

Federico Falcini – PhD

Consiglio Nazionale delle Ricerche-CNR (*Italian National Research Council*)

Istituto di Scienze dell'Atmosfera e del Clima-ISAC (*Institute of Atmospheric and Climate Science*)

Via del Fosso del Cavaliere 100

00133, Rome - Italy

Phone: +39 06 49934309

Website: <http://www.artov.isac.cnr.it/personale/>

E-mail: f.falcini@isac.cnr.it

Personal

Born: Rome, Italy. April 15, 1976

Italian citizen

Status: married

Current Position

From May. 2012 – Research Associate (fixed term contract, Art. 23 del DPR 171/91), CNR-ISAC, Global Ocean Satellite monitoring and marine ecosystem studies (GOS), Italy.

Group Head: Dr. R. Santoleri

Geophysical Fluid Dynamics. Sediment Transport Dynamics. Remote Sensing Analysis.

Education

Ph. D., Earth Sciences (2008) – University of Rome “La Sapienza”, Rome, Italy.

Dissertation title: Analytical Modelling of Turbidity Currents: inferring of paleo-flow conditions from turbidite deposits (an example for the Laga Basin, central Apennines, Italy)

Advisors: Prof. Ettore Salusti and Prof. Salvatore Milli

B.S. and M.S., Physics (2003), University of Rome “La Sapienza”, Rome, Italy.

Thesis title: Critical Analysis of Current and Climatological Heat Flux in the Ross Sea, Antarctica – Theoretical and Experimental Results

Advisor: Prof. Ettore Salusti

Grants, funded projects, and awards

- 2013 – MedSea Check Point WP8: River Inputs. Period: November 2013 – November 2016
- 2012 – RITMARE SP4 WP2: Planning of the Deep Marine Environment and the Open Sea. Period: December 2011 – December 2016

- 2012 – SSD-PESCA: Sistema di supporto alle decisioni per la gestione sostenibile della pesca nelle regioni del Mezzogiorno d'Italia. Period: May 2012 – December 2015.
- 2011 – NSF RAPID: Connecting the historic 2011 Mississippi River flood to marsh sedimentation on the Delta [**featured in Nature News, 13 May 2011**]. Period: June 2011 – May 2012.
- 2010 – NSF RAPID: Effects of the Mississippi River plume on the spread of the Deepwater Horizon oil slick. Period: September 2010 – September 2011.

Professional Experiences and Collaborations.

- *Sep. 2011 – Apr. 2012 – **Postdoctoral Researcher**, St. Anthony Falls Laboratory – University of Minnesota, Minneapolis MN – USA.*
Supervisors: Prof. Chris Paola; Prof. Vaughan Voller
Geophysical Fluid Dynamics. Sediment Transport Dynamics. Geomorphology.
- *Mar. 2009 – Sep. 2011 – **Postdoctoral Researcher**, Dept. of Earth and Environmental Sciences – University of Pennsylvania, Philadelphia PA -USA*
Supervisor: Prof. Douglas Jerolmack.
Geophysical Fluid Dynamics. Sediment Transport Dynamics. Geomorphology.
- *Sep. 2008 – Feb. 2009 – **Postdoctoral Researcher**, Dept. of Earth Sciences – Boston University, Boston MA –USA.*
Supervisor: Prof. Sergio Fagherazzi.
Geomorphology. Sediment-gravity currents. Sediment transport dynamics.
- *Mar. 2008 – Aug. 2008 – **Postdoctoral Researcher**, IGAG – CNR, Rome, Italy.*
Supervisors: Prof. Francesco Latino Chiocci; Prof. Ettore Salusti.
Physical Oceanography. Marine Geology. Acoustic field in the Mediterranean Sea.
- *Oct. 2004 to Dec. 2004 - **Research Associate**, IBiMet – CNR, Rome, Italy.*
Supervisor: Dr. G. Dalu.
Theoretical study on f - and β -plane mesoscale cell.
- *From 2004 – **Scientific Collaboration**, INFN, Rome, Italy*
Supervisors: Prof. A. Capone and Prof E. Salusti.
Current meter and hydrologic data processing. Well site analysis for a Neutrino Telescope (NEMO Experiment)
- *From 2003 – **Scientific Collaboration**, University of Rome “La Sapienza”, Rome, Italy; University of Concepcion, Concepcion, Chile.*
Supervisors: Prof M. V. Kurgansky and Prof E. Salusti.

Theoretical study and experimental application on Tracer Potential Vorticities.

Contributions to National and International scientific press

- *Oct. 2012 – Almanacco della Scienza (CNR):* Spiegata l'alluvione di New Orleans. (n. 15 del 3 Ottobre 2012: <http://www.almanacco.cnr.it/reader/>)
- *Jun. 2011 – Nature, News in Focus: Studies spy on a river's rage.* (Nature, Vol. 474).
- *Jun. 2011 – Rendez-vous annuel entre la communauté scientifique et les gestionnaires du bassin de la Loire et ses affluents: Monitoring Mississippi Delta Flood from Space.* (<http://www.authorstream.com/Presentation/PlanLoire-1103127-presentationppt-falcini/>)
- *May 2011 – The Christian Science Monitor: How Mississippi River Floods could save Louisiana's sinking coasts.* (www.csmonitor.com)
- *May 2011 – Penn News: Penn Researchers Monitoring Mississippi Delta Flood From Space.* (<http://www.upenn.edu/pennnews/news>)
- *Mar. 2011 – EOS Research Spotlight: What controls the shape of sediment channels in river deltas? (Eos Trans. AGU, 92(13), doi:10.1029/2011EO130010.)*
- *Jun. 2010 – SAS Frontiers: Can the Mississippi River Fight the Oil Spill in the Gulf?* (<http://www.sas.upenn.edu/home/SASFrontiers/>)

Oceanographic Surveys

- *Apr. 2015 – COSIMO (Adriatic Sea) – R/V Minerva Uno. Chief Scientist: Dr. F. Falcini.* CTD (Seabird SBE 911 plus) and ADCP (RDI) data acquisition and processing.
- *Apr. 2013 – WMED-BIOOPT (Tyrrhenian Sea - Central Mediterranean) – R/V Minerva Uno. Supervisor: Dr. F. Bignami.* CTD (Seabird SBE 911 plus) and ADCP (RDI) data acquisition and processing.
- *Feb. 2013 – TIGRAF (Tyrrhenian Sea - Central Mediterranean). R/V Urania, IGAG – CNR. Supervisor: Prof. F. Chocci.* CTD (Seabird SBE 911 plus) and ADCP (RDI) data acquisition and processing.
- *Jul 2008 – KALET (Tyrrhenian Sea - Central Mediterranean). R/V Urania, University of Rome “La Sapienza” – Earth Sciences Department. Supervisor: Prof. F. Chocci.* CTD (Seabird SBE 911 plus) and ADCP (RDI) data acquisition and processing.
- *Jul 2007 – KM3Net_07 (Ionian Sea - Central Mediterranean). R/V Urania, ISMar – CNR. Supervisor: Dr. G. Gasparini.* CTD (Seabird SBE 911 plus), ADCP (RDI), XBT (Sippican T-6/T-7) data acquisition and processing.
- *Aug 2004 – ALT1 (Tyrrhenian Sea - Central Mediterranean). R/V Urania, ISAC – CNR.*

Supervisor: Dr. R. Santoleri. CTD (Seabird SBE 911 plus), ADCP (RDI), XBT (Sippican T-6/T-7) data acquisition and processing.

- *Jan 2004* – **MEDGOOS7** (Sicily Channel - Central Mediterranean). R/V Urania, ISMar – CNR. *Supervisor:* Dr. G. Gasparini. CTD (Seabird SBE 911 plus), Current Meter (Aanderaa RCM 7–8), XBT (Sippican T-6/T-7) data acquisition and processing.

Teaching Experiences

- *2010* – Lecturer, Meteorology and Atmospheric Science, University of Pennsylvania.
- *2008* – Teaching Assistant, Introduction to Oceanography, Boston University.
- *2005* – Teaching Assistant, Theoretical Sedimentology, University of Rome “La Sapienza”.
- *2004* – Teaching Assistant, Physical Oceanography, University of Rome “La Sapienza”.

Advising Activity

Bachelor Student Advisor for:

- *2013* – F. Marra at University of Rome “La Sapienza”, Italy
- *2011* – C. Masteller at University of Pennsylvania, USA.
- *2010* – A. Piliouras at University of Pennsylvania, USA

Master Student

- *2010* – D. Mizsei at University of Pennsylvania, USA

Postdoctoral fellow

- *2014* – R. Droghei at CNR-ISAC, Italy

PhD students

- *2015* – M. Pierdomenico at University of Rome “La Sapienza”, Italy

Workshops, Short Courses and Summer Schools attended

- *Aug. 2011* – Summer Institute on Earth-surface Dynamics, **Coastal Processes and the Dynamics of Deltaic Systems**, University of Minnesota, Minneapolis, MN, USA.
- *Mar. 2009* – ExxonMobil’s Geophysical short courses, **Multi-Disciplinary Subsurface Integration in Exploration and Production, from Plates to Pores**, Huston, TX, USA.
- *Jan. 2008* – MassFlow-3D Workshop, **How to Bridge the Gap**, Stavanger, Norway.
- *Sep. 2007* – Short Course on turbidites GEOITALIA, **Contributo dell’analisi di facies per la ricostruzione geologica dell’Appennino (torbiditi oceaniche, torbiditi di foreland, torbiditi di bacini piggy-back)**, Bobbio, Italy.

- *Jun. 2007* – Alpine Summer School CNRS, ISAC – CNR, **Fundamental Issues in Geophysical and Environmental Fluid Mechanics**, Valsavarenche, Italy.
- *Jun. 2006* – Alpine Summer School CNRS, ISAC – CNR, **Fundamental Issues in Geophysical and Environmental Fluid Mechanics**, Valsavarenche, Italy.
- *Jun. 2005* – 2nd Short Course and Workshop ENI, IFP, and FIST, **The Record of Thermal History in Sedimentary Successions**, University “Roma Tre”, Rome, Italy.
- *Apr. 2004* – Workshop SINAPSI, **Temporal Series – Empirical Orthogonal Functions**, Zoological Station “A. Dhorn”, Naples, Italy.

Publications

- 24 ISI International Journal paper, about 10 scientific papers published in international congresses with referee, and about 20 abstracts presented in international congresses.
- Dr. Federico Falcini is author of 24 documents, with 143 citations by 118 documents, and 83 co-authors (Scopus search on September 2015)

Invited Talk presentations

- *Feb. 2014* – *A remote sensing approach for connecting the historic 2011 Mississippi River flood to wetland sedimentation on the Delta*. Seminars **UTMEA – ENEA**, Rome, Italy.
- *Jun. 2013* – *Turbidity Currents: hydrodynamic, sedimentary and triggering processes*”. Seminari DiSAm – **Università degli Studi di Napoli “Parthenope”**, Naples, Italy.
- *Dec. 2011* – *Hydrographic and suspended sediment measurements of the Mississippi River plume during the historic 2011 flood: a coupled satellite analysis and boat survey approach to determine an efficiency factor for sediment trapping in the nearshore zone*. **AGU Fall 2011 Meeting**, San Francisco (CA), USA.
- *Dec. 2011* – *Hydrodynamic and suspended sediment transport controls on river mouth morphology*. **AGU Fall 2011 Meeting**, San Francisco (CA), USA.
- *May 2009* – *Potential-Vorticity Estimates of Absolute Velocities in the Ross Sea Shelf (Antarctica)*. **MIT Sack Lunch Seminars**, Cambridge (MA), USA.
- *Jan. 2008* – *An Inverse Problem To Infer Paleo-Flow Condition From Turbidites*. **MassFlow-3D Seminar/Workshop**, Stavanger, Norway. [**Invited lecture**]

Languages

Italian (native) and *English* (fluent).

Computer expertise

Operating system: Windows, Linux.

Applications: IDL, Ocean Data View, LabView, Origin, Maple, MatLab, Latex.

Relevant Publications

- FALCINI, F., PALATELLA, L., CUTTITTA, A., NARDELLI, B. B., LACORATA, G., LANOTTE, A. S., ... & SANTOLERI, R. (2015). The Role of Hydrodynamic Processes on Anchovy Eggs and Larvae Distribution in the Sicily Channel (Mediterranean Sea): A Case Study for the 2004 Data Set. *PloS one*, 10(4).
- FALCINI, F., & SALUSTI, E. (2015). Friction and mixing effects on potential vorticity for bottom current crossing a marine strait: an application to the Sicily Channel (central Mediterranean Sea). *Ocean Science*, 11(3), 391-403.
- TORRI, M., CORRADO, R., FALCINI, F., CUTTITTA, A., PALATELLA, L., LACORATA, G., ... & SANTOLERI, R. (2015). Wind forcing and fate of *Sardinella aurita* eggs and larvae in the Sicily Channel (Mediterranean Sea). *Ocean Science Discussions*, 12, 2097–2121.
- FAGHERAZZI, S., EDMONDS, D. A., NARDIN, W., LEONARDI, N., CANESTRELLI, A., FALCINI, F., ... & SLINGERLAND, R. L. (2015). Dynamics of River Mouth Deposits. *Reviews of Geophysics*, 53, doi:10.1002/2014RG000451.
- PALATELLA L., BIGNAMI F., FALCINI F., LACORATA G., LANOTTE A.S., SANTOLERI R. (2014) Lagrangian Simulations and Inter-Annual Variability of Anchovy Egg and Larva Dispersal in the Sicily Channel. *Journal of Geophysical Research: Oceans*. doi 10.1002/2013JC009384.
- FALCINI F., PILIOURAS A., GARRA R., GUERIN A., JEROLMACK D., ROWLAND J, PAOLA C. (2014) Hydrodynamic and suspended sediment transport controls on river mouth morphology. *Journal of Geophysical Research: Earth Surface*. v. 119, 1–11, doi:10.1002/2013JF002831.
- MARIOTTI G., FALCINI F., GELEYNSE N., GUALA M., SUN T., FAGHERAZZI S. (2013) Sediment eddy diffusivity in meandering turbulent jets: implications for levee formation in river mouths. *Journal of Geophysical Research Earth Surf.*, v. 118, 1-13, doi:10.1002/jgrf.20134.

- **FALCINI F.**, FOUFOULA-GEORGIOU E., GANTI V., PAOLA C., VOLLER V. (2013) A combined nonlinear and nonlocal model for topographic evolution in channelized depositional systems. *Journal of Geophysical Research Earth Surf.*, v. 118, 1-11, doi:10.1002/jgrf.20108
- KHAN, N. S., HORTON, B. P., MCKEE, K. L., JEROLMACK, D., **FALCINI, F.**, ENACHE, M. D., VANE, C. H. (2013). Tracking sedimentation from the historic AD 2011 Mississippi River flood in the deltaic wetlands of Louisiana, USA. *Geology*. doi: 10.1130/G33805.1
- VOLLER V., **FALCINI F.**, GARRA R. (2013) Fractional Stefan problems exhibiting lumped and distributed latent-heat memory effects. *Physical Review E*, v. 87, doi: 10.1103/PhysRevE.87.042401
- VOLLER V., **FALCINI F.** (2013) Two exact solutions of a Stefan problem with varying diffusivity. *International Journal of Heat and Mass Transfer*, v. 58, pp. 80-85.
- **FALCINI F.**, ET AL. (2012) Linking the historic 2011 Mississippi River flood to coastal wetland sedimentation. *Nature Geoscience*, doi:10.1038/ngeo1615.
- RUBINO A., **FALCINI F.**, ET AL. (2012) Abyssal undular vortices in the Eastern Mediterranean basin. *Nature Communications*, v. 3, doi:10.1038/ncomms1836.
- **FALCINI F.**, JEROLMACK D., BUONGIORNO NARDELLI B. (2012) Mississippi River and Sea Surface Height Effects on Oil Slick Migration.. *PlosOne*, v. 7, doi:10.1371/journal.pone.0036037.
- JEROLMACK D., EWING R.C., **FALCINI F.**, MARTIN R.L., MASTELLAR C., PHILLIPS C., REITZ M.D., BUYNEVICH I. (2012) Internal boundary layer model for the evolution of desert dune fields. *Nature Geoscience*, doi:10.1038/ngeo1381.
- **FALCINI F.**, FAGHERAZZI S., JEROLMACK D. (2011), Wave induced sediment suspension on gravity-driven currents: theoretical treatment and geomorphological implication. *Continental Shelf Research*, v. 33, p. 37-50, doi:10.1016/j.csr.2011.11.004.
- **FALCINI F.**, JEROLMACK D. (2010), A potential vorticity hydrodynamic theory for the formation of elongate river channels (Mississippi Bird' s Foot and tie channels), *Journal Geophysical Research*, v. 115, F04038, doi:10.1029/2010JF001802.
- MARTORELLI E., **FALCINI F.**, SALUSTI E., CHIOCCI F.L. (2010), Analysis and modeling of contourite drifts and currents off promontories in Southern Italian Seas (Mediterranean Sea), *Marine Geology*, v. 278, p. 19-30, doi:10.1016/j.margeo.2010.08.007.

- **FALCINI F.**, MARINI M., MILLI S., MOSCATELLI M. (2009), An inverse problem to infer paleoflow conditions from turbidites, *Journal Geophysical Research*, v. 114, C10019, doi:10.1029/2009JC005294.
- **FALCINI F.**, IUDICONE D., SALUSTI E. (2009), Potential-Vorticity Estimates of Absolute Velocities in the Ross Sea Shelf (Antarctica). *Deep-Sea Research Part I*, v. 56, p. 314-329, DOI: 10.1016/j.dsr.2008.10.005.
- **FALCINI, F.**, MAPONI, P., SALUSTI, E. (2009). On Forced Instabilities Of Sediment Resuspending Gravity Marine Currents. in Kneller, B., Martinsen, O.J., and McCaffrey, B., eds., External Controls on Deep-Water Depositional Systems: *SEPM Special Publication 92*, p. 385-396.
- MILLI, S., MOSCATELLI, M., STANZIONE, O., **FALCINI, F.** (2007) Sedimentology and physical stratigraphy of the messinian turbidite deposits of the Laga Basin (central Apennines, Italy). *Bollettino della Società Geologica Italiana (Ital. J. Geosci.)*, v. 126, p. 255-281.