

CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	Pilar		
Family name	Garcia Navarro		
Gender (*)	Woman	Birth date (dd/mm/yyyy)	03/01/1962
Social Security, Passport, ID number	XXXXXXXX		
e-mail	pigar@unizar.es	URL Web	http://ghc.unizar.es
Open Researcher and Contributor ID (ORCID) (*)	0000-0003-XXXXXXXX		

(*) Mandatory

A.1. Current position

Position	Catedrática (Full Professor)		
Initial date	1 Febrero 2011		
Institution	Universidad Zaragoza		
Department/Center	Ciencia y Tecnología de Materiales y Fluidos	Escuela de Ingeniería y Arquitectura	
Country	Spain	Teleph. number	876555057
Key words	Numerical methods, Computational Hydraulics		

A.2. Previous positions (research activity interruptions, indicate total months)

Period	Position/Institution/Country/Interruption cause
1997-2011	Profesora Titular(Lecturer)/ Univ. de Zaragoza/España
1993-1997	Prof. Ayudante(Assistant Prof.)/Univ. Zaragoza/España

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Physics Degree	Universidad Zaragoza/España	1984
PhD	Universidad Zaragoza/España	1989

Part B. CV SUMMARY (max. 5000 characters, including spaces)

My research activity has been focused on the specific field of Computational Hydraulics since 1986. The results of this work are reflected in numerous international publications and contributions to conferences, collaborations with universities, as well as private companies and public institutions in an innovative field. in Spain and a pioneer within the University of Zaragoza.

The numerical models of free surface flows developed by the group that has been generated as a result of my activity have proven to be powerful, efficient and accurate simulation tools. They are based on numerical methods for solving systems of conservation law equations, which, initially, were located in contexts of simple geometries. We have extended these numerical schemes making possible their application to realistic cases with applications to engineering, where the importance of the source terms in the equations, especially related to bottom topography in river flows, requires a special numerical treatment in complex cases. The research results have been published in scientific journals classified in the ISI. The research has been developed with the funding of European Programs, National Programs,



Regional Programs and collaboration with companies. (H-Index 32 (Source: ISI Web of Knowledge November 2021) average of 23.58 citations per item). I have 5 CNEAI six-year terms and 1 transfer six-year term.

My contributions to society from my activity carried out in the Fluid Mechanics Area of the University of Zaragoza since 1992, with my total dedication to university work understood as a privileged position for the development of knowledge and its communication, have included aspects of research, teaching and university management. The postgraduate and doctorate training activity stands out. I have participated in 2 Quality PhD programs, Fluid Mechanics and Mechanical Engineering. I was a teacher of the Master U. in Applied Mechanics at the University of Zaragoza and currently at the Master U. of Industrial Engineering. I was PI of the Computational Fluid Mechanics Group, recognized as a Reference Group within the research program of the Government of Aragon, for 8 years. In addition, I have been responsible for a Master's Study in Water Resources Engineering at the University of Zaragoza, for 10 editions starting from. In this sense, I have been permanently active in technological development, innovation, dissemination activities (4 summer courses on Information and Technological Development for Water Management and 3 International Workshop on Hydrodynamic Modelling) and collaboration with industry and the private sector. I have led agreements with the Ebro Hydrographic Confederation, the Bilbao Water Consortium. I have collaborated in transfer projects with the company Inclam (Spain) and with the company Hydronia (USA) for the registration and transfer of marketable software. We have registered 2 utility models at the University of Zaragoza.

My contributions to the training of young researchers materialize in the direction of 20 PFC, 22 TFG, 6 TFM and 15 doctoral theses that have culminated in the creation of a stable research group (www.ghc.unizar.es) for which I am responsible. These works have been financed with competitive scholarships of which I have been a tutor or through contracts charged to my group's projects. (16 doctoral theses supervised, 9 in the last 10 years, and 3 more currently under development)

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Publications (*see instructions*)

1. Garcia-Navarro, P., Murillo, J., Fernandez-Pato, J., Echeverribar, I., Morales-Hernandez, M (Morales-Hernandez, M., The shallow water equations and their application to realistic cases ENVIRONMENTAL FLUID MECHANICS, Volume19, Issue5, Page1235-1252, 2019 DOI10.1007/s10652-018-09657-7
2. Echeverribar, I; Morales-Hernandez, M; Fernandez-Pato J.; Garcia-Navarro, P. 2D numerical simulation of unsteady flows for large scale floods prediction in real time, ADVANCES IN WATER RESOURCES 134 Volume134, DOI10.1016/j.advwatres.2019.10344, 2019.
3. Fernandez-Pato, J., Martinez-Aranda, S., Garcia-Navarro, P., A 2D finite volume simulation tool to enable the assessment of combined hydrological and morphodynamical processes in mountain catchments, ADVANCES IN WATER RESOURCES Volume141, DOI10.1016/j.advwatres.2020.103617, 2019.
4. Lacasta, A; Morales-Hernandez, M; Murillo J.; Garcia-Navarro, P, GPU implementation of the 2D shallow water equations for the simulation of rainfall/runoff events. ENVIRONMENTAL EARTH SCIENCES 74 (11) pp.7295-7305. 2015. DOI10.1007/s12665-015-4215-z
5. Murillo, J., Garcia-Navarro, P., Accurate numerical modeling of 1D flow in channels with arbitrary shape. Application of the energy balanced property, JOURNAL OF COMPUTATIONAL PHYSICS Vol.260, 222-248, DOI10.1016/j.jcp.2013.12.0406. 2014.
6. Lacasta, M. Morales-Hernández, J. Murillo, and P. García-Navarro, An optimized GPU implementation of a 2D free surface simulation model on unstructured meshes, Advances in Engineering Software, vol. 78, pp. 1-15, 2014. DOI10.1016/j.advengsoft.2014.08.007
7. Caviedes-Voullieme, D; Juez, C; Murillo J. and Garcia-Navarro, P., 2D dry granular free-surface flow over complex topography with obstacles. Part I: experimental study using a consumer-grade RGB-D sensor. COMPUTERS & GEOSCIENCES 73. pp.177-197. 2014.
8. Morales-Hernández M., Garcia-Navarro P., Burguete J., and P. Brufau, A conservative strategy to couple 1D and 2D models for shallow water flow simulation, Computers & Fluids, vol. 81, pp. 26-44, 2013. DOI10.1016/j.compfluid.2013.04.001



9. Morales-Hernandez, M., Murillo, J., Garcia-Navarro, P. The formulation of internal boundary conditions in unsteady 2-D shallow water flows: Application to flood regulation, WATER RESOURCES RESEARCH Vol. 49, Page471-487, DOI10.1002/wrcr.200624. 2013.

10. Juez, C., Murillo, J, Garcia-Navarro, P., Numerical assessment of bed-load discharge formulations for transient flow in 1D and 2D situations, JOURNAL OF HYDROINFORMATICS Volume15, Issue4, Page1234-1257, DOI10.2166/hydro.2013.153, 2013.

C.2. Congress, indicating the modality of their participation (invited conference, oral presentation, poster)

1. Invited Keynote in Mathematics and Control for the Earth Planet, Institute Henry Poincaré, Paris, 2013.

2. Invited keynote in Int. Symp. on Shallow Flows, Univ. Eindhoven, 2017.

3. Organiser of International Workshop on Numerical Modelling for Water Resources, Zaragoza, (Spain) 2019.

C.3. Research projects, indicating your personal contribution. In the case of young researchers, indicate lines of research for which they have been responsible.

- IP de PGC2018-094341-B-I00: Herramientas eficientes de alta precisión para la simulación y control de flujos medioambientales. 2019-2021.

- IP de CGL2015-66114-R: Desarrollo de modelos de simulación avanzados con base física para procesos hidráulicos y geofísicos. 2016-2019.

- PI in the 2 year project Management and Control of Water Storage Areas to minimize the environmental Impact of river flooding waves. (GECOZI). CTPP04/10 funded by Comunidad de Trabajo de los Pirineos. Gobierno de Aragón 2011-2012.

- PI in the 3 year Project Numerical Simulation of the Trigger And Evolution Of Granular Geophysical Flows And Their Impact On Water Masses funded by Spanish Ministry of Science 2012-2014.

- Researcher in the 3 year project. Development of A Computational Tool For The Optimal Control of Gates In Irrigation Channel Networks, funded by Spanish Ministry of Science, 2012-2014.

- Researcher in the 2 year project Quantification and modelling of the soil water and salt balance and their influence on Agro-ecosystems in the semiarid Aragon área. Funded by Gobierno de Aragon-La Caixa, 2012-2013.

- Researcher in the 3 year project WE@EU / Water Efficiency in European Urban Areas. Funded by EU, 2013-2016.

C.4. Contracts, technological or transfer merits, Include patents and other industrial or intellectual property activities (contracts, licenses, agreements, etc.) in which you have collaborated. Indicate: a) the order of signature of authors; b) reference; c) title; d) priority countries; e) date; f) Entity and companies that exploit the patent or similar information, if any

1. DEVELOPMENT OF ALGORITHMS AND COMPUTER CODES FOR HYDRODYNAMIC MODELS. Universidad de Zaragoza. HYDRONIA. 2013- 2016.

2. DEVELOPMENT OF ALGORITHMS AND COMPUTER CODES FOR HYDRODYNAMIC MODELS. Universidad de Zaragoza. HYDRONIA 2017-2021

3. SERVICIOS DE IMPLANTACIÓN DE UN MODELO BIDIMENSIONAL PARA SIMULACIÓN DE TRÁNSITO DE AVENIDAS EN EL TRAMO DEL RÍO EBRO ENTRE ZARAGOZA Y MEQUINENZA (2019)

4. INSTALACIÓN Y MANTENIMIENTO DEL MODELO DE SIMULACIÓN 2D DEL EBRO EN EL SISTEMA DE AYUDA A LA DECISIÓN DEL CENTRO DE PROCESO DE CUENCA (2017)