

KAZOLEA MARIA

Curriculum Vitae

PERSONAL INFORMATION

Name: Kazolea Maria
 Date of Birth: 26/07/1982
 Marital Status: Married
 Citizenship: Greek
 Address: 8, Rue Jules Guesde, 33800, Bordeaux
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RESEARCH POSITIONS

2014-now: Researcher, INRIA Bordeaux Sud-Ouest, Cardamom team.

EDUCATION

2009-2013: Ph.D., Technical University of Crete, Environmental Engineering Department, Crete, Greece.

Ph.D Dissertation: *Mathematical and computational modelling for the generation and propagation of waves in marine and coastal environments*,

Advisor: Prof. C. Synolakis

2004-2006: M.Sc., Technical University of Crete, Department of Sciences, Division of Mathematics, Crete, Greece.

M.Sc. Dissertation: *Computational modelling for the generation and propagation of long waves*, Advisor: Prof. A.I. Delis

2000-2004: Ptycheion, University of Crete, Department of Applied Mathematics, Crete, Greece.

RESEARCH INTERESTS

Applied and Computational Mathematics. High performance computing. Numerical solution of partial differential equations on computational fluid dynamics. Specifically, I am interested in free surface flows using hyperbolic conservation laws and Boussinesq-type equations for which numerical methods are deduced using finite difference, finite element and finite volume schemes.

TEACHING EXPERIENCE

10/2008-01/2009 Lab/teaching assistant, *Numerical Linear Algebra*, Technical University of Crete.

10/2006-01/2007 Lab/teaching assistant, *Introduction to programming*, Technical University of Crete.

- 02/2006-06/2006 Lab/teaching assistant, *Numerical Linear Algebra*, Technical University of Crete.
- 09/2005-01/2006 Lab/teaching assistant, *Numerical Analysis*, Technical University of Crete.
- 10/2004-01/2005 Lab/teaching assistant, *Introduction to programming*, Technical University of Crete.

SCHOLARSHIPS

- 2011-2013 Operational Program “Education and Lifelong Learning” of the National Strategic Reference Framework (NSRF) – Research Funding Program: Heracleitus II, Investing in knowledge society through the European Social Fund. Co-Financed by the European Union (European Social Fund- ESF) and Greek national funds.
- 06/2003-08/2003 Summer Undergraduate Research Fellows (SURF) program, Rockefeller University, New York, Laboratory for Computational Genomics, TFHunder project.

INVOLVEMENT ON FUNDED PROGRAMS

- 10/2006-12/2007 Collaborative scientist at the Foundation of Research and Technology Hellas (FORTH), Institute of Applied and Computational Mathematics, Beachmed-e: “*Strategic management of the littoral defence and the sustainable development of the Mediterranean coastal zones*”, INTERREG IIIC.
- 01/2011-03/2011 Basic Research 2010, Special research account of the Technical University of Crete. “Introduction of a turbulence model into the two dimensional shallow water equations for the computational modelling of generation and propagation and run-up of (long) waves”.
- 10/2014- now Project TANDEM (Tsunamis in the Atlantic and the English Channel: Definition of the Effects through numerical Modeling (2014-2018): a French initiative to draw lessons from the Tohoku-oki tsunami on French coastal nuclear facilities. Contribution: Benchmarking responsible and involvement on work packages WP1 and WP3.

PUBLICATIONS

Journal publications

1. A. I. Delis, **M. Kazolea**, and N. Kampanis, "A Robust High-Resolution Finite Volume Scheme for the Simulation of Long Waves Over Complex Domains", *Int. J. Numerical Methods in Fluids*, 56(4), 419–452, 2008.
2. A. I. Delis and **M. Kazolea** "Finite volume simulation of waves formed by sliding masses", *Comm. in Numerical Methods in Engineering* (now *International Journal for Numerical Methods in Biomedical Engineering*), 27(5), 732-757, 2011.
3. A. I. Delis, I. K. Nikolos and **M. Kazolea**, "Performance and comparison of cell-centered and node-centered unstructured finite volume discretizations for shallow water free surface flows", *Archives of Computational Methods in Engineering*, 18(1), 57-118, 2011.

4. **M. Kazolea** and A.I. Delis, "A well-balanced shock-capturing hybrid finite volume-finite difference numerical scheme for extended 1D Boussinesq models", *Applied Numerical Mathematics*, 67, 167-186, 2013. **(4 Citations)**
5. **M. Kazolea**, A.I. Delis, I. K. Nikolos and C. E. Synolakis, "An unstructured finite volume numerical scheme for extended Boussinesq-type equations", *Coastal Engineering*, 69,42-66, November 2012.
6. **M. Kazolea**, A.I. Delis and C. E. Synolakis, "Numerical treatment of wave-breaking on unstructured finite volume approximations for extended Boussinesq-type equations", *Journal of Computational Physics*, 271, 281-305, August 2014.
7. A.G.Filippini, **M. Kazolea** and M. Ricchiuto, "A flexible and genuinely nonlinear approach for nonlinear wave propagation , breaking and run-up", *Journal of Computational Physics*, 130, 381-41, 2016.
8. Maria Kazolea, Andrea Filippini, Mario Ricchiuto, Stéphane Abadie, M Martin Medina, Denis Morichon, Camille Journeau, Richard Marcer, Kévin Pons, Sylvestre LeRoy, Rodrigo Pedreros, Michèle Rousseau, "Wave propagation, breaking, and overtopping on a 2D reef: A comparative evaluation of numerical codes for tsunami modelling", *European Journal of Mechanics-B/Fluids*, In Press, 2017.
9. M. Kazolea and M. Ricchiuto, "On wave breaking for Boussinesq-type models", *Ocean Modelling*, 123,16-39,2018.
10. M. Kazolea and A.I. Delis, "Irregular wave propagation with a 2DH Boussinesq-type model and an unstructured finite volume scheme", *European Journal of Mechanics, B/Fluids*, 72, 432-448, 2018

Papers in conference proceedings

1. A. I. Delis and **M. Kazolea**, "Finite volume computations of nonlinear waves generated by landslides", Proceedings of the 9th Hellenic-European conference on Computer Mathematics and its Applications (HERCMA 2009).
2. A. I. Delis, I. K. Nikolos and **M. Kazolea**, "Comparison of cell-centered and node-centered formulations of a high resolution well-balanced finite volume scheme: application to shallow water flows", XVII International Conference on Computational Methods in Water Resources, CMWR 2010, J. Carrera (Ed.) CIMNE, Barcelona 2010
3. **M. Kazolea** and A. I. Delis, "Well-balanced shock-capturing hybrid finite volume - finite difference schemes for Boussinesq-type models", Proceedings of NUMAN 2010 Conference in Numerical Analysis (ISBN 978-960-8475-14-4), pp. 112-119, 2010
4. A. I. Delis and **M. Kazolea**, "A Well-Balanced Finite Volume Scheme for Extended Boussinesq Equations on Unstructured Meshes", Proceedings of the 5th international Conference on Advanced Computational Methods in Engineering (ACOMEN 2011), November 2011, Liege, Belgium.

5. A. I. Delis and **M. Kazolea**, "Advanced Numerical Simulation of Near-shore Processes by Extended Boussinesq-type Models on Unstructured Meshes", Proceedings of ECMI 2014 European Consortium for Mathematics in Industry, June 2014, Taormina, Italy.
6. M. Kazolea, N.Kalligeris, N. Maravelakis, C. E. Synolakis, A.I. Delis and P. J. Lynett. "Numerical study of wave conditions for the old Venetian harbor of Chania in Crete, Greece". 36th IAHR World Congress, 2015, The Hague, The Netherlands.
7. D. Violeau, R. Ata, M. Benoit, A. Joly, S. Abadie, L. Clous, M. M. Medina, D. Morichon, J. Chichepor-tiche, V. Hergault, M. L. Gal, , A. Frère, A. Gailler, H. Hébert, D. Imbert, A. Loevenbruck, **M. Kazolea**, M. Ricchiuto, A. Lemoine, S. L. Roy, R. Pedreros, K. Pons, R. Marcer and R. S. Jacinto. A database of validation cases for tsunami numerical modelling. In Proc. of the 4th International Association for Hydro- Environment Engineering and Research (IAHR) European conference. Liege, Belgium, July 2016.

Papers in conference proceedings (short abstract peer review)

1. M. Kazolea, C.E Synolakis and A.I. Delis, "Boussinesq-type Modeling Using Unstructured Finite Volume Techniques." In 22nd International Offshore and Polar Engineering Conference (ISOPE), Rhodes, Greece, June 17-23/2012.
2. M. Kazolea, A.I.Delis and C.E. Synolakis, "Unstructured Finite Volume Techniques for Boussinesq type modelling." In 1st International Conference on Frontiers in Computational Physics: Modelling the Earth System, Boulder, CO, USA, December 2012.
3. M. Kazolea and A. I. Delis "An unstructured finite volume numerical scheme for extended Boussinesq-type equations for irregular wave propagation", The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Apr 2015, Athenes, GA, United States.
4. The Ninth IMACS International Conference, Nonlinear Evolution equations and Wave Phenomena: Computation and Theory, Fully nonlinear Boussinesq models: Theory and Practice, Athens, GA, United States, April 1-4, 2015. **(Invited speaker)**
5. M. Kazolea and M.Ricchiuto, Wave breaking and dissipation in weakly and fully non-linear Boussinesq models. 35th International Conference on Coastal Engineering, ICCE 2016 (accepted)
6. A. Filippini, M. Kazolea and M. Ricchiuto, A flexible 2D nonlinear approach for nonlinear wave propagation, breaking and run-up. 35th International Conference on Coastal Engineering, ICCE 2016 (accepted)

Technical Reports

1. Alonso B., Durán R., Benabeu A., Ercilla G., Serra J., Valois X., Lamberti A., Martinelli L., Clementi E., Aminti P.L., D'Elisio C., Barbieri G., Battistini A., Cappietti L., Mori E., Tecchi G., Petaccia A., Greco A., Maistri A., Certain R., Kotsovinos N., Xeidakis G., Hrissanthou V., Angelidis P., Delimani P., Georgoulas A., Andredaki M., Koutandos E.V., Kampanis N.A., Karambas Th.V., Kazolea M. (2007) *Gestion des stocks sableux interceptés par les ouvrages côtiers et fluviaux. Récupération du transport solide. BEACHMED-e; Le Sous-projet GESA. La*

gestion stratégique de la défense des littoraux pour un développement soutenable des zones côtières de la Méditerranée. Ier Cahier Technique Phase A., Short report, 117-127 (and Long Report, **123 pp**, electronic format, www.beachmed.eu)

REVIEWER IN PEER-REVIEW JOURNALS

1. Engineering Applications of Computational Fluid Mechanics.
2. Applied Mathematics and Computation.
3. Journal of Hydraulic Research.
4. Computational and Applied Mathematics
5. Coastal Engineering Journal
6. Communications in Computational Physics

CONFERENCE PRESENTATIONS

1. 14th ERCIM Environmental Modelling Group Workshop on “Informatics Applications on Simulation and Modelling for Engineering the Environment”, Thessaloniki, 3-4 September 2007.
2. 9th Hellenic European Research on Computer Mathematics & its Applications Conference Athens, September 24-26, 2009
3. XVII International Conference on Computational Methods in Water Resources, CMWR 2010, CIMNE, Barcelona, Spain, 2010.
4. I-math School on Numerical Solutions of Partial Differential Equations (Poster presentation), February 2010, Malaga, Spain.
5. Conference in Numerical Analysis (NUMAN 2010), Recent approaches to Numerical Analysis: Theory, Methods and Applications, Chania, Crete, September 2010..
6. The 34th International Conference on Coastal Engineering, June 15-20, 2014, Seoul, Korea.
7. B’Waves 2014, Workshop on Breaking Waves, August 25-29, 2014, Bordeaux, France. **(invited speaker)**
8. The 6th International Conference on Numerical Analysis (NUMAN 2014), Recent approaches to Numerical Analysis: Theory, Methods and Applications, Chania, Crete, September 2014.
9. Day of Scientific Computing team, Mathematics Department of the University of Bordeaux. Topic: Numerical modelling for the generation and propagation of waves in coastal environments, Brodeaux, France, January 23, 2015. **(Invited speaker)**
10. MathOcean Workshop Institut de MathÈmatique de Bordeaux et a l'Institute MathÈmatique de Toulouse, Wave Breaking for Boussinesq type equations , Bordeaux, France, February 2, 2015. **(Invited speaker)**

11. B' Waves 2016, Workshop on Breaking Waves, University of Bergen, Norway, June 13 - 17, 2016. **(Invited speaker)**

PREPRINTS/SUBMITTED PAPERS/RESEARCH REPORTS

1. M. Kazolea, M. Gaitani and A. I. Delis, “Numerical solution of sparse linear systems that occur from the discretization of Boussinesq-type equations”. International collaboration with professor A.I. Delis from Technical University of Crete, Greece, <https://hal.inria.fr/hal-01202983>
2. M Kazolea and M. Ricchiuto, “ Wave breaking for Boussinesq-type models using a turbulence kinetic energy model” (Inria Report RR-8781).

CONTRIBUTION TO PhD SUPERVISION

1. Andrea Gilberto Filippini. 2014-2017, Co-funding from INRIA and region Aquitaine. Title: “Robust non-hydrostatic modelling for free surface flow in near-shore zones on unstructured meshes” Topic: Evaluation of hybrid strategies for the solution of Green-Nagdhi system of equations for the simulation of fully nonlinear and weakly dispersive free surface waves. Construction of tool packages for the computation on non hydrostatic terms of fully nonlinear Boussinesq-type models, accessible to external users.
2. Luca Arpaia, 2014-2017, Funding from PIA TANDEM. Topic: Study of Finite Volume schemes and benchmarking for tsunami inundation

ONGOING PROJECTS

1. A.G. Filippini, M. Kazolea, M. Ricchiuto, “ A flexible genuinely nonlinear approach for wave propagation, breaking and runup-2D approach”.
2. Marche F., Lannes D., Bonneton P., Marieu V., Delmas S., Ricchiuto M., Kazolea M., Duran A, Perrier V. UAINA, “un modèle communautaire pour la simulation des vagues extrêmes” .

SEMINARS/SCHOOLS

- 08-12/02/20120 I-math School on Numerical Solutions of Partial Differential Equations, Malaga, Spain.
- 09-14/07/2007 Summer School on Computation Fluid Dynamics, Foundation of Research and Technology Hellas, Institute of Applied and Computational Mathematics, Crete, Greece.
- 04-06/11/2004 Conference on Applied Mathematics, Foundation of Research and Technology Hellas, University of Crete, Greece.
- 19-30/07/2004 Conference on Applied Mathematics, Foundation of Research and Technology

Hellas, University of Crete, Greece.

FOREIGN LANGUAGES

English	First Certificate in English (Oxford, Cambridge)
French	Delf A1, A2, A3, A4
Greek	Native speaker

COMPUTER SKILLS

Programming Languages	Fortran 77/90, C
Operating Systems	Windows XP/ME/Vista/7, Linux, Mac OSX
Engineering Software	Matlab, Tecplot
Word Processing	Latex, Microsoft Word

REFEREES

1. Prof. A. I. Delis, Department of Sciences-Division of Mathematics, Technical University of Crete, University Campus, Kounoupidiana, GR-73100, Chania, Greece.
email: adelis@science.tuc.gr
phone number: +30 2821037751
2. Prof. C. E. Synolakis, School of Environmental Engineering, Technical University of Crete, University Campus, Kounoupidiana, GR-73100, Chania, Greece.
email: costas@usc.edu
phone number: +30 2821037779
3. Prof. I. K. Nikolos, Department of Production Engineering and Management, Technical University of Crete, University Campus, Kounoupidiana, GR-73100, Chania, Greece.
email: jnikolo@dpem.tuc.gr
phone number: +30 2821037300