

Curriculum vitae

1) Introduction

Name: Bocchiola Daniele

Date and place of birth: [REDACTED]

Nationality: [REDACTED]

Available at:

C/o Politecnico di Milano: [REDACTED]

Fax: [REDACTED]

e-mail: [REDACTED]

urls:

Member:

EVK2CNR: Scientific Association, [REDACTED]

Phone: [REDACTED]

url: [REDACTED]

NATRISK: Interdepartmental Center for Mountain Risk. University Turin, Italy.

url: [REDACTED]

Languages

Mother tongue: Italian

Good knowledge of English, spoken and written

Fulfilment of TOEFL exam in 1995 with a score of 570/ 680, then improved travelling.

Good knowledge of Spanish spoken and written, acquired studying and travelling.

Basic knowledge of French.

Basic knowledge of Russian.

Scientific scores (2000-2023).

Publications #: 101 (ISI), 106 (SCOPUS), 100+ (G-Scholar).

H-index: 30 (ISI), 31 (SCOPUS), 37 (ResearchGate), 37 (G-Scholar). i10-Index (G-Scholar): 76.

Ranked within Top2% worldwide scientists.

Science-wide author databases of standardized citation indicators 2023:

<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6>

2) Higher Education and career

i) **PhD** in Hydraulic Engineering and Hydrology 7th March 2003 at Politecnico di Milano, with **Special Mention** from the PhD board of reviewers. My doctorate was conducted in the field of **Data Assimilation** and remote sensing with the title "**A methodology for stochastic assimilation of rainfall rates data from multiple remote sensors**". Tutor: Prof. Renzo Rosso. Partially fulfilled at MIT, Cambridge, MA, USA. Advisors: Prof. Dara Entekhabi, Prof. Dennis McLaughlin. **Special mention** of the board for PhD.

ii) **Master's Degree in Environmental Engineering** at Politecnico di Milano, September 1991 to July 23th 1998, with full marks (91/100).

3) Experience and Employment history

i) May/2/2016-. **Associate Professor** (with Abilitation as Full Professor since July 2017), Hydrology and Hydraulic and Maritime Infrastructures (ICAR02), and Water Resources Management at Politecnico di Milano.

ii) June/16/05-May/1/2016. Charged as Assistant Professor (permanent staff) at Politecnico di Milano, Hydraulic Division.

iii) April 2003-June 2005. Research assistant at Politecnico di Milano, Hydraulic Division.

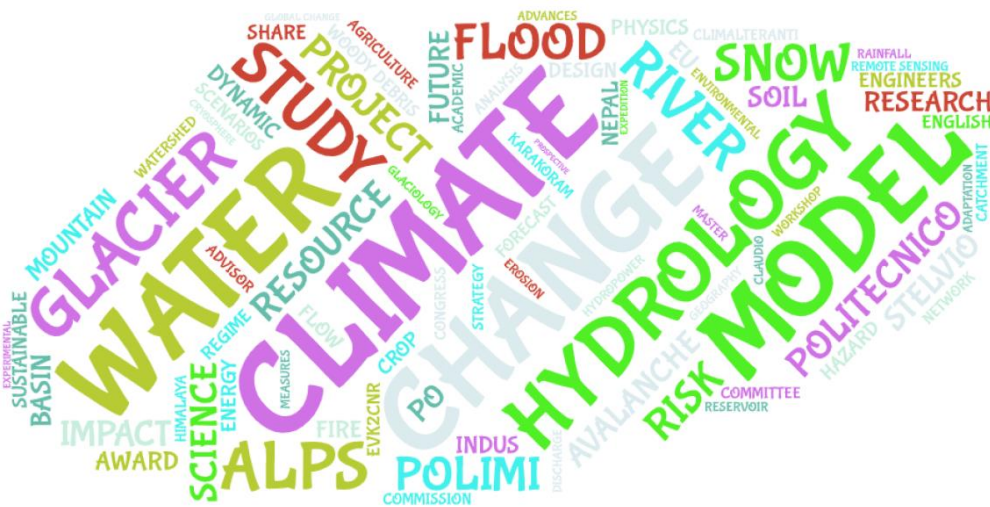
iv) March 2000-March 2003, I've been working to my PhD thesis in Politecnico di Milano, fulfilled in March 2003.

v) March to October 2001, I've been working at Massachusetts Institute of Technology. Full time, fulfilment of PhD thesis.

Milano, January 23rd 2024.

4) Mission

My field of interest in research covers a broad range of issues, with particular focus upon impact of ongoing and prospective climate change on water resources, natural hazard, agriculture, and cryosphere in the European Alps, the Andes, the Hindu-Kush Karakorum the Himalaya, the Caribbeans, Haiti. See *Word Cloud* below.



World Cloud of Daniele Bocchiola's CV. <https://wordart.com/>

5) Research Achievement

i) I'm currently Charged as **Associate Professor** (permanent staff) at Politecnico di Milano, Hydraulic Division, starting from May/02/2016. **Habilitation as Full Professor ASN, on July 28th 2017.**

ii) I was awarded the **Research Projects 5% Award** for outstanding young scientists, delivered by the Academic Senate of Politecnico di Milano, 2009 Edition, for the project: I CARE: Impact of Climate change on Alpine water REsources: the case of Italy and Switzerland. Funded budget (personal) \approx €8 E⁴. <http://www.polimi.it/ricerca-scientifica/finanziamenti-alla-ricerca/progetti-5x1000-bando-2009/>

iii) Ranked 1st **Young researcher** in DIIAR, Dept. of Hydraulics, Road, Survey and Environmental Engineering, Politecnico di Milano, year 2008.

iv) I have been nominated for **AGU Award for Early Career Hydrologic Sciences**, July 2009, nomination issued by Renzo Rosso.

v) I have been ranked among **the best five young Italian researchers** (born after 1/1/1972) for the assignment of the prize "Italian Group of Hydraulics" (GII Gruppo Italiano Idraulica, President Prof. Aronne Armanini, University of Trento), during the XXX Congress of Hydraulics, Rome, September 2006.

vi) I cooperate with personnel from several institutes, within EU and national projects in the field of data assimilation of precipitation for storm now and forecasting, hydrology of mountain snow fed rivers, natural hazards from floods, soil movements and snow avalanches, and eco-hydrological effect of climate change (*e.g.* MIT Cambridge, SLF/WSL Davos, TU Wien, CEMAGREF and LECA Grenoble, CESIRicerca Milano, Earth Sciences and Crop production Dept. University Milano, CNR of Italy, Lithuanian Energy Institute, ICTP-Trieste, University of Ljubljana, EPFL Lausanne, TU München, University of Innsbruck, University Turin, Sertit Strasbourg, University Wageningen, Melnikov Institute for Permafrost Research, among others)

vii) I am an Associate member and scientific advisor for water resources and natural hazard for the Association **EVK2CNR committee for high mountain research** within projects in the field of hydrological budgets and climate change impacts in Italy, Hindu-Kush, Karakorum, Himalaya and South America, particularly within the framework of the project: **SHARE**, Stations at High Altitude for Research on the Environment (<http://www.ev2cnr.org/cms/>, <http://www.ev2cnr.org/cms/it/share/people>).

viii) I am member of the Italian Glaciological Committee (**CGI, Comitato Glaciologico Italiano**, <http://www.glaciologia.it/>), as of June 18th 2009. Admission by cooptation upon recommendation by Prof. Claudio Smiraglia, former President.

ix) Member of **AGU, EGU and IGS**, and I currently participate to their meetings.

x) First promoter and manager of the **HydroEcoLab initiative** @ Politecnico di Milano, aimed to foster research, seminars, talks at national and international congresses, publish papers on peer reviewed journals, and develop national and international scientific projects in this area.

xi) Scientific experiences abroad

- 1) March 2001-February 2002. Invited scientist, the Parsons Laboratory, Massachusetts Institute of Technology (Ref. Prof. Dara Entekhabi and Prof. Dennis McLaughlin). Partial fulfilment of PhD thesis.
- 2) I have participated to several meetings and congresses abroad in USA, Chile, Brasil, Perù, India, Vietnam, Nepal, Pakistan, and several European countries.
- 3) May 2010 (1 week). Invited Visiting Scientist, WRU Hanoi, VN.
- 4) February 2012 (1 month). Invited Scientist, in Direccion General de Aguas, Ministerio de Obras Públicas, Santiago de Chile.
- 5) June 25-30 2018. Invited Scientist, Electroconsult-NEA, Nepal. Fulfilment of Project: *Hydrological assessment in support of the Dudhkoshi Storage Hydroelectric Project. Update of the Feasibility Study and Detailed Design.*
- 5) June 8-15 2019. Visiting Scientist, The National Schools of Art La Habana, Cuba, in fulfilment of the project *Landscape management and flood risk assessment and mitigation.*

xii) I am member of the Scientific Committee of the climate change blog: <http://www.climalteranti.it/> as of December 2011.

xiii) I have carried out a number of scientific field campaigns, in Europe, South America, Karakoram, Himalaya.

xiv) I am member of the IGU *Commission on Water Sustainability*, as of November 18th 2012. Admission upon cooptation by Prof. Claudio Cassardo, President. <http://water-sustainability.ph.unito.it>

xv) Member of the *Upper Indus Basin Monitoring Working Group*, Islamabad, as Scientific Representative of EVK2CNR, as of December 2012. <http://www.icimod.org/?q=10110>

xvi) Member of *CONISMA (National Interuniversity Consortium for Sea Sciences)* of Italy, since March 2013. POLIMI Unit, Ref. Prof. Marino Gatto, www.conisma.it.

xvii) Representative of EVK2CNR committee of Italy for the SPICE project (*Solid Precipitation Inter Comparison*) of WMO, test sites 1) Forni, 2) Pyramid site. www.wmo.int/pages/prog/www/IMOP/intercomparisons/SPICE/SPICE.html, <http://viewer.zmags.com/publication/f088b3fc#f088b3fc/152>

xviii) POLI-HIGH group http://intranet.dica.polimi.it/fileadmin/user_upload/docenti_file/10019421/POLI_High_March_2015.pdf
Task force group for hydrology of the cryosphere, Director.

xix) Awards

2009. AWARD EXPO 2015 committee. Effetti del cambiamento climatico sulla risorsa idrica derivante dalla fusione nivo-glaciale ed impatti sulle attività agricole in aree del Karakoram (Pakistan, Asia). Analisi delle evidenze attuali e formulazione di future strategie di adattamento.

2011. Polimi 5xmille AWARD. I CARE: Impact of Climate change on Alpine water RESources: the case of Italy and Switzerland.

2016. Tutor, Thesis MS, *Modellazione monodimensionale dello snow-gliding: il caso di Mont de la Saxe (AO) [Monodimensional modeling of snow-gliding, the case study of Mont de la Saxe (AO)]*, Giulia Premoli, AWARD: Miglior Tesi di Laurea 2015, Comitato Glaciologico Italiano [Best Thesis 2015, Italian Glaciological Committee], Milano, December 11th 2015.

2017. *Highest Cited Paper Award*, for the paper *Impact of climate change scenarios on crop yield and water footprint of maize in the Po valley of Italy*, published in 2013. One of the 5 most highly cited papers during 2014, 2015 and up until June 2016.

2018. Awarded, 1 PhD scholarship, 2018-2021. *Aval-Risk: Avalanche risk under present and prospective climate change: experimental modeling and mathematical models for risk mapping*. Tutor. Awarded by the Doctorate School of Politecnico di Milano.

2018. *Paper Modelling hydrological components of the Rio Maipo of Chile, and their prospective evolution under climate change. Cover Story, Climate Issue 3 2018.*

2019. Giovanni Bombelli. MS Thesis. *L'influenza del cambiamento climatico sulla produzione idroelettrica dei grandi serbatoi lombardi [Impact of climate change upon hydropower production in large reservoirs of Lombardia]*. **Infopoint Morbegno Award** in the *Young Academics Award of the Alpine Convention*, Innsbruck, April 2019. Daniele Bocchiola Tutor.

2019. Leonardo Stucchi. MS Thesis. *La diga del ghiacciaio: Cambiamenti climatici e produzione all'impianto del Sabbione*. Award: **Premio di Laurea Comitato Glaciologico Italiano CGI 2019**, 1 Classificato. <http://www.glaciologia.it/il-comitato/premio-di-laurea/>. Daniele Bocchiola Tutor.

2021. ENEL InnoCentive Challenge 9934165 – Biodiversity Innovations for Sustainability Improvement at Renewable Energy Plants. Awarded (prize 4k\$) for the proposal “*RICH: RIVER Continuum under Hydropower operation*”.

2023. Award ITCOLD2023 for the best MS Thesis on Dams and Reservoirs, ThesisClimate change impacts upon hydropower production from the S. Giustina Lake. S. Ambrosini, C. Simoni. DB Tutor.

xx) Member of *Nat-Risk* Center since February 2019. <https://www.natrisk.unito.it/it>

xxi) Member of the Scientific Committee, Rivista “*Impronta-Zero*”. <https://www.improntazero.it/giornale/>

6) Publications list

At now, I have developed and/or contributed to the following publications.

i) Refereed Journals. Last Journal IF reported where suitable.

- 1) Bocchiola D., Catalano F., Menduni G., Passoni, G., *An analytical-numerical approach to the hydraulics of floating debris in river channels*, Journal of Hydrology, 269/1-2, 65-78, 2002. IF 2009: 2.305, ISI, SCOPUS
- 2) Bocchiola, D., Menduni and Ward, D., *Testing block probes for wall shear stress measurement in water flows*, ASCE Journal of Hydraulic Engineering, Volume 129, Issue 2, 102-109, 2003. IF 2007: 0.876, ISI, SCOPUS
- 3) Bocchiola, D., De Michele, C., Rosso, R., *Review of recent advances in index flood estimation*, Hydrology and Earth System Sciences, vol 7 (3), 283-296, 2003. IF 2007: 2.27, ISI, SCOPUS
- 4) Bocchiola, D., Rulli, M.C., Rosso, R., *Transport of Large Woody Debris in the presence of obstacles*, Geomorphology, 76, 166-178, 2006. IF 2009: 2.339, ISI, SCOPUS
- 5) Bocchiola, D., Rosso, R., *Real time flood forecasting at dams: a case study in Italy*, Int. Jrn. on Hydropower and Dams, 13 (1), 92-99, 2006. SCOPUS
- 6) Bocchiola, D., Rulli, M.C., Rosso, R., *Flume experiments on wood entrainment in rivers*, Advances in Water Resources, 29, 8, 1182-1195, 2006. IF 2009: 2.235, ISI, SCOPUS
- 7) Rulli, M.C., Bozzi, S. Spada, M., Bocchiola, D. and Rosso, R., *Rainfall simulations on a fire disturbed mediterranean area*, Journal of Hydrology, 327, 3-4, 323-338, 2006. IF 2009: 2.305, ISI, SCOPUS
- 8) Bocchiola, D., Medagliani, M., Rosso, R., *Regional snow depth frequency curves for avalanche hazard mapping in central Italian Alps*, Cold Regions Science and Technology, 46, 3, 204-221, 2006. Five years IF 1.95, ISI, SCOPUS
- 9) Bocchiola, D., Rosso, R. *The use of scale recursive estimation for short term Quantitative Precipitation Forecast*, Physics and chemistry of the earth, 31, 18, 1228-1239, 2006. IF 2009: 1.138, ISI, SCOPUS
- 10) Bocchiola, D., Rosso, R., *The distribution of daily Snow Water Equivalent in the Central Italian Alps*, Advances in Water Resources, 30, 135-147, 2007. IF 2009: 2.235, ISI, SCOPUS
- 11) Rosso, R. Rulli, M.C., Bocchiola, D., *Transient catchments hydrology after wildfires in a Mediterranean watershed: runoff, sediment and woody debris*, Hydrology and Earth System Sciences, 11(1), 125-140, 2007. IF 2007: 2.27, ISI, SCOPUS
- 12) Bocchiola, D., *Use of Scale Recursive Estimation for multisensor rainfall assimilation: a case study using data from TRMM (PR and TMI) and NEXRAD*, Advances in Water Resources, 30, 2354-2372, 2007. IF 2009: 2.235, ISI, SCOPUS
- 13) Bocchiola, D., Rulli, M.C., Rosso, R., *A flume experiment on the formation of wood jams in rivers*, Water Resour. Res., 44, W02408, doi:10.1029/2006WR005846, 2008. IF 2007: 2.154, ISI, SCOPUS
- 14) Bocchiola, D., Rosso, R., *The use of regional approach for hazard mapping at an avalanche site in northern Italy*, Advances in Geosciences, 14, 1-9, 2007. SCOPUS
- 15) Bianchi Janetti, E., Gorni, E., Sovilla, B., Bocchiola, D., *Regional snow depth estimates for avalanche calculations using a 2d model with snow entrainment*, Ann. Glaciol., 49, 63-70, 2008. IF 2005: 0.802, ISI, SCOPUS
- 16) Simaityte, J., Bocchiola, D., Augutis, J., Rosso, R., *Use of a snowmelt model for weekly flood forecast for a major reservoir in Lithuania*, Ann. Glaciol., 49, 33-37, 2008. IF 2005: 0.802, ISI, SCOPUS
- 17) Bocchiola, D., Bianchi Janetti, E., Gorni, E., Marty, C., Sovilla, B., *Regional evaluation of three day snow depth frequency curves for Switzerland*, NHESS, 8, 685-705, 2008. IF 2009: 1.345, ISI, SCOPUS
- 18) Bocchiola, D., Medagliani, M., Rosso, R., *Use of a regional approach for long term simulation of snow avalanche regime: a case study in the Italian Alps*, Arctic Antarctic and Alpine Research, 41,3, 285-300, 2009. IF 2007: 1.045, ISI, SCOPUS
- 19) Maragno, D., Diolaiuti, G., D'agata, C., Mihalcea, C., Bocchiola, D., Bianchi Janetti, E., Riccardi, A., Smiraglia, C., *New evidence from Italy (Adamello Group, Lombardy) for analysing the ongoing decline of Alpine glaciers*, Physical Geography and Quaternary Dynamics, GFDQ, 32, 31-39, 2009. ISI, SCOPUS
- 20) Bocchiola, D., Rosso, *Use of a derived distribution approach for extreme floods design: a case study in Italy*, Advances in Water Resources, 32, 8, 1284-1296. IF 2009: 2.235, ISI, SCOPUS
- 21) Bocchiola, D., Diolaiuti, G. *Evidence of climate change within the Adamello Glacier of Italy*, Theor. App. Climat., 100, 3-4, 351-369, 2010, doi: 10.1007/s00704-009-0186-x. IF 2008: 1.621, ISI, SCOPUS.
- 22) Bocchiola, D., *Regional estimation of Snow Water Equivalent using Kriging: a preliminary study within the Italian Alps*, Physical Geography and Quaternary Dynamics, GFDQ, 33, 3-14, 2010, ISI, SCOPUS. <http://www.glaciologia.it/gfdq/?p=1742>
- 23) Groppelli, B., Bocchiola, D., Rosso, R. *Precipitation downscaling using random cascades: a case study in Italy*, Advances in Geosciences, 8, 1-6, 2010. SCOPUS.
- 24) Bocchiola, D., Groppelli, B., *Spatial estimation of Snow Water Equivalent at different dates within the Adamello Park of Italy*, Cold Regions Science and Technology, 63(3), 97-109, 2010. Five years IF 1.95, ISI, SCOPUS
- 25) Bocchiola, D., Mihalcea, C., Diolaiuti, G., Mosconi, B., Smiraglia, C., Rosso, R., *Flow prediction in high altitude ungauged catchments: a case study in the Italian Alps (Pantano Basin, Adamello Group)*, Advances in Water Resources, 33, 1224-1234, 2010. IF 2010: 2.354, ISI, SCOPUS
- 26) Diolaiuti, G., Maragno, D., D'Agata, C., Smiraglia, C., Bocchiola, D., *Glacier retreat and climate change: Documenting the last 50 years of Alpine glacier history from area and geometry changes of Dosdè Piazzè glaciers (Lombardy Alps, Italy)*, Progress in Physical Geography, 35(2), 161-182, 2011. IF 2014: 3.89, ISI, SCOPUS
- 27) Groppelli, B., Bocchiola, D., Rosso, R., *Spatial downscaling of precipitation from GCMs for climate change projections using random cascades: A case study in Italy*, Water Resour. Res., 47, W03519, doi:10.1029/2010WR009437, 2011. IF 2009: 2.45, ISI, SCOPUS.
- 28) Bocchiola, D., Diolaiuti, G., Soncini, A., Mihalcea, C., D'Agata, C., Mayer, C., Lambrecht, A., Rosso, R., Smiraglia, C. *Prediction of future hydrological regimes in poorly gauged high altitude basins: the case study of the upper Indus, Pakistan, Invited contribution* for the: HESS Special Issue on "Catchment classification and PUB", HESSD, hessd-8-3743-2011. <http://www.hydrol-earth-syst-sci-discuss.net/8/3743/2011/hessd-8-3743-2011.html>, Hydrol. Earth Syst. Sci., 15, 2059-2075, 2011. IF 2013: 3.59, ISI, SCOPUS
- 29) Groppelli, B., Soncini, A., Bocchiola, D., Rosso, R., 2011. *Evaluation of future hydrological cycle under climate change scenarios in a mesoscale Alpine watershed of Italy*, NHESS, 11, 1769-1785. doi:10.5194/nhess-11-1769-2011. <http://www.nat-hazards-earth-syst-sci.net/11/1769/2011/nhess-11-1769-2011.html>, IF 2013: 1.75, ISI, SCOPUS

- 30) Soncini, A., Bocchiola, D., *Assessment of future snowfall regimes within the Italian Alps using general circulation models*, CRST, 68, 113-123, doi:10.1016/j.coldregions.2011.06.011. Five years IF 1.95, *ISI, SCOPUS*
- 31) Bocchiola, D., *Modified river hydraulics and habitat suitability in presence of woody debris: a flume experiment*, *Advances in Water Resources*, 34, 1304-1319, 2011. IF 2013: 2.41, *ISI, SCOPUS*
- 32) Confortola, G., Maggioni, M., Freppaz, M., Bocchiola, D., *Modelling soil removal from snow avalanches: a case study in the North-Western Italian Alps*, CRST, 70, 43-52, 2012, doi:10.1016/j.coldregions.2011.09.008. Five years IF 1.95, *ISI, SCOPUS*
<http://www.sciencedirect.com/science/article/pii/S0165232X1100190X>
- 33) Diolaiuti, G., Bocchiola, D., D'agata, C., Smiraglia, C., *Evidence of climate change impact upon glaciers' recession within the Italian alps: the case of Lombardy glaciers*, *Theoretical and Applied Climatology*, 109(3-4), 429-445. DOI: 10.1007/s00704-012-0589-y. <http://www.springerlink.com/content/jp57023765r31436/> IF 2012: 1.76, *ISI, SCOPUS*
- 34) Diolaiuti, G., Bocchiola, D., Vagliasindi, M., D'agata, C., Smiraglia, C., *The 1975-2005 glacier changes in Aosta Valley (Italy) and the relations with climate evolution*, *PPG*, 36(6), 764-785, 2012. Available at Online first, <http://ppg.sagepub.com/content/early/2012/08/13/0309133312456413.abstract?rss=1> IF 2014: 3.89, *ISI, SCOPUS*
- 35) Bocchiola, D., Nana, E., Soncini, A., *Impact of climate change scenarios on crop yield and water footprint of maize in the Po valley of Italy*, *Agricultural Water Management*, 116, 50-61, 2013, doi: 10.1016/j.agwat.2012.10.009, <http://www.sciencedirect.com/science/article/pii/S0378377412002569#> IF 2013: 2.20, *ISI, SCOPUS*. Highest **Cited Paper Award**, January 2017. One of the 5 most highly cited papers during 2014, 2015 and up until June 2016.
- 36) Bocchiola, D., Diolaiuti, G., *Recent (1980-2009) evidence of climate change in the upper Karakoram, Pakistan*, *Theoretical and Applied Climatology*, 113(3-4), 611-641, 2013. IF 2016: 2.02, *ISI, SCOPUS*
- 37) U. Minora, D. Bocchiola, C. D'Agata, D. Maragno, C. Mayer, A. Lambrecht, B. Mosconi, E. Vuillermoz, A. Senese, C. Compostella, C. Smiraglia, G. Diolaiuti, *2001-2010 glacier changes in the Central Karakoram National Park: a contribution to evaluate the magnitude and rate of the Karakoram anomaly*, *The Cryosphere Discussion*, <http://www.the-cryosphere-discuss.net/7/2891/2013/tcd-7-2891-2013.html>. IF 2013: 3.77, *ISI, SCOPUS*.
- 38) D'agata, C., Bocchiola, D., Maragno, D., Smiraglia, C., Diolaiuti, G., *Glacier shrinkage driven by climate change during half century (1954-2007) in the Ortles-Cevedale group (Stelvio national park, Lombardy, Italian Alps)*, *Theor. Appl. Climatology*, <http://link.springer.com/article/10.1007%2Fs00704-013-0938-5>, 116, 1, 169-190, 2014. IF 2016: 2.02, *ISI, SCOPUS*
- 39) Confortola, G., Soncini, A., Bocchiola, D., *Climate change will affect water resources in the Alps: a case study in Italy*, *Journal of Alpine Research, RGA/JAR*, 101(3), 2013. Selected among the final six papers for the *Young Alpine Research Award of RGA/JAR*, edition 2013. <http://rga.revues.org/2176>. *SCOPUS*
- 40) Ravazzani, G., Bocchiola, D., Groppelli, B., Soncini, A., Rulli, M.C., Colombo, F., Mancini, M., Rosso, R., *Continuous stream flow simulation for index flood estimation in an Alpine basin of Northern Italy*, *Hydrological Sciences Journal*, 60(6), 1013-1025, 2015. <http://www.tandfonline.com/doi/full/10.1080/02626667.2014.916405#>. 5-year IF 1.86. *ISI, SCOPUS*.
- 41) Nana, E., Corbari, C., Bocchiola, D., *A model for crop yield and water footprint assessment: study of maize in the Po valley*, *AGSYS*, 127, 139-149, 2014. 5 year IF: 3.28. *ISI, SCOPUS*
- 42) Salerno, F., Gambelli, S., Viviano, G., Thakuri, S., Guyennon, N., D'Agata, C., Diolaiuti, G., Smiraglia, C., Stefani, F., Bocchiola, D., Tartari, G., *High alpine ponds shift upwards as average temperatures increase: a case study of the Ortles-Cevedale mountain group (southern Alps, Italy) over the last 50 years*, *Global and Planetary Change*, 120, 81-91, 2014. DOI: 10.1016/j.gloplacha.2014.06.003. 5 year IF: 4.75. *ISI, SCOPUS*
- 43) Bocchiola, D., *Long term (1921-2011) changes of Alpine catchments regime in Northern Italy*, *Advances in Water Resources*, 70, 51-64, 2014. DOI: 10.1016/j.advwatres.2014.04.017. <http://authors.elsevier.com/sd/article/S0309170814000840>. 5 year IF: 3.53. *ISI, SCOPUS*
- 44) Bocchiola, D., Rosso, R. *Safety of dams against floods in Italy*, *Adv. Water Resour.*, 71, 23-31, 2014. <http://www.sciencedirect.com/science/article/pii/S0309170814001006>. 5 year IF: 3.53. *ISI, SCOPUS*
- 45) Addimando, N., Nana, E., Bocchiola, D., *Modelling pasture dynamics in a Mediterranean environment: a case study in Sardinia*, *ASCE Journal of Irrigation and Drainage Engineering*, 10.1061/(ASCE)IR1943-4774.0000818, 04014063. 5 year IF: 1.59. *ISI, SCOPUS*, 2015. <http://ascelibrary.org/doi/pdf/10.1061/%28ASCE%29IR.1943-4774.0000818>
- 46) Palazzoli, I., Maskey, S., Uhlenbrook, S., Nana, E., Bocchiola, D., *Impact of prospective climate change upon water resources and crop yield in the Indrawati basin, Nepal*. *Agricultural Systems*, 133, 143-157, 2015. 5 year IF: 3.28. *ISI, SCOPUS*. <http://dx.doi.org/10.1016/j.agsy.2014.10.016>
- 47) Soncini A., Bocchiola, D., Confortola, G., Bianchi, A., Rosso, R., Mayer, C., Lambrecht, A., Palazzi E., Smiraglia C., Diolaiuti G., *Future hydrological regimes in the upper Indus basin: a case study from a high altitude glacierized catchment*, *Journal of Hydrometeorology*, 16(1), 306-326, 2015. IF 5 years: 3.93. *ISI, SCOPUS*
- 48) U. Minora, A. Senese, D. Bocchiola, A. Soncini, C. D'agata, R. Ambrosini, C. Mayer, A. Lambrecht, E. Vuillermoz, C. Smiraglia, G. Diolaiuti, *A simple model to evaluate ice melt over the ablation area of glaciers in the Central Karakoram National Park, Pakistan*, *Annals of glaciology*, 56(70), 202-216, 2015. Special issue: Contribution of glaciers and ice sheets to sea-level change: observations, modelling and prediction, IF 2014: 2.52. <http://www.igsoc.org/annals/56/70/a70a206.html>. *ISI, SCOPUS*
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7) Recent projects

- 1) March 2009. Expo 2015, International cooperation for development, Milano Province. Effetti del cambiamento climatico sulla risorsa idrica derivante dalla fusione nivo-glaciale ed impatti sulle attività agricole in aree del Karakoram (Pakistan, Asia). Analisi delle evidenze attuali e formulazione di future strategie di adattamento. [*Effects of climate change on water resources and impacts on agriculture in Karakoram (Pakistan, Asia). Present evidences and future adaptation strategies*]. Coord: Claudio Smiraglia, UNIMI; Coord POLIMI UNIT: Daniele Bocchiola. **Awarded by the EXPO committee.**
- 2) 2010-2013 SHARE-STELVIO. Un Parco-Osservatorio per lo studio dei Cambiamenti Climatici e Ambientali in alta quota. [*A park observatory for studies of climate change at high altitudes*]. Funded by Lombardia Region. Principal investigator hydrology, Coordinator POLIMI UNIT.
- 3) 2009-2024 (renewal every 4 years ca.). IDRO-STELVIO. Una rete idrometrica per il Parco dello Stelvio [*A hydrological network for the Stelvio Park*]. Funded by Parco dello Stelvio Authority. Coordinator Polimi Unit.
- 4) July 2010- July 2013. Share-Paprika. Effects of climate change on water resources Karakoram range (Pakistan, Asia). Funded by EVK2CNR committee. Several working units. Coord POLIMI UNIT: Daniele Bocchiola. Renzo Rosso.
- 5) January 2010. *I CARE: Impact of Climate change on Alpine water RESources: the case of Italy and Switzerland*. Coordinators: Daniele Bocchiola. Partners, SLF Davos (Dr. Miky Lehning), UNIMI (Dr. G. Diolaiuti), UNITO (Dr. M. Freppaz). Stakeholders: EDISON, ENEL Hydropower companies of Italy. Research Projects 5% Junior, Politecnico di Milano, year 2009.
- 6) July 2010. *Reclamation of the Urban centre, sewage and water supply systems of the city of Multan (Pakistan, Asia)*. Funded by EVK2CNR committee of Italy. Several working units. Coord POLIMI UNIT: Daniele Bocchiola, Renzo Rosso.
- 7) SEED, *Social, Economic and Environmental Development for the realization of Central Karakorum National Park (CKNP)*. Funded by EVK2CNR committee of Italy. Coord POLIMI UNIT: Daniele Bocchiola.
- 8) 2012. *Cooperación técnica no reembolsable ATN/OC-11996 Chile, Programa plan de acción para la conservación de glaciares ante el cambio climático*, DGA-BID, Dirección General de Aguas, Ministerio de Obras Públicas. Grant awarded to EVK2CNR, Dr. Daniele Bocchiola coordinator for hydrometric network installation, hydrological modelling.
- 9) 2014-2015. Setup of a hydrological modelling framework for Koshi Basin, Nepal. EVK2CNR-NAST Bilateral committee.
- 10) 2014-2015. *Polimi for Karakoram*, Polisocial Award Politecnico di Milano, 2013-2014, Coord. Eleonora Bersani. Members of proposing team, D. Bocchiola, M. Nistri, B. Bogoni.
- 11) Khumbu-AV-Risk, Set up of a Avalanche Risk Framework for the Khumbu Region, Himalaya. Coord. Daniele Bocchiola. Approved by EVK2CNR-NAST Bilateral committee. **Approved.**

- 12) *Climate-Lab. Interdepartmental Laboratory on Climate Change*. Funded by Politecnico di Milano. 2017-2019. Budget €125 k. Coordinator.
- 13) 2018-2019. HERASE, *Hydrogeological modeling for Erosion Risk Assessment from Space*. Funded by Cariplo Foundation, Coordinator Marco Gianinetto. PI Climate change impact.
- 14) 2018-2020. *Interdisciplinary Project for assessing current and expected Climate Change impacts on Mountain Pastures (IPCC MOUPA)*. Cariplo Foundation. PI Polimi Unit.
- 15) 2018-2019 *WWW. World Water Watch The www of water, a proposed worldwide water watch. I. Water from Ice*. COSMO-SkyMed and Synergies with other EO Missions.
- 16) *GE.RI.KO. Mera. Gestione risorse idriche ed ambienti acquatici in comune – Il bacino del Fiume MERA*. Interreg IT-CH, 2016. Coordinator POLIMI UNIT. 2019-2023.
- 17) *The national schools of art La Habana, Cuba. Landscape management and flood risk assessment and mitigation*. 2018-2020. Getty Foundation. PI Flood Risk. Coordinator Renzo Rosso.
- 18) *Aval-Risk: Avalanche risk under present and prospective climate change: experimental modeling and mathematical models for risk mapping*. Interdepartmental PhD Scholarship Call, Polimi 2018-2021. Tutor.
- 19) *Assessment of hydrological flows in Lombardy alpine rivers, and their connection with the underground aquifer, under potential climate change scenarios in the XXI century*. PhD Scholarship, 2019-2022. Funded by Consorzio Acque Provinciale, CAP Milano. Started November 2019.
- 20) 2021-2022. Project. DICA e ANVCO (Acque Novara Verbano Cusio Ossola). *Monitoraggio, ricerca scientifica e azioni di divulgazione sulle risorse idriche e gli eventi estremi, con particolare riferimento all'area di competenza del ANVCO ed in generale nell'arco alpino*. Funded by ANVCO.
- 21) 2021-2024. *Optimization of Joint Operation of the Three Gorges Reservoir Group under climate scenarios of IPCC (2021-2030)*. China Scholarship Council (CSC), a 4 year (PhD) scholarship.
- 23) 2022-23. *Scientific support in the field of avalanche hazard mapping in Lombardia region, for the layout of the Avalanche Emergency Management Plan*. Funded by Civil Protection Agency, Lombardia Region.
- 24) 2022. *Hydro-sediment study in support of the 1000 islands HP project*. Funded by ELC Electroconsult.
- 25) 2023-2024. Project. DICA e ANVCO (Acque Novara Verbano Cusio Ossola). *ANVCO-RISORSA. Previsione dei fenomeni di siccità stagionale ed eventuale effetto sulla disponibilità di risorsa idrica da fonti superficiali e sotterranee per l'areale di interesse di ANVCO*. Funded by ANVCO.
- 26) 2023. *Modellazione idrologica e proiezioni di scenario climatico per l'areale di Water Alliance*. Funded by Consorzio Acque Provinciale, CAP Milano.
- 27) 2024-2025. *CCHP-ALPS - Climate Change and HydroPower in the Alps*. PRIN. PI Unit Politecnico.
- 28) 2023. *Supporto tecnico per l'attività di scouting di metodologie per la valutazione dell'impatto climatico sui sistemi naturali/umani e diritti umani*. Ramboll-Italy.
- 29) 2023-2024. "TERRA - mappaTura delle Reti tecnologiche. attività di capitalizzazione" Interreg IT-CH. Commessa per lo "Studio del sistema idrogeologico-idraulico Meraner Waalrunde a supporto dell'implementazione del nuovo modello di gestione". Comune di Merano. Resp. Daniele Bocchiola, Giovanni Menduni.
- 30) November 2017- March 2018. "Hydrological assessment in support of the Dudhkoshi Storage Hydroelectric Project. Update of the Feasibility Study and Detailed Design". Commissioned by Electro-Consult SpA, Italy. Responsible, Dr. Daniele Bocchiola.
- 31) November 2019-June 202. "Medium Size Hydropower Project, Kumbih3, Sumatra Utara, Indonesia", Commissioned by Electro-Consult SpA, Italy. *Hydro-sediment study in support of the Kumbih3 HP project*. Responsible, Dr. Daniele Bocchiola.
- 32) November 2021-March 2022. "Medium Size Hydropower Project, Kumbih3, Sumatra Utara, Indonesia". Commissioned by Electro-Consult SpA, Italy. *Support for the assessment of ecological flows in the Kumbih3 HP project*. Responsible, Dr. Daniele Bocchiola.

8) Memorandum of understanding/agreements

- 1) 2014. Agreement: Alpine Club of Italy, UNIMI, UNIMIB, UNIFI, UNIQ, for expedition on mount ARARAT, July 2014. Joint research activity.
- 2) 2019. MOU: *Convenzione operativa per la conduzione di attività di ricerca congiunta in merito alla gestione delle risorse idriche in ambito montano e agli effetti dei cambiamenti climatici in alta quota*. [Framework of cooperation for water resources management in the mountain areas, and climate change effects. Politecnico di Milano, CNR-IRSAF, Verbania. Responsible: Daniele Bocchiola, Gianfranco Becciu.
- 3) 2021-2026. Framework Agreement. *Collaborazione tra il DICA e il Parco dello Stelvio Lombardo, per "Attività di monitoraggio, ricerca scientifica e azioni di divulgazione sugli ecosistemi alpini e sulle risorse naturali, con particolare riferimento alle risorse idriche e glaciali del Parco"*. Responsabile Daniele Bocchiola
- 4) 2021-2024. Framework Agreement. "Collaborazione tra il DICA e ANVCO (Acque Novara Verbano Cusio Ossola) nell'ambito delle rispettive attività di monitoraggio, ricerca scientifica e azioni di divulgazione sugli ecosistemi alpini e sulle risorse naturali, con particolare riferimento all'area di competenza dell'ANVCO (Province di Novara e Verbania) e in generale nell'arco alpino".
- 5) 2021-2022. Framework Agreement. Ramboll-Environ Italy. "Affidamento di attività tecniche nell'ambito di commissioni ricevute da Ramboll da parti terze nel settore della consulenza ambientale e climatica".
- 6) 2023-2028. MOU. Politecnico di Milano-DICA and Associazione Riconosciuta Ev-K2-CNR. *Framework agreement for cooperation*.