



Founder and Director of the Centre of Applied Research in Hydrometeorology. Full Professor on hydrometeorology and environmental engineering at the Universitat Politècnica de Catalunya – BarcelonaTech.

More than 25 years of experience on hydrometeorological modelling, precipitation estimation and forecasting using radar, Early Warning Systems and Decision Support Systems for management of climate and weather emergencies.

Expert on leveraging technology and digital innovation, successfully leading large and diverse teams to tackle complex problems, transforming applied research into innovative solutions.

Innovative thinker and successful fundraiser, Coordinator (European PI) of several EU innovation actions as [GOBEYOND](#) and [ANYWHERE](#), which received the [EC Security Innovation Award on Resilience in 2022](#), and [UCPM prevention projects](#) as ERICHA, EDHIT and HAREN, or [IMPRINTS](#).

Currently leading [GOBEYOND](#) EU innovation action, and co-leading Mission Climate Adaptation project [CLIMAAX](#), coordinating the financial support for third parties Open Call to fund regional/local projects for promoting climate adaptation strategies (<https://climaax-call4regions.fundingbox.com>)

DEGREES

1990. **Ph.D. in Hydrology**, *Institut National Polytechnique de Grenoble* (France).

1987. DEA in *Mécanique des milieux Géophysiques et Environnement* (M. Sc. Environmental Sciences), Université Joseph Fourier (Grenoble, France).

1986. *Licenciado en Ciencias Físicas* (M. Sc. Physics, Major in Atmospheric Sci.), Universidad de Barcelona (Spain).

LANGUAGES

Fluent in Spanish, Catalan, French, English, and with working-level proficiency in Italian.

PRESENT POSITION

- *Catedrático* (Civil servant full professor) of Hydrometeorology and Environmental Eng. Department of Civil and Environmental Engineering. Universitat Politècnica de Catalunya - BarcelonaTech, (UPC).

- Founder and Director of the *Centre de Recerca Aplicada en Hidrometeorologia* (Center of Applied Research in Hydrometeorology, CRAHI, from 2002).

EXPERIENCE

Coordinator of EC projects:

Coordinator (European PI) of the EC Innovation Action [GOBEYOND](#) (*Geo and weather multi-risk impact Based Early warning and response systems supporting rapid deployment of first responders in EU and beyond*, 2023-2027).

Co-Coordinator (European Co-PI) of the EC Mission Climate Adaptation project [CLIMAAX](#) (*CLIMate risk and vulnerability Assessment framework and toolbox*, 2023-2026).

Coordinator (European PI) of the EC H2020-DRS-1-2015-700099 Innovation Action [ANYWHERE](#) (*EnhANCing emergency management and response to extreme Weather and climate Events*, 2016-2020, see www.anywhere-h2020.eu).

Coordinator (European PI) of the of the EU Civil Protection Prevention Project ERICHA (*Integrating a European Rainfall-Induced Hazard Assessment system*, 2016-2017, ECHO/SUB/2015/718684/PREV30, <http://crahi.upc.edu/ericha/>).

Coordinator (European PI) of the of the EU Civil Protection Prevention Project EDHIT (*European Demonstration of a rainfall-induced Hazard Identification nowcasting Tool*, <http://crahi.upc.edu/edhit/>).

Coordinator (European PI) of the of the EU Civil Protection Prevention Project HAREN (*Hazard Assessment based on Rainfall European Nowcasts*, <http://crahi.upc.edu/haren>).

Coordinator (European PI) of the European FP7 project IMPRINTS (*Improving preparedness and Risk Management for Flash Floods and debris flow events*, FP7-ENV-2008-1-226555, 2009-2012). See http://europa.eu/rapid/press-release_IP-14-950_en.htm.

Visiting research stays:

2013. Visiting Scientist at the Research Applications Laboratory (RAL - NCAR), Boulder (CO). October -December 2013.

2015. Visiting Professor (FIRST Scholar) at the **Civil Engineering Department of the University of Colorado, Boulder, USA**, (2015). Course: *Flash flood Early Warning Systems: The challenge of transforming rainfall nowcasting into hazard assessment*.

2023. Visiting Scientist at the Centre for Advanced Studies of the EC Joint Reserach Centre, to collaborate on the Risk Data Hub of the [DRMKC](#), Ispra (Italy), April-July 2023.

Academic and Scientific responsibilities:

-**Director of the Centre of Applied Research on Hydrometeorology (CRAHI)** of the UPC (since January 2002 until present).

-**Expert in the [Community of European Research and Innovation for Security \(E03834\)](#)** expert group of the EC DG HOME, assisting the European Commission in the preparation of legislative proposals and policy initiatives as recognized expert in Disaster Resilient Societies.

-Member of the **Scientific Committee on Hydrology** of the **Comisión Nacional de Geodesia y Geofísica** of Spain.

-Member of the **Consulting Council** (Consell Assessor) of the **Meteorological Service of Catalunya**.

-**Director of the Centre de Recerca de l'Aeronàutica i de l'Espai** (CRAE) of the UPC (from September 2005 to March 2007).

-**Chairperson of the IV European Conference on radar in Meteorology and Hydrology** (ERAD2006, held in Barcelona, Spain).

-Member of the **Radar Committee of the American Meteorological Society** (2005-2007), and member of the scientific organizing committees of **ERAD 2004-2024**, **WRaH 2004-2011** and **AMS Radar Conference 2005-2007**.

-Member of the **Doctoral Studies Committee** of the UPC (from June 2002 to September 2006).

-**Dean for International Relations of the Civil Engineering School of Barcelona** (UPC), from October 1998 to September 2002.

Entrepreneurial and Innovation achievements:

- **Entrepreneur and founder of the start-up SME Hydrometeorological Innovative Solutions S. L. ([HYDS](#))** (2006-2009).

- Member of the **Innovation Board** at Hydrometeorological Innovative Solutions S. L. ([HYDS](#), from 2008).

- Member of the **Innovation Board of the Centre for Technological Innovation** of the UPC (from 2010).

AWARDS

1985. Grant from the private La Caixa Foundation fellowships for Ph.D. studies abroad. https://youtu.be/RxRs9OBTK_s?si=ZtlPezJ2iWWw0XvS

1995. Award to the best **Post-Doctoral research in Environment** of the **Fundación Caja de Madrid** to the original work: **Analysis of the hydrological impact of forest fires**.

2001 **Research Distinction of the Catalunya Government** (*modality young scientists*). July 2001.

2004 Second prize in the **Competition on Business ideas of the INNOVA program**.

2005 Third prize for **Technological Entrepreneurs** of the **Caixa de Manresa**.

- 2005 Third prize *Investigación en ciencias experimentales, técnicas y de la salud sobre protección civil* (Spanish Civil Protection) to a supervised Ph.D.
- 2022 EC 2022 Security Innovation Resilience Award as Coordinator of the Innovation action [ANYWHERE](#)

SELECTED PUBLICATIONS

- 2024 Sempere-Torres, D. and Berenguer, M. (2024). The ANYWHERE paradigm shift in responding to weather and climate emergencies. Impact forecasting, dynamic vulnerability and the need for citizen's involvement. In: Sempere-Torres et al. (Ed.) **Responding to extreme weather events**: 1-18. Wiley & Sons. [ISBN: 9781119741589](#).
2023. Palau, R.M., Berenguer, M., Hürlimann M. and Sempere-Torres, D. Implementation of hydrometeorological thresholds for regional landslide warning in Catalonia (NE Spain). **Landslides**, 20, 2039–2054 (2023). <https://doi.org/10.1007/s10346-023-02094-8>.
2023. Meléndez-Landaverde, E. R. and Sempere-Torres, D. A user experience evaluation of a mobile application for disseminating site-specific impact-based flood warnings: The A4alerts app. **J. Flood Risk Management**, e12951. <https://doi.org/10.1111/jfr3.12951>.
2022. Meléndez-Landaverde, E. R., & Sempere-Torres, D. Design and evaluation of a community and impact-based site-specific early warning system (SS-EWS): The SS-EWS framework. **J. Flood Risk Management**, e12860. <https://doi.org/10.1111/jfr3.12860>.
2022. Ritter, J., M. Berenguer, F. Dottori, M. Kalas, D. Sempere-Torres: Compound flood impact forecasting: integrating fluvial and flash flood impact assessments into a unified system. **Hydrol. Earth Syst. Sci.**, 26, 689–709, 2022. <https://doi.org/10.5194/hess-26-689-2022>.
2022. Palau, R.M., M. Berenguer, M. Hürlimann and D. Sempere-Torres: Application of a fuzzy verification framework for the evaluation of a regional-scale landslide early warning system during the January 2020 Gloria storm in Catalonia. **Landslides**, 19, 1599–1616. <https://link.springer.com/article/10.1007/s10346-022-01854-2>.
2021. Ritter, J., Berenguer, M., Park, S., and Sempere-Torres, D.: Real-time Assessment of Flash Flood Impacts at pan-European scale: The ReAFFINE method, **J. Hydrol.**, 603, 127022, <https://doi.org/10.1016/j.jhydrol.2021.127022>.
2021. Cassiraga, E. F., J. J. Gómez-Hernández, M. Berenguer, D. Sempere-Torres, and Javier Rodrigo Ilari: Spatio-temporal precipitation estimation from rain gauges and meteorological radar using geostatistics, **Mathematical Geosciences**, 53: 499-516. <https://link.springer.com/article/10.1007/s11004-020-09882-1>.
2020. Ritter, J., M. Berenguer, C. Corral, S. Park, D. Sempere-Torres, 2019: ReAFFIRM: Real-time Assessment of Flash Flood Impacts – a Regional high-resolution Method. **Environment international**, 136: 105375. <https://doi.org/10.1016/j.envint.2019.105375>.
2020. Palau, R.M., Hürlimann, M., Berenguer, M. et al. Influence of the mapping unit for regional landslide early warning systems: comparison between pixels and polygons in Catalonia (NE Spain). **Landslides** 17, 2067–2083. <https://doi.org/10.1007/s10346-020-01425-3>
2019. Schauwecker, S., Gascón, E., Park, S., Ruiz-Villanueva, V., Schwarb, M., Sempere-Torres, D., Stoffel, M., Vitolo, C., and Rohrer, M. Anticipating cascading effects of extreme precipitation with pathway schemes – Three case studies from Europe. **Environmental International**, 127: 291-304.
2019. Park, S., M. Berenguer, and D. Sempere-Torres: Long-term analysis of gauge-adjusted radar rainfall accumulations at European scale, **Journal of Hydrology**, 573: 768-777. <https://doi.org/10.1016/j.jhydrol.2019.03.093>
2019. Corral, C., M. Berenguer, D. Sempere-Torres, L. Poletti, F. Silvestro and N. Rebora, 2019: Comparison of two systems for regional flash flood hazard assessment forecasting, **Journal of Hydrology**, 572: 603-619. <https://doi.org/10.1016/j.jhydrol.2019.03.026>
- 2018 Lengfeld, K.; Berenguer, M. and Sempere-Torres, D. Intercomparison of attenuation correction algorithms for single-polarized X-band radars. **Atmospheric Research**, 210: 116-132. <https://doi.org/10.1016/j.atmosres.2017.10.020>
2015. Gochis, D.; Schumacher, R., Friedrich, K. *et al.* The great Colorado flood of September 2013. **Bulletin of the American Meteorological Society**. Any: 2015. Volum: 96. Número: 9. Pàgs: 1461-1487. JCR-Science Index d'impacte: 11.808. <https://doi.org/10.1175/BAMS-D-13-00241.1>
2015. Berenguer, M., D. Sempere-Torres, M. Hürlimann: Debris-flow hazard assessment at regional scale by combining susceptibility mapping and radar rainfall, **Natural Hazards and Earth System Sciences**, 15, 587–602. <https://doi.org/10.5194/nhess-15-587-2015>.
2014. Versini, P. A., Berenguer, M., Corral, C., and Sempere-Torres, D. (2014): An operational flood warning system for poorly gauged basins: demonstration in the Guadalhorce basin (Spain), **Natural Hazards**, 71, pp 1355-1378. <https://link.springer.com/article/10.1007/s11069-013-0949-7>.
2013. Versini, P.-A., M. Velasco, A. Cabello and Sempere-Torres, D. Hydrological impact of forest fires and climate change in a Mediterranean basin, **Natural Hazards**, 66, 609-628.

2012. Quintero, F., Sempere-Torres, D., Berenguer, M. and Baltas, E. A scenario-incorporating analysis of the propagation of uncertainty to flash flood simulations. **Journal of Hydrology**, 460-461: 90-102.
2011. Berenguer, M., Sempere-Torres, D. y Pegram, G.G.S. SBMcast – An ensemble nowcasting technique to assess the uncertainty in rainfall forecasts by Lagrangian extrapolation. **Journal of Hydrology**, 404: 226-240. <https://doi.org/10.1016/j.jhydrol.2011.04.033>
2011. Schröter, K., Lloret, X., Velasco-Forero, C., Ostrowski, M. y Sempere-Torres, D. Implications of radar rainfall estimates uncertainty on distributed hydrological model predictions. **Atmospheric Research**, 100: 237-245. [doi:10.1016/j.atmosres.2010.08.014](https://doi.org/10.1016/j.atmosres.2010.08.014)
2009. Germann, U., Berenguer, M., Sempere-Torres, D. and Zappa, M. REAL: Ensemble radar precipitation estimation for hydrology in a mountainous region. **Quarterly Journal of the Royal Meteorological Society**, 135: 445–456. <https://doi.org/10.1002/qj.375>
2009. Velasco-Forero, C. A., Sempere-Torres, D., Cassiraga, E. F. y Jaime Gómez-Hernández, J. A non-parametric automatic blending methodology to estimate rainfall fields from rain gauge and radar data. **Advances in Water Resources**, 32(7): 986-1002. [doi:10.1016/j.advwatres.2008.10.004](https://doi.org/10.1016/j.advwatres.2008.10.004).
2009. Eric Gaume, Valerie Bain, Pietro Bernardara, Olivier Newinger, Mihai Barbuc, Allen Bateman, Lotta Blaskovicova, Gunter Blöschl, Marco Borga, Alexandru Dumitrescu, Ioannis Daliakopoulos, Joachim Garcia, Anisoara Irimescu, Silvia Kohnova, Aristeidis Koutroulis, Lorenzo Marchi, Simona Matreata, Vicente Medina, Emanuele Preciso, Daniel Sempere-Torres, Gheorghe Stancalie, Jan Szolgay, Ioannis Tsanis, David Velasco, Alberto Viglione. A compilation of data on European flash floods. **Journal of Hydrology**, 367: 70-78. <https://doi.org/10.1016/j.jhydrol.2008.12.028>.
2005. Berenguer, M., Corral, C., Sánchez-Diezma, R. y Sempere-Torres, D. Hydrological validation of a radar-based nowcasting technique. **Journal of Hydrometeorology**, 6: 532-549. <https://doi.org/10.1175/JHM433.1>
2004. Lee, G.W., Zawadzki, I., Szymer, W., Sempere Torres, D. y Uijlenhoet, R. A general approach to double-moment normalization of drop size distributions. **Journal of Applied Meteorology**, 43: 264-281. [https://doi.org/10.1175/1520-0450\(2004\)043<0264:AGATDN>2.0.CO;2](https://doi.org/10.1175/1520-0450(2004)043<0264:AGATDN>2.0.CO;2)
2002. Salles, C., Poesen, J. y Sempere-Torres, D. Kinetic energy of rain and its functional relationship with intensity. **Journal of Hydrology**, 257: 256-270. [https://doi.org/10.1016/S0022-1694\(01\)00555-8](https://doi.org/10.1016/S0022-1694(01)00555-8)
2000. Corral, C., Sempere Torres, D., Revilla, M. and Berenguer, M. A semi-distributed hydrological model using rainfall estimates by radar. Application to a Mediterranean basin. **Physics and Chem. of the Earth**, 25: 1133-1136. [https://doi.org/10.1016/S1464-1909\(00\)00166-0](https://doi.org/10.1016/S1464-1909(00)00166-0)
2000. Sánchez-Diezma, R., Zawadzki, I. and Sempere Torres, D. Identification of the bright band through the analysis of volumetric radar data. **Journal of Geophysical Research**, 105 (D2): 2225-2236. <https://doi.org/10.1029/1999JD900310>
2000. Sempere Torres, D., Sánchez-Diezma, R., Zawadzki, I. and Creutin, J.D. Identification of stratiform and convective areas using radar data with application to the improvement of DSD analysis and Z-R relations. **Physics and Chem. of the Earth**, 25: 985-990. [https://doi.org/10.1016/S1464-1909\(00\)00138-6](https://doi.org/10.1016/S1464-1909(00)00138-6)
1999. Sempere Torres, D., Corral, C., Malgrat, P. and Raso, J., R. Use of weather radar for CSO monitoring and control. **Journal of Environmental Eng., ASCE**, 125: 372-380. [https://doi.org/10.1061/\(ASCE\)0733-9372\(1999\)125:4\(372\)](https://doi.org/10.1061/(ASCE)0733-9372(1999)125:4(372))
1998. Sempere Torres, D., Porrà, J.M. y Creutin, J.D. Experimental evidence of a general description for raindrop size distribution properties. **Journal of Geophysical Research**, 103, D2: 1785-1797. <https://doi.org/10.1029/97JD02065>
1994. Sempere Torres, D., Porrà, J.M. and Creutin, J.D. A general formulation for rain Drop Size Distribution. **Journal of Applied Meteorology**, 33: 1494-1502. [https://doi.org/10.1175/1520-0450\(1994\)033<1494:AGFFRS>2.0.CO;2](https://doi.org/10.1175/1520-0450(1994)033<1494:AGFFRS>2.0.CO;2)
1993. Lavabre, J., Sempere Torres, D. and Cernesson, F. Changes in the hydrological response of a small Mediterranean basin a year after a wildfire. **Journal of Hydrology**, 142: 273-299. [https://doi.org/10.1016/0022-1694\(93\)90014-Z](https://doi.org/10.1016/0022-1694(93)90014-Z)

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