



CURRICULUM VITAE (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

CV date	6/12/2025
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First name	Miguel A.		
Family name	Zavala		
Gender (*)	Male	Birth date (dd/mm/yyyy)	13/02/1968
ID number	02617367-J		
e-mail	ma.zavala@uah.es madezavala@gmail.com	URL Web	https://forecolab.web.uah.es/
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-1456-0132		

(*) Mandatory

A.1. Current position

Position	Full professor (Catedrático de Universidad)		
Initial date	22/12/2018		
Institution	Universidad de Alcalá		
Department/Center	Ciencias de la Vida		
Country	Spain	Teleph. number	+34 918856411
Key words	Modeling, Global Change, Adaptation, Mitigation, Forest Ecology, Mediterranean Forests, Forest Management, Resilience		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
11/2011-12/2018	Associate professor, Universidad de Alcalá, Spain
12/2010-11/2011	Director, CIFOR-INIA, Spain (service commission)
10/2007-10/2009	Researcher, CIFOR-INIA, Spain (on leave)
3/2002-10/2007	Assistant professor, Universidad de Alcalá, Spain
09/2000-02/2002	Assistant professor; Universidad de Vigo, Spain
09/1993-09/2000	Teaching assistant; Princeton University, New Jersey, EEUU
09/1992-08/1993	Research Technician; CIF-Lourizán, Pontevedra, Spain
09/1991-08/1992	Research Technician; US Forest Service, EEUU

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Doctor of Philosophy (Ph.D.)	Princeton University, New Jersey, EEUU	2000
Master of Arts	Princeton University, New Jersey, EEUU	1996
Forestry Engineer (M. Eng.)	Universidad Politécnica de Madrid, España	1993

Part B. CV SUMMARY (max. 5000 characters, including spaces)

My main scientific contribution is the integration of theory, experiments, and field observations to understand Mediterranean vulnerability and resilience in response to Global Change. I have developed mathematical models to test critical hypothesis, and I have integrated mathematical and computational models -i.e. spatially explicit stochastic models, ordinary differential equations and partial differential equations - with field observations to understand the role of mechanisms such as competition, dispersion, local adaptation and phenotypic plasticity in ecosystem stability. Recent contributions include simplification of complex forest models to



identify transition regimes and tipping points to reformulate current management models to enhance resilience. I have also contributed to building interdisciplinary research networks to harmonize forest data (FUNDIV-UE-FP-VII), ecosystem models (PROFOUND and TERRABITES cost actions), tree mortality (TREEMORT-ERC grant), etc. The results of these investigations have been reflected in more than 150 publications including multidisciplinary journals such as Science, Nature, PNAS, Nature comm., Nature Ecol. & Evol., Scientific data, Scientific Reports etc. and Q1 journals both in Ecology (Ecology, Ecol. Monogr, Ecol. Applic., Ecol. Lett., J. Ecol., J. Applied Ecol., New Phytol., Global Change Biol., Global Ecol. Biogr., etc) and Forestry (For. Ecol. Manag., Can J. For. Res., Agric. For. Meteor., etc). I have coordinated more than 10 competitive grants including 2 UE FP VII, 5 Ministry of Science and Innovation; 2 INIA; 2 Biodiversity Foundation, 1 Autonomous National Park Program, 3 grants from regional governments- and 10 fellowships raising more than 3 mill. euros. As a researcher I have participated in more than 20 projects including international grants funded by NERC-UK, UE (ERANET), Andrew Mellon Foundation, Microsoft Research, etc. Scientific leadership include the coordination of the UAH Forest Ecology & Restoration Research Group (including twelve faculty members, two Talento Madrid fellows and ten younger scientists) and previously as deputy director of the Franklin Institute for American Studies, director of CIFOR-INIA, coordination of INIA-Genetic & Ecology Unit and COST meetings.

My contributions to society range from dissemination to society and particular projects with the public administrations and other interested parties. I have intensively collaborated in knowledge transfer to public administrations to encourage innovation to confront pressing environmental challenges. I have participated in the European Forestry Institute Report (EFI) to inform the European Council on Carbon Farming guidelines for European forests, coordinated the Spanish Ministry Report on Climate Change Impacts and Adaptation on Biodiversity and forest sector; two advisory reports on Forest Europe Ministerial Conference on forest ecosystem payments, a monitoring system to include certification in forest value chain (FSC) and the developed the Climate Change Adaptation monitoring systems for the Madrid region. I have also participated in various research transfer activities such as scientific networks (GLOBIMED, REDBOME, REDECC, etc).

My contribution to the training of young researchers includes mentoring of 14 Ph.D. thesis with most former graduate students holding faculty and distinguished position -e.g. associate professor: I. Urbieto, UCLM; R. Sánchez Salguero, UPO; P. Ruiz, UAH), assistant professor R. García Valdés, URJC, ERC Consolidator recipient and D. Montoya, BC3 as well as more than 10 postdoctoral fellows (e.g. Marie Curie, Juan de la Cierva, Maria Zambrano and Talento). I have coordinated the Interuniversity Doctorate program in Forest Ecology, Conservation and Restoration (UAH, UPM, UCM, URJC) that has resulted in more than 20 doctoral theses. I have served as invited professor at INRA-University of Bordeaux-INRA (France), Cambridge University ("Fitzwilliam Fellow") (UK), CNRS (France) and University of Stirling (UK). In Spain I have extensive teaching experience at the Master and Undergraduate level and Senior theses. I have an active evaluation activity both for main high impact scientific journals and scientific panel (e.g. member of Flandes, European Science Foundation, COST action etc.), national programs (ANECA, ANEP, Ramón y Cajal program) and regional agencies (Asturias, Valencia, Castilla y León).

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications (see instructions) (Selection of 10 publications).

1. **Zavala, M.A.**, Angulo, Ó., de la Parra, R.B. et al. Scaling up tree growth to assess forest resilience under increasing aridity: the case of Iberian dry-edge pine forests. ***Landscape Ecology*** 39, 6 (2024).
2. Astigarraga, J., Esquivel-Muelbert, A., Ruiz-Benito, P., Rodríguez-Sánchez, F., **Zavala, M. A.**, Vilà-Cabrera, A., ... & Pugh, T. A. (2024). Relative decline in density of Northern Hemisphere tree species in warm and arid regions of their climate niches. ***Proceedings of the National Academy of Sciences***, 121(28), e2314899121.
3. Lines ER, **Zavala MA**, Ruiz-Benito P, Coomes DA (2019) Capturing juvenile tree dynamics from count data using Approximate Bayesian Computation. ***Ecography*** 42:1-13.



4. Madrigal-González J, Ballesteros-Cánovas JA, Herrero A, Ruiz-Benito P, Stoffel M, Lucas-Borja ME, Andivia E, Sancho-García C, **Zavala MA** (2017) Forest productivity in Southwestern Europe is controlled by coupled North Atlantic and Atlantic multidecadal oscillations. *Nature Communications* 8: 2222.
5. Valladares F, Matesanz S, Guilhaumon F, et al. **Zavala MA** (13/13) (2014). The effects of phenotypic plasticity and local adaptation on forecasts of species range shifts under climate change. *Ecology Letters* 17: 1351-1364.
6. Stephenson NL, Das AJ, Condit R, et al. **Zavala MA** (25/25) (2014) Rate of tree carbon accumulation increases continuously with tree size. *Nature* 507: 90-93.
7. García-Valdés R, **Zavala MA**, Araújo MB, Purves DW (2013). Chasing a moving target: projecting climate-change driven changes in non-equilibrium tree species distributions. *Journal of Ecology* 101: 441–453.
8. Gómez-Aparicio L, García-Valdés R, Ruiz-Benito P, **Zavala MA** (2011). Disentangling the relative importance of climate, size and competition on tree growth in Iberian forests: implications for management under global change. *Global Change Biology* 17: 2400-2414.
9. Montoya D, **Zavala MA**, Rodríguez MA, Purves DW (2008). Animal versus wind dispersal and the robustness of tree species to deforestation. *Science* 320: 1502-1504.
10. Purves DW, **Zavala MA**, Ogle K, Prieto F, Benayas JMR (2007). Environmental heterogeneity, bird-mediated directed dispersal and oak woodland dynamics in Mediterranean Spain. *Ecological Monographs* 77: 77-97.

C.2. Congress (selection of 10 conference presentations).

1. Scaling up tree growth with an analytical size-structured model to assess forest resilience under increasing aridity." Mathematical Modelling in Engineering & Human Behaviour 2024 (MME&HB 2024). Instituto Universitario de Matemática Multidisciplinar (IMM). Valencia. Spain, 2024.
2. El valor de la naturaleza. La España vaciada y la Política de Cohesión Europea. Oficina del Parlamento Europeo en España Madrid, 2019.
3. A Payment for Ecosystem Service proposal for Spanish forests. Expert group on valuation of forest ecosystem services. Forest Europe. Bratislava (Eslovaquia). 2018.
4. Assessing European Forest vulnerability in response to climate change: do we need more data or better models? Data Integration and Assimilation COST Action FP1304 PROFOUND Final Meeting, Postdam. 2017.
5. Forest Inventory platform of FUNDIV: data availability and model parameterization. Reviewing European Forest data: from information to knowledge. COST-Profound TG1. Invited oral communications. Bruselas. 2015.

C.3. Research projects (selection of 10 grants).

1. Vulnerabilidad y Riesgo de los ecosistemas de pino silvestre frente al cambio climático: Diseño de un sistema de Alerta Temprana y Seguimiento" **Organismo Autónomo de Parques Nacionales** (ref 2794/2021) 2021-2023. €. PI: Miguel A. Zavala.
2. Iberian Forest responses to climate change across spatio-temporal scales: hotspots and roles of structural and functional Resilience (IB-ForRes). **Ministerio de Ciencia e Innovación**. 01/09/2022-31/08/2025. (4 subprojects IPE-CSIC, UPO, UAH-Geo, UAH-Eco) 2021-123675OB-C41 (480.000 €). PI: Paloma Ruiz Benito, Miguel A. Zavala
3. Data Driven Models of Forest Drought Vulnerability and Resilience across spatial and temporal Scales: Application to the Spanish Climate Change Adaptation Strategy (DARE); (RTI2018-096884-B-C32; **Ministerio de Ciencia e Innovación**. 2018-2021 116.160,00 €. PI: Miguel A. Zavala UAH.
4. Exploring whether functional and structural diversity confer forests resistance and resilience to drought: implications for adaptation to climatic change (FUNDIVER)" **Ministerio Economía y Competitividad**. 2016-2018. 105.000€. PI UAH: Miguel A. Zavala.



5. Vulnerabilidad de pinares ibéricos frente al cambio climático: impactos históricos y modelización de escenarios futuros para la adaptación (VULPINECLIM). **Ministerio de Economía y Competitividad**. 2014-2016. 50.000 €. PI: Miguel A. Zavala.
6. Multiscale analyses, modelling and prospective of carbon sinks dynamics in Spanish forest ecosystems under Global Change (SUM, 2009-2012). **INIA-Ministry of Science and Innovation**. 400.786 €. PI: Miguel A. Zavala.
7. Regional patterns and local processes: models of Mediterranean forest structure and dynamics in response to Global Change (CGL, 2009-2012). **Ministry of Science and Innovation**. 90.000 €. PI: Miguel A. Zavala.
8. Functional significance of forest biodiversity in Europe (FUNDIV Europe, NV.2010.2.1.4-1. **European Union**. (2009-2014). IP: Prof. Dr. Michael Scherer-Lorenzen 9,255,429.80 € (PI UAH partner Miguel A. Zavala: 225.712 €).
9. The terrestrial Carbon cycle under Climate Variability and Extremes – a Pan-European synthesis (CARBO-Extreme,). FP7-ENV-2008-1. **European Union** (2008-2013).PI. Dr. Markus Reichstein (PI UAH partner Miguel A. Zavala 10000 €).
10. REMEDINAL 2 (2010-2014) “I+D schedule program on environmental restoration in the Madrid region”. 905.000 €. **Comunidad de Madrid, European Social Funds (S2009/AMB-1783)**. IP: Dr. Adrián Escudero, Rey Juan Carlos University. PI UAH-INIA partner Miguel A. Zavala 4000 €.

C.4. Contracts, technological or transfer merits (*selection of 10 contracts*).

1. Carbon Farming in the European forestry sector. **European Forest Institute** (EFI). ref. PR0000550. 4043 / WP22. PI: Ana Rey (CSIC) 7/2023-10/2024. 98.000 € (IP-UAH: Miguel A. Zavala).
2. Organización de un grupo de trabajo con la participación de expertos en diferentes disciplinas para el análisis y propuesta de directrices y criterios de restauración de los ecosistemas **TRAGSATEC**. 06-6-2022,30-11-2022 11.180,00 € (IP: Miguel A. Zavala UAH).
3. Modelización de la producción de madera a lo largo del tiempo en base a los diferentes escenarios de temperatura y precipitación según los escenarios AEMET Técnicas de adaptación al cambio climático en la gestión forestal y la industria de la madera. **Forest Stewardship Council** Art 83. 2019-2020 10.000 €.: (IP: Miguel A. Zavala UAH)
4. Adaptación al cambio climático a través de la certificación FSC: implementación y seguimiento de un protocolo de gestión adaptativa en los bosques españoles”. Entidad financiadora: **Fundación Biodiversidad**: FSC, UAH. 2018-2019. 55.206,54 €. (IP: Miguel A. Zavala UAH)
5. Desarrollo matemático de las fórmulas de ponderación y algoritmos del modelo multifactorial para valorar los pagos por los servicios de los ecosistemas forestales españoles”. **Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente**. 01/10/2018-31/12/2018. 10.000 €. (IP: Miguel A. Zavala UAH)
6. La certificación forestal como instrumento de gestión forestal adaptativa” “Adaptación al cambio climático a través de la certificación FSC: implementación y seguimiento de un protocolo de gestión adaptativa en los bosques españoles”. Entidad financiadora: **Fundación Biodiversidad**. Entidades participantes: FSC, UAH. 2017-2018. 51.800 €. (IP: Miguel A. Zavala UAH)
7. Proyecto RIOCCADAPT. **Agencia Española de Cooperación Internacional para el Desarrollo (AECID)**; Programa ARAUCLIMA; OECC. 2018-2019. (IP: Jose Manuel Moreno UCLM); (UAH: Miguel A. Zavala)
8. Diseño de un modelo multifactorial a nivel nacional”. Encomienda **Ministerio de Agricultura y Pesca, Alimentación y Medio Ambiente**. Duración desde: 01/10/2017 hasta 31/12/2017. 10.000 €. (IP: Miguel A. Zavala UAH).
9. Indicadores de adaptación a los impactos del cambio climático en la Comunidad de Madrid. Entidad financiadora: **Fundación Canal de Isabel II**. Entidades participantes: FC, UAH. 2015-2016. 30.000 €. (IP: Miguel A. Zavala UAH)
10. Evaluación de Impactos, Vulnerabilidad y Adaptación al Cambio Climático en España en los sectores de Biodiversidad y Bosques (CA2012). Entidad financiadora: **Fundación Biodiversidad**, Universidad de Alcalá. 2013-2014: 89.144,00 € (IP: Miguel A. Zavala UAH).