

# Ivan Palmegiani, MSc

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[LinkedIn Profile](#)

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## Professional Profile

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My expertise results from the fusion of system thinking and technical skills.

I hold professional experience in several thematic areas including water risk management, landscape ecology, as well as soil monitoring. I'm familiar with European Union directives, and well informed about international initiatives and partnerships aiming at the conservation, restoration, and sustainable management of natural resources.

I can identify, collect and analyse quantitative data as well as satellite imagery to address pressing environmental issues involving land ecosystems, and make sense of the numerical results to identify risks and opportunities inherent each case study.

Technical Skills		Organizational Skills	
Python for Geospatial Analysis	Advanced	Self-Motivation	Exceptional
R Spatial, Stats and Charts	Advanced	Physical & Mental Organization	Excellent
QGIS	Advanced	Problem Solving	Excellent
Conda Management	Advanced	Critical Thinking	Excellent
PostgreSQL-PostGIS	Intermediate	Communication	Very good
Google Earth Engine	Intermediate	Prioritization	Very good
Linux Bash & CLI Tools	Intermediate	Planning	Very good
Containerization in Docker	Intermediate	Teamwork	Very good

Advanced: can handle most tasks independently, good knowledge of available tools and tricks. Can troubleshoot most problems with minimal recourse to documentation and online resources. Intermediate: can handle a variety of relatively complicated tasks and situations with recourse to documentation and online resources

## Languages

English - Fluent • Italian - Native • Spanish - Fluent • Portuguese - Fluent • German - Intermediate

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## Professional Experience

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**Data Analytic Consultant at [UNCCD](#)**

Contract, Jan. 2022 - May 2022

Development of an analytical framework for the synthesis of data gathered within the CRIC 21 reporting process

| Prototyping data visualizations for the CRIC synthesis documents | Cooperation with internal and external stakeholders at the development of a relational database for the effective storage and querying of reporting data

Tech stack: Python, Jupyter, PostgreSQL-PostGIS, R Tidyverse, RStudio, Docker, Conda, Git & GitHub

**Geospatial Data Consultant at WWF Water Risk Filter**

Contract, *Feb. 2021 - ongoing*

Reviewed methodologies for corporate water risks assessment and scenarios analysis in close cooperation with the technical project manager | Designed data visualizations and maps of global water risks for efficient data communication in stakeholder engagement | Established automation workflows for data analysis and for data reporting | Developed a R package with over 70 exported functions necessary to generate Risk Assessment and Scenarios Analysis reports

Tech stack: R Spatial, Tidyverse, R-Plotly, OfficeR, RStudio, MS Office, Conda, Git & GitHub

**Geospatial Data Consultant at WWF Sweden**

Contract, *July. 2021 - Feb.2022*

Analysed data to estimate corporate water risks at site level | Generated data visualizations such as charts and maps | Produced reports and slide-shows presentations in accordance with WWF Water Risk Filter reporting process and standards

Tech stack: R Spatial, Tidyverse, R-Plotly, OfficeR, RStudio, MS Office, Conda, Git & GitHub

**Research Fellow at PlanAdapt Climate Co-Adaptation Lab**

Fellowship, *Apr. 2021 - ongoing*

Proposal development with focus on GIS and Earth Observation technologies for the design of Nature-Based Solutions

**Geospatial Data Scientist at SmartCloudFarming GmbH**

Contract, *Mar. 2020 - Feb. 2021*

Coordinated a small team of data professionals in a production context, i.e. research and development. Developed a minimum viable product (MVP) for soil moisture monitoring from Earth Observation data

Performed literature research to identify state-of-the-art methods for the estimation of soil water content and soil organic carbon from satellite imagery | Presented key findings in bibliographical reports | Identified suitable data sources to facilitate programmatic access to satellite imagery, and to ground data | Developed data science pipelines to source and composite satellite imagery to train machine learning (ML) models, and prepared ground data to test and validate predictions | Co-developed and fine-tuned ML models to predict soil moisture content from satellite data. The accuracy of predictions is satisfactory ( $R^2 > 0.95$ ,  $RMSE < 0.05$ ) | Generated interactive data visualizations and 3D maps to report model predictions to executives | Developed dashboards to display ground data and model predictions to investors, and to potential clients

Tech stack: Python Spatial Modules, Jupyter, QGIS, Google Earth Engine (Python API), Scikit Learn, Python-Plotly, Streamlit, Conda, Git & GitHub, Docker, PostgreSQL-PostGIS, Google Cloud Platform, Google App Engine

**Data Scientist at Earth Ratings UG**

Contract, *May 2020 - Jun. 2020*

Explored CDP data and methodologies | Identified additional data sources on Corporate Environmental Footprint (CEF) and Social Responsibility (CSR) | Developed a web scraper program to source publicly available data sets in accordance with the respective terms of use | Transformed unstructured data into tabular formats and integration of open data sets from several sources | Exploratory analyses and visualization of the resulting data sets

Tech stack: all technical work was performed in Python

## **Data Management Consultant at University of Primorska**

Contract, Jan. 2020

Revised data storage procedures at the Conservation and Population Genetic research group | Data wrangling | Migration from data sheets to relational database (ETL) | Automation of data queries | Advising the research team on data management

Tech stack: data wrangling in Python, forms for data entry were generated in Microsoft Access

## **Professional re-qualification**

Oct. 2018 - Nov. 2019

Data Science and Python programming courses | German language course | Conflict management and non-violent-communication (NVC) self-training | Personal development

## **Graduate Research Assistant at Leibniz Institute for Zoo and Wildlife Research**

Full-time, Apr. 2013 - Jun. 2018

Investigated the behavioural ecology of the cheetah in central Namibia, and engaged with local stakeholders and communities for the mitigation of human-wildlife conflict

Desk research activities:

Developed data collection protocols | Managed field operations | Planned and supervised field campaigns for the live-capture of cheetahs | Performed spatial and movement analyses of high-resolution GPS telemetry data | Modeled distribution of the species and use of space in relation to landscape features, land use, land cover, and natural vegetation phenology | Modeled individual movement patterns and interactions between individuals | Managed GPS telemetry data in Movebank | Designed and maintained PostgreSQL-PostGIS database | Formulated evolutionary hypothesis and performed statistical testing | Presented scientific results to local stakeholders through talks and presentations | Organized scientific symposia

Tech stack: QGIS, R Stats, R Spatial, Rstudio, PostgreSQL-PostGIS

Field activities:

Executed live-capture campaigns for biotagging cheetahs | Assisted in the live-capture for biotagging leopards | Collected presence-absence data via camera-trap surveys | Engaged with local communities and stakeholders with the aim of mitigating human-wildlife conflict | Coordinated data collection in the field, supervised technicians and volunteers

## **Graduate Research Assistant at CIBIO - Research Center in Biodiversity and Genetic Resources**

Full-time, Feb. 2012 - Feb. 2013

Investigated the spatial ecology of endangered wildlife species in the Iberian peninsula (Portugal and Spain)

Field activities:

Undertaken live-capture campaigns for biotagging wolves | Collected presence-absence data along line-transects and via camera-trap surveys | Engaged with rural communities in the attempt to mitigate human-wildlife conflict | Joined field expeditions to Southern Portugal and Spain in support of *EU Life* project for the conservation of the Iberian Lynx (Reference: LIFE08 NAT/P/000227, Acronym: Habitat Lince Abutre)

Desk research activities:

Modeled habitat selection and distribution of species in relation to land use and land cover

Tech stack: QGIS, R Stats, R Spatial, Rstudio

## **Graduate Research Assistant at Department of Zoology and Evolutionary Genetics, University of Sassari**

Full-time, Nov. 2010 - Nov. 2011

Investigated spatial distribution, abundance and reproductive success of wolves in Central and Northern Italy

Field activities:

Undertaken live-capture campaigns for biotagging wolves | Estimated pack size and reproductive success via

wolf-howling surveys | Collected presence-absence data along line-transects and via camera-trap surveys | Engaged with local communities in the attempt to mitigate human-wildlife conflict

Desk research activities:

Performed biocustical analysis of wolves vocalizations | Ensured proper storage and management of spatial data via GIS softwares

Tech stack: QGIS, R Stats, R Spatial, Rstudio

## Latest Volunteer Activities

### The United Nations Office for Outer Space Affairs

*Aug. - Sept. 2021*

Generated contents for the Space4Water portal, title of the article: "The water cycle from space: the central role of satellite-informed models in corporate water management". [Link to the article](#)

### OpenStreetMap

*June 2021 - ongoing*

Added, completed and/or updated spatial features such as roads, intersections, forest patches, agricultural lands and respective metadata in Rieti province and immediate surroundings, in Central Italy, plus minor contributions to features over the city of Berlin, in Germany.

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## Education

### Master of Science (MSc), Jul. 2010

*Environmental Sciences and Natural Resources Management*, University of Sassari

Grade: 110/110 *Summa cum Laude*

Systems ecology, landscape ecology, regional geology, pedology, sedimentology, wildlife conservation and management, conservation genetics, environmental modeling, statistical inference, advanced statistical theory, environmental economics

### Bachelor of Science (BSc), Feb. 2008

*Environmental Sciences*, University of Perugia

Grade: 107/110

Principles of biology, geology and ecology. The course of study covered a wide range of subjects to provide students with the solid background required to undertake ecological and environmental studies.

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## Training courses

### Water Risk Assessment Blueprint, Mar. 2022 - May 2022

*by Jennifer Moeller-Gulland*

Understand and assess water risk holistically | Understand the importance of water risk for businesses and investment operations | Scanning countries, project sites and investment portfolios for water risk | Stakeholder engagement | Water risk assessment for improved decision making, investment decisions and project implementation | Induce decision/policy makers into water stewardship action | Finding solutions to water risk | Multi-stakeholder platforms to address water risk

### Artificial Intelligence (AI) for Earth Monitoring, Feb. 2022

*EUMETSAT and European Centre for Medium-Range Weather Forecasts (ECMWF), [Certificate of Completion](#)*

Introduction to European Union's Copernicus Programme | Copernicus Data Collections | Types of AI, Machine Learning, and Deep Learning algorithms | Practical, Real-world Applications of AI for Earth Monitoring of Land, Ocean, Atmosphere, and Climate | Hands-on training using Python in Jupyter Notebooks on the WEKEO platform

**ARSET Advanced Training - Using Earth Observations for Pre- and Post-Fire Monitoring**, Jan. 2022

*Applied Remote Sensing Training Program - NASA, [Certificate of Completion](#)*

Identify land cover and climate variables related to wildfire risk | Access and display geospatial wildfire risk data layers | Create a burn severity map using satellite imagery | Calculate burned area using satellite imagery

**End-to-End Google Earth Engine**, Nov. 2021

*Spatial Thoughts, [Certificate of Completion](#)*

Data Import/Export, Calculating Indices, Extracting Time Series, Supervised Classification, Building UI Apps, Using Python API

**Danube Floodplain Management**, Sept. 2021

*by Technical University of Munich within EU Interreg Project, [Certificate of Completion](#)*

Principles of floodplain management and its relevance to EU legislation | Knowledge on technical aspects such as modelling, ecosystem services valuation, stakeholder engagement | Principles of feasibility studies and cost-benefit analysis |

Presentation of newly developed Web-GIS tools for evaluating floodplains and their restoration potential

**ARSET - Agricultural Crop Classification with Synthetic Aperture Radar and Optical Remote Sensing**, Oct. 2021

*Applied Remote Sensing Training Program - NASA, [Certificate of Completion](#)*

Passive and active remote sensing data and how they relate to agricultural parameters | Characteristics of passive and/or active sensors used in operational crop mapping and biophysical retrievals | Satellite data for conducting agricultural analysis | Pre-processing optical and radar imagery | Crop types classification using supervised and unsupervised techniques | Best practices for collecting field-based training data | Retrieval of crop biophysical variables

**Advanced QGIS**, Sept. 2021

*Spatial Thoughts, [Official QGIS Certification](#)*

Modeling and Automating GIS Workflows | Visualizing Time Series and 3D Data | Advanced Expressions

**ARSET - Species Distribution Modeling with Remote Sensing**, Aug. 2021

*Applied Remote Sensing Training Program - NASA, [Certificate of Completion](#)*

Overview of Species Distribution Models (SDMs) | Data Sources for Species Distribution and Remote Sensing Data for Landscape Characterization | Tools for conducting SDM for a variety of ecosystems such as Wallace R-based platform for modeling of species niches and distributions

**ARSET - Using Google Earth Engine for Land Monitoring Applications**, Jun. 2021

*Applied Remote Sensing Training Program - NASA, [Certificate of Completion](#)*

Navigate the GEE interface to explore remote sensing datasets relevant to land monitoring | Execute JavaScript commands to retrieve satellite data and process imagery for analysis | Complete a supervised land classification along with an accuracy assessment in GEE | Apply algorithms to derive a time series of environmental parameters and calculate differences between years to detect landscape changes | Illustrate the capabilities of cloud-based raster computing for land management applications

**ARSET - Satellite Observations and Tools for Fire Risk, Detection, and Analysis**, May 2021

### *Applied Remote Sensing Training Program - NASA, Certificate of Completion*

Terminology regarding type and components of fire (pre, during, post) | Climatic and biophysical conditions pre-, during-, and post-fire | The satellites and instruments used in conducting fire science | The applications of passive and active remote sensing for fires | How to visualize fire emissions and particulate matter | The use of tools for active fires, emissions, and burned areas | How to acquire data for conducting analysis in a given study area

### **Echoes in Space, July 2020**

#### *EO College, European Space Agency - Friedrich-Schiller-Universität Jena, Certificate of Completion*

History of Radar technology and the discovery of electromagnetic waves | Image acquisition | Geometry of airborne and space borne Radar systems | Land applications of Radar remote sensing | Applications of radar remote sensing over Water | Application of Radar remote sensing for Hazard management

### **Data Science Bootcamp, Aug. 2019 - Nov. 2019**

#### *Business Trends Academy, Certificate of Completion*

Data protection and ethical matters | Linear and nonlinear regression | A/B testing | Hypothesis testing | Data visualization in Tableau | Object oriented programming (OOP) | Python modules and functions | Pandas and NumPy | Multiprocessing and multithreading | RESTful API | Webscraping | Neural Networks and Machine Learning techniques | Keras and TensorFlow

### **Movement Ecology Summer School, Aug. 2015**

#### *Population Ecology Research Group, University of Zurich*

GIS and remote sensing in R | Characterization of movement trajectories | Home range analysis | Habitat selection modelling | Integration of data from alternative sensors and future perspectives

### **Next Generation Data Management in Movement Ecology, Jul. 2015**

#### *IRSAE, International Research School in Applied Ecology - FEM, Edmund Mach Foundation*

Spatial database management in PostgreSQL/PostGIS | Movement data analysis in R

### **Multivariate Data Analysis for Ecology and Evolution in R, Nov. 2012**

#### *CIBIO - Research Center in Biodiversity and Genetic Resources*

Explanatory methods (PCA, PcoA, MDS, clustering) | Inferential methods (Randomization, bootstrap, jackknife, Monte Carlo, GLM, PLS, CanCor, Mantel Test) | Evolutionary and ecological Non-Independence (PGLS, PIC, rates of change, spatial autocorrelation, spatial GLS) | Model selection (i.e. Hypothesis testing vs information criteria) | Analysis of dispersion (i.e. Convex hulls area/volume, nearest neighbor, centroid size, eccentricity)

### **Biostat 2011 – Statistic inference in Biology and Human Sciences, Jun. 2011**

*UniASTISS, Department of Statistics - Purdue University, Department of Economy - UniMORE, Italian Institute for Philosophical Studies, Department of Statistics - Bologna University, Department of Human and Animal Biology - University of Turin, Department of Social Research - University of Eastern Piedmont, Asti Association for Scientific and Technological Development*

Linear and nonlinear regression models | Non-parametric regression model  
| Principal components analysis | Factor analysis | Correspondence analysis | Cluster analysis | R coding

## **Hobbies and interests**

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Cooking • Indoor gardening • Outdoor sports and activities such as climbing, bouldering, hiking, biking, canoeing, camping • Tai Chi • DIY and Handicraft • Music and Arts • Urban agriculture