DR. SERGIO MARCONI

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Education

2020	Ph.D in Interdisciplinary Ecology, University of Florida
2014	M.Sc. (cum Laude) in Forestry and Environmental Sciences, University of Tusica
2010	B.Sc. (cum Laude) in Forestry and Environmental Sciences, University of Tuscia

Research and Professional Experience

2020-	Postdoctoral Associate at University of Florida
2014-15	Postgraduate Research fellow at the Euro-Mediterranean Center on Climate Change

Fellowships and Awards

1. UF-CALS Outstanding Achievement Award (2020)
2. University of Florida Informatics Institute Fellowship (2019)
3. University of Florida Biodiversity Institute fellowship (2017)
4. US-Italy Fulbright fellowship (2015)

Publications (including Pre-prints)

1. **Marconi, S**., Weinstein, B. G., Lichstein, J. W., Bohlman, S. A., Singh, A., & White, E. P. (2021). Disentangling the roles of inter and intraspecific variation on leaf trait distributions across the eastern United States. bioRxiv https://doi.org/10.1101/2021.04.01.438064 (in revision).
2. **Marconi, S.,** Weinstein, B.G., Zou, S., Bohlman, S.A., Zare, A., Singh, A., Stewart, D., Harmon, I., Steinkraus, A. and White, E.P., (2021). Continental-scale Hyperspectral tree species classification in the National Ecological Observatory Network. bioRxiv https://www.biorxiv.org/content/10.1101/2021.12.22.473714v1 (in revision at Remote Sensing of Environment).
3. Graves SJ, **Marconi S**, Stewart D, Harmon I, Weinstein BG, Kanazawa Y, Scholl VM, Joseph MB, McClinchy J, Browne L, Sullivan MK. (2021) Data science competition for cross-site delineation and classification of individual trees from airborne remote sensing data. bioRxiv https://www.biorxiv.org/content/10.1101/2021.08.06.453503v1 (in revision at PeerJ)
4. Nagy, R.C., Balch, J.K., Bissell, E.K. , Cattau, M.E., Glenn, N.F., Halpern, B. S., Ilangakoon, N, Johnson, B, Joseph, M.B., **Marconi, S.,** O'Riordan, C., Sanovia, J., Swetnam, T.L., Travis,

W.R., Wasser, L.A., Zarnetske, P., Abdulrahim, M., Adler, J., Barnes, G., Bartowitz, K.J., Blake, R. E., Bombaci, S.P., Brun, J., Buchanan, J.D., Chadwick, K.D., Chapman, M.S., Chong, S.S., Chung, Y.A., Corman, J.R., Couret, J., Crispo, E., Doak, T.G., Donnelly, A., Duffy, K.A., Dunning, K.H., Duran, S.M., Edmonds, J.W., Fairbanks, D.E., Felton, A.J., Florian, C.R., Gann, D., Gebhardt, M., Gill, N.S., Gram, W.K., Guo, J.S., Harvey, B.J., Hayes, K.R., Helmus, M.R., Hensley, R.T., Hondula, K.L., Huang, T., Hundertmark, W.J., Iglesias, V., Jacinthe P., Jansen, L.S., Jarzyna, M.A., Johnson, T.M., Jones, K.D., Jones, M.A., Just, M.G., Kaddoura, Y.O., Kagawa-Vivani, A.K., Kaushik, A., Keller, A.B., King, K.B.S., Kitzes, J., Koontz, M.J., Kouba, P.V., Kwan, W., LaMontagne, J.M., LaRue, E.A., Li, D., Li, B., Lin Y., Liptzin, D., Long, W.A., Mahood ,A.L., Malloy, S.S., Malone, S.L., McGlinchy, J.M., Meier, C.L., Melbourne, B.A., Mietkiewicz, N., Morisette, J.T., Moustapha, M., Muscarella, C., Musinsky, J., Muthukrishnan, R., Naithani, K., Neely, M., Norman, K., Parker, S.M., Perez Rocha, M., Petri, L., Ramey, C.A., Record, S., Rossi, M.W., SanClements, M., Scholl V.M., Schweiger A.K., Seyednasrollah B., Sihi D., Smith K.R., Sokol E.R., Spaulding, S.A., Spiers, A.I., St. Denis, L.A., Staccone, A.P., Stack Whitney, K., Stanitski, D.M., Stricker, E., Surasinghe, T.D., Thomsen, S.K., Vasek, P.M., Xiaolu, L., Yang, D., Yu, D., Yule, K.M., & Zhu, K. "Harnessing the NEON Data Revolution to Advance Open Environmental Science with a Diverse and Data-Capable Community". Ecosphere 12.12 (2021): e03833

5. 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". Ecosphere 12.11 (2021): e03795.

6. Stewart, D., Zare, A., **Marconi, S.,** Weinstein, B., White, E.P., Graves, S., Bohlman, S.A., & Singh A. RandCrowns: A Quantitative Metric for Imprecisely Labeled Tree Crown Delineation. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing 14 (2021): 11229-11239.

7. Weinstein, B., Graves, S., **Marconi, S**., Singh, A., Zare, A., Stewart, D., Bohlman, S.A., & White, E. P. (2020). A benchmark dataset for canopy crown detection and delineation in co-registered airborne RGB, LiDAR and hyperspectral imagery from the National Ecological Observation Network. PLoS computational biology 17.7 (2021): e1009180.

8. **Marconi, S.,** Graves, S. J., Weinstein, B. G., Bohlman, S., & White, E. P. (2021). Estimating individual level plant traits at scale. Ecological Applications 31(4): e02300. https://doi.org/10.1002/eap.2300

9. Weinstein, B. G., **Marconi, S**., Bohlman, S. A., Zare, A., Singh, A., Graves, S. J., & White, E. P. (2021). A remote sensing derived data set of 100 million individual tree crowns for the National Ecological Observatory Network. Elife, 10. 10.7554/eLife.62922

10. Weinstein, B. G., **Marconi, S.,** Aubry-Kientz, M., Vincent, G., Senyondo, H. & White, E. P. (2020). DeepForest: A Python package for RGB deep learning tree crown delineation. Methods in Ecology and Evolution, 11(12), 1743-1751. https://doi.org/10.1111/2041-210X.13472

11. 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. https://doi.org/10.1016/j.ecoinf.2020.101061

12. Taylor, S. D., & **Marconi, S.** (2020). Rethinking global carbon storage potential of trees. A comment on Bastin et al.(2019). Annals of Forest Science, 77(2), 1-7. https://doi.org/10.1007/s13595-020-0922-z

13. **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., Kumar, S.A., Nishant A., Prarabdh, J., Rege, S.U., Bohlman, S.A., White, E.P. & Wang, D. Z. (2019). A data science challenge for converting airborne remote sensing data into ecological information. PeerJ, 6, e5843. https://doi.org/10.7717/peerj.5843

14. Weinstein, B. G., **Marconi, S**., Bohlman, S., Zare, A., & White, E.P. (2019). Individual tree-crown detection in RGB imagery using semi-supervised deep learning neural networks. Remote Sensing, 11(11), 1309. https://doi.org/10.3390/rs11111309

15. Choi, H., Sadeghian, A., **Marconi, S.,** White, E.P., & Wang, D. Z. (2019). Measuring Impact of Climate Change on Tree Species: analysis of JSDM on FIA data. arXiv https://arxiv.org/abs/1910.04932.

16. **Marconi, S.,** Chiti, T., Nolè, A., Valentini, R., & 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), 220. https://doi.org/10.3390/f8060220

17. Perugini, L., Caporaso, L., **Marconi, S.,** Cescatti, A., Quesada, B., de Noblet-Ducoudre, N., House, I.J., & Arneth, A. (2017). Biophysical effects on temperature and precipitation due to land cover change. Environmental Research Letters, 12(5), 053002. https://doi.org/10.1088/1748-9326/aa6b3f

18. Collalti, A., **Marconi, S.,** Ibrom, A., Trotta, C., Anav, A., D'Andrea, E., Matteucci, G. Montagnani ,M., Gielen, B., I. Mammarella, I., Grünwald, T., Knohl, A., Berninger F., Zhao Y., Valentini, R., & Santini, M. (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), 479-504. https://doi.org/10.5194/gmd-9-479-2016

19. Vaglio Laurin, G., Hawthorne, W. D., Chiti, T., Di Paola, A., Cazzolla Gatti, R., **Marconi, S**., Noce, S., Grieco, E., Pirotti, F., & 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, 354-362. https://doi.org/10.3832/ifor1779-008

20. Collalti, A., Santini, M., **Marconi, S.**, Mattiuzzi, M., Candini, A., Natali, S., Nolè, A., & Valentini, R. (2013). Application of the 3D-CMCC FEM (Three Dimension Forest Ecosystem Model) on multi-temporal NDVI satellite imagery and future scenarios. In First annual conference, Società Italiana per le Scienze del Clima.

Software and Data Products

1. **Marconi, S.,** Schools, V., Weinstein, B. "neonVegWrangler" an R package to retrieve and clean NEON terrestrial and airborne data (alpha), https://doi.org/10.5281/zenodo.4647870

2. Weinstein, B., **Marconi, S.,** Aubry-Kientz, M., Vincent ,G., Senyondo, H., White, E.P. DeepForest: A Python package for RGB deep learning tree crown delineation, https://zenodo.org/record/3906928

3. **Marconi, S.,** Weinstein, B., Lichstein, J., Bohlman, S., Singh, A., White, E.P. Derived estimates of leaf traits for 1.2 million trees across Eastern US, https://zenodo.org/record/4647559#.YIlz8i1h0dU

4. Weinstein, B., **Marconi, S.,** Zare, A. Bohlman, S.A., Graves, S., Singh, A., & White E.P. NEON Tree Crowns Dataset https://doi.org/10.5281/zenodo.3765872

5. **Marconi, S.,** Graves, S.J., Weinstein, B., Bohlman, S.A., & White E.P. Derived estimates of leaf traits for ~5 million individual tree crowns at 2 NEON sites, https://doi.org/10.5281/zenodo.3991815

6. Graves, S., **Marconi, S.** IDTReeS 2020 Competition Dataset https://doi.org/10.5281/zenodo.3934932

7. Weinstein, B., **Marconi, S.,** White, E. Training Data for the NeonTreeEvaluation Benchmark https://doi.org/10.5281/zenodo.3459803

8. **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., Kumar, S.A., Nishant, A., Prarabdh, J., Rege, S.U., Bohlman, S.A., White, E.P., & Wang, D. Z. 2019 ECODSE competition training set https://doi.org/10.5281/zenodo.1206101

Invited presentations

1. **Marconi S.** "Rethinking the fundamental unit of ecological remote sensing: Scaling functional and structural traits from individuals to landscape scale". UF 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 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". UF UFBI Symposium 2018.

Contributed Oral Presentations

4. Duran, S.M., Falco, N., **Marconi, S.,** Efren, P., Henderson, A., Wainwright, H.M., Steltzer, H., Brodie, E., Saleska, S.R. and Enquist, B.J., 2021, December. Hyperspectral derived traits and vegetation indices predict rates of above-and below-ground carbon fluxes in alpine meadows. In AGU Fall Meeting 2021. AGU.

5. **Marconi S.** Disentangling the role of ecological drivers on forest biological dimensions across scales. SNRE exit seminar, Univeristy of Florida, 2020

6. **Marconi S.** Disentangling the role of ecological drivers on tree dimensions from landscape to continental scale. PEERS seminar, Univeristy of Florida, 2020

7. **Marconi S.** Disentangling the role of ecological drivers on tree dimensions from landscape to continental scale. UFII Fellows Journal club, 2020

8. **Marconi S.** Big Data in Ecology: Using HiPerGator to Disentangle the Effects of Climate on Million of Trees. 2nd Annual HiperGator Symposium, 2019

9. Chaudhary V. & **Marconi S.**, Automatic categorization of camera trap images using machine learning. 3rd Annual UFBI symposium, 2019.

10. **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

11. S Graves*, T Caughlin, **S Marconi**, S Bohlman "From pixels to function: Tree growth estimation from canopy hyperspectral reflectance", ForestSat 2018, DC

12. **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

13. **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.

14. **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.

15. **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.

16. **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.

17. 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.

18. 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.

19. 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.

Reviewer activity:

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

Guest Editor: Ecosphere, Remote Sensing
Reviewer: Nature Climate Change, Methods in Ecology and Evolution, Transactions on Geoscience and Remote Sensing, Journal of Ecology, Remote sensing, Geoderma, Sustainability.

Teaching experience

1. Certified instructor for the Carpentries
2. Developed material and taught workshops on Pattern Recognition and Spatial Ecology
3. Mentored undergraduates in Computer Sciences Dept.

Languages
Italian (mother tongue)
English (fluent)