



Europass Curriculum Vitae

Personal information

First name(s) / Surname(s) Ivan Federico
Telephone(s) +39 0832 671032
E-mail ivan.federico@cmcc.it
Nationality Italian

Occupational field **Hydraulic marine engineering, coastal oceanography**

Current occupation

Dates 05/2012 – ongoing
Occupation Junior Scientist at CMCC (Centro Euro-Mediterraneo sui Cambiamenti Climatici), OPA (Ocean Predictions and Applications) Division
Main activities and responsibilities Modelling and forecasting in coastal ocean based on unstructured-grid method
Responsible of coastal modelling activities.

Work experiences

Dates Sept – Oct 2014
Occupation Civil researcher in MREA2014, a Marine Rapid Environmental Assessment for the Taranto Gulf investigating ocean and coastal fields through CTD, XBT and Argo Floats observing system. MREA2014 have been supported by Italian Navy, EuroMediterranean Centre on Climate Changes, University of Bologna, Italian National Institute of Geophysics and Volcanology and Italian National Research Council.
Main activities and responsibilities Modelling activities to provide forecast bulletins in studied areas.
Civil researcher on board Galatea Italian Navy ship operating with CTD and XBT probes.

Dates 2013 – 2014
Occupation Professor of Coastal engineering for the OTTIMA (Oceanografia operativa e tecnologie informatiche per la sicurezza marittima, *in Italian – Operational oceanography and informatics for maritime safety*) post graduate course, organized by LINKS spa, CMCC and CNR-IAMC.
Main activities and responsibilities Lectures

Dates 11/2007 – 12/2011
Occupation Research collaboration with Soil Conservation Department of University of Calabria. Topics: Simulations of free-surface flows with numerical models (particle models). Academic collaboration as assistant professor for Hydraulic Structures course with examinations at University of Calabria

Dates 11/2009 – 06/2010
Occupation Research activity in Numerical Modeling at INSEAN (*The Italian Ship Model Basin*) in CNR (*Italian National Research Council*), in Rome.
Department of Manoeuvrability and Sea-keeping.
Topic: Simulations of free-surface and open-channel flows, and wave impact through Particle Lagrangian Models.

Dates 07/2011 – 04/2012
Occupation Hydraulic engineer at *Italferr SpA (Gruppo Ferrovie dello Stato Italiane)* in Milan. Topics: Hydraulic and hydrological modeling of rivers flowing near railways and roads.

Dates 01/2008 – ongoing
Occupation Civil, hydraulic and marine engineer as *consultant*.
Topics: (1) Specialist studies of coastal waves propagation and morphological-morphodynamic lineshore evolution (Regione Calabria); (2) Technical assistant in supervision of construction for sewages projects; (3) Hydrologic, hydraulic and landslide analysis for risk evaluation of structures near rivers; (4) Technical collaboration for verification of roundabout intersections; (5) Recovery of existing buildings for the realization of *Edilizia Pubblica Residenziale (Regione Calabria and ATERP)*; (6) Structural computations of retaining walls in reinforced concrete; etc.

Education and training

Dates 09/1997 – 06/2002
Title of qualification awarded High School Diploma (Scientific Lyceum) at *Liceo Scientifico Statale* of Acri (Cosenza) – Vote 100/100.

Dates 09/2002 – 09/2007
Title of qualification awarded M.Sc. Degree in Civil Engineering (Hydraulics) – Vote: 110/110 cum laude, at University of Calabria. Thesis: *Dinamiche di riossigenazione e trasporto di inquinanti: applicazione sperimentale e numerica al fiume Crati (in Italian)*, advisor: Prof. Paolo Veltri.

Dates 11/2007 – 11/2010
Title of qualification awarded Ph.D. in Hydraulic Engineering for the Environment and Territory at University of Calabria, collaborating with CNR-INSEAN Institute in Rome. Thesis: *Simulating Open-channel Flows and Advective Diffusion Phenomena through SPH Model*, Tutors: Prof. Paolo Veltri, Dr. Andrea Colagrossi. (Vote: Maximum).

Dates 06/2009
Title of qualification awarded Registered on section A of *Ordine degli Ingegneri* (Professional Register of Engineers) of Cosenza – Civil and Environmental Engineering Sector (n° 5103)

Personal skills and competences

Mother tongue(s) **Italian**

Other language(s)

Self-assessment

European level (*)

English

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
B2	B2	B2	B2	B2

(*) Common European Framework of Reference for Languages

Computer skills and competences

- Word processing: Microsoft Word, Latex
- Spreadsheet: Microsoft Excel, Curve Expert
- Software for Hydrology and Hydraulics: Hec-Ras / Hec-Hms (Heasted Methods)
- Software for Hydraulic networks: Epanet, InfoWorks WS
- Software for Marine Engineering: (un)Swan, Genesis
- Software for projects of roads/railways: SierraSoft ProSt
- Structural/geotechnical softwares: CDSWin, CDMaWin, CDGsWin, Aztec-Max90
- Software for priced bill in works: PriMus
- Software GIS: ER Mapper, QGIS
- Software for water quality: WASP7
- CAD softwares: Autocad, Archicad
- Programming Languages: Fortran, NCL, Shell, Matlab, R
- Post processing and data visualization: Tecplot360, Paraview, NCL, ncview, cdo
- Computer Operating Systems: Mac, Linux, Windows
- Software for digital image processing: Adobe Photoshop, Corel Draw, Gimp

Driving licence

B – Car

Main Research topics

Numerical Models. Costal Oceanography. Computational Fluid Dynamics. Marine Structure.

Implementation and development of SANIFS: a forecasting system for the Southern Adriatic Northern Ionian seas. The forecasting system based on unstructured grid, finite element model SHYFEM (Shallow water HYdrodynamics Finite Element Model) provides currents, sea levels, temperature and salinity for the Apulia, Calabria, Basilicata coastal areas.

Development of Lagrangian numerical model (SPH, Smoothed Particle Hydrodynamics) to evaluate motion and concentration fields. Application to turbulent and multi-phase flows, in marine and river environments. Evaluation of interface dynamics.

Wave data analysis in time and frequency domain. Meteorological climates (sea states) and extreme sea events (sea storms). Wave propagation and morphodynamic models. Morphological analysis.

Partecipation at International Research Projects

10/2013 – *ongoing*

ARGES – pAssengeRs and loGistics information Exchange System

(partners: Region of Epirus, Igoumenitsa Port Authority S.A, Patras Port Authority S.A., Corfù Port Authority S.A., Computer Technology Institute and Press “Diophantus”, Port Authority of Bari, Ministry of Infrastructure and Transports – Itaian Coast Guards Headquarters, Province of Barletta-Andria-Trani, Polytechnic of Bari, CMCC.

05/2012 – 05/2015

TESSA - Development of technologies for the "Situational Sea Awareness"

(partners: LINKS, CMCC, CNR-IAMC)

The TESSA project will develop a set of products and services for Situational Sea Awareness (SSA) based on new operational oceanography environmental data integrated into advanced technological platforms for use by end users in the maritime sector, tourism and environmental protection.

05/2012 – 01/2015

IONIO - IONian Integrated marine Observatory (partners: CMCC, ENEA, HCMR)

The project aims at designing and implementing an “IONian Integrated marine Observatory” (IONIO) that will produce environmental information about the Southern Adriatic and Northern Ionian (SANI) Programme Area for a safer maritime traffic.

10/2009 – 04/2012

NextMuSE - Next generation Multi-mechanics Simulation Environment

(partners: CNR-INSEAN of Rome, Ecole Centrale de Nantes, Ecole Centrale de Lyon, National University of Ireland - Galway, ETH Zürich, ANDRITZ HYDRO SA and HydrOcean).

The objective of NextMuSE is to initiate a paradigm shift in the technology of Computational Fluid Dynamics (CFD) and Computational Multi-Mechanics (CMM) simulation software which is used to model physical processes in research development and design across a range of industries.

Scientific publications

B.Sc., M.Sc. and Ph.D. Theses

[1] I. Federico - Curve di possibilità pluviometrica per le piogge di durata inferiore a 1 ora – B.Sc. thesis, University of Calabria, July 2005 (in Italian)

[2] I. Federico - Dinamiche di riossigenazione e trasporto di inquinanti: applicazione sperimentale e numerica al fiume Crati – M.Sc. thesis, University of Calabria, September 2007 (in Italian)

[3] I. Federico - Simulating Open-Channel Flows and Advective-Diffusion through SPH model – Ph.D. thesis, University of Calabria, February 2011 (download:

http://cfd.mace.manchester.ac.uk/sph/SPH_PhDs/2010/FEDERICO_Ivan_PhDThesis_2010.pdf)

Scientific publications

Scientific journals

[4] I. Federico, S. Marrone, A. Colagrossi, F. Aristodemo, M. Antuono - Simulating 2D open-channel flows through an SPH model – European Journal Of Mechanics B-Fluids, Vol. 34, pp. 35-46, 2012.

[5] F. Aristodemo, I. Federico, P. Veltri, A. Panizzo - Two-phase SPH modelling of advective diffusion processes - Environmental Fluid Mechanics, Vol. 10, pp. 451-470, 2010.

[6] I. Federico, F. Aristodemo, P. Veltri - Evoluzione di fluidi bifase e di fenomeni diffusivi attraverso la tecnica SPH - L'Acqua, Vol. 4, pp. 63-70, 2010. (in Italian)

[7] F. Aristodemo, S. Marrone, I. Federico - SPH modelling of plane jets into water bodies through an inflow/outflow algorithm, Ocean Engineering (in review), pp. 1-21, 2015

Proceedings of Conferences/Workshops

[8] I. Federico, F. Aristodemo, P. Veltri - Coupling SPH boundary conditions for dam-break cases in the presence of abrupt bottom variations – Proceedings of XIX Italian Conference on Computational Mechanics, Cosenza, pp. 1-14, 2012, June 2012.

[9] I. Federico, S. Marrone, F. Aristodemo, A. Colagrossi, P. Veltri - SPH modelling of buoyant/non buoyant jets into open-channel flows - 6th International SPHERIC SPH Workshop, Hamburg, 8-10 June 2011.

[10] I. Federico, S. Marrone, F. Aristodemo, A. Colagrossi, P. Veltri - Modelling of shallow water jets using Smoothed Particle Hydrodynamics method - 4th Italian Workshop on Urban Hydraulics Acqua & Città 2011, Venice, 21-24 June 2011

[11] P. Veltri, F. Aristodemo, A. Fiorini Morosini, I. Federico – Smaltimento di reflui a mare con condotte sottomarine – 32th refresher course in Tecniche per la difesa dall'inquinamento, Guardia Piemontese (Cosenza, Italy), 15-18 June, 2011 (in Italian)

[12] I. Federico, S. Marrone, A. Colagrossi, F. Aristodemo, P. Veltri - Simulating free-surface channel flows through SPH - V Spheric Workshop, Manchester, June 2010

[13] F. Aristodemo, I. Federico, P. Veltri, A. Panizzo - SPH simulations of advective diffusion phenomena induced by pollutant in water - V Spheric Workshop, Manchester, June 2010

[14] I. Federico, S. Marrone, A. Colagrossi, F. Aristodemo, P. Veltri - Simulations of hydraulic jump through SPH model - 32th Italian Conference in Hydraulics and Hydraulic Structures, Palermo, September, 2010

[15] F. Aristodemo, I. Federico, P. Veltri - Modellazione numerica SPH applicata a problem di idraulica ambientale - 3rd Italian Workshop on Urban Hydraulics Acqua & Città 2011, Milan, 6-9 October 2009

[16] B. Verbeni, P. Veltri, G. Maradei, A. Fiorini Morosini, I. Federico - Sulle difficoltà connesse alla limitata disponibilità di dati per le previsioni dello stato di qualità di un fiume – 29th refresher course in Tecniche per la difesa dall'inquinamento, Guardia Piemontese (Cosenza, Italy), Nuova Bios: pp. 675-695, June 2008 (in Italian)

Abstract of Conferences\Workshops

[17] I. Federico, N. Pinardi, P. Oddo, R. Lecci, T. Vukicevic – Operational coastal forecast system in Southern Adriatic Northern Ionian seas based on unstructured-grid model – The 47th International Liege Colloquium on Marine Environmental Monitoring, Modelling and Prediction, Liege, 4-8 May 2015

[18] P. Oddo, A. Acierno, D. Cuna, I. Federico, M.B. Galati, E. Awad, G. Korres, R. Lecci G.M.R. Manzella, W. Merico, L. Perivoliotis, N. Pinardi, E. Shchekinova, G. Mannarini, C. Vamvakaki, L. Pecci, F. Reseghetti - IONIO Project: Computer-mediated Decision Support System and Communication in Ocean Science - Geophysical Research Abstracts Vol. 15, EGU 2013, General Assembly 15, 4167, 2013

[19] I. Federico, E. Awad, P. Oddo, G. Coppini, N. Pinardi - Coastal Ocean Modelling in Southern Adriatic Northern Ionian Seas - The 4th China-Italy Collaboration Workshop on Operational Oceanography and Regional Climate Change in the Adriatic and China Seas, 2013

[20] I. Federico, P. Oddo, N. Pinardi, G. Coppini - Towards a coastal ocean forecasting system in Southern Adriatic Northern Ionian seas based on unstructured-grid model - Geophysical Research Abstracts Vol. 16, EGU 2014-16839-1, 2014.

[21] Coppini, G., Pinardi, N., Oddo, P., Awad, E., Bonaduce, A., Calcagnile, E., Ciliberti, S. A., Federico, I., Galati, M. B., Lecci, R., Liubartseva, S., Mancini, M., Mannarini, G., Shchekinova, E., Verri, G. (2013). *The operational research in support to decisional instruments*. Contribute to III Convegno Nazionale di Oceanografia Operativa, 3-5 June 2013, Oristano, Italy.

[22] Coppini, G., Marra, P., Pinardi, N., Oddo, P., Manzella, G., Perivoliotis, L., Mancini, M., Lecci, R., Bonaduce, A., Galati, M. B., Scalas, M., Tedesco, L., Pizzolante, E., Sorgente, R., Olita, A., Fazioli, L., Cucco, A., Rollo, D., Aloisio, G., Fiore, S., Palazzo, C., D'Anca, A., Nassisi, P., Conte, L., Tonani, M., Drudi, M., Awad, E., Calcagnile, E., Ciliberti, S. A., Federico, I., Mannarini, G., Shchekinova, E., Verri, G., Falchetti, S., Trotta, F., Archetti, R., Vacchi, M., Samaras, A., Fiori, E. (2013). *TESSA, IONIO and SeaConditions: to know the present and future sea conditions for safer navigation*. Contribute to III Convegno Nazionale di Oceanografia Operativa, 3-5 June 2013, Oristano, Italy.

Signature

