DR. SERGIO MARCONI

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Education

University of Florida, Gainesville, FL, US 21/12/2020
Ph.D in Interdisciplinary Ecology

University of Tuscia, Viterbo, Italy 21/11/2014
M.Sc. cum Laude in Forestry and Environmental Sciences

University of Tuscia, Viterbo, Italy 13/12/2010
B.Sc. cum Laude in Forestry and Environmental Sciences

Honors and Awards

1. UF-CALS Outstanding Achievement Award;
2. US-Italy Fulbright fellowship Self Placed fellowship;
3. University of Florida Informatics Institute fellowship;
4. University of Florida Biodiversity Institute fellowship;
5. Master of Sciences with honors, Tuscia University;
6. Bachelor of Sciences with honors, Tuscia University;

Grants

1. US-Italy Fulbright fellowship 2015/16 Award, **$31,000**; 2015/16
2. University of Florida Informatics Institute fellowship, **$26,190**; 2019/20
3. University of Florida Biodiversity Institute fellowship, **$20,000**; 2017/18
4. Michael Vinciguerra IIE Supplemental Grant, **$4,000**; 2015/16
5. Short Term Scientific Mission grant, COST action, Karlsruhe Institute of Technology, IMK-IFU, **1,570€;** 2010
6. UF Informatics Institute travel award **$500**; 2019
7. Travel grant for AGU Fall Meeting, CMCC, **560€**; 2013
8. UF IFAS Travel Grant for Gordon Conference **$250**; 2016
9. Forest Ecology Lab. Student fellowship, Tuscia University, **960 €**; 2009
10. Information Systems and Inventories Lab. Student fellowship, Tuscia University, **960€**.

Professional Experience

1. *Post Graduate fixed term contract, CMCC, ORIENTGATE, IAFENT*, 1/12/2014 to 30/6/2015
   a. Development of a Forest Ecosystem Process Model (C/++)
   b. Metanalysis of impacts of forest physical change on Climate
2. *Project related fixed term contract, Project ORIENTGATE, CMCC, IAFENT,* Data analysis of structure of forests in Central Africa (Ghana) 2013

Teaching experience

1. *Graduate level workshops in scientific programming for UF Carpentries* 2016/19
    a. Instructor and helper to a number of workshops in R, Git, Shell, OpenRefine, Geospatial Ecology for the Carpentries Organization;
2. *Graduate level workshop on Pattern Recognition and Spatial Ecology at the UFBI (website):* 2018
    a. Developed materials, Organized, and taught a Spatial Ecology workshop focusing on tree crown objects delineation and classification using hyperspectral and LiDAR data
3. *Co-mentoring undergrad student*: Choi Hyun (Computer Sciences)

Computer Skills

Programming Languages: R, Pyhton, C/++, Bash, Matlab
Main computational/statistical tools: HPC computing, version control (e.g. git, GitHub), bayesian statitics tools (jags, rstan, brms), python machine learning suites (keras, sklearn), r/python geospatial tools (e.g., lidR, gdal, sf, postgis, geopandas, rasterio).

Invited presentations

1. **Marconi S.** "Rethinking the fundamental unit of ecological remote sensing: Scaling functional and structural traits from individuals to landscape scale". CESD invited seminar, 2020.
2. **Marconi S.** "Big not just data: NEON as the trans-disciplinary, open community to unlock ecology across space, taxa, and time.", Plenary talk at the first NEON Science Summit, 2019.
3. **Marconi S.** "Rethinking the fundamental unit of ecological remote sensing: Scaling functional and structural traits from individuals to landscape scale". UFBI Symposium 2018.

Peer Reviewed Papers

Total citation count (Google Scholar): 219;
h-index: 7
h-10: 7

1. **Marconi, S.,** Graves, S.J., Weinstein, B.G., Bohlman, S. and White, E.P., 2020. *Estimating individual level plant traits at scale.* Accepted, Ecological Applications.
2. Weinstein, B.G., **Marconi, S.**, Aubry-Kientz, M., Vincent, G., Senyondo, H. and White, E., 2020. DeepForest: *A Python package for RGB deep learning tree crown delineation.* Methods in Ecology and Evolution.
3. Weinstein, B. G., **Marconi, S**., Bohlman, S. A., Zare, A., & White, E. P. 2020. Cross-site learning in deep learning RGB tree crown detection. Ecological Informatics, 56, 101061.
4. Taylor, S.D. and **Marconi, S., 2020.** Rethinking global carbon storage potential of trees. A comment on Bastin et al.(2019). Annals of Forest Science, 77(2), pp.1-7.
5. Weinstein, B.G., **Marconi, S.**, Bohlman, S., Zare, A. and White, E., 2019. Individual tree-crown detection in RGB imagery using semi-supervised deep learning neural networks. Remote Sensing, 11(11), p.1309.
6. **Marconi, S**., Graves, S.J., Gong, D., Nia, M.S., Le Bras, M., Dorr, B.J., Fontana, P., Gearhart, J., Greenberg, C., Harris, D.J. and Kumar, S.A., …, Wang DZ., In press. *A data science challenge for converting airborne remote sensing data into ecological information*. PeerJ.
7. **Marconi, S.,** Chiti, T., Nolè, A., Valentini, R. and Collalti, A., 2017. *The role of respiration in estimation of net carbon cycle: coupling soil carbon dynamics and canopy turnover in a novel version of 3D-CMCC forest ecosystem model*. Forests, 8(6), p.220.

8. Perugini, L., Caporaso L., **Marconi S.**, Cescatti A., Quesada B., de Noblet-Ducoudre N., House J.I., and Arneth A.. "*Biophysical effects on temperature and precipitation due to land cover change.*" Environmental Research Letters 12, no. 5 (2017): 053002.
9. Collalti, A., **Marconi, S.,** Ibrom, A., Trotta, C., Anav, A., D'andrea, E., Matteucci, G., Montagnani, L., Gielen, B., Mammarella, I. and Grünwald, T., 2016. *Validation of 3D-CMCC Forest Ecosystem Model (v. 5.1) against eddy covariance data for 10 European forest sites*. Geoscientific Model Development, 9(2), pp.479-504.
10. Vaglio Laurin, G., Hawthorne, W.D., Chiti, T., Di Paola, A., Cazzolla Gatti, R., **Marconi, S.,** Noce, S., Grieco, E., Pirotti, F. and Valentini, R., 2016. *Does degradation from selective logging and illegal activities differently impact forest resources? A case study in Ghana.* iForest-Biogeosciences and Forestry, 9, pp.354-362.

Pre-Prints

1. Weinstein B.G., **Marconi S**., Bohlman S., Zare A., Singh A., Graves S.J., White E.P., "Predicting 115 million trees in the National Ecological Observatory Network", in prep.

Publications in Prep

1. **Marconi, S**., Weinstein B., Bohlman S., Singh A., White EP. "Disentangling the role of phylogeny and climate on joint leaf traits distribution across Eastern United States", in prep.
2. **Marconi, S.**, Weinstein B., Steward D., Graves. S.J., Singh A., Zare A., Bohlman S., White EP "An ensemble of multiple weak classifiers to derive a remotely sensed inventory of tree species for 60 million individual crowns across the US.", in prep.
3. Nagy C., Bissell E., Cattau M., Glenn N., Halpern B., Ilangakoon N., Johnson B., Joseph M., **Marconi S.**, …, Balch J.K. "Harnessing the NEON data revolution", in prep.
4. Kitzes J., Joseph M., **Marconi S.**, Bombaci S., Yang Di, Blake R., Schweiger A., Chapman M., LaRue L., Duran S., Thilina S., "Biodiversity instrumentation and machine learning", in prep.
5. Weinstein BG, Graves, S.J., **MarconiS**., Bohlman S., Zare A., White EP. "A benchmark dataset for individual tree crown detection in co-registered airborne RGB, LiDAR and Hyperspectral data imagery from the National Ecological Observation Network", in prep.

Conference Papers and Technical Reports

1. Choi, H., Sadeghian, A., **Marconi, S**., White, E. and Wang, D.Z., 2019. *Measuring Impact of Climate Change on Tree Species: analysis of JSDM on FIA data.* NeurIPS 2019 Workshop: Tackling Climate Change with Machine Learning.
2. M. Santini, S. Torresan, A. Trabucco, D. Balzarolo, A. Bonaduce, G. Coppini, … **S. Marconi**, …, & A. L. Zollo, 2014. "*Pilot study 3 Orientgate Report: Adaptation in water and coastal areas in Puglia, Italy*."
3. A. Collalti, M. Santini, **S. Marconi**, M. Mattiuzzi, A. Candini, S. Natali, A. Nolè, R. Valentini, 2013. "*Application of the 3D-CMCC FEM (Three Dimension Forest Ecosystem Model) on multi-temporal NDVI satellite imagery and future scenarios*". First annual conference, Società Italiana per le Scienze del Clima.

Peer reviewed for journals:

Publons profile: https://publons.com/a/1499258

Nature Climate Change, Methods in Ecology and Evolution, Journal of Ecology, Remote sensing, Geoderma, Sustainability.

Contributed Oral Presentations

1. **Marconi S.** Disentangling the role of ecological drivers on forest biological dimensions across scales. SNRE exit seminar, Univeristy of Florida, 2020
2. **Marconi S.** Disentangling the role of ecological drivers on tree dimensions from landscape to continental scale. PEERS seminar, Univeristy of Florida, 2020
3. **Marconi S.** Disentangling the role of ecological drivers on tree dimensions from landscape to continental scale. UFII Fellows Journal club, 2020
4. **Marconi S.** Big Data in Ecology: Using HiPerGator to Disentangle the Effects of Climate on Million of Trees. 2nd Annual HiperGator Symposium, 2019
5. Chaudhary V. & **Marconi S**., Automatic categorization of camera trap images using machine learning. 3rd Annual UFBI symposium, 2019.
6. **Marconi S**, Graves SJ., Bohlman S, Lichstein JW, Singh A, White EP. Scaling up remote sensing fundamental unit: from pixel to crowns. Inferring forest structure and traits syndromes for each individual tree within NEON forest sites. Ecological Society of America Annual Meeting, Contributed Talk in Statistics (COS 87) New Orleans, 2018
7. S Graves*, T Caughlin, **S Marconi**, S Bohlman “From pixels to function: Tree growth estimation from canopy hyperspectral reflectance”, ForestSat 2018, DC
8. **Marconi, S.,** Graves, S.J., Gong, D., Nia, M.S., …, Bohlman S., Weng D., White EP., “Data Science for Plant Identification with Remote Sensing”, Hyperspectral Image (HSI) Analysis Seminar series at University of Florida, 2017

Contributed Poster Presentations

1. **Marconi S.**, Weinstein B., Bohlman S., White EP. “Disentangling the role of phylogeny and climate on joint leaf traits distribution across Eastern United States", American Geophysical Union Fall Meeting, 2019.
2. **Marconi, S.,** White E. (2016). *Scaling Up Competition For Light From Leaf To Ecosystem: A New Framework To Represent Intra-crown Plasticity For Evergreen Species at the Gordon Research Conference: Unifying Ecology Across Scales* in Biddeford, Maine, USA.
3. **S. Marconi**, A. Collalti, M. Santini, R. Valentini (2014) "*Assessing NEE and Carbon Dynamics Among European Forest Ecosystems: Development and Validation of a New Phenology and Soil Carbon Routines within the Process Oriented 3D-Cmcc-Forest-Ecosystem Model*". Poster presentation at the annual meeting of the American Geophysical Union, December 18th, San Francisco CA.
4. **S. Marconi**, A. Collalti, M. Santini, R. Valentini (2013) "*Simulating Carbon cycle and phenology in complex forests using a multi-layer process based ecosystem model; evaluation and use of 3D-CMCC-Forest Ecosystem Model in a deciduous and an evergreen neighboring forests, within the area of Brasschaat (Be)*". Poster presentation at the annual meeting of the American Geophysical Union, December 10th, San Francisco CA.
5. A. Collalti, M. Santini, **S. Marconi**, M. Mattiuzzi, A. Candini, S. Natali, A. Nolè, R. Valentini (2013) “*Application of the 3D-CMCC FEM (Three Dimension Forest Ecosystem Model) on multi-temporal NDVI satellite imagery and future scenarios*”. Poster presentation at the annual meeting of the American Geophysical Union, December 13th, San Francisco CA.
6. A. Collalti, **S. Marconi**, G. Vacchiano, R. Motta, R. Valentini (2013) “*Simulazione della produttività di pinete di pino silvestre delle Alpi occidentali con il modello 3D-CMCC FEM*”. IX Congresso Nazionale SISEF, 16th September, Bolzano, Italy.

7. A. Collalti, **S. Marconi**, A. Candini, M. Santini, R. Valentini (2013) "*3D-CMCC LAND, a new flexible tool for land modeling". Poster presentation given at the 2013* "CMCC Annual meeting", Ugento (LE), Italy.

Languages

Italian (mother tongue)
English (fluent)