Roberto Colombo

CURRICULUM VITAE

2025

1. Personal information

Name	Roberto Colombo
Birth place and date	Monza (Mb), 25/11/1966
Citizenship	Italian
Personal Address	Via Berra, 17, 20132 Milano (Italy)
Personal Phone	335 6898566
Professional Address	Laboratorio di Telerilevamento delle Dinamiche Ambientali (LTDA) Dip. di Scienze dell'Ambiente e del Territorio e di Scienze della Terra (DISAT), Università degli Studi di Milano Bicocca (UNIMIB) Piazza della Scienza, 1 20126 Milano Italia
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Web page	www.ltda-disat.it

2. Education and Scientific Profile

1991 Laurea in Earth Science - University of Milano. Geomorphological analysis of the Niger River floodplain (Mali) by using Landsat-5 MSS data and field survey (Dott. E. Zilioli, Prof. A. Bini).

1993 Post-graduate course on Remote Sensing and Natural Resources Evaluation. Istituto Agronomico per l'Oltremare, Italian Development Cooperation. Firenze (Italy).

1994 -1995 Research fellow at the Istituto Agronomico per l'Oltremare. Assimilation of optical and thermal data (Landsat and SPOT XS) in an integrated hydrological model for the Mareb River (Eritrea). (Dott. L. Ongaro, Dott. P. Sarfatti).

1996-1999 Research Scientist at Istituto di Rilevamento sul Rischio Sismico, National Research Council, Milano. Remotely sensed data for the estimation of energy balance components in mountainous catchments (Landsat TM, AVHRR-NOAA and ERS data). (Dott. P.a. Brivio).

1998 Post-graduate course on Space Techniques for Environmental Risks (STER), International Space University, Strasburg (France).

2000-2002 Research Scientis at the Institute for Environment and Sustainability, Joint Reseach Centre European Commission (JRC-EC), Ispra (Va), Italy. Deriving drainage networks and catchment boundaries at European scale by combining Digital Elevation Data and geo-environmental parameters. (Dott. J. Vogt).

2003-2004 Postdoctoral fellow and Adjunct Professor at the Department of Environmental Sciences (DISAT) University of Milano Bicocca (UNIMIB, Italy). Estimation of geophysical surfaces properties at different spatial and temporal scales by using field spectroscopy and airborne hyperspectral data for land and water applications. (Prof. C.M. Marino).

2005-Oct 2019 → University Researcher (GEO/10). Head of the Remote Sensing of Environmental Dynamics Lab., whose mission is the development of multi-source, multi-spectral and multi-temporal remote sensing tools for quantitative estimation of geophysical properties from field to satellite scale and their assimilation in environmental modelling.

2019- → Currently, Roberto Colombo is Associate Professor of Remote Sensing at DISAT-UNIMIB (FIS/06). He is stil leading the Remote Sensing of Environmental Dynamics Lab. Prof. Roberto Colombo is a member of ASI and ESA scientific committees for the definition of future optical and thermal spaceborne imaging spectroscopy missions for land and water applications. He leads airborne campaigns, vicarious cal/val activities and contribute to the design of proximal remote sensing instruments. He is a reviewer of proposals, national and international research projects of scientific journals, PhD evaluation committees. He is teaching Remote Sensing and Earth Physics for Environmental courses. He has opened over 30 positions for fellowships, grants, PhDs and RTDs and is the supervisor of over 60 dissertations. He is author of over 160 scientific publications and listed in Alper-Doger Scientific Index and Elsevier Data Repository among outstanding scientists.

- Qualified I fascia Settore Concorsuale 02/C1 - ASTRONOMIA, ASTROFISICA, FISICA DELLA TERRA E DEI PIANETI. SSD FIS/06. FISICA PER IL SISTEMA TERRA E IL MEZZO CIRCUMTERRESTRE (Abilitazione Scientifica Nazionale ottenuta il 29/11/2017);
- Qualified I fascia Settore Concorsuale 04/A4 GEOFISICA. Abilitazione Scientifica Nazionale 2021-2023, validità dal 01/12/2023 al 01/12/2034.

Research Interests

The main research interest is in the field of imaging spectroscopy, multi-scale optical and thermal remote sensing, new space missions' concept, geo-environmental monitoring of land surface processes with a focus on the dynamics of the cryosphere. He works with a wide range of Earth Observation data at different scales and geophysical methods for monitoring environmental dynamics, integrating multi-source, multi-spectral and multi-temporal data, field spectroscopy, radiative transfer physical models and development of algorithms for the estimation of geophysical parameters, with a focus on snow properties.

- *Space mission concepts:* Definition of observational requirements, scientific specifications, processing levels, products and cal/val plans for future Earth Observation missions focused on water and land applications. Contribution, as a MAG (Mission Advisory Group) member, to the definition phases for the ESA FLEX (Fluorescence Explorer) and CHIME (Copernicus Hyperspectral Imaging Mission for the Environment) imaging spectroscopy space missions, for the SBG-TIR (Surface Biology and Geology Thermal Infrared) ASI/NASA mission and for ASI PRISMA and PRISMA NG missions.

- *Airborne campaigns and field cal/val activities*: Interest in planning, designing and collecting spectral data and geophysical parameters at field level. Participation at field campaigns in Mali, Tunisia, Eritrea and Myanmar for cooperation studies and Italy, USA, Germany, France, Finland, Czech Rep., under FLEX, Sentinel-2 and PRISMA missions. Knowledge of meteorological stations and portable instruments (e.g. OO VIS–NIR HR–4000; ASD FieldSpec field spectrometers; FLIR and Apogee thermal sensors) and field measurements of bio-geophysical parameters (e.g. LI-COR LAI-2000, NIKON Fisheye, Delta-T-SunScan, SPAD 502).

- *Engineering and design of proximal RS instruments*: Design and developments of hyperspectral instrument for long-term and unattended field spectroscopy measurements of reflectance and fluorescence (HyperSpectral Irradiometer -HSI and the Multiplexer Radiometer Irradiometer, -MRI) for land and water ecosystems; Co-designing of the Hyperspectral Ice Core system (HICE) for measuring the spectral properties of snow and ice in laboratory; Co-designing of the UAV-based non-imaging hyperspectral system (HYUAV and FROG).

- *Algorithms development, retrieval of geophysical parameters, environmental monitoring and modelling*: Estimation of snow, water and vegetation parameters from airborne hyperspectral sensors (e.g. APEX, MIVIS, CASI, AISA, AHS and HyPlant) and satellite data (e.g. PRISMA, Sentinel-2, MODIS) and field data by statistical and inversion of physically based radiative transfer models at different scales. Remote sensing-related snow parameters are estimated by optical and thermal properties inferred from multisource remote sensing and include liquid water content, light absorbing impurities, albedo, energy balance, radiative forcing, climate feedback and snow density. Assimilation of remotely sensed data in environmental models.

Scientific Appointments and Assignments

- *1- Appartenenza a Comitati Scientifici Nazionali e Internazionali relativi a future missioni spaziali per l'osservazione della Terra.* Roberto Colombo is working in collaboration with national and international space agencies to support new space missions and advanced environmental applications:

- 2017-ad aggi. Membro del MAG (Mission Advisory Group) della missione spaziale ESA FLEX (FLuorescence EXplorer), promossa come ottava missione Earth Explorer (EE8). Preparazione della missione, requisiti scientifici, sviluppo strumenti di campo e algoritmi, attività di cal/val. Data di lancio prevista fine 2025.
- 2018. Membro Task Force ESA - Mission Expert Group per la definizione dei requisiti di osservazione della Missione di Earth Observation Sentinel-10 Hyperspectral Imaging Mission.
- 2018 ad oggi. Member of the CHIME MAG, ESA Space Mission. Ipotesi di lancio 2029.
- 2019 ad oggi. Member of the PRISMA Advisory Group for Data Exploitation (PAGE), ASI
- 2022 Member PRISMA Second Generation Advisory Group - ASI. Ipotesi di lancio 2027.
- 2021 ad oggi. Member of the TIR-SBJ MAG, ASI/NASA Space Mission Ipotesi di lancio 2029.

- *2- Direzioni e incarichi di Ateneo - UNIMIB*

- Director of GEMMA Centre (GeoEnvironmental Monitoring from Multiple PlAtform), Progetto Dipartimento di Eccellenza, DISAT (2018-2022).

- Delegato Università Milano Bicocca per il Lombardia Aerospace Cluster. Settore dell'industria aerospaziale in Lombardia per sviluppi tecnologici e applicazioni EO (2014-2021).
- Member of the DISAT Dept. Board 2011-2013.
- Member of PhD commission in Environmental Science (2012- 2017). Collegio Docenti Corso di Dottorato, corso Scienze Ambientali.
-Member of PhD commission Risorse Nuova Pubblica Amministrazione (2022- ad oggi). Collegio Docenti Corso di Dottorato, Risorse per la nuova Pubblica Amministrazione: persone e dati.
- Member of the DISAT Educational board commission (2006-2014).
- Member (President) of the DISAT VQR commission (2023-).
- Member of the Copernicus Academy for UNIMIB (2019-).

- *3- Affiliazioni*

- CNR-ISP Affiliated
- INFN Affiliated

- *4- Partecipazione a comitati editoriali di riviste scientifiche*

- Member of the Editorial Board of Remote Sensing Journal MDPI (2016-)
- Guest Editor for the Special Issue on "Recent progress in remote sensing of terrestrial and aquatic fluorescence", Remote Sensing (MDPI) (2019)

- *5- Partecipatizione a comitati scientifici per progetti di ricerca e iniziative Cal/Val*

- Member of the Steering Committees for the "Hyperspectral biomonitoring air quality and the city" Project (HYPERCITY), Programma STEREO dal Belgian Earth Observation Programme - Belgian Science Policy Office (BELSPO).
- Member of the Steering Committees for the "BIOmonitoring of urban habitat quality by airborne HYPErspectral measurements" Project (BIOHYPE) (Belspo, 2015-2018)
- Member of the WG CEOS ISPRS Mapping and GIS (1996)
- Member of the International LAI intercomparison CEOS WG Cal/Val (2003)
- WG for the Italian-Canadian Joint Hyperspectral Mission (JHM) (2006)
- Membro del Nucleo Tecnico Scientifico del Lombardia Aerospace Cluster (2014 ad oggi)

Scientific Committees for conferences and organization of scientific events

- *2017. Member of the Scientific Committee* ESA FLEX2017 Symposium. Remote Sensing of Fluorescence Photosyntesis and Vegetation Status. 17 - 19 January 2017 ESA-ESRIN, Frascati, Italy.
- *2018. Member of the Scientific Committee* Workshop on Land Product Validation and Evolution (LPVE 2018), ESA-ESRIN 27 February – 1 March.
- *2018. Member of the Scientific Committee* of the Congress "Il telerilevamento Iperspettrale per applicazioni civili e scientifiche. CISAM, San Piero a Grado 21/09/2018.
- *2019. Member of the Scientific Commitee* of the Congress "International Network on Remote Sensing of Terrestrial and Aquatic Fluorescence, 5-8 March 2019, Davos Switzerland, ESA.
- *2019. Convener* Session BG2.47, Emerging constraints of photosynthesis (including chlorophyll fluorescence), respiration, and transpiration at ecosystem to global scales, EGU General Assembly 2019, Vienna (Austria) 7–12 April 2019.
- *2019 Member of the Scientific Committee* ESA Living Planet Symposium, 13 -16 May 2019, Milan, Italy.
- *2019*, IGARSS 2020, SOs to Special Topic: Remote sensing parameters and models for radiation energy budget.
- *2021*, IGARSS, SOs to Special Topic: Remote sensing of land surface processes.
- *2023* Membro Comitato Scientifico INTERNATIONAL WORKSHOP ON HIGH-RESOLUTION THERMAL EO. Preparation of a range of high-resolution thermal missions including TRISHNA (CNES/ISRO), SBG-Thermal (NASA/ASI) and LSTM (ESA/EC) to be launched in coming years.
- 2023 Membro Comitato Scientifico. LPVE23 - WORKSHOP ON LAND PRODUCT VALIDATION AND EVOLUTION. European Space Agency (ESA) in collaboration with the Land Product Validation subgroup (LPV) of the Committee on Earth Observation Satellites (CEOS) Working Group on Calibration Validation (WGCV)
- 2023 Membro Comitato Scientifico. FLEX FLUORESCENCE WORKSHOP 2023.

- *2014. Organization of the plenary conference* EU COST Action ES1309. Innovative optical Tools for proximal sensing of ecophysiological processes (OPTIMISE), 8-10 Ottobre 2014. DISAT- Università degli Studi di Milano-Bicocca.
- *2018*. *Co-convener EGU* Special session on snow impurities and remote sensing (2018)
- *2019. Convener EGU*, Session BG2.47, Emerging constraints of photosynthesis (including chlorophyll fluorescence), respiration, and transpiration at ecosystem to global scales, EGU General Assembly 2019, Vienna (Austria) 7–12 April 2019.
- *2024. Member of the Scientific Committee* of the Remote Sensing of Forest Fires:
- Lessons learned and future challenges under a changing climate, 19-20 Sept 2024, Milan

Selected invited talks

- *2003*. 2nd International SPECTRA Workshop, A space-borne Earth Observation Mission to address the role of terrestrial vegetation in the Carbon Cycle, ESA-ESTEC, Nordwijk, 29-30 Oct. "Hyperspectral observation for forest ecosystem characterisation at the Ticino experimental site".
- *2004*. LAI Intercomparison/MODIS Workshop, CEOS LPV Validation SubGroup, Missoula-Montana (USA), 8-10 Aug. "Cal/Val of bio-geophysical products".
- *2005.* VALERI (VAlidation of Land European Remote Sensing Instruments) international meeting, Avignone, France, March. "LAI and fAPAR data for carbon balance of fast-growing forests in Italy".
- *2007.* SINO-ESA's Earth Observation Science Workshop, Firenze July 18, 2007. "Retrieval of leaf biochemical and canopy biophysical parameters from hyperspectral data".
- *2008*. XI Edizione Convegno di Varenna di Protezione civile - Dalla previsione al superamento dell'emergenza. Confronto e sinergie per affrontare le sfide del futuro - Varenna (Lc), Villa Monastero, 7-8 Ottobre 2008. "Contributo del rilievo satellitare ai fini della previsione e delle procedure di lotta agli incendi boschivi".
- *2014.* BELAIR Workshop, Grand-Leez, Gembloux (BE), June 13, 2014. Keynote on "Ground-based measurements of reflectance and sun-induced chlorophyll fluorescence".
- *2014.* RemTech Expo, Convegno Gestione rischio amianto negli edifici pubblici e privati. Gli obblighi di legge nazionale e regionali dei proprietari e dei responsabili delle attività, Ferrara, 19 settembre 2014. "Telerilevamento iperspettrale per il riconoscimento di coperture in cemento amianto".
- *2014*. First Italian meeting on the Mapping and Assessment of Ecosystems and their Services, February 27, Rome. "Remote sensing applications for mapping ecosystem services in the European Alps".
- *2014.* NASA Goddard Space Flight Center, Greenbelt, Maryland (USA), May 8 2014. Seminar on the "Retrieval of vegetation biophysical parameters and fluorescence from multisource remote sensing".
- *2016*. Monalisa Conference, EURAC, Institute for Applied Remote Sensing, 25 November 2016, Bolzano. "Hyperspectral Remote Sensing of vegetation".
- *2018*. Il telerilevamento Iperspettrale per applicazioni civili e scientifiche. CISAM, San Pero a Grado 21/09/2018. "Contribution of hyperspectral data for environmental monitoring"
- *2019*. Living Planet Symposium, 13-17 May, Milano. "Time series and spatial pattern of sun-induced fluorescence for various ecosystems and different scales".
- *2019*. ASI-INGV Workshop on a new EO Mission Study in the MWIR-LWIR spectral range, 10-11 June Roma. Overview on the 2018 FLEX campaign.
- *2019*. SENSECO COST ACTION. Cal/val plan for FLEX mission, Budapest, September
- *2019*. Technical Seminar "Infrared techniques and applications for aerospace", CNR-IFAC Florence 16 September, Contribution of snow thermal inertia to evaluate snowmelt dynamics.
- *2023*. 39th edition of International Symposium on Remote Sensing of Environment (ISRSE), Antalya, Turchia. Thermal snow inertia monitoring from space.

Oral presentations at national and international conferences

- 1992. II Convegno Nazionale dei Giovani Ricercatori Geologia Applicata, Viterbo. "Considerazioni Morfo-Pedologiche e analisi dei lineamenti ricollegabili alla genesi di alcune Mares in ambiente Saheliano".
- 1994. International Workshop on Hydrologic Application by Remote Sensing techniques, Luglio, Montpellier, Francia, July "Hydrological analysis of two sub-catchments of the Mareb River (Eritrea)"

- 1995. VII Convegno Nazionale Associazione Italiana Telerilevamento, Chieri (To). "Stima dell'erosione del suolo nell'alto bacino del fiume Mareb (Eritrea)".
- 1997. International Symposium on Remote Sensing, Earth Surface Remote Sensing, Aerospace Remote Sensing SPIE, 21 Sept, London. "Evaluation of spatially distributed remotely sensed data to estimate hydrologically related parameters".
- 1998. International Symposium on Remote Sensing, Aerospace Remote Sensing SPIE, Barcellona Sept,. "Evaluation of Evapotranspiration in Alpine Forest Catchment Using Satellite Remotely Sensed Data".
- 1999. International Workshop on Satellite Remote Sensing and Climate Simulations: Synergies and Limitations, Les Diablerets (Svizzera), 20-24 Sept. "The Use of Remotely-Sensed Data for the Estimation of Energy Balance Components in a Mountainous Catchment Area".
- 2000. MEDCOAST. International Workshop on Applications of Remote Sensing to the Management of River Catchment Areas and their Coastal Margins in the Mediterranean and Black Sea, Ispra (Va), 10 Apr. "Catchment Mapping and Characterisation. A Pan-European Approach".
- 2001. First International Workshop on the Analysis of Multitemporal Remote Sensing Images, Trento, 13-14 Sept. "Multitemporal evaluation of MIVIS data for waste disposal and landslide applications".
- 2003. 7a Conferenza Nazionale delle Agenzie Ambientali, Milano, 26 Nov. "Stima di variabili biofisiche e biochimiche della vegetazione di pianura mediante misure di terreno e tecniche di telerilevamento satellitare e da aereo".
- 2004. XXII Conferenza Nazionale ASITA, Roma, 14-17 Dic. "Stima del contenuto idrico della vegetazione tramite telerilevamento iperspettrale".
- 2004. MODIS Vegetation Workshop II, Missoula, Montana, USA, 17-19 Aug. "Coupling the BIOME-BGC model with temporal series of MODIS surface reflectance data for simulating carbon and water budgets in poplar plantations".
- 2005. IX Conferenza Nazionale ASITA, 15-18 Nov., Catania. "Stima della fIPAR tramite immagini MODIS".
- 2005. COST 718, Climatic Analysis And Mapping For Agriculture, Workshop, 14-17 June, Bologna, Italy. "Estimation of the Net Ecosystem Exchange in agro-forestry ecosystems by assimilation of satellite-derived information in a process model".
- 2007. 3rd International Workshop on Remote Sensing of Vegetation Fluorescence, Florence, 7-9 Feb. Solar-induced fluorescence and photochemical reflectance index for detecting plants physiological status.
- 2009. 6th EARSeL SIG IS workshop Imaging Spectroscopy, 16 – 19 March 2009, Tel-Aviv University, Tel- Aviv, Israel. "Retrieval of vegetation fluorescence from hyperspectral data for the analysis of plant status: Innovative tool for scientific and commercial environmental applications".
- 2010. XIV Conferenza Nazionale ASITA, Fiera di Brescia, Italia 9-12 Novembre 2010. "Analysis of interannual variation of vegetation phenology in the Alpine environment using time series of MODIS data".
- 2012. Third Annual Hyperspectral Imaging Conference. Istituto Nazionale di Geofisica e Vulcanologia, Rome, Italy, 15 – 16 May. "Hyperspectral remote sensing tools for precision farming applications".
- 2014. WHISPERS Workshop. 6th Workshop on Hyperspectral Image and Signal Processing: Evolution in Remote Sensing, Lausanne, Switzerland, 24-27 June 2014. Remote sensing of sun-induced chlorophyll fluorescence at different scales.
- 2016. Workshop Future Missioni e Paylaod di Osservazione della Terra in studio presso la Comunità Scientifica Italiana", 29 novembre. CHRISTMAS- Cryosphere High spatial Resolution Images and Snow/ice properties via apparent Thermal inertia obtained from Multispectral Advanced optical Systems
- 2016. AGU Fall Meeting. San Francisco, Calif., 12-16 Dec. "Multi source remote sensing for monitoring light-absorbing impurities on snow and ice in the European Alps".
- 2016. SAIL35 symposium. Eye on Foliage, Enschede, The Netherlands on 27 and 28 Sept. "Remote sensing of sun induced chlorophyll fluorescence in the context of the FLEX mission",
- 2017. ASI PRISMA Workshop. Data Exploitation della missione PRISMA, precursore delle missioni iperspettrali nazionali. Agenzia Spaziale Italiana, Roma, 1-3 marzo. "Attività cal/val della missione ESA/FLEX e possibili sinergie con PRISMA".
- 2017, 103° Congresso Nazionale Società Italiana Fisica, Trento, 11 - 15 settembre 2017, Sezione 4: Geofisica, Fisica dell'Ambiente. Utilizzo di dati ottici e termici per il monitoraggio della criosfera

- 2017. ESA-FLEX2017 Conference. Remote Sensing of Fluorescence Photosyntesis and Vegetation Status. ESA-ESRIN, Frascati, Italy, 17 - 19 Jan. "Ground Measurements of Sun-Induced Chlorophyll Fluorescence in the Context of FLEX Mission".
- 2018 Cryosphere High spatial Resolution Images and Snow/ice properties via apparent Thermal inertia obtained from Multispectral Advanced optical Systems (CHRISTMAS)
- 2019, Ground-based fluorescence measurements and vegetation dynamics across different ecosystems. International Network on Remote Sensing of Terrestrial and Aquatic Fluorescence, 5-8 March 2019, Davos Switzerland, ESA.
- 2019 Using optical and thermal data for tracking snowmelt processes in Alpine area, IGARSS 2019, Yokohama,Japan
- 2019. SnowHydro Bolzano 2020
- 2021. Presentazione convegno INTERNATIONAL WORKSHOP ON HIGH-RESOLUTION THERMAL EO. Monitoring Snow Processe by using thermal inertia.
- 20121 AIT conference, October 2021. Snow dynamics from remote sensing
- 2022. Seminario a invito Paul Sabatier University - Toulouse III. 3D Radiative transfer models for simulating surface temperature, reflectance and fluorescence
- 2022-Convegno ESA LPS 2022. The FLEX mission. Status of the cal/val activities.

Evaluation of International Projects, Proposals and Scientific Journal Reviewer

- STEREO Programme (Belgian Earth Observation Programme - Belgian Science Policy Office)
- EUFAR projects
- European Research Council (ERC)
- ESA - Earth Explorer 9 and 10 Program (2016, 2017, 2018)
- The Netherlands Space Office (2015)
- Natural Sciences and Engineering Research Council of Canada (2019)

- Remote Sensing of Environment
- Hydrology and Earth System Sciences
- European Journal of Remote sensing
- IEEE Geoscience and Remote Sensing Letters
- International Journal of Applied Earth Observation and Geoinformation
- IEEE Transactions on Geoscience and Remote Sensing
- Remote Sensing
- International Journal of Remote Sensing (Taylor & Francis)
- Survey in Geophysics

- Roberto Colombo served on several committees for national and international PhD evaluations

Professional Organizations Membership

- EUFAR Member (EUropean Facility for Airborne Research)
- Associazione Italiana Telerilevamento (AIT, Italian Association of Remote Sensing)
- American Geophysical Union (AGU)
- Italian Physical Society (SIF)

Computational Skills

- Image Processing and GIS: Gemstone 35; Envi 5.5.3; Pci Easi v. 6.2; ER Mapper 5.3; e.Cognition, BEAM toolbox), Ilwis 2.0; Idrisi 1.1; MapInfo 3.0, ArcView 3.2; Esri ArcGis 7.1; QGIS 3.36;
- Programming languages: IDL 8.5;
- Operational radiative transfer models in remote sensing: MODTRAN, HydroLight, PROSAIL, SCOPE, ARTMO, SNICAR, 6S;
- Environmental modelling: SnowPack, GEOtop, FlamMap fire mapping and analysis system; Revised Universal Soil Loss Equation, Biome-BGC ecosystem process model; MOD17 MODIS for GPP/NPP; Growing Season Index and Degree Day phenological models; Soil Conservation Service - Curve Number (CN) method for runoff volume.

3. Teaching and Educational Activities

Academic at UNIMIB

Anno Accademico	Insegnamento	CFU	Corso di Laurea
2025/2026	*Fisica Terrestre; Telerilevamento Applicato,*	*8, 6*	*STA, STAT*
2024/2025	*Fisica Terrestre; Telerilevamento Applicato,*	*8, 6*	*STA, STAT*
2023/2024	*Fisica Terrestre; Telerilevamento Applicato, Marine Ecology*	*8, 6, 4*	*STA, STAT, MS*
2022/2023	*Fisica Terrestre; Telerilevamento Applicato, Ocean Monitoring and Data Analysis*	*8, 6, 4*	*STA, STAT, MS*
2021/2022	*Fisica Terrestre; Telerilevamento Applicato, Ocean Monitoring and Data Analysis*	*8, 6, 4*	*STA, STAT, MS*
2020/2021	*Fisica Terrestre; Telerilevamento Applicato*	*8, 6*	*STA, STAT*
2019/2020	*Fisica Terrestre; Telerilevamento Applicato*	*8, 6*	*STA, STAT*
2018/2019	*Fisica Terrestre*	*8*	*STA*
2017/2018	*Fisica Terrestre, Principi di Scienze della Terra*	*8, 2*	*STA*
2016/2017	*Fisica Terrestre, Principi di Scienze della Terra*	*8, 2*	*STA, STA*
2015/2016	*Fisica Terrestre, Principi di Scienze della Terra*	*8, 4*	*STA, STA*
2014/2015	*Fisica Terrestre*	*8*	*STA*
2013/2014	*Fisica Terrestre*	*8*	*STA*
2012/2013	*Fisica Terrestre, Telerilevamento Applicato*	*6, 6*	*STA, STAT*
2011/2012	*Fisica Terrestre; Telerilevamento Applicato, Laboratorio di Telerilevamento*	*6, 4, 4*	*STA, STAT, STAT*
2010/2011	*Fisica Terrestre; Telerilevamento Applicato*	*6, 6*	*STA, STAT*
2009/2010	*Laboratorio di Telerilevamento; Tecniche e Misure Geo-ambientali*	*4, 4, 2*	*STA, STAT, STA*
2008/2009	*Laboratorio di Telerilevamento, Telerilevamento delle Risorse Terrestri*	*4, 2*	*STA, STAT*
2007/2008	*Telerilevamento delle Risorse Terrestri*	*4*	*STAT*
2006/2007	*Telerilevamento delle Risorse Terrestri*	*8*	*SA*

CFU= 8 hours lectures
STA: Scienze e Tecnologie per l'Ambiente (BSc)
STAT: Scienze e Tecnologie per l'Ambiente e il Territorio (MSc)
MS: Marine Sciences (MSc)
SA: Scienze Ambientali

Attended International Training Courses and Teaching Notes

- Use of ERS-1 SAR and other Complementary Spaceborne Sensors for Land Use and Land Cover Applications (1996). I International Training Course organizzato da EURIMAGE/ESRIN/ESA. Frascati (Roma), 24-27 June.
- Contribution of Remotely Sensed data and Geographical Information System for Soil Erosion Mapping (Soils) (1997). XVIII Post-graduate course "Remote Sensing and Natural Resource Evaluation"; Istituto Agronomico per l'Oltremare, Firenze, 7-11 February.
- Use of ERS-1 SAR and other complementary spaceborn sensors for land use and land cover applications (1997). II International Training Course organizzato da EURIMAGE/ESRIN/ESA. Roma (Roma), June.
- Contribution of Remotely Sensed data and Geographical Information System for Watershed Management (Climatology) (1998). XVIII Post-graduate course "Remote Sensing and Natural Resource Evaluation"; Istituto Agronomico per l'Oltremare, Firenze, 25-28 February.
- Hydrological Applications of Remote Sensing (1999, 2000, 2001, 2002, 2003). In XIX Professional Master on "Remote Sensing and Natural Resource Evaluation"; Istituto Agronomico per l'Oltremare, Firenze, Firenze. 8 hr.
- Teledetección aplicada a los recursos naturales (2002). In "Postgrado en Sistemas de Información Geográfica aplicados a la Gestión Territorial y Ambiental", Universidad del Azuay/IERSE Cuenca-Ecuador; 1-11 April.
- Airborne Remote Sensing (2005) In" Airborne Flux Measurements, A CarboEurope Advanced Training Course Fiano Romano (Roma, Italia), 24-30 October.
- Basic of remote sensing of vegetation, EURAC, 14-16 October 2008.

- Environmental remote sensing: sensors and platforms, Space Mission Design, Space Engineering al Politecnico di Milano, 2015.
- Introduction to S3 and FLEX missions, Summer School 'Sentinel for Applications in Agriculture' 17-21 settembre 2018, Piacenza Italy

Academic Supervisor: Graduate students, PhD tutor and Post-doc responsabilities

Supervisior of the following PhD students:

1. Tuzzi Luca. Monitoraggio della produttività primaria netta in ambienti montani. In corso, XXXIII Ciclo.
2. Matteo Monzali. Snow thermal inertia and snow density monitoring from space. XXXIII Ciclo.
3. Cesana Ilaria. Stima della fluorescenza della vegetazione terrestre e acquatica nell'ambito della missione satellitare FLEX. XXXII Ciclo.
4. Bearzot Francesca. Studio del Permafrost in ambiente alpino e della sua evoluzione in relazione al clima mediante dati telerilevati., XXXII Ciclo.
5. Bartkowiak Paulina. Multi-source remote sensing data for monitoring water availability in Alpine natural and agricultural ecosystems under changing climate and land-use, XXXII Ciclo.
6. Cazzaniga Ilaria. Processing and analysis of latest generation satellite data for monitoring optically complex waters. Università degli Studi di Milano-Bicocca. XXXI Ciclo.
7. Celesti Marco. Development of innovative methods for the estimation of fluorescence using multisource remote sensing techniques, XXX Ciclo.
8. Garzonio Roberto. Sviluppo di una procedura per la determinazione di ghiacciai perforabili mediante indicatori ottenuti da telerilevamento multisorgente e da parametri morfometrici, nell'ambito del progetto di interesse NEXTDATA. Università degli Studi di Milano-Bicocca. XXVIII ciclo
9. Di Mauro Biagio. Analysis of snow/ice optical properties using multi-surce hyperspectral data and evaluation of the role of light absorbing impurities in terrestrial radiative balance. Università degli Studi di Milano-Bicocca. XXVIII Ciclo.
10. Julitta Tommaso. Telerilevamento di prossimità. Monitoraggio delle dinamiche ambientali Dottorato di Ricerca in Scienze Ambientali, XXVII ciclo. Università degli Studi di Milano-Bicocca.
11. Fussi Fabio. Integrazione di dati tele rilevati a supporto di piani di gestione dell'acqua in paesi emergenti. Dottorato di Ricerca in Scienze Ambientali, XXVII ciclo. Università degli Studi di Milano-Bicocca.
12. Galvagno Marta. Carbon dioxide exchange of an alpine grassland: integration of eddy covariance, proximal sensing and models. Dottorato di Ricerca in Scienze Ambientali, XXIII ciclo. Università degli Studi di Milano-Bicocca.
13. Cogliati Sergio. Dottorato di Ricerca in Scienze Ambientali, XXIII ciclo. Università degli Studi di Milano-Bicocca.
14. Migliavacca Mirco. Caratterizzazione e upscaling dei flussi di carbonio in ecosistemi terrestri. Dottorato di Ricerca in Scienze Ambientali, XXI ciclo. Università degli Studi di Milano-Bicocca. In corso.
15. Fava Francesco. Monitoraggio di pascoli in aree marginali mediante tecniche di telerilevamento e modellistica. Dottorato di Ricerca in Ecologia Agraria, Scuola di Dottorato Terra Ambiente e Biodiversità, XXI ciclo, Università degli Studi di Milano. Tutor Prof. T. M. Maggiore.
16. Busetto Lorenzo. Stima della produzione primaria netta in ecosistemi agroforestali mediante analisi di immagini satellitari MODIS. Dottorato di Ricerca in Scienze Ambientali, XX ciclo. Università degli Studi di Milano-Bicocca.

Supervisor of about 85 BSc and MSc thesis *(http://ltda-disat.it/?page_id=666);* Supervisor of 18 fellowships, 10 post-doc positions and 3 RTD; Supervisor of more than 10 visiting scientist and PhD students @LTDA-DISAT UNIMIB.

Outreach and technological transfer

http://blogs.esa.int/campaignearth/2012/09/12/tales-from-a-cherry-picker/
http://milano.corriere.it/notizie/cronaca/16_ottobre_23/custode-ghiacciai-usa-droni-b160396c-9895-11e6-bb29-05e9e8a16c68.shtml
http://www.old.unimib.it/open/news/Un-drone-per-misurare-i-ghiacciai/729120914879530549
http://blogs.esa.int/campaignearth/2014/06/24/changing-the-properties-of-vegetated-surfaces/
https://www.nestle.it/media/pressreleases/stressi_drico_nutrizionale_coltivazioni_rischio

http://www.valledifassa.com/tanti-auguri-con-linea-bianca-dalla-val-di-fassa/

- Partecipazione all'ideazione della società JB Hyperspectral Devices (spettroradiometri di campo portatitili per la misura in continuo della riflettanza e fluorescenza delle superfici, intervallo spettrale 400-1000nm), 2015.

4. Research Projects

Roberto Colombo has been involved in several research projects of local, regional, national and international relevance, as Collaborator, Task leader or Project Coordinator. The full list of Projects can be found at the LTDA web page (http://ltda-disat.it/?page_id=13).

Responsibility in Competitive Projects (Group leader or PI)

- Verso il telerilevamento del bilancio del carbonio della vegetazione: sviluppo di metodi innovativi, Grant: MIUR, PRIN05. (2005-2007).
- KYOTO: Ricerca sui cambiamenti climatici e il controllo dei gas serra in Lombardia. Grant: Regione Lombardia, Ministero Ambiente (2005-2008).
- Spectroradiometric methods to estimate biochemical and biophysical parameter of vegetation in industrial contaminated areas. Grant: ISPESL, Programma di Ricerca B n.01/DIPIA/07 (2008).
- PHENOALP – Phénologie alpine, Grant: Interreg EU-, ALCOTRA, Arpa Val d'Aosta, (2009-2011).
- Axia: Towards the identification of water early stress indicators: Development of innovative hyperspectral aerial remote sensing techniques. Grant: Nestlè-CRUI (2010).
- MANFRED – Management Strategies to adapt Alpine Space Forests to climate change risks. Grant: Alpine Space program (2010).
- ALP FFIRS (ALPine Forest FIre waRning System); Grant: EU-INTERREG IIIB Alpine Space Program, ERSAF, Gargnano (Bs) (2011).
- FLEX/S3 Tandem Mission Performance Analysis and Requirements Consolidation Study (PARCS); ESTEC RFQ 3-13397/11/NL/CBi. Grant: ESA (2012-2013).
- SINOPIAE. Sistema prototipale multi-sorgente INtegrante tecniche di Osservazione multispettrale da satellite, aeromobile e a terra per il monitoraggio multi-scala della variazione di Indicatori ambientali legata ai costituenti Atmosferici e dispersione Energetica, Grant: MIUR-Regione Lombardia (2012-2014).
- Use of remote sensing and terrain modelling to identify suitable zones for manual drilling in Africa and support low cost water supply. Grant: NERC (National Environment Research Council) (2014-2015).
- CHRISTMAS. Cryosphere High spatial Resolution Images and Snow/ice properties via apparent Thermal inertia obtained from Multispectral Advanced optical Systems. Grant: ASI, Programma Osservazione della Terra: attività preparatorie per future missioni e payload, (2016-2017).
- FLEX L1B TO L2 ALGORITHM DEVELOPMENT STUDY, Grant ESA (2018-2020).
- MUSICA - Multiband Ultrawide SpectroImager for Cryosphere Analysis, Grant ASI (2019-2020).
- Pignoletto, Monitoraggio del territorio e agricoltura di precisione mediante sistemi a pilotaggio remoto, Grant Regione Lombardia, HUB (2019-2021)
- CRIOSAR- ASI. Radar and thermal data for snow characterization Grant ASI (2021-2023)
- GEMMA Lab. Geoenvironmental Monitoring from Multiple Platform. Grant MIUR- Dipartimento di Eccellenza
- SCIA – Sviluppo di algoritmi per lo studio della Criosfera mediante Immagini PrismA; Grant ASI (2022-2024)
- STOPP. Stress Detection from sun-induced fluorescence, CIRA – ASI (2022--2024)
- THERESA – THErmal infRarEd SBG Algorithms for surface temperature anisotropy of land surfaces, Grant ASI, 2023-2025
- PRIN 2022. Monitoring snow water equivalent from multisourse remote sensing (2023-2025)
- DISC ESA-FLEX Project (2024-2029). Development of cal/val activities over water and land surface for FLEX space mission.

Responsibility in non-competitive Projects (Group leader or PI)

- Sviluppo e applicazione di metodi per la perimetrazione di aree bruciate tramite osservazioni remote: sperimentazione del rilievo satellitare ai fini della previsione e delle procedure di lotta agli incendi boschivi; Grant Ente Regionale per i Servizi all'Agricoltura e alle Foreste (Bs), (2004-2005).
- Airborne hyperspectral MIVIS data for mapping asbestos. Grant: Arpa Lombardia (2005)
- Immagini satellitari ad alta risoluzione geometrica come strumento di supporto per un efficace governo dell'ambiente e del territorio della Provincia di Milano e Parco Sud; Grant: Provincia di Milano (2005).
- JRC-Kyoto Experiment: Modelling greenhouse gases by means of remotely sensed data; Grant: JRC-EC, Ispra (Va); Resp Scient: Dott. G. Seufert (2005-2008).
- CEFLES2, Technical Assistance for Airborne/Ground Measurements in support of FLuorescence EXplorer (FLEX) mission proposal during CEFLES2 Campaign. Grant: ESA-ESRIN 20802/07/I-LG; (2007-2008)
- Evoluzione spazio temporale delle aree agricole tramite analisi di immagini satellitari; Grant: NRD, Sassari (2006).
- Sperimentazione del rilievo satellitare ai fini della previsione e delle procedure di lotta agli incendi boschivi. Grant: ERSAF, Lombardia (2006-2007).
- INFOGESO, Individuazione remota di indicatori del danno dovuto a ozono tramite misure passive condotte con spettroradiometri ad alta risoluzione spettrale - Grant ERSAF-Regione Lombardia (2005-2007).
- Progetto Mapping snow cover from Space; Grant: INTERREG III Spazio Alpino, ARPA Val d'Aosta (2006-2007).
- DIVALPA (Dinamiche della Vegetazione ALPina e dell'azoto in ambienti d'Alta quota in risposta ai cambiamenti climatici recenti), Grant: ERSAF Lombardia (2006-2008).
- MASOGIS (Sviluppo di Modelli Aziendali Sostenibili e multifunzionali per la valorizzazione dei pascoli in aree marginali mediante GIS), Grant: Nucleo Ricerca Desertificazione, Università di Sassari (2006-2007).
- Carta Natura. Near Real Time Satellite Data for Stress Detection. Grant: ARPA Valle d'Aosta (2007).
- AVVISA (AVVistamento Incendi da SAtellite) Sperimentazione del rilievo satellitare ai fini della previsione e delle procedure di lotta agli incendi boschivi. Grant Regione Lombardia, Protezione Civile (2007-2008).
- Mappatura dei modelli di combustibile tramite osservazioni iperspettrali; Grant: Ente Regionale per i Servizi all'Agricoltura e alle Foreste (Bs), (2008).
- Misure da satellite per la stima della concentrazione di PM10 E PM2,5; Grant: Comune di Milano; (2009).
- Individuazione della catena di processo ottimale per la correzione radiometrica ed atmosferica e per la georeferenziazione delle immagini acquisite dal sistema iperspettrale SIM.GA; Grant: E-GEOS, Telespazio (2009).
- Monitoraggio del consumo di suolo mediante telerilevamento; Grant: Provincia di Varese; (2010).
- Modelling the phenological cycle from satellite data in Apline region, Grant: EURAC, Bolzano (2009-2010).
- REPHLEX – REmote Sensing of PHenology – Larch EXperiment. Grant: Arpa Val d'Aosta (2009).
- EDOCROS, Early Detection Of CROp Stress by remotely sensed indicators; Grant: EU-EUFAR (European Facility For Airborne Research) Transnational Access project (2010)
- Sen2Exp, Technical Assistance to fieldwork in the Harth forest during SEN2Exp (2012-2013). Grant: ESA.
- Technical Assistance for the Deployment of an advanced hyperspectral imaging sensor during HYFLEX; ESTEC RFQ-3-13566/12/NL/LF. Grant: ESA, (2012-2013).
- Mappatura delle coperture in cemento amianto in ambiente urbano mediante sensori iperspettrali. Grant: Comune di Monza (2013-2014).
- FLEX-US Technical Assistance for the Deployment of the Airborne HyPlant Imaging Spectrometer ESA/NASA Joint FLEX-US Campaign. Grant: ESA (2013-2014).
- Precision Farming by hyperspectral technologies. Grant: Ceres Imaging Inc., San Francisco California (USA) (2014).
- FLEX-EU, HyPlant and Thermal data for fluorescence evaluation in manipulation experiment. Grant: ESA.
- FLEX Bridge Study ESA RFP IPL-PEO/FF/lf/14.687. Grant: ESA (2014-2016).
- COAST, Telerilevamento delle risorse marine e costiere per la generazione di mappe tematiche degli habitat prioritari presenti nel Parco Nazionale Marino di Lampi (Mynamar). Grant: Istituto Oikos (2014-2015).

- HyPlant Processing Experiment (HYPER). Grant: ESA (2015-2017).
- SEGUICI. Near Real Time Satellite Data for Stress Detection. Grant: Antares. (2015).
- SoyFLEX: Technical Assistance for the Deployment of an advanced hyperspectral imaging sensor during FLEX-EU. Grant: ESA.
- Caratterizzazione superfici Cemento Amianto. Grant: Ecoconsulting spa (2017).
- HYPERSPECTRAL IMAGING MISSION CONCEPTS, Grant: ESA/AO/1-8579/16/I-SBo (2016-2017).
- Approccio integrato per lo studio delle risorse naturali in Mozambico. Grant: Istituto Oikos Milano (2017).
- Technical Assistance for the Deployment of Ground-based Instruments for Long term measurements of Red and Far-red Sun Induced chlorophyll Fluorescence (ATMOFLEX), Grant ESA, 2017-2019.
- FlexSense, Aiborne Campaign, Grant ESA, 2019-2020.
- Pignoletto, Monitoraggio del territorio e agricoltura di precisione mediante sistemi a pilotaggio remoto, Grant Regione Lombardia, HUB (2019-2021)
- SnowLab-NG. Thermal inertia of snowpack. Grant ESA (2019-2021)
- PRISCAV, Attività cal/val missione PRISMA (2019-2024), Grant ASI.
- SWATH SENSE, Multiangular measurments of reflectance and surface temperature, ESA (2022-2025)
- CHIME Algorithm Consolidation study. Grant ESA (20222-2023)
- BioGeoAlbedo feedback ai margini della calotta Antartica. Grant PNRA (2022-2024)
- DEFLOX project, ESA (2023)
- ESA CAL/VAL PARK ESA, (2023-2024)

Collaborations to other projects

- 1993-1995: Progetto AFRICOVER (FAO/IAO e Ministero dell'Agricoltura Eritreo), svolto allo IAO (Resp. Scient. Dott. L. Ongaro), classificazione digitale di immagini satellitari;
- 1996-1997: Progetto RAISA (Ricerche Avanzate per Innovazioni nel Sistema Agricolo) svolto al CNR-IREA (Resp. Scient. Dott. M. Gomarasca), modellistica e fenologia;
- 1996-1997: Progetto GNDCI (Valutazione del rischio idraulico geologico e zonazione; strategie di intervento per la mitigazione degli effetti degli eventi estremi), svolto al CNR-IREA (Resp. Scient. Dott. P. Brivio), modellistica bilancio energetico-radiativo;
- 1997-1999 Progetto "Per una Cartografia Territoriale Lombarda" Grant Fondazione Lombardia per l'Ambiente, Milano. CNR-IREA, modellistica idrologica.
- 1997-1999: Progetto "Per una Cartografia Territoriale Lombarda" svolto al CNR-IREA (Resp. Scient. Dott. M. Gomarasca); Integrazione dati ottici e radar
- 1997-1999: SALMON (SAtellite remote sensing for Lake MONitoring), svolto al CNR-IREA (Resp. Scient. Dott. E. Zilioli); Classificazione comparto acque interne.
- 1998-1999: Progetto AUROSAT (Implementazione di piani informativi geografici per le Regioni Lombardia ed Emilia Romagna), svolto al CNR-IREA (Resp. Scient. R. Tomasoni);
- 1998-1999: Progetto AUROTEM (Implementazione della banca dati della Regione Lombardia mediante tematismi di carattere biofisico derivabili da telerilevamento satellitare), svolto al CNR-IREA (Resp. Scient. Dott. E. Zilioli);
- 2000-2002: Progetto EUROLANDSCAPE (Geo-Information for Development and Environmental Monitoring) JRC-IES (Resp. Scient. Dott. J. Vogt), Modellistica della densità di drenaggio a livello Europeo;
- 2001-2002 Progetto DARFEM (Dais and Rosis for Forest Ecosystem Monitoring), Grant EU-HYSENS-DLR, Resp. Scient. Dott. P.A. Brivio, CNR IREA.
- 2002: Progetto Immagini da satellite ad alta risoluzione IKONOS per aggiornamento e realizzazione di basi informative agro-ambientali inerenti il territorio lombardo; Grant: ERSAF (Mi). Resp Scient: Prof. C. M. Marino;
- 2002. Progetto Bioindicatori di stress forestale da telerilevamento iperspettrale. ; Grant: Parco Ticini LOmbardo. Resp Scient: Prof. C. M. Marino;
- 2003: Progetto LAI-INTERCOMPARISON, LPV MODIS, Grant: NASA – USA; Resp. Scient. J. Morisette, MODIS Science Team;
- 2002-2003: Progetto CARBOEUROFLUX (An investigation on Carbon and Energy exchanges of terrestrial ecosystems in Europe), Grant European Commission DG Research -V th Framework programme), Resp. Scient. Dott. G. Seufert JRC-IES

- 2005. Progetto Programma di indagini a carattere documentale inerenti le tecniche di telerilevamento fotografico ed elettronico dell'ambiente sul territorio lombardo con particolare riferimento alle coperture in cemento amianto. Grant: ARPA Lombardia, Resp Scient: Prof. C.M. Marino.
- 2006. Partecipazione preparazione al Progetto Studi Scientifici a supporto della Joint Hyperspectral Mission (JHM) (ASI).
- 2013. Development of a GIS environment to assess rice cultivation measures adopted and their spatial relation with theSites of Community Importance (Habitat directive 92/43/EEC) in the Padana plain rice area (Northern Italy). Grant Dow AgroSciences, 2013. Responsabile Scientifico A. Finizio.
- 2014: WineCam – Monitoraggio di indici di vegetazione in Vigneti 2014-2015. PI: Edoardo Cremonese, ARPA Vda, Italy.
- 2015: EUFAR TA / DEHESHyrE project (2015). PI: Mirco Migliavacca, Max Planck Institute for Biogeochemistry, Department Biogeochemical Integration, Jena, Germany.
- 2015: Specnet-Decagon "An Optical Sensor Network for Carbon Flux Analysis across Ecosystems" in collaboration with ARPA VdA (2015). PI: Prof John Gamon, Departments of Earth & Atmospheric Sciences and Biological Sciences, University of Alberta, Canada.
- 2016: HYPPOS Project, EUFAR Transnational Access. CNR/IREA, Milano. Ing. Claudia Giardino
- 2016-2018: Transregional Collaborative Research Centre 32. PI. Prof. Uwe Rasher, Julich, Germany
- 2017: Sen2Coral Project –https://sen2coral.argans.co.uk/?p=325. CNR/IREA, Milano, Ing. Claudia Giardino.
- 2017: ESA/AO/1-8579/16/I-SBo "HYPERSPECTRAL IMAGING MISSION CONCEPTS". PI. Prof. Andrea Taramelli, ISPRA (Roma)
- 2017-2019: Procedure operative per l'Identificazione di superfici con cemento amianto da telerilevamento e librerie spettrali (ASBESTOP), Grant ISPESL. PI. Cinzia Panigada, DISAT
- TRuStEE "Training on remote sensing for ecosystem modeling". Programma Horizon 2020 Marie Sklodowska-Curie Innovative Training Networks 2016 (2016-2020). PI. Micol Rossini, DISAT.
- CHIME Requirements Consolidation Study, ESA contract 4000125506 (2018-2019), PI. Prof. Andrea Taramelli

5. Selected Publications

Roberto Colombo is author of more than 160 peer-reviewed publications in the field of remote sensing of the environment. Publications focus on a wide range of Earth observation data integrating multi-source, multi-spectral and multi-temporal data, field spectroscopy and instruments, radiative transfer physical models and development of algorithms for the retrieval of bio-geophysical parameters, with particular focus to snow dynamics. Google Scholar: H-index 61, cit. 13330; (30 July, 2025).

SCOPUS: *https://www.scopus.com/results/results.uri?sort=plf-f&src=s&st1=Colombo&st2=Roberto&nlo=1&nlr=20&nls=afprfnm-t&sid=aee6750db02f9f4a86cb4ea193ffbb37&sot=anl&sdt=aut&sl=37&s=AU-ID%28%22Colombo%2c+Roberto%22+35744467900%29&partialQuery=&txGid=af91cf5a7b52e1603f08d4c012aaf70e*

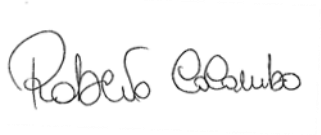
GOOGLE SCHOLAR: *https://scholar.google.com/citations?user=Wzeq3KUAAAAJ&hl=it*

The 10 most cited publications:

TITOLO	CITATA DA	ANNO
Remote sensing of solar-induced chlorophyll fluorescence: Review of methods and applications M Meroni, M Rossini, L Guanter, L Alonso, U Rascher, R Colombo, ... Remote sensing of environment 113 (10), 2037-2051	885	2009
Remote sensing of solar-induced chlorophyll fluorescence (SIF) in vegetation: 50 years of progress GH Mohammed, R Colombo, EM Middleton, U Rascher, C Van Der Tol, ... Remote sensing of environment 231, 111177	657	2019
Retrieval of leaf area index in different vegetation types using high resolution satellite data R Colombo, D Bellingeri, D Fasolini, CM Marino Remote sensing of environment 86 (1), 120-131	546	2003
Integration of remote sensing data and GIS for accurate mapping of flooded areas PA Brivio, R Colombo, M Maggi, R Tomasoni International Journal of Remote Sensing 23 (3), 429-441	536	2002
Validation of global moderate-resolution LAI products: A framework proposed within the CEOS land product validation subgroup JT Morisette, F Baret, JL Privette, RB Myneni, JE Nickeson, S Garrigues, ... IEEE Transactions on Geoscience and Remote Sensing 44 (7), 1804-1817	530	2006
Estimation of leaf and canopy water content in poplar plantations by means of hyperspectral indices and inverse modeling R Colombo, M Meroni, A Marchesi, L Busetto, M Rossini, C Giardino, ... Remote sensing of environment 112 (4), 1820-1834	328	2008
Sun-induced fluorescence – a new probe of photosynthesis: First maps from the imaging spectrometer *HyPlant* U Rascher, L Alonso, A Burkart, C Cilia, S Cogliati, R Colombo, A Damm, ... Global change biology 21 (12), 4673-4684	300	2015
Using digital repeat photography and eddy covariance data to model grassland phenology and photosynthetic CO2 uptake M Migliavacca, M Galvagno, E Cremonese, M Rossini, M Meroni, ... Agricultural and Forest Meteorology 151 (10), 1325-1337	292	2011
Inversion of a radiative transfer model with hyperspectral observations for LAI mapping in poplar plantations M Meroni, R Colombo, C Panigada Remote sensing of environment 92 (2), 195-206	278	2004
The PRISMA imaging spectroscopy mission: overview and first performance analysis S Cogliati, F Sarti, L Chiarantini, M Cosi, R Lorusso, E Lopinto, F Miglietta, ... Remote sensing of environment 262, 112499	264	2021

Milano, February 2025

Roberto Colombo



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