

Christian Massari

Researcher

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Education

- B.Sc. in Environmental Engineering, University of Perugia, Italy, 2006
- M.Sc. in Environmental Engineering, University of Perugia, Italy, 2008
- Ph.D. in Hydraulic Engineering, University of Perugia, Italy - University of Arizona, Tucson, USA, 2012.

Research interests

- Flood and drought hazards assessment
- Irrigation and water resource management
- Development of land data assimilation systems to ingest remote sensing retrievals
- Hydrological and land surface water balance modeling
- Microwave and radar remote sensing of soil moisture and precipitation
- Supply pipe system diagnosis for the reduction of energy and water waste

Publication metrics

- H-Index Web of Science: 28, Citations: 2035
<https://app.webofknowledge.com/author/record/29952716>
- H-Index Scopus: 29, Citations: 2191
<https://www.scopus.com/authid/detail.uri?authorId=36773560600>

Awards and Recognitions

- Winner of the ESA-Copernicus Excellence Award
- 2019: Highly cited paper status of Web of Science: Toward Global Soil Moisture Monitoring With Sentinel-1: Harnessing Assets and Overcoming Obstacles by Bauer-Marschallinger et al 2019 and On the performance of satellite precipitation products in riverine flood modeling: A review by Maggioni and Massari, 2018.
- 2018: "Winner of the [Copernicus Masters competition: BayWa Smart Farming Challenge](#)" given by Copernicus Masters
- 2018: "Winner of the Short Mobility Program" of the National Research Council.
- 2018: "[Top Reviewers for Geosciences](#)" (#20) given by Publons.
- 2017: "[Publons Peer Review Awards 2017](#)" given by Publons, as one of the top 1% of peer reviewers in Environmental Science.
- 2017: Outstanding contribution in reviewing from Journal of Hydrology (IF 4.500) Elsevier
- 2016: Winner (1st place out of +300 candidates in the area of Natural and Anthropogenic Risks and Environmental Technologies) of the contest for 82 excellent young researchers for the National Research Council of Italy.

- 2016: [“The Sentinel of Science Award 2016”](#) given by Publons, 6th place among Earth and Planetary Science.
- 2016: "Best poster award IDRA" (co-author) for "Potenziale dei dati satellitari per la previsione delle piene del fiume Benue in Nigeria" by A. Tarpanelli et al.
- 2016: “Winner of the Short Mobility Program” of the National Research Council.
- 2014: “Nature Research Highlights” for the paper: “Detecting rainfall from the bottom up”. Nature, 509, 262–263 by Brocca et al. (2014). Soil as a natural rain gauge: estimating global rainfall from satellite soil moisture data. Journal of Geophysical Research, 119(9), 5128-5141”
- 2012: "Early Careers Water Loss Symposium Award” at International Conference Water Loss 2012, Ferrara May 23/25 2012 for the paper: “Hydraulic characterization of leaks in pressurised pipes”.

Projects

- 2021-: Principal Investigator. ESA 4DMED-Hydrology. 2021-2023.
- 2021-: Co-investigator. Convenzione Regione Umbria Scale di Portata. 2021-2024.
- 2020- :Unit responsibility. HYDRO-CFD, Regione Umbria, 2020-2022.
- 2020-: Co-investigator. European Space Agency (ESA). DTE Hydrology
- Participation. Austrian FFG, DWC-Radar.
- 2020-: Co-Investigator. ESA. Irrigation+. March 2020-March 2022
- 2019-: Participation. FFG Cooperative R&D Project. Resolving the Daily Water Cycle over Land with Radar Satellites. DWC-Radar
- 2019: Co-Investigator. ESA. STREAM. March 2019-March 2020
- 2018-2019: Principal Investigator. European Space Agency (ESA) SMOS+RAINFALL Land II
- 2017-2022: Participation. EUMETSAT, Satellite Application Facility on Support to Operational Hydrology and Water Management (H SAF), 2017-2022
- 2017: Co-Investigator. ESA. WACMOS IRRIGATION
- 2015-2017: Unit responsibility. ESA. SMOS+RAINFALL Land
- 2015: Co-Investigator. International Water Management Institute (IWMI). Algorithm development to estimate discharge using multisource remote sensing data and its application in Nigeria and India.
- 2012-2015: Unit responsibility. EU Life+2011. Floods and fire Risk assessment and management (FLIRE)
- 2015-2016: Participation. Earth Observation Data Centre for Water Resource Monitoring (EODC). 37 years of soil moisture derived rainfall: application of SM2RAIN to the CCIsoil moisture product, algorithm improvement and product validation
- 2015-2016: Unit responsibility. Regione Umbria. Sviluppo della conoscenza della pericolosità idraulica finalizzata alla mitigazione del rischio di un territorio a complessa interazione idrologica, idrogeologica ed idraulica. Caso di studio area urbana di Pistrino - Alta valle del Tevere Umbro

Academic and lecturing

- Lecturer 5 h. Seminar on the “Use of Earth observation in hydrology”. University of California - Berkeley.
- +20 hours of lectures on application of remote sensing for hydrology for the Italian Civil Protection Department and for EUMETSAT and serves as a teacher in the “Diplomazia 2” program of CNR.

- +10 M.Sc. thesis in hydrology and hydraulic applied research areas at the CNR, University of Perugia and at the University of Arizona (Tucson)
- 2010: Co-lecturer. Hydraulic. University of Perugia, Italy
- 2009: Co-lecturer. Hydraulic Infrastructures. University of Perugia, Italy

Appointments

- 2021: Member of the Committee for the GFG review panel for the "Cosmic Sense" Research Unit
https://www.dfg.de/en/research_funding/programmes/coordinated_programmes/research_units/index.html
- 2020: Member of the Committee for the Hydrology Outstanding Student Presentation Awards (OSPA) of the American Geophysical Union General Assembly 2020.
<https://education.agu.org/ospa/>
- 2020: Member of the "[International Steering Committee of Hymex](#)"
- 2020: Member of the "[Satellite geodetic data assimilation for hydro-climate research](#)" working group.
- 2019: Member of the [American Geophysical Union Technical Committee on Precipitation](#).
- 2018: Part of the [Committee of Earth Observations Satellite](#) and participated to the Workshop in Freshwater from Space, 13 – 15 nov 2018 Delft, Netherlands.
- 2013 on: Member of [Italian Hydrological Society](#), the Italian Group of Hydraulics (GII), the European Geophysical Union (EGU) and the American Geophysical Union (AGU).

Visiting scientists/scholarships

- 2018: Visiting researcher at the Department of Civil, Environmental, and Infrastructure (CEIE) at George Mason University (Fairfax Fairfax, Virginia, USA)"
- 2016: Visiting researcher at "United States Department of Agriculture (Maryland, USA)"
- 2010-2011: Visiting scholarship at the "Department of Hydrology and Water Resources of the University of Arizona (Tucson, USA)

National and International PhD supervisor and examination committees

- 2021: Co-Supervisor of one Ph.D in SUSTAINABLE MANAGEMENT OF AGRICULTURAL FORESTRY AND FOOD RESOURCES 37° ciclo, a.a. 2021/2022. University of Florence, Italy, (<https://www.phd-gsrafa.dagri.unifi.it/ls-12-phd-program.html>)
- 2019: Member of the supervisor committee of one PhD position in the "Dottorato di ricerca in Scienze Agroalimentari ed Ambientali 36° ciclo, a.a. 2020/2021. University of Trento, Italy.
- 2018: Member of the supervisor committee of one PhD position in the Doctoral School: Science, Engineering & Technology, Arenberg Doctoral School KU-Leuven University, Belgium.
- 2017: Foreign Member of the PhD Examination Committee for "International Doctor Award": Public University of Navarre (Pamplona).

Editorial board, referring, convener activities and conference organization

- 2021: Guest Editor of the "Remote Sensing" Journal Special Issue: [Remote Sensing for Water Resources and Environmental Management](#)

- 2021: Review Editor of “Water and Hydrocomplexity” Frontiers Journal. <https://www.frontiersin.org/journals/water/sections/water-and-hydrocomplexity#editorial-board>
- 2021: Member of the Editorial Board of Multi- and Hyper-Spectral Imaging as Review Editor for Frontiers in Remote Sensing. <https://www.frontiersin.org/journals/remote-sensing/sections/multi--and-hyper-spectral-imaging>
- Member of the Scientific Committee of the IEEE International Geoscience and Remote Sensing Symposium [IGARSS 2017](#) and [IGARSS 2018](#) and [IGARSS 2020](#).
- From 2019: [Associate Editor for Remote Sensing journal \(MDPI\)](#)
- From 2018: [Associate Editor for the Journal of Hydrology \(Elsevier\)](#)
- Editor (with Dr. Viviana Maggioni) of the book “[Extreme Hydroclimatic Events and Multivariate Hazards in a Changing Climate](#)” for Elsevier.
- 2019: Member of the Scientific Committee of the [Living Planet Symposium 2019](#).
- 2018: Co-chair at the The 5th Satellite Soil Moisture Validation and Application Workshop 2018. Fairfax, VA (USA). October 24/25, 2018.
- 2018: Responsible for the evaluation of visiting scientist activity proposal “Leveraging coincident H-SAF soil moisture and precipitation within the Eumetsat Satellite Application Facility on Support to Operational Hydrology and Water Management (H-SAF).
- 2018: Co-convener and part of the science committee at the European Geophysical Union (EGU) –[16th Plinius Conference on Mediterranean Risks](#). Session “PL4 - Advances in remote sensing methods for hydro-meteorological risk monitoring. EGU Topical Conference Series, Montpellier, France. 9–11 October 2018.
- 2018: Co-convener at the European Geophysical Union (EGU) General Assembly - session AS1.16/CL2.04/HS11.6 “Precipitation: Measurement, Climatology, Remote Sensing, and Modeling (co-organized)”
- 2011: member of the organizing committee of two National conferences: “La diagnosi e la gestione dei sistemi idrici”, Roma, 16-17 giugno 2011 and “Giornate dell'idrologia”, Perugia 6/8 Ottobre 2015 organized by [Italian Hydrological Society](#).
- Since 2009: Reviewer for 123 manuscript in international scientific journals certificated by Publons-Web of Science (<https://publons.com/researcher/723602/christian-massari/>)

Invited Presentations

- Data assimilation of remote sensing observations into hydrological models: challenges and perspectives. EGU GALILEO conference: A European vision for hydrological observations and experimentation. NAPLES | ITALY | 20–23/09/2021 (shifted to 2021 for COVID-19 emergency)
- Antecedent wetness conditions of European floods: a comprehensive study. Hydrologic Remote Sensing, Modeling and Data Assimilation session at the 2020 International Geoscience and Remote Sensing Symposium (IGARSS). Waikoloa, Hawaii, on July 19-24, 2020 (held on line).
- Invited member of the Panel Discussion of the 5th Satellite Soil Moisture Validation and Application Workshop 2018, George Mason University, 2018.
- Soil moisture products: Quality assessment and hydro-validation in Satellite inspired hydrology in an uncertain future: a H SAF and HEPEX workshop, ECMWF | Reading | 25-28 November 2019

- Assimilation of H-SAF soil moisture products for hydrological modelling in Mediterranean catchments. "H-SAF and HEPEX workshops on coupled hydrology", European Centre for Medium-Range Weather Forecasts (ECMWF), 3-7 November 2014, Reading (UK).
- Assimilation of Soil Moisture products into hydrological models, "First H-SAF Assimilation Workshop" Slovak Hydrometeorological Institute (SHMÚ), May 2014, Bratislava (Slovakia).

Publications

1. Filippucci, P., Brocca, L., Massari, C., Saltalippi, C., Wagner, W., & Tarpanelli, A. (2021). Toward a self-calibrated and independent SM2RAIN rainfall product. *Journal of Hydrology*, 603, 1-13.
2. Masseroni, D., Camici, S., Cislighi, A., Vacchiano, G., Massari, C., & Brocca, L. (2021). The 63-year changes in annual streamflow volumes across Europe with a focus on the Mediterranean basin. *Hydrology and Earth System Sciences*, 25(10), 5589-5601.
3. Massari, C., Modanesi, S., Dari, J., Gruber, A., De Lannoy, G. J., Giroto, M., ... & Brocca, L. (2021). A review of irrigation information retrievals from space and their utility for users. *Remote Sensing*, 13(20), 4112.
4. Maggioni, Viviana, Christian Massari, and Chris Kidd. "Errors and Uncertainties Associated with Quasi-Global Satellite Precipitation Products." *Precipitation Science* (2021) in Roca, R., Haddad, Z. S., Akimoto, F. F., Alexander, L., Behrangi, A., Huffman, G., ... & Utsumi, N. *The Joint IPWG/GEWEX Precipitation Assessment* (2021).
5. De Santis, D., Biondi, D., Crow, W. T., Camici, S., Modanesi, S., Brocca, L., & Massari, C. (2021). Assimilation of Satellite Soil Moisture Products for River Flow Prediction: An Extensive Experiment in over 700 Catchments throughout Europe. *Water Resources Research*, e2021WR029643.
6. Massari, C., Avanzi, F., Bruno, G., Gabellani, S., Penna, D., & Camici, S. (2021). Evapotranspiration enhancement drives the European water-budget deficit during multi-year droughts. *Hydrology and Earth System Sciences Discussions*, 1-24.
7. Abdalla, S., Kolahchi, A. A., Ablain, M., Adusumilli, S., Bhowmick, S. A., Alou-Font, E., ... & Hamon, M. (2021). Altimetry for the future: Building on 25 years of progress. *Advances in Space Research*.
8. Mimeau, L., Trambly, Y., Brocca, L., Massari, C., Camici, S., & Finaud-Guyot, P. (2021). Modeling the response of soil moisture to climate variability in the Mediterranean region. *Hydrology and Earth System Sciences*, 25(2), 653-669.
9. Chen, F., Crow, W.T., Ciabatta, L., Filippucci, P., Panegrossi, G., Marra, A.C., Puca, S., Massari, C., 2020. Enhanced large-scale validation of satellite-based land rainfall products. *Journal of Hydrometeorology* 1. <https://doi.org/10.1175/JHM-D-20-0056.1>
10. Pellarin, T., Roman-Cascon, C., Baron, C., Bindlish, R., Brocca, L., Camberlin, P., Fernandez-Prieto, D., Kerr, Y.H., Massari, C., Panthou, G., Perrimond, B., Philippon, N., Quantin, G., 2020. The Precipitation Inferred from Soil Moisture (PrISM) Near Real-Time Rainfall Product: Evaluation and Comparison. *REMOTE SENSING* 12. <https://doi.org/10.3390/rs12030481>
11. Camici, S., Giuliani, G., Brocca, L., Massari, C., Tarpanelli, A., Farahani, H. H., ... & Benveniste, J. (2021). Synergy between satellite observations of soil moisture and

- water storage anomalies for global runoff estimation. *Geoscientific Model Development Discussions*, 1-38.
12. Camici, S., Massari, C., Ciabatta, L., Marchesini, I., & Brocca, L. (2020). Which rainfall score is more informative about the performance in river discharge simulation? A comprehensive assessment on 1318 basins over Europe. *Hydrology and Earth System Sciences*, 24(10), 4869-4885.
 13. El Khalki, E. M., Tramblay, Y., Massari, C., Brocca, L., Simonneaux, V., Gascoïn, S., & Saidi, M. E. M. (2020). Challenges in flood modeling over data-scarce regions: how to exploit globally available soil moisture products to estimate antecedent soil wetness conditions in Morocco. *Natural Hazards and Earth System Sciences*, 20(10), 2591-2607.
 14. Brocca, L., Massari, C., Pellarin, T., Filippucci, P., Ciabatta, L., Camici, S., ... & Fernández-Prieto, D. (2020). River flow prediction in data scarce regions: soil moisture integrated satellite rainfall products outperform rain gauge observations in West Africa. *Scientific Reports*, 10(1), 1-14.
 15. Sinagra, M., Nasello, C., Tucciarelli, T., Barbetta, S., Massari, C., & Moramarco, T. (2020). A Self-Contained and Automated Method for Flood Hazard Maps Prediction in Urban Areas. *Water*, 12(5), 1266.
 16. Massari, C., Brocca, L., Pellarin, T., Abramowitz, G., Filippucci, P., Ciabatta, L., ... & Fernandez Prieto, D. (2020). A daily 25 km short-latency rainfall product for data-scarce regions based on the integration of the Global Precipitation Measurement mission rainfall and multiple-satellite soil moisture products. *Hydrology & Earth System Sciences*, 24(5).
 17. Pellarin, T., Román-Cascón, C., Baron, C., Bindlish, R., Brocca, L., Camberlin, P., ... & Perrimond, B. (2020). The Precipitation Inferred from Soil Moisture (PrISM) near Real-Time Rainfall Product: Evaluation and Comparison. *Remote Sensing*, 12(3), 481.
 18. Cislighi, A., Masseroni, D., Massari, C., Camici, S., & Brocca, L. (2020). Combining a rainfall–runoff model and a regionalization approach for flood and water resource assessment in the western Po Valley, Italy. *Hydrological Sciences Journal*, 65(3), 348-370.
 19. Modanesi, S., Massari, C., Camici, S., Brocca, L., & Amarnath, G. (2020). Do satellite surface soil moisture observations better retain information about crop-yield variability in drought conditions?. *Water Resources Research*, e2019WR025855.
 20. Filippucci, P., Tarpanelli, A., Massari, C., Serafini, A., Strati, V., Alberi, M., ... & Brocca, L. (2020). Soil moisture as a potential variable for tracking and quantifying irrigation: A case study with proximal gamma-ray spectroscopy data. *Advances in Water Resources*, 136, 103502.
 21. Azimi, S., Dariane, A. B., Modanesi, S., Bauer-Marschallinger, B., Bindlish, R., Wagner, W., & Massari, C. (2020). Assimilation of Sentinel 1 and SMAP–based satellite soil moisture retrievals into SWAT hydrological model: the impact of satellite revisit time and product spatial resolution on flood simulations in small basins. *Journal of Hydrology*, 581, 124367.
 22. Ciabatta, L., Camici, S., Massari, C., Filippucci, P., Hahn, S., Wagner, W., Brocca, L. (2019). Soil moisture and precipitation: the SM2RAIN algorithm for rainfall retrieval from satellite soil moisture. In: V. Levizzani et al., (eds.), *Satellite precipitation measurement*, Springer, book chapter, in press.

23. Massari C., Maggioni V. (2019). Error and uncertainty characterization. In: V. Levizzani et al., (eds.), *Satellite precipitation measurement*, Springer, book chapter, in press.
24. Brocca, L., Filippucci, P., Hahn, S., Ciabatta, L., Massari, C., Camici, S., Schüller, L., Bojkov, B., Wagner, W. (2019). SM2RAIN-ASCAT (2007-2018): global daily satellite rainfall from ASCAT soil moisture. *Earth System Science Data*, in press.
25. Massari, C., Maggioni, V., Barbetta, S., Brocca, L., Ciabatta, L., Camici, S., Moramarco, T., Coccia, G., Todini, E. (2019). Complementing near-real time satellite rainfall products with satellite soil moisture-derived rainfall through a Bayesian inversion approach. *Journal of Hydrology*, 573, 341-351, doi:10.1016/j.jhydrol.2019.03.038. <https://doi.org/10.1016/j.jhydrol.2019.03.038>.
26. Dari, J., Morbidelli, R., Saltalippi, C., Massari, C., & Brocca, L. (2019). Spatial-temporal variability of soil moisture: addressing the monitoring at the catchment scale. *Journal of Hydrology*. (in press). <https://doi.org/10.1016/j.jhydrol.2019.01.014>
27. Jalilvand, E., Tajrishy, M., Brocca, L., Massari, C., Hashemi, S. G. Z., & Ciabatta, L. (2018). Estimating the drainage rate from surface soil moisture drydowns: Application of DfD model to in situ soil moisture data. *Journal of Hydrology*, 565, 489-501. <https://doi.org/10.1016/j.jhydrol.2018.08.035>
28. Bauer-Marschallinger, B., Paulik, C., Hochstöger, S., Mistelbauer, T., Modanesi, S., Ciabatta, L., Massari, C., Brocca, L., Wagner, W. (2018). Soil moisture from fusion of scatterometer and SAR: closing the scale gap with temporal filtering. *Remote Sensing*, 10(7), 1030. <https://doi.org/10.3390/rs10071030>.
29. Bauer-Marschallinger, B., Naeimi, F., Cao, S., Paulik, C., Schaufler, S., Stachl, T., Modanesi, S., Ciabatta, L., Massari, C., Brocca, L., Wagner, W. (2018). Towards global soil moisture monitoring with Sentinel-1: harnessing assets and overcoming obstacles. *IEEE Transactions on Geoscience and Remote Sensing*, in press, <https://doi.org/10.1109/TGRS.2018.2858004>.
30. Camici, S., Ciabatta, L., Massari, C., Brocca, L. (2018). How reliable are satellite precipitation estimates for driving hydrological models: a verification study over the Mediterranean area. *Journal of Hydrology*, 563, 950-961, <https://doi.org/10.1016/j.jhydrol.2018.06.067>.
31. Chiaravalloti, F., Brocca, L., Procopio, A., Massari, C., Gabriele, S. (2018). Assessment of GPM and SM2RAIN-ASCAT rainfall products over complex terrain in southern Italy. *Atmospheric Research*, 206, 64-74, <https://doi.org/10.1016/j.atmosres.2018.02.019>.
32. Ciabatta, L., Massari, C., Brocca, L., Gruber, A., Reimer, C., Hahn, S., Paulik, C., Dorigo, W., Kidd, R., Wagner, W. (2018). SM2RAIN-CCI: a new global long-term rainfall data set derived from ESA CCI soil moisture. *Earth System Science Data*, 10, 267-280. <https://doi.org/10.5194/essd-10-267-2018>.
33. Jalilvand, E., Tajrishy, M., Brocca, L., Massari, C., Hashemi, S.A.G., Ciabatta, L. (2018). Estimating the drainage rate from surface soil moisture drydowns: application of DfD model to in situ soil moisture data. *Journal of Hydrology*, 565, 489-501. <https://doi.org/10.1016/j.jhydrol.2018.08.035>.
34. Maggioni, V., & Massari, C. (2018). On the performance of satellite precipitation products in riverine flood modeling: A review. *Journal of Hydrology*, 558, 214-224. <https://doi.org/10.1016/j.jhydrol.2018.01.039>
35. Loizu, J., Massari, C., Álvarez-Mozos, J., Tarpanelli, A., Brocca, L., Casali, J. (2018). On the assimilation set-up of ASCAT soil moisture data for improving streamflow

- catchment simulation. *Advances in Water Resources*, 111, 86-104, doi: 10.1016/j.advwatres.2017.10.034. <https://doi.org/10.1016/j.advwatres.2017.10.034>.
36. Massari, C., Camici, S., Ciabatta, L., Brocca, L. (2018). Exploiting satellite-based surface soil moisture for flood forecasting in the Mediterranean area: state update versus rainfall correction. *Remote Sensing*, 10(2), 292, doi: 10.3390/rs10020292. <https://doi.org/10.3390/rs10020292>.
 37. Ciabatta, L., Massari, C., Brocca, L., Gruber, A., Reimer, C., Hahn, S., Paulik, C., Dorigo, W., Kidd, R., Wagner, W. (2018). SM2RAIN-CCI: a new global long-term rainfall data set derived from ESA CCI soil moisture. *Earth System Science Data*, <http://dx.doi.org/10.5194/essd-2017-86>.
 38. Brocca, L., Crow, W.T., Ciabatta, L., Massari, C., de Rosnay, P., Enenkel, M., Hahn, S., Amarnath, G., Camici, S., Tarpanelli, A., Wagner, W. (2017). A review of the applications of ASCAT soil moisture products. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 10(5), 2285-2306, doi:10.1109/JSTARS.2017.2651140. <http://dx.doi.org/10.1109/JSTARS.2017.2651140>
 39. Brocca, L., Ciabatta, L., Massari, C., Camici, S., Tarpanelli, A. (2017). Soil moisture for hydrological applications: open questions and new opportunities. *Water*, 9(2), 140, doi:10.3390/w9020140. <http://dx.doi.org/10.3390/w9020140>
 40. Ciabatta, L., Marra, A.C., Panegrossi, G., Casella, D., Sanò, P., Dietrich, S., Massari, C., Brocca, L. (2017). Daily precipitation estimation through different microwave sensors: verification study over Italy. *Journal of Hydrology*, 545, 436-450, doi: 10.1016/j.jhydrol.2016.12.057. <http://dx.doi.org/10.1016/j.jhydrol.2016.12.057>
 41. Massari, C., Crow, W., Brocca, L. (2017). An assessment of the accuracy of global rainfall estimates without ground-based observations. *Hydrology and Earth System Sciences*, 21, 4347-4361, doi:10.5194/hess-21-4347-2017. <http://dx.doi.org/10.5194/hess-21-4347-2017>
 42. Massari, C., Su, C.-H., Brocca, L., Sang, Y.F., Ciabatta, L., Ryu, D., Wagner, W. (2017). Near real time de-noising of satellite-based soil moisture retrievals : An intercomparison among three different techniques. *Remote Sensing of Environment*, 198, 17-29, doi:10.1016/j.rse.2017.05.037. <http://dx.doi.org/10.1016/j.rse.2017.05.037>
 43. Masseroni, D., Cislighi, A., Camici, S., Massari, C., Brocca, L. (2017). A reliable rainfall-runoff model for flood forecasting: review and application to a semiurbanized watershed at high flood risk in Italy. *Hydrology Research*, 48(3), 726-740, doi:10.2166/nh.2016.037. <http://dx.doi.org/10.2166/nh.2016.037>
 44. Román-Cascón, C., Pellarin, T., Gibon, F., Brocca, L., Cosme, E., Crow, W., Fernández, D., Kerr, Y., Massari, C. (2017). Correcting satellite-based precipitation products through SMOS soil moisture data assimilation in two land-surface models of different complexity: API and SURFEX. *Remote Sensing of Environment*, 200, 295-310, doi:10.1016/j.rse.2017.08.022. <http://dx.doi.org/10.1016/j.rse.2017.08.022>.
 45. Tarpanelli, A., Amarnath, G., Brocca, L., Massari, C., Moramarco, T. (2017). Discharge estimation and forecasting by MODIS and altimetry data in Niger-Benue River. *Remote Sensing of Environment*, 195, 96-106, doi:10.1016/j.rse.2017.04.015. <http://dx.doi.org/10.1016/j.rse.2017.04.015>
 46. Tarpanelli, A., Massari, C., Ciabatta, L., Filippucci, P., Amarnath, G., Brocca, L. (2017). Exploiting a constellation of satellite soil moisture sensors for accurate rainfall

- estimation. *Advances in Water Resources*, 108, 249-255, doi: 10.1016/j.advwatres.2017.08.010. <http://dx.doi.org/10.1016/j.advwatres.2017.08.010>.
47. Brocca, L., Pellarin, T., Crow, W.T., Ciabatta, L., Massari, C., Ryu, D., Su, C.-H., Rudiger, C., Kerr, Y. (2016). Rainfall estimation by inverting SMOS soil moisture estimates: a comparison of different methods over Australia. *Journal of Geophysical Research*, 121(20), 12062-12079, doi:10.1002/2016JD025382. <http://dx.doi.org/10.1002/2016JD025382>
48. Brocca, L., Massari, C., Ciabatta, L., Wagner, W., Stoffelen, A. (2016). Remote sensing of terrestrial rainfall from Ku-band scatterometers. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 9(1), 533-539, doi:10.1109/JSTARS.2015.2508065. <http://dx.doi.org/10.1109/JSTARS.2015.2508065>
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