Valentina Olmo, PhD

Born on 02 October 1994 in Alzano Lombardo (BG), Italy
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Trieste (IT)
Nationality: Italian

WORK EXPERIENCE

04/05/2026 – PRESENT
Technical Specialist at the Phytosanitary and Chemical Service, Research, Experimentation and Technical Assistance of Trieste, Regional Agency for Rural Development (ERSA), Autonomous Region of Friuli Venezia Giulia.

EDUCATION

01/11/2020 – 01/03/2024
PhD IN ENVIRONMENTAL LIFE SCIENCES at the University of Trieste - Udine
Scientific-disciplinary sector: Environmental and Applied Botany BIOS-01/C.
Date of completion: 01/03/2024, Academic year: 2022/2023.

05/12/2020 – 21/01/2022
TRAINING COURSE FOR 24 CFU FOR TEACHING at the University of Trieste
Date of completion: 21/01/2022.

10/2017 – 04/2020
MASTER'S DEGREE IN GLOBAL CHANGE ECOLOGY LM-06 at the University of Trieste
Date of completion: 03/04/2020, Degree grade: 110/110 cum laude.

10/2013 – 02/2017
BACHELOR'S DEGREE IN BIOLOGICAL SCIENCES L-13 at the University of Milan
Date of completion: 22/02/2017

01/2016 - 06/2016
ERASMUS PROGRAM at Universitetet i Oslo, Norway.

09/2008 - 07/2013
HIGH SCHOOL DIPLOMA IN TRADITIONAL SCIENTIFIC STUDIES at Liceo Scientifico Andrea Fantoni in Clusone.
Date of completion: 05/07/2013.

RESEARCH EXPERIENCE

01/11/2023 – 03/05/2026
RESEARCH FELLOW IN ENVIRONMENT AND LIFE at the University of Trieste
Research grant for the scientific-disciplinary sector BIOS-01/C Environmental and Applied Botany (Area 05 - Biological Sciences).
The research activity focuses on defining and optimizing the spatial configuration of the ecological network of the city of Trieste and evaluating the ecosystem services associated with it. The assessment involved developing an updated map of the municipality's green infrastructure through the use and processing of remote sensing data.

01/11/2020 – 01/03/2024
DOCTORAL RESEARCH IN ENVIRONMENT AND LIFE at the University of Trieste – Udine
Thesis Title: *“Ecosystem services modelling and mapping for sustainable land management and planning”*
Supervisor: Giovanni Bacaro, Co-supervisors: Maurizia Sigura, Erika Kosuta.
Scientific-disciplinary sector: BIOS-01/C. Academic Year 2022/2023.
The doctoral project evaluated tools and parameters for mapping ecosystem services (ES) at the territorial

scale for the Friuli Venezia Giulia region. The aim was to develop innovative, reproducible, and standardized approaches to quantify and map ES to support sustainable management and planning strategies.

04/2019 – 04/2020
MASTER'S DEGREE INTERNSHIP at the University of Trieste
Thesis Title: *"Use of Sentinel satellite data for windthrows monitoring and delimiting: the case of the 'Vaia' storm in Friuli Venezia Giulia (Northeastern Italy)"*
Supervisor: Alfredo Altobelli.
The internship focused on developing an experimental thesis on remote sensing in forestry. The study aimed at monitoring and delimiting the damage caused by the Vaia storm, which hit Friuli Venezia Giulia in October 2018, using radar and multispectral satellite images from the Sentinel-1 and Sentinel-2 constellations.

09/2015 – 12/2015
BACHELOR'S DEGREE INTERNSHIP at the University of Milan
Thesis Title: "Methodologies in plant genetics and biotechnology and immunology".
Supervisor: Paolo Pesaresi.

QUALIFICATIONS AND PROFESSIONAL CERTIFICATIONS

01/12/2025
SUBJECT-MATTER EXPERT FOR THE FIVE-YEAR PERIOD 2025–2030 at the University of Trieste
for the courses: "Remote Sensing of Environmental Changes" and "Geographic Information Systems"
Academic discipline: Environmental and Applied Botany, BIOS-01/C.
Date of completion: 01/12/2025.

04/08/2020
PROFESSIONAL BIOLOGIST LICENSE - SECTION A at the University of Trieste
Date of completion: 04/08/2020.

RESEARCH ACTIVITIES

Research in environmental remote sensing, ecophysiology, and applied botany

- Remote monitoring of ecosystems and mapping of extreme events (wildfires, storm-related windthrows, heatwaves) using multispectral, thermal, and radar data;
- Identification, monitoring, and analysis of vegetation through field surveys;
- Analysis, monitoring, and quantification of taxonomic diversity (alpha, beta, and gamma components) of plant communities using processed remote sensing imagery;
- Analysis and quantification of functional traits and vegetation health status through vegetation indices derived from multispectral and hyperspectral remote sensing data;
- Analysis and quantification of community functional diversity, with a particular focus on hydraulic traits;
- Acquisition and analysis of drone-based hyperspectral imagery;
- Analysis and quantification of vegetation structural characteristics using LiDAR data;
- Analysis of the relationship among taxonomic, functional, and spectral diversity in plant communities using satellite-based multispectral and drone-based hyperspectral imagery;
- Analysis of spatial patterns through the use of landscape metrics.

Mapping and quantification of Ecosystem Services

- Identification and mapping of green infrastructure;
- Quantification of the benefits provided by green spaces and urban trees (temperature regulation, carbon sequestration, runoff regulation, etc.);
- Identification and assessment of Ecosystem Services to support spatial planning and decision-making processes through Living Labs;
- Quantification of Ecosystem Services (carbon storage, recreation, erosion control, etc.) through biophysical, monetary, and socio-cultural approaches;
- Quantification and mapping of Ecosystem Services at the regional scale using flexible and transferable integrated modelling tools (InVEST, ARIES, ESTIMAP);
- Quantification and mapping of Ecosystem Services at the local scale using integrated modelling tools and platforms (i-Tree Tools, ENVI-met);
- Analysis of trade-offs and hotspots of Ecosystem Services using GIS software and R environment.

Development of ecological networks and connectivity analysis

- Identification of key habitats and species to assess ecological connectivity in compliance with current regulations;
- Design of ecological networks using tools and software to model species movements;
- Identification of ecological corridors, core habitats, and stepping stones to enhance ecological connectivity;
- Calculation and analysis of ecological connectivity metrics.

TEACHING EXPERIENCE

AY 2025/2026
LECTURING at the University of Trieste
Planned 4 hours of teaching as part of the proposal *"Discussion game for sustainability: Change the game"*, within the orientation program *"Oriented to change the world, for a sustainable future"*- project *"Active orientation in the transition from school to university"* – National Recovery and Resilience Plan – CUP J11I24000280006 – 2025/2026.

AY 2025/2026
SUPPORT OF TEACHING ACTIVITIES at the University of Trieste
Performed 30 hours of instrumental and support activities for the course *"Remote Sensing of Environmental Changes"* (BIOS-01/C) in the degree program *"Ecology and Sustainability of Global Changes"* at the University of Trieste.

AY 2024/2025
LECTURING at the University of Trieste
Delivered 10 hours of teaching as part of the proposal *"Discussion game for sustainability: Change the game"*, within the orientation program *"Oriented to change the world, for a sustainable future"*- project *"Active orientation in the transition from school to university"* – National Recovery and Resilience Plan – CUP J11I24000280006 – 2024/2025.

AY 2023/2024
LECTURING at the University of Trieste
Delivered 8 hours of teaching with the proposal *"Discussion game for sustainability: Change the game"*, as part of the orientation program *"Oriented to change the world, for a sustainable future"* - project *"Active orientation in the transition from school to university"* – National Recovery and Resilience Plan – CUP J91I23000120006 – 2023/2024.

AY 2023/2024
SUPPORT OF TEACHING ACTIVITIES at the University of Trieste
Performed 24 hours of instrumental and support activities for the course *"Remote Sensing of Environmental Changes"* (BIOS-01/C) in the degree program *"Ecology and Sustainability of Global Changes"* at the University of Trieste.

AY 2022/2023
TUTOR at the University of Trieste
Performed 50 hours of tutoring and support activities for the course *"Remote Sensing of Environmental Changes"* (BIOS-05/A) in the degree program *"Ecology of Global Changes"* at the University of Trieste.

AY 2021/2022
SUPPORT OF TEACHING ACTIVITIES at the University of Udine
Performed 15 hours of instrumental and support activities for the course *"Geomatics"* within the degree programs *"Environmental and Nature Sciences"* and *"Agricultural Sciences"* at the University of Udine.

THESIS CO-SUPERVISION

Master's Thesis

10/2025 – 07/2026 – Co-supervisor of Master's thesis (Ecologia e Sostenibilità dei Cambiamenti Globali LM-06). Student: Colussi Anna. Titolo: *Assessment of land-cover and connectivity changes in a remote region of Lesotho.*

02/2025 – 10/2025 – Co-supervisor of Master's thesis (Ecologia e Sostenibilità dei Cambiamenti Globali LM-06). Student: Gaia Foltran. Title: *Two Decades of Change in Land Cover and Landscape Pattern (2004-2024) Across Protected Areas in the Mozambique - Zimbabwe Transboundary Region.*

03/2024 – 03/2025 – Co-supervisor of Master's thesis (Ecologia e Sostenibilità dei Cambiamenti Globali LM-06). Student: Andrea Monachino. Title: *Assessment of the relationship between functional and spectral plant composition using drone-based hyperspectral imagery in a controlled experiment.*

02/2023 – 10/2023 – Co-supervisor of Master's thesis (Ecologia dei Cambiamenti Globali LM-06). Student: Valerio Tosti. Title: *Influence of sacred areas on landscape fragmentation and heterogeneity: remote analysis of temples on Shikoku Island, Japan.*

Bachelor's Thesis

06/2023 – 03/2025 – Co-supervisor of Bachelor's thesis (Scienze e Tecnologie per l'Ambiente e la Natura L-32). Student: Dario Milos. Title: *Remote estimation of structural characteristics of trees in the urban park "Giardino pubblico Muzio de Tommasini" in the city of Trieste: a methodological proposal for urban forestry.*

05/2023 – 10/2023 – Co-supervisor of Bachelor's thesis (Scienze e Tecnologie per l'Ambiente e la Natura L-32). Student: Giorgia Bernard. Title: *Identification of green areas within the local ecological network of the city of Trieste through remote sensing techniques.*

02/2023 – 07/2023 – Co-supervisor of Bachelor's thesis (Scienze e Tecnologie per l'Ambiente e la Natura L-32). Student: Federica Montenero. Title: *Remote sensing as a tool for monitoring functional diversity: the case of psammophilous vegetation on Brussa beach (Caorle, VE).*

PUBLICATIONS

Bacaro, G., Fonda, F., Castello, M., Ojija, F., Olmo, V., Foltran, G., Maccherini, S., Pafumi, E., Colombetta, G., Brandmayr, P. (2026) Taxonomic and functional variation of carabid beetles (Coleoptera: Carabidae) diversity in pioneer black pine and secondary broad-leaved Karst forests. Forest Ecology and Management, 615,123835. https://doi.org/10.1016/j.foreco.2026.123835

Scridel, D., Stanič, D., Pacorini, L., Kravos, K., Utmar, P., Olmo, V., Fonda, F., Mlakar Medved, M., Koce, U., Tout, P., Cernich, S., Cunder, M., Mortelliti, A., Petruzzellis, F., Kmecl, P., Bacaro, G. (2025) Integrating remote sensing and species' traits to assess bird responses to wildfire in agropastoral landscapes. Biological Conservation, 308, 111260. https://doi.org/10.1016/j.biocon.2025.111260

Motta, G.*, Olmo, V.*, Xamin, L., Terlizzi, A., Petruzzellis, F., Bacaro, G., Iudicone, D., Bevilacqua, S. (2025) Idiosyncratic patterns of chlorophyll-*a* anomalies in response to marine heatwaves in the Adriatic Sea (Mediterranean Sea) over the last two decades. Marine Environmental Research, 208, 107144. https://doi.org/10.1016/j.marenvres.2025.107144

Olmo, V., Petruzzellis, F., Alberti, G., Sigura, M., Balbi, S., & Bacaro, G. (2025). Assessing ecosystem services in protected areas: trade-offs and hotspots in Friuli Venezia Giulia region (northeastern Italy). Biodiversity, 1–14. https://doi.org/10.1080/14888386.2025.2460759

Olmo, V., Bacaro, G., Sigura, M., Alberti, G., Castello, M., Rocchini, D., Petruzzellis, F. (2024) Mind the gaps: horizontal canopy structure affects the relationship between taxonomic and spectral diversity. International Journal of Remote Sensing, 45(9), 2833–2864 - doi:10.1080/01431161.2024.2334776

Olmo, V., Sigura, M., Alberti, G. (2022). Forest plantations with public subsidies: to harvest or not to harvest, this is the question. iForest 15: 229-233. - https://doi.org/10.3832/ifor3943-015

Olmo, V., Tordoni, E., Petruzzellis, F., Bacaro, G., Altobelli, A. (2021). Use of Sentinel-2 Satellite Data for Windthrows Monitoring and Delimiting: The Case of "Vaia" Storm in Friuli Venezia Giulia Region (North-Eastern Italy). Remote Sensing 13(8):1530. - https://doi.org/10.3390/rs13081530

* Joint first author

CONFERENCE CONTRIBUTIONS

09-12/06/2025 – **Poster** at SIBM (Napoli, Italy). Symposium theme: *Biodiversity and impacts on species in the Mediterranean Sea*. Title: *Idiosyncratic patterns of chlorophyll-a anomalies in response to marine heatwaves in the Adriatic Sea (Mediterranean Sea) over the last two decades.* Authors: Motta, G.*, Olmo, V., Xamin, L., Petruzzellis, F., Bacaro, G., Iudicone, D., Bevilacqua, S.

19/06/2024 – **Oral presentation** (online) at ECCB 2024 (Bologna, Italy). Symposium theme: *People and nature for a transformative change*. Title: *Flourishing diversity along sacred paths: unveiling habitat conservation through remote sensing analysis in the Henro Pilgrimage, Shikoku, Japan*. Authors: Giovanni Bacaro, Francesco Petruzzellis, Valerio Tosti, Miris Castello, Federica Fonda, Davide Scridel, Elisa Thouverai*, Valentina Olmo

20/09/2023 – **Oral presentation** at the *4th International Conference on Community Ecology 2023* (Trieste, Italy). Symposium theme: *Patterns of species richness and diversity in terrestrial and freshwater systems*. Title: *Disentangling vegetation cover and structure influence on spectral diversity: insights from a study in North-Eastern Italian forests*. Authors: Valentina Olmo*, Giovanni Bacaro, Maurizia Sigura, Giorgio Alberti, Miris Castello, Duccio Rocchini, Francesco Petruzzellis

20/04/2023 – **Oral presentation** at *Challenging Conservation: Adapting to Change – First Conference of Conservation Biology for ECR*, Italian Chapter of the Society for Conservation Biology (Rome, Italy). Symposium theme: *Conservation biology between science and practice*. Title: *Do Natura 2000 protected areas support ecosystem services and biodiversity? An example from Friuli-Venezia Giulia Region (NE-Italy)*. Authors: Valentina Olmo*, Francesco Petruzzellis, Maurizia Sigura, Giorgio Alberti, Erika Kosuta, Giovanni Bacaro

14/07/2022 – **Oral presentation** (online) at *IALE 2022 – European Landscape Ecology Congress* (Warsaw, Poland). Symposium theme: *Planning and policy approaches for future landscapes: learning from past experiences to develop novel pathways*. Title: *Multiple ecosystem services modelling and mapping for Friuli Venezia Giulia Region (NE Italy) planning: Carbon storage and Recreation Ecosystem Services*. Authors: Valentina Olmo*, Giovanni Bacaro, Erika Kosuta, Maurizia Sigura

* Presenter

OTHER PROJECTS AND CONTRIBUTIONS

09/2025 – **Contribution** in "*Segnali dal clima FVG*" divulgative publication on climate change in Friuli-Venezia Giulia region. Authors: Bacaro G., Olmo V., Castello M., Bagnolini F., Prodan R., Trani A., Della Betta E. Presentation of the contribution on 17 October 2025 at the meeting, valid for professional development, "*Climate change: urban areas*" in Trieste (Italy).

01/02/2024 – 03/05/2026 - **Scientific Support** to the Interreg Project WASTEREDUCE - Integrated waste reduction strategies and solutions in projected and Natura 2000 areas. Trieste (Italy).

04/2025 **– Technical evaluation** of forest ecosystems (mapping and spatial analysis) within the feasibility study of biodiversity offsetting actions related to the DudhKoshi Storage Hydroelectric Project, Nepal. Trieste (Italy).

01/09/2025 – **Scientific Support** for mapping and spatial analysis of ecosystems within the feasibility study of biodiversity offsetting actions related to the Oxbow Hydropower Project in Lesotho. Trieste (Italy).

13/11/2024 – **Technical evaluation** of Ecosystem Services in the Municipality of Trieste related to the Ecological Network and Urban Forest. Trieste (Italy).

03/05/2024 – **Technical evaluation**: The Local Ecological Network of the Municipality of Trieste. Trieste (Italy).

11/2023 – **Technical evaluation:** Modelling and mapping of ecosystem services for sustainable land planning and management. Friuli Venezia Giulia Region. Part of PhD research. Trieste (Italy).

02/2023 – **Technical evaluation** of Ecosystem Services provided by the holm oaks of Villa Bottini, Lucca. Authors: Olmo V., Bacaro G., Chines A. Presentation of the contribution on 14 March 2024 at the conference, valid for professional development, "*Conference on new horizons for urban public spaces*" in Lucca (Italy).

27/01/2023 – **Workshop** on quantifying Ecosystem Services within the environmental impact assessment of the DudhKoshi Storage Hydroelectric Project, Nepal. Organized by ELC Electroconsult Spa in association with NEWJEC Inc., Milan (Italy).

03/2021 – 05/2022 – **Project**: "*Ecosystem Services in the Land Use Plan of Friuli Venezia Giulia*" for the FVG Region, Department of Territory and Infrastructure Planning, in collaboration with PhD students from UNIUD (Architecture) and IUAV (Urban Planning). Trieste (Italy).

PROFESSIONAL SKILLS

- **Geospatial analysis & GIS:** spatial data processing, analysis and mapping of vector and raster datasets, landscape modelling and georeferenced field data collection.
- **Remote sensing:** analysis of satellite, LiDAR and UAV imagery using GIS, R, Google Earth Engine and machine-learning approaches.
- **Statistical analysis:** environmental data analysis in R, including linear models, multivariate analyses and biodiversity metrics.
- **Plant functional ecology:** measurement and analysis of functional plant traits.
- **Fieldwork:** vegetation surveys, biodiversity sampling, georeferencing, dendrometric measurements and fieldwork planning.
- **UAV-based remote sensing:** drone piloting and flight planning, thermal, multispectral and hyperspectral data acquisition, processing and analysis.

DIGITAL AND TECHNICAL SKILLS

- R
- Phyton (basic)
- GIS applications: QGIS, ArcGIS, GRASS GIS, SNAP
- Google Earth Engine
- Agisoft Metashape
- Autodesk AutoCAD 2D e 3D (basic)
- ARIES – Artificial Intelligence for Environment & Sustainability
- InVEST
- i-Tree Tools
- ENVI-met
- Cubert CUVIS
- DJI Pilot
- CloudCompare
- MATLAB
- Graphab
- ImageJ
- Phenovein

LANGUAGE SKILLS

Native language: **ITALIAN**
Other languages: **ENGLISH** – (C1 level: Listening, Reading, Speaking; Certified in 2011: B2 level)

TRAINING AND COURSES

02/06/2025 - 04/06/2025 - First T4EU **Trasformation Lab Fair and Stakeholder Challenge** at Sofia University - St. Kliment Ohridski, Sofia (Bulgaria). Title: "Climate change and european cities: adaptation to urban heat island effect and nature-based solutions"
27/08/2025 – 29/08/2025 – **Phyton Data Fundamentals,** DataCamp (Online, 12 hours).
15/04/2024 – 19/04/2024 - **Occupancy Modelling Course 2024**, University of Trieste (24 hours).

04/09/2023 – 08/09/2023 - **Google Earth Engine Summer School 2023**, geoLAB – Laboratory of Forest Geomatics, University of Florence (24 hours).
03/07/2023 – 06/07/2023 - **Introduction to Applied Statistics in R 2023,** University of Trieste (24 hours).
18/05/2023 – **Urban Forestry Course** – "Nature in the City: Turning Knowledge into Urban Forestry Practice" (Online, 50 hours).
20/04/2023 – 04/05/2023 - **ARSET – Fundamentals of Machine Learning for Earth Science**, NASA (Online, 4.5 hours).
09/05/2022 – 13/05/2022 - **Workshop**: "Adaptation Processes in Novel Ecosystems during the Anthropocene", Transform4Europe T4EU, University of Silesia, Katowice (Poland).
Freshwater Biomonitoring Summer School, University of Trieste (MSc)

- Wading river biomonitoring – Fluvial Functioning Index; analysis of physico-chemical parameters
- Description of morphological and hydraulic parameters; assessment of anthropogenic impact
- Sampling and analysis of benthic macroinvertebrates, fish, and macrophytes

Plant Identification Summer School, University of Trieste (MSc)

- Observation and identification of alpine flora, lichens, and mosses; use of computer-aided identification tools

ADDITIONAL INFORMATION

Driving licence: Category B
UAS pilot certificate: Categories A1-A2-A3, STS01

CERTIFICATIONS

2026 – UAS Pilot Certificate (CategorySTS01)
2025 – UAS Pilot Certificate (Category A2)
2023 – UAS Pilot Certificate (Categories A1-A3)
2022 – Completion of 24 ECTS credits required for teaching qualification (Italy)
2020 – Professional qualification as Biologist – Section A (National licensing exam)
2011 – First Certificate in English (FCE), University of Cambridge – Level B2

I hereby authorize the processing of my personal data included in this CV in accordance with Article 13 of Italian Legislative Decree No. 196 of 30 June 2003 ("Personal Data Protection Code") and Article 13 of EU Regulation 2016/679 ("General Data Protection Regulation").

Trieste, 28/09/2026
Valentina Olmo

