

PICS: towards Integrated Nowcasting of Flash Flood Impacts

Appendices

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1. Presentation of project partners

Ifsttar (O. Payrastre, F. Bourgin, I. Emmanuel, E. Gaume, L. Lebouc: subsidy of 200 k€)

IFSTTAR is a Public Institution of Scientific and Technical Nature (EPST), under the joint supervision of the Ministry of the Environment, Energy and Marine Affairs, and the Ministry of Higher Education & Research. It conducts applied research and expert appraisals in the fields of transport, infrastructure, natural hazards and urban issues with the aim of improving the living conditions of our fellow citizens and, more widely, promoting the sustainable development of our societies. The GERS (Geotechnical engineering, Environment and Risks) department develops part of its research in the specific field of natural hazards and risks. For more than 10 years, GERS has developed a sustained activity on the observation, study and forecasting of flash floods. It coordinated the ANR PreDiFlood (2009-2012) project on the forecasting of road submersions during flash floods, and it is currently involved in programs on observation and study of extreme floods in the European and Mediterranean regions (Hymex project, OHMCV observatory). It was also involved in several EU projects in the field of flood risk management (EU FP6 Floodsite, EU FP7 Hydrate and EraNet Crue Fimframe). In the PICS project Ifsttar offers its experience in the area of integrated rainfall - flow rate - flood plain modelling and impacts (Versini *et al.*, 2010 a,b; Naulin *et al.*, 2013; Le Bihan *et al.*, 2016; ANR PreDiFlood).

CCR (D. Moncoulon, J.P. Naulin, T. Onfroy: subsidy of 50 k€)

Caisse Centrale de Réassurance is a reinsurance company owned by the French state, ranked in the top 25 reinsurers in the world. It is accredited to provide, upon the request of the insurer, State-guaranteed unlimited reinsurance coverage against natural disasters in France. This reinsurance service currently covers almost 90% of the French market. Another mission given to CCR is to assess the financial consequences of natural disaster by collecting insurance-related data and by developing its own model applications. The role of CCR within the PICS project will be to bring its expertise in terms of vulnerability and damage modelling (Moncoulon *et al.*, 2014, 2016).

Cerema (F. Pons, M. Alquier, L.Bonnifait: subsidy of 88 k€)

Cerema is a Public Administrative Body (EPA), under the joint supervision of the Ministry of the Environment, Energy and Marine Affairs and the Ministry of Housing and Sustainable Homes. It offers a scientific and technical expertise support to the state and local authorities in the fields of risks, environment, mobility, and land planning. In the field of natural risks it was recently highly involved in the implementation of the EU flood directive, and developed several technical engineering softwares (Nunieau, Exzeco, Cartino, ..). It is currently involved in the FUI DIDRO (dikes monitoring) and the CPER PORTE (natural risks observatory) research projects. In the PICS project, Cerema contributes its know-how in 1D semi-automated hydraulic modelling (Pons *et al.*, 2014; Cartino models), its experience in evaluating contextual damages to property and individuals (COPARI 2015-2016) and its know-how in crisis management.

CNRM UMR 3589 (B.Vincendon, V. Ducrocq, A. Lovat: subsidy of 51 k€)

National Meteorological Research Centre is a joined unit of CNRS and Météo-France. Acknowledged as one of the leading international lab for meteorological research, CNRM coordinates all Météo-France R&D. Its main missions are (i) to progress in the understanding of atmosphere and its interfaces (soil, vegetation, snow cover, ocean) and of the processes governing their interactions and (ii) to develop and improve models for weather forecasting including high-impact weather events, climate changes, seasonal forecasting, flood forecasting... In the PICS project, it will offer its competences in the areas of both the numerical forecasting of precipitating systems and integrated hydrometeorological modelling (Vincendon, 2011; Vincendon *et al.*, 2016). A thesis in its start-up phase (A.Lovat) will be involved in this project.

Geosciences Rennes UMR 6118 (D. Lague, P. Davy, A. Le Guennec: subsidy of 43 k€)

Geosciences Rennes is a joint research unit of CNRS and Rennes 1 University. It develops its research activities in the field of current and long-term interactions between hydrosphere, geosphere, and biosphere. It contributes to the Rennes OSUR observatory, which recently purchased a state of the art dual-wavelength airborne Lidar for combined topographic/bathymetric data acquisitions. In the PICS project, the team brings its skills in Lidar data acquisition and processing (Lague *et al.*, 2013; Brodu and Lague, 2012), as well as in 2D hydrodynamic modelling and morphodynamic modelling of rivers (i.e. the Floodos model, Davy *et al.*, *subm.*). A recently launched thesis (Arthur Le Guennec) will contribute to this project through new methods of classification of lidar data to extract roughness information for 2D hydraulic modelling on high resolution DEM.

Irstea (P. Javelle, V. Andreassian, P. Arnaud, C. Perrin, M.H. Ramos: subsidy of 158 k€)

Irstea, namely institute of science and technology for environment and agriculture, is a public scientific institution depending on the Ministry of Research, and the Ministry of Agriculture. It is organized in three scientific departments on water, land and eco-technologies respectively. One of its main research fields (called ARCEAU) focuses on the hazards and risks related to the water cycle. Several research teams in Aix-en-Provence, Antony and Lyon, contribute to this topic, and have large experience in hydrological modeling, hydro-meteorological forecasting, parameters regionalization, uncertainty estimation, etc. In the field of flash flood forecasting, Irstea has developed several tools, including the GRP forecasting model and the AIGA warning method. Irstea recently contributed to the RYTHMME project (Mountainous and Mediterranean hazards monitoring) and the FRAMEA Interreg project (Flood forecasting using Radar in Alpine and Mediterranean Areas). In the PICS project, two teams of Irstea (in Aix and Antony) will particularly bring their experience in hydrological modelling in ungauged context (Randrianasolo *et al.*, 2011;

Javelle et al., 2014), in overall hydrometeorological forecasting and uncertainties quantification (Casari et al., 2014; Pagano et al., 2014), as well as flood inundation mapping.

IGE UMR 5001 (I. Ruin, S. Anquetin, X. Beaufils, B. Boudevillain, J.D. Creutin, G. Delrieu, C. Lutoff; subsidy of 142 k€)

IGE (Institute of Environmental Geosciences) is a new common research unit of CNRS/INSU, IRD, UGA et Grenoble-INP, resulting of the fusion of LTHE and LGGE labs in Grenoble. The institute hosts the OHM-CV research observatory. Its research activities are related to varied geophysical environments (physico-chemical atmosphere, cryosphere, oceans, watersheds, critical zones), and focused on their behaviors and interactions in both natural and anthropic influenced conditions. In the last years, the HMCIS team has been developing a sustained activity on understanding and modelling human exposure and coping response to weather related crisis conditions. It coordinated two ANR research projects in this field (Adaptflood and Mobiclimex), and is currently involved in the Hymex project ("Flash Floods and Vulnerabilities » and « Towards integrated prediction of heavy precipitation, flash-floods and impacts science teams) and EU H2020 ANYWHERE project. In the PICS project the team shares its competences in social-physical integrated modelling and the use of social impacts data for model verification (Ruin *et al.*, 2014, Debionne *et al.*, 2016; Shabou, 2016; Shabou *et al.*, 2017). An ongoing post-doc (G.Terti) will partly contribute to the project by bringing her expertise in impact-based vulnerability modelling and forecasting (Terti *et al.*, 2015; Terti *et al.*, 2016; Terti *et al.*, 2017).

MEEM-SCHAPI (B. Janet, A. Escudier, L. Garandeau, no subsidy requested)

The Schapi is part of the French ministry in charge of ecology, energy and oceans. It is in charge of the hydrological monitoring of the 22.100 km of river streams representing the highest flood-related risks over the French territory. It provides continuous information to both public and authorities on the forthcoming flood risks in the form of a "flood vigilance map" published on the Vigicrues website (<http://www.vigicrues.fr>). This mission is conducted with the support of 19 local flood forecasting services which form the so-called Vigicrues network. In the last years, the SCHAPI tackled the challenge of developing a first flash-floods warning service covering small ungauged rivers: this service, called "Vigicrues flash" (Javelle et al. 2016), is operational since march 2017. In the PICS project, the SCHAPI will bring all its experience in operational flood forecasting. It will also be interested in upgrading the Vigicrues-flash warning system considering the most promising developments provided by the PICS project.

2. Summary table of persons involved in the project

Partner	Name	First name	Current position	Involvement (in months)	Role & responsibilities in the project
Ifsttar	PAYRASTRE	Olivier	Researcher	18	Project scient. Coordinator (coordinator of WP0)
Ifsttar	BOURGIN	François	Researcher	18	Coordinator of WP2
Ifsttar	EMMANUEL	Isabelle	Researcher	3	Contributor
Ifsttar	GAUME	Eric	Head of GERS dept	3	Contributor
Ifsttar	LEBOUC	Laurent	Technician	9	Contributor
CCR	MONCOULON	David	Engineer	2	Partner scient. leader
CCR	ONFROY	Thomas	Engineer	2	Contributor
CCR	NAULIN	Jean-Philippe	Engineer	2	Contributor
Cerema	PONS	Frederic	Engineer	8	Partner scient. leader
Cerema	BONNIFAIT	Laurent	Engineer	6	Other member
Cerema	ALQUIER	Mathieu	Technician	4	Other member
CNRM	VINCENDON	Béatrice	Researcher	18	Partner scient. leader, coordinator of WP1
CNRM	DUCROCQ	Véronique	Head of CNRM /GMME	3	Contributor
CNRM	LOVAT	Alexane	Engineer	18	Contributor
Geosciences	LAGUE	Dimitri	Researcher	6	Partner scient. leader
Geosciences	DAVY	Philippe	Researcher	6	Contributor
Geosciences	LE GUENNEC	Arthur	PhD stud.	12	Contributor
IGE	RUIN	Isabelle	Researcher	12	Partner scient. leader, coordinator of WP3
IGE	ANQUETIN	Sandrine	Researcher	4	Contributor
IGE	BEAUFILS	Xavier	Engineer	6	Contributor
IGE	BOUDEVILLAIN	Brice	Researcher	4	Contributor
IGE	CREUTIN	Jean-Dominique	Researcher	4	Contributor
IGE	DELRIEU	Guy	Researcher	4	Contributor
IGE	LUTOFF	Céline	Researcher	2	Contributor
IGE	TERTI	Galatea	Post-Doc	4	Contributor
Irstea	JAVELLE	Pierre	Researcher	12	Partner scient. leader, coordinator of WP4
Irstea	ANDRÉASSIAN	Vazken	Head of ARCEAU	3	Contributor
Irstea	ARNAUD	Patrick	Researcher	3	Contributor
Irstea	PERRIN	Charles	Researcher	10	Contributor
Irstea	RAMOS	Maria-Helena	Researcher	10	Contributor
SCHAPI	JANET	Bruno	Engineer	1	Partner scient. leader
SCHAPI	ESCUDIER	Aurélié	Engineer	1	Contributor
SCHAPI	GARANDEAU	Léa	Engineer	1	Contributor

3. CVs of project main scientific contributors

Olivier PAYRASTRE – Ifsttar – project coordinator (coordinator of WP0)

PhD, Ingenieur Divisionnaire des Travaux Publics de l'Etat, 42 years old, senior scientist.

Expertise: Flash floods: observation, frequency analysis, hydrological processes, rainfall runoff modelling, impacts modelling, operational forecasting

Contact details: Route de Bouaye - CS4 - 44344 BOUGUENAIS Cedex,
+33 (0)2 40 84 57 04, olivier.payrastre@ifsttar.fr

Initial education:

2002 - 2005: Ph.D. in Hydrology - Ecole Nationale des Ponts et Chaussées
1998 - 1999: Master degree in mechanics and engineering, water sciences – E.N.G.E.E.S and Louis Pasteur University of Strasbourg
1993 - 1996: Engineering degree - Ecole Nationale des Travaux Publics de l'État

Professionnal experience:

2009 - 2016: Ifsttar - GERS Department - Water and Environment Laboratory – *Research Project Manager - Supervision of activity tied to inundation risks*
2005 - 2009: DDTM du Gard Directorate - Grand Delta Flood Forecasting and Hydrometry Service - *Head of the Forecasting Unit - Deputy Service Manager*
2002 - 2005: ENPC - CEREVERE (now renamed Ponts Paristech - LEESU) - *Doctoral student in Hydrology*
1997 - 2002: CETE de l'Est – Nancy Regional Laboratory - *Head of Urban Sewer Systems Unit*

Scientific activity:

Publications: 16 articles referenced in the Web of Science, 280 citations (252 articles), h-index: 6

Projects: 2010-2016: assistance with SCHAPI on Flood Forecasting (coordinator): annual convention with French Ecology Ministry, Risk Prevention Directorate, approx.. 35k€ annual funding.
2010-2016: HYMEX Project (www.hymex.org, task team coordinator and executive committee member), financed by MISTRALS (partnership among French laboratories).
2009-2012: ANR PREDIFLOOD Project (heberge.lcpc.fr/prediflood/, coordinator), ANR Research Agency, 650 k€ of total project budget (5 partners).
2009-2011: FIMFRAME (www.fimframe.net/, participant), ERA-NET CRUE, 240k€ total project budget (4 partners).
2004-2007: INOND'HIS LR (www.rdtrisques.org/projets/inondis/, participant), French Environment Ministry, RDT program, 35k€ funding.

Scientific evaluation: Referee for: Advances in Water Resources, Journal of Hydrology, Journal of Hydrometeorology, Hydrological Sciences Journal, Natural Hazards and Earth System Sciences, and Water Resources Research. Approx. 5 articles reviewed per year.

Teaching: General hydrology (ENTPE Public Works, Ecole Centrale de Nantes, University of Nantes) and statistical hydrology (ENPC, Ecole Centrale de Nantes, CNFPT).

Béatrice VINCENDON – CNRM – partner scientific leader – coordinator of WP1

PhD, Ingénieur Divisionnaire des Travaux de la Météorologie, 41 years old

Expertise: Hydrometeorological modelling, coupling between atmospheric- soil- hydrological models, propagation of uncertainties in flash-flood forecasting.

Education:

2010: PhD in Hydrometeorology, University Paul Sabatier of Toulouse, France.

1998: Engineering degree of the National Meteorological School, ENM, Toulouse, France.

Professional experiences and activities:

Civil engineer, employed by Météo-France since 1995.

2006-present: Research Scientist, National Meteorological Research Center (CNRM), Météo-France & CNRS.

2000-2006: Deputy head of the climatological data base department, Météo-France.

1998-2000: Forecaster, Météo-France.

1995-1998: Engineer Student at the National Meteorological School, Météo-France.

Scientific activities:

12 publications since 2009.

Scientific projects: 2010-2020 HYMEX / 2013-2016 ANR MOBICLIMEX / 2009-2012 ANR PREDIFLOOD / 2007-2011 ANR MEDUP / 2005-2008 PREVIEW FP6 integrated european project.

François BOURGIN – Ifsttar – coordinator of WP2

PhD, Chargé de recherches 2^{ème} classe.

Initial education:

2014: Ph.D. in Hydrology - AgroParisTech

2009: Master degree in Environmental Engineering, TU München, Munich

2009: Engineering degree - ENSTA ParisTech, Paris

Professional experience:

2016 - present: Ifsttar - GERS Department - Water and Environment Laboratory – *Research Scientist*

2014 - 2016: AXA Global P&C - *Flood Risk Modeler*

2010 - 2014: Irstea - HBAN - *Doctoral student in Hydrology*

2009 - 2010: IRD - Cesbio - *Research Engineer in Agro-hydrology and remote sensing*

Scientific activities:

5 articles referenced in the Web of Science

Teaching general hydrology at ENTPE and Polytech Nice-Sophia

Isabelle Ruin – IGE – partner scientific leader – coordinator of WP3

PhD, CNRS Research Scientist (CR1), 43 years old

Expertise:

- Risk perception, exposure, vulnerability and resilience to high impact weather events

Defi 1 – Axe 6 - PRCE

- Space and time dynamics of human mobility and coping behaviors during flash flood

Education

2004-2007 Ph.D. Geography, Joseph Fourier University, Alpine Geography Institute, Grenoble.
 2002-2003 M.A. Geography, Joseph Fourier University, Alpine Geography Institute, Grenoble.
 1997 M.S. Geotechnology, University of Clermont-Ferrand.

Professionnal experience

Since 2010 CNRS Research scientist, LTHE, Grenoble.
 2010 Project scientist, LTHE - CNRS, Grenoble.
 2008-09 Post-Doctoral fellow, National Center for Atmospheric Research (NCAR), Boulder, CO (USA).
 2004-07 Research associate and teaching assistant, Joseph Fourier University, Grenoble.
 11-12/2003 Engineer, LTHE/CNRS, Grenoble.
 2002-1998 Project engineer and educator, Centre Permanent d'Initiatives pour l'Environnement (CPIE)

Scientific activities

Publications: 23 peered-review publications, 586 citations, h-index: 11

Projects:

- ANYWHERE – EU H2020 (2016-2019): Coordinator for the LTHE partner and task leader
- MobiCLIMeX - ANR SOC&ENV (2013-17): Coordinator for the LTHE partner and Task leader
- ADAPTflood - ANR Retour Post-doctorant (2009-13): Project coordinator and PI.
- FLOODsite - FP6 (2004-09): Investigator.
- AMPHORE - InterregIIIB Meddoc (2004-06): Investigator.

Pierre Javelle – Irstea – partner scientific leader – coordinator of WP4

PhD, 45 years old, Senior scientist

Expertise: Hydrometry, Hydrology, Flood forecasting and warning

Education:

2001: Ph. D. in Hydrology, Institut National Polytechnique, Grenoble, France
 1996: M.Sc. in Mechanic, Environment and Geophysic, Grenoble University

Professional experiences and activities:

Since Nov. 2007: Research scientist in Hydrology (IRSTEA/CEMAGREF Aix-en-Provence, France)
 2002-2007: Flood forecaster in the regional centre for the Seine, Marne, Yonne and Loing rivers, based in Paris
 2001 - 2002: Post-doctoral researcher (Marie Curie Fellowship) at University College Dublin (Ireland), quality and quantity modelling

Scientific activities:

Publications: 11 articles since 1999.

Scientific projects: CRISTAL – Interreg project France-Italy, Flood management by Integrating of border forecasting tools on Alpines watersheds (2008-2011). RHYTMME-regional project, Hydrometeorological Risk on Mountain and Mediterranean Territories (2008-2015). ANR PreDiFlood Project, Distributed models for forecasting and road management in Cevennes-Vivarais region (2009-2012). FASEP-BRESIL project, Hydrologic Risk Management in São Paulo, Brazil (2013-2017). DGPR - Irstea collaboration on Flood forecasting (since 2008)

Teaching: Professional training at IFORE (Ministry of Ecology)

Dimitri Lague – Geosciences Rennes – partner scientific leader

PhD, 43 years old, CNRS Senior researcher

Expertise: lidar data acquisition and processing; fluvial hydrology; numerical modelling;

Education:

2001: Ph. D. in Earth Sciences, University of Rennes

1997: Master Degree in Geophysics, Ecole Normale Supérieure de Lyon

Professional experiences and activities:

Since 2017: Head of the “Dynamics, Modelling and Imagery of Environmental Systems” team

Since 2015: Scientist in charge of the Titan topo-bathymetric airborne lidar sensor

2011: Visiting scientist (Marie Curie Fellowship), University of Canterbury, Christchurch, NZ

Since 2004: CNRS Junior Researcher, appointed Senior Researcher in 2016

2002-2004: Post-doctoral researcher (Marie Curie Fellowship), Cambridge University, UK

Scientific activities:

Publications since 2000: 25 articles, 2 softwares, Hindex = 18, Citations Google Scholar = 2085.

Scientific projects as PI since 2002: 4 international projects, 4 national projects. Recent projects:

SEDIQUAKE (2014-2015): Hydrosedimentary hazards modeling following large earthquakes

(INSU/ALEAS); Marie-Curie IOF, €ROSNZ (2011-2013) : Landslides, floods and erosion (collab.

New-Zealand); Exploiting high-resolution topography for advancing the understanding of mass and

energy transfer across landscapes (US/USGS/NSF 2014-2015);

Awards and distinctions: 2012: Gordon Warwick Medal, British Society for Geomorphology; 2010:

Walter Penck award, European Geosciences Union, Geomorphology division;

Scientific evaluation: 2011-2013 : Associate Editor J. Geophysical Research; Referee for: Nature,

Science, J. of Geophysical Research, NSF, NERC. Evaluating Committee of CNRS programs

INSU/SIC/BIOHEFFECT (2013-...), INSU/TS/TELLUS (2015-...).

Teaching: hydrology and fluvial dynamics, lidar data processing (University of Rennes).

David MONCOULON – CCR – partner scientific leader

PhD, 44 years old, Head of R&D and modelling team

Expertise: Financial impact models, exposure analysis, post-event estimations, insurance, reinsurance, police and claim databases

Education

2014: Ph.D. in Hydrology, University Paul Sabatier, Toulouse, France

1998: Agronomist engineer, Ecole Nationale Supérieure d'Agronomie, Montpellier, France

1995: master of Science in molecular biology, Université Paul Sabatier, Toulouse, France

Professional experiences and activities

Since Jan. 2007: Head of R&D and modelling team, CCR, Paris, France

2002 - 2006: Research engineer (ADEME / CNRS Toulouse, France): critical loads for atmospheric pollutants modelling

1999 - 2002: Agricultural adviser and business officer, SEM Agriculture Environnement, Chambéry, France

Scientific activities: R&D and applied modelling for reinsurance activities, Scientific publications

Frederic PONS - CEREMA - partner scientific leader

Ingénieur Divisionnaire des Travaux Publics de l'Etat

Initial education:

1997 – 2000: Engineering degree - Ecole Nationale des Travaux Publics de l'État

2000 – 2001: Master degree in Geography, Urban planning, Geomorphology, Ecology, GIS

Professional experience:

2001 - 2017: Cerema Méditerranée Hydraulic expert on floods and coastal hazards

Since 2011: Expert designed by Geotechnical and natural risks committee of Ministry of Ecology

Scientific activities:

https://www.researchgate.net/profile/Frederic_Pons

Scientific projects: FUI DIDRO (2016-),

Teaching: floods and coastal hazards (basic education: Aix-Marseille University, continuous training: IFORE, CVRH, Public bodies, Private companies)

Technical developments dissemination: NUNIEAU, EXZECO, DICARTO, CARTINO, MOBITC

(<http://www.mediterranee.cerema.fr/developpements-r53.html>), Rivages

(<https://play.google.com/store/apps/details?id=fr.cerema.rivages&hl=fr>)

Vazken ANDRÉASSIAN – Irstea – contributor

PhD, 47 years old, Senior scientist, Deputy Scientific Director for water at Irstea

Expertise: Water Resources, Floods, Droughts, Hydrology, Inundation modelling, Land use change impact

Education

2005: Habilitation in Hydrology, University Pierre et Marie Curie, Paris

2002: PhD in Hydrology, University Pierre et Marie Curie, Paris

1992: Master of Sciences (Watershed Management,) University of Arizona, Tucson

1992: Water and Forest Engineer (Ingénieur du corps du Génie Rural, des Eaux et des Forêts), Ecole Nationale du Génie Rural des Eaux et des Forêts, Paris

1991: Agricultural Engineer (Ingénieur Agronome), Institut National Agronomique Paris-Grignon

Professional experiences and activities

Since 2011: Deputy Scientific Director (Hydrological Research), Irstea, Antony, France

1998 - 2012: Head of the Hydrology Research Group, Irstea, Antony, France

1995 - 1997: Research engineer, Water Quality and Hydrology Research Unit, Cemagref, Antony, France

Scientific activities:

Editorial activity: Associate Editor of Journal of Hydrology

Publications: more than 100 articles since 2000.

Scientific projects: ONEMA-Irstea: water resources estimation and flow mapping (since 2009); DGPR/SCHAPI - Irstea: Flood forecasting and uncertainties (since 2003); Project on inundation forecasting (AXA, 2015-2018); Project on extreme flood estimation in Africa (2015-2018, Tractebel Engineering France)

Teaching: Pierre et Marie Curie University (Paris), Ecole Nationale des Ponts et Chaussées (Marne-la Vallée), Centrale Supélec

Patrick ARNAUD – Irstea – contributor

PhD, 46 years old, Senior scientist, Responsible of hydrology research team

Expertise: Hydrology, Hydrologic modelling, Flood Frequency Analysis,

Education:

2015: Accreditation to supervise researches (HDR), University Aix-Marseille

1997: PhD in Hydrology, University Montpellier II

1993: Master of Sciences (Hydrology) Montpellier

1993: Water Science Engineer (Polytech Montpellier)

Professional experiences and activities:

Since 2011: Responsible of Hydrology team, Irstea, Antony, France

2004-2011: Research engineer Irstea Aix-en-Provence - Hydraulic works and Hydrology Research Unit

2000-2003: Assistant Professor - ENGEES. strasbourg (High School of Engineers)

Scientific activities:

Publications: 37 articles since 1999.

Scientific projects: CRISTAL – Interreg project France-Italy, Flood management by Integrating of border forecasting tools on Alpines watersheds (2008-2011). RHYTMME-regional project, Hydrometeorological Risk on Mountain and Mediterranean Territories (2008-2015). ANR PreDiFlood project, Distributed models for forecasting and road management in Cevennes-Vivarais region (2009-2012). ANR EXTRAFLUO project, Extremes rainfalls and floods estimation – Intercomparison of methods (2009-2013). DGPR-Irstea collaboration on Flood frequency estimation and mapping (since 2008).

Teaching: Aix-Marseille University, University of Avignon, ENGEES

Laurent Bonnifait – CEREMA – contributor

Ingénieur des Travaux Publics de l'Etat

Initial education:

2000 – 2001: Master degree in natural hazards - Montpellier 2

2002 – 2004: Master degree in Water sciences - INRS (Canada)

Professional experience:

2005 - 2010: LTHE Hydraulic/Hydrology engineer on flash floods

2011 - 2012: Irstea Hydraulic engineer on rating curves

2012 - 2015: Cerema IDF Hydraulic/Hydrology engineer on floods

Since 2017: Cerema Méditerranée Hydraulic expert on floods, hydraulic modelisation

Since 2014: Specialist designed by Geotechnical and natural risks committee of Ministry of Ecology

Scientific activities:

<https://www.researchgate.net/search?q=laurent%20bonnifait>

Teaching: hydraulic, rating curves, incertitudes in hydrology (continuous training: IFORE)

Technical developments dissemination: BaRatin (<https://forge.irstea.fr/projects/baratin>)

Eric GAUME – IFSTTAR – contributor

PhD, 48 years old, Senior scientist, Head of a research department at IFSTTAR

Expertise: Hydrology, Flash floods, flood forecasting.

Education

2007: Habilitation in Hydrology, University Pierre et Marie Curie, Paris

2002: PhD in Hydrology, INRS-ETE, Canada

1992: Master of Sciences (Environmental technologies,) University Paris XII

1992: Water and Forest Engineer (Ingénieur du corps du Génie Rural, des Eaux et des Forêts), Ecole Nationale du Génie Rural des Eaux et des Forêts, Paris

1991: Agricultural Engineer (Ingénieur Agronome), Institut National Agronomique Paris-Grignon

Professional experiences and activities

Since 2010: Deputy head and Head, of the Department for geotechnics, Environment, Natural Hazards and Earth Sciences, IFSTTAR, Nantes, France

2007-2010: Deputy head and Head of the Water division, LCPC (now IFSTTAR), Nantes

1995-2007: Research engineer and teacher, Ecole Nationale du Génie Rural des Eaux et des Forêts and Ecole Nationale des Ponts et des Chaussées, Paris, France.

1994-1995: Head of the Forestry Service, Direction Départementale de l'Agriculture et de la Forêt (DDAF), Ajaccio, France.

1993-1994: Research assistant, INRS-ETE, Québec, Canada.

Scientific activities:

Expert activity: Member of the scientific boards of the SCHAPI, Agence de l'Eau Seine Normandie, RDT research program.

Publications: 55 articles in international journals (h-index : 22)

Teaching: Professor, in charge of the Hydrology course, Ecole des Ponts ParisTech, contribution to courses at Ecole Centrale de Nantes, Ecole Polytechnique, Univ. Nantes...

Charles PERRIN – Irstea – contributor

PhD, 43 years old, Senior scientist

Expertise: Hydrology, Hydrologic modelling, Flood and low-flow forecasting, Quantification of uncertainties, Impacts of climate change

Education:

2000: Ph. D. in Hydrology, Institut National Polytechnique, Grenoble, France

1997: Master of Mechanics and Engineering, Water Sciences option, Université Louis Pasteur, Strasbourg, France

1997: Water Engineer, Ecole Nationale du Génie de l'Eau et de l'Environnement de Strasbourg, France

Professional experiences and activities:

2000 to present: Research engineer in the Hydrology group of the Hydrosystems and Bioprocesses Research Unit, Irstea (formerly Cemagref), Antony, France

1997 - 2000: PhD student in the Hydrology group of the Water Quality and Hydrosystems Research Unit, Cemagref, Antony, France

Scientific activities:

Editorial activity: Associate Editor of Hydrological Sciences Journal

Publications: 15 articles since 2015.

Scientific projects: ONEMA-Irstea: Low-flow forecasting (since 2009); HYRADIER (Regional Program STIC-AmSud) (2015-2017), DGPR/SCHAPI - Irstea: Flood forecasting and uncertainties (since 2003); R2D2: Impacts of climate change on the Durance River (GICC, 2012-2015); Explore2070: Impacts of climate change in France (2010-2013)

Teaching: Pierre et Marie Curie University (Paris), PolyTech (Paris), François Rabelais University (Tours), Profesional training at IFORE (Ministry of Ecology)

Maria-Helena RAMOS – Irstea – contributor

PhD, 46 years old, Senior scientist

Expertise: Hydrology, Hydrometeorology, Hydrologic forecasting and flood warning, Quantification and communication of uncertainties, Water resources management, Rainfall hazard characterization

Education:

2002: Ph.D. in Earth and Atmospheric Sciences, University Joseph Fourier (UJF), LTHE, Grenoble, France

1998: M.Sc. in Sanitation, Environment and Water Resources, School of Engineering of the Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil

1994: B.Sc. in Civil Engineering, School of Engineering of the Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil (1989-1993)

Professional experiences and activities:

Since Nov. 2007: Research scientist in Hydrology (IRSTEA/CEMAGREF Antony, France)

2006 - 2007: Researcher (CEMAGREF Lyon, France): Climatology applied to hydrology

2005 - 2006: Post-doctoral researcher (Institute for Environment and Sustainability, DG JRC, EC, Ispra, Italy): EFAS Project: European Flood Alert System

2003 - 2005: Post-doctoral researcher (CEMAGREF Lyon, France): Space-time variability of rain fields and severity indicators

1998 - 2002: Ph.D. student (UJF, LTHE, Grenoble, France): Analysis of rainfall under mesoscale convective systems

Scientific activities:

Publications: 19 articles since 2012.

Scientific projects: H2020 IMPREX (Research project, EC) (2015-2019); HYRADIER (Regional Program STIC-AmSud) (2015-2017), DGPR/SCHAPI - Irstea: Flood forecasting, flood watch and uncertainties (since 2008); Hydrologic Risk Management in São Paulo, Brazil (FASEP) (2013-2017); Interreg DROP (Research project, European Interreg IVB NWE) (2013-2015); FP7 COMPLEX (Research project, EC) (2012-2016)

Teaching: Pierre et Marie Curie University (Paris), PolyTech (Paris), EIVP (Paris), Professional training at IFORE (Ministry of Ecology)

4. End-users group: letters of support

City of Cannes



Cannes,
March 28th, 2017

To whom it may concern

A research project called "PICS" will be submitted soon for funding by the French Agence Nationale de la Recherche (Appel à Projets Générique 2017).

This project aims at offering significant technological advances in the field of integrated forecasting of flash flood impacts, by combining hydrometeorological forecasting methods, hydraulic flows modelling, and flood impacts modelling. The governance of this project will rely on an end users group, aiming to guarantee a high level of connection between the project content and operational needs.

The City of Cannes was recently contacted by the project teams for being part of this end users group. Considering that the objectives of the PICS project directly match several operational concerns encountered by Cannes, we accepted with enthusiasm to contribute to this project. This contribution will help Cannes to manage better, in the future, the flash floods thanks to the use of the past floods data to feed the analyses in the PICS Project.

In conclusion, I would like hereby to express my full support to the PICS project.



Claire-Anne REIX
Local Councillor Responsible for the Risk Prevention



Lyon, the 28th of March 2017

To whom it may concern

Dear,

A research project called "PICS" will be submitted soon for funding by the French Agence Nationale de la Recherche (Appel à Projets Générique 2017). This project aims at offering significant technological advances in the field of integrated forecasting of flash flood impacts, by combining hydrometeorological forecasting methods, hydraulic flows modelling, and flood impacts modelling. The governance of this project will rely on an end users group, aiming to guarantee a high level of connection between the project content and operational needs.

CNR was recently contacted by the project teams for being part of this end users group. Considering that the objectives of the PICS project directly match several operational concerns encountered by CNR, we accepted with enthusiasm to contribute to this project.

CNR operates 19 hydroelectric facilities located all along the Rhône River. To optimise its renewable electricity production as well as to ensure hydraulic safety and security, CNR has developed a complete hydrological forecasting chain. Yet, these operational forecasting tools are not able to capture flash flood events, although this kind of event is very impacting. This contribution will then greatly help CNR in operating its hydroelectric facilities.

In conclusion, I would like hereby to express my full support to the PICS project.

Best regards,

COMPAGNIE NATIONALE DU RHONE
Direction de l'Energie

A blue ink signature of Frédéric Storck is written over a horizontal line.

Frédéric STORCK
Directeur

EDF



Pôle Énergies Renouvelables
Développement, Mesures, Méthodes
DTG
Département Surveillance
Développement, Mesures, Méthodes
21, Avenue de l'Europe - BP 41
38040 GRENOBLE CEDEX 09

Grenoble, March 27, 2017

To whom it may concern

A research project called "PICS" will be submitted soon for funding by the French Agence Nationale de la Recherche (Appel à Projets Générique 2017). This project aims at offering significant technological advances in the field of integrated forecasting of flash flood impacts, by combining hydrometeorological forecasting methods, hydraulic flows modelling, and flood impacts modelling. The governance of this project will rely on an end users group, aiming to guarantee a high level of connection between the project content and operational needs.

The General Technical Direction of Électricité de France (EDF-DTG) was recently contacted by the project teams for being part of this end users group. Considering that the objectives of the PICS project directly match several operational concerns encountered by EDF, we accepted with enthusiasm to be part of the en-user group. This project will improve handling of the issue of integrated forecasting of risks associated with flash floods. More particularly, it will help EDF-DTG in disposing efficient and integrated nowcasting tools for flash-flood management.

In conclusion, I would like hereby to express my full support to the PICS project.

Yours faithfully,



Hervé TISSOT
Team Manager

SNCF

SNCF RESEAU
INGÉNIERIE & PROJET
Département Lignes Voie Environnement IP.LVE
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Affaire suivie par : M. TRIQUET
Tél. : 290782
Mél : michel.triquet@reseau.sncf.fr

To whom it may concern

ST DENIS, 22 MARS 2017

REF: LVE-OTH/MT/ D2017-00170

OBJET : Support to the PICS project

A research project called "PICS" will shortly be submitted for funding by the French Agence Nationale de la Recherche (Appel à Projets Générique 2017). This project aims to provide significant technological advances in the field of integrated forecasting of flash flood impacts, by combining hydrometeorological forecasting methods, hydraulic modelling and flood impacts modelling. The governance of this project will rely on a group of "potential end users", which aims to guarantee a high level of connection between the project content and operational needs.

SNCF Reseau was recently contacted by the project team with a view to being integrated in the end users group. Considering that the objectives of the PICS project directly match several operational concerns encountered by SNCF, we accepted with enthusiasm to contribute to this project. This contribution will help SNCF to better anticipate flash flood events concerning small ungauged catchments (most flood affecting our network concern catchments having areas less than 1 km²). As a consequence, delays between the warning and the flood event are currently often too short. Having hydrometeorological forecasting chains providing immediate forecasts (1 to 6-h lead time) combined with understanding of impacts for and users would be a real opportunity.

In conclusion, I would like hereby to express the full support of SNCF Reseau to the PICS project.

Le Chef de la Division LVEOTH



M. TRIQUET

Copie à :

LVE – CIR : M SAUSSINE
LVE – OTH

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