Curriculum vitae di *Carlo Barbante*

Sottosettori ERC primari (max 3): *PE10 Earth System Science, PE4 Physical and Analytical Chemical Sciences*

Eventuali sottosettori ERC secondari (max 3): *PE10_18 Cryosphere, dynamics of snow and ice cover, sea ice, permafrosts and ice sheets, PE10_6 Palaeoclimatology, palaeoecology, PE4_5 Analytical chemistry*

PERSONAL DETAILS

Carlo Barbante: Curriculum Vitæ
Ca' Foscari University of Venice, Department of Environmental Sciences, Informatics and Statistics
Via Torino, 155 Venice Mestre, 30172, Italy
ph: +39 041 2348942
barbante@cnr.it carlo.barbante@cnr.it
orcid.org/0000-0003-4177-2288 SCOPUS ID: 7006727897

- **Education and key qualifications**

1982 – 1988 - Master's Degree in Industrial Chemistry, University of Padua, Italy, Full Marks with laude

- **Current position(s)**

2006 - Full Professor of Analytical Chemistry, Department of Environmental Sciences, University Ca' Foscari of Venice

- **Previous position(s)**

2021–2024 Director of the Institute of Polar Sciences - CNR
2002–2006 Associate Professor at the Department of Environmental Sciences, University Ca' Foscari of Venice
1992–2002 Researcher at the Department of Environmental Sciences of University Ca' Foscari of Venice

Le seguenti sezioni devono avere lunghezza totale compresa fra 2 e 4 pagine.

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

I am an **ERC Senior Grantee** and a scientist with a distinguished international profile and a long-standing commitment to advancing environmental and climate sciences, leading a research group (mixed research team between the Institute of Polar Sciences and the University Ca'Foscari of Venice) of more than 45 units. My research has consistently bridged diverse fields, including ice core geochemistry, analytical chemistry, paleoclimate reconstruction, and atmospheric chemistry, providing pivotal insights into Earth system history and climate variability.
I've published more than 330 peer reviewed papers - more than 180 in the last ten years - listed in full publications list in WoS search, (using distinct author set facility), **cited more than 14,600 times** (WoS). I published 15 edited book chapters and authored a book: Adams F., Barbante C. "*Chemical Imaging Analysis*", Elsevier 2015 pp 480. I have an **h-index of 60 (WoS)**. The publications, a large part in top level journals (17 in journals such of the Nature and Science editors), straddle topics including: polar climate, glaciology, ice chemistry, Quaternary paleoclimate, Polar and Alpine regions, analytical chemistry, technology, trace element and organic geochemistry, heavy metals and organic compound contamination. A full list of publications can be found in WoS and/or Scopus. I'm ranked among the top **2% of international scientific authors in terms of citation impact, according to Stanford University's 2019 ranking**.

I **founded the Institute of Polar Sciences at CNR (ISP-CNR),** creating a hub for interdisciplinary research focused on polar regions and their critical role in understanding global climate systems.

-I coordinated several groundbreaking research projects at international level and I'm currently PI of two iconic international projects:
- **Ice Memory** (www.icememory.org) is an international project under the auspices of UNESCO. It aims to collect ice cores from major glacial sites of non-polar areas of the earth and preserve them in Antarctica in order to make these samples, available to the scientific community of the future.
- **Beyond EPICA** (www.beyondepica.eu) aims to obtain quantitative, high-resolution ice-core information on climate and environmental changes over the last 1.2 Myr. Over 5000 man/days in Antarctica, the project recently reached its primary goal and further analyses will reveal how climate changed during the Middle Pleistocene Transition, 0,9 to 1,2 Myr ago. It comprises 12 partners, more than 200 researchers involved.

At the European level, I have served as Work Package leader in numerous collaborative projects, including EUPolarNet and EU-PolarNet2 (www.eupolarnet.eu) , where
I coordinated activities that integrated research, policy, and societal engagement in polar science. My leadership extends to securing significant private funding, such as the support from Gruppo PRADA for the "Follow the Ice" project, which highlights the intersection of scientific discovery and cultural dissemination.

In addition, I have coordinated in the last ten years several national projects funded by the Italian National Antarctic Research Program (PNRA), the Projects of National Interest (PRIN) and FISR-CIPE, FOE further enhancing our understanding of biogeochemical cycles, atmospheric trace elements, and paleoclimatology.
Through these projects, I have consistently delivered high-impact results, contributing to transformative discoveries in paleoclimate reconstruction and environmental
chemistry.

In addition to my research achievements, II serve on the Advisory Board of the Polar Dialogue initiative, offering guidance on addressing the complex challenges facing polar regions. Through these scientific and leadership endeavors, I have established myself as a driving force in polar and climate sciences, committed to addressing the pressing challenges of our time with a holistic and innovative approach.

I'm **Member Elected at the Accademia Nazionale delle Scienze detta dei XL** and vice-President since 2021 I've got a prestigious **Distacco Linceo, Accademia Nazionale dei Lincei**. I am an elected member of the **Istituto Veneto di Scienze, Lettere ed Arti, where I have been serving as the Secretary of the Classe di Scienze** since 2021.

My studies, led or co-authored by myself, focus on polar and non-poplar ice as archives of past climate and environmental changes, shedding light on interactions between the atmosphere, biosphere, and human activities. The analysis of trace elements and organic compounds in subglacial environments (1) and the development of advanced analytical methods for aromatic acids in ice cores (3). Detection of organic contaminants in Caucasus ice cores (6) and metal pollutants in the Arctic (8). Detection of particles in ice cores via deep neural networks (2) and two-dimensional impurity imaging in Antarctic ice cores (5). Research on aerosols and atmospheric source changes in Greenland (7) and on atmospheric iron flux and marine productivity (4). Fire dynamics and human-climate interactions (10), investigating large-scale European fires 3,000 years ago, and in (9), reconstructing Holocene fire histories in the Petén Basin, Guatemala.

List of ten selected publications as senior/first author, in the last ten years
1. Turetta, C., … Barbante, C. (2023), STOTEN. https://doi.org/10.1016/j.scitotenv.2023.164480
2. Maffezzoli, N., … Barbante, C. (2023), Cryosphere, https://doi.org/10.5194/tc-17-539-2023
3. Barbaro, E., … Barbante, C. (2022), Anal. Chem., https://doi.org/10.1021/acs.analchem.1c05412
4. Burgay, F., … Barbante, C. (2021).. Clim. Past., https://doi.org/10.5194/cp-17-491-2021
5. Bohleber, P., … Barbante, C. (2021). Cryosphere, https://doi.org/10.5194/tc-15-3523-2021
6. Vecchiato, M., … Barbante, C. (2020). Sci. Rep., https://doi.org/10.1038/s41598-020-67642-x
7. Schupbach, S. … Barbante, C.(2018). Nat. Comm. https://doi.org/10.1038/s41467-018-03924-3
8. Barbante, C., … (2017). Earth Sci. Rev., https://doi.org/10.1016/j.earscirev.2017.02.010
9. Schuepbach, S., … Barbante, C. (2015). Quat. Sci. Rev., https://doi.org/10.1016/j.quascirev.2015.03.004
10. Zennaro, P., … Barbante, C. (2015). GRL., https://doi.org/10.1002/2015GL064259

Peer recognition

2024 Premio del Ministro della Cultura per le Geoscienze - **Accademia Nazionale dei Lincei**
2022 **Premio Mario Rigoni Stern**, finalista.
2020 Special Expert of the Shaanxi Province, China. **China One Thousand Talent Plan**
2015 Member Elected at the Accademia Nazionale delle Scienze detta dei XL; vice-President since 2021
2013 «**La Belgica» Prize** of the Belgian Royal Academy of Sciences.
2013 Member Elected of the Istituto Veneto di Scienze Lettere ed Arti; Secretary of the Classe di Scienze since 2021
2012 **Distacco Linceo** (4 years) at Centro Linceo B. Segre, Accademia Nazionale dei Lincei
2012 **Antarctica Service Medal**, for the service of United States interests in Antarctica
2010 **Award Ca' Foscari University** for Research
2007 **Descartes Award for the Excellence in Research** (jointly with the European Project for Ice Coring in Antarct

ADDITIONAL INFORMATION

Supervision of graduate students; phd postdoc students:
I have supervised about 40 Master and 25 PhD theses of students of various backgrounds (Chemistry, Polar sciences, Environmental, Climate) and have served on 7
external PhD panels. I have also supervised 5 PhD students in co-tutelle with the University Joseph Fourier of Grenoble. Since 2008 I am Professor of Earth's Climate at
the Harvard Summer School. In the last 10 years I supervised 10 Marie Curie Fellows (Post Doc).

Teaching activities:
- Analytical Chemistry
- Climate of the Past
- The Anthropocene

Organisation of scientific meetings:
2022 InternationalSummer Schools on Environmental Dynamics, Venice
2019 - Beyond EPICA workshops
2008 Quaternary Climate: from Pole to Pole - EPICA Open Science Conference - Venice
2003 IV International Conference on High Resolution Sector Field ICPMS - Venice

Institutional responsibilities:
2024 - Member of the Scientific Committee of the INGV
2024 - Member of the Executive Board of the European Polar Board
2024 - Member of the Advisory Board of the Polar Dialogue
2023 - Coordinator of the National PhD Program in Polar Sciences
2021-2024 Director of the Institute of Polar Sciences – CNR
2021 - Senior Expert of the Shadow Strategic Programme Committee for the specific programme implementing Horizon Europe – Cluster 5 "Climate, Energy and
Mobility"– Italian Representative
2021- vice-Chair of the International Ice Memory Foundation, France
2020 - Configuration SC5 "Climate action, environment, resource efficiency and raw materials"
– Italian Representative
2014-2020 Member of the Board of Directors (Consiglio di Amministrazione) of the Ca'Foscari University of Venice
2020 - Member of the National Scientific Committee for Antarctic Research
2013-2020 Members of the Programme Committee for the specific programme implementing Horizon2020

Reviewing activities:
2017 - 2022 Member of the International Advisory Board of Analytical and Bioanalytical Chemistry
2011 - Member of the Editorial Board of Climate of the Past (Chief Editor for 2yr), Copernicus EGU Journal
2012 - Editor of Atmospheric Chemistry and Physic, Copernicus EGU Journal
2010 - I served in several international panels for the evaluation of research

Memberships of scientific societies:
2017-2018 President of the Italian National Society of Climate Sciences (SISC)
2015- Member of the EuroIPICS – International Partnership for Ice Coring Science
Member of the Società Chimica Italiana (various year, discontinuous)
Member of the European Geosciences Union (various year, discontinuous)

Major collaborations:
During the last ten years I've extensively collaborated with many leading institutions in the frame of ice core analyses and paleoclimatic reconstructions, namely
Frank Wilhelms, Pascal Bohleber, Alfred Wegener Institute, Bremerhaven, Germany
Eric Wolf, University of Cambridge, United Kingdom
Jerome Chappellaz, Swiss Polar Institute, Sion Switzerland
Hubertus Fischer, Thomas Stocker, University of Bern, Switzerland
Dorthe Dahl-Jensen, University of Copenhagen, Denmark

Career breaks, diverse career paths and major life events

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