

Curriculum Vitae

Prof. Ing. Marco Mancini

PROFESSOR OF HYDROLOGY AND WATER ENGINEERING

AT

POLITECNICO DI MILANO

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1. General information

Marco Mancini was born in Naples in 1961. He graduated at the University of Naples in 1985 and obtained his Ph.D. in Hydrology at the Politecnico di Milano in the 1990. He is currently *Full Professor* of Hydrology and Water Resources at the Department of Hydraulic Environmental and Surveying Engineering at Politecnico di Milano.



The main research activities undertaken by Marco Mancini are related to the hydrological processes in the river basins and their interactions with anthropic activities for hydraulic work design. He has developed and continuous upgrades research on distributed hydrological models driven by remote sensing data. Currently he is working on soil moisture real time monitoring and forecasting developing together with his group, web systems for operative monitoring and forecast floods and irrigation water needs in synergy with traditional structural hydraulic works as adaptation tools to climate instabilities

He developed the activities in collaboration with important national and international partners also supported by funded projects in Italy and abroad. He was responsible scientist for several remote sensing campaigns and experiment starting from the pioneering ones of NASA MACEUROPE'91 and the SIR-C/X-SAR on the Virginiolo basin (Tuscany) to the most recent campaigns with land surface temperature data from ESA, NASA and MOIST. Actually together with his research group he is involved in research and operative programs as principal investigator for real time basin hydrology with EU and MOIST China.

His main permanent periods abroad were at the University of Concepcion (Chile, 1991) working with EUrope Latin America Institute, than in 1992 he was appointed as research stuff at the Water Resource Program at the Department of Civil Engineering at Princeton University. Since 1991 he is involved in studies related to the estimation of soil moisture via distributed models and remote sensing.

He has published over 100 papers in international journals, books, and conference proceedings dealing with flood hydrograph estimation, hydrologic water balance, parsimonious irrigation, remote sensing applications in hydrology and geographical information systems.

He supports specific consultancies and designs in the field of water engineering for water authorities municipality and companies, transferring to the operational applications the results of the research activity. His main consultancies are on the: i) quantitative and qualitative monitoring of the hydrologic processes, ii) flood risk mitigation structures, iii) flood forecast systems, iv) River engineering, v) urban and rural flood mapping, vi) hydrological water balance for a parsimonious real time use of irrigation water.

Current position:	Full Professor in hydrology water engineering and maretime structure since 2000, of hydrology, water resources and hydraulic works at Politecnico di Milano Department of Civil and Environmental Engineering. Teach River engineering and river basin reclamation
Languages:	Italian (mother language), English (good speaking and writing), Spanish (oral).
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Teaching Positions	Associate Professor at Politecnico di Milano (1998) in hydrology water engineering and maritime structure; Professor of water engineering, Como campus Politecnico di Milano, (2003-2008); Professor of “hydraulic network infrastructures” Como campus Politecnico di Milano, (2001-2004); Research associate at University of Parma and Politecnico di Milano 1991; Professor of Hydraulic and Agricultural hydraulic engineering at University of Parma (1990-1992); Research Stuff at Princeton University (1992). Professor at University of Concepcion, Chile (1991) Assistant Professor in water engineering Politecnico di Milano, 1991-1997
Professional Associations	Engineer and Architect Milano association n°20224 EGU European Geophysical Union GII Italian Hydraulic association
Administrative Positions	Head of environmental engineering program at Cremona campus, Politecnico di Milano, (2003 2008); President of the commission for State Diploma in civil engineer 2001. Member of Strategy for Development Civil Engineering Faculty Politecnico di Milano Expert Member of Inter-ministerial commission on hydraulic schemes (Environment, Agriculture, Infrastructures) 2001 -2003

2. Education

- 1987-1990** Ph.D. in Hydraulic Engineering, Polytechnic of Milan, Milan (Italy). Thesis title: “Distributed hydrologic modeling: effects of infiltration space variability and its modeling scale” in Italian.
- 1979-1985** Master degree in Civil Hydraulic Engineering, mark 110/110 with laude. University of Naples Federico II, Thesis title: “Attenuation of a monochromatic wave through a breakwater”; tutor: Prof. E.Benassai.” (in Italian);
- 1976-1979** Classic high school “Army School Nunziatella” (Naples), Diploma mark: 58/60

SCIENTIFIC RESEARCH AND TEACHING

Marco Mancini's research activity is focused on the hydrological processes and their interactions with anthropic activities for quantification of the design variables of engineering hydraulic works and water resource systems. He developed distributed hydrological hydraulic models and algorithms for the integration of satellite information with a support of specific ground measurements and dedicated experiments. He developed researches on: the rainfall runoff transformation, the estimation of soil moisture from satellite images high resolution radar and land surface temperature, the real time flood and irrigation forecasting systems, the measurements and modeling of evapotranspiration.

The research on surface soil moisture was oriented to be applied in flood forecast system and precision irrigation system supported also from the innovative use of satellite microwave radar and land surface temperature data integrated in operative distributed hydrology that produced original and outstanding results. The need of experimental data, let him to organize and to

participate, as principal investigator, to several field campaigns, in which acquisition of satellite maps and soil moisture data was performed. In recent years, together with his team, Marco Mancini dedicated efforts to the evapotranspiration modeling techniques using energy and mass balance approach and validating the modeling results with data from eddy covariance measures. He developed this activities in collaboration with important national and international partners also supported by granted projects.

His teaches courses of: i) River basin reclamation, ii) hydrology, and hydraulic infrastructures at the second level of the degree course on Civil and Environmental engineering .

6. List of Published Papers

The numbering of the works in chronological order, is accompanied by a code (1-5), which highlights the location of publication in the following format:

1= ISI & Scopus journal (, 2= national journal, 3= books, 4= acts of Congress, 5 other location

- 1.5. Ontoyn, J., Mancini M., Regionalization of peak discharges in the South-Western part of Ghana, WARREDOC Università per Stranieri, Perugia, 1986 *
- 2.4. Moro A., M. Mancini, Space/time statistical analysis of the historical precipitation data of the Arno basin, Proc. of the International Conference on the Arno Project, 185-198, CNR-pub 29, Bologna, 1987.
- 3.4. Brath A., M. Mancini, P. Mignosa, M. Tanda, Curve segnalatrici di rischio idrologico, Atti del XXI Conv. di Idraulica e Costruzioni Idrauliche, L'Aquila, 1988.
- 4.4. Bacchi B., A. Brath, P. Burlando, M. Mancini, Application of lumped conceptual model to real time flash flood forecasting, Proc. of the International Annual Conference on Modelling and Simulation, 1527-1534, School of Engineering, University of Pittsburgh, Pittsburgh, USA, 1988.
- 5.4. Carrara A., M. Mancini, & R. Rosso, Taratura del coefficiente di afflusso a scala di bacino a partire da un sistema informativo geografico, Vol. 1, 45-58, Atti del XXI Congr. Idraulica e Costruzioni Idrauliche, L'Aquila, 1988.
- 6.3. Mancini M., Effetti della variabilità spaziale della natura del terreno e dell'uso del suolo sulla formazione del deflusso superficiale, in *Rapporto 1988*, ed. F. Rossi, CNR-GNDICI, Roma, 1989.
- 7.3. Mancini M., & R. Rosso, Using GIS to asses spatial variability of SCS Curve Number, in *New Directions for surface Water Modelling*, IAHS publ. 181, 435-443, Wallingford Institute of Hydrology, England, 1989.
- 8.4. Brath A., M. Mancini, P. La Barbera e R. Rosso, Analysis of scale effects in distributed rainfall-runoff modeling, in *Modeling and Simulation*, ed. M.G. Voght & M.H. Mickle, vol. 20, part 4, 1521-1526, School of Engineering, University of Pittsburgh, Pittsburgh, USA, 1989;
- 9.4. Brath, A., M. Mancini, P. La Barbera, e R. Rosso, The use of distributed rainfall-runoff models based on GIS at different scales of information, Proceedings of 3rd Nat. Conf. "Hydraulic Engineering" Am. Soc. Civ. Engineerings, New York, 1989;
- 10.3. Mancini, M., La modellazione della risposta idrologica: effetti della variabilità spaziale e della scala di rappresentazione del fenomeno dell'assorbimento, Tesi di Dottorato Politecnico di Milano, 1990;
- 11.3. Mancini, M., La modellazione matematica della formazione del deflusso superficiale, ed. in: *La modellazione delle acque superficiali nella pianificazione di bacino*, pp. 294-306, CLUP, Milano, 1991;
- 12.4. Mancini M., S. Orlandini, R. Rosso, La rappresentazione del sistema elementare suolo vegetazione atmosfera nei modelli idrologici distribuiti, Atti del XXIII Conv. di Idraulica e Costruzioni Idrauliche, Firenze, 1992;
- 13.1. Wood E., D-S. Lin, M. Mancini, D. Thongs, P. Troch., J. Famiglietti, T. Jackson, Intercomparison between passive and active microwave remote sensing, and hydrological modelling for soil moisture, in *Adv. Space Res. Vol 13*, n°5 167-176, England, 1993;.
- 14.1. Troch P., M. Mancini, E. Wood and C. Paniconi, Evaluation of a distributed catchment scale water balance model, *Water Resources Research*, vol 29 (6) pp. 1805-1817, AGU Washington, 1993;
- 15.4. Mancini M., R. Rosso, D-S. Lin, E.F. Wood and P. Troch, AIRSAR Capability in soil moisture content for different climatic scenarios, Proc. of the 25th Remote Sensing Symposium, vol I, 185-200, ERIM, Ann Arbor MI, USA, 1993.

- 16.4. D'Urso G, Mancini M, Troch P., Dielectric behaviour of soil: comparison between TDR measurements and SAR data within MAC-Europe'91 in Montespartoli, Proc. of CEOS-SAR calibration workshop, Noordwijk, ESA WPP-048, 29-33, 1993.
- 17.4. D'Urso G, Mancini M., Romano N, Rosso R. Santini A., Differenti tecniche a confronto per la stima dell'umidità del suolo a scala di bacino, Atti del V Conv. AIGR, Maratea, 1993.
- 18.3. Mancini M., P.Troch, E.Wood, Overland flow routing over a range of catchment scales; in *Advances in Distributed Hydrology*, ed. Becchi, Bemporad, Rosso, 225-244, Water Resource Publications, Colorado USA, 1994.
- 19.3. Wood E., P. Troch, M. Mancini and C. Paniconi, Distributed approach to catchment scale hydrologic modelling, in *Advances in Distributed Hydrology*, ed. Becchi, Bemporad, Rosso, 31-58, Water Resources Publications, Colorado USA, 1994.
- 20.3. Burlando P., M. Mancini, R. Rosso, FLORA: a distributed flood risk analyzer, in Computer support for environmental impact assessment, *IFIP Transaction B-16*, 91-102, ed. Guariso G. and B. Page, Elsevier Science, Amsterdam, Holland, 1994.
- 21.1. Troch P., F. De Troch, M.Mancini, E. Wood , Stream Network Morphology and Storm Response in Humid Catchment, *Hydrological Processes*, vol. 9, 575-587, Chichester, England, 1995.
- 21-bis.3. Troch P., F. De Troch, M.Mancini, E. Wood, Stream network morphology and storm response in humid catchment, in *Scale Issues in Hydrological Modelling*, ed. Kalma Sivapalan, John Wiley & Sons Ltd, Chichester England, 1995.
- 22.2. M. Mancini M., S. Orlandini, R.Rosso, Su un Modello Idrologico Distribuito dei fenomeni di Piena con Aggiornamento continuo dello stato di imbibimento del suolo e della copertura vegetale, *Idrotecnica*, vol. 1, pp. 3-17, 1995.
- 23.1. Lin D. S., E. F. Wood, P. Troch, M. Mancini and T. Jackson, Comparison between remotely sensed and model simulated soil moisture on a heterogeneous watershed, *Journal of Remote Sensing Environ.*, vol 48., 159-171, Elsevier Science New York, 1994.
- 24.4. Burlando P., M. Mancini, R. Rosso, La caratterizzazione idrologica del bacino del Bio-Bio, Atti XV Conv. S.It.E.(Società Italiana Ecologia), 918-928, Milano Settembre 1992
- 25.4. D'Urso G., M.Mancini, A. Santini, Satellite SAR data sensitivity to soil dielectric and moisture patterns, Proc. of XII World Agricultural Engineering, 35-42, Milano 1994
- 26.4. D'Urso G., A. Giacomelli, M.Mancini, P.Troch, Remote sensing of surface soil moisture from a spaceborne SAR sensor over the Sele Plain, Proc. of the International Symposium on Satellite and Remote Sensing, Rome, EUROPTO Series, SPIE, Bellingham, Washington USA, 1994.
- 26-bis.4. D'Urso G., A. Giacomelli, M.Mancini, P.Troch, The SESAR'93 experiences on soil dielectric behaviour from ERS-1 Satellite, Proc. of First Workshop Ev-5V-ct94-0466 on Data Collection and Data Analysis, Gent, 1994;
- 27.4. Lin, D-S, E. Wood, P. Troch, F. De Troch and M. Mancini, On Microwave Remote Sensing of Soil Moisture and its application to Hydrological Modeling, Proc. of Mac-Europe 1991 final results, Munic, ESA, Parigi, 1994;
- 28.4. Lin D-S, E. Wood, J. Famiglietti and M. Mancini, Impact of microwave derived soil moisture on hydrologic simulations using a spatial distributed water balance model, Proc. of VI International Conference on Physical Measures and Signature in Remote Sensing, ed. 457-467, CNES, Parigi, Francia, 1994;
- 29.4. Mancini M., Orlandini S., Rosso R., A conceptual catchment scale model for flood event distributed analysis, in proceedings of *1st European Congress on Regional Geological Cartography and Information System*, Ed. Regione Emilia Romagna, Bologna, 1994;
- 30.1. Giacomelli A., U. Bacchiega, P.Troch, M.Mancini, Evaluation of surface soil moisture by means of SAR remote sensing techniques and conceptual modelling, *Journal of Hydrology*, 166, 445-459, Elseweir, Amsterdam The Netherlands, 1995;
- 31.4. Mancini M., Vandrsteen F., Troch P.A., Bolognani O., Terzaghi G., D'Urso G., Wuthric M., Experimental setup at the EMSL for the retrieval of soil moisture profiles using multifrequency polarimetric data, Proc. of IGARS'95 Florence, IEEE Piscataway, NJ USA, 1995;
- 32.4. Nesti G., P.Pampaloni, P.Coppo, M. Hallikainen, M.Mancini, P.Troch, M.von Shonermark, Experimental Research at the EMSL on scattering Properties of non vegetated terrains, Proc of IGARS'95 Florence, IEEE Piscataway, NJ USA, 1995;
- 33.1 Mancini M. and P. Troch, Experimental set-up for soil moisture profile determination using multifrequencies backscattering data, on *EMSL Newsletter*, ed. E. Ohlmer, JRC, Ispra, Italia, 1995;

- 34.2. Rosso, R., Brath, A., Burlando, P., De Michele, C. & M. Mancini, Invarianza di scala del regime di piena, *L'Acqua*, n°5, p.15-23, 1996;
- 35.1. Altese E., O.Bolognani, M.Mancini, P.Troch, A theoretical surface scattering model for retrieving soil moisture over a bare soil using ERS-1 SAR data, *Water Resources Research*, vol.32 (3) p. 653-661, AGU, Washington USA, 1996;
- 36.1. Bolognani O., M.Mancini, R.Rosso, Soil Moisture Profiles from Multifrequency radar data at basin scale, *Meccanica*, vol.31 (1), 59-72, Kluwer, Dordrecht, the Netherlands, 1996;
- 37.1. Orlandini S., M.Mancini, C.Paniconi, R. Rosso, Local contributions to infiltration excess runoff for a conceptual catchment scale model, *Water Resources Research*, vol. 32, (1) 2003-2012, AGU, Washington USA, 1996;
- 38.1. Giacomelli, A., Mancini, M. & R. Rosso, Assessment of flooded areas from ERS-1 PRI data: an application to the 1994 flood in northern Italy, *Physical Chemical Earth (20)*, pp. 469-474, 1996, Elsevier Science Ltd, Great Britain, 1996.
- 38-bis.4. Giacomelli A., M. Mancini, Integrazioni di immagini satellitari ERS-1 PRI e modelli digitali del terreno per l'individuazione di aree esondate, Atti del XXV convegno di Idraulica e Costruzioni Idrauliche, Torino, 1996 *.
- 38-ter.4. Giacomelli A., M. Mancini e R. Rosso, Integration of ERS-1 PRI Imagery and digital Terrain Models for the Assessment of Flooded Areas, Proc. 3rd ERS Symp. On Space at the Service of Environment, Florence 17-21 March, (ESA SP-414), pp. 1859-1870, 1997.
- 39.4. Mancini M., Esperienze di laboratorio per la misura dell'umidità del suolo con radar multifrequenza, Atti del XXV Conv. di Idraulica e Costruzioni Idrauliche, Torino, 1996.
- 40.5. Mancini M., R. Rosso, Technical Report on: Spatial and Temporal soil moisture mapping from ERS-1 and JERS-1 SAR data and macroscale hydrologic modelling for regional climate models, Report finale EC-EV5V-CT94-0446, Bruxells, 1994*
- 41.3. Mancini M., La formazione del deflusso superficiale, in: *Moderni criteri di sistemazione degli alvei fluviali*, a cura di U. Maione e A. Brath ed. BIOS, 1996;
- 42.1. Mancini M., P.Troch, R.Rosso, Soil moisture retrieval in the NVT experiments at the EMSL, *EMSL Newsletter (8)*, ed. E. Ohlmer, JRC, Ispra, Italia, 1996.
- 43.5. Giacomelli A., M. Mancini, Data acquisition for the Virginiolo catchment, in: "Spatial and Temporal soil moisture mapping from ERS-1 and JERS-1 SAR data and macroscale hydrologic modelling", EC-EV5V-CT94-0446, 1997
- 44.5. Giacomelli A., M. Mancini, Field Scale soil moisture estimation, in "Spatial and Temporal soil moisture mapping from ERS-1 and JERS-1 SAR data and macroscale hydrologic modelling", EC-EV5V-CT94-0446 1997.
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- 46.4. Burlando, P., M.Mancini, R. Rosso, Impact of climate change on hydrological modelling and flood Risk assessment, Ribamod, Proc. of the first expert meeting, EUR. 17456 EN, ISBN 92-827-9562-4, pp. 7-25, 1997.
- 47.4. Colombo, R, S. Brivio, E. Zilioli M. Mancini, Evaluation of spatially distributed remotely sensed to estimate hydrological-related parameter, Proc. of EUROPTO Conference, EUROPTO Series, SPIE, Bellingham, Washington USA , 1997;
- 48.4. Wu, T.D., Chen K.S., Fung A.K, Su Z., Trough P., Hoeben R. & M: Mancini, A Reappraisal of the Validity of IEM Model, Proc. of IGARS-97, 0-7803-3839-1/97, 1997;
- 49.3. Mancini, M. & R. Rosso, Caratterizzazione idrologica delle capacità di assorbimento del terreno, in: *19 Giugno 1996: Alluvione in Versilia e Garfagnana*, a cura di R. Rosso & L. Serva, ANPA-ARPAT, Firenze, pp.123-136, 1998 (ISBN 88-448-0011-X);
- 50.3. Mancini, M. & R. Rosso, La valutazione delle portate di rischio lungo la rete idrografica, in: *19 Giugno 1996: Alluvione in Versilia e Garfagnana*, a cura di R. Rosso & L. Serva, ANPA-ARPAT, Firenze, pp.167-192, (ISBN 88-448-0011-X), 1998;
- 51.3. Mancini, M. Dinamica dell'evento di piena: *19 Giugno 1996: Alluvione in Versilia e Garfagnana*, a cura di R. Rosso & L. Serva, ANPA-ARPAT, Firenze, pp.145-166, (ISBN 88-448-0011-X), 1998;
- 52.3. Brugioni, M., Burlando, P., Bussotti, F., Galli, G., Gozzini, B., Mancini, M., Maracchi, G., Marzocchi, A., Menduni, G., Meneguzzo, F., Rosso, R., Serva, L. & E. Vittori, Il ruolo della predicibilità e della prevedibilità nella gestione ambientale del rischio idrogeologico, in: *19 Giugno 1996: Alluvione in*

- Versilia e Garfagnana*, a cura di R. Rosso & L. Serva, ANPA-ARPAT, Firenze, pp.259-296, (ISBN 88-448-0011-X) 1998;
- 53.4. Mancini M., Montaldo N. e Rosso R., Modellazione distribuita degli eventi di piena in presenza di invasi artificiali nel bacino del fiume Toce, atti XXVI Conv. di Idraulica e Costruzioni idrauliche, vol. II, Catania, 1998, pp. 237 – 248
- 54.1. Mancini, M., R. Hoeben, P. Troch, Multifrequency radar observation of bare surface soil moisture content: a laboratory experiment, *Water Resources Research*, 35 (6), 1827-1838, 1999; *
- 55.5. Gallo, M.L., M. Mancini, C. Marforio, R. Rosso, Un modello cinematico bidimensionale applicato alla simulazione dello scorrimento dell'acqua sul versante, in *Il comportamento biotecnico della vegetazione nell'ingegneria naturalistica*, IReR, Regione Lombardia, 1999;*
- 56.5. Mancini, M., D. Rabuffetti, and R. Rosso, Infiltration control on rainfall thresholds for soil slips triggering in bare hillslopes, in revisione presso *Water Resources Research*, 1999; *
- 57.5 M. Mancini, N. Montaldo and R. Rosso, "A Flash-Flood Event-Based Spatially-Distributed Rainfall-Runoff Transformation (FEST98) Model", in First Year Progress Report of FRAMEWORK project, edited by R. Rosso, Milano (Italy), February, 1999.*
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- 60.3 Montaldo N., Mancini M., Toninelli V., R. Rosso et al. "Sensitivity analysis in the hydrological models", *Final Report of the RAPHAEL project*, EC, contract # ENV4-CT97-0552, B. Bacchi and R. Ranzi, eds., Brescia (Italy), 2000.
- 61.3 N. Montaldo, V. Toninelli, M. Mancini, J. D. Albertson and P. A. Troch, "Estimation of actual evapotranspiration and Soil Moisture in the Pieve Vergonte case study", in *Technical Report n. 10*, University of Brescia (Italy), 2001.
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Research Projects.

1989	Collaborazione alla Consulenza al Consiglio Regionale della Lombardia : “Gli aspetti Idraulici ed Idrologici dei dissesti avvenuti nel mese di luglio 1987 in Valtellina e Valbrenbana
1991	Cura la parte relativa all’installazione di stazioni di misura delle portate nel contratto del Politecnico di Milano con la Regione Lombardia: Criteri di progettazione della rete idrometeorologica della Lombardia.
1993	CEE Spatial and temporal soil moisture mapping from ERS1 and JRS1 SAR data and macroscale hydrological modelslng for regional climate models (finanziato).
1993	EMSL-JRC, Experiment Proposal on: SAR capabilities in spatial soil moisture monitoring (realizzato).
1994	CNR-GNDCI Progetto METEO, Utilizzo di sensori remoti a microonde attive nel monitoraggio e nella modellizzazione degli eventi alluvionali (finanziato).
1995	CEE, Hydrologic modelling for regional climate models (HYREC II): upscaling of soil moisture and land Surface hydrologic characteristics based on remote sensing, (non finanziato)
1996	Italian Space Agency (ASI), Utilizzazione e interpretazioni dei risultati delle missioni SAR (finanziato).
1998-2000	Valutazione delle Soglie Idrometeorologiche di Preallarme delle Piene Fluviali nel Bacino dell’Arno, Autorità di Bacino del Fiume Arno.
1998	Hydrologic analysisi for maximum flood discharge for the reservoirs of Monguelfo, S. Valentino e Gioveretto, Edison SpA
1999	CNR-GNDCI Progetto Meteo-Idrologia: Utilizzo di Modelli di precipitazione ad area limitata nella trasformazione afflussi deflussi.(finanziato)
1999-2000	Il comportamento biotecnico della vegetazione nell’ingegneria naturalistica, IReR, Regione Lombardia
1999	CEE, Fiume Toce, Runoff and Atmospheric Processes for flood HAZard forEcasting and control, Raphael, resp U.O. Politecnico di Milano (finanziato)
2000	MIUR Modellistica Idrologica e Metereologica: Integrazione ed applicazione ai fini dell’allerta di piena su piccoli bacini, resp U.O. Politecnico di Milano (finanziato)
2002	MIUR Assimilazioni di dati satellitari ed modellistica idrologica nella gestione della risorsa idrica, resp

	U.O. Politecnico di Milano (finanziato)
2002	“Interazione tra acquifero e bilancio idrologico anche in relazione alle escavazioni di inerti nella pianura cremonese, Provincia di Cremona
2002	ASI Soil moisture mapping and data assimilation from ASAR imagery for catchments and river basins in Sardinia, National coordinator (finanziato)
2003	INRM Allestimento di un bacino sperimentale per lo studio dei processi erosivi in ambiente alpino (finanziato)
2003	INRM Effetti delle Caratteristiche Idrologiche dei suoli sull’insediamento di scivolamenti superficiali (finanziato)
2003	MIUR Effetti della dinamica della vegetazione sul bilancio idrico del suolo in regioni semi-aride, 2003. (finanziato)
2005-2006	CE, Application des méthodologies de prévisions hydro-météorologiques orientées aux risques environnementaux”, AMPHORE, nell’ambito del Programma Interreg III B Medoc
2005-2007	Cariplo: Previsori distribuiti d’afflusso al lago in Twole-A Un sistema per la gestione delle risorse idriche, applicazione al Verbano ed Ticino sublaquale (finanziato);
2007-2008	Cariplo: Monitoraggio di fusti idrici ed energetici in Twole-B Un sistema per la Pianificazione delle risorse idriche, applicazione al Lario ed all’Adda sublaquale (finanziato)
2007-2009	Assessment of soil moisture maps in the operating flood forecasting, finanziato dal Ministero dell’Università e della Ricerca
2009-2011	I Laghi di cava come regolatori delle emergenze idriche, Regione Lombardia e Fondazione Cariplo, bando 2006, Gestione sostenibile delle acque: promuovere forme di gestione integrata e partecipata delle acque superficiali,
2010-2011	Strategies to Promote Small Scale Hydro Electricity Production in Europe, EU , CESI
2008-2013	ACQWA “Assessing Climate impacts on the Quantity and quality of Water”. Progetto finanziato all’interno del programma FP7
2009-2011	ACCA “Misura e modellazione matematica dei flussi di ACqua e CARbonio negli agro-ecosistemi a mais”. Progetto finanziato dalla Regione Lombardia
2010-2012	PREGI “Previsione meteo idrologica per la gestione irrigua (Irrigation meteo-hydrological forecast)”. Progetto finanziato dalla Regione Lombardia
2011-2014	Soglie pluviometriche di allerta di piena (Flood alert) , STRADA, EU Regione Piemonte
2012-2014	Application of remote sensing and other space technology to hydrology and water resources (ESA DRAGON 2 ID 5281) European Space - MOIST Agencies
2014-2016	Satellite data and hydrological model to assess water quantity and quality in the Yangtze River basin (ESA DRAGON 3 ID 10664 EU - CHINA Project
2014	Physical model of di Pratolungo Dam model design execution and test , Lazio Region
2014-2015	SEGUICI project ((Irrigation meteo-hydrological forecast) , Regione Lombardia
2014	Benchmark analysis of forecasted temperature data: at power station kassandra forecast model ,ENI n 3500025053
2015	Benchmark analysis for long and short-term temperature forecasts: years 2013 – 2014, ENI Contract n° 2500016241 - 13/02/2014, FINAL REPORT – PHASE I -II
2016-2019	H2020 Waterworks JPI Smart Irrigation Monitoring coordinator (www.sim.polimi.it)
2016-2020	DRAGON 4 ESA –MOIST (EU CHINA Project)
2016-2019	SIM SMART IRRIGATION FROM SOIL MOISTURE FORECAST USING SATELLITE AND HYDRO –METEOROLOGICAL MODELLING in collaboration with Chinese partner) www.sim.polimi.it , EU Waterworks
2017	Physical model of Lake Idro dam outlet Itinera spa per Regione Lombardia,