Dr. Marco Mina
Senior Researcher

Institute for Alpine Environment   Phone: +39 0471 055 302
Eurac Research   Email: marco.mina@eurac.edu
Bolzano/Bozen   Website: https://marco-mina.com
ITALY

EDUCATION

2015	**Ph.D., ETH Zürich,** Switzerland - Forest Ecology Dissertation: *Forest dynamics, management and ecosystem services: the future of European mountain forests in an era of climate change*
2010	**M.Sc., University of Padua**, Italy - Forestry and Environmental Sciences
2007	**B.Sc., University of Padua**, Italy - Forestry and Environmental Technology

PROFESSIONAL APPOINTMENTS

2021 - now	**Senior Researcher** at Eurac Research Institute of Alpine Environment, Bolzano/Bozen, Italy
2018 - 2021	Postdoctoral Research Fellow at the Université du Québec à Montréal Centre for Forest Research CEF, Montreal, Canada
2016 - 2017	Postdoc at the Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Forest Resources and Management, Birmensdorf, Switzerland
2011 - 2012	Research Intern and Assistant at the Paul Scherrer Institute PSI Laboratory for Energy systems Analysis, Villigen, Switzerland
2007 - 2009	Technical Assistant at Paulownia Italia s.r.l., Venice, Italy

GRANTS and FELLOWSHIPS

2021–23	**Marie Sklodowska-Curie Individual Fellowship,** granted by ERC H2020-MSCA-IF-2019, 24 months. Grant number 891671
2018–19	**Early Postdoc.Mobility Fellowship**, granted by the Swiss National Science Foundation 18 months, 94 500 CAD. Grant number 75101
2012–15	PhD studentship funded through European Union 7th Framework Programme for Research and Technological Development (FP7) for project ARANGE

PUBLICATIONS

Summary: 18 peer reviewed papers, 818 total citations, h-index of 11, i10 index of 13

Articles Accepted or Published in Peer Reviewed Journals

1. Hillebrand L, Marzini S, Crespi A, Hiltner U, **Mina M** 2023. Contrasting impacts of climate change on protection forests of the Italian Alps. Frontiers in Forests and Global Change 6 1240235

2. Osborn P, Aquilué N, **Mina M**, Moe K, Jemtrud M, Messier C 2023. A trait-based approach to both forestry and timber building can synchronize forest harvest and resilience. *PNAS Nexus* 2:8, pgad254

3. Suárez-Muñoz M, Herrero J, Bonet-García FJ, **Mina M** 2023. Forest management scenarios drive future dynamics of Mediterranean planted pine forests under climate change. *Landscape Ecology*. 38, 2069–2084.

4. **Mina M**, Messier C, Duveneck M, Fortin MJ, Aquilué N. 2022. Managing for the unexpected: building resilient forest landscapes to cope with global change. *Global Change Biology* 28, 4323– 4341

5. Searle EB, Bell WF, Laroque GR, Fortin M, Dacosta J, Sousa-Silva R, **Mina M,** Deighton HD 2021. Simulating the Effects of Intensifying Silviculture on Desired Species Yields across a Broad Environmental Gradient. *Forests*. 12(6).

6. Suárez-Muñoz M, **Mina M**, Salazar PC, Navarro-Cerrillo RM, Quero JL, Bonet-García FJ. 2021. A step-by-step guide to initialize and calibrate landscape models: a case study in the Mediterranean mountains. *Frontiers in Ecology and Evolution*. 9, 209.

7. Irauschek F, Barka I, Bugmann H, Courbaud B, Elkin C, Hlasny T, Klopcic M, **Mina M**, Rammer W, Lexer MJ. 2021. Evaluating five forest models using multi-decadal inventory data from mountain forests. *Ecological Modelling* 445, 109493

8. Aquilué N, Messier C, Martins K, Dumais-Lalonde V, **Mina M**. 2021. A simple-to-use management approach to boost adaptive capacity of forest to global uncertainty. *Forest Ecology and Management*. 481: 118692.

9. **Mina M**, Messier C, Duveneck M, Fortin MJ, Aquilué N. 2020. Network analysis can guide resilience-based management in forest landscapes under global change. *Ecological Applications*. 31(1):e02221.

10. Messier C, Bauhus J, Doyon F, Maure F, Sousa-Silva R, Nolet P, **Mina M**, Aquilué N, Puettmann K. 2019. The functional complex network approach to foster forest resilience to global changes. *Forest Ecosystems*. 6:21.

11. **Mina M**, Del Rio M, Huber MO, Thürig E, Rohner B. 2018. The symmetry of competitive interactions in mixed Norway spruce, silver fir and European beech forests. *Journal of Vegetation Science*. 29:775–87.

12. Houpert L, Rohner B, Forrester DI, **Mina M**, Huber MO. 2018. Mixing Effects in Norway Spruce-European Beech Stands Are Modulated by Site Quality, Stand Age and Moisture Availability. *Forests*. 9(2), 83.

13. **Mina M**, Huber MO, Forrester DI, Thürig E, Rohner B. 2018. Multiple factors modulate tree growth complementarity in central European mixed forests. *Journal of Ecology*: 106:1106–1119.

14. Klopčič M, **Mina M**, Bugmann H, Bončina A. 2017. The prospects of silver fir (Abies alba Mill.) and Norway spruce (Picea abies (L.) Karst) in mixed mountain forests under various management strategies, climate change and high browsing pressure. *European Journal of Forest Research* 136:1071–1090.

15. **Mina M,** Bugmann H, Klopcic M, Pardos M, Irauschek F, Cordonnier T, Cailleret M. 2017. Future ecosystem services from European mountain forests under climate change. *Journal of Applied Ecology*. 54:389-401.

16. **Mina M**, Bugmann H, Klopcic M, Cailleret M. 2017. Accurate modeling of harvesting is key for projecting future forest dynamics: a case study in the Slovenian mountains. *Regional Environmental Change* 17:49-64.

17. **Mina M**, Martin-Benito D, Bugmann H, Cailleret M. 2016. Forward modeling of tree-ring width improves simulation of forest growth responses to drought. *Agricultural and Forest Meteorology* 221:13-33.

18. Meyer N.K., **Mina M.** 2012. Wood energy fuel cycle optimization for beech and spruce forests. *Environmental Research Letters*, 2012, 7, 014001.

Book chapters, technical reports, magazine articles

Hilpold A., Anderle M., Guariento E., Marsoner T., **Mina M.,** Paniccia C., Plunger J., Rigo F., Ruedisser J., Scotti A., Seeber J., Steinwandter M., Stifter S., Strobl J., Suárez-Munoz M., Vanek M., Bottarin R., Tappeiner U. Handbook Biodiversity Monitoring South Tyrol. https://doi.org/10.57749/2qm9-fq40

Messier M, Maure F, **Mina M**, Aquilué N. 2022 Le futur de la foresterie au Canada dans un monde incertain - quelques pistes de solution. In *Une économie écologique pour le Québec* eds. Mendez A, Bissonette JF, Dupras J. ISBN 978-2-7605-5560-0. 384 pg.

Mina M, Cailleret M, Motta R, Bugmann H. 2019. Fruizione futura dei servizi ecosistemici. Prospettive in funzione dei cambiamenti climatici e della gestione nelle foreste montane. *Rivista Sherwood* 239:23-27.

Mina M, Bugmann H. 2013. Improved and tested forest models for case study regions. Project Deliverable D2.1, FP7-289437-ARANGE, 44 pp, Institute of Terrestrial Ecosystems, ETH Zurich.

Theses and internship reports

Mina M. 2016. Forest dynamics, management and ecosystem services: the future of European mountain forests in an era of climate change. Ph.D. thesis. ETH Zürich. Advisor Prof. H. Bugmann.

Mina M, Meyer N. 2011. Wood energy fuel cycle optimization. Technology Assessment, Paul Scherrer Institute. Villigen, Switzerland. Internship report.

Mina M. 2010. Politiche ed istituzioni del settore forestale in Cina/Policies, Institutions and Markets in the P.R.C. forestry sector. M.Sc. thesis. University of Padua, Italy. Advisor Prof. D. Pettenella.

Mina M. 2007. Evoluzione della ectomicorrizazione in trapianti di farnia inoculati artificialmente in vivaio/Evolution of ecto-mycorrhization in artificially inoculated *Quercus robur* seedlings. B.Sc. thesis. University of Padua, Italy. Advisor Prof. L. Montecchio.

CONFERENCES - *only when first presenter*

2023   **Mina M**. Simulating biotic disturbances with forest landscape models - comparing different approaches in different forest ecosystems. European Conference of Ecological Modelling ECEM 2023, Leipzig, Germany.

2022   **Mina M**, Aquilué N, Duveneck M, Fortin MJ, Messier C. Managing forests as functional networks: preparing our landscapes for the unexpected. Forest Disturbances and Ecosystem Dynamics in a Changing World. Berchtesgaden National Park, Germany <poster>

   Mina M, Aquilué N, Duveneck M, Fortin MJ, Messier C. Managing for the unexpected - Building resilient forest landscapes to cope with global change. Ecological Society of America (ESA) Annual Meeting 2022. Montreal, Canada.

   Mina M, Aquilué N, Messier C. Managing forests as functional networks - preparing our landscapes for the unexpected. XIII Congresso Nazionale SISEF "Alberi Foreste Biodiversitá - Dal New Green Deal alla Farm to Fork Strategy". Orvieto, Italy

2021   **Mina M**, Aquilué N, Duveneck M, Fortin MJ, Messier C. Managing the Unexpected – Resilient Forest Landscapes to Novel Climate and Insect Outbreak Disturbance Regimes. IALE-North America Annual Meeting, Reno, NV [virtual]

2020   **Mina M**, Aquilué N, Duveneck M, Fortin MJ, Messier C. Coupling simulation modelling with network theory to evaluate resilience to global change in fragmented forest landscapes. IALE-North America Annual Meeting, Toronto [virtual].

       Mina M, Aquilué N, Duveneck M, Fortin MJ, Messier C. Future trajectories in fragmented forest landscapes: linking simulation modelling with the functional complex network approach. Conference: Governing and managing forests for multiple ecosystem services across the globe. Bonn, Germany.

       Mina M, Aquilué N, Duveneck M, Fortin MJ, Messier C. Seeing forest landscapes as functional complex networks: a way to enhance resilience to climate change and disturbances. Conference: Managing forests in the 21st century. Potsdam, Germany.

2019   **Mina M**, Duveneck M, Aquilué N, Fortin MJ, Messier C. Managing forest landscapes as functional complex networks to increase resilience: a simulation study. IALE World Congress, Milan, Italy

2018   **Mina M**, Aquilué N, Fortin MJ, Messier C. Coupling tree-community and landscape models with functional diversity and network theories for resilience-based forest management. ESA Annual Meeting, New Orleans, USA

2017   **Mina M**, Huber MO, Thürig E, Rohner B. Representation of species mixing in growth functions for forest development models. Cost PROFOUND Final Conference, Potsdam, Germany

       Mina M, Huber MO, Thürig E, Rohner B. Disentangling species mixture effects on individual-tree growth using Swiss national forest inventory data. IUFRO 125th Anniversary Congress, Freiburg, Germany <poster>

2016   **Mina M**, Huber MO, Thürig E, Rohner B. Integrating effects of species mixture into individual-tree growth models based on national forest inventory data. EUMIXFOR Final Conference, Prague, Czech Republic <poster>

2015   **Mina M**, Cailleret M, Bugmann H. Can adapted forest management sustain the provision of multiple ecosystem services in different European mountain regions? Mountains of Our Future Earth, Perth, UK

       Mina M, Martin-Benito D, Bugmann H, Cailleret M. Tree-ring forward modelling improves growth response to drought for simulating long-term forest dynamics. EuroDendro 2015, Antalya, Turkey <poster>

       Mina M, Cailleret M, Bugmann H. Adaptive forest management is necessary to maintain ecosystem services in different European mountain regions. ARANGE Final Conference, High Tatra Mts., Slovakia

2014   **Mina M**, Bugmann H, Klopcic M, Cailleret M. Which management under climate change? An assessment of the provisioning of ecosystem services in mountain forests. IUFRO Congress, Salt Lake City, USA <poster>

       Mina M, Bugmann H, Klopcic M, Cailleret M. Does management of Slovenian Silver fir-European beech mountain forests need to be adapted to climate change? GfÖ Annual Meeting, Hildesheim, Germany

       Mina M, Cailleret M, Bugmann H. A modeling approach for evaluating the sustainability of Business-As-Usual management in uneven-aged Dinaric mountain forests. 9th IUFRO Conference on Uneven-aged Silviculture, Birmensdorf, Switzerland <poster>

2013   **Mina M**, Cailleret M, Bugmann H. Testing the applicability of a forest succession model in Mediterranean mountains. ClimTree Conference Zurich, Switzerland <poster>

INVITED TALKS - *selected*

May 2023 Forest modelling, biodiversity & More - Eurac's Alpine Environment research in South Tyrol. SLF Davos, Switzerland

Dec 2022 *Spatio-temporal scales of resilience – from trees to landscapes and climatic change*, University of Helsinki [remotely]

Models for sustainable forest management, University of Innsbruck

May 2022 *Forest Planning 2.0 – Simulating forest futures to aid management decisions*, Free University of Bolzano/Bozen, seminar for PhD program

Apr 2022 *Modelling forest landscapes as functional complex networks for resilience to global change*, Quebec LANDIS-Hub [remotely]

Feb 2020 *Forest landscapes as functional complex networks: a new approach to increase multi-scale resilience to global change*, WSL Birmensdorf, Switzerland

Dec 2019 *Forest Planning 2.0: Foreseeing forest futures to aid management decisions*, Harvard Forest, MA, USA

Oct 2019 *European forests: status, management, challenges and ecosystem services*, University of Toronto, Canada

Jan 2017 *Individual tree growth complementarity in Swiss forests varies with mixture types, climate and stand conditions*, INIA Madrid, Spain

Jan 2016 *Forward modeling of tree-ring width improves simulation of forest growth responses to drought*, WSL Birmensdorf, Switzerland

Oct 2014 *Mountain forests, climate change and management: a modeling approach*, UC Berkeley USA

SKILLS AND COMPETENCES

Programming R, C#, SQL

Software ArcGIS, Git and Github, Microsoft Office (certified ECDL), Reference Management (EndNote, Mendeley, Zootero), Adobe Acrobat, Photoshop, InkScape, Cofecha (tree-rings analysis), SimaPro and Ecoeditor (Life Cycle Assessment & Inventory), Web editing (HTML, WordPress, Hugo, Markdown)

Languages
Italian	native speaker
English	full proficiency
German	intermediate (B1)
French	intermediate (B1)

Scientific methods ● Use and development of process-based forest simulation models (ForClim, LANDIS-II, iLand, PnET, VSlite) ● Analysis of large environmental datasets (e.g., forest inventories, permanent sampling plots) ● Statistical modeling ● Forest sampling for growth modeling, diversity, and structure ● Tree sampling for dendroecology and analysis of tree-ring data ● Scientific writing, blogging and science communication.

PROFESSIONAL SERVICE AND MEMBERSHIPS

National Scientific Habilitation as Associate Professor in the scientific sector 07/B2 - Arboriculture and forest systems (session 2021-2023) (Feb 2023 – Feb 2033). Unanimous vote of the Committee.

Projects	2012 – 2015 *ARANGE* (EU FP7): Active member of the project consortium, preparation of project deliverables, data contributor, task co-responsible
	2016 – 2017 *Swiss-SpeMixMod* (Swiss Secretariat for Research and Innovation under the COST Action EuMIXFOR): Co-lead, co-author of annual reports
Reviewing	*Peer-review for journals* (total: 27) Journal of Ecology, Forest Ecology and Management, Global Change Biology, Global and Environmental Change, Agricultural and Forest Meteorology, Journal of Applied Ecology, Methods in Ecology and Evolution, PLOS ONE, Ecosystems, Ecosphere, and others. Publons profile: H-6047-2019
	Grant proposals BiodivERsA ERA-NET COFUND H2020, LabEx ARBRE
Editorial roles	2020 –21 Guest Associate Editor and Review Editor for Frontiers in Forests and Global Change
Memberships	2021 – SwissForestLab (Associated member) 2018 – Centre for Forest Research CEF-CFR 2018 – Ecological Society of America 2013 – Italian Society of Silviculture and Forest Ecology SISEF
Public outreach	Contributing author for scientific blogs Forest Monitor (http://www.forest-monitor.com/en/) and EFI Resilience blog (https://resilience-blog.com/)
Teaching	2023 Invited lecturer at the Free University of Bolzano and University of Milan 2021 Écologie et environnement à l'international (ECO5053), BSc Ecology and Environment, UQO, Canada 2019 MSc Sustainable Management of Forest Ecosystems, UQAM, Canada 2018/19 Multi-scale forest Dynamics Models, MSc European forestry Erasmus Mundus, University of Lleida, Spain
Mentoring and supervision	Supervision of 1 PhD student (ongoing) Co-supervision of 1 PhD student (finished) Supervision of multiple MSc students and interns
Consultancy	Technical assistant in a forestry consultancy company (Paulownia Italia srl)

CONTINUING EDUCATION AND TRAINING

2018	Landscape Ecology, ETH Zurich (edX verified certificate), Switzerland Complex Network Winter Workshop, University of Vermont, Quebec, Canada
2016	Nonlinear Regression, ETH Zurich Advanced Studies in Applied Statistics, Switzerland SORTIE-ND Workshop, Cary Institute of Ecosystem Studies, Millbrook NY, USA
2012 – 2015	Vocational courses and qualifying exams for doctoral studies: Applied Statistical Regression, Robust Statistics, R programming, R graphics, ArcGIS, Landscape Ecology, Dendroecology, Project Management for research, Scientific Writing, German language. ETH Zurich, Switzerland
2010	Course of Dendrochronology. University of Padua & WSL Institute, S. Vito di Cadore, Italy
2009	Visiting student at the Chinese Academy of Forestry, Beijing, China (2 months)
2006	Practice with plant breeding and nursery management. Centre for Biodiversity and Outside-Forest Activities, Veneto region, Italy