

- •Article INRIA national sur la startup Bits2beat co-fondée par G. Attuel, chercheur de Geostat

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- •Article INRIA national + podcast à propos de l'article A&A "Description of turbulent dynamics in the interstellar medium: multifractal/microcanonical analysis I. Application to Herschel observations of the Musca filament" selected as "Highlights" by Astronomy & Astrophysics

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- •Article "Description of turbulent dynamics in the interstellar medium: multifractal/microcanonical analysis I. Application to Herschel observations of the Musca filament" selected as "Highlights" by Astronomy & Astrophysics

[Lien vers Astronomy & Astrophysics.](#)

- •Partenariat recherche-entreprise en traitement d'images : bilan entre I2S et Geostat. Article paru sur inria.fr

[Lien vers l'article.](#)

- •K. Daoudi has given a presentation at VIV HEALTHTECH (September 2020).
- •A. El Aouni has won the "Prix de thèse Systèmes complexes" CNRS ISC-PIF 2020 !

[Link to ISC-PIF prize list.](#)

- •May 27, 2019. Seminar given by G. Attuel at EPFL, Physics of Complex Systems Laboratory: "Cardiac fibrillation : an interdisciplinary puzzle".

[Link to EPFL announcement.](#)

- **•Announcement: International Summer Institute on Network Physiology (ISINP) : Como, Italy, 28 July - 02 August 2019**

The focus of this summer institute is to integrate empirical and theoretical knowledge across disciplines with the aim to understand in different contexts -- from extensive data analyses and modeling approaches to clinical practice -- how diverse physiological systems and subsystems dynamically interact to produce health and disease. This will be an interactive event with lectures ranging from physics, applied mathematics and biomedical engineering to neuroscience, physiology and clinical medicine, covering a range of physiologic systems from the cellular to the organ level, and will discuss the challenges, current frontiers and future developments in the emerging field of Network Physiology.

The institute will address a diverse audience of graduate students, postdocs, research scientists and faculty across a broad range of disciplines and fields, and will provide opportunities for the researchers to exchange new ideas and viewpoints, forge new collaborations and train the next generation of young scientists.

[Click here for more information \(registration, program...\)](#)

- **•Research results done by GEOSTAT and LEGOS on greenhouse gases partial pressures at the atmosphere/ocean interface layers put forward on ESA site.**

Read : "[Increasing the effective resolution of not well-resolved Essential Ocean Variables](#)".

- **•Ayoub Tamim, PhD Student in Geostat, wins the gold medal of Hubert Curien PhD prize 2017.** A. Tamim's PhD title:

*"Segmentation et classification des images satellitaires : application à la détection des zones d'upwelling côtier marocain et mise en place d'un logiciel de suivi spatiotemporel"*.

- **•Sen2RES software can be downladed from [official ESA web page](#) .**

- **•In the wake of the GENESIS project, invited session by H. Yahia at Séminaire du laboratoire d'Astrophysique de Bordeaux. 8 mars 2017 & Colloquium SFB956, Université de Cologne, Physikalisches Institut (May 2017).**

- **•Geostat is joining the GENESIS project with Laboratoire d'Astrophysique de Bordeaux & Physics Inst. (Köln University).**

- •ANR "Voice For Parkinson Disease" led by K. Daoudi accepted. Duration: 4 years, starting end of 2016.

- •Nicolas Brodu is joining Geostat in October 2016 as a Research Associate !

- •H. Badri has won the "Prix de thèse AFRIF" 2016 !

- •Presentation given by N. Brodu at "Unithé ou Café", April 1st, 2016.

[slides](#) .

- •Presentation given by N. Brodu at Labri on February 18th, 2016. "Super-résolution d'images multispectrales Sentinel-2".

[slides \(french\)](#) , [slides \(english\)](#) .

- •Presentation given by B. Xu on January 11th, 2016, at the University of Basel, Research Group : Computational Physiology and Biostatistics. " *From the Complexity Analysis of Biosignals to Clinical Applications*

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[abstract](#) .

- •H. Badri PhD defended on December 1st, 2015. "Sparse and Scale-Invariant Methods in Image Processing"

[slides](#) .

- •The session "Machine learning adaptations for Earth monitoring", organized by Nicolas Brodu and Frédéric Frappart, has been accepted as part of the EGU General Assembly of 2016 :

[\(web site\)](#) .

The call for abstract is now open, for topics covering all use of machine learning applied to Earth Sciences, especially feature extraction from very large environmental data sets. The European Geosciences Union is a non-profit international organisation and Europe's premier geosciences union. It manages a portfolio of 17 scientific journals. Its annual General Assembly is the largest and most prominent European geosciences event, attracting over 11,000 scientists from all over the world. The meeting's sessions cover a wide range of topics, including volcanology, planetary exploration, the Earth's internal structure and atmosphere, climate, as well as energy and resources.

Session Abstract:

Sensors on-board satellites combines many sources of information, like multispectral and radar images, microwave brightness temperatures and emissivities, radar scatterometry, etc. When combined with in situ measurements, properly exploiting this wide variety of data sources, of heterogeneous temporal and spatial resolutions, become a challenge. Moreover, typical applications like land use occupation or changes detection caused by natural and anthropogenic phenomenon (e.g., flood, fires, forest logging), rely on automated inference at some point. Although generic Machine Learning (ML) techniques are well-established, their general framework is not necessary relevant for environmental applications. For example, how to deal with scales ranging from local measurements to the swath of the satellite ; accounting for the spatial consistency between nearby samples in ML algorithms ; or including the known seasonal and interannual variations to build better time series descriptors. Similarly, the physics of observed phenomena need to be incorporated into ML frameworks for accurate modeling and predictions. Therefore, this session calls for abstracts on how to best apply ML methods in Earth Science contexts. The goal is to promote exchanges and ideas on ML techniques that could benefit multiple Earth Science domains and questions of interest ; domain-specific ML tricks that focus on only one particular Earth Science application may be interesting to other EGU sessions, but are here out of topic. Examples of relevant abstracts include new methodologies for data fusion (e.g. SAR/multispectral/in situ measurements), how to include physics of natural processes in feature descriptors (e.g. fluid dynamics), how ML can help interpret large data sets (e.g. automated detection of areas with different statistical properties), how multi-resolution (spatial or temporal) features help detect and deal with characteristic scales, how new features can be extracted from data sets using innovative image processing and time series analysis, etc.

- • Nicolas Brodu's paper "Spanning the scales of granular materials through microscopic force imaging" accepted in Nature Communications. [INRIA has made a press release diffused nationally](#) [and on the INRIA BSO website](#) .
- • Paper Complexity analysis of experimental cardiac arrhythmia by B. Xu et al. has been nominated in the best paper award category at the IEEE Tensymp conference, 2014. [HAL](#) .
- • Associated team "OPTIC" between GEOSTAT and IIT Roorkee (India) accepted by DRI .
- • Suman Kumar Maji has defended his PhD (November 14th, 2013, University of Bordeaux 1).

- • Joël Sudre has defended his PhD (December 20th, 2013, University of Toulouse 3 Paul Sabatier).

- • Hicham Badri, PhD student in GEOSTAT, has received the University Mohammed V best Master student award

- • The paper **An efficient solution to sparse linear prediction analysis of speech** by V. Khanagha and K. Daoudi appears in the list of [top downloaded papers of Eurasip Journal on Audio, Speech, and Music Processing](#) .

- • The paper **Reconstructing an image from its edge representation** by Suman K. Maji, H. Yahia and H. Badri appears in the list of [top downloaded papers of Elsevier's Digital Signal Processing journal](#) .

- • Paper accepted (technical brief) at [SIGGRAPH ASIA 2013:](#)  
H. Badri, H. Yahia, D. Aboutajdine,  
**Fast Multi-Scale Detail Decomposition via Accelerated Iterative Shrinkage**

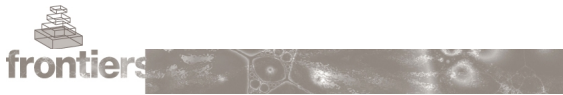
- • Researchers of Geostat have two papers accepted as oral presentations, including an invited speaker session, in one of the best international conferences in computational biomedecine

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[EMBC 2013](#)

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B. Xu, S. Jacquir, G. Laurent, J.-M. Bilbault, S. Binczak,  
**Phase space reconstruction of an experimental model of cardiac field potential in normal and arrhythmic conditions**  
O. Pont, H. Yahia, B. Xu,  
**Arrhythmic dynamics from singularity analysis of electrocardiographic maps (invited speaker session).**

- • H. Yahia is a member of the organizing and technical program committees of the INDIA CEFIPRA workshop in ICST, “Challenges in overcoming complexity, from big data to cyber-physical systems”, April 4 - 5, 2013, New Delhi- India.

- • V. Khanagha has defended his PhD on January 16th, 2013.
- • [Dr. Max Little](#) is invited in GeoStat in 2012.
- • H. Yahia is now a member of the editorial board of "*Frontiers in Fractal Physiology*" journal  
[\(link to Frontiers' editorial board\)](#)



- • H. Yahia is invited to present a talk at the Workshop in "*Mathematics in Network Science: Implication to Socially Coupled Systems November 21-23, 2011*" to be held in Torino (Italy) organized and supported by the Institute for Scientific Interchange (ISI) Foundation  
[\(link to website\)](#)

- • H. Yahia is now a member of the editorial board of Elsevier's "*Digital Signal Processing*" journal



- • H. Yahia is invited speaker in the session "*Non linear physical and biogeophysical processes in the atmosphere and ocean*" at the next [AGU fall meeting](#), San Francisco, 5-9 December 2011.

- • H. Yahia is invited speaker to the EGU General Assembly 2012 (Vienna), to present the work "*High-resolution ocean dynamics from microcanonical formulations in non linear complex signal analysis*". [Link to EGU page](#)

- • V. Khanagha is a finalist for the *best student paper award* of the Interspeech2010 conference (Makuhari, Japan, 26-30 september, 2010) for the paper "*A Novel Text-Independent Phonetic Segmentation Algorithm Based on the Microcanonical Multiscale Formalism*".