Dr Marco Mina

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CURRENT POSITION

Researcher at Eurac Research
- Evaluation of future forest landscapes under uncertain global changes
- Forest stand and landscape dynamic modelling, landscape ecology
- Integrated forest management

EDUCATION

2012 – 2015	**Ph.D. Forest Ecology, Department of Environmental Systems Science**, ETH Zürich, Switzerland - Advisor Prof. H. Bugmann ⎮ Date obtained: 18 Dec 2015
2010	**M.Sc. Forestry and Environmental Sciences**, University of Padua, Italy
2007	B.Sc. in Forestry and Environmental Technology. University of Padua, Italy

PROFESSIONAL EMPLOYMENT

2021 - now	Researcher (Marie Skłodowska-Curie fellow) 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

Suárez-Muñoz M, Herrero J, Bonet-García FJ, **Mina M** (*under review*) Forest management scenarios drive future dynamics of Mediterranean planted pine forests under climate change.

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

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).

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.

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

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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

Book chapters, reports, magazine articles, theses

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

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.

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

Mina M. 2010. Policies, Institutions and Markets in the P.R.C. forestry sector. M.Sc. thesis. Available online in Italian*.* University of Padua, Italy. Advisor Prof. D. Pettenella.

Mina M. 2007. 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*

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

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

Jun 2017 *The Swiss-SpeMixMod project: studying mixing effects using forest inventory data*, WSL Birmensdorf, Switzerland

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

Nov 2014 *A simulation study for evaluating adaptive management in Slovenian Silver fir-European beech mountain forests under climate change*, University of Bolzano/Bozen, Italy

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

SKILLS AND COMPETENCES

Programming R, C#, SQL, Pascal

Software ArcGIS, Git and Github, Microsoft Office (certified ECDL), Reference Management (EndNote, Mendeley), Adobe Acrobat, Photoshop, Illustrator, 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

| 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: 26) Journal of Ecology, Forest Ecology and Management, 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 – Guest Associate Editor 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 | 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 | Co-supervision of 2 PhD student (ongoing)
Supervision of several MSc students and interns |
| Consultancy | Technical assistant in a forestry consultancy company (Paulownia Italia srl) |
| Events | Mixed Forests Workshop, WSL Birmensdorf, Nov 2017
Workshop convener/co-organiser ARANGE WP2-4, ETH Zurich, Sep 2012
Support Fair *Forlener* 2007 w/ Paulownia Italia srl, Italy, Sep 2007 |

CONTINUING EDUCATION AND TRAINING

| 2018 | Landscape Ecology, ETH Zurich (edX verified certificate), Switzerland
Complex Network Winter Workshop, University of Vermont, Quebec, Canada |
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| 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

DATASETS AND CODES

Mina M (2022). Managing for the unexpected: building resilient forest landscapes to cope with global change: Supporting data [Data set]. In Global Change Biology. Zenodo. https://doi.org/10.5281/zenodo.6434982

Mina M (2020). LANDIS-II and PnET-Succession supporting data to Mina et al. 2021 Ecological Applications. In Ecological Applications (1.0, Vol. 31, Number 1). Zenodo. https://doi.org/10.5281/zenodo.3823195

Mina M, Huber MO, et al. (2017) Datasets supporting Mina et al. (2018) *Journal of Ecology*. Dryad Data Repository. http://dx.doi.org/10.5061/dryad.r8591

Mina M, Bugmann H, et al. (2016) Datasets supporting Mina et al. (2017) *Journal of Applied Ecology*. Dryad Data Repository. http://dx.doi.org/10.5061/dryad.21sj8

Mina M, Martin-Benito D, et al. (2016). Modified VS-Lite model. Code accompanying Mina et al. (2016) *Agricultural and Forest Meteorology*. PANGAEA. https://doi.pangaea.de/10.1594/PANGAEA.857289