SHORT CV Josep Penuelas

Prof. Josep Penuelas is a **Research Professor of the National Research Council of Spain (CSIC)** at **CREAF** (Center for Ecological Research and Forestry Applications).

Director of the Global Ecology Unit CREAF-CSIC-UAB-UB-IEC in CREAF at Universitat Autònoma de Barcelona,

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Prof. Penuelas is one of the most respected, cited and influential ecologists working today in the world; no one working in global ecology can afford not to engage with his work. Prof. Penuelas is internationally recognized as one of the world's most respected, cited, and influential ecologists actively contributing to global ecology. Engaging with his work is essential for anyone working in this field. His innovative and multidisciplinary research on ecological sciences has had an enormous impact. He is especially renowned for his groundbreaking work in discovering ecophysiological mechanisms related to carbon and oxygen utilization, which helps explain the diversity and distribution of aquatic and terrestrial plants. Additionally, he co-developed the increasingly used remote-sensing techniques such as the photochemical reflectance index (PRI) and the water index (WI), which are now established tools in remote sensing for natural and agricultural ecosystems. His contributions extend to the discovery of evidence on the effects of global change, climate change, and pollution on biodiversity, and structure and functioning of terrestrial ecosystems. He also introduced metabolomics in ecology, studied the mechanisms, function, and effects of emissions of volatile organic compounds by plants and ecosystems, and unraveled the biogeochemical processes involved in the carbon and nutrient cycles. Moreover, he has played a crucial role in developing science and policy for a sustainable planet. Professor Penuelas has coordinated groups of international scientists in producing influential papers on ecology, Earth sciences, plant and animal sciences, agriculture, and the impacts of human activities on the biosphere. His seminal concepts and tools in ecology, such as the "elementome" and the "biogeochemical niche," have had a significant impact, as also "ecometabolomics" in omics sciences and “PRI” and “WI” in remote sensing through PRI and the "water index." His expertise extends beyond ecology to diverse fields, including molecular ecology, theoretical ecology, agriculture, food security, global human health, and the role of humans in precipitating global change and existential crises during the Anthropocene. This breadth of knowledge is evident in the numerous keynote and plenary invitations he receives from prestigious universities and research centers, as well as the prizes and awards he consistently garners. **H-index 212, ca. 206.500 citations.**

Issues of study:

His research in the field of global ecology tackles scientific challenges that require high levels of interdisciplinarity. His fields of specialization are: Global ecology, remote sensing, global change, climate change, atmospheric pollution, Biogenic Volatile Organic Compounds emissions, plant ecophysiology, functioning and structure of terrestrial plants and ecosystems, chemical ecology, ecometabolomics, microbial ecology, macroecology, biogeochemistry with special focus on phosphorus, environmental sustainability, food security and global health.

Scientific publications:

Professor J. Penuelas has published **6 books on ecology,** more than **1800 papers in scientific journals and books** (more than 1660 scientific articles in journals of the Science Citation Index; 152 in **Nature** journals, 18 in **Science-Science Advances**, 17 in **PNAS**, 11 in **National Science Review** and **Science Bulletin**, 21 in **Trends in Plant Science**, 11 in **Trends in Ecology and Evolution** and 3 **The Innovation**, as well as **in highest profile scientific journals** in ecology and environmental sciences: 114 in **Global Change Biology**, 35 in **Global Ecology and Biogeography**, 11 in **Ecology Letters**; remote sensing: 20 in **Remote Sensing of Environment**; and plant biology: 47 in **New Phytologist**), 300 in other journals and

chapters of books, and more than **270 articles on popular science**. It is also outstanding his labour popularizing science issues at international and national scale in mass media, newspapers, radio, tv and social networks. He is also generating several influencing studies to develop science and policy for a sustainable planet, including use and recycling of resources, food security, and mitigation of pollution and climate change.

Education

Academic degrees

Biology (Outstanding-With honours), University of Barcelona, (1975-80)

Pharmacy, University of Barcelona (1976-81).

PhD Ecology ("Cum laude") (Supervisor Prof. R. Margalef), 1985, University of Barcelona.

Software programmer, University of Barcelona, 1984.

Analyst of scientific applications, University of Barcelona, 1985

Honorary degrees

Doctor Honoris Causa by the Estonian University of Life Sciences, Tartu, Estonia (2016).

Stages, teaching activities and invited seminars in international centers

Prof. Penuelas was Titular Professor of Ecology in the University of Barcelona until 1990 and is involved on seminars and postgraduate courses in many of the main national and international Universities. He has been visiting professor or visiting scientist in more than 50 universities and centers in all the continents, including for example, universities of Barcelona, Los Angeles, Washington, Duke, Lancaster, Avignon, Paris, Saint Andrews, Mexico, Tokyo, Sheffield, National Center for Atmospheric Research (Boulder Colorado), Phoenix, Flagstaff, Vancouver, Boulder, Hawaii at Moana, Mèxic, Danah Latu (Borneo), Austalian National University (Canberra), Stanford, Colorado, Kuopio, British Columbia, Maryland, Católica de Chile, Northern Arizona, Tsukuba (Japan), Malaysia Sabah, Stanford, Lancaster, China Academy of Sciences, Macquarie University, NCAR Boulder, Beijing, ASU Phoenix, NAU Flagstaff, Berkeley, Stanford, Oxford, Cambridge, PNNL Richland (Washington), Antwerp University, University of Zurich, Talahua-Simiatug (Bolivar-Ecuador), Berkeley, Stanford, Cambridge, Brno, Vienna, Birmingham, Center of Molecular Plant Biology University of Delhi, Nanjin, Beijing, Tribhuvan, Athens, Agrocultural University of Iceland, Oxford, Berkeley, Princeton, University Paris Saclay…… He is involved on seminars and postgraduate courses in many of the main national and international Universities.

Prizes, honors and distinctions

1975. Omnium Cultural Prize of Figueres for his work 'Desenvolupament dels sistemes numèrics'

1976. Omnium Cultural Prize of Figueres for his work 'Les plantes als rius de l'Empordà'

1990. Conde de Barcelona Foundation Prize for his work on Global Ecology at Stanford University (US).

1998. National Institute Agro Environmental Sciences of Japan (Tsukuba) award.

2005. Elected one of the 45 outstanding Spanish scientists in “La generación de la ley de la Ciencia. 45 perfiles de científicos de hoy” by the Spanish Ministry of Science and Technology.

2008. Environmental science Prize, Institut d’Estudis Catalans-Caixa de Sabadell

2010. National Research Prize of Catalonia

2014. Elected permanent member of the Catalan National Academy of Sciences

2014. Silver badge of the Institut d’Estudis Catalans (October 27th, 2014)

2014. One of the World’s most influential Scientific Minds (Thomson Reuters)

2015. King Jaime I Prize in the class of Environmental Science

2015. Third most prolific author on climate change (Carbon Brief Organization)

2016. Most cited scientist in Remote Sensing and Atmospheric chemistry by Thomson Reuters

2016. Figueres named Josep Penuelas adoptive son of the city

2016. International Prize of Ecology Ramon Margalef Prize

2016. Doctor Honoris Causa by the Estonian University of Life Sciences, Tartu, Estonia

2018. Chinese Academy of Sciences Distinguished Scientist

2018. Special mention at the Premis Ciutat de Barcelona 2017 in the class of Earth and environmental sciences (February, 2018)
2018. Nominated as finalist for the reward of scientific projects in the environment area of the 2è Trophées de la Fondation Air Liquide (Joan Llusià-Josep Penuelas), (Paris February 2018)
2018. Scientist with the highest h-index in Plant Sciences and Ecology in Spain, by http://indice-h.webcindario.com/

2018. Marsh Award for Climate Change Research Prize of the British Ecological Society.

2018. Premi a l'Excel·lència Ramon Muntaner (Figueres).

2019. Prize Ciutat de Barcelona in Earth and Environmental sciences 2018.

2019. Scientist with the highest h-index in Plant Sciences and Ecology in Spain, by http://indice-h.webcindario.com/

2019. Elected Honorary member of the Catalan College of Biologists.

2019. CREAF accredited as centre of excellence Severo Ochoa (Spain's Ministry of Science, Innovation and Universities).

2019. Nominated among the four hundred most influential scientists in all fields and among the ten most influential scientists in ecological and environmental sciences (Meta-Research Innovation Center at Stanford – METRICS)
2020. Elected American Geophysical Union 2020 Fellow for his exceptional contributions in the Earth and space sciences.
2021. His Imbalance-P project elected between the highlighted 15 examples of how ERC researchers have truly transformed science (among 10,000 ERC grantees).
2021. Premi Crítica «Serra d'Or» de Recerca en l'apartat de Ciències 2021 per l'obra *Llibre blanc de la gestió de la natura als Països Catalans*,
2021. Ranked one of the sixty most influential researchers in Spain and Spaniards abroad based on the newest Webometrics Ranking.
2021. Recognized as an Expertscape World Expert in Climatic Processes. https://expertscape.com/ex/climatic+processes
2021. Most productive ecologist of the world (GlobalauthorID 2021 ranking)
2022-2023. Josep Peñuelas occupies the 1st position in the ranking of leading ecology and evolution scientists of Spain (Research.com)
2014 - 2024. Highly cited scientist in ecology/environment, plant and animal sciences, agricultural sciences, geosciences and in all scientific fields of the ISI essential science indicators. Clarivate
2023. Ranked 1st researcher in all areas of science in the province of Barcelona according to https://grupodih.info/provincias.html.
2022-2023 - Ecology and Evolution in Spain Leader Award (Research.com)
2023. Alejandro Malaspina National Science Award, in the area of natural resource sciences and technologies.
2023. World's Best Ecology and Evolution Scientists. H-Index Ecology and Evolution Science Ranking 2023 (Research.com.pdf)
2024.Ranked among the 1000 most important scientists in the world according to World Scientists Rankings 2024. https://www.adscientificindex.com/?q=pe%C3%B1uelas.
2024. Josep Peñuelas occupies the 282th position between worldwide scientists and number 5 in the field of Ecology in 2023, according to Stanford/Elsevier Top 2% Scientists List 2024.
2024. Scilit Top-Cited Scholar (for the exceptional contributions, based on the number of highly cited papers published between 2014 and 2023)
2025. Ranked 1st researcher in Highly Ranked Scholars™ 2024 https://scholargps.com/highly-ranked-scholars?year=2024&ranking_duration=LAST_5_YEARS&specialty=global+change

2025. Premio Medalla Margarita Salas a la mejor trayectoria en supervisiónde personal investigador. https://www.csic.es/sites/default/files/2025-09/report_20250906_MS_MM_Resoluci%C3%B3n_concesi%C3%B3n_2025.pdf

Science management and editorial activities:

- He has been principal investigator or scientific coordinator of several European Union, Spanish and Catalan projects financed by public research agencies and by private funding. Among them he had been awarded with ERC-Synergy 2014-2020 grant.
- Supervision of young researchers: 64 PhD theses, 51 Master theses, 65 postdocs.

- Organizer and signer of the Barcelona Declaration 2008: Challenges and Pathways to Earth Sustainability. 2008.
- He is Subject editor or member of the editorial board of the most influential scientific journals in ecology, global ecology, plant and animal sciences, atmospheric sciences and remote sensing as Tree Physiology (2001-2003, 2006), Ecology Letters (since 2004), Global Change Biology (since 2010), Global Ecology and Biogeography (2010-2018), Trends in Plant Science (since 2016), New Phytologist (since 2008), Remote Sensing of the Environment (since 2004), Atmospheric Pollution Research (since 2009), e-Forestry (since 2007), Journal of Plant Ecology (2008 - 2011), Plant Ecology and Diversity (since 2007), Trees structure and function (2013-2016), Contributions to Science (since 2014), Plant methods (since 2017), Remote Sensing (since 2018), Peer Community in Ecology (since 2018), Frontiers in Forests and Global Change (since 2018), Sensors (2016-2020), Annals de l'Institut d'Estudis Empordanesos (since 2019), Metabolites (since 2019), Journal of Remote Sensing (since 2020), Plant Abiotic Stress (specialty section of Frontiers in Plant Science) (since 2020), The Innovation Geoscience (since 2022), Mètode (since 2024), Guest editor of several issues: Frontiers in Forest and Global Change (Urban green space and air quality), Remote Sensing of environment (Remote sensing of functional traits), Metabolites (Ecometabolomics), Remote Sensing (Land Surface Fluxes), occasional editor of Proceedings of National Academy of Sciences (USA)…
- Scientific **advisor** of several international research centers, foundations, city councils, governments, and diverse associations... and diverse cultural activities associated to science and the dissemination of science. Member of the **Steering committee** of several European research consortia (CLIMMANI, VOCBAS, COST-TERRABITES,...).
- Member of several academies and international and national scientific associations.

Funding last 10 years:

Principal investigator (PI) or partner in 24 national and international research projects (mainly public and EU-funded): CLIMOOR, VULCAN, ALARM, ISONET, VOCBAS, NITROEUROPE, MICROCARB, CONSOLIDER-MONTES, GLOVOCS …

Current funding:

The group is founded by European institutions and programs (ERC, Horizon2020, COST,…), Spanish and Catalan institutions and foundations (BBVA, CSIC, Bancaixa, Fundación Areces, …), and Spanish and Catalan Government science agencies.

Hundreds of invited presentations and lectures in the most prestigious universities and research centers (see examples in the list above), research expeditions (from the Artic to the tropics), and organization of international conferences