

Christian Temperli – Curriculum vitae

Updated 1.12.2021

Contact:

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Education

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| 3.2009-12.2012 | Ph.D. Thesis at the Professorship Forest Ecology, Department of Environmental Systems Science, ETH Zurich. Title of thesis: <i>"Climate change, large-scale disturbances and adaptive forest management"</i> . Supervision: Prof. H. Bugmann (ETH Zurich) and Dr. C. Elkin (ETH Zurich). Date of thesis defense: 7 December 2012. |
| 6.2007-12.2007 | Diploma thesis (M.Sc.) with the Disturbance Ecology group at WSL. Title of thesis: <i>"Vegetation dynamics after forest fire in comparison to the pre-fire state"</i> . Supervision: Prof. H. Bugmann (Forest Ecology, ETH Zurich) and Dr. T. Wohlgemuth (Disturbance Ecology, WSL Birmensdorf). |
| 10.2002-12.2007 | Studies in environmental sciences at the Department of Environmental Systems Science at ETH Zurich with focus on terrestrial systems and biology. |

Appointments

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| Since 9.2018 | Scientific staff member, Scientific Service NFI at WSL, Birmensdorf.
Research on forest ecosystem service provision, NFI-reporting on timber harvesting and management planning. |
| 9.2016–9.2018 | Scientific staff member, Resource Analysis at WSL, Birmensdorf.
Modelling and projecting ecosystem services indices based on forest inventory data. |
| 9.2014–9.2016 | Postdoc with the Resource Analysis group at WSL, Birmensdorf.
Empirical modelling of forest development under various timber harvesting scenarios. NFP66 Project MOBSTRAT |
| 4.2013–4.2014 | Postdoc at the Department of Geography, University of Colorado at Boulder funded through the Swiss National Science Foundation fellowship for prospective researchers until April 2014 (Grant number 145714).
Dynamic modeling of forest disturbance and ecosystem services under climate change, Field study on logging-bark beetle interactions, student mentoring. |
| 1.2013 | Postdoc at the Professorship Forest Ecology, ETH Zürich.
Publication of Ph.D. research (one month). |
| 3.2009-11.2012 | Scientific assistant at the Professorship Forest Ecology, ETH Zurich.
Ph.D. research and maintenance of group website. |

2005–2009 Practical trainings at the Professorship Forest Ecology, ETH Zürich (12.2008–2.2009), with the Stand Dynamics and Silviculture group at WSL, Birmensdorf (1.2008–8.2008) and with Parks Victoria in the Dandenong Ranges National Park, Australia (11.2005–3.2006).

Research skills

- Application, development and evaluation of dynamic ecosystem models
- Planning and leading landscape-scale forest inventory and vegetation sampling campaigns
- Data processing, analysis and visualization: R, SQL and SAS
- Object-oriented programming: C++
- GIS: ESRI ArcGIS, R
- Scientific writing and publishing
- MS Office (Word, Excel, Access, PowerPoint, etc.)

Languages

- German: native language
- English: fully proficient
- French: intermediate

Outreach, dissemination and services

Scientific talks: Colloquium of the Research unit Forest Resources and Management 2015 and 2017, Colloquium at the Department of Geography, University of Colorado at Boulder 2013, Various talks at meetings of the MOBSTRAT (2014–2016) and MOTIVE (2010–2013) projects. See publication list for contributions to international conferences.

Practitioner interactions: Development of timber mobilization scenarios with cantonal forestry officers in MOBSTRAT (2014–2016); Montagskolloquium 2012, ETH Zürich; MOTIVE stakeholder meeting 2011, Rastatt, Germany; Collaboration on practitioner course Climate change and Silviculture (*Waldbau unter dem Einfluss des Klimawandels*) 2011, Forest Education Center, Maienfeld, Switzerland.

Dissemination: Collaboration on various dissemination products of the projects MOTIVE and MOBSTRAT.

Reviews for *Atmosphere*, *Canadian Journal of Forest Research*, *Ecological Applications*, *Ecological modelling*, *Ecological Monographs*, *Ecosphere*, *Environmental Modelling and Software*, *Forest Ecology and Management*, *Forestry*, *Forests*, *Frontiers in Forests and Global Change*, *Global Change Biology*, *Journal of Environmental Management*, *Journal of Vegetation Science*, *Landscape Ecology*, *Mountain research and development*, *PeerJ*, *Plant and Soil*, *PlosOne*, *Restoration ecology*, *Scientific Reports*, *Sustainability*

Peer-reviewed:

- Bont, L., M. Fraefel, C. Fischer, **C. Temperli**, and F. Frutig. 2021. Beurteilung der Holzerntesysteme und der Walderschliessung in der Schweiz: neue Produkte. *Schweizerische Zeitschrift für Forstwesen* 172:268–277.
- Temperli, C.**, and C. Blattert. 2021. Waldleistungen und Störungsanfälligkeit: eine modellbasierte Multikriterienanalyse. *Schweizerische Zeitschrift für Forstwesen* 172:300–309.
- Bowditch, E., G. Santopuoli, F. Binder, M. del Río, N. La Porta, T. Kluvankova, J. Lesinski, R. Motta, M. Pach, P. Panzacchi, H. Pretzsch, **C. Temperli**, G. Tonon, M. Smith, V. Velikova, A. Weatherall, and R. Tognetti. 2020. What is Climate-Smart Forestry? A definition from a multinational collaborative process focused on mountain regions of Europe. *Ecosystem Services* 43:101113.
- Santopuoli, G., **C. Temperli**, I. Alberdi, I. Barbeito, M. Bosela, A. Bottero, M. Klopčič, J. Lesinski, P. Panzacchi, and R. Tognetti. 2020 (e-first). Pan-European Sustainable Forest Management indicators for assessing Climate-Smart Forestry in Europe. *Canadian Journal of Forest Research*.
- Blattert, C., R. Lemm, E. Thürig, G. Stadelmann, U.-B. Brändli, and **C. Temperli**. 2020. Long-term impacts of increased timber harvests on ecosystem services and biodiversity: A scenario study based on national forest inventory data. *Ecosystem Services* 45:101150.
- Temperli, C.**, C. Blattert, G. Stadelmann, U.-B. Brändli, and E. Thürig. 2020. Trade-offs between ecosystem service provision and the predisposition to disturbances: a NFI-based scenario analysis. *Forest Ecosystems* 7:27.
- Temperli, C.**, and H. Bugmann. 2020. Borkenkäferdynamik im Klimawandel: die Bedeutung der Landschaftsebene. *Schweiz Z Forstwes* 171:142–150.
- Stadelmann, G., **C. Temperli**, B. Rohner, M. Didion, A. Herold, E. Rösler, E. Thürig. 2019. Presenting MASSIMO: A Management Scenario Simulation Model to Project Growth, Harvests and Carbon Dynamics of Swiss Forests. *Forests* 10. doi:10.3390/f10020094.
- Schelhaas, M.-J., J. Fridman, G. Hengeveld, H. Henttonen, A. Lehtonen, U. Kies, N. Krajnc, B. Lerink, A. Dhubháin, H. Polley, T. Pugh, J. Redmond, B. Rohner, **C. Temperli**, J. Vayreda, G.-J. Nabuurs. 2018. Actual European forest management by region, tree species and owner based on 714,000 re-measured trees in national forest inventories. *PLOS ONE* 13: e0207151. doi.org/10.1371/journal.pone.0207151.
- Yousefpour, R., **C. Temperli**, J. B. Jacobsen, B. J. Thorsen, H. Meilby, M. Lexer, M. Lindner, H. Bugmann, J. Borges, J. Palma, D. Ray, N. Zimmermann, S. Delzon, A. Kremer, K. Kramer, C. Reyer, P. Lasch-Born, J. Garcia-Gonzalo, and M. Hanewinkel. 2017. A framework for modeling adaptive forest management and decision making under climate change. *Ecology and Society* 22. doi: 10.1007/s10113-014-0717-6
- Temperli, C.**, G. Stadelmann, E. Thürig, and P. Brang. 2017. Timber mobilization and habitat tree retention in low-elevation mixed forests in Switzerland: an inventory-based scenario analysis of

- opportunities and constraints. *European Journal of Forest Research* 136:711–725. doi: 10.1007/s10342-017-1067-y
- Reyer, C. P. O., S. Bathgate, K. Blennow, J. G. Borges, H. Bugmann, Sylvain Delzon, S. P. Faias, J. Garcia-Gonzalo, B. Gardiner, J. R. Gonzalez-Olabarria, Carlos Gracia, J. G. Hernández, S. Kellomäki, K. Kramer, M. J. Lexer, M. Lindner, E. van der Maaten, M. Maroschek, B. Muys, B. Nicoll, M. Palahi, J. H. Palma, J. A. Paulo, H. Peltola, T. Pukkala, W. Rammer, D. Ray, S. Sabaté, M.-J. Schelhaas, R. Seidl, **C. Temperli**, M. Tomé, R. Yousefpour, N. E. Zimmermann, and M. Hanewinkel. 2017. Are forest disturbances amplifying or canceling out climate change-induced productivity changes in European forests? *Environmental Research Letters* 12:034027. doi: 10.1088/1748-9326/aa5ef1
- Temperli, C.**, G. Stadelmann, E. Thürig, and P. Brang. 2017. Silvicultural strategies for increased timber harvesting in a Central European mountain landscape. *European Journal of Forest Research* 136:493–509. doi: 10.1007/s10342-017-1048-1
- Temperli, C.**, G. Stadelmann, E. Thürig, and P. Brang. 2017b. Timber mobilization and habitat tree retention in low-elevation mixed forests in Switzerland: an inventory-based scenario analysis of opportunities and constraints. *European Journal of Forest Research*:1–15.
- Schwörer, C., D. M. Fisher, D. G. Gavin, **C. Temperli**, and P. J. Bartlein. 2016. Modeling postglacial vegetation dynamics of temperate forests on the Olympic Peninsula (WA, USA) with special regard to snowpack. *Climatic Change*:1–16. doi: 10.1007/s10584-016-1696-z
- Temperli C.**, S. Hart, T. Veblen, D. Kulakowski and A. Tepley. 2015. Interactions among spruce beetle disturbance, climate change and forest dynamics captured by a forest landscape model. *Ecosphere* 6:article no. 231. doi: 10.1890/ES15-00394.1
- Bouriaud, L., M. Marzano, M. J. Lexer, L. Nichiforel, C. Reyer, **C. Temperli** and 24 more. 2015. Institutional factors and opportunities for adapting European forest management to climate change. *Regional Environmental Change* 15:1595–1609. doi: 10.1007/s10113-015-0852-8
- Stadelmann, G., **C. Temperli**, M. Conedera, A. Gómez und P. Brang. 2015. Möglichkeiten zur Holzmobilisierung im Tessiner Kastaniengürtel Möglichkeiten zur Holzmobilisierung im Tessiner Kastaniengürtel. *Schweizerische Zeitschrift für Forstwesen* 166:291–298. doi: 10.3188/szf.2015.0291
- Temperli C.**, S.J. Hart, T.T. Veblen, D. Kulakowski, J.J. Hicks and R. Andrus. 2014. Are density reduction treatments effective at managing for resistance or resilience to spruce beetle disturbance in the southern Rocky Mountains? *Forest Ecology and Management* 334:53–63. doi: 10.1016/j.foreco.2014.08.028
- Bouriaud, L., O. Bouriaud, C. Elkin, **C. Temperli**, C. Reyer, G. Duduman and 4 more. 2014. Age-class disequilibrium as an opportunity for adaptive forest management in the Carpathian Mountains, Romania. *Regional Environmental Change* 15:1557–1568. doi: 10.1007/s10113-014-0717-6
- Elkin, C., A. Gutierrez, S. Leuzinger, C. Manusch, **C. Temperli**, L. Rasche and H. Bugmann. 2013. A 2 °C warmer world is not safe for ecosystem services in the European Alps. *Global Change Biology* 19:1827–1840. doi: 10.1111/gcb.12156

Temperli, C., J. Zell, H. Bugmann, and C. Elkin. 2013. Sensitivity of ecosystem goods and services projections of a forest landscape model to initialization data. *Landscape Ecology* 28:1337–1352. doi: 10.1007/s10980-013-9882-0

Temperli, C., H. Bugmann, and C. Elkin. 2013. Cross-scale interactions among bark beetles, climate change, and wind disturbances: a landscape modeling approach. *Ecological Monographs* 83:383–402. doi: 10.1890/12-1503.1

Yousefpour, R., **C. Temperli**, H. Bugmann, C. Elkin, M. Hanewinkel, H. Meilby, J.B. Jacobsen, and B.J. Thorsen. 2013. Updating beliefs and combining evidence in adaptive forest management under climate change: A case study of Norway spruce (*Picea abies* L. Karst) in the Black Forest, Germany. *Journal of Environmental Management* 122:56–64. doi: 10.1016/j.jenvman.2013.03.004

Temperli, C., H. Bugmann, and C. Elkin. 2012. Adaptive management for competing forest goods and services under climate change. *Ecological Applications* 22: 2065–2077. doi: 10.1890/12-0210.1

Moser, B., **C. Temperli**, G. Schneiter, and T. Wohlgemuth. 2010. Potential shift in tree species composition after interaction of fire and drought in the Central Alps. *European Journal of Forest Research* 129:625–633. doi: 10.1007/s10342-010-0363-6

None peer-reviewed

Temperli, C., B. Allgaier Leuch, and F. Frutig. 2021. Effizientere Forstbetriebe in der Schweiz. *Wald und Holz* 21:24–27.

Book chapters:

Weatherall, A., G.-J. Nabuurs, V. Velikova, G. Santopuoli, B. Neroj, E. Bowditch, **C. Temperli**, F. Binder, L. Ditmarová, G. Jamnická, J. Lesinski, N. L. Porta, M. Pach, P. Panzacchi, M. Sarginci, Y. Serengil, and R. Tognetti. 2022. Defining Climate-Smart Forestry. Pages 35–58 in R. Tognetti, M. Smith, and P. Panzacchi, editors. *Climate-Smart Forestry in Mountain Regions*. Springer International Publishing, Cham.

Temperli, C., G. Santopuoli, A. Bottero, I. Barbeito, I. Alberdi, S. Condés, T. Gschwantner, M. Bosela, B. Neroj, C. Fischer, M. Klopčič, J. Lesiński, R. Sroga, and R. Tognetti. 2022. National Forest Inventory Data to Evaluate Climate-Smart Forestry. Pages 107–139 in R. Tognetti, M. Smith, and P. Panzacchi, editors. *Climate-Smart Forestry in Mountain Regions*. Springer International Publishing, Cham.

Bosela, M., K. Merganičová, C. Torresan, P. Cherubini, M. Fabrika, B. Heinze, M. Höhn, M. Kašanin-Grubin, M. Klopčič, I. Mészáros, M. Pach, K. Střelcová, **C. Temperli**, G. Tonon, H. Pretzsch, and R. Tognetti. 2022. Modelling Future Growth of Mountain Forests Under Changing Environments. Pages 223–262 in R. Tognetti, M. Smith, and P. Panzacchi, editors. *Climate-Smart Forestry in Mountain Regions*. Springer International Publishing, Cham.

Fischer, C., B. Rohner, A. Herold, B. Allgaier Leuch, **C. Temperli**, F. Frutig, L. Bont, E. Thürig, and E. Rösler. 2020. Holzproduktion. Pages 147–187 in U. B. Brändli, M. Abegg, and B. Allgaier Leuch, editors. *Schweizerisches Landesforstinventar. Ergebnisse der vierten Erhebung 2009–2017*. Eidgenössische Forschungsanstalt für Wald, Schnee und Landschaft WSL; Bundesamt für Umwelt BAFU, Birmensdorf, Bern.

Stadelmann, G., **C. Temperli**, B. Rohner, M. Didion, A. Herold, E. Rösler, and E. Thürig. 2019. Forest Development Model MASSIMO. Pages 265–279 in C. Fischer and B. Traub, editors. Swiss National Forest Inventory – Methods and Models of the Fourth Assessment. Springer International Publishing, Cham.

Reports and data:

Temperli, C. 2014. Spruce beetle and fire interactions under climate change and adaptive forest management in subalpine forests of northern Colorado, USA: Scientific summary report to the Swiss National Science Foundation. 6pp.

Temperli, C., H. Bugmann, and C. Elkin. 2013. Data from: Cross-scale interactions among bark beetles, climate change, and wind disturbances: a landscape modeling approach. Dryad Digital Repository. doi:10.5061/dryad.18790.

Temperli, C., C. Elkin, and H. Bugmann. 2009. Tree species interactions and the driving forces behind the distribution of species in the Valais. Forest Ecology, ETH Zürich.

Temperli, C., K. Streit, V. Robin, and P. Brang. 2008. Standard analysis of the sampling inventory in unmanaged forest reserves. The Josenwald example. Swiss Federal Institute for forest, Snow and landscape research WSL, Birmensdorf, Switzerland. 46 pp.

Brang P., L. Rohrer, **C. Temperli**, A. Stalder, K. Streit, and H. Bugmann. 2008. Selection of permanent plots in nature reserves for the Swiss monitoring program. Swiss Federal Institute for forest, Snow and landscape research WSL, Birmensdorf, Switzerland. 47 pp.

Theses:

Temperli, C. 2012. Climate change, large-scale disturbances and adaptive forest management. Dissertation. ETH Zürich. Supervision: Prof. H. Bugmann, Co-supervision: Dr. Ché Elkin.

Temperli, C. 2007. Vegetation dynamics after forest fire in comparison to the pre-fire state. Diploma Thesis. ETH Zürich, WSL Birmensdorf. Supervision: Prof. H. Bugmann (ETH), Dr. T. Wohlgemuth (WSL). doi: 10.3929/ethz-a-005517791

Geilinger, E., and **C. Temperli**. 2007. Wie kann das Internet die Neuauflage des Buches „Kontaktpunkt Umwelt“ ergänzen? Semesterarbeit in Sozialwissenschaften. ETH Zürich. Supervision: Dr. U. Nagel (Pädagogische Hochschule des Kantons Zürich), Prof. G. Hirsch Hadorn (ETH Zürich).

Temperli, C. 2006. Forest Wiregrass, animal activity and environmental weeds in Sherbrooke Forest (Dandenong Ranges National Park, Victoria, Australia). Semester thesis in natural sciences. ETH Zürich, Dandenong Ranges Nationalpark, Upper Fern tree gully, Australia. Supervision: Dr. B.O. Krüsi (ZHAW Wädenswil).

Grant proposals:

Thürig, Esther (corresponding applicant), M. Huber (further applicant), G. Stadelmann, B. Rohner, J. Zell, **C. Temperli**, O. Thees, H. Bugmann (project partners). SessFor – Sustainable development of ecosystem services in Swiss Forests. 2017. Project proposal to the National Research Programm NFR73 Sustainable economy. Requested CHF 649'434. Fully awarded in August 2017. C. Temperli conceived work package 5, contributed to the design of work packages 4 and 8 and edited the full proposal prior to submission.

- Temperli, C.**, C. Blattert, R. Lemm, U.-B. Brändli und E. Thürig. 2015. Entwicklung von Walddleistungen in der Schweiz: Prognose anhand von LFI-Daten. Projektantrag an die Projektoberleitung des Schweizerischen Landesforstinventars (POL-LFI). Beantragte Mittel umfassen die Finanzierung eines wiss. Mitarbeiters (C. Temperli) für 24 Monate und eines Doktoranden (C. Blattert) für 6 Monate (ca. CHF 372'000 basierend auf KTI B+ Tarif fürs LFI). Bewilligt an der Sitzung der POL-LFI im April 2016.
- Temperli, C.** 2014. Forest disturbance interactions under climate change and their effects on ecosystem services in the Colorado Rockies. Swiss National Science Foundation fellowship for Advanced Postdoc Mobility. Requested CHF 46'352 for 12 months. Rejected in June 2014.
- Pitlick, J., T. Veblen and **C. Temperli**. 2013. Optimizing fuels treatments in subalpine watersheds to reduce fire intensity and increase water supply. Joint Fire Science Program. PIs: J. Pitlick and T. Veblen. Requested US\$ 351'183 for 24 months. Rejected in March 2014.
- Veblen, T., P. Hessburg, C. Naficy and **C. Temperli**. 2013. Interactions among fires, forest structures, fuel treatments and critical weather thresholds: Insights from cross-scale analyses and model simulations. Joint Fire Science Program. PI: T. Veblen. Requested US\$ 508'623 for 48 months. Rejected in March 2014.
- Veblen, T., D. Kulakowski, S. Hart and **C. Temperli**. 2013. Collaborative Research: Spruce beetle and wildfire interactions under varying climate in the Rockies. U.S. National Science Foundation, Geography and Spatial Sciences Program. PIs: T. Veblen and D. Kulakowski. Awarded US\$ 340'000 for 36 Months. C. Temperli contributed to work package 5 out of 5.
- Temperli, C.** 2012. Spruce beetle and fire interactions under climate change and adaptive forest management in subalpine forests of northern Colorado, USA. Swiss National Science Foundation fellowship for prospective researchers. Awarded CHF 44'300 for 12 months.
- Selected presentations at international conferences:*
- Temperli, C.**, G. Stadelmann, E. Thürig, P. Brang. 2017. Balancing timber mobilization and habitat tree retention in mixed broadleaf-conifer forests: an inventory-based scenario analysis. IUFRO 125th Anniversary Congress 2017. Freiburg im Breisgau. Talk
- Temperli, C.**, G. Stadelmann, E. Thürig, P. Brang. 2016. Waldbauliche Strategien für eine erhöhte Holznutzung im Gebirge. Forstwissenschaftliche Tagung FOWITA 2016, Freiburg im Breisgau. Talk.
- Temperli, C.**, T. T. Veblen, S. J. Hart, D Kulakowski and A. Tepley. 2014. Interactions among spruce beetle disturbance, climate change and forest dynamics. 14 IUFRO World Congress, Salt Lake City, USA. Talk.
- Temperli, C.**, C. Elkin, and H. Bugmann. 2012. Sensitivity of forest ecosystem projections to data on current forest state. International conference: Tackling climate change: the contribution of forest scientific knowledge, Tours, France. Poster.
- Temperli, C.**, C. Elkin, and H. Bugmann. 2012. Bark beetle disturbance under climate change. Swiss Global Change Day 2012, Bern, Switzerland. Poster.

- Temperli, C.,** C. Elkin, A. Trasobares, and H. Bugmann. 2011. Landscape scale modeling of adaptive forest management for multiple ecosystem goods and services under climate change. 12th EEF Congress, Avila, Spain. Invited talk.
- Temperli, C.,** C. Elkin, and H. Bugmann. 2011. Modeling adaptive forest management under climate change. Swiss Global Change Day 2011, Bern, Switzerland. Poster.
- Temperli, C.,** C. Elkin, A. Trasobares, and H. Bugmann. 2010. Assessing trade-offs in adaptive forest management for multiple ecosystem goods and services under climate change using landscape scale modeling. UIFRO Landscape ecology conference, Braganca, Portugal. Talk.
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