

Jean-Philippe VIDAL

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HR WALLINGFORD
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HYDROCLIMATOLOGIST

WORK EXPERIENCE

- Dec 2006- | HR WALLINGFORD – Water Resources Department, *Oxfordshire*
Senior hydrologist
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- Climatological and hydrological trend analyses for Welsh Water drought plan
- 2005-2006 | HR WALLINGFORD – Water Resources Department, *Oxfordshire*
Stays at Lancaster University, Centre for Research on Environmental Systems and Statistics
Post-Doctoral Researcher (*Marie Curie European Fellowship*, 19 months)
-
- Impact of climate change on water resources (www.futuredrought.org.uk):
- Development of an integrated framework to derive local scale multi-GCMs climate scenarios and application to 21st century UK climate
 - Development of a methodology to assess the uncertainty on hydrological model structure and parameters
 - Derivation of probabilistic hydrological scenarios for 70 UK catchments
 - Development and provision to UK water companies of integrated tools for assessing the impact of climate change on water resources for the 2020s
 - Development of an object-oriented Matlab toolbox for climate change impact assessment on the hydrological regime
 - Flow trend analysis for 40 UK catchments
- 2002-2004 | CEMAGREF (National Institute for Agricultural and Environmental Engineering Research), Hydrology-Hydraulics Research Unit
Stays at IMFT (Fluid Mechanics Institute of Toulouse), Hydrodynamics and Environment Group, and at INRIA (National Institute for Agricultural and Environmental Engineering Research), Orion Project
PhD Student (38 months)
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- Thesis: Computer-aided model calibration in 1D river hydraulics – Contributions from artificial intelligence
- Development of a methodological framework for the operational validation of numerical models
 - Formalisation of the expertise applied for calibrating 1D river models
 - Implementation of a calibration support system and application to two real-life case studies
- 2001 | CEMAGREF – Hydrology-Hydraulics Research Unit, *Lyon*
Research Engineer in the Integrated River Management Team (5 months)
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- Contribution to a handbook for managing hydraulic studies (CEMAGREF and CETMEF joint research project)
 - Expert's report on hydraulic studies
- 2000-2001 | Regional Council of Martinique – Technical Department – River and Coastal Hydraulics Group
Project Engineer (*Military Service as a Volunteer for Technical Assistance*, 16 months)
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- Planning and management of works on county infrastructures: hydraulic structures and roads, fishing harbours and wharves
 - Field expertise and technical validation
 - Management of contracts for engineering studies

WORK EXPERIENCE (contd)

- 1999 | EDF-DTG (Électricité de France, technical branch), *Toulouse*
Trainee in the Water Resources Department (6 months)
- Development of statistical hydrological modelling tools
 - Calibration of flood propagation models in the Garonne and Tarn river basins
 - Flood monitoring and real-time forecasting for the management of power dams and nuclear plants
- 1998 | SHEM (Southern Hydro-Electric Company), *Toulouse*
Trainee in the Civil Engineering Department (2 months)
- Hydraulic study of the head-race canal a hydroelectric plant
 - Identification of causes of hydraulic power levelling
- 1997 | SMAT of the Haut-Allier (Local Joint Board), *Langeac (43)*
Trainee in the Water Section (1 month)
- Study of the temperature distribution in a river confluence for the inlet of a salmon farm
 - Production of a water quality map for a river management project

EDUCATION

- 2002-2005 | PhD – Earth and Environment Sciences, passed with distinction, proposed by the thesis committee for the Léopold Escande INPT thesis prize
- INPT (National Polytechnic Institute of Toulouse)
- 1998-1999 | MSc – Project Management: Engineering of Information Systems for Decision Support, passed with distinction
- INPT, Industrial Systems Engineering Department
- 1996-1999 | Engineer Diploma in Hydraulics and Fluid Mechanics, speciality: Water Sciences and Environment
- ENSEEIH (National Engineering School in Electrotechnics, Electronics, Informatics and Hydraulics of Toulouse)
- 1993-1996 | Preparatory classes for the entrance exam to the Grandes Écoles, speciality : Mathematics
- Lycée Blaise Pascal (*Clermont-Ferrand*)
- 1993 | A level in Mathematics and Physics, passed with distinction
- Lycée Lafayette (*Brioude, 43*)

INFORMATICS

Programming

- MATLAB 7.3
+ Statistics toolbox et Mapping toolbox
- C++, Fortran 90, Visual Basic

Numerical modelling

- River hydraulics: MAGE, Hec-Ras
- Rainfall-runoff : Catchmod, PDM, DBM

Softwares

- Objecteering/UML
- ArcGIS, MapInfo
- EndNote, JabRef
- LaTeX, Office XP, Photoshop
- MS Project
- Cygwin, MS-Dos, Windows XP

LANGUAGES

- English (fluent, TOEIC score 865/990, UK resident since April 2005)
- Spanish (academic knowledge)
- German (academic knowledge)

MISCELLANEOUS

- Nationality: French
- Date of birth: 14 April 1975
- Driving Licence (1993)

MEMBERSHIPS

Scientific bodies

- 2005- IAHS/AISH (International Association of Hydrological Sciences), member
- 2005- SHF (Société Hydrotechnique de France), member
- 2006- BHS (British Hydrological Society), member
- 2006- ICE (Institution of Civil Engineers), associate member

Associations

- 1999- AIn7 (Association des Ingénieurs IET-ENSEEIH), member
- 2005- ANDès (Association Nationale des Docteurs ès Sciences), member
- 2006- MCFA (Marie Curie Fellowship Association), member

Others

- 2007- Climateprediction.net, participant

SCIENCE COMMUNICATION

UK

- 2006 | UK Water Industry Research technical note
WADE S. D., VIDAL J.-P. et LAWSON, R. (2005), Water planning in an uncertain world – UKWIR / Environment Agency research project “Effect of climate change on river flows and groundwater recharge: a practical methodology”, *UKWIR Technical Note*, december, 4 p.
- 2005 | UK Water Industry Research technical note
WADE S. D., VIDAL J.-P. et LAWSON, R. (2005), Planning for climate change – UKWIR / Environment Agency research project “Effect of climate change on river flows and groundwater recharge: a practical methodology”, *UKWIR Technical Note*, december, 4 p.

France

- 2004 | Article in a popular science journal
VIDAL J.-P. (2004), La prévention des inondations, entre savoir et savoir-faire. (Flood prevention, between knowledge and know-how, in French), *Le Gluon, popular science journal of Joseph Fourier University (Grenoble)*, n° 19, p. 1-2.
- 2002-2004 | Film Festival « À nous de voir, Science et Cinéma » (Oullins, France)
Member of the scientific committee for the 16th, 17th, and 18th film festival
- 2003 | French science week (*Lyon*)
Posters for the Cemagref exhibition stand: “Catchment understanding... for better flood management” and “Water path, from the river to the river,... through your tap”
- 2002 | French science week (*Lyon*)
 - Design of an interactive watershed scale model
 - Animation of the Cemagref exhibition stand “Living with floods?”

TEACHING

Lectures

2003-2004 | ENSEEIHT Two lectures, Hydraulic and Fluid Mechanics Department, MSc level
Topic : *Hydraulics of Lèze River – Test of a calibration support system*

Student supervision

2006 B. ANGAMUTHU, Master Euro Aquae (Euro Hydro-Informatics and Water Management)
Semi-distributed rainfall-runoff modelling in South-East England catchments

2003-2004 V. BÉON, P. BRELLE, O. CAZEAUX, S. DELICHÈRE, S. DERRIEN, R. DURANT, N. FUHR and C. GRASSAY, Master's degree in engineering, ENSEEIHT (Long-time practical work within the Hydraulic and Fluid Mechanics Department)
Model calibration in 1D river hydraulics: application of Mage simulation software and AMO modelling environment to Lèze River

2004 J. LE DROGO, Master's degree in engineering, ISIMA (Advanced Institute for Informatics, Modelling and their Applications)
Development of a modelling environment for 1-D hydraulics simulation codes

2003 P. TARDY, Master's degree in engineering, ISIMA
Development of a modelling environment for 1-D hydraulics simulation codes

2002 L. DHERVILLEZ, MSc in Modelling and Simulation in Mechanics (Joseph Fourier University, Department of Mechanics)
Uncertainty in the extension of a flooded area

RESEARCH PROJECTS

United Kingdom

2005-2007 | Effect of climate change on river flows and groundwater recharge. A practical methodology
UKWIR/Environment Agency, projet n°CL/04/C. Partners : HR Wallingford, Lancaster University, Met Office, Entec

2005-2006 | Climate change impacts and adaptation
DEFRA (*Department for Environment, Food and Rural Affairs, Global Atmospheres Division*), Cross-regional Research Programme. Project C: Water. Partners : HR Wallingford, Met Office, Risk & Policy Analysts

France

2003-2004 | Assistance semi-automatique au calage d'un modèle numérique en hydraulique fluviale (computer-aided model calibration in river hydraulics)
French Department of Research, Programme ECCO (*ECosphere COntinentale : processus et modélisation*) – Action thématique PNRH – Hydrologie : cycle de l'eau et flux associés (matières, énergies). Partners : CEMAGREF, INRIA

2002-2004 | Valorisation de l'information issue de l'observation de la terre dans l'établissement des cartes d'aléa extrême (valorisation of for hazard mapping)
French Department of Ecology and Sustainable Development, convention « Risques Inondations » RIO2, n° 01008. CEMAGREF, IMFT.

PUBLICATIONS

Articles in peer-reviewed journals

- VIDAL J.-P. and WADE S. D., Probabilistic assessment of the impact of climate change in UK river flows. In preparation for *Water Resources Research*.
- VIDAL J.-P. and WADE S. D., A spatial assessment of future climatological droughts in the UK. In preparation for *International Journal of Climatology*.
- VIDAL J.-P. and WADE S. D., Multimodel projections of catchment-scale precipitation regime. In preparation for *Journal of Hydrology*.
- VIDAL J.-P. and WADE S. D., A framework for developing high-resolution multi-model climate projections: 21st century scenarios for the UK. *International Journal of Climatology*, accepted with minor revisions, February 2007.
- VIDAL J.-P., MOISAN S., FAURE J.-B., and DARTUS D., River model calibration, from guidelines to operational support tools. *Environmental Engineering and Software*, in press. DOI: 10.1016/j.envsoft.2006.12.003
- VIDAL J.-P., MOISAN S., FAURE J.-B., and DARTUS D. (2005), Towards a reasoned 1-D river model calibration. *Journal of Hydroinformatics*, vol. 7, n° 2, p. 91-104, IWA Publishing.
- VIDAL J.-P., MOISAN S., and FAURE J.-B. (2003), Knowledge-based hydraulic model calibration. *Lecture Notes in Artificial Intelligence*, vol. 2773 (*Knowledge-Based Intelligent Information and Engineering Systems: 7th International Conference KES'2003*; V. Palade, R. J. Howlett et L. C. Jain, eds.), p. 676-683. DOI: 10.1007/b12002

Communications in peer-reviewed conference proceedings

- VIDAL J.-P. and MOISAN S. (2006), Fuzzy knowledge-based curve evaluation for 1-D river model calibration. In: *Proceedings of the 7th International Conference on Hydroinformatics*, Nice (P. Gourbesville, J. Cunge, V. Guinot, and S.-Y. Liong, eds.), vol. 2, p. 1203-1210. Research Publishing. ISBN 81-903170-3-2.
- VIDAL J.-P., FAURE J.-B., DARTUS D., and MOISAN S. (2004), Decision support system for calibration of 1-D river models. In: *Proceedings of the 6th International Conference on Hydroinformatics* (S. Y. Liong, K. K. Phoon, and V. M. Babovic, eds.), vol. 2, p. 1067-1094, Singapore: World Scientific Publishing.
- VIDAL J.-P. and MOISAN S. (2004), Opérationnalisation de connaissances pour le calage de modèles numériques – Application en hydraulique fluviale. (Operationalisation of knowledge about model calibration – Application in river hydraulics, in French) In: *Actes des 15^e journées francophones d'Ingénierie des Connaissances (IC'2004)*, p. 261-272, Lyon, France: Presses Universitaires de Grenoble.
- FAURE J.-B., DHERVILLEZ L., and VIDAL J.-P. (2002), Automatic evaluation of the uncertainty on the surface of a flooded area. In: *Proceedings of the 5th International Conference on Hydroinformatics* (I. D. Clukie, D. Han, J. P. Davis, and S. Heslop, eds.), vol. 2: Software Tools and Management Systems, p. 1319-1324, Cardiff, Wales: IWA Publishing.
- PAQUIER A., FANG Z. X., ROUCH B., and VIDAL J.-P. (2002), Assessment of flood risk in areas protected by dikes (Example of Agly River). In: *Proceedings of the 5th International Conference on Hydroinformatics* (I. D. Clukie, D. Han, J. P. Davis, and S. Heslop, eds.), vol. 2: Software Tools and Management Systems, p. 1337-1342, Cardiff, Wales: IWA Publishing.

Published research reports

- VIDAL J.-P. and WADE S. D. (2007), Synthesis report. *Effect of climate change on river flows and groundwater recharge. A practical methodology*. UKWIR Report 06/CL/04/9, en préparation.
- VIDAL J.-P. and WADE S. D., (2007), Guidelines for resource assessment and UKWIR06 scenarios. *Effect of climate change on river flows and groundwater recharge. A practical methodology*. UKWIR Report 06/CL/04/8, 52 p. + appendices. ISBN: 1-84057-431-3.
- WADE S. D., VIDAL J.-P., ROMANOWICZ R. J., and BEVEN K. J., (2006), Interim report on rainfall-runoff modelling. *Effect of climate change on river flows and groundwater recharge. A practical methodology*. UKWIR Report 06/CL/04/7, 38 p. + appendices. ISBN 1-84057-421-6.

PUBLICATIONS (contd)

Published research reports (contd)

- BEVEN K. J., ROMANOWICZ R. J., WADE S. D., VIDAL J.-P., and BARNETT C. (2006), A strategy for evaluating uncertainty in assessing the impacts of climate change on water resources. *Effect of climate change on river flows and groundwater recharge. A practical methodology*. UKWIR Report 05/CL/04/6. 49 p. + appendices ISBN 1-84057-396-1.
- WADE S. D., VIDAL J.-P., DABROWSKI C., YOUNG P. C., and ROMANOWICZ R. J. (2005), Trends in UK river flows: 1970-2002. *Effect of climate change on river flows and groundwater recharge. A practical methodology*. UKWIR Report 05/CL/04/3, 37 p. + appendices. ISBN 1-84057-387-2.

Invited talks

- WADE S. D. and VIDAL J.-P. (2007), Droughts of the future – Scenarios and prospects. Invited for communication at the seminar *Drought Ahead! What do we need to do to prepare for future droughts?* organised by the Institution of Civil Engineers (ICE), London, 27 February.
- WADE S. D., VIDAL J.-P., BARNETT C., and FENN T. (2006), Climate change impacts and adaptation: Cross-regional research programme. Topic C: Water. End of programme Workshop, Department for Environment, Food and Rural Affairs (DEFRA, Global Atmosphere), London, 6 October.
- WADE S. D. and VIDAL J.-P. (2006), Water resource management in a changing climate. Seminar *Climate Change: Current Risks – Future Actions* organised by the Chartered Institution of Water and Environmental Management (CIWEM, Central Southern Branch), Swindon, 18 May.
- YOUNG P. C., VIDAL J.-P., ROMANOWICZ R. J., BEVEN K. J., and WADE S. D. (2006), Trend estimation and the evaluation of climate change effects on river flows in UK. Seminar *Climate Change and Hydrology* organised by the British Hydrological Society (BHS, Pennines Group), Leeds, 15 February.

Posters

- VIDAL J.-P. and WADE S. D. (2007), Changement climatique et ressources en eau, un avenir incertain – l'exemple du Royaume-Uni. (Climate change and water resources, an uncertain future – The example of the UK) Accepted for communication at the 29th Days of Hydraulics, Congress of the Société Hydrotechnique de France (SHF): *Variations climatiques et hydrologie (Climate variability and hydrology)*, Lyon (France), 27-28 March.
- VIDAL J.-P. and WADE S. D. (2006), Probabilistic assessment of the impact of climate change on UK river flows. SKCC (Sustainable Knowledge for a Changing Climate) workshop *Use of probabilistic climate scenarios in impacts assessment and adaptation studies*, Norwich, 10 November.

Memoirs

- VIDAL J.-P. (2005), Assistance au calage de modèles numériques en hydraulique fluviale – Apports de l'intelligence artificielle. (Computer-aided model calibration in river hydraulics – Contributions from artificial intelligence, in French), *PhD Thesis, Earth and Environment Sciences*, National Polytechnic Institute of Toulouse, 286 p. + appendices, 486 refs.
- Committee: Denis DARTUS (IMFT), Sabine MOISAN (INRIA), Jean-Baptiste FAURE (CEMAGREF), Roger MOUSSA (INRA, National Institute for Agricultural Research), Jean-Michel TANGUY (SCHAPI, Central Service for Hydrometeorology and Assistance for Flood Forecasting), and Jean-Louis ERMINE (INT, National Institute of Telecommunications)
- VIDAL J.-P. (1999), Évolution du processus de décision par extension de l'accessibilité d'un Système Interactif d'Aide à la Décision dans un contexte distribué – Application à la prévision hydrométéorologique en temps réel pour l'aide à la gestion des aménagements hydroélectriques. (Evolution of the decision process due to the accessibility spread of a Decision Support System in a distributed context – Application to real-time hydrometeorological forecasting for supporting the management of hydroelectrical structures, in French) *MSc Thesis*, EDF Production Transport – Division Technique Générale, 55 p. + appendices.
- VIDAL J.-P. (1999), Étude de faisabilité d'un modèle de prévision des débits de la Garonne à Golfech. (Feasibility study of a flood forecasting model for the Garonne River in Golfech, in French) *Final engineering school thesis*, EDF Production Transport – Division Technique Générale, 30 p. + appendices.

PUBLICATIONS (contd)

Technical reports

- VIDAL J.-P. and WADE S. D. (2006), Dŵr Cymru/Welsh Water. **Draft Water Resource Plan: Trends in hydrological variables and drought frequency in Wales.** HR Wallingford Report EX 5457, 30 p. + appendices.
- VIDAL J.-P. and RECKING A. (2001), **Expertise relative aux études hydrauliques sur la Bourbre – Synthèse des études et proposition de cahier des charges pour les études complémentaires.** (Expertise on hydraulic studies of the Bourbre River – Synthesis of previous results and proposition of specifications for complementary studies), CEMAGREF, *Report for assistance to project owner*, Agriculture and Forest County Council of Isère, 40 p.