



RESEARCH CENTER

FIELD

Digital Health, Biology and Earth

Activity Report 2013

Section Popularization

Edition: 2015-04-10

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ABS Project-Team (section vide)

AMIB Project-Team

7.3. Popularization

- Outreach seminar at *Lycée Blaise Pascal* (Orsay, France) – Yann Ponty – Popular science seminar (2h), jointly organised by INRIA (Saclay) and Académie de Versailles.
- Unite ou café, Inria Saclay Popularization seminar, *Les briques de construction de la vie*, see: <https://intranet.saclay.inria.fr/vie-du-centre/unithe-cafe/rencontres-2013/briques-construction-vie>.

We also had the opportunity to be part of a few valorization related events. RNA structural studies were presented at the Rencontres Inria Industrie - Modélisation, simulation et calcul intensif in June 2013 <http://www.inria.fr/centre/saclay/innovation/rii-modelisation-simulation-calcul-intensif/presentation>. This led to an invitation at Sanofi Pharmacometry and Bioinformatics day in December 2013.

BAMBOO Project-Team (section vide)

BEAGLE Project-Team

8.3. Popularization

- E. Tannier participated to large audience conferences at the Université Populaire de Lyon in February 2013, giving three lectures on scientific revolutions.
- E. Tannier is a co-author of an article to the large audience journal “Pour la science” [32].

BIGS Project-Team (section vide)

BONSAI Project-Team (section vide)

DYLISS Project-Team

8.3. Popularization

- *Bioinfo-fr.net* Bioinfo-fr.net is a french web site where researchers, engineers and students talks about bioinformatics. We have written 6 articles for this web site on diverse subjects: metabolic networks, genome assembly, phylogenetics. [G. Collet, S. Prigent]. [\[more info\]](#).
- *Participation at Rennes Village des Sciences for French National Science day* (Fête de la Science). Title : *Crazy random walks*. Description : Popularization Festival where researchers present scientific themes. [V. Picard]
- *Fête de la science (LINA, Nantes)* During the 24th of october, 250 students discovered bioinformatics, genome assembly and algorithmic by practicing games and tutorials made by our team with the help of Julien Gras and Marko Budinich (LINA) [J. Bourdon, D. Eveillard, G. Collet].
- *Organization of Sciences en Cour[t]s*. Popularization Festival where PhD students explain their thesis via short films. [S. Prigent, C. Bettembourg, G. Garet] [\[more info\]](#).

GENSCALE Project-Team

9.3. Popularization

- Participation to the event "A la découverte de la recherche" (presentation of the research activity to high school students) [C. Lemaitre, P. Peterlongo]
- Participation to the event "Professional Meeting" (talk: discovering bioinformatics), IUT Lannion [D. Lavenier]
- Production of a short movie of PhD subject popularization. [M. Le Boudic-Jamin] <https://doctoriales2013.ueb.eu/content/posters>

IBIS Project-Team (section vide)

MAGNOME Project-Team

9.3. Popularization

Magnome participated in « UniThé ou Café » in the Inria Bordeaux – Sud-Ouest research center.

Anna Zhukova animated one of the Inria workshops at the 2013 “Fête de la Science”

David Sherman is a member of the Inria Bordeaux – Sud-Ouest’s “Scientific Culture” committee, which organizes and proposes various scientific popularization actions.

MORPHEME Project-Team

7.3. Popularization

- Xavier Descombes has given a conference in Nice within the program "Science au Lycée".
- Xavier Descombes has given a seminar in Marseille University in a workshop dedicated to multi-disciplinarity.

SERPICO Project-Team (section vide)

VIRTUAL PLANTS Project-Team

7.3. Popularization

Christophe Godin gave 3 conferences for high-school pupils respectively on plants and fractals and on the Secret Code of Flowers in the context of MathC2+ and fête de la science (6h).

CORTEX Team (section vide)

ARAMIS Team

9.3. Popularization

The team is involved in the BrainCatalogue project (coordinator: Roberto Toro, Institut Pasteur) dedicated to the popularization of neuroanatomical knowledge. The project features MRI scans and 3D reconstructions for various vertebrates species (bear, mouse, macaque, dolphin, leopard, rhinoceros, human, squirrel ...).

The team has participated to the ICM "Donor days".

ASCLEPIOS Project-Team (section vide)

ATHENA Project-Team (section vide)

DEMAR Project-Team (section vide)

GALEN Project-Team (section vide)

MNEMOSYNE Team

8.3. Popularization

For a multi-disciplinary team as Mnemosyne, science popularization is not a nice and useful contribution to the dissemination of scientific knowledge but also a necessity since we work with colleagues from bio-sciences with whom sharing profound ideas in computer science is mandatory for a real collaboration.

- Thierry Viéville is half-time involved in popularization actions both at a concrete level [21], [23], [22], [9], [10] (including on Mnemosyne subjects [25], [20] and at the methodological level [15], [29], [18]. This explains the rather huge amount of publications on these external subjects in this document.
- “A small history of cyber-criminality” at the Journées pédagogiques sur ISN (N. Rougier, June)
- “About brain modeling”, Interstices podcast, (N. Rougier, February)
- Participation to the program “Science Publique”, on the french national radio France Culture to a one-hour debate entitled “What can we expect from an artificial human brain?” (F. Alexandre, January).

NEUROMATHCOMP Project-Team (section vide)

NEUROSYS Team

8.3. Popularization

- Nancy Renaissance 2013 *Moments d'Invention* with stand and talk on conference (L. Bougrain).
- Fête de la Science à Nancy, October 2013 (L. Bougrain et A. Hutt).
- Science Slam Talk on *Sleep and Anaesthesia* at University of Frankfurt / Main, February 2013 (A. Hutt).

PARIETAL Project-Team

8.3. Popularization

PARIETAL presented a game designed by Virgile Fritsch to illustrate our research activities on brain activity decoding, at the Salon de jeux et culture mathématique (May 30th-June 2nd, 2013).

Popix Team

9.3. Popularization

We have built a comprehensive online wiki (WikiPopix, <https://wiki.inria.fr/popix>) for the population approach with mixed-effects models. This wiki aims to be an invaluable resource for all pharmacometricians, statisticians, teachers, graduate and undergraduate students in academia, industry and regulatory agencies. It is freely available online for all these communities.

Furthermore, the team developed an online animated film called *Introduction to PK modeling* for interested members of the public and for teaching and training purposes. It can be seen at <https://team.inria.fr/popix/files/2013/02/PKmodelling.swf>, and joins two previous animated films already developed by the team (see <http://team.inria.fr/popix/files/2011/11/PopulationApproach.swf>).

SHACRA Project-Team

9.3. Popularization

9.3.1. *Fête de la Science*

Christian Duriez has been involved as a *Wandering Researcher* in the Fête de la science (french event that promotes science).

9.3.2. *Exhibitions*

Christian Duriez and Mario Sanz Lopez have been involved in the design and development of scientific and technological demonstrators for the *Plateau* (e.g. Showroom) Inria at Euratechnologies and for *The Labo* at Inria test laboratory.

9.3.3. *Recontre Inria-Industrie 2013*

This was a public event taking place in Paris the 11th of June 2013. The new training system dedicated to electrocardiology and the recent deformable robot was presented.

9.3.4. *IHU Scientific Days*

At the occasion of the IHU Scientific days, we visited the IHU Strasbourg and several talks were done by members of the team: Alexandre Bilger, Stéphane Cotin, Jeremie Dequidt, Nazim Haouchine, Igor Peterlik, and Hugo Talbot.

9.3.5. *Intergovernmental seminar*

The intergovernmental seminar on digital sciences was held in february at the University of Cergy-Pontoise. Within this context, the team has exhibited a demonstration of a cataract surgery simulator which is dedicated to train surgeons to a new cost-effective cataract surgery procedure MSICS (*manual small incision cataract surgery*). This simulator was developed at Inria and has been transferred to the start-up InSimo.

VISAGES Project-Team

ANGE Team

9.3. Popularization

08/01/13 J. Sainte-Marie together with O. Bernard (Inria BIOCORE) and B. Sialve (Naskeo) published a short article named “Un zeste de mathématiques pour les biocarburants de demain” on the french Mathematics for Planet Earth website.

30/05-02/06/13 N. Seguin participated to the “Salon de la culture et des jeux mathématiques” at the UPMC stand. This forum aims at explaining the job of researcher in Mathematics to pupils and high school students.

10-11/10/13 E. Audusse gave a talk for high school students at “Savante Banlieue”.

10-12/10/13 E. Audusse, E. Godlewski, R. Hamouda, Y. Penel and J. Sainte-Marie run the Inria stand at the 2013 edition of the “Fête de la Science”. They presented animations of past tsunamis to a general public.

2013 E. Audusse intervened in a secondary school (Pontault Combault) for “Maths en Jeans”.

2013–2014 E. Audusse, R. Hamouda and J. Sainte-Marie implemented a software (“Tsunamath”) for simulating tsunamis in the context of a worldwide exhibition for Mathematics of Planet Earth. The first stage will be held in Berlin in March 2014.

BANG Project-Team

8.3. Popularization

- Jean Clairambault: (1) 1 h Forum des métiers UPMC, September; (2) 2 h Exposé “Animath” lycée St Laurent, Lagny, November
- Marie Doumic: movie on the ERC grants for "Horizon 2020", <http://www.horizon2020.gouv.fr/cid75865/video-lancement-horizon-2020-decembre-2013.html>

CASTOR Team

9.1. Popularization

- With Maria Vittoria Salvetti of the University of Pisa, Hervé Guillard has written a popularization article "Des mathématiciens à la rescousse des lagunes méditerranéennes" [29] for the online journal Accromath.
Accromath is a journal of the "Centre de recherches mathématiques de l'Université de Montréal" whose aim is to popularize Mathematics and their applications for secondary school pupils and their professors.
- Redaction of the short note "Les vagues et les rivages, une question de changement de variables" <http://mpt2013.fr/changement-de-variable-et-comment-les-vagues-montent-a-lassaut-des-rivages/> in the framework of Mathematics of Planet Earth 2013 (MPE2013) published 04/10/2013 (Hervé Guillard).
- Redaction of the short note "Retour vers le futur" <http://mpt2013.fr/retour-vers-le-futur/> in the framework of Mathematics of Planet Earth 2013 (MPE2013) published 16/10/2013 (Jacques Blum & Didier Auroux).

CLIME Project-Team

9.3. Popularization

- Marc Bocquet made a presentation on employment in the environment sector at the second “Forum Maths Emploi”, January 2013, Paris.
- Marc Bocquet wrote a paper [32] on “Modélisation numérique de la dispersion atmosphérique accidentelle des radionucléides : l’état de l’art de la recherche” in the journal “Revue du Centre de Défense NBC”.
- Isabelle Herlin and Vivien Mallet wrote an introduction to air quality simulation [33] for a special issue on Mathematics for Planet Earth dedicated to teachers in french “collèges” and “lycées” and an internet contribution [35] “Votre air, votre santé”: <http://mpt2013.fr/votre-air-votre-sante/>
- Vivien Mallet introduced numerical simulation of air pollution at the 2013 edition of “Mathématiques en mouvement”.
- Vivien Mallet and Anne Tilloy took part to the festival “Futur en Seine” and presented, during four days, research advances in air quality simulation at urban scale.

COFFEE Project-Team

8.3. Popularization

- R. Masson: Talk “mathematics in geosciences” for the prize-giving of the Olympiads of Mathematics 2013 at UNS
- R. Masson: Article on the role of mathematics in petroleum engineering, in “L’énergie à découvert”, CNRS Editions, 2013.
- T. Goudon: “Modelling and simulation of spacecraft charging”, European Success Stories in Industrial Mathematics, Springer 2012.
- During the international program “2013, Mathematics of the Planet Earth”, supported by UNESCO, T. Goudon, with M. Andler, L. Bel, S. Benzoni, C. Imbert, A. Rousseau has animated the website mpt2013.fr with a daily short notice describing a mathematical activity in connection to the Planet Earth. This operation will be followed by a book, to be edited in 2014.
- T. Goudon: “Mathématiques de la Planète Terre”, Textes et Documents pour la Classe (TDC), Scérén, CNDP-CRDP, 2013.
- T. Goudon, with C. Calgaro and E. Creusé “Modélisation et simulation des avalanches de neige”, Matapli n. 100, 2013.
- T. Goudon: Working session for teachers on “mathematics of the planet earth”, during the national meeting of the APMEP (national society of teachers in math), with F. Boyer, G. Chapuisat and J. Charrier from Marseille; this will be completed with talks in classes, with S. Krell.

FLUMINANCE Project-Team

9.3. Popularization

Etienne Mémin

- E. Mémin. Ou vont les nuages ?, Un jour, une brève, Mathématiques de la planète terre, (Brève)
- Invited paper in the journal "Revue française de photogrammétrie et de Télédétection", Outils méthodologiques d'analyse d'images MSG : estimation du mouvement, suivi de masses nuageuses et détection de fronts, with T. Corpetti, V. Dubreuil, E. Mémin, O. Planchon, C. Thomas.
- Invited paper in the journal de la Société Française de Statistique, Image data assimilation with filtering methods, with Anne Cuzol.

MAGIQUE-3D Project-Team

9.3. Popularization

- The short movie “Probing the invisible, from the earthquake to the model” realized by MAGIQUE-3D in 2010, has been presented at Unesco during the day “Mathematics for Planet Earth”, on March 5th 2013 <http://mpe2013.org/fr/mpe-day-at-unesco/>. It is also part of the virtual exhibition “Mathematics of Planet Earth <http://imaginary.org/fr/node/134>”
- H el ene Barucq is member of the scientific board created for helping to the organization of a mobile exhibition in favor of the equality between girls and boys. The exhibition will be held in Pau in June 2014.
- Juliette Chabassier has written a short paper, “Simuler le son d’un piano” , on the website of Math ematiques de la plan ete Terre 2013, “Un jour, une br eve”, <http://mpt2013.fr/facteur-de-piano-numerique> [75].
- Juliette Chabassier has written a short paper, “Le piano r ev e des math ematiens” , in the book “Math ematiques: l’explosion continue”, <http://hal.inria.fr/hal-00913685>.
- Juliette Chabassier has published a website on the piano modeling, <http://modelisation.piano.free.fr>.
- Julien Diaz participated to the “Journ ees jeunes chercheurs en math ematiques du lyc ee de Navarre / UPPA” <http://univ-pau.fr/live/newsletter/newsletter-n46/journeesmaths?isPdf=1>, March 20th-22th, 2013.
- Julien Diaz has written an article, “Prospection p etroli ere : le sous-sol r ev el e”, in the TDC (Textes et Documents pour la classe) journal, for high-school teachers, <http://www.cndp.fr/tdc/tous-les-numeros/les-mathematiques-de-la-terre.html> [77].
- Julien Diaz has written a short paper, "Jeter un  eil “Au centre de la Terre” , on the website of Math ematiques de la plan ete Terre 2013, “Un jour, une br eve”, <http://mpt2013.fr/jeter-un-oeil-au-centre-de-la-terre/> [76].
- Victor P eron participated to the “Journ ee d’Immersion des Lyc eens   l’Universit e de Pau” and has given a talk “Probing the invisible, from the earthquake to the model”, November 28th, 2013.

MOISE Project-Team

9.3. Popularization

- E. Blayo gave several conferences for highschool students on the topics of applied mathematics and applied mathematics for environment.
- A. Rousseau is the Grenoble Rhône-Alpes scientific correspondent for outreach
- A. Rousseau and M. Nodet wrote an outreach article in the APMEP journal about mathematical modelling for the environment [59].
- A. Rousseau, M. Nodet and S. Minjeaud (Nice) developed an impressive outreach effort on the subject of ocean circulation, called "Bottles and Oceanography". They first wrote a paper and designed a numerical experiment, then they proposed a physical experiment as well. This whole package has been presented at UNESCO for the launch of Maths for Planet Earth 2013 <http://mpe2013.org/mpe-day-at-unesco>, and is a part of the IMAGINARY platform for outreach <http://imaginary.org/films/flaschen-und-ozeanographie>. It has also been presented at the Comité International des Jeux mathématiques [57], and has been published in the journal Textes et Documents pour la Classe (resources for highschool teachers) [56].
- A. Rousseau and M. Nodet are members of the editorial committee of Maths for Planet Earth "Un jour une brève » operation <http://mpt2013.fr>, which aimed and succeeded to publish every day a short outreach article in 2013. Moreover, A. Rousseau is also webmaster and member of the executive board (6 people) of the operation.
- A. Rousseau and M. Nodet gave conferences during the Science Fair / Fete de la Science, for high-school students and their teachers, on the topics of mathematical modelling for the environment.
- M. Nodet gave a talk at the JELU workshop, which regroups university teachers and highschool teachers on teaching methods.
- M. Nodet wrote and outreach article about glaciology in the journal of the French society for applied mathematics SMAI, in the special issue MATAPLI number 100 on the occasion of Mathematics for Planet Earth 2013.
- M. Nodet gave a conference at the Mathematics Weeks in Valence for highschool students and their teachers, on the topic of mathematics for the environment and meteorology.
- Ch. Kazantsev begins a collaboration with Morocco, she has presented the IREM and IREM activities to the Ecole Normale de Rabat who wants now to create such an Institute.
- In the context of the program "100 parrains-100 classes", Ch. Kazantsev gives a weekly lectures to pupils of one secondary school in Grenoble.
- Ch.Kazantsev has participated in the "Fête de sciences" and in the "Semaine des maths" presenting the activities of the IREM of Grenoble.
- F. Zertuche and J. Calandreau have participated in the "Fête de sciences" presenting the activities of Moise.

POMDAPI Project-Team

7.3. Popularization

J. Ch. Gilbert has written the following pages on Wikipedia.fr in 2013: [Algorithme des directions alternées](#), [Borne d'erreur](#), [Complémentarité](#), [Cône dual](#), [Ensemble de sous-niveau](#), [Gradient projeté](#), [Inéquation variationnelle](#), [Lagrangien \(optimisation\)](#), [Lemme de Hoffman](#), [Matrice complètement positive](#), [Matrice copositive](#), [Méthode de Gauss-Seidel](#), [Optimisation complètement positive](#), [Optimisation conique](#), [Optimisation convexe](#), [Optimisation copositive](#), [Optimisation SDP](#).

M. Kern gave a talk on “Mathematics and Simulation” at the *Palmarès académique des Olympiades de mathématiques de l'Académie de Paris*, on May 29th, 2013.

M. Kern gave a talk on “Mathematics and Subsurface Water”, as part of the *Promenades mathématiques* program for students in Terminale S and 1ère S, at Lycée Émilie du Châtelet (Serris), on May 22nd, 2013.

SAGE Project-Team

9.3. Popularization

- J. Erhel participated in the Inria workshop on scientific popularization, Paris, January 2013.
- J. Erhel participated in the Mathematics of Planet Earth Day at UNESCO, Paris, March 2013.
- J. Erhel gave a talk entitled "la terre se met aux maths", during the week of maths, at lycée Victor and H el ene Basch, Rennes, in March 2013 [59]. See <http://www.irisa.fr/sage/jocelyne>
- J. Erhel participated in the panel on "Observer et mesurer la terre", Rencontres CNRS Jeunes Sciences et Citoyens, Ile de France, March 2013 See <http://www.scienceouverte.fr/Rencontres-CNRS-Jeunes-Sciences-et,413> and <http://www.scienceouverte.fr/-Divers-voyages-> [58]
- J. Erhel was invited to "congr es des jeunes chercheurs", at ISFEC Bretagne, Rennes, April 2013
- J. Erhel gave a talk with F. Tort (ENS Cachan) entitled "L'informatique, c'est pas pour les filles", at the salon "Educat ec-Educative", Paris, November 2013.
- J. Erhel coordinated with C. Leininger the journal TDC no 1062 "les math ematiques de la terre", october 2013. See <http://www.cndp.fr/tdc/tous-les-numeros/les-mathematiques-de-la-terre.html>
- B. Philippe wrote a review on TDC no 1062. See <http://www.interstices.info>.
- J. Erhel wrote a document entitled "sur les traces des polluants", in TDC no 1062 [57].
- J. Erhel wrote a paper entitled "Le Jour d'apr es : vers une r eflexion sur les mod eles climatiques ", in Interstices [56]
- J. Erhel wrote two texts in the blog mpt2013: "Henry Darcy et sa loi" [54] and "La diffusion, un moteur universel" [55].
- B. Philippe wrote a text in the blog mpt2013: "La terre a du potentiel" [61] See <http://mpt2013.fr/>.

STEPP Team

9.3. Popularization

STEPP participated in the 2013 edition of the technological fair “Forum 4i” of the Rhône-Alps region, which was on “Intelligent mobility, usages and innovations”. The forum is visited by local and regional politicians and other stakeholders as well as by the general public. We presented the activities of the team and the socio-economic issues that motivate them.

Emmanuel Prados has been invited to give the introductory talk of the conference “Journée des Mathématiques” of Grenoble organized by the “Rectorat de Grenoble” (Grenoble, March 18, 2013; Title of the presentation: “Préserver l’environnement avec l’aide des mathématiques”).

BIOCORE Project-Team

CARMEN Team

9.3. Popularization

- S. Labarthe, Forum Emploi Maths 2013, invited for an intervention to the round table « Témoignages : métiers du secteur santé », 01/2013, Paris.
- S. Labarthe and G. Ravon welcomed two secondary school pupils for a week dedicated to the observation of research work in our team and the Inria research center.
- N. Zemzemi, recieved 4 groups of pupils in final year of high school, that were following a special option on computer, numerical sciences. He animated a workshop on modelling for health sciences.
- The team was represented by N. Zemzemi at the « Rencontre Inria-Industrie » (meeting Inria – Industry) on: Modelling, simulation, and high-performance computing, Paris, June 11th, 2013.
- A. Davidovic presented herself and her work during a meeting with the public called « Visages de sciences », organized at « Cap Sciences », Bordeaux, Spring 2013.

DRACULA Project-Team (section vide)

M3DISIM Team

8.3. Popularization

TV News Story “**la météo du coeur**” (how to predict the heart weather) on France5 “Magazine de la santé” (11 March 2013)

D. Chapelle invited speaker at “**Horizon Maths 2013**”

MASAIE Project-Team (section vide)

MODEMIC Project-Team

8.3. Popularization

The team has participated to the writing of a blog [73], [72] for the MPT2013, french edition of Mathematics of the Planet Earth 2013.

The team has participated to the writing of two articles [31], [32] in the TDC magazine dedicated to teachers in secondary classes.

NUMED Project-Team

7.3. Popularization

- Vincent Calvez is responsible for regular actions towards high school students (regular talks in high schools).
- Paul Vigneaux:

Paul Vigneaux has a significant activity in the official dissemination website of CNRS: “Images des Mathématiques”. He is a member of its Editorial Board since the beginning in 2009, in particular responsible of the “Billets” section (60% of the total reading flux of the website). Nonetheless, he also edited most of the applied mathematics articles of the site and made several articles contributions. Among others a translated/commented article on Richard Courant and his Institute, as well as a series, with the authorization of the EMS, of 20 articles on “Success Stories of Mathematics in Industry” in 2012-2013. Cf: <http://images.math.cnrs.fr/Vigneaux-Paul.html> In 2013, he was one of the editors of the series of 40 books published by the association of *Le Monde* (top national newspaper), *Institut Henri Poincaré* (Head: Cedric Villani) and *Images des mathematiques*. This series was supported by Cedric Villani and aims at broadcasting mathematics to a general public. Vincent Calvez was also one of the editors of the series. Currently still under publication, it is already an editorial success in terms of selling (20 book issued).

REO Project-Team

8.3. Popularization

- Ayman Moussa
 - Participation at “Fête de la science” at Paris 7

SISYPHE Project-Team

9.3. Popularization

The high profile publications in *Nature* and *Science* are popularizing the new field of quantum engineering.