

CURRICULUM VITAE ABREVIADO (CVA)

The Curriculum Vitae cannot exceed 4 pages. Instructions to fill it available in the website

Part A. PERSONAL INFORMATION

First name	Begoña		
Family name	Vitoriano Villanueva		
Gender (*)	Female	Birth date (dd/mm/yyyy)	
ID number			
e-mail		URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-3356-6049		

A.1. Current position

Position	Associate Professor (Profesora Titular)		
Initial date	24/11/2009		
Institution	Complutense University of Madrid		
Department/Center	Statistics and Operational Research / <u>Faculty of Mathematical Sciences. Interdisciplinary Mathematics Institute</u>		
Country	Spain	Teleph. number	
Key words	Operational Research, Mathematical Programming, Multicriteria Decision Making, Logistics, Disaster Management, Sustainable Development		

A.2. Previous positions (research activity interruptions, art. 14.2.b))

Period	Position/Institution/Country/Interruption cause
1990-1997	Assistant Lecturer/Complutense University/Spain/ (4 months childbirth 1991)
1997-2006	Associate profesor/Comillas Pontificia University/Spain/
2006-2009	Lecturer (Contratado Doctor)/Complutense University/Spain

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed Mathematics	Complutense University of Madrid/Spain	1990
PhD Mathematics	Complutense University of Madrid/Spain	1994

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

- Six-years periods positive evaluation: 4 of research and 1 of transfer (last year 2007)
- Qualification for full professor (ANECA) 2023.
- Number of PhD theses supervised: 6.
- Articles included in JCR journals: 33
- Citations (Scopus; Google): 1087; 2333
- h index (Sc; Go): 16; 23.
- European projects as Principal Researcher at Complutense University: 2 (1 ongoing)
- Number of R&D projects in competitive calls as Principal Researcher: 11 (1 ongoing)
- Number of R&D projects in public calls as a team member: 32
- Number of R&D contracts with entities as PR: 11
- Number of R&D contracts with entities as a team member: 17

Begoña is Associate Professor at the Department of Statistics and Operational Research of Complutense University of Madrid (UCM) since 2009, and researcher of the Interdisciplinary Mathematics Institute (IMI). She has been a university lecturer since 1990, at UCM and at Comillas Pontifical University (1997-2006).

Particularly relevant is her activity in knowledge transfer and her leadership in research projects, contracts and groups creation and management:

- She has participated in 5 proposals of European projects (one as Principal Researcher), 2 of them with success, being PR at UCM of the RISE-MSCA-H2020 GEOSAFE (2016-20), and, currently, being PR at UCM of the HORIZON-RIA project HURRICANE (2025-28).
- She has been PR of 11 national research projects, leading currently the Thematic Network on Multiple Criteria Decision Making, and participated in other 32 projects as a team member. Begoña was one of the experts of the Mathematical Action against Coronavirus of the Spanish Committee of Mathematics (CEMat) (2020-21).
- She has been PR of 10 contracts with private companies and entities (1 of them ongoing with INDRA), participating in other 17 contracts.
- She has been PR of 11 cooperation for development projects on competitive calls, and team member of other 6. She has been involved in development cooperation activities organising programs in El Salvador, Peru and Mozambique since 1995, providing her with extensive knowledge of other realities and motivating her research.
- She is currently Past President of the Spanish Society of Statistics, Operations Research and Data Science, being previously President (2022-25) and Elected President (2021-22).
- She is the founder and coordinator of the UCM research group Decision Aid Models for Logistics and Disaster Management (Humanitarian Logistics) since 2011, and organiser of the IMI Data Science Club since 2019.
- She has been coordinator of the Master's Degree in Mathematical Engineering of UCM (2010-12), of several masters in Statistics (El Salvador, Peru and Mozambique), the first coordinator of the Master in Disaster Management of the UCM and the Technical University of Madrid (UPM) (2014-19), and coordinator of the PhD Programme in Mathematical Engineering, Statistics and Operational Research of UCM and UPM (2015-22).
- Begoña has supervised 35 Master Theses, 30 Degree Theses and 6 PhD Theses, the last two as the only supervisor reaching one of them the 2022 Prize for the Best PhD Thesis in MCDM of the Spanish Group on MCDM; and another one in cotutelle with John Hearne of the Royal Melbourne Institute of Technology (Australia).
- She also has an international recognition, as can be seen by the 5 proposals of European projects, with an intensive activity in national and international conferences as program chair, member of scientific committees, stream and session organiser, and as member of international committees (EMS, CIMPA...). In 2023, she has been member of the Scientific Committee of the IFORS conference and plenary speaker of the XI CSMIO.

Begoña is one of the pioneers in mathematical models for humanitarian logistics and disaster management, a research topic that was in its infancy when she began researching it in 2001. Her knowledge of operational research and its applications, and practical field knowledge from development projects, provided the motivation to work in such an unexplored area. The article Vitoriano et al. (2011) is a reference in the area. Thanks to the MSCA RISE GEOSAFE (2016-20) she could learn about the complexity of wildfires management from practitioners and began successful research with John Hearne.

She is author of more than 75 research publications (32 in journals included in the JCR), being also co-editor of the book *Decision Aid Models for Disaster Management and Emergencies* (Springer, 2013) and author of the chapter *Humanitarian Logistics* of the *Handbook of Disaster Risk Reduction and Management* (World Scientific Press & Imperial College Press, 2017).

Her research focuses mainly on Integer and Stochastic Programming, and Multicriteria Decision Making, leading and developing, with her collaborators, new lines of research, new mathematical models for real problems, new mathematical and solution concepts, new methodologies for solving models, and even identifying new theoretical problems in OR.

Part C. RELEVANT MERITS (sorted by typology)

C.1. Publications

Articles indexed in Journal Citation Report (a selection)

1. Granda, B., Vitoriano, B. (2025) A Greedy Constructive Heuristic for Solving the Team Orienteering Problem with Variable Time Windows. *International Journal of Computational Intelligence Systems*, 18, 69. <https://doi.org/10.1007/s44196-025-00797-5>
2. Granda-Chico, B, Vitoriano B, Figueira, J.R. (2025) A Mathematical Programming Approach for a Fire Suppression Problem. *Operational Research*, 25, 16.
3. B. Granda, B. Vitoriano (2024) The Team Orienteering Problem with Variable Time Windows. *International Transactions in Operational Research*, 0 (2024) 1-28.
4. B. Granda, J. León, B. Vitoriano, J. W. Hearne (2023) Decision support models and methodologies for fire suppression. *FIRE-Switzerland Journal* 6(2):37.
5. J. León, B. Vitoriano, J. Hearne (2023) A risk averse solution for the prescribed burning problem. *Safety Science* 158, 105951.
6. F. Liberatore, J. León, J. Hearne, B. Vitoriano (2021) Fuel Management Operations Planning in Fire Management: a Bilevel Optimisation Approach. *Safety Science* 137, 105181.
7. J.M. Ferrer, F.J. Martín-Campo, M.T. Ortuño, A.J. Pedraza-Martinez, G. Tirado, B. Vitoriano (2018) Multicriteria optimization for last mile distribution of disaster relief aid: Test cases and applications. *European Journal of Operational Research*, 269, 501-515.
8. C. Mejía-Argueta, J. Gaytán, R. Caballero, J. Molina, B. Vitoriano (2018) Multi-criteria optimization approach to deploy humanitarian logistic operations integrally during floods. *International Transactions in Operational Research*, 25, 1053-1079,
9. Liberatore F, Ortuño MT, Tirado G, Vitoriano B, Scaparra MP (2014). A hierarchical compromise model for the joint optimization of recovery operations and distribution of emergency goods in Humanitarian Logistics. *Computers & Operations Research* 42, 3-13
10. J. T. Rodríguez, B. Vitoriano, J. Montero (2012) A general methodology for data-based rules building and its application to natural disaster management. *Computers & Operations Research* 39, 863-873.
11. B. Vitoriano, M.T. Ortuño, G. Tirado, J. Montero (2011). A multi-criteria optimization model for humanitarian aid distribution. *Journal of Global Optimization (JOGO)*, 51, 189-208

C.2. Congress

Most relevant participations of 2023 and 2024

1. Member of the **scientific committee** of IFORS 2023 conference (Santiago de Chile, 10-14 July 2023), and **cluster organiser** jointly with Andres Weintraub: *Use of Analytics in Forest Fires Management*
2. **Plenary speaker** in the XI Conference of the Mexican Society of Operational Research (Puebla, México, 18-20 October 2023): *Modelos de decisión en logística humanitaria*
3. Member of the **scientific committee** of the Optimization and Wildfire Conference (Luso, Portugal, 1-4 October, 2024).

C.3. Research projects (a selection of last years)

- As Principal Researcher

1. HOLISTIC UGV-BASED RESILIENT AND REAL-TIME INTELLIGENCE FOR CRISIS AND NATURAL EMERGENCY (HURRICANE). HORIZON RIA. Proposal ID 101168017. PR of the project: Abraham Mejía (EURAC). PR of the UCM group: B. Vitoriano. 2025-28
2. Red Temática en Decisión Multicriterio. Convocatoria REDES. AEI. 2023-2025
3. LOG4D: MODELOS DE DECISIÓN Y CIENCIA DE DATOS EN LOGÍSTICA DE DESASTRES, DESARROLLO Y SOSTENIBILIDAD. National Research Agency AEI. 2020-2024. Co-IP: G. Tirado.

4. GEO-SAFE GEOSPATIAL BASED ENVIRONMENT FOR OPTIMISATION SYSTEMS ADDRESSING FIRE EMERGENCIES. H2020-MSCA-RISE, 2016-2020. Coordinator: E. Galea (University of Greenwich). PR of the UCM group: B. Vitoriano
5. MODELOS DE AYUDA A LA DECISIÓN PARA LOGÍSTICA HUMANITARIA EN GESTIÓN DE DESASTRES. Spanish Ministry MINECO. 2016-2019
6. Research Group UCM 970643 "HUM-LOG: MODELOS DE DECISIÓN EN LOGÍSTICA Y GESTIÓN DE DESASTRES (LOGÍSTICA HUMANITARIA)". UCM-Santander GR3/14. 2024, 2023, 2022, 2021, 2020, 2018-19, 2014-15

- As a team member

7. CONCEPTOS Y APLICACIONES DE LOS SISTEMAS INTELIGENTES (CASI-CAM-CM). Red de Excelencia de la Comunidad de Madrid S2013/ICE-2845. 2014-18
8. AYUDA A LA DECISION CON INFORMACION DIFUSA Y CRITERIOS MULTIPLES. APLICACION A LA GESTION DE DESASTRES. (Spanish Ministry of Science and Technology). TIN2012-32482. 2013-2015

C.4. Contracts, technological or transfer merits (a selection)

Contracts (principal researcher)

1. Herramientas, Algoritmos y Modelos de Análisis. INDRA Sistemas. 2024-25
2. Evaluación Medioambiental de Proveedores. EDPRenewals (a través de Math-in). 2022. (Utility model, in production in the company)
3. Optimización de Stocks de Consumibles en Empresas de Transporte. Obuu Tech S.L. 2019-2020.
4. Modelos de Decisión y Ciencia de Datos en el Sector de la Restauración. Mapal Software S.L. 2018-2021 (ASTE, utility model in production in the company)
5. HEPLASE: Modelos planificación a medio plazo de generación de energía eléctrica. ENDESA. 2004-2006 (VALORE, utility model in production in the company)

Contracts (team member)

6. Análisis de datos y estadística para llevar a cabo la definición de la estratificación y su ajuste tras el proceso de datos del INES, basándose en los resultados del INES 2001-2019 anterior. TRAGSATEC. 2023. PR: J. Tinguaro Rodríguez.

Cooperation for development projects (competitive calls) (principal researcher)

7. Desarrollo Institucional y Transferencia del Proyecto de Educación para el Desarrollo: Máster en Estadística de Mozambique. XIX Convocatoria UCM de ayudas para proyectos de cooperación que contribuyan a la consecución de los ODS 2023. 2023
8. El Máster en Estadística en Mozambique como Motor del Desarrollo: Educación de Calidad, Transferencia y Fortalecimiento Institucional. XVII Convocatoria UCM de ayudas para proyectos de cooperación que contribuyan a la consecución de los ODS 2021. 2021
9. Fortalecimiento de las Matemáticas y la Estadística en Mozambique: Máster en Estadística. AECID A1/036689/11 (Acción Integrada). 2012-2013 (62.400€)
10. Fortalecimiento de las Matemáticas en El Salvador: Formación de Postgrado, Investigación y Biblioteca. AECID (Acción Integrada D/018093/08). 2009-2010. (106.695€)

PhD Thesis (a selection)

1. J.T. Rodríguez. Clasificación de desastres y emergencias con representación bipolar del conocimiento. Supervisors: J. Montero, B. Vitoriano. UCM. 2010
2. J. León. Mathematical programming with uncertainty and multiple criteria for development and wildfires management. Supervisors: B. Vitoriano, J. Hearne. UCM and Royal Melbourne Institute of Technology. 2020
3. A. Rodríguez. Stochastic Modelling and Scenarios Generation for Disaster Management. Supervisor: B. Vitoriano. UCM. 2021.
4. B. Granda. Operational Research for Wildfire Suppression: The Team Orienteering Problem with Variable Time Windows. Supervisor: B. Vitoriano. UCM. 2024