

# DR. ROSSELLA GUERRIERI

## 1. PERSONAL INFORMATION

**Full name** Guerrieri Maria Rosa (preferred name Rossella)  
**Nationality** Italian  
**Working address** ALMA MATER STUDIORUM - Università di Bologna  
Dipartimento di Scienze e Tecnologie Agro-Alimentari  
Viale Fanin 50, Bologna (Italy)  
**E-mail** [r.guerrieri@unibo.it](mailto:r.guerrieri@unibo.it)  
**Webpage** <http://www.rossellaguerrieri.com/>  
**ORCID ID** <http://orcid.org/0000-0001-5247-0432>

## 2. CAREER PROFILE

I am a plant physiologist and forest ecologist with broad research interests unified by the goal of better understanding how forest functioning varies in relation to major environmental and anthropogenic changes. During my post-doctoral research experiences I have significantly contributed to improving our understanding on forest carbon, nitrogen and water cycling by using **stable isotopes** alone or in combinations with other methodological approaches (e.g., **metabarcoding, leaf gas exchanges, eddy covariance**), as demonstrated by papers I published and international collaborations I built. I have led and co-authored **25 SCI papers** (one of them under second revision in Scientific Report) in high impact multi-disciplinary (Nature Ecology and Evolution, PNAS) or specific in my field journals, accumulating more than 600 citations. My publications represent milestones in my career, which on one hand demonstrate my capacity to work with top scientists experts in my field and to disseminate results in international journals. On the other hand they are the ‘fuel’ for new and exciting ideas and collaborations to develop. My approach to research is enthusiastic, determined and inquisitive, always seeking to gain an in-depth knowledge of topics, to ask new and exciting questions and to find the best and novel approaches to answer them. My well documented international experience, involvement in large projects (e.g., NASA funded project in the US) and leading role in personal competitive grants (i.e., **Newton International fellowship** and **Marie Curie Skłodowska fellowships**) contributed to significantly **strengthening** my **leading thinking, ability to build** a network of **collaborations, coordinate multidisciplinary projects, manage multiple tasks**, taking crucial **decisions** during the project execution and last, but not least, **create the best conditions** to work in **multicultural, respectful and collaborative environment**.

## 3. PROFESSIONAL EXPERIENCES

*Numbers at the end of each project refer to the papers published in (or submitted to) international peer-reviewed journals as listed in the section Publications. Project titles are reported in the original language.*

**University of Bologna** **October 2019-present**  
**Senior assistant professor**

**CREAF (Spain)** **June 2016-August 2019**  
**Marie Skłodowska-Curie Fellow**, working at the project 1) and contributing to 2) and 3):

1) *A novel approach to determine canopy nitrification in the phyllosphere of European forests: combining multiple isotope tracers and proteogenomic techniques (NITRIPHYLL)*. Mentors: M Mencuccini and J Peñuelas; collaborators: A Avila and S Mattana (CREAF), J Cáliz and E Casamayor (Centre of Advanced Studies of Blanes, CEAB-CSIC, Spain), S Hellsten (IVL Swedish Environmental Research Institute, Sweden), E Vanguelova (Forest Research, Farnham, UK), A Verstraeten (Research Institute for Nature and Forest, Belgium), M Nicolas (Office National des Forêts, France), D Elustondo and JM Santamaria Ulecia (Universidad de Navarra, Spain) P Waldner (WSL, CH), Giorgio Matteucci (ISAFOM, CNR, Italy), F Magnani and G Marcolini (University of Bologna, Italy), P Merilä (Natural Resources Institute, Finland) K Watanabe (National Institute for Environmental Studies, Japan) and G Michalski (Purdue University, USA). NITRIPHYLL investigated temporal and spatial changes in nitrification occurring

in tree canopies of Scots pine, beech and holm-oak forests by combining stable isotopes and genetic analyses (qPCR and metabarcoding). We selected 15 sites within the ICP forests network, along a climate and nitrogen deposition gradient, and a nitrogen manipulation experiment in Italy. [1,27 and two papers in preparation]

2) *Water use and drought resistance strategies at different scales: from homeostatic mechanisms to regional vegetation dynamics*. PIs: J Martínez-Vilalta, M Mencuccini. My task has been to gather hydraulic traits for the 6 species most dominant in Catalunya to estimate changes in water-use efficiency (WUE) along a moisture gradient, by using the Sperry model (2017). Output from the model will be compared with WUE I calculated from stable carbon isotope composition ( $\delta^{13}\text{C}$ ) measured in foliar samples. [Paper in preparation].

3) *Potencial del establecimiento espontaneo de bosques en Europa para el aumento de servicios ecosistémicos: Importancia de los mecanismos ecológicos y del contexto paisajístico*. PIs: J- M Espelta, J Pino Vilalta. I am investigating the differences (in term of WUE and nitrogen availability) between established beech forests and new growth forests on former pasture areas. I have been combining  $\delta^{13}\text{C}$  in foliar samples, stable nitrogen isotope composition ( $\delta^{15}\text{N}$ ) in foliar and soil samples with growth and site-related data. [Paper in preparation]

**Earth Systems Research Center, University of New Hampshire (USA) March 2013-May 2016**  
**Post-Doctoral Research Associate**, working at the following NASA funded project:

*Exploring relationships among water use efficiency, canopy nitrogen and carbon cycling across North American ecosystems to improve land surface models*. Mentors: S Olliger, H Asbjornsen and J Xiao; collaborators: K Jennings and L Lepine (UNH) and S Belmecheri (Laboratory of tree ring research, The University of Arizona, USA). I contributed to two of the four objectives of the project, namely: i) to link remotely-sensed derived canopy nitrogen and carbon-water fluxes, and ii) to compare estimates of water-use efficiency as obtained from leaf and tree-ring isotopes and eddy covariance measurements. We considered 8-11 forests across the US, within the AmeriFlux network. [2,3,6,7,9,11]

**School of Geosciences, University of Edinburgh (UK) October 2011-May 2012**  
**Research Fellow**, working at the following projects:

1) *Understanding the interactions between nitrogen deposition and climate on tree growth, water-use efficiency and N cycling for UK forests*. Mentor: M Mencuccini (CREAF, University of Edinburgh); collaborators: J Morison, M Perks, R Pitman, E Vanguelova (Forest Research of Forestry Commission, UK). The project aimed to assess changes in water-use efficiency and N availability along a climate and nitrogen-sulphur deposition in Britain. We included 12 forest stands (and four species) within the ICP forests and UK-monitoring networks, and we combined  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  in tree rings. [4]

2) *Leaf gas exchange across multiple forest sites in Andean and lowland Peru*. Joint Amazon Carnegie RAINFOR Expedition (JACARE), coordinated by P Meir (University of Edinburgh, UK, now at the Australian National University, ANU), Y Malhi (University of Oxford, UK), G Asner (Stanford, USA), N Salinas (UNSAAC, Cusco, Peru), J Lloyd (University of Leeds, UK), O Atkin (ANU, Canberra, Australia). Leading-- together with Y Ishida (James Cook University, Australia) and L Weerasinghe (University of Peradeniya, Sri Lanka)-- intensive fieldwork aiming to characterize photosynthetic capacity and foliar nutrient along an altitudinal transect in the tropical forests of Peru (from the lowland Peruvian side of the Amazon forest to the Andean altitudinal transect). [5,10,12,13,16]

**School of Geosciences, University of Edinburgh (UK) September 2009-September 2011**  
**Newton International Fellow**, working at the following projects:

1) *The role of nitrogen deposition in driving carbon uptake by forest ecosystems* project within the Newton International Fellowship. Mentor: M Mencuccini. Collaborators: L Sheppard, M Sutton (Center for Ecology and Hydrology, Edinburgh), M Perks (Forest Research of Forestry Commission, UK). The project included a unique experimental site in Scotland where long-term nitrogen and sulphur manipulation experiment was carried out by continuous misting over tree canopies for 8 years. We used tree-ring  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  to look at the changes in water-use efficiency and N availability. [20]

2) *The role of stable isotopes in tracing N transformations in forest ecosystems*, within the NERC isotope geoscience award: PI Prof. M Mencuccini, co-Investigator R Guerrieri; collaborators: T Heaton (NERC-NIGL, UK), E Vanguelova (Forest Research, UK) and G Michalski (Purdue University, USA). We combined stable nitrogen and oxygen isotopes in nitrate and ammonium to elucidate nitrogen transformation occurring during the interaction between atmospheric

nitrogen with tree canopies. [15]

**University of Basilicata (Italy)**

**April 2008-April 2009**

**Research assistant**, contributing to the following projects [17,18,19]:

1) *CarboItaly* (PI R Valentini, co-PI M Borghetti);

2) *Remote sensing of photosynthetic potential in forest ecosystems: comparison among species and effects of water stress* (MIUR-COFIN project, PI: F Magnani, co-PI M Borghetti, F Ripullone and S Raddi).

**University of Basilicata (Italy)**

**January 2004- February 2007**

**PhD**, working at the project 1) and contributing to the projects 2 and 3:

1) *Isotope signal in tree rings as tool to monitor forest "health"* project within the ESF-SIBAE grant awarded to R. Guerrieri. External mentors: R Siegwolf, M Saurer. [21,22,29,31]

2) *Mediterranean Terrestrial Ecosystem and Increasing Drought (MIND)*. Funded by V EU-Framework Programme; PI F Miglietta, co-PI M Borghetti and F Magnani. [23,24]

3) PRIN 2005: "Limitazioni ambientali e fisiologiche dell'accrescimento degli alberi al limite superiore del bosco nelle Alpi e negli Appennini". PIs: R Motta (University of Torino) and A Saracino (University of Basilicata, now University Federico II in Napoli). [29,30]

**University of Basilicata (Italy)**

**June-October 2003**

**Post-degree research contract** contributing to the following projects:

1) *Mediterranean Terrestrial Ecosystem and Increasing Drought (MIND)*. See above [23,24]

2) *Drought and Mediterranean forests: stomatal mechanisms in the regulation of plant gas exchanges*. [25]

#### 4. ACADEMIC QUALIFICATION

**Italian accreditation** as associate professor in the field 07/B2 –

**November 2018**

‘Scienze e tecnologie dei sistemi arborei e forestali’ (valid from 06/11/2018 to 06/11/2024)

**Master** in Gardening and landscape design, University of Torino

**October 2007**

**International PhD**, University of Basilicata (Potenza)

**15 February 2007**

*Thesis: Tree ecophysiology under limiting conditions. Two study cases: at treeline and at exposure to emissions from anthropogenic activities*. Supervisors: M Borghetti, A. Saracino

**Bsc in Forest and Environmental Sciences**, University of Basilicata (Potenza)

**29 April 2003**

*Thesis: Abbonanze isotopiche del carbonio negli anelli di accrescimento di alberi forestali: aspetti metodologici e confronto tra specie*. Supervisor: M Borghetti

#### 5. COMPETITIVE PERSONAL GRANTS AND AWARDS

Competitive fellowships and scholarships awarded

**EU Horizon 2020**

**2016-2018**

Marie Skłodowska-Curie Individual Fellowship (€ 158.121)

**The Royal Society (UK)**

**2013-2017**

Follow-on Newton International Fellowship (funding for travel and research) (£6.000/year)

**NERC (UK)**

**2010-2012**

Isotope geoscience award (PI: M Mencuccini, co-PI: R Guerrieri) (£30.600)

**The Royal Society, the British Academy and the Royal Academy of Engineering (UK)**

**2009-2011**

Newton International Fellowship (£101.000)

**European Science Foundation (ESF) nell'ambito del programma Nitrogen in Europe:**

**2009**

Visiting researcher (3 months) at the University of Edinburgh (UK) (€ 5.900)

**ESF nell'ambito del programma Stable Isotopes in Biospheric-Atmospheric Exchange:**

Visiting PhD student (7 months) at the Paul Scherrer Institute (CH) (€ 10.900)	2005-2006
<u>Altri riconoscimenti competitivi di rilevanza nazionale (in Italia):</u>	
<b>Viggiano municipality (Potenza)</b>	2007
Award for best research project carried out in Basilicata region (€ 4.000)	
<b>V SISEF Cogress, Grugliasco (Torino)</b>	2005
Best poster presentation (€ 250)	

## 6. DISSEMINATIONS

Here I list all the activities of communicating research to scientific communities (oral and poster presentations in scientific conferences and invited talks) and public outreach. Note that all contributions are reported in the original language they were presented

### 6.1 INVITED TALKS AND SEMINARS

- **Guerrieri R (2019)**. *Beyond the tree-ring boundary: combining multidisciplinary approaches to link carbon, water and nitrogen cycling in forests*. **TRACE 2019 conference**, San Leucio, Caserta (Italy), 7<sup>th</sup> -10<sup>th</sup> May 2019;
- **Guerrieri R (2017)**. *Combining multiple isotopes and metagenomic to delineate the role of canopy nitrification at ICP forest sites*. **6<sup>th</sup> ICP forests scientific conference**, Bucharest (Romania), 16<sup>th</sup> -17<sup>th</sup> May;
- **Guerrieri R (2017)**. *Reconstructing and tracing changes in carbon, water and nitrogen cycling in forests by using stable isotopes*. **I International Workshop on Isotopes for Tropical Ecosystem Studies**, University of Costa Rica, San José (Costa Rica), 2<sup>nd</sup>-6<sup>th</sup> October;
- **Guerrieri R (2017)**. *Linking carbon, water and nitrogen cycling in forests: from microbes to ecosystem*. Seminar at the **INRA**, Bordeaux (France), 27<sup>th</sup> October, invited by Lisa Wingate;
- **Guerrieri R (2017)**. *Linking carbon, water and nitrogen cycling in forests: from microbes to ecosystem*. Seminar at the **Purdue University**, Lafayette (USA), 29<sup>th</sup> November, invited by Greg Michalski;
- **Guerrieri R (2015)**. *The fingerprint of nitrogen deposition on the carbon and nitrogen cycles of UK forests as revealed by stable isotopes*. Seminar at the **Forest Research**, Farnham, London (UK), 22<sup>nd</sup> January, invited by Elena Vanguelova;
- **Guerrieri R (2013)**. *Esperienza di ricerca forestale in Italia e all'estero*. University of Basilicata, 31<sup>st</sup> January, invited by Domenico Pierangeli and Francesco Ripullone;
- **Guerrieri R (2013)**. *The use of stable isotopes to analyze the physiological response of forests to climate and anthropogenic factors*. Seminar at the **University of Basilicata**, Potenza (Italy), 13<sup>th</sup> November, invited by Marco Borghetti;
- **Guerrieri R (2011)**. *Professional skills in the ecological and environmental sciences – designing a research programme*. Seminar at the School of Geosciences, University of Edinburgh, Edinburgh (UK), 11<sup>th</sup> October, invited by Joanna Cloy;
- **Guerrieri R (2011)**. *Introduction to Stable Isotopes in Plant Ecophysiology*. School of Geosciences, University of Edinburgh, Edinburgh (UK), 31<sup>st</sup> January, invited by Gail Jackson;
- **Guerrieri R (2009)**. *Effects of nitrogen deposition on water-use efficiency: a lesson from stable isotope in tree rings*. Seminar at the **Northern Research Station of Forestry Commission**, Penicuik, Edinburgh (UK), 3<sup>rd</sup> November, invited by Mike Perks.

### 6.2 ORAL CONTRIBUTIONS TO INTERNATIONAL CONFERENCES

- **Guerrieri R (2019)**. Leaf microbes and nitrification in the canopies of European forests: evidence from stable isotopes, meta-barcoding and qPCR. **SIBECOL**, Barcelona (Spain), 4<sup>th</sup>-7<sup>th</sup> February;
- **Guerrieri R**, Avila A, Barcelo' A, Elustondo D, Hellstein S, Magnani F, Mattana S, Matteucci G, Merilä P, Michalski G, Nicolas M, Vanguelova E, Verstraeten A, Waldner, Watanabe M, Peñuelas J, Mencuccini M (2017). *Combining multiple isotopes and metagenomic to delineate the role of tree canopy nitrification in European forests along nitrogen deposition and climate gradients*. **AGU Fall meeting**, New Orleans, (USA), 11<sup>th</sup>-15<sup>th</sup> December;

- Belmecheri S, **Guerrieri R**, Voelker S (2016). Regulation of leaf gas exchange strategies of woody plants under elevated CO<sub>2</sub>. **AGU Fall meeting** San Francisco (USA), 12<sup>th</sup> -16<sup>th</sup> December;
- **Guerrieri R**, Belmecheri S, Asbjornsen H, Lepine L, Xiao J, Ollinger S (2016). Temporal trends in water-use efficiency across U.S. forests: integrating tree ring stable C and O isotopes with eddy covariance data . **3<sup>rd</sup> Ameridendro**, Mendoza (Argentina), 28<sup>th</sup> March-1<sup>st</sup> April;
- **Guerrieri R**, Lepine L, Asbjornsen H, Xiao J, Ollinger S (2015). Linking carbon and water cycling to nitrogen for forests across North America: From the leaf to the ecosystem. **X Conference of the Italian Society of Silviculture and Forest (SISEF)**, Firenze (Italy), 15<sup>th</sup>-18<sup>th</sup> September;
- Ollinger S, **Guerrieri R**, Lepine L, Asbjornsen H, Xiao J (2014). Canopy diversity in relation to carbon fluxes, water use and spectral reflectance in North American forests. **AGU Fall meeting**, San Francisco (USA), 15<sup>th</sup>-19<sup>th</sup> December;
- **Guerrieri R**, Lepine L, Zhou Z, Ouimette A, Asbjornsen H, Ollinger S (2014). Controls on water use efficiency in mesic forests across North America: insight from foliar  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$  and N. **ESA annual conference**, Sacramento (USA), 10<sup>th</sup>-15<sup>th</sup> August;
- **Guerrieri R**, Mencuccini M, Sheppard L, Saurer M, Perks M, Levy P, Sutton M, Borghetti M, Grace J (2011). Does adding N to forest canopies, as compared to the soil, reveal similar effects on N and C cycling? **NitroEurope conference**, Edinburgh (UK), 11<sup>th</sup>-15<sup>th</sup> April;
- **Guerrieri R**; Mencuccini M; Borghetti M; Levy P; Perks M; Saurer M; Sheppard L; Sutton M (2010). Physiological responses of a young Picea Sitchensis stand to long-term nitrogen and sulphur deposition: a lesson from  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  in tree rings . **EGU conference**, Vienna (Austria), 2<sup>nd</sup>-7<sup>th</sup> May
- **Guerrieri R**, Borghetti M, Grace J, Mencuccini M, Perks M, Ripullone F, Saurer M, Sheppard LJ, Siegwolf RTW (2009). Effects of nitrogen deposition on water-use efficiency as assessed by a triple isotope approach. **VII SISEF Conference**, Isernia-Pesche (Italy), 29<sup>th</sup> September- 3<sup>rd</sup> October;
- **Guerrieri MR**, Siegwolf R; Saurer M, Jäggi M, Cherubini P, Ripullone F, Borghetti M (2007). Water relations of trees at high elevation in a Mediterranean mountain. The study case of Pinus leucodermis Ant. in the National Park of Pollino (Basilicata, Southern Italy). **IUFRO conference: Natural Hazards and Natural Disturbances in Mountain Forests**. Trento (Italy), 18<sup>th</sup>-21<sup>st</sup> September;
- **Guerrieri MR**, Siegwolf RTW, Saurer M, Jäggi M, Cherubini P, Saracino A, Borghetti M (2007).  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$  and  $\delta^{15}\text{N}$  negli anelli legnosi quali efficaci indicatori degli effetti delle deposizioni azotate su ecosistemi forestali. **VI SISEF Conference**, Arezzo (Italy), 25<sup>th</sup>-27<sup>th</sup> September.

### 6.3 POSTER CONTRIBUTIONS TO INTERNATIONAL CONFERENCES

*Presenter underlined; (\*) Indicates posters I prepared, but one of the co-authors presented it*

- Avila A, **Guerrieri R**<sup>(\*)</sup>, Lecha L, Mattana S, Peñulas J, Mencuccini M (2018). Nitrogen transformations in the canopy: Exploring the role of phyllosphere microbes in a Mediterranean holm oak forest. **CAPERmed 2018 - III Meeting – Pamplona** (Spain), 20<sup>th</sup> -21<sup>st</sup> June;
- **Guerrieri R**, Mattana S, Cáliz J, Peñuelas J, Mencuccini M (2018). Beyond greenness: microbial life hidden in tree canopies and its contribution to nitrogen cycling. **Symposium: From the deep past to the Anthropocene. Coupling earth system function to climate change**. INRA, Bordeaux (France), 8<sup>th</sup>-9<sup>th</sup> March;
- Oh Y, Yi K, Novick K, Maxwell J, **Guerrieri R**, Welp L (2016). Carbon stable isotopes in leaf and tree ring: importance of remobilization and post- photosynthetic processes . **AGU Fall meeting**, San Francisco (USA), 12<sup>nd</sup>-16<sup>th</sup> December;
- **Guerrieri R**<sup>(\*)</sup>, Belmecheri S, Martin M, Lepine L, Jennings K, Asbjornsen H, Xiao J, Ollinger S (2016). Spatial and temporal trends in water-use efficiency across U.S. forests: integrating tree ring stable C and O isotopes with eddy covariance data. **AGU Fall meeting**, San Francisco (USA), 12<sup>nd</sup>-16<sup>th</sup> December;
- **Guerrieri R**, Rossi S, Deslauriers A, Jennings K, Lepine L, Ouimette A, Millman T, Asbjornsen H, Ollinger S (2016). Linking carbon and water cycles in forests: from the cell to the ecosystem level. **3<sup>rd</sup> Ameridendro**, Mendoza (Argentina), 28<sup>th</sup> March-1<sup>st</sup> April;
- **Guerrieri R**, Vanguelova E, Michalski G, Heaton T, Mencuccini M (2015). Detecting biological nitrification and nitrogen deposition processing in forest canopies by using multiple isotope tracers . **X SISEF Conference**, Firenze (Italy), 15<sup>th</sup>-18<sup>th</sup> September;



- **Guerrieri R**, Lepine L, Asbjornsen H, Xiao J, Ollinger S (2014). Controls On Water Use Efficiency For Different Forest Ecosystems Across North America: From The Leaf To Landscape. **AGU Fall meeting**, San Francisco (USA), 15<sup>th</sup>-19<sup>th</sup> December;
- **Xiao J**, Ollinger SV, Li F, Li C, Frolking S, Hurtt GC, **Guerrieri R**, Lepine L, Asbjornsen H (2014). Impacts of recent droughts on North American terrestrial ecosystems. **AGU Fall meeting**, San Francisco (USA), 15<sup>th</sup>-19<sup>th</sup> December;
- **Guerrieri R**<sup>(\*)</sup>, Mencuccini M, Sheppard L, Saurer M, Perks M, Levy P, Sutton M, **Borghetti M**, Grace J (2011). Impacts of nitrogen deposition on C and N cycling in forests: the case study of manipulation of canopy deposition at Deepsyke, Scotland. **VIII SISEF Conference**, Rende (Italy), 4<sup>th</sup>-7<sup>th</sup> October;
- **Guerrieri MR**, Siegwolf RTW, **Saurer M**, Jäggi M, Cherubini P, Ripullone F, Borghetti (2009). *A triple stable isotope approach in tree rings for detecting the impact of nitrogen emissions on tree physiology*. **EGU conference**, Vienna (Austria), 19<sup>th</sup>-24<sup>th</sup> April;
- **Guerrieri MR**, Borghetti M, Levy P, Mencuccini M, Perks M, Saurer M, Siegwolf R, Sheppard LJ, Sutton M (2010). *Physiological responses of a young Picea Sitchensis stand to long-term nitrogen and sulphur deposition: a perspective from stable carbon, oxygen and nitrogen isotopes in tree rings*. **Stable Isotopes in Biospheric-Atmospheric Exchange**, Ascona (Switzerland), 21<sup>st</sup>-26<sup>th</sup> March;
- **Guerrieri MR**, Siegwolf RTW, Saurer M, Jäggi M, Cherubini P, Ripullone F, Borghetti M (2008). *Impact of different nitrogen emission sources on tree physiology: a triple stable isotope approach*. **Joint European Stable Isotopes Meeting**, Presqu' Île de Giens, France, 31<sup>st</sup> August-5<sup>th</sup> September;
- **Guerrieri MR**<sup>(\*)</sup>, Saurer M, **Cherubini P**, Waldner P, Siegwolf RTW (2006). *The impact of traffic on the nitrogen isotope ratio in needles and tree rings of Norway spruce in Switzerland*. **7th International conference on dendrochronology**, Beijing (China), 11<sup>th</sup>- 17<sup>th</sup> June;
- **Guerrieri MR**, Saurer M, Cherubini P, Waldner P, Siegwolf RTW (2006). *The impact of traffic on the nitrogen isotope ratio in needles and tree rings of Norway spruce in Switzerland*. **BASIN SIBAE International Conference**, Tomar, Portugal, 13<sup>th</sup>-15<sup>th</sup> March;
- **Guerrieri MR**, Saurer M, Siegwolf RTW, Waldner P, Cherubini P (2005). *Impatto del traffico veicolare su  $\delta^{15}N$ ,  $\delta^{13}C$  e  $\delta^{18}O$  di aghi ed anelli annuali di abete rosso (Picea abies L.) presso un'autostrada in Svizzera*. **V SISEF Conference**, Grugliasco (Italy), 27<sup>th</sup>-30<sup>th</sup> September;
- **Guerrieri MR**, D'Alessandro C, Borghetti M, Lapolla A, Carraro V, Todaro L, Saracino A (2005). *Risposte ecofisiologiche di Pinus leucodermis Ant. al limite superiore della vegetazione arborea nella montagna mediterranea*. **V SISEF Conference**, Grugliasco (Italy), 27<sup>th</sup>-30<sup>th</sup> September;
- D'Alessandro CM, **Guerrieri MR**, Saracino A, Borghetti M (2003). *Abbondanze isotopiche del carbonio ( $\delta^{13}C$ ) in anelli legnosi di alberi forestali: aspetti metodologici*. **IV SISEF Conference**, Potenza (Italy), 7<sup>th</sup>-10<sup>th</sup> October.

#### 6.4 INVITED ORAL PRESENTATION DURING TASK FORCE/PROJECT MEETINGS

- **Guerrieri R** (2019). *Leaf microbes and nitrification in the canopies of European forests: evidence from stable isotopes, metabarcoding and qPCR*. Joint Expert Panel meeting ICP Forests, Brussels (Belgium), 25<sup>th</sup> -29<sup>th</sup> March;
- **Guerrieri R** (2019). *Composition of microbial communities across EU forests: from the atmosphere to the phyllosphere, and down to the soil*. Joint Expert Panel meeting ICP Forests, Brussels (Belgium), 25<sup>th</sup> -29<sup>th</sup> March;
- **Guerrieri R** (2019). *Leaf microbes and nitrification in the canopies of European forests: evidence from stable isotopes, metabarcoding and qPCR*. Imbalance P project - 5<sup>th</sup> annual meeting. Sitges (Spain), 11<sup>th</sup>-15<sup>th</sup> February, (ERC Synergy grant, PIs: Philippe Ciais, Ivan Janssens, Michael Obersteiner, and Josep Peñuelas);
- **Guerrieri R**, **Peñuelas J**, **Mencuccini M** (2018). *The occurrence of canopy nitrification in European forests as proved by stable isotopes and meta-genomic analyses*. Imbalance P project - 4<sup>th</sup> annual meeting, Lommel (Belgium), 5<sup>th</sup>-9<sup>th</sup> February, (ERC Synergy grant, PIs: Philippe Ciais, Ivan Janssens, Michael Obersteiner, and Josep Peñuelas).

#### 6.5 PUBLIC OUTREACH

- *Science communication* at the **Edinburgh International Science Festival (2011-2012)**;

- *Open day of the Ecohydrology lab* at the Earth Systems Research Center Institute, **University of New Hampshire (2016)**;
- Exhibition '*Després de la fi del món – after the end of the world*' at the **Centre de Cultura Contemporània de Barcelona**, co-organizing the event '*Boscós en moviment. Com afectarà el canvi climàtic els nostres boscós?*' led by Jordi Martínez Villalta (CREAF/UAB) (**March 2018**);
- *Interview* for the i) Italian **blog '[Oggiscienza](#)**'; ii) **CREAF blog**; iii) **Universidad de Costa Rica blog**.
- *Invited* to contribute to the **2017 ICP forests Executive Report** for public and policy makers - see publication [25];
- Article published in the European Journal for teachers *Science in School* - see publication [26];
- Interview during the radio show '*Vida verde*' (Radiotelevisión Española, Radio 4, 16<sup>th</sup> September 2019);
- Invited speaker at the *Colloqui di Dobbiaco* (Bolzano, Italy, 27<sup>th</sup> -29<sup>th</sup> September 2019);
- Speaker at the *Cafè científic a la Casa Orlandai* (Barcelona, 16<sup>th</sup> October 2019).

## 7. OTHER RESPONSABILITIES

### 7.1 TEACHING AND MENTORING

- Supervision of undergraduate and master students (at the University of New Hampshire, Durham, USA and at the CREAF, Barcelona, Spain);
- Lecturing and laboratory/field demonstrating experience for a number of environmental and forestry science courses, i.e., Plant Ecophysiology, Professional skills in the Ecological and Environmental Sciences at the School of GeoSciences, University of Edinburgh (UK); Silviculture, Forest ecophysiology at the University of Basilicata (IT); Stable Isotopes and Plant physiology at the Paul Scherrer Institute (CH), Laboratory of Atmospheric Chemistry - Ecosystem Fluxes / Stable Isotope Research Group.

### 7.2 REFEREE ACTIVITIES

- Serving as reviewer for scientific papers submitted to high impact scientific journals, including Tree Physiology, Oecologia, New Phytologist, iForest, Frontiers in Plant Science, Biogeosciences, Global Change Biology, Ecological Indicators, Rapid Communications in Mass Spectrometry, Plant Cell and Environment, Dendrochronologia, Scientific Reports (Nature), Agricultural and Forest Meteorology;
- Invited to review grant proposals submitted to the Swiss National Foundation, SNF (CH), the National Science Foundation, NSF (USA); **Free University of Bolzano** (Italy) and **Horizon 2020 Marie Curie fellowship** (current call for 2020);
- Serving as subject editor for the journal **iforest-Biogeosciences and Forestry** (5-years impact factor: 1.573).

## 8. MEMBERSHIP OF SCIENTIFIC SOCIETIES

Member of the:

- **Italian Society of Silviculture and Forest Ecology** (SISEF) since 2004;
- **American Geophysical Union** (AGU) since 2014;
- **Tree ring society** since January 2019;
- **Marie Curie Alumni Association** (since 2016) and core team of the Barcelona Marie Curie Alumni Association (since 2018), organizing monthly networking activities for MCAA members in Barcelona.

## 9. TRAINING

- Science communication course: how to prepare 5 minutes monologue to communicate your research to public audience. CREAF, Bellaterra (Barcelona, Spain), 6<sup>th</sup>-27<sup>th</sup> November 2018;
- The use of QIIME to processing raw DNA sequences after Illumina analyses. Servei de genòmica bioinformàtica, Universidad Autònoma de Barcelona, 5<sup>th</sup>-27<sup>th</sup> May 2017;
- Introductory R Course. CREAF, Bellaterra (Barcelona, Spain), 13<sup>th</sup>-20<sup>th</sup> March 2017;

- Learning how to prepare samples to carry out xylogeneses analyses. Visiting Sergio Rossi at the Université du Québec à Chicoutimi (Canada), August 2015 and May 2016.
- Learning technical and theoretical background on the application of stable carbon, oxygen and nitrogen isotopes in forest ecology studies. Visiting PhD student at the Paul Scherrer Institute, in Matthias Saurer and Rolf Siegwolf's group, partially funded by the ESF scholarship (total 1 year, between 2005 and 2006).

## 10. PUBLICATIONS

### 10.1 PUBLICATIONS IN INTERNATIONAL JOURNALS

*My work has accumulated more than 600 citations, with an h-index of 15 (i-10 index: 18) according to google scholar. Numbers at the end of each paper indicate citations cumulated until 12 May 2019 (source: google scholar).*

- [1] **Guerrieri R**, Lecha L, Mattana S, Calíz J, Casamayor E, Barceló, Michalski G, Peñuelas J, Avila A, Mencuccini M (2019). *Partitioning between atmospheric deposition and canopy microbial nitrification into throughfall nitrate fluxes in a Mediterranean forest.* **Journal of Ecology** <https://doi.org/10.1111/1365-2745.13288>
- [2] **Guerrieri R**, Belmecheri S, Ollinger S, Asbjornsen H, Jennings K, Xiao J, Stocker BD, Martin M, Hollinger D, Bracho-Garrillo R, Clark K, Dore S, Kolb T, Munger JW, Novick K, Richardson AD (2019). *Disentangling the role of photosynthesis and stomatal conductance on rising forest water-use efficiency.* **Proceedings of the National Academy of Sciences of the United States of America (PNAS)** [www.pnas.org/cgi/doi/10.1073/pnas.1905912116](http://www.pnas.org/cgi/doi/10.1073/pnas.1905912116).
- [3] Craine JM, Elmore AJ, Wang L, Boeckx P, Delzon S, Fang Y, Gray A, Guerrieri R, Gundale MJ, Hietz P, Nelson DM, Peri PL, Templer PH, Werner C (2019) **Reply to: Data do not support large-scale oligotrophication of terrestrial ecosystems.** *Nature Ecology & Evolution* volume 3: 1287–1288.
- [4] Smith N, Keenan T, Prentice C, Wang H, Wright I, Niinemets U, Crous K, Domingues T, **Guerrieri R**, Ishida Y, Kattge J, Kruger E, Maire V, Rogers A, Serbin S, Tarvainen L, Togashi H, Townsend P, Wang M, Weerasinghe L, Zhou S (2018). *Global photosynthetic capacity is optimized to the environment.* **Ecology Letters** 22 (3): 506-517. [2]
- [5] Asbjornsen H, Campbell J, Jennings K, Vadeboncoeur M, McIntire C, Templer PH, Phillips R, Bauerle TL, Dietze M, Frey S, Groffman P, **Guerrieri R**, Hanson PJ, Kelsey E, Knapp A, McDowell NG, Meir P, Novick K, Ollinger S, Pockman W, Schaberg P, Wullschlegel SD, Smith MD, Rustad L (2018). *Guidelines and considerations for designing precipitation manipulation experiments in forest ecosystems.* **Methods in Ecology and Evolution** 9:2310–2325. [2]
- [6] Craine J, Elmore AJ, Aranibar J, Bauters M, Boeckx P, Crowley BE, Dawes MA, Delzon S, Fajardo A, Fang Y, Fujiyoshi L, Gray A, **Guerrieri R**, Gundale MJ, Hawke D, Hietz P, Jonard M, Kearsley E, Kenzo T, Makarov M, Marañón-Jiménez S, McGlynn TP, McNeil BE, Mosher SG, Nelson DM, Peri PL, Roggy JC, Sanders-DeMott R, Song M, Szpak P, Templer PH, Van der Colff D, Wang L, Werner C, Xu X, Yang Y, Yu G, ZmudczyńskaSkarbek K (2018). *Isotopic evidence for oligotrophication of terrestrial ecosystems.* **Nature Ecology and Evolution** 2: 1735-1744. [5]
- [7] Peñuelas J, Saradans J, Filella.. [other 28 names], **Guerrieri R** et al. (2017). *Quantifying Impacts of Drought and Wildfire on Forest's Water and Carbon Resources.* **Forest Ecology and Biology** 8 (12), 463. [13]
- [8] **Guerrieri R**, Jennings K, Belmecheri S, Asbjornsen H, Ollinger S (2017). *Evaluating climate signal recorded in tree ring  $\delta^{13}C$  and  $\delta^{18}O$  from bulk wood and  $\alpha$ -cellulose for six species across the northeastern US.* **Rapid Communications in Mass Spectrometry** 31 (24), 2081-2091. [2]
- [9] Fyllas N, Bentley LP, Shenkin A, Asner GP, Atkin OK, Díaz S, Enquist B, Farfan-Rios W, Gloor E, **Guerrieri R**, Huaraca Huasco W, Ishida Y, Martin RE, Meir P, Phillips O, Salinas N, Silman M, Weerasinghe LK, Zaragoza-Castells J, Malhi Y (2017). *Solar radiation and functional traits explain the decline of forest primary productivity along a tropical elevation gradient.* **Ecology Letters** 20 (6), 730-740. [18]
- [10] **Guerrieri R**, Lepine L, Asbjornsen H, Xiao J, Ollinger S (2016). *Evapotranspiration and water use efficiency in relation to climate and canopy nitrogen in U.S. forests.* **Journal of Geophysical Research: Biogeosciences** 121, 2610–2629. [12]
- [11] Malhi Y, Girardin CAJ, Goldsmith GR, Doughty CE, Salinas N, Metcalfe D B, Huaraca Huasco W, Silva-Espejo JE, del Aguilla-Pasquell J, Farfán Amézquita F, Aragão LEOC, **Guerrieri R**, Ishida FY, Bahar NHA, Farfan-Rios W, Phillips OL, Meir P, Silman M (2016). *The variation of productivity and its allocation along a tropical elevation gradient: a whole carbon budget perspective.* **New Phytologist** 214 (3), 1019-1032. [38]



- [12] Bahar NHA, Ishida FY, Weerasinghe LK, **Guerrieri R**, O'Sullivan OS, Bloomfield KJ, Asner GP, Martin RE, Lloyd J, Malhi Y, Philips OL, Meir P, Salinas N, Cosio EG, Domingues T, Long BM, Evans JR and Atkin OK (2016). *Photosynthetic capacity is greater in high-elevation, Andean tropical moist forests than their lowland, Amazonian counterparts*. **New Phytologist** 214 (3), 1002-1018. [39]
- [13] Jennings K, **Guerrieri R**, Vadeboncoeur M, Asbjornsen H (2015). *Response of *Quercus velutina* growth and water use efficiency to climate variability and nitrogen fertilization in a temperate deciduous forest in the northeastern U.S.* **Tree Physiology** 36 (4), 428-443. [10]
- [14] **Guerrieri R**, Vanguelova EI, Michalski G, Heaton THE, Mencuccini M (2015). *Isotopic evidence for the occurrence of biological nitrification and nitrogen deposition processing in forest canopies*. **Global Change Biology** 21 (12): 4613-4626. [17]
- [15] Atkin O, Bloomfield KJ, Reich PB, Tjoelker MG, [...], **Guerrieri R**, et al. (2015). *Global variability in leaf respiration in relation to climate, plant functional types and leaf traits*. **New Phytologist** 206 (2), 614-636. [138]
- [16] Bellino A, Alfani A, Selosse MA, **Guerrieri R**, Borghetti M, Baldantoni D (2014). *Nutritional regulation in mixotrophic plants: new insights from *Limodorum abortivum**. **Oecologia** 175 (3), 875-885. [18]
- [17] Leonardi S, Gentilesca T, **Guerrieri R**, Ripullone F, Magnani F Mencuccini M, van Noije T, Borghetti M (2012). *Assessing the effects of nitrogen deposition and climate on carbon isotope discrimination and intrinsic water-use efficiency of angiosperm and conifer trees under rising CO<sub>2</sub> conditions*. **Global Change Biology** 18, 2925-2944. [50]
- [18] Ripullone F, Rivelli A, Baraldi R, Guarini R, **Guerrieri MR**, Magnani F, Peñuelas J, Raddi S, Borghetti M (2011). *Effectiveness of the photochemical reflectance index to track photosynthetic activity over a range of forest tree species and plant water status*. **Functional Plant Biology** 38, 177-186. [30]
- [19] **Guerrieri R**, Mencuccini M, Sheppard LJ, Saurer M, Perks M, Levy P, Sutton MA, Borghetti M, Grace J (2011). *The legacy of enhanced N and S deposition as revealed by the combined analysis of  $\delta^{13}C$ ,  $\delta^{18}O$  and  $\delta^{15}N$  in tree rings*. **Global Change Biology** 17, 1946-1962. [44]
- [20] **Guerrieri R**, Siegwolf RTW, Saurer M, Ripullone F, Mencuccini M, Borghetti M (2010). *Anthropogenic NO<sub>x</sub> emissions alter the intrinsic water-use efficiency (WUEi) for *Quercus cerris* stands under Mediterranean climate conditions*. **Environmental Pollution** 158, 2841-2847. [15]
- [21] **Guerrieri MR**, Siegwolf RTW, Saurer M, Jäggi M, Cherubini P, Ripullone F, M Borghetti (2009). *Impact of different nitrogen emission sources on tree physiology as assessed by a triple stable isotope approach*. **Atmospheric Environment** 43, 410-418. [36]
- [22] Ripullone F, **Guerrieri MR**, Saurer M, Siegwolf RTW, Jäggi M, Guarini R, Magnani F (2009). *Testing a dual isotope model to track carbon and water gas exchanges in a Mediterranean forest*. **iForest** 2, 59-66. [15]
- [23] Ripullone F, Borghetti M, Raddi S, Baraldi R, Vicinelli E, Cantoni L, Nolè A, **Guerrieri MR**, Lapolla A, Anichini M, Saurer M, Siegwolf R, Jäggi M, Magnani F (2009). *Physiological and structural changes of an evergreen Mediterranean forest in response to long-term altered precipitation regimes*. **Trees-Structure and Function** 23 (4), 823-834. [31]
- [24] Ripullone F, **Guerrieri MR**, Magnani F, Nolè A, Borghetti M (2007). *Stomatal conductance and leaf water potential responses to hydraulic resistance variation in *Pinus pinaster* plants*. **Trees- Structure and Function** 21, 371-378. [33]

## 10.2 UNDER REVISION

- [25] **Guerrieri R**, Vanguelova E, Pitman R, Benham S, Perks M, Morison J, Mencuccini M (2019). *Exploring trends in water-use efficiency and nitrogen availability across British forest stands by a triple isotope approach in tree rings*. **Nature, Scientific Reports** (under second review).

## 10.3 OTHER PUBLICATIONS

Including PhD thesis, publications in peer-reviewed Italian journal, essay, report/article for policy makers and general public. Note that titles are kept in the original language (in Italian).

- [26] **Guerrieri R** (2019). *The secret life of forests*. Science in School, 46: 20-24 (www.scienceinschool.org).
- [27] **Guerrieri R**, Peñuelas J, Mencuccini M (2018). *Nitrification in tree canopies*. ICP Forests 2017. Executive Report. Eberswalde, Germany, pp: 5-6. [https://icp-forests.org/pdf/ER2017.pdf] ISSN 1020-587X, e-ISSN 2198-6541] Invited contribution

- [28] **Guerrieri MR (2010)**. *Utilizzo degli isotopi stabili per il monitoraggio degli ecosistemi forestali*. Viggiano (PZ), Edizione Akiris (monografia).
- [29] **Guerrieri MR**, Todaro L, Carraro V, D'Alessandro CM, De Stefano S, Lapolla A, Saracino A (2008). Ecophysiological performances of *Pinus leucodermis* at the tree line in Mediterranean area. **Forest@** 5, 28-38.
- [30] **Guerrieri MR**, Nolé A, Ripullone F, Lapolla A, Borghetti M (2008). Effetti delle emissioni di NOx su popolamenti di *Quercus cerris*. *Alberi e Territorio* 5 (3), 8.
- [31] **Nolè A**, Ripullone F, **Guerrieri MR**, Ferrara A, Borghetti M (2008). Applicazione del modello 3PG-S per la stima dell'accumulo di carbonio negli ecosistemi forestali a scala regionale. *Alberi e Territorio*. 3: 8 - 9.
- [32] **Guerrieri R (2007)**. *Tree ecophysiology under limiting conditions. Two study cases: at treeline and at exposure to emissions from anthropogenic activities*. **PhD thesis**
- [33] **Guerrieri MR**, Saurer M, Siegwolf RTW, Waldner P, Cherubini P (2006). Impact of traffic on  $\delta^{15}\text{N}$ ,  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  of needles and annual tree rings of Norway spruce (*Picea abies* L.). **Forest@** 3 (3), 437-445.
- [34] D'Alessandro CM, **Guerrieri MR**, Saracino A (2004). *Comparing carbon isotope composition of bulk wood and holocellulose from *Quercus cerris*, *Fraxinus ornus* and *Pinus radiata* tree rings*. **Forest@** 1 (1), 51-57.