, Dem. Stathakis, (2009). "Probability satellite imagery based maps for substituting tobacco", in 29th EARSeL Symposium, Imagine Europe, 15-18 June, MAICh conference Center, Chania, Crete Greeece.
- 20. I. Faraslis and Perakis K., (2008). "Gestion participative de l'espace rural Grècque à l'aide du modèle tridimentionnelle du terrain", in International Conference «La Teledetection au service du development», Centre Nationale de Teledetection, Tunis, invited lecture, 10-11 July 2008.
- 21. D. Goussios, I. Faraslis, & F Vallerand, (2007). "Utilisation des nouvelles technologies et gestion participative de l'espacerural méditerranéen: Télédétection et SIG au service du diagnostic territorial / Elaboration d'une méthode et d'outils", TEMPUS, FORMDER, IAM Montpellier France.
- 22. K. Perakis, I. Faraslis and D. Goussios, (2003). "Neural Networks classification in Remote Sensing: Case study in rural areas of Farsala region", in International Symposium on GIS and Remote Sensing: Environmental Applications Volos.
- 23. Goussios D., Koutsouris A., Faraslis J., (2000). "Sustainable Natural Resources use: A Participatory Tool", in: Development and Ruralities in the European Space, (Proceedings of the 8th APDR Conference, Vol. 2), Coleccao APDR, Coibra (Portugal): 303 317.
- 24. I. Faraslis, (1993). "Presentation and investigation of the American National forecast's system concerning the risk forest fire in Greek conditions", in the third congress of Environmental Science and Technology, Lesvos Greece.

11. REVIEWER IN SCIENTIFIC JOURNALS

2014-2019 Reviewer of publications in the following scientific journals:

- ✓ International Journal of Remote Sensing
- ✓ Modeling Earth Systems and Environment
- ✓ Journal of Applied Remote Sensing (JARS)
- ✓ Applied Geography
- ✓ Journal of Imaging
- ✓ Journal of Basic & Applied Sciences
- ✓ Environmental Modelling and Software

12. KNOWLEDGE OF SOFTWARES

- $\checkmark \;\;$ Geographical Information Systems (GIS): ArcGis , QGIS.
- ✓ Remote Sensing Photogrammetry: Erdas Imagine, SNAP, GRASS-GIS, GEOMATICA 2018, Agisoft (Drone mapping).