
FERDINANDO VILLA, Ph.D.

Institution: Basque Centre for Climate Change (BC3)

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Professional status: Ikerbasque Research Professor (tenured) **start date:** Jan 1st, 2011

Administrative status: full time permanent staff

Studies and career

1986-1989: Chief software engineer, EDECA, Parma, Italy.

1987 M.Sc. *cum laude* in Biology, University of Parma, Italy.

1989-1991: Independent consultant in IT, database, and educational software for large-scale environmental and commercial applications.

1993: Ph.D., Ecology. Institute of Ecology, University of Parma.

1996-2002: Assistant Research Scientist, Institute for Ecological Economics, University of Maryland.

2002-2008: Associate Research Professor, Department of Plant Biology, University of Vermont.

2002-present: Fellow, Gund Institute of Ecological Economics, University of Vermont

2007-2010: Adjunct Research Professor, Department of Computer Science, University of Vermont.

2009-2010: Research Professor, Department of Plant Biology, University of Vermont.

2010-2011: Research Professor, Basque Centre for Climate Change, Bilbao, Spain.

2011-present: Ikerbasque Research Professor (tenured), Basque Centre for Climate Change, Bilbao, Spain.

Additional studies

1984 School in Mathematical Modelling for Biology and Medicine; Course in Ecological Modelling. University of Ancona, Italy.

1992 International Summer School on Environmental Dynamics. Venice, Italy.

1993 Modelling Structured Populations in Freshwater, Marine and Terrestrial Ecosystems, Cornell University, Ithaca (NY), U.S.A.

1993-1996: Postdoctoral fellow, Theoretical Ecology, GIS, Island Biogeography, University of Parma.

Language skills

Italian	Native speaker
English	Near-native fluency

Spanish	Excellent reading, comprehension; good speaking and writing
French	Good speaking, comprehension, writing, reading
Portuguese	Good reading and comprehension; basic writing and speaking

Courses taught (partial)

- 1.1990: teacher of Statistics in the 15th Course in Statistics for Base and Applied Biological Research, Cortona (Italy) on behalf of the Biometric Society.
- 2.1990: teacher of Statistics within the Ph.D. program in Environmental Biology at the University of Messina, Italy.
- 3.1993: teacher of Environmental Management in the 1st European Master in Environmental Management organized by European Association for Environmental Management Education (EAEME) sponsored by the European Community, Verbania, Italy.
- 4.1998: Collaborated as a teacher on the course "Dynamic modeling of ecological and economic system" (MEES 698S/ZOOL 708U) at the University of Maryland.
- 5.2000-2004: Knowledge Representation, data management and information technology for Ecological Economics. 5 Course modules (~1 month each) taught yearly in the International Master Program in Ecological Economics, Chulalongkorn University, Bangkok, Thailand.
- 6.2002: Teaching faculty in workshop: Reforestation of the Atlantic Forest as a tool for watershed management. Conceicao do Macabu, Brazil. Teaching in Portuguese and English.
- 7.2002: Participation in teaching and organization of Ecosystem Services and Biodiversity (NR 285) 3 credits, University of Vermont, Fall semester.
- 8.2003. Participation to NR 378 - Integrating Analyses of Natural Resources Issues. University of Vermont, Fall Semester
9. 2004. Knowledge modeling for Environmental Research and Management. University of Vermont, Spring Semester, (NR) 385.
- 10.2010. Modeling for Environmental Planning. University of Vermont, Plant Biology (PBIO) 295/Natural Resources (NR) 285, 3 credits.
- 11.2010. Ecosystem Services Modeling for environmental decision-makers. Intensive hands-on course for international policy makers, Spring break 2010.
- 12.2013. International Spring University of Ecosystem Services Modelling. 2-week intensive course (30 worldwide participants). Bilbao, March 2013. School director, organizer, and teacher with 5 other international teachers.
- 13.2014. International Spring University of Ecosystem Services Modelling. Second edition (26 worldwide participants). Bilbao, April 2014. School director, organizer, and teacher with 8 other international teachers.
- 14.2015. International Spring University of Ecosystem Services Modelling. Third edition (21 worldwide participants). Bilbao, April-May 2015. School director, organizer, and teacher with 9 other international teachers.
- 15.2016. International Spring University of Ecosystem Services Modelling. Fourth edition (25 worldwide participants). Bilbao, May 2016. School director, organizer, and teacher with 8 other international teachers.

I have additionally taught environmental science and computer science seminars within research projects and Ph.D. programs at many institutions worldwide. I have also taught

music, musical instruments (piano, guitar), photography and multimedia for remote learning during projects not described in this CV.

Students advised and funded

1. Andrea Mazza, post-doctoral fellow. Primary mentor. University of Parma. 1995-1996.
2. Sergey Krivov, post-doctoral fellow. Primary mentor until he became part of the Computer Science faculty. Full-time position funded 100% 2001-2006, 50% in 2007.
3. Shuang Liu. Natural Resources (Ph.D. co-advisor). Funded 100 to 50%. 2001-2004.
4. Gary W. Johnson, Jr. Computer Science. Primary Ph.D. advisor. Research assistantship funded 100% 2007-2010.
5. Kenneth J. Bagstad. Natural resources (Ph.D. co-advisor). Funded 50% 2007-2009.
6. Kenneth J. Bagstad. Mentor, post-doctoral fellowship (funded by US Geological Service). 2009-2012.
7. Elena Perez-Minana, Ph.D., Primary supervisor of post-doctoral fellowship. 2013-2016.
8. Stefano Balbi, Ph.D. Primary supervisor of post-doctoral fellowship. 2014-2016. Supervisor, Juan de la Cierva fellowship, 2016-present.
9. Javier Martínez Lopez, Ph.D. Primary supervisor of post-doctoral fellowship. 2015-present.

Computer skills

Operating systems: Unix/Linux (system, GUI programming, database development, professional level), MS-DOS/Windows (system programming, professional level), MacOS; professional knowledge of multiplatform portability kits.

Programming languages: C++ and C, Java, FORTRAN, Scheme/Lisp, Clojure, Tcl/Tk, Perl, parallel extensions.

Development environments: GNU development tools, X11, GRASS, commercial and open source SQL and no-SQL DBMS, spatial extensions, Eclipse.

System administration: Linux/Unix, Solaris, Windows.

Networking : TCP/IP protocol, network configuration; World Wide Web page design in HTML, DHTML, Javascript, CGI, Java servlet/J2EE, GWT and Javascript AJAX, AngularJS. Client/Server architecture development, web service (SOAP, Axis, REST) development.

Major software projects as primary designer and developer

1. ALICE (1988): object-oriented programming language with integrated hypertext capabilities. Smalltalk-like language with separate bytecode compiler and interpreter; graphical front-end capable of hypertext functionalities, with display of mathematical notation. Running under MS-DOS. C++, 28,500 lines. Commissioned and used in the MAT-UNO project for self-learning of mathematics in secondary school, financed by regional education authorities.
2. BBSim (1991-1993): individual-oriented ecological simulation package, with special features to allow easy simulation of colonization, interaction, reproduction, and death in heterogeneous habitats. Running under UNIX, the system uses the TCL/Tk language by J. Osterhout as a command language and graphical interface generator, and retrieves/stores data through SQL language calls to the PostGres relational database manager. Used in all the simulation projects described in Section 5, C/C++, 11,500 lines.

3. r.concordance (1995): multicriteria analysis module, to be used within the geographical information system GRASS developed by the Construction Engineering Research Laboratory (CERL) of the U.S. Army. Allows the definition of management priorities, the identification and reclassification of input data, and produces raster maps of the concordance and discordance level between data and priorities. C/C++. Publicly available as contributed software to the GRASS system.
4. Collaborative Modelling Environment (1997): a graphical, integrated environment to enable collaborative development of ecological models. C/Tcl/TK, 8,000 lines.
5. SME graphical user interface. 1997. Graphical interface to the Spatial Modelling Environment (<http://www.uvm.edu/giee/SME3>). C++/Tcl/Tk, 3200 lines.
6. Model Performance Evaluation Package. 1999. Software to define and calculate the Model Performance Index. C++, 2800 lines.
7. TCL-based extended command language for the Spatial Modelling Environment. 1997. A command-language for the Spatial modelling environment to allow adaptive, context-sensitive spatial simulation.
8. Simulation Network Interface (SNI). A client-server based protocol and software package to interact and exchange data with remotely running simulation models, used to connect different simulation paradigms in higher-level, distributed simulation models, to provide remote access to models with remote graphical interfaces, and to implement remote data servers to be used from within simulation models or in dedicated configurations. 1999.
9. Integrating Modelling Toolkit (IMT). A toolkit for integrated development and use of multi-scale, multi-paradigm ecological models. 2004. C++, 150,000 lines. Web pages: <http://sf.net/projects/imt>, <http://www.integratedmodelling.org>,
10. GrOWL: a graphical browser and editor of Semantic Web ontologies. 2004. Design and project direction with Sergey Krivov (principal developer) and Rich Williams. Java. Web page:
11. k.LAB: a software framework that allows connecting formal ontologies to software objects, both in-memory and persistent. It can be used for any application of semantically explicit, generic, integrated modelling. Because k.LAB enables formal reasoning on the contents of databases and user sessions, it is particularly useful in integrated data management, dynamic modelling, intelligent database and collaborative knowledge development. k.LAB manages large-scale storage of semantically annotated objects from multiple, heterogeneous sources, and allows automated reasoning over their abstract definitions and building of computational workflows to observe concepts stated by users. Java and Clojure, 200,000+lines. 2007-ongoing. Source code available (under a GPL 3.0 license) at <http://bitbucket.org/ariesteam/klab-core.git>. Software and applications to be documented at www.integratedmodelling.org (partially available).
12. ARIES: multi-paradigm distributed modeling platform dedicated to natural-human system decision and ecosystem services evaluation. 2007-ongoing. Software and applications documented at aries.integratedmodelling.org.

External research collaborations until 2002 (too numerous to mention afterwards)

- 1.1987-88: research work on evaluation of kidney functionality in the field of Nuclear Medicine, Sanitary Unit 9, Saronno (Italy)

- 2.1992: National Aeolian Project (Italian Ministry of Instruction, 40% funding), director Prof. Orazio Rossi.
- 3.1992: Consultant as an environmental database expert with UNESCO (Man and the Biosphere project n. 7 "Ecology and Rational Use of Island Ecosystems", Director Dr. P.G. D'Ayala) in Paris.
- 4.1993: Coastal Lagoons Eutrophication and Anaerobic Processes (C.L.E.A.N.) project, European Community, Director Prof. P.Caumette. Participation as an expert in modelling, statistics and data management.
- 5.1994-1995: Consultant for the Italian Ministry of the Environment in the Project "Basi conoscitive per la realizzazione della Cartografia della Natura Italiana" (Knowledge bases for the realization of the Italian Nature Map). Participation as ecologist and GIS developer.
- 6.1998-2002: Part of a four-persons international advisory panel on the design of Marine Protected Areas in the Mediterranean, selected by the Italian Ministry of the Environment's Institute for Marine Research (ICRAM).
- 7.1998-2001: Part of an international advisory panel for the development of an Environmental Vulnerability Index (EVI) for the Fiji islands and other countries in the South Pacific, selected by the South Pacific Applied Geoscience Commission (SOPAC).
- 8.1998-2003: Part of the Application Technology Team on Environmental Hydrology in the National Computational Science Alliance (NCSA) Partnership for Advanced Computational Infrastructure, funded by the NSF.
- 9.1998-2000: Part of the Working Group on the Value of the World's Ecosystem Services and Natural Capital; funded by the National Center for Ecological Analysis and Synthesis (NCEAS).
- 10.1998-2002: Collaborator in the NSF-funded Long Term Ecological Research (LTER) project on the urban ecosystem of Baltimore city.

Other relevant work experience

- 1.1986-1989: chief software engineer, EDECA, Parma. Designed and implemented a number of major software systems, including an object-oriented programming language and hypertext engine, both used in Computer Aided self-learning of Mathematics in Italian secondary schools. Developed (in collaboration) a package for the optimization of the use of chemicals in agricultural pest control and completed several other scientific and environmental software projects.
- 2.1989-1991 and 1993-1996: software consultant with many nationwide Italian firms and institutions, while pursuing ecological research at the University on a voluntary basis.
3. 1984-present: Artist photographer and graphic designer. Held many personal photography exhibitions in Italian art galleries. Participation in documentary exhibits on natural environments. Authored and designed record covers, logos, and web sites for both artistic and scientific applications. Art CV and portfolio available on request.

Memberships and Awards

- 1991** Italian Society of Ecology (SITE).
1997 International Society of Ecological Economics (ISEE).
2004 Sigma-Xi, Vermont panel.

Grants and Awards

1. Italian National Institute for Alternative Energy (ENEA). Three-year Ph.D. scholarship. \$39,000. 1989-1993.
2. An Open Spatial Modeling Environment. NSF 075 25335, 1996-1999. \$381,000 (Co-Investigator)
3. Integrated Ecological Economic Modeling and Valuation of Watersheds. EPA 075 25275, 1996-1999. \$997,000 (Co-Investigator).
4. Integration of Process-based and Agent-based modelling approaches. US Army 075 25366, 1998. \$25,508. (Co-Investigator).
5. Whole watershed restoration: applying the Patuxent and Gwinn Falls landscape models to designing a sustainable balance between Man and Nature. EPA 075 25377, 1999-2002. \$699,916 (Co-Investigator).
6. Modular Spatial Ecosystems. NSF 075 25282, 1998-2002, \$219,369 (Co-Investigator)
7. Human Settlements as Ecosystems: Metropolitan Baltimore from 1797-2100. NSF 075 25343, 1997-2000. \$600,000 (Co-Investigator).
8. A web-accessible knowledge base for the integrated analysis and valuation of Ecosystem Services. \$780,377. National Science Foundation, 2000-2003. (Principal investigator)
9. Biodiversity and Ecosystem Informatics (BDEI) - Towards an Operational Semantics of Biological Diversity: Integrating Structure and Function in a Web-accessible Knowledge Base." \$95,680. National Science Foundation, 2001-2003 (Principal Investigator).
10. Information Technology Research (ITR): SEEK: Enabling the Science Environment for Ecological Knowledge. National Science Foundation. (Main program: UNM, \$12,500,000 Pi: William Michener). Subcontract to University of Vermont: \$464,277, 2002-2007 (Co-principal investigator).
11. System for Environmental and Agricultural Modelling: Linking European Science and Society (SEAMLESS). European Union, €12,500,000. Subcontract to UVM: €158,000. 2005-2009 (Principal investigator of sub-contract, co-principal investigator in main project).
12. Biological Databases and Informatics: Project ARIES (ARTificial Intelligence for Ecosystem Services): an integrated Digital Collaboratory to support the economic valuation of ecosystem services. National Science Foundation. \$927,000. Principal investigator.
13. United Nations Environmental Programme (UNEP)-WCMC. 2009. Assessing flows of Ecosystem Services from mountaintops to ocean. \$80,000. Principal Investigator.
14. Natural Environment Research Council, UK. 2010. Food security at the forest-agriculture interface: A complex systems analysis of ecosystem services trade-offs and tipping points (co-investigator; T. Dawson, principal investigator.). Ecosystem Services for Poverty Alleviation development grant NE/I002863/1. GBP 50,000
15. ASSETS: Attaining Sustainable Services from Ecosystems through Tradeoff Scenarios. ESPA/NERC, 2012-2016. 4 joint grants totaling GBP 3,000,000. Contract to BC3 GBP 157,764. Principal investigator of BC3 contract.
16. ESSENSE - Mapping regulating Ecosystem Services using remote SENSing imagery. Flemish Institute for Technological Research 2012. EUR 5,000. Co-principal investigator.
17. CAUSE: Comparative Assessment and Valuation of Ecosystem Services in Agro-Forest systems: a methodology for Land Use Policy prioritization. 2013-2016. Plan Nacional 2013 (Spanish Government). EUR 37,730. Principal Investigator.

18. Equipment grant: Server System for a Laboratory in Modeling of Ecological Systems. 2013-2015. Dept. of Education, University and Research, Basque Government. EUR 39,492. Principal Investigator.
19. WISER: Which Ecosystem Service Models Best Capture the Needs of the Rural Poor? ESPA/NERC, 2014-2016. GBP ~400,000, Contract to BC3 GBP 69,715. Co-principal investigator.
20. AQUACROSS: Knowledge, Assessment, and Management of AQUATIC Biodiversity and Ecosystem Services across EU Policies. Horizon 2020 proposal. June 2015-Dec 2018. EUR ~7M. Co-principal investigator; lead institution ECOLOGIC GmbH, Berlin.

Invited lecturer, keynote speaker, chair, or panelist (selected)

1. Multi-paradigm Simulation Modelling: Model Interoperability through Network-based interfaces. Invited lecture, Computer Science Department, Louisiana State University (Baton Rouge, LA), February 9, 1999.
2. Frameworks for multi-paradigm meta-models: integrating process-based landscape models with Swarm agents. Invited talk, Swarmfest '99, University of California at Los Angeles (UCLA), March 29, 1999.
3. Seminar: Scientific tools for marine protected areas planning and management. Workshop "Il Coordinamento della Ricerca nelle Aree Marine Protette Italiane", ICRAM, Rome, Italy, September 22-23 1999.
4. Seminar: Marine protected areas planning and management: spatialized multiple criteria analysis. Workshop "La Politica del Mare", Portoferraio, Italy, September 25-28 1999.
5. Panelist and chair: Agent 2000: The simulation of social agents: architectures and institutions. Chicago, October 5-7, 2000, sessions: "Representing Agent Worlds" and "Implementation and Tool Convergence".
6. Presentation: dg.o2002 - National Conference for Digital Government Research. Invited talk: Towards an Operational Semantics of Biological Diversity: Integrating Structure and Function in a Web-accessible knowledge base. Los Angeles, May 19-22, 2002.
7. Seminar: University of Massachusetts at Boston, Dept. of Computer Sciences. Towards a generalized model and XML semantics for integrated cross-paradigm modeling. October 28, 2002.
8. Invited talk: National Science Foundation headquarters, Arlington, VA. An Operational Semantics for Biological Diversity. Arlington, VA, February 11, 2003.
9. University of Vermont, Department of Botany seminar series. Invited talk: Towards a new semantics for Ecology: representing Nature across scales and paradigms. Burlington, VT, April 24, 2003.
10. University of Vermont, Department of Biology seminar series. Invited talk: Towards a new semantics for Ecology: representing Nature across scales and paradigms. Burlington, VT, April 18 2003.
11. Presentation and workshop participation: Boston College: Open Source/Content LULC Modeling Workshop. August 21-22 2003, Boston.
12. Workshop participation and session chair: "Collaboration in Ecology" workshop. October 22-24, 2004, University of California, Irvine.
13. Workshop participations: System for Environmental and Agricultural Modelling: Linking European Science and Society (SEAMLESS). Modelling workshop. Wageningen, the Netherlands. Jan 10, 2005.

14. Workshop participation and Seminar: Ontology-driven data integration. System for Environmental and Agricultural Modelling: Linking European Science and Society (SEAMLESS) meeting. Lund, Sweden, 2005.
15. Invited talk on Ecosystem Services valuation and the Ecosystem Services Database. Conservation International, Washington, DC, Nov 16, 2005.
16. Department of Computer Science seminar series. University of Vermont.
Ecoinformatics: Knowledge Representation and Machine Reasoning for Sustainable Environmental Research and Decision Making. Burlington, VT, May 4th, 2007.
17. Exxon-Mobil and Business for Social Responsibility: Environmental Services, Tools, and Markets Working Group. Invited lecture on ARIES. Exxon-Mobil headquarters, VA, June 2008.
18. Conservation International. Seminar series. Invited talk: Artificial Intelligence for Ecosystem Services. Crystal City, VA, June 18rd, 2008.
19. Environmental Protection Agency. Invited country-wide webinar, ARIES (Artificial Intelligence for Ecosystem Services): an introduction. Aug 21st 2008
20. Keynote address and workshop lead, Conservation International Madagascar. Artificial Intelligence for Ecosystem Services (ARIES): Supporting decision and policy making on nature's services and human wellbeing in Madagascar. Antananarivo, Madagascar, September 11th, 2008.
21. Keynote address, 4th International ICSC symposium on Information Technologies in Environmental Engineering. Thessaloniki, Greece, May 2009
22. Keynote address, Roundtable Discussion of Emerging Ecosystem Service Tools between Industry, Government, & Tool Developers. Fondazione Enrico Mattei, Milano Italy, September 18th 2009.
23. British Petroleum (BP). Invited talk: Artificial Intelligence for Ecosystem Services. BP headquarters, Sunbury, UK, October 5th 2009.
24. Keynote Address, Business for Social Responsibility. A Roundtable Discussion of Emerging Ecosystem Service Tools and Applications within Corporate Decision-Making. Keynote address. Burlington, VT, Oct 13, 2009
25. Invited speaker at the BSR Conference, San Francisco, October 20 – 23, 2009
26. NatureServe Environmental Tool Network workshop series. Invited nationwide webinar: Ecosystem Services Modeling with ARIES. December 3rd, 2009.
27. United Nations Environmental Programme. PROTEUS partnership 2012 workshop. Invited talk: Applications of coastal and marine datasets: ARIES. London, UK, Dec 9th 2009.
28. United Nations Environmental Programme. Global Biodiversity Modelling workshop. Invited talk: Marine ecosystem service modelling using ARIES. World Conservation Monitoring Centre, Cambridge, UK, Jan 19th 2010.
29. National Council for Science and Environment. The New Green Economy conference. Session Chair and Workshop Leader, Practical Assessment and Valuation of Ecosystem Services. Jan 22nd, 2010.
30. Ontario Government workshop series. Invited talk: The Artificial Intelligence for Ecosystem Services (ARIES) approach to ecosystem services assessment and valuation. Peterborough, Ontario, March 26th, 2010.
31. Dalle Molle Institute of Studies on Artificial Intelligence, Lugano, Switzerland. Semantic meta-modelling: towards true modularity and interoperability in model specification. Invited lecture. April 27, 2010.
32. United Nations Environmental Programme. Invited talk: Flows of ecosystem services from land to ocean. World Conservation Monitoring Centre, Cambridge, UK, Oct 6th

2009. Invited talk, Environmental Protection Agency, Ecosystem Services Research Program modeling workshop. Athens, GA, October 19th 2009.
33. Department of Computer Science seminar series. University of Vermont. Semantically driven meta-modelling: automating model construction and calibration through explicit semantics, with an application to environmental decision support systems. Burlington, VT, Apr 8th, 2010.
 34. Conservation International. Seminar series. Invited talk: Artificial Intelligence for Ecosystem Services. Crystal City, VA, June 3rd, 2010.
 35. USGS Forest Service. Invited talk on Artificial Intelligence for Ecosystem services assessment and valuation. Washington, DC, Jun 4th 2010.
 36. Ente Nazionale Idrocarburi (ENI). Invited talk: Corporate valuation of Ecosystem Services: assessment and valuation of ES for industry applications. Milano, Italy, June 8th, 2010.
 37. Keynote address: Bridging scales and paradigms in natural systems modeling. 4th Metadata and Semantics research conference. Alcalá de Henares, Spain, October 2010.
 38. Royal Society, London. Invited talk: What science of ecosystem services to address environmental securities? In: "Achieving food and environmental security - new approaches to close the gap" meeting. London, December 4th, 2012.
 39. UN Global Mechanism: Capacity Building workshop for Eastern Africa. Participation and Keynote address. Dec 10-13, Kigali, Rwanda.
 40. Invited talk: Modeling on a semantic web: unifying data processing, data retrieval and modeling through the semantics of observation. An introduction to semantic meta-modelling. Democritus University of Thrace, Xanthi, Greece. May 15, 2013.
 41. Invited talk: Modeling on the semantic web. An introduction to semantic meta-modelling. Department of Computer Science, University of Luxembourg. Sep 13, 2013.
 42. Villa, F. Semantic meta-modeling. Participation and invited talk, Advancing Software for Ecological Forecasting workshop, National Center for Supercomputing Applications, Urbana-Champaign, IL, March 25-27, 2014.
 43. Villa, F. Ecosystem Services assessment for the 21st century: an introduction to the ARIES technology. Invited talk. IH Cantabria, Santander, Spain. August 13th, 2014.
 44. Villa, F. Modeling and managing socio-environmental systems on the semantic web, Symposium on EcoTopia Science 2015 (ISETS '15) - Innovation for Smart Sustainable Society. Nagoya University, Nagoya, Japan, Nov, 2015.
 45. Workshop: Improving Semantics in Agriculture. Food and Agriculture Organization (FAO). July 2015.
 46. Workshop: Hawaiian Watershed Response. SESYNC, Annapolis, MD, USA. March 2016.
 47. Workshop: Integrating human agency and ecosystem services: an ABM perspective on food. 8th International Congress on Environmental Modelling and Software, organized with Stefano Balbi. Toulouse, France, July 2016.
 48. Workshop: Using artificial intelligence instruments in conservation and management of protected areas. CUTGANA, Catania, Italy, October 2016.
 49. Workshop: Modelling Cultural Ecosystem Services, presented at the Understanding multiscale linkages in ecosystem services assessment using ARIES platform. Organized by ICIMOD, Kathmandu, Nepal, Nov, 2016
 50. Workshop: The future of the Global Agricultural Concept Scheme (GACS). Within MTRS conference, November 22-24, 2016.
 51. Workshop: National Accounting of Ecosystem services. Powell Center and SESYNC, Fort Collins, CO, USA. October 2016.

ews and press releases (only listed since 2013)

1. **Euskadi Innova** (Basque Government innovation forum). *Nuestro objetivo es hacer más simple la toma de decisiones complejas usando la inteligencia artificial*. Interview on ARIES and the Spring University, 3/22/2013. Online at <http://www.euskadinnova.net/es/innovacion-social/entrevistas/nuestro-objetivo-hacer-simple-toma-decisiones-compleja-usando-inteligencia-artificial/612.aspx>.
2. **El País**. *Tenemos que aprender la manera de vivir con menos*. Interview on ARIES by Eva Larrauri on 3/24/2013. In print and online at: http://ccaa.elpais.com/ccaa/2013/03/24/paisvasco/1364145943_633888.html
3. **El Correo**. *Expertos Mundiales se forman en Bilbao sobre sostenibilidad*. Press release. 9/3/2013. In print and online at: <http://www.elcorreo.com/vizcaya/v/20130319/sociedad/expertos-mundiales-forman-bilbao-20130319.html>

Outreach and service activity

1. **Editorial Boards**: Journal of Earth Science Informatics (Springer); Environmental Modelling and Software (Elsevier). Currently phasing out memberships and review activities for corporate-owned journals and concentrating on supporting *respectable*, high-quality and fair open access science.
2. **Referee activity** for international journals (too numerous to mention) and books (Gordon and Breach, Springer, Wiley). Now supporting non-corporate, not-for-profit, high-quality journals only.
3. **Book reviewer** for *Ecological Economics*, *Indice dei Libri*.
4. **Reviewer of research proposals** for the US National Science Foundation, US Environmental Protection Agency, Canadian Research Council, Chinese academy of sciences, French Foundation for Biodiversity and others. Regular member of premier review panels at the US NSF (2001-2010). Panelist in the 2014 European Research Council (ERC) Consolidator grants (ERC Advanced panel sought by commission, not accepted due to conflict with own ERC proposal).
5. **Reviewer of governmental programs** for the US Environmental Protection Agency.
6. **International advisor** on the design of Marine Protected Areas in the Mediterranean, selected by the Italian Ministry of the Environment's Institute for Marine Research (ICRAM), and on the development of an Environmental Vulnerability Index (EVI) for the Fiji islands and other countries in the South Pacific, selected by the South Pacific Applied Geoscience Commission (SOPAC).
7. **External reviewer for PhD candidates and promotions** for universities, NGOs and corporations worldwide.

PUBLICATIONS (total 155 including major software projects and web sites)

Published abstracts, conference papers, invited talks with published abstracts

1. F.Villa (1992): Un programma per la simulazione orientata all'individuo di popolazioni e comunità in habitat complessi. Institute of Ecology, University of Parma.
2. F. Villa, O. Rossi, P.G. D'Ayala (1992): Problems and perspectives in designing a data bank for small islands research and management. Paper presented at the international symposium ISLANDS 2000, Giardini Naxos 19-24 May 1992.
3. F.Villa (1995): r.concordance manual. Distributed with the corresponding program.
4. S. Sei, G. Rossetti, F.Villa, I. Ferrari (1996): "Studi di lungo termine dello zooplankton in due lagune del delta padano". Conference proceedings, GADIO 1996 symposium, Venice, Italy.
5. Costanza R., R. Boumans, W. Boynton, T. Maxwell, F. Villa, A. Voinov, L. A. Wainger, T. Fisher, R. Gardner, N. Bockstael, J. Geoghegan, I. Strand, 1996. Integrated Ecological Economic Modeling: Progress in the Patuxent Watershed. In: 1996 Water and Watersheds Program Review. NSF/EPA Partnership for Environmental Research. 14-15 November 1996. Alexandria, VA.
6. Maxwell, Thomas P., and F. Villa (presenting author) (1997): "A paradigm for collaborative, high performance landscape modeling". US-IALE '97 symposium, Durham, NC.
7. Boumans, R.M., R. Costanza, T. Maxwell, F. Villa, A. Voinov, H. Voinov and L. Wainger (1997): "Integrated ecological economic modeling of the Patuxent watershed, Maryland". US-IALE '97 symposium, Durham, NC.
8. Voinov, A., R. Costanza, L. Wainger, R.M.J. Boumans, F. Villa, T. Maxwell, H. Voinov, 1998. Integrated ecological economic modeling of watersheds. In: Proceedings of Conference: Mission Earth '98, San Diego, SCS.
9. Maxwell, T. and F. Villa, 1998. "Collaborative Multi-Paradigm Modeling of Environmental Systems." Proceedings of the 1998 Conference in Simulation Methods and Applications. Orlando, Florida.
10. F. Villa (1997). Usage of the Collaborative Modelling Environment. IEE internal report, University of Maryland, 27 pp.
11. F. Villa (1997). Guide to the Spatial Modelling Environment graphical user interface. IEE internal report, University of Maryland, 42 pp.
12. F. Villa (1997). Guide to the Spatial Modelling Environment TCL-based command line interface. IEE internal report, University of Maryland, 11 pp.
13. F. Villa (1997). Usage of the Model Performance Evaluation software. IEE internal report, University of Maryland, 24 pp.
14. F.Villa, R.M.J. Boumans, R. Costanza. An approach to the calibration and evaluation of performance of complex simulation models. ISEM 1998 conference, Baltimore, August 2-5, 1998.
15. R.M.J. Boumans, F. Villa, R. Costanza. A calibration strategy for the PAT-GEM model using the Model Performance Index and exploratory data analysis. ISEM 1998 conference, Baltimore, August 2-5, 1998.
16. F.Villa, R.M.J. Boumans, R. Costanza. Calibration and testing of complex process-based simulation models. 12-pages draft accepted for the 1998 Applied Modelling and Simulation (AMS) conference, Honolulu, August 12-14, 1998.
17. Costanza R., R. Boumans, T. Maxwell, F. Villa, A. Voinov, H. Voinov, L. Wainger, 1998. Integrated Ecological Economic Modeling and Valuation of Watersheds. In: 1998 Water and Watersheds Program Review. NSF/EPA Partnership for Environmental Research. 28-29 January 1998. Corvallis, OR.
18. Voinov, A., R. Costanza, L. Wainger, R. Boumans, F. Villa, T. Maxwell and H. Voinov, 1998. Integrated ecological economic modeling of watersheds. In: A. Sydow, Jin-Yi Yu

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A handwritten signature in black ink that reads "ferdinandovilla". The signature is written in a cursive, lowercase style.