

CURRICULUM VITAE

PERSONAL INFORMATION

Name **Giacomo Bertoldi**
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Nationality Italian

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Eurac Website:

<http://www.eurac.edu/en/research/mountains/alpenv/staff/Pages/staffdetails.aspx?persId=8583>

Publons: <https://publons.com/researcher/1292678/giacomo-bertoldi/>

Google Scholar: <https://scholar.google.com/citations?user=OjM4pc4AAAAJ&hl=it>

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=7003924011>

PROFESSIONAL RECORD

14 January 2008 – Present | **Senior researcher** at Institute for the Alpine Environment, Eurac Research, Bolzano/Bozen, Italy.

25 August 2005 – 31 December 2007 | **Research associate** at Duke University, Durham (NC), USA, Department of Civil and Environmental Engineering.

15 November 2004 – 31 August 2005 | **Post-doctoral fellowship** at the University of Trento, Italy, Department of Civil and Environmental Engineering.

1 July 2004 – 14 November 2004 | **Post-doctoral fellowship** at the University of Trento, Italy, Department of Civil and Environmental Engineering.

1 November 2000 – 2 July 2004 | **Ph. D. candidate** at the University of Trento, Italy, Department of Civil and Environmental Engineering.

EDUCATION

4 September 2018 | Italian national scientific **qualification as Full Professor** (Fascia 1) – sector 08/A1 –

<p>20 November 2017 2 December 2013</p>	<p>Hydraulic, hydrology, hydraulic and marine construction (Call 2018, as defined in D.D. 1532 of 29/07/2016), valid until 4/09/2024.</p> <p>Certified Project Management Associate – IPMA Level D®</p> <p>Italian national scientific qualification as Associate Professor (Fascia 2) – sector 08/A1 – Hydraulic, hydrology, hydraulic and marine construction (Call 2012, as defined in D.D. 222 of 20/07/2012), valid until 2/12/2019.</p>
<p>02 July 2004</p>	<p>Ph.D. in Environmental Engineering (XVI cycle), Department of Civil and Environmental Engineering, University of Trento, Italy. Specialization: Hydrology.</p>
<p>30 January 2001</p>	<p>Professional Habilitation as Engineer, Civil Sector, Province of Trento, id. 2176.</p>
<p>18 October 2000</p>	<p>M.S. in Environmental Engineering University of Trento, Italy, full marks 110/110 with honors.</p>
<p>LANGUAGES</p>	<p>Italian (native language), English (fluent – C2), German (good – B2).</p>
<p>MAJOR CURRENT RESPONSIBILITIES</p>	<p>Responsible of the research line on ecohydrology of the Institute for Alpine Environment. Development and implementation of eco-hydrological models to study the impacts of land cover and climatic changes on water resources in mountain environments. Fundraising and management of research projects. Supervision of junior collaborators, master and Ph.D. students and trainees. Contributing to strategic activities in the Institute.</p> <p>Responsible of the research line on ecohydrology of the Institute for Alpine Environment. Development and implementation of eco-hydrological models to study the impacts of land cover and climatic changes on water resources in mountain environments. Fundraising and management of research projects. Supervision of junior collaborators, master and Ph.D. students and trainees. Contributing to strategic activities in the Eurac Institute for Alpine Environment.</p>
<p>AREAS OF EXPERTISE</p>	<p>Hydrology: distributed numerical modeling, land surface interactions, evaporation and soil moisture estimation, catchment hydrology, flood forecasting and management, snow processes, landslides, impacts of climate change on water resources.</p> <p>Ecology: eco hydrology, dynamic vegetation models, plants physiology.</p> <p>Remote sensing: use of remote sensing data for distributed eco – hydrological models, remote sensing of soil moisture.</p> <p>Hydrometeorology: atmospheric boundary layer physics, computational fluid dynamic, turbulence modeling, micrometeorological monitoring.</p> <p>Geomorphology: Geographic Information Systems (GIS), catchments morphology.</p> <p>Statistics: management of experimental and hydro-meteorological datasets, time-series analysis, spatial interpolation techniques.</p>
<p>COMPUTING SKILLS</p>	<p>Programming languages: C, C++, Fortran, Linux bash.</p> <p>GIS systems: GRASS, Qgis.</p> <p>Software: Matlab, Mathematica, Office, Python, R.</p>
<p>RESEARCH INTERESTS</p>	<p>My research is motivated by the curiosity in understanding and modelling the complex physical, and biological processes that sustain ecosystems and influence the water cycle. In fact, a better quantitative knowledge of these processes is needed for developing adaptation and mitigation responses to projected climatic changes in the local, regional, and global water cycles.</p>

PROFESSIONAL SERVICE

- Associated Editor for *Frontier in Water* – Section Water and Hydrocomplexity, since 2021.
- Guest Editor for *Water*: “Advances in Catchment Science through Integrated Hydrological Modelling and Monitoring” Guest Editors: M. Camporese, M. Sulis, G. Bertoldi (2019-2021)
- Reviewer for the following Journals: *Agricultural and Forest Meteorology*, *Archives of Agronomy and Soil Science*, *Biogeoscience*, *Catena*, *Ecohydrology*, *Geophysical Research Journal*, *Geophysical Research Letters*, *Geoscientific Model Development*, *Hydrological Processes*, *Hydrological Sciences J.*, *Hydrology and Earth System Sciences*, *Hydrology Research*, *J. of Geophysical Research*, *J. of Hydrology*, *J. of Hydrometeorology*, *J. of Selected Topics in Applied Earth Observations and Remote Sensing*, *Landscape Ecology*, *Plant and Soil*, *Remote Sensing*, *Science of Total Environment*, *Water Resources Research*.
- Reviewer of research proposals for the American National Science Foundation, for ETH Grant Funding Program, for the World Bank, for the UK Natural Environment Research Council (NERC), for the EU PRIMA Call 2018.
- Convener for the following conferences: “International Conference on Snow Hydrology: SnowHydro 2020”, January 2020, Bolzano/Bozen, Italy. ICAM 2019, September 2019, Riva del Garda, Italy; Convegno Nazionale di Idraulica e Costruzioni Idrauliche, 2018 and 2016, Giornate dell’Idrologia 2016, EGU 2015 (Ecohydrology section)
- Member of: Engineering Italian Union since 2001, Province of Trento. American Geophysical Union, of the European Geophysical Union since 2001. Italian Hydrological Society, since 2016. Italian Group of Hydraulics, since 2014. Società Italiana per le Scienze del Clima, since 2019, AISAM, since 2021. Professional snow observer for avalanche risk assessment, since 1997. Operator and assistant of artificial avalanches triggering, since 1999.

PUBLICATIONS IN PEER REVIEWED JOURNALS

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|------|---|
| 2021 | 1. - <u>Bertoldi G</u> , Camporese M, Sulis M. Advances in Catchment Science through Integrated Hydrological Modelling and Monitoring. <i>Water</i> . 2021; 13(15):2013. https://doi.org/10.3390/w13152013 |
| 2021 | 2. - Crespi, A., Matiu, M., <u>Bertoldi, G.</u> , Petitta, M., and Zebisch, M.: A high-resolution gridded dataset of daily temperature and precipitation records (1980–2018) for Trentino – South Tyrol (north-eastern Italian Alps), <i>Earth Syst. Sci. Data</i> , 13, 2801–2818, https://doi.org/10.5194/essd-13-2801-2021 , 2021. |
| 2021 | 3. - Bottazzi M, Bancheri M, Mobilia M, <u>Bertoldi G</u> , Longobardi A, Rigon R. (2021). Comparing Evapotranspiration Estimates from the GEOframe-Prospero Model with Penman–Monteith and Priestley–Taylor Approaches under Different Climate Conditions. <i>Water.</i> ; 13(9):1221. https://doi.org/10.3390/w13091221 . |
| 2021 | 4. - Matiu, M., Crespi, A., <u>Bertoldi, G.</u> , Carmagnola, C., Marty, C., Morin, S., Schöner, W., Berro, D., Chiogna, G., Gregorio, L., Kotlarski, S., Majone, B., Resch, G., Terzago, S., Valt, M., Beozzo, W., Cianfarra, P., Gouttevin, I., Marcolini, G., Notarnicola, C., Petitta, M., Scherrer, S., Strasser, U., Winkler, M., Zebisch, M., Cicogna, A., Cremonini, R., Debernardi, A., Faletto, M., Gaddo, M., Giovannini, L., Mercalli, L., Soubeyroux, J., Sušnik, A., Trenti, A., Urbani, S., Weilguni, V. (2021). Observed snow depth trends in the European Alps 1971 to 2019. <i>The Cryosphere</i> , 2021, 1-50. https://dx.doi.org/10.5194/tc-2020-289 . |
| 2020 | 5. - Marin, C., <u>Bertoldi, G.</u> , Premier, V., Callegari, M., Brida, C., Hürkamp, K., Tschiersch, J., Zebisch, M., and Notarnicola, C. (2020): Use of Sentinel-1 radar observations to evaluate snowmelt dynamics in alpine regions, <i>The Cryosphere</i> , 14, 935–956, 2020, https://doi.org/10.5194/tc-2019-175 . |
| 2019 | 6. - Brenner, J, Genova, <u>G</u> , <u>Bertoldi, G</u> , Niedrist, G and Della Chiesa, S. (2019) |

- SWCalibrateR: Interactive, Web – Based Calibration of Soil Moisture Sensors. Journal of Open Research Software, 7: 20. DOI: <https://doi.org/10.5334/jors.254>
- 2019 7. - Engel, M., Penna, D., Bertoldi, G., Vignoli, G., Tirler, W., and Comiti, F. (2019): Controls on spatial and temporal variability of streamflow and hydrochemistry in a glacierized catchment. Hydrol. Earth Syst. Sci. 23, 2041–2063. <https://doi.org/10.5194/hess-23-2041-2019> .
- 2018 8. - Anagnostou M., Nikolopoulos T. I., Kalogiros J., Anagnostou N. E., Marra F., Mair E., Bertoldi G., Tappeiner U., Borga M., 2018. Advancing Precipitation Estimation and Streamflow Simulations in Complex Terrain with X-Band Dual-Polarization Radar Observations. Remote Sens. 10, 1258. <https://doi.org/10.3390/rs10081258>
- 2018 9. - Castelli, M., Anderson, M.C.C., Yang, Y., Wohlfahrt, G., Bertoldi, G., Niedrist, G., Hammerle, A., Zhao, P., Zebisch, M., Notarnicola, C. (2018): Two-source energy balance modeling of evapotranspiration in Alpine grasslands. Remote Sens. Environ. 209, 327–342. <https://doi.org/10.1016/j.rse.2018.02.062> .
- 2017 10. - Engel M., Notarnicola C., Endrizzi S., Bertoldi G., (2017). Snow model sensitivity analysis to understand spatial and temporal snow dynamics in a high-elevation catchment. Hydrological Processes, 1–18, <https://doi.org/10.1002/hyp.11314>
- 2017 11. - Penna, D., Engel, M., Bertoldi, G., and Comiti, F. (2017): Towards a tracer-based conceptualization of meltwater dynamics and streamflow response in a glacierized catchment, Hydrol. Earth Syst. Sci., 21, 23-41, <https://doi.org/10.5194/hess-21-23-2017> .
- 2017 12. - Kollet, S., Sulis, M., Maxwell, R., Paniconi, C., Putti, M., Bertoldi, G., Coon, E. T., Cordano, E., Endrizzi, S., Kikinzon, E., Mouche, E., Mügler, C., Park, Y.-J., Refsgaard, J. C., Stisen, S. and Sudicky, E. (2017), The integrated hydrologic model intercomparison project, IH-MIP2: A second set of benchmark results to diagnose integrated hydrology and feedbacks. Water Resour. Res., 53, 867-890, <https://doi.org/10.1002/2016WR019191> .
- 2016 13. - Niedrist, G. Tasser E., Bertoldi G., Della Chiesa S., Obojes N., Egarter-Vigl L. and Tappeiner U. (2016): Down to future: Transplanted mountain meadows react with increasing phytomass and shifting species composition. Flora, 224, 172-182, <https://doi.org/10.1016/j.flora.2016.07.013> .
- 2016 14. - Greifeneder F., Notarnicola C., Bertoldi G., Niedrist G., and Wagner W.: (2016). From point to pixel scale: An upscaling approach for in-situ soil moisture measurements Vadose Zone Journal, vol 15, Iss 6, <https://doi.org/10.2136/vzj2015.03.0048> .
- 2016 15. - Mair E., Leitinger G., Della Chiesa S., Niedrist G., Tappeiner U., Bertoldi G. (2016). A simple method to combine snow height and meteorological observations to estimate winter precipitation at sub-daily resolution, Hydrological Sciences Journal, 61:11, 2050-2060, <https://doi.org/10.1080/02626667.2015.1081203> .
- 2016 16. - Engel, M., Penna, D., Bertoldi, G., Dell’Agnese, A., Soulsby, C., and Comiti, F. (2016). Identifying runoff contributions during melt-induced runoff events in a glacierized Alpine catchment. Hydrological Processes, 30, 343-364. <https://doi.org/10.1002/hyp.10577> .
- 2015 17. - Pasolli, L., Notarnicola, C., Bertoldi, G., Bruzzone, L., Remegaldo, R., Niedrist, G., Della Chiesa S., Tappeiner, U., Zebisch, M. (2015). Estimation of Soil Moisture in Mountain Areas Using SVR Technique Applied to Multiscale Active Radar Images at C-Band. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing , 8(1), 262–283. <https://doi.org/10.1109/JSTARS.2014.2378795>
- 2014 18. - Penna D., Engel M., Mao L., Dell’Agnese A., Bertoldi G., Comiti F. (2014). Tracer-based analysis of spatial and temporal variation of water sources in a glacierized catchment. Hydrology and Earth System Sciences, 18, 5271-5288, 2014. <https://doi.org/10.5194/hess-18-5271-2014> .
- 2014 19. - Pasolli, L., Notarnicola, C., Bertoldi, G., Della Chiesa S., Niedrist, G., Bruzzone, L., Tappeiner, U., Zebisch, M. (2014): Soil moisture monitoring in mountain areas by using high-resolution SAR images: results from a feasibility study. European Journal of Soil Science, 1–13 . <https://doi.org/10.1111/ejss.12189> .

- 2014 20. - Bertoldi, G., Della Chiesa, S., Notarnicola, C., Pasolli, L., Niedrist, G., Tappeiner, U. (2014) Estimation of soil moisture patterns in mountain grasslands by means of SAR RADARSAT2 images and hydrological modeling. *Journal of Hydrology*, 516, 245–257. <https://doi.org/10.1016/j.jhydrol.2014.02.018>
- 2014 21. - Della Chiesa, S., Bertoldi, G., Niedrist, G., Obojes, N., Endrizzi, S., Alberson, J. D., Wohlfahrt, G., Hörtnagl, L., Tappeiner, U. (2014). Modeling changes in grassland hydrological cycling along an elevational gradient in the Alps. *Ecohydrology*, 7, 1453–1473, <https://doi.org/10.1002/eco.1471> .
- 2013 22. - Penna, D., Mao, L., Comiti, F., Engel, M., Agnese, A. D., and Bertoldi, G. (2013). Hydrological effects of glacier melt and snowmelt in a high-elevation catchment. *Die Bodenkultur*, 64, 93–98 ISSN: 0006-5471.
- 2013 23. - Bertoldi, G., Kustas, W.P., Albertson, J.D., 2013. Evaluating Source Area Contributions from Aircraft Flux Measurements Over Heterogeneous Land Using Large-Eddy Simulation. *Boundary-Layer Meteorol.* 147, 261–279. <https://doi.org/10.1007/s10546-012-9781-y>.
- 2011 24. - Pasolli L., Notarnicola C., Bruzzone L., Bertoldi G., Della Chiesa S., Niedrist G., Tappeiner U., Zebisch M. (2011): Polarimetric radarsat2 imagery for soil moisture retrieval in alpine areas, *Canadian Journal of Remote Sensing*, 37(5), 535-547, doi: 10.5589/m11-065, 2011.
- 2011 25. - Rigon, R., D'Odorico, P., and Bertoldi, G. (2011): The geomorphic structure of the runoff peak, *Hydrol. Earth Syst. Sci.*, 15, 1853-1863, 10.5194/hess-15-1853-2011.
- 2011 26. - Pasolli L., Notarnicola C., Bruzzone L., Bertoldi G., Della Chiesa S., Hell V., Niedrist G. Tappeiner U., Zebisch M., Del Frate F. and Vaglio Laurin G. (2011): Estimation of Soil Moisture in an Alpine Catchment with RADARSAT2 Images, *Applied and Environmental Soil Science*, vol. 2011, Article ID 175473, 12 pages, doi:10.1155/2011/175473.
- 2010 27. - Bertoldi G., Notarnicola C., Leitinger G., Endrizzi S., Zebisch M., Della Chiesa S. and Tappeiner U.: (2010) Topographical and ecohydrological controls on land surface temperature in an Alpine catchment, *Ecohydrology*, 3, 189 – 204, doi:10.1002/eco.129.
- 2009 28. - Gebremichael, M., Rigon, R., Bertoldi, G., and Over, T. M. (2009): On the scaling characteristics of observed and simulated spatial soil moisture fields, *Nonlin. Processes Geophys.*, 16, 141-150. doi: 10.5194/npg-16-141-2009.
- 2008 29. - Bertoldi, G., Kustas W. P., and Albertson J. D., Estimating spatial variability in atmospheric properties over remotely sensed land-surface conditions, *Journal of Applied Meteorology and Climatology*, 47, 2147-2165, doi: 10.1175/2007JAMC1828.1, 2008.
- 2008 30. - Timmermans W. J., Bertoldi G., Albertson J. D., Olioso A., Su Z., and Gieske A. S. M. (2008): Accounting for atmospheric boundary layer variability on flux estimation from RS observations, *International Journal of Remote Sensing*, 29:17, 5275 – 5290, doi: 10.1080/01431160802036383.
- 2008 31. - Simoni, S., Zanotti, F., Bertoldi, G. and Rigon R. (2008): Modelling the probability of occurrence of shallow landslides and channelized debris flows using GEOtop-FS, *Hydrological Processes*, vol. 22, issue 4, pp. 532-545. doi: 10.1002/hyp.6886.
- 2007 32. - Bertoldi G., Albertson J. D., Kustas W. P., Li F., and Anderson M. C.. (2007). On the opposing roles of air temperature and wind speed variability in flux estimation from remotely sensed land surface states, *Water Resources Research*, 43, W10433, doi:10.1029/2007WR005911.
- 2006 33. - Rigon R., Bertoldi G. and Over T.M. (2006): GEOtop: A Distributed Hydrological Model with Coupled Water and Energy Budgets, *Journal of Hydrometeorology*, 7, 371-388, doi: 10.1175/JHM497.1.
- 2006 34. - Bertoldi G., Rigon R., and Over T. M. (2006): Impact of Watershed Geomorphic Characteristics on the Energy and Water Budgets. *Journal of Hydrometeorology*, 7, 389-403, DOI: 10.1175/JHM500.1.

2004	35. - Zanotti, F., Endrizzi, S., <u>Bertoldi, G.</u> and Rigon R. (2004): The GEOTOP snow module, <i>Hydrological Processes</i> , 18, 3667–3679, DOI:10.1002/hyp.5794.
PUBLICATIONS IN REVISION	
2021	- Schmözl K, Felber A., Thaler M., Wieser J., Mark W., Persiano S., <u>Bertoldi G.</u> and Tasser Erich (2021): A methodical approach for analyzing morphological and hydrological dynamics based on fish requirements in diverse Alpine streams. <i>Freshwater Biology</i> , under review.
ON – LINE PUBLICATIONS	
2021	- Matiu, M. Snow: developments and effects in South Tyrol and the Alps. (2021). Eurac Research, https://beta.eurac.edu/en/dossiers/dossier-snow-south-tyrol-alps . <u>Bertoldi G.</u> , Notarnicola C., Zebisch M, (eds).
2018	- Brenner, J., Della Chiesa, S., Genova G., Niedrist G., <u>Bertoldi G.</u> : (2018, November 30). JBrenn/SWCalibrateR: version 1.0.0 (Version v1.0.0). R package published in 2018 via Zenodo. https://github.com/JBrenn/SWCalibrateR/tree/v1.0.0 http://doi.org/10.5281/zenodo.1745328
2018	- Brida C., <u>Bertoldi G.</u> : “SnowSeasonAnalysis V 1.0”. R package published in 2018 via Zenodo. https://github.com/EURAC-Ecohydro/SnowSeasonAnalysis/releases . DOI:10.5281/zenodo.116267.
2004	- <u>Bertoldi G.</u> and Rigon R., GEOTOP: a hydrological balance model: technical description and programs guide, version 0.75, <i>Technical Report DICA-04-001</i> , University of Trento, Italy, April 2004. http://eprints.biblio.unitn.it/archive/00000551/
2004	- <u>Bertoldi G.</u> , The water and energy balance at basin scale: a distributed modeling approach, University of Trento, <i>Monograph of the School of Doctoral Studies in Environmental Engineering</i> , 202 pp., ISBN 88-8443-069-0, 2004, http://www.ing.unitn.it/dica/eng/monographs/index.php
DATASETS	
2020	- Crespi, A.; Matiu, M.; <u>Bertoldi, G.</u> ; Petitta, M.; Zebisch, M. (2020): High-resolution daily series (1980 - 2018) and monthly climatologies (1981 - 2010) of mean temperature and precipitation for Trentino - South Tyrol (north-eastern Italian Alps). PANGAEA, https://doi.pangaea.de/10.1594/PANGAEA.924502
2020	- Matiu, M., Crespi, A., <u>Bertoldi, G.</u> , Carmagnola, C. M., Morin, S., Kotlarski, S., ... Weilguni, V. (2020). Snow cover in the European Alps: Station observations of snow depth and depth of snowfall (Version v1.0) [Data set]. Zenodo. http://doi.org/10.5281/zenodo.4064129

12 October 2021

Giacomo Bertoldi