

Dr. ELSA CATTANI

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Employment

- 2007-present: Full-time researcher at the CNR-ISAC.
- 2000-2006: Contract researcher at the CNR-ISAC, Satellite Meteorology Group.
Title of the contract: A study of the radiative and microphysical cloud properties using new generation sensors.
- 1999: Grant holder at the CNR-ISA0, Satellite Meteorology Group.
Title of the grant: Methods for the atmospheric aerosol measurement by means of VIS and IR spaceborne sensors.
- 1997 and 1998: Grant holder at the CNR-IMGA, Remote Sensing Group.
Title of the grant: A study of the objective functions applied to the remote sensing (application to GOME measurements).

Research interests

- Clouds and rainfall regional climatology
- Satellite remote sensing of clouds and precipitation
- Blended IR-MW techniques for the precipitation estimation
- Radiative and microphysical cloud characterization from satellite remote sensing
- Radiative transfer models in the VIS-NIR-IR for cloudy scenarios

Education

- 1993: Degree in Physics, University of Modena, Italy.
- 2000: International Summer School on Atmospheric and Oceanic Sciences (ISSAOS), corso in “Remote sensing of atmosphere and ocean from space: Models, instruments and techniques”. Department of Electric Engineering and Department of Physics, University of L’Aquila, Italy.
- 2001: Remote Sensing Course, Prof. P. Menzel, University of Wisconsin (Madison). CNR, Bologna, Italy.

Membership in scholarly societies

- European Geoscience Union (member since 2010)
- American Meteorological Society (member since 2017)
- Associazione Italiana di Scienze dell’Atmosfera e Meteorologia (member since 2018)

Editorial Activity

- Associate Editor of Atmospheric Research (July 2022 – present)
- Associate Editor of Meteorological Applications (Sept. 2019 – present)
- Member of the Section Board for Remote Sensing of Water Cycle (2019 – present)
- Review editor for Atmospheric Science in Frontiers Earth Science (Oct. 2013 – present)

International and National Projects

- 2019–present: Raincast – ESA AO/1-9324/18/NL/NA
A multi-platform and multi-sensor study to address the requirement from the research and operational communities for global precipitation measurements
- 2018–present: Copernicus Climate Change Service - Essential Climate Variable products derived from observations - ITT Reference: C3S_312b Lot 1
- 2014–2017: Global Earth Observation for integrated water resource assessment (earthH2Observe)
EC funded collaborative project, 7th Framework Programme
- 2007 -2016: Satellite Application Facility on Support to Operational Hydrology and Water Management” (H-SAF)
EUMETSAT
- 2011 – 2012: A collaborative project aimed at pre-validation of a GMES Global Water Scarcity Information Service (GLOWASIS)
EC funded project, 7th Framework Programme
- 10/2007- 2011: Progetto pilota “Protezione civile dalle Alluvioni:il Nowcasting”
Project funded by Italian Space Agency (ASI)
- 2007 - 2010: Progetto Strategico “Nowcasting avanzato con l’uso di tecnologie GRID e GIS”
Project funded by Regione Puglia
- 2005 – 2007: Anthropogenic Aerosol Trggering and Invigorating Severe Storms – ANTISTORM”
STREP Project EC funded, 6th Framework Programme
- 2005: A microphysical retrieval package for cloud-aerosol in teractions using MSG-SEVIRI
EUMETSAT ITT 04/658
- 2002–2004: Critical Assessment of Available Radar Precipitation estimation Techniques and development of innovative approaches for environmental management – CARPEDIEM
Shared-cost project co-funfed by the Research DG of the European Commision, 5th Framework Programme
- 2001 – 2003: European satellite rainfall analysis and monitoring at the geostationary scale – EURAINSAT
A shared-cost project (contract EVG1-2000-00030) co-funded by the Research DG of the European Commission within the RTD activities of a generic nature of the Environment and Sustainable Development sub-programme (5th Framework programme).

- 1999 – 2006: Use of the MSG SEVIRI channels in a combined SSM/I, TRMM and geostationary IR method for rapid updates of rainfall
 METEOSAT Second Generation Research Announcement of Opportunity (MSG-RAO) – ESA and European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) (Project ID 152).
- 1999: Programma di ricerca applicata all’osservazione della Terra - Cartografia atmosferica: procedura d’inversione multi-strumento per la generazione di un prodotto aerosol-nubi-vapor d’acqua e sua validazione
 Project funded by Agenzia Spaziale Italiana (ASI) and Ministero dell’Università e della Ricerca Scientifica e Tecnologica (MURST)
- 1997 – 1998: “Gome Cloud and Aerosol Data Products Algorithms Development”
 ESA Contract 11572/95/NL/CN

Assistant supervisor of degree thesis

- 2001: Gian Luca Mercoli.
 Doctor in Physics, Dept. of Physics, Università Statale di Milano
 “Simulazione delle radianze nelle bande spettrali del visibile, vicino infrarosso e infrarosso del sensore SEVIRI a bordo di METEOSAT Second Generation in presenza di nubi per la meteorologia ed il clima”.
- 2004: Andrea Cucchi.
 Doctor in Physics, Dept. of Physics, University of Bologna
 “Caratteristiche microfisiche delle nubi nelle bande spettrali dei sensori satellitari di nuova generazione”.
- 2006: Francesco Venturi
 Batchelor degree in Atmospheric Physics and Meteorology, Dept. of Physics, University of Bologna
 “Retrieval di proprietà microfisiche delle nubi mediante tecniche satellitari multispettrali”.
- 2010: Alessandro Maffioli
 Batchelor degree in Atmospheric Physics and Meteorology, Dept. of Physics, University of Bologna
 “Caratterizzazione delle nubi e formazione delle idrometeore mediante sensori satellitari di ultima generazione”
- 2012: Claudia Acquistapace
 Doctor in Physics, Dept. of Physics, University of Bologna
 “Satellite-based VIS-IR multispectral screening of precipitating clouds: A case study during summer ay mid-latitude”
- 2013: Mario Corbani
 Batchelor degree in Atmospheric Physics and Meteorology, Dept. of Physics, University of Bologna

“Identificazione delle nubi mediante sensori satellitari nel VIS-NIR-IR”

- 2015: Francesca Vittorioso
Doctor in Physics, Dept. of Physics, University of Bologna
An inter-comparison between a VIS/IR and MW satellite-based methods for cloud detection and classification”
- Diego Cerrai
Doctor in Physics, Dept. of Physics, University of Bologna
“Moisture and potential vorticity in Medicanes: theoretical approach and case studies”
- 2020: Olivia Ferguglia
Doctor in Physics of the Earth System, University of Bologna
“Analisi di tre prodotti di stima della precipitazione sull’East Africa e sull’Africa Australe”
- 2021: Francesco Esposito
Doctor in Physics of the Earth System, University of Bologna
“Climatologia della precipitazione sull’Europa e il Mediterraneo da osservazioni e modelli climatici (1979-2016)”

Publications on peer-reviewed journals

1. F. Torricella, **E. Cattani** , M. Cervino, R. Guzzi, and C. Levoni, 1999: Retrieval of aerosol properties over the ocean using Global Ozone Monitoring Experiment measurements: Method and applications to test cases. *J. Geophys. Res.* , **104** (D10), 12085-12098.
2. C. Levoni, **E. Cattani** , M. Cervino, R. Guzzi, W. Di Nicolantonio, and F. Torricella, 2001: Effectiveness of the MS-method for computation of the intensity field reflected by a multi-layer plane-parallel atmosphere. *J. Quant. Spectrosc. Radiat. Transfer* , **69**, 635-650.
3. F. Torricella, **E. Cattani** , M. Cervino, V. Levizzani, and M. J. Costa, 2001: Simulations of time-coincident, co-located measurements from ENVISAT-1 instruments for the characterization of tropospheric aerosols: a sensitivity study including cloud contamination effects, *Atmos. Sci. Lett.*, **1**, 2, 115-124, [doi:10.1006/asle.2000.0021](https://doi.org/10.1006/asle.2000.0021)
[10.1006/asle.2001.0025](https://doi.org/10.1006/asle.2001.0025)
4. M. J. Costa, M. Cervino, **E. Cattani** , F. Torricella, V. Levizzani, A. M. Silva, and S. Melani, 2002: Aerosol characterization and optical thickness retrievals using GOME and METEOSAT satellite data. *Meteorol. Atmos. Phys.*, **81**, 289-298.
5. Melani, S., **E. Cattani** , V. Levizzani, M. Cervino, and F. Torricella, and M. J. Costa, 2003: Radiative effects of simulated cirrus clouds on top of a deep convective storm in METEOSAT Second Generation SEVIRI channels. *Meteorol. Atmos. Phys.*, **83**, 109-122.
6. Melani, S., **E. Cattani**, F. Torricella, and V. Levizzani, 2003: Characterization of plumes on top of a deep convective storm using AVHRR imagery and radiative transfer simulations. *Atmos. Res.*, **67-68**, 485-499.

7. Rosenfeld, D., **E. Cattani**, S. Melani, and V. Levizzani, 2004: Considerations on daylight operation of 1.6 μm vs. 3.7 μm channels on NOAA and METOP satellites. *Bull. Amer. Meteor. Soc.*, **85**, 873-881.
8. **Cattani, E.**, M. J. Costa, F. Torricella, V. Levizzani, and A.M. Silva, 2006: Influence of the aerosol particles from biomass burning on cloud microphysical properties and radiative forcing. *Atmos. Res.*, **82**, 310-327.
9. Torricella, F., **E. Cattani**, and V. Levizzani, 2006: Exploitation of cloud top characterization from three-channel IR measurements in a physical PMW rain retrieval algorithm. *Adv. Geosci.*, **7**, 19-23.
10. Torricella, F., **E. Cattani**, and V. Levizzani, 2008: Rain area delineation by means of multispectral cloud characterization from satellite. *Adv. Geosci.*, **17**, 43-47.
11. **Cattani, E.**, F. Torricella, S. Laviola, and V. Levizzani, 2009: On the statistical relationship between cloud optical and microphysical characteristics and rainfall intensity for convective storms over the Mediterranean. *Nat. Hazards Earth Syst. Sci.*, **9**, 2135-2142.
12. Levizzani, V., S. Laviola, and **E. Cattani**, 2011: Detection and measurement of snowfall from space. *Remote Sensing*, **3**(1), 145-166.
13. Laviola, S., A. Moscatello, M. Miglietta, **E. Cattani**, and V. Levizzani, 2011: Satellite and numerical model investigation of two heavy rain events over Central Mediterranean. *J. Hydrometeor.*, **12**, 634-649.
14. Levizzani, V., S. Laviola, **E. Cattani**, and M. J. Costa, 2013: Extreme precipitation on the Island of Madeira on 20 February 2010 as seen by satellite passive microwave sounders. *European J. Remote Sensing*, **46**, 475-489.
15. Mugnai, A., D. Casella, **E. Cattani**, S. Dietrich, F. Di Paola, S. Laviola, V. Levizzani, G. Panegrossi, P. Sanò, D. Biron, L. De Leonibus, D. Melfi, P. Rosci, A. Vocino, F. Zauli, S. Puca, A. Rinollo, L. Milani, F. Porcù, and F. Gattari, 2013: The precipitation products from the Hydrology SAF. *NHESS*, **13**, 1959-1981.
16. Rinollo, A., G. Vulpiani, S. Puca, P. Pagliara, J. Kanák, E. Lábo, L. Okon, E. Roulin, P. Baguis, **E. Cattani**, S. Laviola, and V. Levizzani, 2013: Definition and impact of a quality index for radar-based reference measurements in the H-SAF precipitation product validation. *Nat. Hazards Earth Syst. Sci.*, **13**, 2695-2705.
17. Laviola, S., V. Levizzani, **E. Cattani**, and C. Kidd, 2013: The 183-WSL fast rainrate retrieval algorithm. Part II: Validation using ground radar measurements. *Atmos. Res.*, **134**, 77-86.
18. Puca, S., F. Porcu, A. Rinollo, G. Vulpiani, P. Baguis, S. Balabanova, E. Campione, A. Ertürk, S. Gabellani, R. Iwanski, M. Jurašek, J. Kaňák, J. Kerényi, G. Koshinchanov, G. Kozinarova, P. Krahe, B. Lapeta, E. Lábó, L. Milani, L. Okon, A. Öztopal, P. Pagliara, F. Pignone, C. Rachimow, N. Rebora, E. Roulin, I. Sönmez, A. Toniazzi, D. Biron, D. Casella, **E. Cattani**, S. Dietrich, F. Di Paola, S. Laviola, V. Levizzani, D. Melfi, A. Mugnai, G. Panegrossi, M. Petracca, P. Sanò, F. Zauli, P. Rosci, L. De Leonibus, E. Agosta, and F.

- Gattari, 2014: The validation service of the hydrological SAF geostationary and polar satellite precipitation products. *Nat. Hazards Earth Syst. Sci.*, **14**, 871-889, doi:10.5194/nhess-14-871-2014.
19. Merino, A., L. López, J. L. Sánchez, E. García-Ortega, **E. Cattani**, and V. Levizzani, 2014: Daytime identification of summer hailstorm cells from MSG data. *Nat. Hazards Earth Syst. Sci.*, **14**, 1017-1033.
 20. **Cattani, E.**, A. Merino, and V. Levizzani, 2016: Evaluation of monthly satellite-derived precipitation products over East Africa. *J. Hydrometeorol.*, **17**, 2555-2573, doi:10.1175/JHM-D-15-0042.1.
 21. Miglietta, M. M., D. Cerrai, S. Laviola, **E. Cattani**, and V. Levizzani, 2017: Potential vorticity patterns in Mediterranean “hurricanes”. *Geophys. Res. Lett.*, **44**, 2537-2545. doi:10.1002/2017GL072670.
 22. Wenhaji Ndomeni, C., **E. Cattani**, A. Merino, and V. Levizzani, 2018: An observational study of the variability of East African rainfall with respect to sea surface temperature and soil moisture. *Q. J. Roy. Meteorol. Soc.*, doi: 10.1002/qj.3255.
 23. **Cattani, E.**, A. Merino, J. A. Guijarro, and V. Levizzani, 2018: East Africa Rainfall Trends and Variability 1983–2015 Using Three Long-Term Satellite Products. *Remote Sens.*, **10**, 931, doi:10.3390/rs10060931.
 24. Levizzani, V., and **E. Cattani**, 2019: Satellite remote sensing of precipitation and the terrestrial water cycle in a changing climate. *Remote Sens.*, **11**, 2301, doi:10.3390/rs11192301.
 25. Bagaglini, L., P. Sanò, D. Casella, **E. Cattani**, and G. Panegrossi, 2021: The Passive Microwave Neural Network Precipitation Retrieval Algorithm for Climate Applications (PNPR-CLIM): Design and Verification. *Remote Sens.*, **13**, 1701. doi.org:10.3390/rs13091701.
 26. **Cattani, E.**, O. Ferguglia, A. Merino, and V. Levizzani, 2021: Precipitation Products’ Inter-Comparison over East and Southern Africa 1983–2017. *Remote Sens.*, **13**, 4419, doi:10.3390/rs13214419.
 27. Marra, F., V. Levizzani, and **E. Cattani**, 2022: Changes in extreme daily precipitation over Africa: Insights from a non-asymptotic statistical approach. *J. Hydrology X*, **16**, 100130, <https://doi.org/10.1016/j.hydroa.2022.100130>.
 28. Laviola, S., G. Monte, G., **E. Cattani**, and V. Levizzani, 2022: Hail Climatology in the Mediterranean Basin Using the GPM Constellation (1999–2021). *Remote Sens.*, **14**, 4320. <https://doi.org/10.3390/rs14174320>

Contributions to books

1. **Cattani, E.**, S. Melani, V. Levizzani, and M. J. Costa, 2007: The retrieval of cloud top properties using VIS-IR channels. In "Measuring precipitation from space – EURAINSAT and the future", (pp 79-95). V. Levizzani, P. Bauer, and F. J. Turk (Eds.), Springer, Dordrecht, *Advances in Global Change Research*, **28**, 722 pages.
2. Costa, M. J., **E. Cattani**, V. Levizzani, and A. M. Silva, 2007: Cloud microphysical properties retrieval during intense biomass burning events over Africa and Portugal. In "Measuring precipitation from space – EURAINSAT and the future", (pp 97-111). V. Levizzani, P. Bauer, and F. J. Turk (Eds.), Springer, Dordrecht, *Advances in Global Change Research*, **28**, 722 pages.
3. **Cattani, E.**, A. Merino, and V. Levizzani, 2020: Rainfall trends in East Africa from an ensemble of IR-based satellite products. In Satellite Precipitation Measurements. Levizzani, V., C. Kidd, D. B. Kirschbaum, C. D. Kummerow, K. Nakamura, and F. J. Turk, Eds., *Advances in Global Change Research*, **69**, Springer Nature, Cham, 791-817, doi.org/10.1007/978-3-030-35798-6_17.

International conference

1. Guzzi, R., **E. Cattani**, M. Cervino, C. Levoni, and F. Torricella, 1997: Aerosol optical thickness from GOME data. Methodological approach and preliminary results. *Proc. 3rd ERS Symp. On Space at the service of our environment*, Florence, Italy, 17-21 March, **3**, 687-691.
2. Mochi, M., A. Bartoloni, C. Serafini, M. Cervino, C. Levoni, and **E. Cattani**, 1997: GOME data processing at I-PAF: The aerosol optical thickness retrieval from GOME spectra. *Proc. 3rd ERS Symp. On Space at the service of our environment*, Florence, Italy, 17-21 March, **3**, 723-727.
3. Bartoloni, A., M. Mochi, C. Serafini, **E. Cattani**, M. Cervino, R. Guzzi, C. Levoni, and F. Torricella, 1997: Aerosol optical thickness retrieval from GOME spectra. *Proc. SPIE, Multispectral Imaging for Terrestrial Applications II*, J. B. Lurie and T. Delaney Eds.
4. Costa, M. J., M. Cervino, **E. Cattani**, F. Torricella, V. Levizzani, and A. M. Silva, 1999: Aerosol optical thickness determination and aerosol classification: A method based on METEOSAT and GOME data. *Proc. 1999 EUMETSAT Meteorological Satellite Data Users' Conf.*, Copenhagen, 6-9 Sept., 263-269.
5. Costa, M. J., M. Cervino, **E. Cattani**, F. Torricella, V. Levizzani, and A. M. Silva, 1999: Aerosol optical thickness and classification: Use of METEOSAT, GOME and modelled data. EOS-SPIE Int. Symp. on Remote Sensing, *Proc. SPIE, Satellite Remote Sensing of Clouds and the Atmosphere IV*, J. E. Russell. Ed., **3867**, 268-279.
6. Melani, S., **E. Cattani**, V. Levizzani, M. Cervino, F. Torricella, T. Rother, M. Hess, and K. Schmidt, 2000: Simulations of ice crystal optical properties and cloud top radiative properties on top of deep convective storms in the MSG SEVIRI VIS and IR channels. *Proc. 2000 EUMETSAT Meteorological Satellite Data Users' Conf.*, Bologna, Italy, 29 May - 2 June, 291-298.

7. Costa, M. J., M. Cervino, **E. Cattani**, F. Torricella, V. Levizzani, and A. M. Silva, 2000: Evolution and initial validation of an aerosol retrieval method based on METEOSAT and GOME data. *Proc. 2000 EUMETSAT Meteorological Satellite Data Users' Conf.*, Bologna, Italy, 29 May - 2 June, 420-427.
8. Torricella, F., **E. Cattani**, M. Cervino, M. J. Costa, and V. Levizzani, 2000: Detection and characterisation of atmospheric aerosol using simulated measurements from ENVISAT-1 nadir viewing spectrometers. *Proc. 2000 EUMETSAT Meteorological Satellite Data Users' Conf.*, Bologna, Italy, 29 May - 2 June, 428-435.
9. Levizzani, V., P. P. Alberoni, P. Bauer, L. Bottai, A. Buzzi, **E. Cattani**, M. Cervino, P. Ciotti, M. J. Costa, S. Dietrich, B. Gozzini, A. Khain, C. Kidd, F. S. Marzano, F. Meneguzzo, S. Migliorini, A. Mugnai, F. Porcù, F. Prodi, R. Rizzi, D. Rosenfeld, L. Schanz, E. A. Smith, F. Tampieri, F. Torricella, J. F. Turk, G. A. Vicente, and G. Zipoli, 2000: Use of the MSG SEVIRI channels in a combined SSM/I, TRMM and geostationary IR method for rapid updates of rainfall. *Proc. 1st MSG-RAO Meeting*, **ESA SP- 452**, 63-66.
10. Costa M. J., M. Cervino, **E. Cattani**, F. Torricella, V. Levizzani, and A. M. Silva, 2001: Impact of SEVIRI spectral channels on aerosol characterisation: A polar and geostationary data based method. *Proc. 2001 EUMETSAT Meteorological Satellite Data Users' Conf.*, Antalya, Turkey, 1-5 Oct., 77-83.
11. Costa, M. J., M. Cervino, **E. Cattani**, F. Torricella, V. Levizzani, and A. M. Silva, 2002: Lessons learnt from synergistic use of polar and geostationary satellite sensors for the retrieval of aerosol characteristics. *Proc. SPIE Int. Symp. on Optical Science and Technology*, S. Diego, CA, 29 Jul. - 3 Aug., 17-27.
12. Rosenfeld, D., S. Melani, **E. Cattani**, and V. Levizzani, 2002: Considerations on daylight operation of 1.6 μm vs. 3.7 μm channels on NOAA and METOP satellites. *Proc. 2002 EUMETSAT Meteorological Satellite Data Users Conf.*, Dublin, 2-6 Sept., 64.
13. Levizzani, V., D. Rosenfeld, **E. Cattani**, S. Melani, F. Torricella, and M. J. Costa, 2002: Multispectral observations of cloud top as a powerful tool for rainfall estimations. *Proc. 1st IPWG Workshop*, Madrid, 23-27 Sept., 153-158.
14. **Cattani, E.**, M. J. Costa, F. Torricella, V. Levizzani, and A. M. Silva, 2003: Comparison of cloud microphysical properties retrieved from different algorithms during aerosol transport events. *Proc. 2003 EUMETSAT Meteorological Satellite Conf.*, Weimar, 29 Sept.-3 Oct., 678-685.
15. Costa, M. J., E. Cattani, F. Torricella, A. M. Silva, and V. Levizzani, 2003: Cloud microphysical properties retrieval in the presence of strong aerosol events. *Proc. 2003 EUMETSAT Meteorological Satellite Conf.*, Weimar, 29 Sept.-3 Oct., 671-677.
16. Costa, M. J., E. Cattani, V. Levizzani, and A. M. Silva, 2004: Cloud properties derived from SEVIRI and MODIS: A comparison study. *Proc. 2004 EUMETSAT Meteorological Satellite Conf.*, Prague, 31 May - 4 June, 145-151.
17. Torricella, F., **E. Cattani**, V. Levizzani, and V. Poli, 2004: A multi-approach analysis of the

November 2002 intense precipitation event over the northern Italy. *Proc. 2004 EUMETSAT Meteorological Satellite Data Users Conf.*, Prague, 31 May – 4 June, 240.

18. **Cattani, E.**, M. J. Costa, V. Levizzani, and A. M. Silva, 2004: Satellite observation and radiative modeling of the influence of aerosol particles from biomass burning on cloud microphysical properties. *Proc. 14th Int. Conf. on Clouds and Precipitation, Bologna*, 18-23 July, 32-34.
19. Costa, M. J., **E. Cattani**, A. M. Silva, and V. Levizzani, 2004: Satellite derived cloud properties relevant for cloud radiative forcing: a case study of interaction between clouds and dust aerosol particles. *Proc. 14th Int. Conf. on Clouds and Precipitation, Bologna*, 18-23 July, 47-50.
20. Levizzani, V., C. Adamo, P. P. Alberoni, A. Antonini, A. Battaglia, A. Buzzi, D. Capacci, C. Caracciolo, **E. Cattani**, M. Celano, D. Cimini, M. J. Costa, S. Davolio, S. Dietrich, M. Fantini, S. di Michele, G. Giuliani, M. Kästner, A. Khain, C. Kidd, J. Kidd, D. Kniveton, R. Lahav, R. Layberry, I. Lensky, P. Malguzzi, S. Mantovani, F. S. Marzano, A. Maurizi, C. M. Medaglia, S. Melani, F. Meneguzzo, G. Messeri, A. Mugnai, S. Natali, A. Orlandi, A. Ortolani, G. Panegrossi, M. Pasqui, S. Pinori, V. Poli, F. Porcù, F. Prodi, D. Rosenfeld, V. Sanderson, E. A. Smith, R. Solomon, J. Steinwagner, F. Tampieri, F. J. Tapiador, A. Tassa, F. Torricella, G. J. Tripoli, F. J. Turk, G. A. Vicente, M. G. Villani, 2004: Precipitation estimation: from the RAO to EURAINSAT and beyond. *2nd MSG-RAO Meeting, Salzburg*, 9-10 Sept., ESA-SP-582, 113-118.
21. **Cattani, E.**, M. J. Costa, F. Torricella, V. Levizzani, and A. M. Silva, 2005: Cloud radiative forcing from SEVIRI data: possible effects of air pollution. *Proc. 2005 EUMETSAT Meteorological Satellite Data Users Conf.*, Dubrovnik, 19-23 Sept., 474-481.
22. **Cattani, E.**, M. J. Costa, F. Torricella, V. Levizzani, and A. M. Silva, 2005: Cloud radiative forcing from SEVIRI data: possible effects of air pollution. *Proc. 2005 EUMETSAT Meteorological Satellite Data Users Conf.*, Dubrovnik, 19-23 Sept., 474-481.
23. **Cattani, E.**, F. Torricella, V. Levizzani, 2006: Rain areas delineation combining MW and VIS-NIR-IR instruments onboard TRMM. *Proc. 3rd Workshop of the International Precipitation Working Group (IPWG)*, Melbourne (Australia), 23-27 Oct., on-line available: <http://www.isac.cnr.it/~ipwg/meetings/melbourne/melbourne2006-proc.html>.
24. **E. Cattani**, E., F. Torricella, and V. Levizzani, 2008: On the statistical relationship between the optical and microphysical characteristics of clouds from AVHRR and the rainfall intensity derived from a new AMSU rain algorithm. *Proc. 4th Workshop of the International Precipitation Working Group (IPWG)*, Chinese Meteorological Agency, Beijing (China), 13-17 Oct., 71-78.
25. Torricella, F., **E. Cattani**, S. Laviola, and V. Levizzani, 2009: On the statistical relationship between the optical and microphysical characteristics of warm topped clouds from AVHRR and the rainfall intensity derived from AMSU-B. *Proc. 4th Int. Precipitation Working Group Workshop*, Beijing, 13-17 Oct., EUMETSAT P.54, ISBN 978-92-9110-085-9, 71-78.

26. Laviola, S., V. Levizzani, **E. Cattani**, and C. Kidd, 2012: First validation of retrieved rain rates and snow cover mask of the 183-WSL retrieval method. *IEEE Proc. MicroRad 2012, 12th Specialist Meeting of Microwave Radiometry and Remote Sensing of the Environment*, Villa Mondragone, 5-9 Mar., doi:10.1109/MicroRad.2012.6185242.
27. **E. Cattani**, A. Merino, and V. Levizzani, 2014: Evaluation of six satellite rainfall products over the Great Horn of Africa. *European Geophysical Union (EGU) General Assembly*, 27 April – 2 May, Vienna, Austria.
28. **E. Cattani**, A. Merino, and V. Levizzani, 2014: Analysis of satellite monthly precipitation time series over East Africa. *7th International Scientific Conference on the Global Water and Energy Cycle*, 14 – 17 July, The Hague, The Netherlands.
29. **E. Cattani**, A. Merino, C. Wenhaji Ndomeni, and V. Levizzani, 2014: Analysis of satellite monthly precipitation time series over East Africa. *7th International Precipitation Working Group Workshop*, 17 – 21 November, Tsukuba, Japan.
30. **E. Cattani**, C. Wenhaji Ndomeni, A. Merino, and V. Levizzani, 2015: Characterization of the precipitation from satellite over East Africa during last decades. *Earth Observation for Water Cycle Science*, 20-23 October, ESA-ESRIN, Frascati, Italy.
31. **E. Cattani**, C. Wenhaji Ndomeni, A. Merino, and V. Levizzani, 2016: Analysis of satellite precipitation over east Africa during last decades. *European Geophysical Union (EGU) General Assembly*, 17 – 22 April, Vienna, Austria.
32. **E. Cattani**, C. Wenhaji Ndomeni, A. Merino, J. A. Guijarro, and V. Levizzani, 2016: East Africa precipitation variability during recent decades. *8th IPWG and 5th IWSSM Joint Workshops*, 3-7 October, CNR, Bologna, Italy.
33. C. Wenhaji Ndomeni, **E. Cattani**, A. Merino, and V. Levizzani, 2016: An observational study of the variability of East African rainfall linked to sea surface temperatures and soil moisture. *8th IPWG and 5th IWSSM Joint Workshops*, 3-7 October, CNR, Bologna, Italy.
34. **E. Cattani**, A. Merino, and V. Levizzani, 2018: Rainfall variability and trends over East Africa. *1° Congresso Nazionale AISAM*, 10-13 September, Bologna, Italy.
35. **E. Cattani**, A. Merino, and V. Levizzani, 2018: Rainfall variability and trends over East Africa. *9th IPWG Workshop*, 5-9 November, Seoul, Korea.
36. **E. Cattani**, A. Merino, and V. Levizzani, 2019: Rainfall variability and trends over East Africa. *12th International Precipitation Conference (IPC)*, 19-21 June, Irvine (CA), USA.
37. G. Panegrossi, Sanò P., Bagaglini L., Casella D., **Cattani E.**, Konrad H., Niedorf A., Schröder M., Mikalsen A. C., Hollmann R., 2020: Development of a microwave-based precipitation climate data record for the Copernicus Climate Change Service. *European Geophysical Union (EGU) General Assembly*, 4-8 May, Vienna, Austria.

38. F. Marra, **Cattani E.**, 2021: Changes in African extreme precipitation and storm structure since 1981 revealed by satellite observations. *European Meteorological Society (EMS) Annual Meeting*, 3-10 Sept., online.
39. H. Konrad, T. Sikorski, G. Panegrossi, P. Sanò, L. Bagaglini, D. Casella, **E. Cattani**, M. Schröder, A.C. Mikalsen, R. Hollman, 2021: COBRA: the precipitation climate data record based on passive microwave observations for the Copernicus Climate Change Service. *EUMETSAT Meteorological Satellite Conference*, 20-24 Sept., online.

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