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Work experience

- 7/2020–present **Permanent Researcher**, *National Research Council (CNR) – Institute of Atmospheric Sciences and Climate (ISAC)*, c.so Fiume 4, 10133 Turin, Italy.
- 2/2017–7/2020 **Research fellow**, *National Research Council (CNR) – Institute of Atmospheric Sciences and Climate (ISAC)*, c.so Fiume 4, 10133 Turin, Italy.
- 11/2013–11/2016 **Research fellow**, *National Research Council (CNR) – Institute of Atmospheric Sciences and Climate (ISAC)*, via P. Gobetti 101, 40129 Bologna, Italy.
- 11/2012–11/2013 **Research fellow**, *National Research Council (CNR) – Institute of Atmospheric Sciences and Climate (ISAC)*, via P. Gobetti 101, 40129 Bologna, Italy.

Education

- 2014–2017 **Ph.D. in Geophysics**, *University of Bologna*, Bologna, Italy.
- 3–5/2015 **Visiting Ph.D. student**, *Eidgenössische Technische Hochschule Zürich (ETH) – Institute for Atmospheric and Climate Science (IAC)*, Universitätstrasse 16, 8092 Zurich, Switzerland.
- 2010–2012 **Master's degree in Physics**, *University of Turin*, Turin, Italy, grade 110/110 L.
- 2006–2010 **Bachelor's degree in Physics**, *University of Turin*, Turin, Italy.

Personal skills

Languages

- Italian **Mothertongue**
- English **Advanced level C1**
- French **Basic level A2**
- German **Basic level A1**

Computer skills

- Programming languages R, Matlab (intermediate level), Fortran and C++ (base level)
- Operating systems Excellent knowledge of Microsoft Windows and basic knowledge of Linux system
- Other Knowledge of software for data analysis, excellent knowledge of Microsoft Office suite and $\text{\LaTeX}$

List of scientific publications

Bibliometric indexes

Scopus 55822833200, *h*-index: 13
Google Scholar fRwYdVIAAAAJ&hl, *h*-index: 15
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Scientific papers

- 31 Cristofanelli, P., Zannoni, N., Apadula, F., Barnaba, F., Bracci, A., Calzolari, F., Di Liberto, L., Guizzardi, D., Magnani, C., Manca, G., Mardonez, V., Montaguti, S., Pasqualini, F., Perfetti, C., Putaud, J.-P., **Putero, D.**, Renzi, L., Zazzeri, G., and Marinoni, A.: Urban CO₂ and CH₄ pilot atmospheric measurements in the Milan city area (Northern Italy), *Atmos. Environ.*, 381, 122124, <https://doi.org/10.1016/j.atmosenv.2026.122124>, 2026.
- 30 Nibert, P., Wu, Y., Joly, M., Amato, P., Cristofanelli, P., Calzolari, F., Piro, J.-L., **Putero, D.**, Montaguti, S., Renzi, L., Vogel, F., Rapuano, M., Brigante, M., Verhaege, C., Baray, J.-L., Deguillaume, L., Marinoni, A., Zanatta, M., and Bianco, A.: Measurement report: Chemical characterization of cloud water at Monte Cimone (Italy) – impact of air mass origin and assessment of atmospheric processes, *Atmos. Chem. Phys.*, 26, 6489–6506, <https://doi.org/10.5194/acp-26-6489-2026>, 2026.
- 29 Sodano, S., Gilardoni, S., Marinoni, A., Landi, T. C., **Putero, D.**, Tranchida, G., Di Liberto, L., and Bonasoni, P.: Seven years of measurements of equivalent black carbon at the Capo Granitola WMO-GAW station: influence of local vegetation fires. *Environ. Sci.: Atmos.*, Advance Article, <https://doi.org/10.1039/d5ea00128e>, 2026.
- 28 Collaud Coen, M., Brem, B. T., Gysel-Beer, M., Modini, R., Henne, S., Steinbacher, M., **Putero, D.**, Gini, M. I., and Eleftheriadis, K.: Detection and climatology of Saharan dust frequency and mass at the Jungfraujoch (3580 m a.s.l., Switzerland). *Atmos. Chem. Phys.*, 26, 1623–1645, <https://doi.org/10.5194/acp-26-1623-2026>, 2026.
- 27 Vogel, F., **Putero, D.**, Bonasoni, P., Cristofanelli, P., Zanatta, M., and Marinoni, A.: Saharan dust transport event characterization in the Mediterranean atmosphere using 21 years of in-situ observations. *Atmos. Chem. Phys.*, 25, 15453–15468, <https://doi.org/10.5194/acp-25-15453-2025>, 2025.
- 26 D'Amico, F., Lo Feudo, T., Ammoscato, I., De Benedetto, G., Sinopoli, S., Malacaria, L., Busetto, M., **Putero, D.**, and Calidonna, C. R.: Analysis of nitric oxide and nitrogen dioxide variability at a Central Mediterranean WMO/GAW station. *Nitrogen*, 6(3), 84, <https://doi.org/10.3390/nitrogen6030084>, 2025.
- 25 Trisolino, P., **Putero, D.**, Arduini, J., Amendola, S., Calzolari, F., and Cristofanelli, P.: Influence of deep stratosphere-to-troposphere transport on atmospheric carbon dioxide and methane at the Mt. Cimone WMO/GAW global station (2165 m a.s.l.): a multi-year (2015–2022) investigation. *Atmos. Res.*, 310, 107627, <https://doi.org/10.1016/j.atmosres.2024.107627>, 2024.

- 24 Cristofanelli, P., Trisolino, P., Calzolari, F., Busetto, M., Calidonna, C. R., Amendola, S., Arduini, J., Fratticioli, C., Hundal, R. A., Maione, M., Marcucci, F., Marinoni, A., Montaguti, S., Renzi, L., Roccato, F., Bonasoni, P., and **Putero, D.**: Influence of wildfire emissions to carbon dioxide (CO₂) observed at the Mt. Cimone station (Italy, 2165 m asl): a multi-year investigation. *Atmos. Environ.*, 330, 120577, <https://doi.org/10.1016/j.atmosenv.2024.120577>, 2024.
- 23 **Putero, D.**, Cristofanelli, P., Chang, K.-L., Dufour, G., Beachley, G., Couret, C., Effertz, P., Jaffe, D. A., Kubistin, D., Lynch, J., Petropavlovskikh, I., Puchalski, M., Sharac, T., Sive, B. C., Steinbacher, M., Torres, C., and Cooper, O. R.: Fingerprints of the COVID-19 economic downturn and recovery on ozone anomalies at high-elevation sites in North America and Western Europe. *Atmos. Chem. Phys.*, 23, 15693–15709, <https://doi.org/10.5194/acp-23-15693-2023>, 2023.
- 22 Salerno, F., Guyennon, N., Yang, K., Shaw, T. E., Lin, C., Colombo, N., Romano, E., Gruber, S., Bolch, T., Alessandri, A., Cristofanelli, P., **Putero, D.**, Diolaiuti, G., Tartari, G., Verza, G., Thakuri, S., Balsamo, G., Miles, E. S., and Pellicciotti, F.: Local cooling and drying induced by Himalayan glaciers under global warming. *Nat. Geosci.*, 16, 1120–1127, <https://doi.org/10.1038/s41561-023-01331-y>, 2023.
- 21 Yang, C., Cagnazzo, C., Artale, V., Nardelli, B. B., Buontempo, C., Busatto, J., Caporaso, L., Cesarini, C., Cionni, I., Coll, J., Crezee, B., Cristofanelli, P., de Toma, V., Essa, Y. H., Eyring, V., Fierli, F., Grant, L., Hassler, B., Hirschi, M., Huybrechts, P., Le Merle, E., Leonelli, F. E., Lin, X., Madonna, F., Mason, E., Massonnet, F., Marcos, M., Marullo, S., Müller, B., Obregon, A., Organelli, E., Palacz, A., Pascual, A., Pisano, A., **Putero, D.**, Rana, A., Sánchez-Román, A., Seneviratne, S. I., Serva, F., Storto, A., Thiery, W., Thorne, P., Van Tricht, L., Verhaegen, Y., Volpe, G., and Santoleri, R.: Independent quality assessment of Essential Climate Variables. *Bull. Am. Meteorol. Soc.*, 103, E2032–E2049, <https://doi.org/10.1175/BAMS-D-21-0109.1>, 2022.
- 20 Tian, B., Ding, M., **Putero, D.**, Li, C., Zhang, D., Tang, J., Zheng, X., Bian, L., and Xiao, C.: Multi-year variation of near-surface ozone at Zhongshan Station, Antarctica. *Environ. Res. Lett.*, 17, 044003, <https://doi.org/10.1088/1748-9326/ac583c>, 2022.
- 19 Vardè, M., Barbante, C., Barbaro, E., Becherini, F., Bonasoni, P., Busetto, M., Calzolari, F., Cozzi, G., Cristofanelli, P., Dallo, F., De Blasi, F., Feltracco, M., Gabrieli, J., Gambaro, A., Maffezzoli, N., Morabito, E., **Putero, D.**, Spolaor, A., and Cairns, W. R. L.: Characterization of atmospheric total gaseous mercury at a remote high-elevation site (Col Margherita Observatory, 2543 m a.s.l.) in the Italian Alps. *Atmos. Environ.*, 271, 118917, <https://doi.org/10.1016/j.atmosenv.2021.118917>, 2022.
- 18 Lacagnina, C., Doblas-Reyes, F., Larnicol, G., Buontempo, C., Obregón, A., Costa-Surós, M., San-Martín, D., Bretonnière, P.-A., Polade, S. D., Romanova, V., **Putero, D.**, Serva, F., Lladrés-Brustenga, A., Pérez, A., Cavaliere, D., Membrive, O., Steger, C., Pérez-Zanón, N., Cristofanelli, P., Madonna, F., Rosoldi, M., Riihelä, A., and Díez, M. G.: Quality Management Framework for Climate Datasets. *Data Sci. J.*, 21(1), 10, <https://doi.org/10.5334/dsj-2022-010>, 2022.

- 17 Cristofanelli, P., Arduini, J., Serva, F., Calzolari, F., Bonasoni, P., Busetto, M., Maione, M., Sprenger, M., Trisolino, P., and **Putero, D.**: Negative ozone anomalies at a high mountain site in northern Italy during 2020: A possible role of COVID-19 lockdowns? *Environ. Res. Lett.*, 16, 074029, <https://doi.org/10.1088/1748-9326/ac0b6a>, 2021.
- 16 Cristofanelli, P., Gutiérrez, I., Adame, J. A., Bonasoni, P., Busetto, M., Calzolari, F., **Putero, D.**, Roccato, F.: Interannual and seasonal variability of NO_x observed at the Mt. Cimone GAW/WMO global station (2165 m a.s.l., Italy). *Atmos. Environ.*, 249, 118245, <https://doi.org/10.1016/j.atmosenv.2021.118245>, 2021.
- 15 Ding, M., Tian, B., Ashley, M. C. B., **Putero, D.**, Zhu, Z., Wang, L., Yang, S., Li, C., and Xiao, C.: Year-round record of near-surface ozone and O₃ enhancement events (OEEs) at Dome A, East Antarctica. *Earth Syst. Sci. Data*, 12, 3529–3544, <https://doi.org/10.5194/essd-12-3529-2020>, 2020.
- 14 Cristofanelli, P., Fierli, F., Graziosi, F., Steinbacher, M., Couret, C., Calzolari, F., Roccato, F., Landi, T., **Putero, D.**, and Bonasoni, P.: Decadal O₃ variability at the Mt. Cimone WMO/GAW global station (2,165 m a.s.l., Italy) and comparison with two high-mountain “reference” sites in Europe. *Elem. Sci. Anth.*, 8, 00042, <https://doi.org/10.1525/elementa.00042>, 2020.
- 13 Naitza, L., Cristofanelli, P., Marinoni, A., Calzolari, F., Roccato, F., Busetto, M., Sferlazzo, D., Aruffo, E., Di Carlo, P., Bencardino, M., D’Amore, F., Sprovieri, F., Pirrone, N., Dallo, F., Gabrieli, J., Vardè, M., Resci, G., Barbante, C., Bonasoni, P., and **Putero, D.**: Increasing the maturity of measurements of essential climate variables (ECVs) at Italian atmospheric WMO/GAW observatories by implementing automated data elaboration chains. *Comput. Geosci.*, 137, 104432, <https://doi.org/10.1016/j.cageo.2020.104432>, 2020.
- 12 Cristofanelli, P., Di Carlo, P., Aruffo, E., Apadula, F., Bencardino, M., D’Amore, F., Bonasoni, P., and **Putero, D.**: An assessment of stratospheric intrusions in Italian mountain regions using STEFLUX. *Atmosphere*, 9(10), 413, <https://doi.org/10.3390/atmos9100413>, 2018.
- 11 Cristofanelli, P., **Putero, D.**, Bonasoni, P., Busetto, M., Calzolari, F., Camporeale, G., Grigioni, P., Lupi, A., Petkov, B., Traversi, R., Udisti, R., and Vitale, V.: Analysis of multi-year near-surface ozone observations at the WMO/GAW “Concordia” station (7506’S, 12320’E, 3280 m a.s.l. – Antarctica). *Atmos. Environ.*, 177, 54–63, <https://doi.org/10.1016/j.atmosenv.2018.01.007>, 2018.
- 10 **Putero, D.**, Marinoni, A., Bonasoni, P., Calzolari, F., Rupakheti, M., and Cristofanelli, P.: Black carbon and ozone variability at the Kathmandu Valley and at the southern Himalayas: a comparison between a “hot spot” and a downwind high-altitude site. *Aerosol Air Qual. Res.*, 18, 623–635, <https://doi.org/10.4209/aaqr.2017.04.0138>, 2018.
- 9 Balestrini, R., Delconte, C. A., Sacchi, E., Wilson, A. M., Williams, M. W., Cristofanelli, P., and **Putero, D.**: Wet deposition at the base of Mt. Everest (5050 m asl, Nepal Himalaya): seasonal evolution of the chemistry and isotopic composition. *Atmos. Environ.*, 146, 100–112, <https://doi.org/10.1016/j.atmosenv.2016.08.056>, 2016.

- 8 **Putero, D.**, Cristofanelli, P., Sprenger, M., Škerlak, B., Tositti, L., and Bonasoni, P.: STEFLUX, a tool for investigating stratospheric intrusions: application to two WMO/GAW global stations. *Atmos. Chem. Phys.*, 16, 14203–14217, <https://doi.org/10.5194/acp-16-14203-2016>, 2016.
- 7 Duchi, R., Cristofanelli, P., Landi, T. C., Arduini, J., Bourcier, L., Busetto, M., Calzolari, F., Marinoni, A., **Putero, D.**, and Bonasoni, P.: Long-term (2002–2012) investigation of Saharan dust transport events at Mt. Cimone GAW global station, Italy (2165 m asl). *Elem. Sci. Anth.*, 4 (1), 000085, <https://doi.org/10.12952/journal.elementa.000085>, 2016.
- 6 Cerenzia, I., **Putero, D.**, Bonsignore, F., Galassi, G., Olivieri, M., and Spada, G.: Historical and recent sea level rise and land subsidence in Marina di Ravenna, Northern Italy. *Ann. Geophys.*, 59 (5), P0456, <https://doi.org/10.4401/ag-7022>, 2016.
- 5 **Putero, D.**, Cristofanelli, P., Marinoni, A., Adhikary, B., Duchi, R., Shrestha, S. D., Verza, G. P., Landi, T. C., Calzolari, F., Busetto, M., Agrillo, G., Biancofiore, F., Di Carlo, P., Panday, A. K., Rupakheti, M., and Bonasoni, P.: Seasonal variation of ozone and black carbon observed at Paknajol, an urban site in the Kathmandu Valley, Nepal. *Atmos. Chem. Phys.*, 15, 13957–13971, <https://doi.org/10.5194/acp-15-13957-2015>, 2015.
- 4 **Putero, D.**, Landi, T.C., Cristofanelli, P., Marinoni, A., Laj, P., Duchi, R., Calzolari, F., Verza, G. P., and Bonasoni, P.: Influence of open vegetation fires on black carbon and ozone variability in the Southern Himalayas (NCO-P, 5079 m a.s.l.). *Environ. Poll.*, 184, 597–604, <https://doi.org/10.1016/j.envpol.2013.09.035>, 2014.
- 3 **Putero, D.**, Cristofanelli, P., Laj, P., Marinoni, A., Villani, P., Broquet, A., Alborghetti, M., Bonafè, U., Calzolari, F., Duchi, R., Landi, T.C., Verza, G.P., Vuillermoz, E., and Bonasoni, P.: New atmospheric composition observations in the Karakorum region: influence of local emissions and large-scale circulation during a summer field campaign. *Atmos. Environ.*, 97, 75–82, <https://doi.org/10.1016/j.atmosenv.2014.07.063>, 2014.
- 2 Cristofanelli, P., **Putero, D.**, Adhikary, B., Landi, T.C., Marinoni, A., Duchi, R., Calzolari, F., Laj, P., Stocchi, P., Verza, G., Vuillermoz, E., Kang, S., Ming, J., and Bonasoni, P.: Transport of short-lived climate forcers/pollutants (SLCF/P) to the Himalayas during the South Asian summer monsoon onset. *Environ. Res. Lett.*, 9(8), 084005, <https://doi.org/10.1088/1748-9326/9/8/084005>, 2014.
- 1 Marinoni, A., Cristofanelli, P., Laj, P., Duchi, R., **Putero, D.**, Calzolari, F., Landi, T.C., Vuillermoz, E., Maione, M., and Bonasoni, P.: High black carbon and ozone concentrations during pollution transport in the Himalayas: five years of continuous observations at NCO-P global GAW station. *J. Environ. Sci.*, 25(8), 1618–1625, [https://doi.org/10.1016/S1001-0742\(12\)60242-3](https://doi.org/10.1016/S1001-0742(12)60242-3), 2013.

Books

- 1 Cristofanelli, P., Brattich, E., Decesari, S., Landi, T. C., Maione, M., **Putero, D.**, Tositti, L., and Bonasoni, P.: High-mountain atmospheric research: the Italian Mt. Cimone WMO/GAW global station (2165 m a.s.l.). *SpringerBriefs in Meteorology*, 144 pp., Springer, Cham. <https://doi.org/10.1007/978-3-319-61127-3>, 2018.

Book chapters

- 1 Vuillermoz, E., Cristofanelli, P., **Putero, D.**, Verza, G. P., Alborghetti, M., Melis, M., Rasul, G., Listo, L., and Bonasoni, P.: Air-quality measurements at Multan – Pakistan, In: Del Bo, A., Bignami, D. (eds) Sustainable Social, Economic and Environmental Revitalization in Multan City. Research for Development. Springer, Cham. https://doi.org/10.1007/978-3-319-02117-1_11, 2014.

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