

CURRICULUM VITAE ET STUDIORUM

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EDUCATION

2004-2007: PhD, University of Basilicata (Italy). Thesis: “*Tree ecophysiology under limiting conditions. Two study cases: at treeline and at exposure to emissions from anthropogenic activities*”. Supervisors: Prof. Borghetti, Prof. Saracino.

2003: Bachelor of Science in Forest and Environmental Sciences, University of Basilicata (Italy). Thesis: “*Carbon isotopic abundances in tree rings of forest trees: methodological aspects and differences among species* “. Supervisor: Prof. Borghetti.

PROFESSIONAL EXPERIENCE

Letters in brackets indicate the project I contributed during my PhD and post-doctoral experiences

June 2016-June 2018: Marie Skłodowska-Curie Individual Fellowships (RI) at the Centro de Investigacion Ecologica y Applications Forestales (CREAF), Barcelona (Spain). Advisors: Prof. M Mencuccini and Prof. J Peñuelas (CREAF), Dr. A Barceló (Servei de Genòmica i Bioinformàtica-Universitat Autònoma de Barcelona) [A]

March 2013-May 2016: Post-Doctoral Research Associate, Earth Systems Research Center, University of New Hampshire (USA). Advisors: Prof. Ollinger, Dr. Asbjorsen H. [B, C]

August 2015: Visiting researcher at the laboratory of Animal and Vegetal Ecology (University of Quebec at Chicoutimi, Canada) to carry out xylogenes measurements. Collaborators: Dr. S Rossi and Prof. A. Desleauriers. [C]

October 2011-May 2012: Research Fellow at the School of Geosciences, University of Edinburgh (UK). Advisor: Prof. Mencuccini/Prof. Meir. [D,E]

September 2009-August 2011: Newton International Fellow at the School of Geosciences, University of Edinburgh (UK). Advisor: Prof. Mencuccini. [E, F, G]

April 2008-April 2009: Research assistant at the University of Basilicata (Italy), advisor Prof. Borghetti. [H]

2005-2006: Visiting PhD student at the Paul Scherrer Institute (Switzerland) Ecosystem Fluxes /Stable Isotope Research Group. Supervisors: Dr. Siegwolf and Dr. Saurer. [I]

2004-2007: PhD presso il Dipartimento di Scienze dei Sistemi Culturali, Forestali e dell'Ambiente, Università degli Studi della Basilicata. [I, L]

June - October 2003: Post-graduate research contract at the University of Basilicata (Italy). [M]

COMPETITIVE GRANTS AND AWARDS

2016-2018: Marie Skłodowska-Curie Individual Fellowships (RI). Host Institute: CREAM, c/o Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain. (€ 158.121)

2013-2017: Follow-on grant for Newton International Alumni to support networking activities and research collaborations with UK-based researchers (£6.000/year)

2009-2011: Newton International Fellowship funded by the Royal Society, the British Academy and the Royal Academy of Engineering. Host Institute: School of GeoSciences, University of Edinburgh, UK. (£101.000)

2010: Isotope GeoScience award (NERC Isotope Geosciences laboratory-NIGL). Co-investigator, PI : Maurizio Mencuccini (£30.600).

2009: Scholarship funded by the **European Science Foundation (ESF)** within the programme "Nitrogen in Europe". Host Institutes: School of Geosciences, University of Edinburgh, and Northern Research Station, UK (€ 5.900).

2005-2006: Scholarship funded by the **European Science Foundation (ESF)** - Stable Isotopes in Biospheric - Atmospheric Exchange (SIBAE). Host Institute: Laboratory of Atmospheric Chemistry - Stable Isotope Research Group, PSI, Switzerland. (€ 10.900).

2005: SISEF, V Congress, **best presentation award** (€ 250)(Grugliasco, Italy) (€ 250)

SCIENTIFIC RESPONSIBILITIES

[Research projects and international collaborations](#)

Numbers at the end of each project refer to the papers published in peer-reviewed international journals (and in preparation) as listed in the following section

[A] **2016-2018:** *A novel approach to determine canopy nitrification in the phyllosphere of European forests: combining multiple isotope tracers and proteogenomic techniques* (NITRIPHYLL). Collaborators: A Avila (CREAF, Barcelona, Spain), S Hellsten (IVL Swedish Environmental Research Institute, Gutenberg, Sweden), Elena Vanguelova (Forest Research, Farnham, UK), A Verstraeten (Research Institute for Nature and Forest, Brussels, Belgium), A Probst (EcoLab, Toulouse, France), 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).

[B] 2013-2016: *Exploring relationships among water use efficiency, canopy nitrogen and carbon cycling across North American ecosystems to improve land surface models.* PI Prof Olliger, co-Investigators Prof. Asbjornsen, Dr. Xiao, Earth Systems Research Center, University of New Hampshire (USA). [1 4, 17, 18]

[C] 2015-2016: Linking carbon and water cycles in forests: from the cell to the ecosystem. Collaborations: Rossi S, Deslauriers A (Université du Québec à Chicoutimi, Canada). [19]

[D] 2011-2013: *Understanding the interactions between nitrogen deposition and climate on tree growth, water-use efficiency and N cycling for UK forests.* Collaborations: Prof. M Mencuccini (CREAF, University of Edinburgh), Dr. J Morison, Dr. M Perks, Dr. R Pitman, Dr. E Vanguelova (Forest Research of Forestry Commission, UK). [20]

[E] 2011-2012: *Leaf gas exchange across multiple forest sites in Andean and lowland Peru.* Joint Amazon Carnegie RAINFOR Expedition (JACARE), coordinated by Prof. P Meir (University of Edinburgh, UK), Prof. Y Malhi (University of Oxford, UK), Prof. G Asner (Stanford, USA), Prof. N Salinas (UNSAAC, Cusco, Peru), Prof. J Lloyd (University of Leeds, UK) Prof. O Atkin (ANU, Canberra, Australia). [2,3,6,16]

[F] 2011-2013: *The role of stable isotopes in tracing N transformations in forest ecosystems.* Collaboration with Prof. Mencuccini, Dr. Tim Heaton (NERC-NIGL, UK), Dr. Vanguelova (FR, UK) and Dr. Michalski (USA). [5]

[G] 2009-2011: *The role of nitrogen deposition in driving carbon uptake by forest ecosystems* (Newton International Fellowship). UK sponsor: Prof. Mencuccini. Collaboration with: Dr. Sheppard, Dr. Sutton, Dr. Perks. [10]

[H] 2007-2009: Contributions to the following projects: *CarboItaly* (PI Prof. R Valentini, co-PI Prof. M Borghetti) and MIUR-COFIN project: *Misure di riflettanza e fluorescenza modulate su piantine allevate in serra e sottoposte a stress idrico* (PI: Prof. M Borghetti, co-PI Prof. F Ripullone) [7,8,9]

[I] 2005-2006: ESF-SIBAE grant: *Isotope signal in tree rings as tool to monitor forest "health"*. Collaboration with Dr. Siegwolf, Dr. Saurer and Dr. Jäggi (PSI, CH) and Dr. Cherubini (WSL, CH). [11, 12]

[L] 2002-2005: V EU-Framework Programme: Mediterranean Terrestrial Ecosystem and Increasing Drought (MIND). Finanziato nell'ambito del. PI F. Miglietta, co-PI at the University of Basilicata: Prof. M. Borghetti. [13,14]

[M] 2003: COFIN-PRIN 2002: Drought and Mediterranean forests: stomatal mechanisms in the regulation of plant gas exchanges. PI: Prof. M Borghetti, co-PI Prof. F Ripullone [15]

[Participation to international conferences](#)

3rd Ameridendro (2016, Mendoza, Argentina, 2 posters and 1 oral presentation); **X Conference** of the Italian Society of Silviculture and Forest Ecology -**SISEF-** (2015, Florence, Italy); **AGU** (2014, San Francisco, 1 poster as first author, 1 poster and 1 oral presentation as co-author); **ESA** (2013, Sacramento, oral presentation); **NitroEurope** (2011, Edinburgh, oral presentation); **EGU** (2010, Vienna, oral presentation); **Stable Isotopes in Biospheric-Atmospheric Exchange** (2010, Ascona, poster); **VII**

SISEF Conference (2009, Isernia-Pesche oral); **Joint European Stable Isotopes Meeting (2008**, Presqu' Île de Giens, poster); **IUFRO Conference: Natural Hazards and Natural Disturbances in Mountain Forests (2007**, Trento, oral presentation); **VI SISEF Conference (2007**, Arezzo, poster); **BASIN SIBAE International Conference: Isotopes as tracer of ecological change (2006**, Tomar, poster); **V SISEF Conference (2005**, Grugliasco, 2 posters); **IV SISEF Conference (2004**, Potenza, poster).

Organization – with Dr. Belmecheri University of Arizona Tucson AZ (United States) and Steve Voelker (Oregon State University Corvallis OR (United States) - of the session 'Forests in the Anthropocene: trading water for carbon from the leaf to the ecosystem' at the AGU fall meeting in San Francisco (December 2016).

Supervision of undergraduate, master students and lab technician (University of New Hampshire, USA) and master student at CREAM

Lecturing and laboratory/field demonstrating experience for several 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.

Reviewer for **1) scientific papers** submitted to high impact scientific journals (Tree Physiology, Oecologia, New Phytologist, iForest, Frontiers in Plant Science, Biogeosciences, Ecological Indicators, Rapid Communications in Mass Spectrometry, Plant Cell and Environment, Dendrochronologia); **2) grant proposals** submitted to the Swiss National Foundation, SNF (CH) and the National Science Foundation, NSF (USA)

Public engagement: Science communication at the *Edinburgh International Science Festival* (2011-2012); *Open day of the Ecohydrology lab* at the Earth Systems Research Center Institute, UNH (May 2016); Interview for the Italian *blog* 'Oggiscienza' available here (<https://oggiscienza.it/2016/05/02/foreste-cambiamenti-climatici-fotosintesi/>).

LIST OF PUBLICATIONS

PUBLICATIONS IN INTERNATIONAL PEER-REVIEWED JOURNALS

[1] **Guerrieri R**, Asbjornsen H, Lepine L, Xiao J, Ollinger S (2016). Guerrieri, R., L. Lepine, H. Asbjornsen, J. Xiao, and S. V. Ollinger (2016). *Evapotranspiration and water use efficiency in relation to climate and canopy nitrogen in U.S. forests*. **J. Geophys. Res. Biogeosci.**, 121, 2610–2629, doi:10.1002/2016JG003415.

[2] Malhi, Y., Girardin, C. A. J., Goldsmith, G. R., Doughty, C. E., Salinas, N., Metcalfe, D. B., Huaraca Huasco, W., Silva-Espejo, J. E., del Aguilla-Pasquell, J., Farfán Amézquita, F., Aragão, L. E. O. C., Guerrieri, R., Ishida, F. Y., Bahar, N. H. A., Farfan-Rios, W., Phillips, O. L., Meir, P. and Silman, M. (2016). *The variation of productivity and its allocation along a tropical elevation gradient: a whole carbon budget perspective*. **New Phytologist** doi:10.1111/nph.14189

[3] 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** doi:10.1111/nph.14079.

[4] 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** doi: 10.1093/treephys/tpw003.

[5] **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 and Biology** 21 (12): 4613-4626.

[6] 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.

[7] 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.

[8] S Leonardi, T Gentilesca, **R Guerrieri**, F Ripullone, F Magnani M Mencuccini, T van Noije and M Borghetti (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 CO₂ conditions*. **Global Change and Biology** 18:2925-2944.

[9] 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.

[10] **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 $\delta^{13}\text{C}$, $\delta^{18}\text{O}$ and $\delta^{15}\text{N}$ in tree rings*. **Global Change and Biology** 17:1946-1962.

[11] **Guerrieri R**, Siegwolf RTW, Saurer M, Ripullone F, Mencuccini M, Borghetti M (2010). *Anthropogenic NO_x emissions alter the intrinsic water-use efficiency (WUEi) for *Quercus cerris* stands under Mediterranean climate conditions*. **Environmental Pollution** 158: 2841-2847.

[12] **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** 43:410-419.

[13] 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.

[14] 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.

[15] 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** 23:137-144.

PAPERS SUBMITTED, UNDER REVISION

[16] Nikolaos M. Fyllas, Lisa Patrick Bentley, Alexander Shenkin, Gregory P. Asner, Owen K. Atkin, Sandra Diaz, Brian Enquist, William Farfan-Rios, Emmanuel Gloor, **Rossella Guerrieri**, Walter Huaraca Huasco, Yoko Ishida, Roberta E. Martin, Patrick Meir, Oliver Phillips, Norma Salinas, Miles Silman, Lasantha K Weerasinghe, Joana Zaragoza-Castells and Yadvinder Malhi (2017). Solar radiation and functional traits explain the decline of forest primary productivity along a tropical elevation gradient. Submitted to **Ecology Letters**.

PAPERS IN PREPARATION

[17] **Guerrieri R**, Jennings K et al. (2016). Carbon and oxygen isotopes in the whole wood, and not cellulose, depict environmental signals across a latitudinal gradients in Eastern US.

[18] **Guerrieri R**, Belmecheri S, Asbjorsen H, Lepine L, Xiao J, Ollinger S et al. (2017). Temporal trends in water-use efficiency across U.S. forests: integrating tree ring stable C and O isotopes with eddy covariance data.

[19] **Guerrieri R**, Rossi S, Deslauriers A, Jennings K, Lepine L, Ouimette A, Milliman T, Ollinger S (2017). Linking carbon and water cycles in forests: from the cell to the ecosystem (2017).

[20] **Guerrieri R**, Vanguelova E, Pitman R, Perks M, Eaton E, Benham S, Morison J and Mencuccini M (2017). Effects of nitrogen deposition and climate on water use efficiency for UK forests.

OTHER PUBLICATIONS

Guerrieri R (2007). *Tree ecophysiology under limiting conditions. Two study cases: at treeline and at exposure to emissions from anthropogenic activities. PhD thesis*

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.

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

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.