10th DPRI Award

for Outstanding Contributions
in Research and Education

研究教育業績賞

Dr. Pierre-Yves Bard

Institut des Sciences de la Terre, Université Grenoble Alpes

選考経緯・業績紹介・講演資料

Dec. 9, 2024

Disaster Prevention Research Institute
Kyoto University, Uji, Kyoto, Japan
京都大学　防災研究所

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Pierre-Yves Bard 先生へのお祝いの言葉

京都大学名誉教授　川瀬　博

Pierre-Yves Bard 先生、この度は 2023 年度 DPRI Award のご受賞、おめでとうございます。今回漸くにして再び防災研を訪れていただいて、2023 年度 DPRI Award を受領していただくことができました。心よりお慶び申し上げます。ご略歴で紹介されていますように、Bard 先生は地震動の地盤構造による増幅効果に関する研究を 1980 年代から現在に至るまで、精力的に実施されてこられ、多くのフランス国内および国際共同研究プロジェクトを指揮され、優れた研究業績を挙げられるとともに、多くのお弟子さんを育成され、この分野の第一人者として世界をけん引されて来られました。防災研究所はその初期の段階から、入倉考次郎強震動地震学分野教授（当時）の先見の明もあって、Bard 先生とは様々な形で連携を図ってきていましたが、現役時代の Bard 先生はあまりにも多忙でおられましたので、日本に長期滞在していただいてじっくりと共同で何かを研究するというようなことは到底叶いませんでした。幸い 2020 年末で彼は常勤職から離れられたので、間髪を入れず社会防災研究部門の客員教授として招へいしようとしたのですが、ちょうどコロナ禍になって渡航が困難になってしまったために、一旦決まった滞在期間を何度も延期していただいて、最終的に 2023 年 2 月から 3 か月間防災研究所に滞在いただくことができ、地震リスク評価高度化研究室と複数のテーマに関して共同研究を進めることができました。

私事で恐縮ですが、私と Bard 先生との出会いは、私が 1986 年から 1988 年の間、南カリフォルニア大学（USC）の安芸敬一先生のところに留学している時に、彼はカリフォルニア地質調査所（CDMG）を訪問中で、安芸先生を訪ねて来られた時に安芸先生から紹介されたのが最初でした。私はその 1 年前、USC に着いた早々に安芸先生から「Bard 博士から貰った Aki-Larner 法のプログラムがあるからそれと君のプログラムを比較しなさい」と指示されて、約半年間散々苦労して漸く一致させる方法を見出したという経緯があったので、当時の私は内心「こいつの所為で酷い目にあった」と思っていて、身構えていたのですが、思っていたよりもずっと若くてフランス人らしからぬ気さくな感じの若手研究者だったので拍子抜けした記憶があります。以来会議でお会いする度に議論を重ね、表層地質の影響評価国際ワーキンググループの活動では 2006 年にグルノーブルで第三回シンポジウムを開催いただいたり、彼のチームが 2015 年～2018 年にかけて実施した国際一斉数値解析実験 PRENOLIN に松島信一准教授（当時）とともに参加させていただいたり、色々な共同研究を行ってきました。

その後、2018 年に半年間、私がサバティカルで彼の地球科学研究所にお世話になった際には、忙しい間を割いて様々な議論を重ね、彼のライフワークとも言えるグルノーブル盆地のサイト増幅効果について具体的に研究を進めることができました。その後、その研究は当時特別研究員だった伊藤恵理さん（その後特定助教を経て現在は建築研究所）に引き継がれ、米国地震学会論文誌に採録されています。2023 年に客員教授として滞在頂いた際にも、深部地盤の非線形性評価の問題と都市とサイトとの相互作用問題に取り組みたいとのお申し出を頂戴し、地震リスク評価高度化研究室の若手研究員へのご指導をいただいて、短期間で2つの研究成果を生み出され、現在も継続的に共同で研究を進めているところです。

Bard 先生には、いつも来日の際にセミナーや特別講義を通して、多くの大学院生、若手研究者を指導していただきました。その暖かいお人柄と何事にも真摯に取り組む姿勢に、彼らも多くのことを学ぶことができたものと確信しています。常勤職は辞されてもまだまだ現役で後進の育成にご尽力されていると伺っています。今後とも是非ご健康でますますご活躍されることを祈念しております。今般は誠におめでとうございました。

2024 年 12 月 9 日

Congratulatory address to Prof. Pierre-Yves Bard for 2023 DPRI Award

Hiroshi Kawase, Professor Emeritus of Kyoto University

Congratulations to Professor Pierre-Yves Bard on winning the 2023 DPRI Award. We are truly delighted that you were finally able to visit the Disaster Prevention Research Institute (DPRI) again and receive the 2023 DPRI Award in person. As is introduced in your biography, Prof. Bard has been conducting researches on the site effects on seismic motions due to ground structure since the 1980s, and has led many French and international joint projects, achieving excellent results and training many students. He has been leading the research activities as an exceptional expert in this field of science. From the early stages of collaboration with the DPRI, he had been collaborating with Professor Emeritus Kojiro Irikura (at the time, Professor of DPRI) in various ways, but Prof. Bard had been far too busy during his time in active service to be able to stay in Japan for a long period of time and collaborate with un on something in depth. Fortunately, he left his full-time job at the end of 2020, so we tried to invite him to the DPRI as a visiting professor as soon as possible。Unfortunately, the COVID-19 pandemic prevented him to come, and so we had to postpone the agreed period of stay several times. In the end, however, he was able to stay at the DPRI for three months from February 2023, and we were able to carry out joint research on multiple themes with the Sophisticated Earthquake Risk Evaluation Laboratory.

I must apologize for the personal nature of the following, but the first time I met Prof. Bard was when I was studying abroad at the University of Southern California (USC) under the guidance of late Professor Keiichi Aki from 1986 to 1988. Prof. Bard was visiting the California Geological Survey (CDMG) at the time, and Kei introduced us when he came to visit USC. One year earlier, soon after I arrived at USC Kei asked me, “I have a program that I got from Dr. Bard, so why don’t you compare your program with that?” After about half a year of struggling, I finally found a way to make them match. When I saw him, I was bracing myself, thinking “I’ve had a terrible time because of this guy”. But I remember being surprised to find that he was much younger than I had expected, and that he was a friendly young researcher who didn’t seem very “French”. Since then, we have met at conferences where we had many fruitful discussions, and we have been involved in various joint research projects, such as the International Joint Working Group on the Effects of Surface Geology on Seismic Motion (JWG-ESG), which held its third symposium in Grenoble in 2006, and the PRENOLIN international numerical analysis experiment in between 2015 and 2018, in which his team invited me and Prof. Shinichi Matsushima (at the time, Associate Professor of DPRI) to participate.

Later, when I was at his institute, ISTerr, on sabbatical for six months in 2018, we were able to have a number of discussions in the midst of his busy schedule and make concrete progress on research into the site amplification effect in the Grenoble Basin, which could be called his life-time job. After that, my research was taken over by Ms. Eri Ito, who was a special researcher at the time (then she became a Program-Specific Assistant Professor of DPRI, now a

researcher at the Building Research Institute), and she successfully published our results on the Bulletin of the Seismological Society of America. When he stayed with us as a visiting professor in 2023, he expressed strong interest in tackling the problem of nonlinearity in deep sediments and the interaction between urbanization and site amplifications. With the guidance to young researchers in the Sophisticated Earthquake Risk Evaluation Laboratory, he produced two research results in a short period of time, and we are continuing to collaborate on these interesting research topics.

Prof. Bard always gave guidance to many graduate students and young researchers through seminars and special lectures whenever he came to Japan. I am sure that they should learn a lot from his warm personality and his sincere approach to all the aspect of scientific research. Even though he has resigned from his full-time position, I hear that he is still working hard to train the next generations. I hope that he will continue to be healthy and active in the future. Congratulations again on his DPRI Award.

December 9, 2024

DPRI Award 設立の趣旨および

第 10 回 DPRI Award 受賞者決定の経緯

研究教育担当副所長　境　有紀

防災研究所は、国内外で発生する自然災害を研究対象とすることから、国際交流協定の締結、国際共同研究、海外災害調査や留学生・海外共同研究者の受け入れなどの国際的な活動にも積極的に取り組んで参りました。平成２２年度に認定され開始した共同利用・共同研究拠点は、令和 4 年度から３期目に入っています。また、防災研究所が事務局を務める世界防災研究所連合（GADRI）は令和５年３月に第６回世界防災研究所サミットを開催いたしました。このように防災研究所は頻発する国内外での自然災害に備えるための国際防災研究拠点として、その地位を確立するために、様々な新しい取り組みを推進しています。

これらの一環として平成２３年３月に「京都大学防災研究所国際表彰規程」が制定され、DPRI Award が設立されました。その表彰の要件は

１）　防災研において、客員教員や共同研究者などとして滞在し、セミナーや共同研究などを実施し、防災研の研究教育に成果を上げた方

２）　防災研が主催する研究集会等において、基調講演、招待講演等を務め、又は企画運営に携わり、防災研の活動に貢献した方

３）　防災研が実施する国際共同研究及び現地調査等において貢献した方

となっております。

平成２５年度には第１回の防災研究所国際表彰 DPRI Award をカリフォルニア工科大学名誉教授の金森博雄博士に授与いたしました。続いて、平成２６年度に第２回 DPRI Award をメキシコ自治大学教授のフランシスコ・サンチェズセスマ博士に、平成２７年度に第３回 DPRI Award をウォータールー大学教授のキース・ハイペル博士に授与しました。平成２８年度の第４回 DPRI Award で

は、ローザンヌ大学教授のミシェル・ジャボイエドフ博士と国際応用システム分析研究所のリスク・レジリエンスプログラムに授与しました。平成３０年度の第５回 DPRI Award はネバダ大学リノ校教授のジョン・グレッグ・アンダーソン博士に、令和元年度の第６回 DPRI Award はノーサンブリア大学教授のアンドリュー・コリンズ博士に、令和２年度の第７回 DPRI Award は台湾国立防災救助技術センター（NCDR）の元センター長の陳亮全（チェン・リアン チュン Liang-Chun CHEN）博士に、令和３年度の第８回 DPRI Award はコロラド大学ボルダー校・行動科学研究所・自然災害センターResearcher in Residence のジェームズ・デニス・ゴルツ博士に、令和４年度の第９回 DPRI Award はメキシコ国立自治大学 ・地球物理学研究所・地震研究部門教授の Víctor Manuel CRUZ-ATIENZA（ビクトール・マヌエル・クルス・アティエンツア）博士に授与しました。

今回、令和５年度の国際表彰について、令和６年１月に防災研究所の川瀬博特任教授から推薦があり、表彰選考委員会で慎重に審議しました。その結果、グルノーブル・アルプ大学 地球科学研究所（Institut des Sciences de la Terre, Université Grenoble Alpes）・上級研究員の Pierre-Yves Bard（ピエー イーヴ・バード）博士に対し、第 10 回の防災研究所国際表彰 DPRI Award の「研究教育業績賞」の受賞者として所長に推薦することを決定いたしました。その後、所長の承認を得、これを教授会に諮り承認されました。

Bard 博士は、1976 年にフランスのパリ工科大学（Polytechnic School in Paris）を卒業した後、1978 年にパリ橋梁道路工科大学（the Bridges and Roads Engineering School in Paris）から土木工学学士（Civil Engineering diploma）を取得、その後 1983 年にグルノーブルのジョセフ・フーリ エ大学（the Joseph Fourier University in Grenoble）から博士の学位（Ph.D.）を取得されました。その後、1984 年から 2021 年に至るまで当初は地球内部科学研究所（LGIT）、その後は地球科学研究所（ISTerre）と称される研究機関の研究者として活躍し続けてこられました。その間、国立土木・計画・ネットワーク研究所（IFSTTAR）にも併任され、地震学者と地震工学者の認識の溝を埋めることに尽力されました。1986 年～1987 年の間にはカリフォルニア鉱山地質局（CDMG）で訪問研究員としてパークフィールドの観測実験に貢献し、また 2008 年～2013 年には ANR（米国 NSF に相当する研究資金配分機関）で自

然災害リスク分野のプログラム管理官（エフォート率 20%の併任）を務められました。その後常勤の研究職から離れ、上級研究員として ISTerre に勤務され現在に至っています。

Bard 博士は、サイト増幅特性評価の分野において重要な功績をあげた国際的に知名度の高い地震工学者です。主な研究テーマは、強震動予測とそれによる地震ハザードの評価で、特に地表付近の不均質性に関連したあらゆる種類のサイト増幅効果に焦点を当て、地盤と構造物の動的相互作用も含んだ幅広い研究を行ってこられました。その中には都市全体への適用や重要な施設を対象とした地震と地盤を特定した決定論的なハザード評価に関する研究が多く含まれています。特に常時微動の特性とその応用に関しては彼の率いるチームは日本の研究者があいまいにしてきた謎をいくつも解明して優れた研究成果を挙げてきました。Bard 博士は 159 編の査読論文と 18 編のその他の論文、28 編の著書等を執筆しており、さらに 48 編の国際会議招待講演論文、185 編の国際会議論文を執筆しています。また彼は、欧州で SESAME、NERIES、NERA など多くのプロジェクトに研究代表者として従事し、多くの研究者を育成するとともに、他機関との共同研究を実施してきています。2006 年には我が国発祥の表層地質が強震動に及ぼす影響に関する国際シンポジウム（ESG シンポ）の第三回開催を主催者としてグルノーブル大学に誘致し、微動解析法のブラインド予測実験を実施して好評を博しました。 Bard 博士は 1988 年に防災研究所地震動部門の招へいで 1985 年 Mexico 地震の Mexico 市の位置する盆地の地震動への影響評価に関する共同研究で短期滞在したことを皮切りに、1997 年の International Symposium on Natural Disaster Prediction and Mitigation に招待されて講演を行いました。2008 年～2009 年には、Bard 博士らが主体となって行われた 3 次元地盤構造における地震動シミュレーションテストプロジェクトに、社会防災研究部門都市空間安全制御研究分野の川瀬教授、地震災害研究部門強震動研究分野の岩田教授が参画し、米国地震学会誌の論文に纏められています。最近では 2014 年 International Workshop on Future Mega-Quakes に招待されて講演を行うとともに、その後の滞在期間において地震災害研究部門強震動研究分野・社会防災研究部門都市空間安全制御研究分野の学生・若手研究者とのディスカッションにも時間を費やして彼らに多大な刺激を与えました。また 2015 年～2018 年には彼がアドバイザーを務めた PRENOLIN プロジェクトに社会防災研究部門都市空間安全制御研究分野

の川瀬教授・松島准教授が招待され共同研究を行いました。その結果は米国地震学会誌に 2 編の論文として結実しています。

さらに最新の彼の貢献として、2023 年 2 月 9 日～5 月 10 日までの３か月間に亙り社会防災研究部門国際防災共同研究分野において外国人客員教授として滞在されたことがあげられ、この期間の貢献は特に大きなものでした。Bard 博士はその期間中に地震防災研究部門強震動研究分野の岩田教授や浅野准教授、地震災害研究センター地盤震動研究領域の松島教授や長嶋准教授、社会防災研究部門防災社会システム研究分野の関口准教授、同地震リスク評価高度化（阪神コンサルタンツ）研究分野の川瀬特任教授や伊藤特定助教ら、およびこれらの研究室の博士後期課程学生やポスドク研究員とフランクに議論し、相互の研究の進捗状況とその後の展開方針について経験に基づいた的確なアドバイスを与えることによって、彼らに大きな刺激を与えてくださいました。具体的にその成果は地盤の非線形性抽出については 2024 年 5 月に大阪で開催された第 8 回国際地震工学・地盤工学会議(ICEGE)において防災研の研究者との共著論文（全文査読付き）として発表され、さらに都市と地震動の相互作用に関しては同じく 2024 年 6 月にイタリアのミラノで開催された第 18 回世界地震工学会議(WCEE)において発表されました。

これらの Bard 博士との継続的な共同研究の実績は、防災研究所の国際的な学際研究を牽引し、国際プレゼンスの向上に大いに貢献されてきました。Bard 博士には、これまでのご貢献に深く感謝するとともに、今後も受賞者に授与される終身称号の DPRI Fellow として、防災研究所の研究・教育に大所高所からご指導・ご助言いただければ大変ありがたく存じます。

Bard博士の御略歴

氏名： Pierre-Yves Bard

称号： Ingénieur Général Honoraire des Ponts, Eaux et Forêts, Senior Scientist
(Honorary General Engineer of Bridges, Water and Forests, Senior Scientist)

国籍： フランス

所属機関： UMR ISTERRE

(Centre national de la recherche scientifique, Unité mixte de recherche, Institut des Sciences de la Terre, Observatoire de Grenoble)
(フランス国立科学研究センター・共同研究ユニット 地球科学研究所)

専門分野： 地震工学、地震災害および地震リスク

Pierre-Yves BARD

SHORT BIOGRAPHICAL SKETCH

Pierre-Yves Bard, 70 is a senior research scientist at ISTERRE Grenoble (Institute of Earth Sciences, University of Grenoble-Alpes), and at University Gustave-Eiffel (Marne-la-Vallée). From 2008 to 2013, he also had a part-time activity (20%) at ANR (French National Research Agency) as program manager on Natural Hazards and Risks. After a basic education in Science at the Polytechnic School in Paris (1973-1976), he received a Civil Engineering diploma from the Bridges and Roads Engineering School in Paris (ENPC, 1978), and a PhD in Geophysics/Seismology at the University Grenoble-Alpes (1983). He also spent one year (1986-1987) as a visiting scientist at the California Division of Mines and Geology (now California Geological Survey) in Sacramento, where he gained experience in processing strong motion data. Since then, he has been working mainly as a researcher in engineering seismology, trying to bridge the gap between seismologists and earthquake engineers. His research is related with assessment of seismic hazard and estimation of strong ground motion, with a special focus on any kind of site effects related with near-surface heterogeneities. His expertise focuses mainly on site-specific hazard estimates, with applications to urban areas (microzonation studies) or critical facilities. Though retired since January 1st, 2020, he is still a senior research scientist at ISTerre involved in various ongoing research projects at the national and European levels, and in various consulting activities related to seismic hazard estimation.

His primary activity has been research. His interests, initially focused on site effects, have gradually broadened to include strong motion seismology, seismic hazard estimation (with emphasis on probabilistic approaches), wave propagation in heterogeneous environments, subsurface and structural monitoring using ambient vibrations, soil-structure and site-city interactions, seismic zonation and microzonation, and their translation into regulatory texts or technical guides and recommendations. They have involved theoretical, numerical and instrumental methodological developments, and examples of applications on real sites, with a particular focus on "frugal" methods that can be used in developing countries or countries with moderate seismicity. The so acquired expertise led him to be involved in public actions concerning changes in regulations (updating the French seismic zonation the early 200O's, European projects for harmonized seismic hazard maps, seismic microzonation studies), as well as in the drafting of various technical recommendation documents for hazard studies for critical installations (dams, chemical and nuclear sites) or site surveys. The latter were often facilitated by participation in R&D projects, notably with the French nuclear industry. He also carried out consultancy or inspection missions to determine the seismic design level of various types of structure (Vasco de Gama bridge in Lisbon, Swiss, Slovak and English nuclear power plants, Cadarache site, various hydraulic or tailings dams, facilities in France and abroad, Groningen gas field...).

He always worked in a predominantly academic environment, which has meant a sustained teaching activity (Masters, engineering schools, continuing education and international thematic courses) and student training (supervising around fourty engineering or M2 internships and 41 PhD theses). This work has given rise to numerous scientific publications (over 170 papers in peer-reviewed journals, over 250 in conference proceedings), as well as a great deal of "grey literature" (guidelines, study reports, …).

PRESENT POSITION
Ingénieur Général Honoraire des Ponts, Eaux et Forêts, Senior Scientist at UMR ISTERRE (Institut des Sciences de la Terre, Observatoire de Grenoble)

EDUCATION / ACADEMIC DEGREES :
- Ecole Polytechnique, Paris 1973 - 1976.
- Civil Engineering (Ecole Nationale des Ponts et Chaussées), Paris 1976 - 1978.
- Doctorat ès Sciences Physiques, University of Grenoble, 1977 - 1983.

PAST POSITIONS :
- 1978-1984: Engineer, Ministry of Equipment, fellowship for doctorate studies, LGIT Grenoble
- 1984 – present : Research scientist, LCPC/IFSTTAR/UGE Paris- LGIT/ISTerre Grenoble.
- 1986-1987 : Visiting scientist at "'Office of Strong Motion Studies" du "California Division of Mines of Geology", Sacramento (California) (NATO fellowship).
- 2008 – 2013: In charge of the "Natural Risks", "Haïti2010" and "Tohoku 2011" Research programs at ANR (French National Research Agency, part time 20%)

RESEARCH FIELDS: ENGINEERING SEISMOLOGY, SEISMIC HAZARD AND SEISMIC RISK
- Wave propagation in heterogeneous media.
- Ground motion prediction
- Site effects and seismic microzonation
- Seismic hazard
- Soil-structure Interaction
- System identification and vibrations of civil engineering structures
- Engineering use of ambient vibrations

TEACHING AND TRAINING

Teaching
- Post-graduate courses in "Seismic hazard and Risk" within several universities and engineering schools : Ecole Nantionale des Ponts et Chaussées (Paris), Ecole Centrale de Paris, University Louis Pasteur (Strasbourg), University Joseph Fourier, University Marne-la-Vallée, INSA Lyon.
- In charge of the "Engneering seismology" module for the "Erasmus Mundus" European Master in Earthquake Engineering and Engineering seismology (MEEES, see http:///www.meees.org)
- Lecturer 1993-2012 for the International Training course on "Seismology and Seismic hazard Assessment" (GeoForschungZentrum Potsdam + UNESCO) - (Potsdam, Roorkee, Managua, Nairobi, Beijing, Concepcion/Antofagasta, Pretoria, Bishkek, Heredia/ San Jose, Izmir, Ifrane).
- Lecturer within several Erasmus "intensive programmes" and summer schools: Thessaloniki 1990, 1991, Udine 1991, Cairo 1994, Thessaloniki 1997, Kefallinia 1999.

Supervising of students :

- PhD thesis (41): L. Géli (1983-1985), C. Boutin (1984-1987), J.-C. Gariel (1985-1988), F.J. Chavez-Garcia (1987 - 1991), H. Afra (1988 – 1991), V. Caillot (1988 - 1992), A.-M. Duval (1991 – 1994), M. Hammoutène (1988 - 1994), M. Kahan (1993 – 1996), C. Lachet (1993 - 1996), M. Farsi (1993 - 1996), J. Riepl (1994 – 1997), M. Zaré (1996 - 1999), P. Guéguen (1997-2000), P. Lussou (1998-2001), C. Cornou (1998-2002), C. Beauval (2000-2003), M. Kham (2000-2004), 0. Sèbe (2000-2004), S. Bonnefoy-Claudet (2001-2004), F. Dunand (2001-2005), E. Haghshenas (2001-2005), H. Cadet (2004-2007), C. Michel (2004-2007), F. Renalier (2006-2010), A. Mikael (2007-2011), M. Hobiger (2007-2011), B. Derras (co-supervision, Univ. Tlemcen, 2007-2011), M. Brax (2006-2013), A. Senouci (2009-2014), J. Iqbal (2008-2014), A. Sandikkaya (2010-2014), A. Imtiaz (2011-2015), C. Salameh (2013-2016), B. Derras (2013-2017), V. Perron (2013-2017), A. Stambouli (co-supervision Univ. Tlemcen, 2013-2018), H. Dif (co-supervision, Univ. Tlemcen, 2013-2019), C. Aristizabal (2014-2018), C. Durand (2015-2018), A. Pothon (co-supervision, 2016-2020)
- Master 2/DEA : 26; Engineering diplomas : 13

SCIENTIFIC ANIMATION, VARIOUS RESPONSABILITIES, A FEW REFERENCES

French level

- In charge of the national working group for the new French seismic zonation map (2002-2004)
- Member of the working group for establishing guidelines for a correct accounting of seismic hazard for safe dam and dyke design (2009-2011), then for environmentally-critical facilities (2028-2020)
- Scenario studies for the city of Nice (2001-2004)
- Vice-President of AFPS (French Association of Earthquake Engineering) (2004-2006, 2008-2012)
- Chairman of the Scientific and Technical Committee of AFPS (2000-2004)
- Chairman of the Evaluation Committee on Microzonation studies (2007-2012)
- Chairman of the Committee on Natural Risks and Climate Change for Overseas Territories, French Ministry of Research, 2009-2010
- Member of various evaluation committees on research programmes (INSU/PNRN), working groups (Dams and Earthquakes) and boards (RAP, French Accelerometric network)

International level

- Expert on seismic hazard for various projects (seismic design of the Vasco de Gama bridge, Lisbon;; update of the seismic hazard assessment for the Mochovce and Jaslovske Bohunice NPPs (PSHA22 – SSHAC Level 2, Chairman of PPRP);
- Participation to the KEM (Knowledge program on the Effects of Mining) expert subpanel acting as a review and advisory committee on public Seismic Hazard and Risk Analysis model for the Groningen gas field. 2021-2024.
- Seismic hazard studies for various civil engineering facilities: Enguri dam, Georgia, 2023; 3 Myanmar dams, 2019)
- Member of the Evaluation Committee for GNDT (Gruppo Nazionale di Difesa del Terremoti, Italian Civil protection), 2001-2004
- Site effect expert for the PEGASOS projects (probabilistic seismic hazard reevaluation for Swiss nuclear power plants, 2001-2004 and 2008-2011)
- Member of the "Technical Advisory Board" of Turkish projects "Microzonation for Earthquake Risk Mitigation" (2002-2004) and "Compilation of National Strong Ground Motion Database in Accordance with International Standards" (2006-2010)
- Coordinator of the European project "SESAME" (2001-2004), NERIES – JRA4 (2006-20010), and NERA-JRA1 (2010-2014) research projects.
- Scientific Committee of the "SIGMA" R&D project [EDF-CEA-AREVA-ENEL, 2011-2015]
- Past Member of the Editorial Board of various Journals: *"Soil Dynamics and Earthquake Engineering", "Journal of Seismology and Earthquake Engineering", "Bulletin of Earthquake Engineering"*
- Reviewer for many peer-reviewed journals (BSSA, GJI, SDEE, JSES, BEE, JGR, NHESS, JOSE, PAGEOPH, …*)* and National Funding Agencies (CH, CL, CZ, FR, IS, IT, NL, NZ, US)

PUBLICATIONS

- International, peer reviewed journals: referenced in ISI WoS: 174; Other: 30 ; Citation index: >10500 - H-index: 59 (*Google Scholar: >22400 /76)*
- Book chapters: 16
- Proceedings: International Conferences: 193 / National Conferences (France): 76
- Additional oral presentations: International Conferences 156, National Conferences (France) 45

AWARDS / INVITED CONFERENCES

- AFPS award 1991 (co-lauréat with A. Pecker)
- ISET (Indian Society of Earthquake Technology) Trifunac award 2014
- RAP (French accelerometric network) award 2018 (shared with A. Souriau)
- Invited professorship, Disaster Prevention Research Institute, Kyoto University, February-May 2023
- Conference Keynote lectures: European Seismological Commission 1998 (Tel Aviv), 2002 (Genoa), 2010 (Montpellier); ESG1998 (Yokohama), 2011 (Santa Barbara), 2016 (Taipei) and 2021 (Kyoto, virtual); Italian Association of Earthquake Engineering, 2001 (Potenza-Matera); 250th Anniversary of the Lisbon earthquake (Lisbon, 2005), Portuguese National Geotechnical Conference, 2006 (Lisbon); Spanish Conference on Earthquake Engineering, 2007 (Girona); Indian Society of Earthquake Technology, 2014 (Roorkee).
- Other invited conferences (international conferences or workshops, state-of-the-art): 48 (Alger, Aïn-Temouchent, Beirut, Bratislava, Brussels, Bucharest, Caracas, Christchurch, Cuernavaca, Erice, Istanbul, Hatay, Kyoto, Lisbon, Nice, Orléans, Oxford, Pasadena, San Francisco, Sapporo, Seeheim, Smolenice, Taipei, Tehran, Tokyo, Trieste, Tunis, Vienna)
- Invited seminars in various institutions: France 15 - Foreign institutions 39

Bard 博士　防災研究所への貢献の足跡

１９８８年8月

第９回世界地震工学会議（9WCEE）の日本（東京・京都）開催終了後に防災研究所に滞在

１９９５年8月

科学研究費助成事業（国際学術研究）（研究代表者：入倉孝次郎）「直下型地震による強震動予測に関する日仏共同研究 Japan-France Joint Project on Strong Motion Prediction」の一環で共同研究者として滞在

２０２３年2月１０日～２０２３年5月１０日

社会防災研究部門国際防災共同研究分野に外国人客員教授として滞在

1982-2024: four decades of accumulating (scientific) debt to “Japan-made” engineering seismology

Pierre-Yves Bard
ISTerre (Institute of Earth Sciences), University Grenoble-Alpes, Grenoble, France

As a sincere thanks for this honoring DPRI award, I will start my talk with listing several features of my professional career that benefitted a lot from inspirational exchanges with Japanese seismologists and engineers. As it might look as an indigest, "à la Prévert" catalog of apparently unrelated activities, I will detail one particular scientific topic that has been one of my constant concerns since the Guerrero-Michoacan 19985 event and its effects in Mexico City, i.e., the interaction between the building stock and the seismic ground motion in densely urbanized areas: this debated issue might find an in-situ, full-scale and real-world instrumental answer with accumulated strong motion gathered since almost three decades by the K-NET and KiK-net networks.

The list of my "Japan-inspired" activities is indeed quite long and broad, as it combines specific research topics, the approach to tackle them, and the way to use and communicate research results. I will shortly mention some of them:

- The involvement in the mid-eighties in the genesis of the IASPEI/EAEE working group on ESG, with smart Japanese and Californian leaders: the way they found a road for understanding the reasons of their different viewpoints on ESG, and for reaching a common understanding (from seismologists to engineers, and on each side of the Pacific Ocean…) left me a career-long example of how to (try to) bridge the multi-fold misunderstanding gaps between the different communities involved in engineering seismology
- Making me aware of the usefulness of long-term test sites coupled with benchmarking exercises: The Ashigara Valley and Turkey Flat blind predictions proved very instructive for me in strongly shaking my (by that time strong) numerical simulation bias, learning me the value of well-controlled data. This was actually the initial seed for the future establishment of several test sites in Europe and the organization of numerous benchmarking exercises.
- The use of microtremors (and microseisms) following the exponential world-wide spread of the H/V technique after the 1989 Nakamura's RTRI paper: this was really a major turn in my scientific career. Trying to understand the physical meaning of this H/V ratio, I discovered the richness of the Japanese literature, the variety of approaches and interpretations, and it was actually for me the initial impetus to introduce the ambient vibration approaches first in the European seismological community, and then in the engineering community. It took long time to convince both communities, but after three decades it is almost done, thanks to many exchanges with Japan, several European projects, dedicated experiments, many PhD students and international benchmarks…
- The new standards set up by K-net and KiK-net networks in producing large sets of high-quality strong motion data and making them freely available worldwide through internet: the post-Kobe, mid-nineties coincided with the time we were starting the French strong motion network, and struggling with the "keep your data for you" policy, and the “kyoshin” web site waq an excellent example to show and follow! Not to talk about the achievement of systematic site investigations and the availability of velocity and geological profiles, which were a fantastic opportunity for many previously impossible investigations, including with emerging AI tools. I will list several topics where actually this dataset was essential in my research activities over the last two decades
- Last but not least, I also enjoyed and benefitted from the beginning of my career, the human qualities of Japanese seismologists. Their humility, their respectful attentiveness, their quietness (and sometimes their silence) were indeed very useful for a young French professional, quite likely to give in to typically French (or Western style) arrogant, loud-speaking behavior.

The second part will focus on the site-city interaction issue, first with a quick overview of past, partial results, followed by an analysis of data from one of the most densely urbanized areas in the World, the Tokyo-Kanto area. The striking site response observations obtained in Mexico City during the 1985 Guerrero-Michoacan even triggered a series of investigations on multiple structure-soil-structure interaction, which later evolved with the concept of metamaterials. Up to very recently, such investigations relied largely on numerical simulations in 2D and 3D media, coupling soft surface

soil layers and simplified building models, including also some theoretical developments using various mechanical concepts. They also relied on a number of laboratory experiments on reduced-scale mock-ups with diverse vibratory sources (shaking table, acoustic devices). The latest studies coupled full-scale experiments on mechanical analogs such as forests or wind turbine farms involving sets of resonators with similar frequencies, and numerical simulation to investigate their impact on the propagation of surface (Rayleigh) waves. Almost all such studies converge in predicting lower ground motion amplitude for sites located within the "urbanized" area, but none of them can be considered a "ground-truth" proof for a real earthquake in a real city. Thus, I took advantage of my 3-month stay in DPRI in Spring 2023, to investigate the possibility of temporal site response changes in areas of rapid urban changes, through an analysis of the event-specific site terms provided by the Generalized Inversion Techniques of Nakano et al. (2015) at all KiK-net, K-NET or JMA (Shin-dokei) located in the Kanto area. In short, it is found that the sites located in or near the priority redevelopment areas of the "urban renaissance" program in Tokyo, where many new high-rise buildings have been erected since the turn of the century, exhibit a significant reduction of the low-frequency amplification (up to a factor of 3 reduction at some sites). Considering the correspondence between high-rise building frequencies (below 1 Hz) and site frequencies (fundamental mode below 0.2 Hz in relation with very thick – around 3 kilometres – sedimentary deposits, and largest amplification between 0.5 and 1 Hz in relation to softer soils at shallow depth), such a decrease is consistent with the outcomes of all kinds of previous investigations carried over three decades about effects of multiple interaction between buildings and underground soil structure. Such a consistency, although intriguing, cannot be considered yet a definite proof that the observed reduction is actually due to "site-city interaction" effects: I look forward a further cooperation with Japanese colleagues to performing some additional investigations (that I will propose) to confirm (or eliminate) the SCI interpretation.

PUBLICATION LIST

Pierre-Yves BARD, October 2024

PEER REVIEW JOURNALS

1. Bard, P.-Y., & M. Bouchon, 1980. The seismic response of sediment-filled valleys. Part 1: The case of incident SH waves. *Bull. seism. Soc. Am.,* **70**, 1263-1286.
2. Bard, P.-Y., & M. Bouchon, 1980. The seismic response of sediment-filled valleys. Part 2: The case of incident P and SV waves. *Bull. seism. Soc. Am.,* **70**, 1921-1941.
3. Bard, P.-Y., 1982. Diffracted waves and displacement field over two-dimensional elevated topographies. *Geophys. J.R. astr. Soc.*, **71**, 731-760.
4. Bard, P.-Y., J.-L. Durville, & J.-P. Mèneroud, 1983. Amplification des ondes sismiques: influence des conditions géologiques locales. *Bull. liaison Laboratoires des Ponts-et-Chaussées,* **123**, 85-90.
5. Bard, P.-Y., J.-L. Durville, & J.-P. Mèneroud, 1984. Influence de la topographie sur la modification des ondes sismiques. *Méditerranée*, **1.2**, 113-121.
6. Bard, P.-Y., & M. Bouchon, 1985. The two-dimensional resonance of sediment-filled valleys. *Bull. seism. Soc. Am.,* **75**, 519-541.
7. Bard, P.-Y., & B.E. Tucker, 1985. Underground and ridge site effects : A comparison of observation and theory. *Bull. seism. Soc. Am.,* **75**, 905-922.
8. Bard, P.-Y., J.-L. Durville, & P. Mouroux, 1985. Les risques naturels: cas des séismes. *Bull. Soc. Géol. Fr.,* **7**, 1129-1143.
9. Bard, P.-Y., & J.-C. Gariel, 1986. The seismic response of two-dimensional sedimentary deposits with large vertical velocity gradients. *Bull. seism. Soc. Am.,* **76**, 343-366.
10. Géli, L., P.-Y. Bard, and D.P. Schmitt, 1987. Seismic wave propagation in a very permeable water saturated surface layer, *J. geophys. Res.,* **92**, 7931-7944.
11. Boutin, C., P.-Y. Bard and G. Bonnet, 1987. Green functions and associated sources in infinite and stratified poroelastic media, *Geophys. J. R. astr. Soc.,* **90**, 521-550.
12. Moczo, P., P.-Y. Bard and I. Psencik, 1987. Seismic response of two-dimensional absorbing structures by ray method, *J. Geophys.,* **62**, 38-49.
13. Bard, P.-Y., J.P. Méneroud, J.L. Durville and P. Mouroux, 1987. Microzonage sismique. Application aux plans d'exposition aux risques (PER), *Bull. Liaison Laboratoires des Ponts et Chaussées, Numéro Spécial "Risques Naturels"*, **150-151**, 130-139.
14. Bard, P.-Y., and J.P. Méneroud, 1987. Modification du signal sismique par la topographie. Cas de la vallée de la Roya (Alpes-Maritimes), *Bull. Liaison Laboratoires des Ponts et Chaussées, Numéro spécial "Risques Naturels"*, **150-151**, 140-151.
15. Géli, L., P.-Y. Bard, and B. Jullien, The effect of topography on earthquake ground motion: a review and new results, *Bull. seism. Soc. Am.,* **7**, 42-63, 1988.
16. Bard, P.-Y., M. Campillo, F.J. Chàvez-Garcia and F.J. Sanchez-Sesma, Strong ground motion in Mexico City during the great Michoacan earthquake. Part B: A theoretical investigation of large- and small-scale amplification effects, *Earthquake Spectra*, **4:3**, 609-633, 1988.
17. Campillo, M., P.-Y. Bard, F. Nicollin and F.J. Sanchez-Sesma, Strong motion in Mexico City during the great Michoacan Earthquake, Part A: The incident wavefield and its interaction with the deep basin, *Earthquake Spectra,* **4:3**, 591-608, 1988.
18. Chàvez-Garcia, F.J., D. Hatzfeld, P.-Y. Bard and G. Pedotti, An experimental study of site effects near Thessaloniki (Northern Greece), *Bull. seism. Soc. Am.,* **80**, 784-806, 1990.
19. Bard, P.-Y., Comportement sismique d'un passage supérieur d'autoroute: analyse de données expérimentales, *Bulletin de liaison des Laboratoires des Ponts-et-Chaussées*, **167**, Mai-Juin 90, pp. 61-76.
20. Gariel J.C., P.-Y. Bard, and K. Pitilakis, A theoretical investigation of source, path and site effects during the 1986 Kalamata Earthquake (Greece), *Geophys. J. Int.*, **104**, 165-177, 1991.
21. Hammoutène, M., B. Tiliouine and P.-Y. Bard, 1991. A two-dimensional nonstationary model for characterization and simulation of seismic accelerations, *European Earthquake Engineering,* **V-1**, 3- 9.
22. Moczo, P. and P.-Y. Bard, 1993. Wave diffraction, amplification and differential motion near strong lateral discontinuities, *Bull. seism. Soc. Am.,* **83**, 85-106.
23. Chàvez-Garcia, F.J., and P.-Y. Bard, 1993. Gravity waves in Mexico City ? I. Gravity perturbed waves in an elastic solid, *Bull. seism. Soc. Am.,* **83**, 1637-1655.
24. Chàvez-Garcia, F.J., and P.-Y. Bard, 1993. Gravity waves in Mexico City ? II. Coupling between an elastic solid and a fluid layer, *Bull. seism. Soc. Am.,* **83**, 1656-1675.
25. Bard, P.-Y., and F.J. Chàvez-Garcia, 1993. On the decoupling of surficial sediments from surrounding geology at Mexico City, *Bull. seism. Soc. Am.,* **83**, 1979-1991.

26. Caillot, V., and P.-Y. Bard, 1993. Magnitude, distance and site dependent spectra from Italian accelerometric data, *European Earthquake Engineering*, **1.93**, 37-48.
27. Lachet, C., and P.-Y. Bard, 1994. Numerical and theoretical investigations on the possibilities and limitations of the "Nakamura's" technique, *Journal of Physics of the Earth*, **42-4**, 377-397, 1994.
28. Chàvez-Garcia, F.J., and P.-Y. Bard, 1994. Site effects in Mexico City eight years after the September 1985 Michoacàn earthquakes, *Soil Dyn. and Earthq. Engng*, 229 - 247.
29. Pedersen, H., B. Le Brun, D. Hatzfeld, M. Campillo and P.-Y. Bard, 1994. Ground motion amplitude across ridges, *Bull. seism. Soc. Am.,* **84**, 1786-1800.
30. Chàvez-Garcia, F.J., F.J. Sanchez-Sesma, M. Campillo and P.-Y. Bard, 1994. El terremoto de Michoacan de Septiembre de 1985: efectos de fuente trayecto y sitio, *Fisica de la Tierra, Editorial Computense*, Madrid, **6**, pp. 157-200.
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32. Chàvez-Garcia, F.J., and P.-Y. Bard, 1995. Reply to "Comment on two articles on gravity waves by Chàvez-Garcia and Bard (1993a,b)", *Bull. seism. Soc. Am.*, **85**, 1272-1274.
33. Teves-Costa, P., L. Matias and P.-Y. Bard, 1996. Seismic behavior estimation of thin alluvium layers using microtremor recordings, *Soil Dyn. and Earthq. Engng,* **15**, 201-209.
34. Theodoulidis, N., P.-Y. Bard, R.J Archuleta and M. Bouchon, 1996. Horizontal to vertical spectral ratio and geological conditions: the case of Garner Valley downhole array in Southern California, *Bull. seism. Soc. Am.,* **86**, 306-319.
35. Wirgin, A., and P.-Y. Bard, 1996. Effects of buildings on the duration and amplitude of ground motion in Mexico City, *Bull. seism. Soc. Am.*, **86**, 914-920.
36. Kahan, M., R.-J. Gibert and P.-Y. Bard, 1996. Influence of seismic waves spatial variability on bridges: A sensitivity analysis, *Earthquake Engineering and Structural Dynamics,* **25-8**, 795-814.
37. Lachet, C., D. Hatzfeld, P.-Y. Bard, N. Theodulidis, C. Papaioannou and A. Savvaidis, 1996. Site effects and Microzonation in the city of Thessaloniki (Greece): comparison of different aproaches, *Bull. seism. Soc. Am.*, **86**, 1692-1703.
38. Duval, A.-M., J.-P. Mèneroud, S. Vidal et P.-Y. Bard, 1996. Une nouvelle méthode d'évaluation de la réponse des sols aux séismes par enregistrement du bruit de fond, *Bulletin de liaison des Laboratoires des Ponts-et-Chaussées*, **203**, Mai-Juin 96, pp. 75-90.
39. Fourmaintraux, D., J.-R. Grasso, P.-Y. Bard, et M. Koller, 1997. Utilisation de l'enregistrement sismique continu pour l'estimation du risque de sismicité associée aux réservoirs d'hydrocarbures et déclenchée par leur exploitation, *Bull. Centre Rech. Elf Explor. Prod.,* **21-2**, 323-336.
40. Riepl, J., C. Sousa-Oliveira and P.-Y. Bard, 1997. Spatial coherence of seismic wave fields across an alluvial valley (weak motion), *Journal of Seismology*, **1**:253-268.
41. Jongmans, D., K. Pitilakis, D. Demanet, D. Raptakis, J. Riepl, C. Horrent, G. Tsokas, K. Lontzetidis and P.-Y. Bard, 1998. EURO-SEISTEST: Determination of the geological structure of the Volvi basin and validation of the basin response, *Bull. seism. Soc. Am.,* **88-2**, 473-487.
42. Riepl, J., P.-Y. Bard, D. Hatzfeld, C. Papaioannou and S. Nechtschein, 1998. Detailed evaluation of site response estimation methods across and along the sedimentary valley of Volvi (EURO-SEISTEST), *Bull. seism. Soc. Am.*, **88-2**, 488-502.
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46. Zaré, M., P.-Y. Bard and M. Ghafory-Ashtiany, 1999. Site categorization for the Iranian strong motion network, *Soil Dyn. and Earthq. Engng,* **18**, 101-123.
47. Lebrun, B., D. Hatzfeld, P.-Y. Bard and M. Bouchon, 1999. Experimental study of ground motion on a large scale topography, *Journal of Seismology,* **3-1**, 1-15..
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52. Tiliouine, B., M. Hammoutène, and P.-Y. Bard, 2000. On the phase content modelling of earthquake strong motions, *European Earthquake Engineering,* **XIV-2**, *27-34*.
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55. Dimitriu, P., N. Theodulidis and P.-Y. Bard, 2000. Evidence of non-linear site response in HVSR from SMART1 data, *Soil Dyn. and Earthq. Engng, **20**, 155-165*.
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41. Maufroy, E. Chaljub, F. Hollender, P.-Y. Bard, J. Kristek, P. Moczo, F. De Martin, N. Theodoulidis, M. Manakou, C. Guyonnet-Benaize, K. Pitilakis and N. Hollard, 2015. Validating the numerical simulation approach for ground motion predic-tion: General framework and latest lessons from the E2VP project. Invited theme lecture, 6ICEGE (6th IInternational Conference on Earthquake Geotechnical Engineering) Christchurch, New-Zealand, November 1-4, 2015.
42. Bard, P.-Y., 2015. Mesures géophysiques de subsurface et risque sismique : intérêts, besoins et questions en suspens. Conférence invitée, Journées Scientifiques AGAP Qualité 2015, Grenoble, 17-19 Novembre 2015.
43. Salameh, C., P.-Y. Bard, B. Guillier, J. Harb, C. Cornou and M. Almakari, 2016. Using ambient vibration measurements for risk assessment at an urban scale: from numerical proof of concept to a case study IN BEIRUT (LEBANON). Invited keynote lecture, 5th IASPEI / IAEE International Symposium: Effects of Surface Geology on Seismic Motion, August 15-17, 2016
44. Bard, P.-Y., C. Aristizabal, C. Beauval, E. Chaljub, C. Cornou, B. Derras, B. Guillier, F. Hollender, A. Laurendeau, E. Maufroy, V. Perron, J. Régnier an A. Stambouli, 2016. Strategies to take into account site-specific conditions and their Uncertainties, Invited keynote lecture, Workshop European ground motion models from the past to the future, 98èmes Journées Luxembourgeoises de Géodynamique, Luxembourg, 14-16/11/2016.
45. Bard, P.-Y., A. Laurendeau, F. Hollender, V. Perron, B. Hernandez and L. Foundotos, 2016. Hard-Rock GMPEs versus "VS30-κ" Host-to-Target Adjustment techniques: Why so large Differences in High-Frequency Hard-Rock Motion? AGU16, Invited paper, Session S43E: Capturing the Complexity of Site Amplification II, 15/12/2016
46. Salameh, C., P.-Y. Bard, B. Guillier, J. Harb, C. Cornou and J. Gérard, 2017. Assessment of seismic damage level at urban scale: a new approach based on ambient vibration measurements with an example case study on Beirut (Lebanon). Trigger International Conference on "Trans-disciplinary Research on Iranian Geology, Geodynamics, Earthquakes and Resources", Tehran, May 6-7, 2017
47. Bard, P.-Y & T. Camelbeeck, 2018. Sismicité et caractérisation de l'aléa sismique pour les projets d'ingénierie. Zonages sismiques France / Belgique. Journée Franco-Belge GBMS/CFMS, Bruxelles, 15/03/2018.
48. Bard, P.-Y., 2018. Hazard assessment and official zonation maps: lessons from the French experience. *Invited conference, workshop "Earthquakes in the world and Lebanon in the last ten years" jointly organized by* ALPS / OEA (Lebanese Association of Earthquake Engineering / Ordre des Ingénieurs et Architectes), Beirut, 26-27/11/2018.
49. Bard, P.-Y., 2021. Principles and methodology for the selection of input ground motions for the dynamic analysis of dams. 2021 Workshop of the "Dams and Earthquakes" European Working Group, 15/06/2021. (https://www.youtube.com/channel/UCDadRBeCphJ0nIxElkKVAew; https://www.youtube.com/watch?v=ybc5AE2jPBk)
50. Bard, P.-Y, 2021. Des géosciences à l'aléa sismique en zone de sismicité modérée : l'exception française. Conférence à l'intersection de l'Académie des Sciences sur le theme "Aléa, Risque et Société", 30 /06 / 2021

51. Bard, P.-Y., (2021). Physics-based site amplification prediction equation: a dream at reach ? Invited keynote lecture, 6th IASPEI / IAEE International Symposium: Effects of Surface Geology on Seismic Motion, Kyoto, August 30-September 1, 2021.

52. Bard, P.-Y., L. Danciu & C. Beauval, 2022. Hazard curves, spectral shapes, importance coefficients and return periods: insight from recent PSHA studies. Invited theme lecture, Third European Conference on earthquake Engineering and Seismology, Bucharest, September 4-9, 2022.

INVITED SEMINARS

1. Politecnico Milano, Décembre 1983 (Two-dimensional response of sediment-filled valleys: theoretical results and observations).
2. Instituto de Ingenieria, UNAM, Mexico, Mars 1986 (Site effects on soft sediments)
3. Université Charles, Prague, Juin 1986 (Site effects: from theory to application)
4. Office of Strong Motion Studies, CDMG Sacramento, Janvier 1987 (A study of site effects in Mexico City)
5. University of Southern California, Los Angeles, Février 1987 (A study of site effects in Mexico City)
6. United States Geological Survey, Menlo Park, California, Mars 1987 (A study of site effects in Mexico City)
7. Office of Strong Motion Studies, CDMG Sacramento, Août 1987 (Analysis of CSMIP structural strong motion data)
8. Université de Thessalonique, Octobre 1987 (Experimental and theoretical studies about the seismic response of sediment-filled valleys)
9. Disaster Prevention Research Institute, University of Kyoto, Août 1988 (Strong ground motion in Mexico City during the great Michoacan earthquake).
10. Ecole Nationale Polytechnique d'Alger (Département Génie Civil), Mai 1989 (Analyse expérimentale du comportement dynamique des structures de génie civil sous chargement sismique réel).
11. Ecole Nationale Polytechnique d'Alger (Département Génie Civil), Mai 1989 (Effets de site et risque sismique: de leur compréhension physique à la règlementation).
12. ENEA/ENEL, Rome, 01/03/1990 -Seminario sui problemi di previsione del moto sismico locale su base accelerometrica - (Numerical prediction of site effects: possibilities and difficulties.)
13. Institut Supérieur d'Etudes et de Recherches Scientifiques et Techniques, Djibouti, Mars 90 (Les effets géotechniques du séisme de Loma Prieta (Californie) du 17/10/1989: analogies et enseignements pour Djibouti).
14. Ecole Nationale Polytechnique d'Alger (Département Génie Civil), Mai 1990 (Le séisme de Loma Prieta (Californie) du 17/10/1989: aspects sismologiques et géotechniques)
15. Université degli studi di Trieste, Italie, Décembre 1991 (I : La méthode du nombre d'onde discret: principaux résultats) , (II : Les effets de site à Benevento, Italie: méthode d'étude, résultats et problèmes)
16. Geophysical Institute, Slovak Academy of Sciences, Bratislava, Septembre 1994 (Effects of surface geology on ground motion: a review of recent results and remaining issues)
17. Cairo Technical University, Decembre 1994 (Seismic Hazard and Site Effects: effects of surface geology on ground motion, liquefaction , slope stability)
18. International Institute of Earthquake Engineering and Seismology (IIEES), Tehran, May 1995. (Short course (12 h) on "The new methods of seismic microzonation and site-dependent seismic design")
19. Disaster Prevention Research Institute, University of Kyoto, Août 1995 (Recent developments about effects of surface geology on ground motion : physical phenomena and estimation methods).
20. Civil Engineering and Architecture Department and Electrical Engineering Department, Drexel University, Philadelphia, Août 1996 (Important issues related to site response and ground motion estimation in seismology).
21. International Institute of Earthquake Engineering and Seismology, Téhéran, Septembre 1996 (EUROSEISTEST/EUROSEISMOD projects: progress report and learnings in the engineering seismology and earthquake engineering fields).
22. Ecole Polytechnique Fédérale de Zurich, Suisse, 21 Janvier 1997 (Site effects and seismic hazard assessment in urban areas)
23. International Institute of Earthquake Engineering and Seismology, Téhéran, Novembre 1997 (Seismic actions for large size structures).
24. Instituto de Ingenieria, UNAM, Mexico, 4 Février 1999 (Microtremor measurements: a tool for site effect estimation ?).
25. Instituto de Ingenieria, UNAM, Mexico, 9 Février 1999 (Site effects in Grenoble: similarities and differences with Mexico City?).
26. Laboratoire de Mécanique et d'Acoustique, Marseille, 9 Juillet 1999 (De l'interaction sol-structure a l'interaction "site-ville" sous sollicitation sismique).
27. University of Karlsruhe, November 9, 1999 (Seismic microzonation : an example and some issues).
28. Instituto de Ingenieria, UNAM, Mexico, 13 Juillet 2000 ("Simple and robust measurements of the duration increase due to site conditions: an example at Euroseistest").
29. Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovakia, 20 mars 2002. ("Anomalous wavefields in surface structures and site effects during earthquakes").
30. FUNVISIS, Caracas, Venezuela, 14 juillet 2002. ("Use of microtremors for site effect analysis").
31. Université de Grenoble, 15/10/2002. Aléa sismique en milieu urbain, Conférence "Midi-sciences"
32. Bard, P.-Y., 2004. Aléa sismique en milieu urbain : enjeux et questions scientifiques. Séminaire Ile de France, Marne-la-Vallée, ENPC, 13 Mai 2004.
33. Bard, P.-Y., 2005. Transports, Ouvrages, Sols … et Séismes : enjeux et problématiques, Semaine Transports et Ouvrages, ENTPE Vaulx-en-Velin, 24/01/2005.
34. Bard, P.-Y., 2005. Séismes: aspects mécaniques, Exemple du séisme de Sumatra, Conférence ENPC, Marne-la-Vallée, 26/01/ 2005
35. Bard, P.-Y., 2006. Transports, Ouvrages, Sols … et Séismes : aperçu des enjeux et problématiques, Semaine Transports et Ouvrages, ENTPE Vaulx-en-Velin, 11/01/2006.
36. Bard, P.-Y., 2006. Aléa sismique en milieu urbain : enjeux et questions scientifiques. *Conférence à l'Ordre des Ingénieurs, Beyrouth, Liban,* 5 Avril 2006.

37. Bard, P.-Y., 2006. Les risques sismiques dans la région grenobloise, *Conférence à l'Université Inter-äge du Dauphiné,* 12 Mai 2006.
38. Bard, P.-Y., 2006. Les résultats du projet SISMOVALP : utilisation pratique, Conférence SIA-Valais, Martigny (Suisse), 4 Octobre 2006
39. Bard, P.-Y., 2007. "Facing the seismic hazard in urban areas : scientific and technological challenges", Cycle de conférences "French Science Today", National Geophysical Reserach Institute, Hyderabad, India, 03/12/2007.
40. Bard, P.-Y., 2007 . Seismic hazard in urban environments : can man modify the hazard ?, Cycle de conférences "French Science Today", Indian Institute of Technology, Roorkee, India, 06/12/2007.
41. Bard, P.-Y., 2008. Définition réglementaire de l'aléa sismique: évolutions en cours. Construire Parasismique en Rhône-Alpes, Grenoble, 17 janvier 2008.
42. Bard, P.-Y., 2008. Constructing synthetic accelerograms with physically consistent aleatoric components. Invited seminar, AREVA, Paris, 11/12/2008.
43. Bard, P.-Y., 2009. Construction et prevention parasismique : elements comparatifs France-Liban. Séminaire Ordre des Ingénieurs de Beyrouth / Institut de Recherche Industrielle / Union des Ingénieurs et Scientifiques Francophones, Beyrouth, 3-4 mars 2009.
44. Bard, P.-Y., 2010. Array measurements and processing of ambient vibrations. Ege University, Izmir, October 14, 2010.
45. Bard, P.-Y., 2010. "Ingénierie parasismique et plans de prevention des risques sismiques, Journée Sciencitfique VOR "Risques Naturels et Vulnérabilité des Infrastructures", Grenoble, 21/10/2010.
46. Bard, P.-Y., A. Senouci, S. Cartier et E. Beck, 2012. Apport de l'étude de vulnérabilité au séisme dans la requalification des tissus urbains. Etude de cas : la ville d'Oran. Presentation à l'Université Saint-Joseph, Beyrouth, 26 janvier 2012
47. Bard, P.-Y., 2012. Rappel sur les séismes, aléa sismique et sismologie de l'ingénieur. Commémoration du 13ème anniversiare du séisme d'Aïn-Temouchent – Génie Parasismique: du séisme à l'ouvrage Aïn Temouchent, Algérie, 4-5 Décembre 2012.
48. Bard, P.-Y., 2014. Why is ILL required to perform specific seismic hazard studies ? Facts and issues about the seismic hazard in the Grenoble area. ILL Colloquium (Séminaire Institut Laue-Langevin), March 14, 2014, Grenoble, France (https://www.ill.eu/fr/presse-et-infos/colloquia-seminars-talks/ill-colloquium-series/2014/).
49. Bard, P.-Y, 2014. Evolution récente des niveaux d'aléa sismique : les sismologues sont-ils vraiment fous ? Journée AG CEA-DPIE, CEA Cadarache, 27/03/2014
50. Bard, P.-Y., 2014. Sismologie et Génie Civil : Enjeux et défis pour parvenir à une réduction effective du risque sismique. Le point de vue d'un sismologue français. Conférence invitée, Institut Français de Bucarest, 08/05/2014.
51. Bard, P.-Y., 2014. Prediction of strong earthquake ground motion : present capabilities, limitations and challenges. Invited talk, Seismology seminar, Bratislava (Slovakia), June 10, 2014.
52. Bard, P.-Y., 2015. Earthquakes, seismicity and seismic hazard, with a special focus on the Grenoble area, "Séminaire interne "La sismique dans les tableaux basse tension", Schneider Electric, Grenoble, 2 et 30 avril 2015.
53. Bard, P.-Y., et al., 2017. The Franco-Hellenic collaboration in Argostoli, 2011-2017: goals, accomplishments and perspectives. Projects in the European and French/Greek frameworks (NERA, SINAPS@, …). Séminaire d'infirmation à l'invitation de la prefecture d'Argostoli, Argostoli, Grèce, 25/09/2017.
54. Bard, P.-Y. & F. Hollender, 2018. Caractérisation de l'aléa sismique régional et local : réflexions en cours dans le cadre des Recommandations AFPS2020. Institut Seism, CentraleSupelec Saclay, 13/11/2018.
53. Bard, P.-Y., 2023. Site amplification factors for generic to site-specific seismic hazard assessment: an overview of recent and ongoing developments in France and Europe. Invited seminar, Disaster Prevention Research Institute, Kyoto/Uji, 07/04/2023
54. Bard, P.-Y., 2023. State-of-art applied seismology in France and its applications: From non-invasive surveys to site response analysis and seismic hazard assessment: a (subjective) French-European experience. Invited seminar, SEG / ESG Japan, Tokyo, 01/05/2023.

10th DPRI AWARD

Disaster Prevention Research Institute, Kyoto University

Awarded on December, 2024