Flavia Tauro

CONTACT INFORMATION

Via San Camillo de Lellis
01100 Viterbo
Dipartimento per l'Innovazione nei sistemi
Biologici, Agroalimentari e Forestali
Università degli Studi della Tuscia
www.mechydrolab.org

E-mail: flavia.tauro@unitus.it
Phone: +39 0761 357355

PRESENT APPOINTMENT

Assistant Professor, Dipartimento per l'Innovazione nei sistemi Biologici, Agroalimentari e Forestali, Università degli Studi della Tuscia, Viterbo, Italy

EDUCATION

"Sapienza" University of Rome, Rome, Italy

Doctorate of Philosophy, Hydraulic Engineering, May 2014

- Dissertation: "Fluorescent particle tracer for surface hydrology"

New York University Polytechnic School of Engineering, Brooklyn, NY 11201, USA

Doctorate of Philosophy, Mechanical Engineering, May 2014

- GPA: 4.00/4.00

Massachusetts Institute of Technology, Cambridge, MA 02139, USA

M.Eng., Civil and Environmental Engineering, June 2009

- Thesis: "Chilean Glacial Lake Outburst Flood Impacts on Dam Construction"

"Sapienza" University of Rome, Rome, Italy

M.Sc. ("Laurea Specialistica"), Environmental Engineering, November 2009

- Final Grade: 110/110 summa cum laude

"Sapienza" University of Rome, Rome, Italy

B.Sc. ("Laurea"), Environmental Engineering, July 2007

- Thesis: "Identification of Rainfall Thresholds for Flood Warning in the Mignone Basin"
- Final Grade: 110/110 summa cum laude

HONORS AND AWARDS

Primary

- 2016 University of Tuscia "Fondi di Ricerca Scientifica di Ateneo"
- 2014 Gruppo Italiano di Idraulica Award for Doctoral Thesis in Water Engineering
- 2014 Soroptimist Club of Rome - Award for an Excellent Woman Researcher in Hydrology
- 2013 – 2014 American Geophysical Union Horton (Hydrology) Research Grant
- 2013 Honors Center of Italian Universities (H2CU) Hydrology Award
- 2008 – 2009 H2CU scholarship: tuition support at the Massachusetts Institute of Technology

JOURNAL PUBLICATIONS

Published and Accepted

1. Tauro F., Grimaldi S.: "Ice dices for monitoring stream surface velocity", *Journal of Hydro-environment Research*, accepted for publication.

2. Tauro F., Salvatori S.: "Surface flows from images: ten days of observations from the Tiber River gauge-cam station", *Hydrology Research*, nh2016302, 2016.
3. Tauro F., Porfiri M., Grimaldi S.: "Surface flow measurements from drones", *Journal of Hydrology*, **540**, 240–245, 2016.
4. Tauro F., Petroselli A., Porfiri M., Giandomenico L., Bernardi G., Mele F., Spina D., Grimaldi S.: "A novel permanent gauge-cam station for surface flow observations on the Tiber river", *Geoscientific Instrumentation, Methods and Data Systems*, **5**(1), 241–251, 2016.
5. Tauro F., Cha Y., Rahim F., Rasul M. S., Osman K., Halim L., Dennisur D., Esner B., Porfiri M.: "Integrating mechatronics in project-based learning of Malaysian high school students and teachers", accepted in *International Journal of Mechanical Engineering Education*.
6. Tauro F., Olivieri G., Petroselli A., Porfiri M., Grimaldi S.: "Flow monitoring with a camera: A case study on a flood event in the Tiber River", *Environmental Monitoring and Assessment*, **188**(2), 118, 2016.
7. Tauro F., Petroselli A., Arcangeletti E.: "Assessment of drone-based surface flow observations", *Hydrological Processes*, **30**(7), 1114–1130, 2016.
8. Tauro F.: "Particle tracers and image analysis for surface flow observations", *WIREs Water*, **3**(1), 25–39, 2016.
9. Tauro F., Martínez-Carreras N., Barnich F., Juilleret J., Wetzel C.E., Ector L., Hissler C., Pfister L.: "Diatom percolation through soils: a proof of concept laboratory experiment", *Ecohydrology*, **9**(5), 753–764, 2016.
10. Tauro F., Pagano C., Phamduy P., Grimaldi S., Porfiri M.: "Large scale particle image velocimetry from an unmanned aerial vehicle", *IEEE Transactions on Mechatronics*, **20**(6), 3269–3275, 2015.
11. Tauro F., Porfiri M., Grimaldi S.: "Orienting the camera and firing lasers to enhance large scale particle image velocimetry for stream flow monitoring", *Water Resources Research*, **50**(9), 7470–7483, 2014.
12. Tauro F., Grimaldi S., Porfiri M.: "Unraveling flow patterns through nonlinear manifold learning", *PLoS ONE*, **9**(3), e91131, 2014.
13. Tauro F., Rapiti E., Al-Sharab J. F., Ubertini L., Grimaldi S., Porfiri M.: "Characterization of eco-friendly fluorescent nanoparticle-doped tracers for environmental sensing", *Journal of Nanoparticle Research*, **15**(9), 1884, 2013.
14. Tauro F., Porfiri M., Grimaldi S. : "Fluorescent eco-particles for surface flow physics analysis", *AIP Advances*, **3**(3), 032108, 2013.
15. Tauro F., Mocio G., Rapiti E., Grimaldi S., Porfiri M.: "Assessment of fluorescent particles for surface flow analysis", *Sensors*, **12**(11), 15827–15840, 2012.
16. Tauro F., Grimaldi S., Petroselli A., Rulli M. C., Porfiri M.: "Fluorescent particle tracers for surface hydrology: a proof of concept in a semi-natural hillslope", *Hydrology and Earth System Sciences*, **16**(8), 2973–2983, 2012.
17. Tauro F., Grimaldi S., Petroselli A., Porfiri M.: "Fluorescent particle tracers for surface flow measurements: a proof of concept in a natural stream", *Water Resources Research*, **48**(6), W06528, 2012.
18. Tauro F., Pagano C., Porfiri M., Grimaldi S.: "Tracing of shallow water flows through buoyant fluorescent particles", *Flow Measurement and Instrumentation*, **26**(August 2012), 93–101, 2012.
19. Grimaldi S., Petroselli A., Tauro F., Porfiri M.: "Time of concentration: a paradox in modern hydrology", *Hydrological Sciences Journal*, **57**(2), 217–228, 2012.
20. Tauro F., Aureli M., Porfiri M., Grimaldi S.: "Characterization of buoyant fluorescent particles for field observations of water flows", *Sensors*, **10**(12), 11512–11529, 2010.

CONFERENCE PAPERS

Accepted

1. Grimaldi S., Petroselli A., Nardi F., Tauro F.: "Analisi critica dei metodi di stima del tempo di corrivazione", XXXII Convegno Nazionale di Idraulica e Costruzioni Idrauliche, September 14–17 , 2010, Palermo, Italy.
2. Tauro F., Porfiri M., Grimaldi S.: "Fluorescent particles as a novel sensing technology for in-situ measurements of water flows", ASME 2011 Student Professional Development Conference, April 1–2, 2011, Philadelphia, PA.
3. Grimaldi S., Tauro F., Petroselli A., Porfiri M.: "Studio preliminare di un tracciante innovativo con particelle fluorescenti per le misure di velocità su versante", Convegno di Medio Termine dell' Associazione Italiana di Ingegneria Agraria, September 22–24 , 2011, Belgirate, Italy.
4. Tauro F., Aureli M., Porfiri M., Grimaldi S.: "Buoyant fluorescent particles as a novel sensing technology for field observations of water flows", 2011 Dynamic Systems and Control Conference, October 31–November 2, 2011, Arlington, VA.
5. Tauro F., Pagano C., Porfiri M., Grimaldi S.: "Fluorescent particle image tracking procedure for shallow water flow tracing", 2012 Dynamic Systems and Control Conference, October 17–19, 2012, Fort Lauderdale, FL.
6. Grimaldi S., Tauro F., Petroselli A.: "Studio preliminare di un tracciante con particelle fluorescenti per le misure di velocità superficiali", XXXIII Convegno Nazionale di Idraulica e Costruzioni Idrauliche, September 10–15, 2012, Brescia, Italy.
7. Tauro F., Grimaldi S., Porfiri M., Petroselli A.: "Fluorescent particles for non-intrusive surface flow observations", *Procedia Environmental Sciences*, **19**, 895–903, 2013.
8. Tauro F.: "Towards novel observations in hydrology", *AGU Hydrology Newsletter*, November 2013, p. 15–18, (Invited paper).
9. Tauro F.: "Fluorescent particle tracer for surface hydrology", *H2CU Magazine*, Spring 2014, (Invited paper).
10. Tauro F., Grimaldi S., Porfiri M.: "A topological framework for flow characterization and identification", 2014 Dynamic Systems and Control Conference, October 22–24, 2014, San Antonio, TX.
11. Pagano C., Tauro F., Grimaldi S., Porfiri M.: "Development and testing of an unmanned aerial vehicle for large scale particle image velocimetry", 2014 Dynamic Systems and Control Conference, October 22–24, 2014, San Antonio, TX.

CONFERENCE PRESENTATIONS/ POSTERS

Accepted

1. Tauro F., Porfiri M., Grimaldi S.: "Fluorescent particles as a novel sensing technology for in-situ measurements of water flows", ASME 2011 Student Professional Development Conference, April 1–2, 2011, Philadelphia, PA, podium presentation.
2. Tauro F., Grimaldi S., Porfiri M.: "Characterization of buoyant fluorescent particles for hydrological field studies", IUGG 2011 (International Union of Geodesy and Geophysics Conference), June 28–July 7, 2011, Melbourne, Australia, presentation #1858.
3. Tauro F., Grimaldi S., Porfiri M., Petroselli A., Rapiti R., Cipollari G., Mocio G., Capocci I.: "Fluorescent particle tracers in surface hydrology: proof of concepts in natural stream and hillslope", EGU 2012 (European Geosciences Union), April 22–27, 2012, Vienna, Austria, presentation #3233.
4. Capocci I., Mocio G., Insogna F., Tauro F., Petroselli A., Rapiti R., Cipollari G.,Grimaldi S., Porfiri M.: "Fluorescent particle tracers for surface hydrology: development of a sensing station for field studies", EGU 2012 (European Geosciences Union), April 22–27, 2012, Vienna, Austria, poster #145.
5. Tauro F., Grimaldi S., Rapiti E., Porfiri M.: "Fluorescent particle tracers for surface hydrology", AGU 2012 (American Geophysical Union), December 3–7, 2012, San Francisco, California, USA, poster #H31G-1202.

6. Grimaldi S., Tauro F., Rapiti E., Porfiri M.: "Fluorescent beeswax for surface flow velocity observations", AGU 2012 (American Geophysical Union), December 3–7, 2012, San Francisco, California, USA, poster #H11I-1295.
7. Tauro F., Martínez-Carreras N., Wetzel C.E., Hissler C., Barnich F., Frentress J., Ector L., Hoffmann L., McDonnell J. J., Pfister L.: "Fluorescent diatoms as hydrological tracers: a proof of concept percolation experiment", EGU 2013 (European Geosciences Union), April 7–12, 2013, Vienna, Austria, poster #7687.
8. Tauro F., Porfiri M., Rapiti E., Grimaldi S.: "Synthesis and characterization of environmentally friendly fluorescent particle tracers", EGU 2013 (European Geosciences Union), April 7–12, 2013, Vienna, Austria, poster #8283.
9. Martínez-Carreras N., Wetzel C.E., Frentress J., Tauro F., Coles A., Ector L., McDonnell J. J., Hoffmann L., Pfister L.: "New insights into hydrological connectivity in the hillslope-riparian-stream system through the use of terrestrial diatoms", EGU 2013 (European Geosciences Union), April 7–12, 2013, Vienna, Austria, poster #10920.
10. Tauro F.: "Novel observations in hydrology", H2CU Highlights in New York, May 17, 2013, New York, New York USA, invited presentation.
11. Tauro F., Grimaldi S., Porfiri M., Petroselli A.: "Image analysis tools for non-intrusive surface flow observations", Soil-Plant-Atmosphere System: Applications and Challenges, June 19–21, 2013, Napoli, Italy, poster presentation.
12. Grimaldi S., Tauro F., Porfiri M., Petroselli A.: "A novel tracer based on the observation of fluorescent particles", IAHS - IAPSO - IASPEI Joint Assembly, July 22–26, 2013, Gothenburg, Sweden, poster #Hw07PS.07.
13. Pagano C., Tauro F., Porfiri M., Grimaldi S.: "Quadrotor helicopter for surface hydrological measurements", AGU 2013 (American Geophysical Union), December 9–13, 2013, San Francisco, California, USA, poster #H43H-1577.
14. Tauro F., Olivieri G., Porfiri M., Grimaldi S.: "An innovative experimental setup for Large Scale Particle Image Velocimetry measurements in riverine environments", EGU 2014 (European Geosciences Union), April 27–May 2, 2014, Vienna, Austria, poster #16555.
15. Tauro F., Porfiri M., Petroselli A., Olivieri G., Rapiti R., Grimaldi S.: "Large scale particle image velocimetry for river flow observation: a case study on the Tiber river", ICID 2014 (International Commission on Irrigation & Drainage), September 14–20, 2014, Gwangju, Korea.
16. Tauro F., Porfiri M., Petroselli A., Olivieri G., Rapiti R., Cipollari G., Grimaldi S.: "Misure di velocità superficiali di un corso d'acqua con telecamera", XXXIV Convegno Nazionale di Idraulica e Costruzioni Idrauliche, September 8–10, 2014, Bari, Italy.
17. Tauro F., Porfiri M., Petroselli A., Olivieri G., Grimaldi S.: "Monitoring surface water velocity using a camera: a case study on the Tiber River", 6th IAHS-EGU International Symposium on Integrated Water Resources Management, June 4–6, 2014, Bologna, Italy.
18. Tauro F., Grimaldi S., and Porfiri M.: "Reverse engineering of flow patterns through nonlinear manifold learning", 8th Annual Machine Learning Symposium, New York Academy of Sciences, March 28, 2014, New York, NY.
19. Tauro F., and Grimaldi S.: "Novel observational tools for sustainable environmental monitoring", Second Conference Engineering for Sustainable and Developing Communities, May 9, 2015, Rome, Italy, (Invited presentation).
20. Tauro F., Porfiri M., Petroselli A., Giandomenico L., Bernardi G., Mele F., Spina D., and Grimaldi S.: "A novel optical-based measurement station for the observation of flood events in the Tiber River", IUGG 2015 (26th General Assembly of the International Union of Geodesy and Geophysics), June 22–July 2, 2015, Prague, Czech Republic (HW12 symposium).

21. Tauro F.: "Water spies in the sky", IUGG 2015 (26th General Assembly of the International Union of Geodesy and Geophysics), June 22–July 2, 2015, Prague, Czech Republic (U8 symposium, invited presentation).
22. Tauro F.: "Water spies in the sky", Gruppo Italiano Idraulica Ph.D Days 2015, July 6–8, 2015, Trento (invited presentation).
23. Tauro F., Porfiri M., Petroselli A., Arcangeletti E., Mocio G., and Grimaldi S.: "Unmanned aerial vehicles for remote surface flow observations", Le Giornate dell'Idrologia 2015, October 6–8, 2015, Perugia.
24. Tauro F., Porfiri M., Petroselli A., Giandomenico L., Bernardi G., Mele F., Spina D., and Grimaldi S.: "A novel measurement station for noninvasive and continuous observations in the Tiber River", Le Giornate dell'Idrologia 2015, October 6–8, 2015, Perugia.
25. Tauro F., Arcangeletti E., Mocio G., Olivieri G., Orlando A., Petroselli A., Porfiri M., Cremonese S., Cesca M., and Grimaldi S.: "Experimental LSPIV configurations for flow observations", 10th Alexander von Humboldt International Conference, November 18–20, 2015, Addis Ababa, poster #AvH10-32.
26. Tauro F., Porfiri M., Petroselli A., Giandomenico L., Bernardi G., Mele F., Spina D., and Grimaldi S.: "A pioneering measurement station for the estimation of surface flow velocities from digital video acquisitions", 10th Alexander von Humboldt International Conference, November 18–20, 2015, Addis Ababa, poster #AvH10-31.
27. Tauro F., Porfiri M., Petroselli A., and Grimaldi S.: "Surface flow observations from a gauge-cam station on the Tiber river", EGU 2016 (European Geosciences Union), April 17–22, 2016, Vienna, Austria, PICO #763.
28. Tauro F., Petroselli A., Fiori A., Romano N., Rulli M.C., Porfiri M., Palladino M., and Grimaldi S.: "Cape Fear: an outdoor hillslope laboratory", EGU 2016 (European Geosciences Union), April 17–22, 2016, Vienna, Austria, poster #13089.
29. Tauro F., Petroselli A., and Grimaldi S.: "Ice and thermal cameras for stream flow observations", EGU 2016 (European Geosciences Union), April 17–22, 2016, Vienna, Austria, poster #13175.
30. Hut R., Selker J., Weijs S., Luxemburg W., Wickert A., Blume T., Bamburger J., Stoof C., and Tauro F.: "7 years of MacGyver sessions at EGU and AGU: what happened?", EGU 2016 (European Geosciences Union), April 17–22, 2016, Vienna, Austria, poster #9869-1.
31. Tauro F. and Grimaldi S.: "Image analysis for hydrological monitoring: a multidisciplinary effort for innovative and low-cost observations", Hydrological Inputs for Water-Related SDGs Implementation: Knowledge, Data, Indicators, Tools & Innovations - 12th Kovacs Colloquium, June 15, 2016, Paris, France, poster presentation.
32. Tauro F., Salvatori S., Giandomenico L., Bernardi Gu., Bernardi Gi., Toth E., and Grimaldi S.: "Surface flow velocity measurements in rivers: LSPIV or PTV? Insight from the Tiber river gauge-cam station", Le Giornate dell'Idrologia 2016, June 27–29, 2016, Trento.
33. Grimaldi S., Petroselli A., Tauro F., Fiori A., Romano N., Rulli M. C., Porfiri M., and Palladino M.: "Cape Fear: preliminary analysis of an experimental hillslope", XXXV Convegno Nazionale di Idraulica e Costruzioni Idrauliche 2016, September 14–16, 2016, Bologna, poster presentation (Best Poster Award).
34. Tauro F., Grimaldi S., Petroselli A., and Porfiri M.: "Measuring surface flow velocity from drones", XXXV Convegno Nazionale di Idraulica e Costruzioni Idrauliche 2016, September 14–16, 2016, Bologna, poster presentation.
35. Tauro F., Grimaldi S., Petroselli A., Porfiri M., Giandomenico L., Bernardi G., Mele F., and Spina D.: "A permanent image-based flow monitoring station on the Tiber River", XXXV Convegno Nazionale di Idraulica e Costruzioni Idrauliche 2016, September 14–16, 2016, Bologna, poster presentation.

AFFILIATIONS

International Association of Hydrological Sciences (IAHS): June 2011-present. Chair of the MOXXI (Measurements and observations in the XXI Century) working group (http://iahs.info/Commissions–W-Groups/Working-Groups/MOXXI.do).

American Geophysical Union (AGU): August 2012-present

European Geosciences Union (EGU): 2012-present

Italian Association of Hydraulics (Gii): 2014-present

Italian Hydrological Society (Sii): 2015-present

Ordine degli Ingegneri della provincia di Roma: N. A34208