

PROPOSITION DE SUJET DE THESE

Formulaire demande de financement : ARED - ISblue - ETABLISSEMENTS - ...

*pour dépôt sur le serveur <https://theses.u-bretagne.fr/sml> au format PDF**NB : ce dossier ne vous dispense pas de déposer en parallèle votre dossier à la Région*

Identification du projet

Acronyme du projet (8 caractères *maximum*) : WESTIntitulé du projet *en langue française* : Couche limite et transport de sédiment en zone de déferlementIntitulé du projet *en langue anglaise* : Wave boundary Layer and sediment transport in the surf zone

Présentation de l'établissement porteur (bénéficiaire de l'aide régionale)

Établissement porteur du projet : UBO/IUEM

Ecole Doctorale : EDSML SPI ou MATHSTIC pour les projets ISblue

Identification du responsable du projet (futur directeur de thèse)

Nom du laboratoire d'accueil : Géosciences Océan

Code du laboratoire (U/UMR/USR/EA/JE/...) : UMR6538

Directeur¹ du Laboratoire : Marc-André Gutscher

Nom de l'équipe de recherche : DYNELI

Nombre HDR dans le laboratoire : 26 Nombre de thèses en cours : 28 Nombre de post-docs en cours : 10

Nom et prénom du directeur* de thèse (HDR), porteur du projet : Marina Rabineau (jusqu'en avril 2021, France Floc'h ensuite, après sa soutenance d'HDR)

- e-mail : marina.rabineau@univ-brest.fr

- Téléphone : 02 98 49 87 28

- Publications récentes du directeur de thèse (nb total et 5 références max au cours des 5 dernières années) :
71 articles rand A, H22

5 publications récentes de 2020 (* l'étoile indique les étudiant(e)s et post-doctorant(e)s que j'ai (co)-encadré(e)s)

1. *Laurent, D., Marsset, T., Droz, L., Granjeon, D., Molliex, S., Picot, M., **Rabineau, M.** (2020) 4D forward stratigraphic modeling of the Late Quaternary Congo deepsea Fan: role of climate/vegetation coupling in the architectural evolution, *Marine Geology*, 429, 106334.2. *Chima, I., [Gorini, C.](#), **Rabineau, M.**, [Granjeon, D.](#), [Do Couto, D.](#), [Leroux, E.](#), [Hoggmascall, N.](#) (2020) Pliocene and Pleistocene stratigraphic evolution of the western Niger Delta intraslope basins: a record of glacio-eustatic sea-level and basin tectonic forcings. *Global and Planetary Changes*, in press. <https://doi.org/10.1016/j.gloplacha.2020.103355>¹ Ce formulaire est rédigé en style épïcène

3. Droz, L., I. Jégou, H. Gillet, B. Dennielou, M. Bez, M. Canals, G. Lastras, **M. Rabineau** (2020). On the termination of deep-sea fan channels: Examples from the Rhône (Gulf of Lion, Western Mediterranean Sea). *Geomorphology*, vol. 369, <https://doi.org/10.1016/j.geomorph.2020.107368>
4. Masters, J., Genin, F., Zhang, Y., Pellen, R., Huck, T., Mazza, P., **Rabineau, M.**, Doucouré, M., Aslanian, D. (2020). Biogeographic mechanisms involved in the colonisation of Madagascar by African vertebrates: rifting, rafting and runways. *Journal of Biogeography*, DOI: 10.1111/jbi.14032
5. Dos Reis, A. T. 1, Amendola, G., Pinheiro Dadalto, T., Silva, C. G. Raiane Gomes Tardin Poço, Josefa Varela Guerra, Virginia Martins, Renata Rebouças Cardia, Christian Gorini, **Marina Rabineau** (2020) Architecture and Depositional Evolution of the Latest Pleistocene-Holocene (last ~20ky) Sedimentary Succession of Sepetiba Bay (RJ). *Revista Geociências UNESP, volume 39 (3), p. 695-708*, <https://doi.org/10.5016/geociencias.v39i03.14366>

- Expériences d'encadrement et co-encadrement de doctorants (passées et en cours)

(nom des doctorants dirigés et en cours et antérieurement, sur les 6 années passées : sujet, financement, date de soutenance, et situation professionnelle actuelle si connue)

Au total : 17 thèses co-encadrées.

Depuis 2016 :

- **Manyano Makuzeni** (co-directrice 30%, 2 co-encadrants) étudiante en thèse, IFREMER-ISBlue, démarrage prévu 2021, marge Afrique du Sud.
- **Lucas Tortarolo** (co-directrice, 30%, 2 co-encadrants) étudiant en thèse, UBO, bourse ISBlue-ARED, démarrage Oct 2020, Marge Amazonienne, Brésil.
- **Susana Gonçalves** (co-directrice, 20%, 1 co-encadrant), étudiante en thèse, UBO, bourse FCT-Portugal, démarrage Janv. 2020, A comprehensive analysis of the deep Lithospheric Structure from Wide-Angle Data, geodynamic implications, rifting and break-up: Brazilian continental margins case.
- **Matthieu Olivier**, (directrice, 30%, 2 co-encadrants) étudiant en thèse, UBO, bourse IFREMER-IFPEN, démarrage Oct 2018, Modélisation stratigraphique de l'impact des courants tidaux et marins. Application à la Rade de Brest.
- **Massimo Belucci**, (co-directrice 30%, 2 co-encadrants) étudiant en thèse, UBO, bourse ARED-LABEX, démarrage Janv. 2018, Etude de la relation entre la segmentation, la nature et la thermicité crustale, et la déformation du sel en Méditerranée occidentale et du rôle des fluides dans la colonne sédimentaire, soutenance prévue printemps 2021.
- **Virgil Pasquier**, (directrice) étudiant en thèse, UBO, bourse ARED-LABEX, Soutenue 17 Nov 2017. Cyclostratigraphie dans le Golfe du Lion au cours des 5 derniers cycles glacioeustatiques. Actuellement Postdoctorant au Weizmann Institute of Science, Israël.
- **Jaó Marcelo Pinheiro** (directrice) étudiant en thèse, bourse "science sans frontière" (CNPQ, Brésil). Soutenue 20 Dec 2017, Segmentation et évolution des marges passives. Acquisition, traitement, interprétation et modélisation sismique des marges continentales passives du Nord-Est Brésil: Mission SALSA (Sergipe Alagoas Seismic Acquisition). Actuellement Postdoctorant à l'Univ. Brasilia, Brésil.
- **Marta Payo-Payo**, étudiante en thèse, UBO, bourse ARED-LABEX, soutenue 14 Dec 2016, «modélisation des canyons sous-marins, application en Méditerranée Occidentale ». Actuellement Chercheur au NOC Liverpool, UK.
- **Romain Pellen** (directrice), étudiant de thèse, UBO, bourse ARED-LABEX IFREMER, «Bassins perchés de Méditerranée» (50%), soutenue 1er Juin 2016 (Actuellement CDD Ifremer).
- **Mohammed Arab** (directrice), étudiant de thèse, co-tutelle UBO-Algérie, (50%) soutenue Mai 2016 (Actuellement Chercheur-Ingénieur CDI Sonatrach)

Et co-encadrant-e scientifique : France Floc'h (soutenance d'HDR prévue le 6 avril 2021, directrice de thèse ensuite)

Laboratoire de recherche co-encadrant (nom + code U/UMR/USR/EA/JE/...) Géosciences Océan UMR6538

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- Expériences d'encadrement et co-encadrement de doctorants (passées et en cours)

(nom des doctorants dirigés et en cours et antérieurement, sur les 6 années passées : sujet, financement, date de soutenance, et situation professionnelle actuelle si connue)

26 Articles de Rang A

Homrani S., Le Dantec N., **Floc'h F.**, Franzetti M., Menier D., Sedrati M., Winter C., Delacourt C., *Multi timescale morphological evolution of a dune bank in a shallow tide-dominated environment*, *Earth Surface Processes and Landforms*, accepted with revisions

Fromant G., Le Dantec N., Perrot Y., **Floc'h F.**, Lebourges-Dhaussy A., Delacourt C., *Suspended sediment concentration field quantified from a calibrated MultiBeam EchoSounder*, *Applied Acoustics*, accepted with

revisions

Moskalski S., **Floc'h F.**, Verney R. (2020) Suspended sediment fluxes in a shallow macrotidal estuary, *Marine Geology*, Vol. 419, 106050, ISSN 0025-3227, <https://doi.org/10.1016/j.margeo.2019.106050>.

Moskalski S., **Floc'h F.**, Verney R., **Fromant G.**, Le Dantec N., Deschamps A. (2018) *Decadal-scale changes in sedimentary dynamics in the macrotidal Aulne River estuary, Brittany, France*, *Journal of Coastal Research*, Volume 34, Issue 6 : pp. 1398 – 1417, <https://doi.org/10.2112/JCOASTRES-D-17-00126.1>

Fromant G., **Floc'h F.**, Lebourges-Dhaussy A., Jourdin F., Perrot Y., Le Dantec N., Delacourt C. (2017) *In situ quantification of the suspended load of estuarine aggregates from multifrequency acoustic inversion*, *Journal of Atmospheric and Oceanic Technology*, 34(8), 1625-1643.

4 thèses soutenues et 2 en cours

C. Hayoun, 2019-2023, 45% d'encadrement, *Interaction between bed slope and wave spectrum in nearshore environment* (co-dir with J.F. Filipot & C. Delacourt), financement 50% ARED/50% UBO

J. Machabee, 2019-2023, 20% d'encadrement, *Morphodynamic of coral back-reef, La Réunion*. (co-dir with G. Pennhober & C. Delacourt) Financement Université de la Réunion

S. Homrani, 2016-2020, 45% d'encadrement, *Bedload and associated morphodynamics of a dune field in mesotidal shallow-water environment* (with N. Le Dantec and C. Delacourt) Financement 100% UBO

G. Minster, 2016-2019, 45% d'encadrement, *Saltation of coarse particles over a rough bed : application to extreme tidal current in the Alderney race* (co-dir with A. Nicolle & B. Zerr) Financement 100% ANR
His current position: [Responsable Production océanographique et acoustique temps réel au Shom, Toulouse](#)

C. Caulet, 2015-2018, 90% d'encadrement, *On the influence of beach slope on beaches hydrodynamics processes* (co-dir with F. Ardhuin) Financement 50% ARED/50%UBO
His current position: [Two-years postdoctoral fellowship at Université du Québec in Rimouski](#)

G. Fromant, 2012-2015, 30% d'encadrement, *SPM quantification from acoustical (MBES) and optical data* (co-dir with A. Deschamps, N. Le Dantec & C. Delacourt) Financement 50%DGA/50%UBO
His current position: [assistant professor @ Université du Littoral et Côte d'Opale \(ULCO\), Wimeureux France , Lisic lab.](#)

Et co-encadrant-e scientifique : Guillaume Fromant

Laboratoire de recherche co-encadrant (nom + code U/UMR/USR/EA/JE/...) LISIC EA4491

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- Expériences d'encadrement et co-encadrement de doctorants (passées et en cours)

(nom des doctorants dirigés et en cours et antérieurement, sur les 6 années passées : sujet, financement, date de soutenance, et situation professionnelle actuelle si connue)

Financement du projet de thèse

En cas de financement à 50 %, le cofinancement est-il déjà identifié (oui/non) :oui

Si oui, préciser la nature du cofinancement (ANR, partenaire privé, Ademe, etc.) :

ANR JCJC WEST 2021-2024 (porteuse : France Floc'h)

Si le cofinancement n'est pas encore confirmé, date prévue de réponse du cofinancier :

En cas de non-obtention du cofinancement demandé, une autre source de cofinancement est-elle identifiée (oui/non) :oui

Si oui, laquelle :bourse DGA (demande à faire fin avril 2021)

Sollicitez-vous un co-financement Is-Blue (y compris ARED Is-Blue) (oui/non) ? oui

Important : Veillez à bien compléter les différents co financements sollicités sur le serveur Thèses en Bretagne Loire lors du dépôt de votre dossier.

Projet de thèse en cotutelle internationale

S'agit-il d'un projet de thèse en cotutelle internationale dans le cadre d'une convention (oui/non) : non

Si oui, préciser l'établissement pressenti (et le pays de rattachement) :

Ce projet de thèse fera-t-il l'objet d'un cofinancement international (oui/non) : non

(Rémunération du doctorant par l'établissement implanté sur le territoire régional (18 mois sur 36 mois), et l'établissement étranger, qui s'engage également à rémunérer le doctorant dans le cadre de son séjour à l'étranger, soit durant 18 mois -a minima-)

En cas de cofinancement international, préciser -si vous en avez connaissance- l'organisation du calendrier des périodes de séjour :

Préciser quel est le stade du projet international (joindre une lettre d'engagement du partenaire)

Présentation du projet (en langue française ou anglaise, 2 à 3 pages)

merci de respecter ce format maxi compatible avec extranet région

Résumé du projet (4000 caractères maxi espaces compris) :

Over the past two decades, significant research efforts have been dedicated to the understanding and modeling of sediment transport processes under realistic non-linear waves in the nearshore zone. The erosion mechanisms during extreme events being well described in the literature, the novelty of ANR JCJC WEST project (2021-2024), coordinated by France Floc'h, is to initiate new research on sediment transport during accretive periods, leading to **beach recovery**. In fact, storm erosion can have short- to medium-term impacts on coasts, depending on the post-storm recovery mechanisms and timescales. To predict coastal evolution, both erosion and accretion mechanisms should be accurately defined. Severe erosion during extreme events is generally the consequence of a large disequilibrium between beach profile and incident conditions. While offshore transport is strongly linked to current, **accretion is linked to wave-generated fluxes occurring in the Wave Boundary Layer (WBL), generated by steady streaming and wave shape streaming** (Henderson and Allen 2004) mainly via bedload transport. Previous experiments and numerical studies show that **WBL dynamics are induced by various hydrodynamic and morphological factors** (nearshore currents, streaming, wave dynamics, wave non-linearities, bed slope and roughness, turbulence...) (Fuhrman, Fredsøe, and Sumer 2009). During calm periods, all these processes contribute to the net sediment transport over one wave cycle with non-negligible contributions. **The two scientific issues raised by the literature are: the lack of knowledge on the role played by each process in the accretion mechanism and their relative contribution, and the difficulty to obtain accurate time-resolved measurements of bed shear stress and sand transport in WBL in situ**. These questions will be addressed during the present PhD thesis. The first objective will be to study the impact of free-surface deformation on water column hydrodynamics, especially in the WBL. Then, the interaction between current and sediment transport (via bedload and suspension) will be investigated in a second objective. Since current knowledge on WBL dynamics draws essentially from laboratory-based experiments and numerical simulations (Kranenburg et al. 2012, 2013; Nielsen 2006) focusing on specific factors, **future progress on WBL processes and sediment transport depends on our ability to study WBL in situ under natural waves**. The aim of the project is to acquire in situ dataset to address the **bed shear stress variability according to the free-stream acceleration and phase lead under irregular waves in hydraulically rough regime, and the influence on sediment transport**. The PhD student will be involved in field measurements on sandy beach near Brest during the first year. During the second and third year, the PhD student will be mainly at LISIC under Guillaume Fromant supervision to

Process and analyse the collected ACVP data and develop novel signal processing methods for robust velocity and concentration estimations at high temporal and spatial scales (Fromant et al. 2018, 2019). The mobility Brest-Calais, the conferences and the PhD laptop will be paid by the ANR JCJC WEST project.

Présentation détaillée du projet :

1 - Hypothèse et questions posées, état de l'art, identification des points de blocages scientifiques (4000 caractères maxi espaces compris)

The two scientific issues raised by the literature are: the lack of knowledge on the role played by each process in the accretion mechanism and their relative contribution, and the difficulty to obtain accurate time-resolved measurements of bed shear stress and sand transport in the WBL *in situ*. The ACVP technology is actually transposed to a new instrument, called UB-Lab2C, that will allow to perform measurements *in situ*. This instrument will be available at Pole Image et Instrumentation (P2I) of IUEM in summer 2021. Then, the first PhD objective will be to study the impact of free-surface deformation on water column hydrodynamics, especially in the WBL. The interaction between current and sediment transport (via bedload and suspension) will be investigated in a second objective.

1 – influence of wave non-linearities on bed shear stress in the WBL

Following the hypothesis that the free-stream velocity asymmetry generate near-bed velocity skewness inside the WBL, 1a will aim to estimate the **bed shear stress from the free-stream acceleration and phase lead under irregular waves in hydraulically rough regime** (Berni et al. 2013). 1a will aim to demonstrate (*in situ*) the presence and impact of velocity asymmetry driven bed shear stress in natural conditions.

2 - Interactions between current and sediment transport

We expect that, as observed in both flow tunnels experiments with skewed oscillatory sheet flows and large scale open channel experiments of regular waves, the transport system under irregular waves is driven by similar pick-up/deposition mechanisms from the shoaling to the breaking region (Fromant et al. 2019; O'Donoghue and Wright 2004; Ouda 2019; Ribberink and Al-Salem 1995). We also expect that wave stirring (Kim et al. 2018) and phase lag effect enhance onshore net transport (Dohmen-Janssen et al. 2002; O'Donoghue and Wright 2004) while sand size and grading will have a tendency to mitigate these effects as sand becomes finer, for which unsteady effects arise. A decomposition of the measured total net sand flux vertical profiles into current, wave and turbulent contributions at several cross-shore locations from the shoaling to the inner surf zone will provide new insights to validate these assessments under natural irregular waves. Different empirical formulations will be considered according to *in situ* results (Van der A et al. 2013; van der A, O'Donoghue, and Ribberink 2010; S. A. Brown et al. 2016; Fromant et al. 2019; Ribberink 1998) to assess the predictive power of these formulas under natural irregular waves during accretion phases and to eventually refine them. The influence of breaking induced turbulence on pick-up/deposition mechanisms will also be investigated.

2 - Approche méthodologique et techniques envisagées : (4000 caractères maxi espaces compris)

To resolve WBL transport processes, measurements should be done at high temporal ($O(0.1\text{ s})$) and spatial ($O(0.001\text{ m})$) resolutions. A recent system, called the ACVP (Acoustic Concentration and Velocity Profiler), matches these requirements (Hurther et al. 2011). It consists in a bistatic acoustic profiler with a large angle between the emitter and the receivers, allowing to accurately measure quasi-instantaneous and co-located velocity and sediment concentration over a 10 to 20 cm vertical profile. New acoustic inversion techniques have also been developed, increasing the reliability of acoustic measurements in terms of sediment concentration and size. ACVP bedload measurements have been validated (Fromant et al., 2018) and used to address WBL dynamics and sheet-flow properties under monochromatic waves (Fromant et al., 2019) in the breaking region in large-scale facilities. So that the instrument can be adapted to marine environment, the first year will be dedicated to optimizing the UB-lab2C device based on ACVP technology, in collaboration with Ubertone[®] SME, with calibration tests conducted in lab (DEXMES facility) in the host institution (LGO). A dedicated mooring device is under conception and will be available in summer 2021. Pressure sensors, video system (gopro+light to visualize burst events) and weights will be fixed onto the mooring frame. In addition, three pointwise Acoustic Doppler Velocimeters (ADVs, Nortek[®]) will be installed covering the water column in order to measure the free-stream velocities and accelerations. These instruments will also be used to double check the UB-Lab2C[®] data (Hydrographic Survey recommendation from IHO²).

Measurements will be carried out over one tidal cycle during storm recovery events and seasonal recovery events during the first year. The mooring frame will be secured thanks to a rope or a chain fixed on the dry part of the beach.

² <https://iho.int/en/standards-and-specifications>

The frame will be installed after low tide during the flow. Two persons at least will stay on the beach for the whole measurement duration until the ebb to retrieve the frame. The macrotidal regime will allow, with one measurement, to address all the nearshore zones from swash to shoaling.

Our main field site is Porsmilin beach, close to IUEM and offering the advantage of being regularly monitored (intertidal topography and bathymetry) in the framework of National Observation Service (SNO) DYNALIT in the Research Infrastructure (IR) ILICO (www.dynalit.fr). Porsmilin is a Low Tide Terrace beach in a macrotidal environment offering the advantage of a wide intertidal zone presenting two different slopes. We consider deploying our instruments at other field sites (e.g., Vougot beach, Blancs-Sablons) to extend the results range. We will investigate the sea state conditions (offshore ADCP mooring), the morphology (DGPS survey) and the grain size (sampling and analysis via laser granulometer) leading to net onshore sediment transport during seasonal recovery or between two winter storms. The PhD student will benefit from cutting-edge equipment available at IUEM's Pole Image & Instrumentation (P2I), such as drones, cameras, 16-beam LiDAR, TLS, currentmeters (point-wise or profiler), pressure sensors, DGPS, Go-pro cameras and laser granulometer necessary for our data collection. Reproducing the experiments several times is mandatory in order to generalize conclusions, and to address different conditions. In total, we expect 20 measurements, i.e. 20 days of *in situ* experiments. A detailed field campaign report will be written.

3 - Positionnement et environnement scientifique dans le contexte régional, national et international :

The improvement of measurement systems (in this project, the measurement by acoustic profiler) is part of the main competences of the Pôle Image et Instrumentation (P2I), an engineering group of the IUEM, being part of the project. The DYNELI research team of the Geosciences Océan laboratory works with the Shom, the DYNECO DHYSED team of Ifremer, FEM via associate researcher within the laboratory or joint projects (notably the DEXMES project financed by EC2CO which allowed the design and building of a sediment resuspension tank allowing the calibration of acoustic instruments). At the national level, this project follows on from an ANR Astrid Maturation between teams from Brest and Grenoble in conjunction with a SME from Strasbourg (Ubertone company), which led to the marinization of the UB-lab2C instrument and the provision of the community with acoustic data inversion tools (Hydrac open-source software). Within the framework of the present project (ANR JJC WEST), an international scientific committee has been set up, bringing together European researchers of international renown: Daniel Conley (h-index: 76 and more than 20 000 citations) et Ad Reniers (h-index: 39 and 6800 citations) for example. ANR JJC WEST will lay out the foundations for future collaborations with board members entity, and will constitute an excellent network for the PhD. The PhD will have also the opportunity to move for three-month in a foreign country.

4 - Contexte scientifique et partenarial : éléments généraux (ERC, CPER, FEDER, Breizhcop ...) (4000 caractères maxi espaces compris)

The recruited PhD will benefit from a three-month stay in a European university, the location is not fixed yet. This mobility will occur during the second half of the second year. The PhD student will globally benefit from the Post-Graduate School ISblue dynamics and funding opportunities (PIA3). In particular, it is envisioned to invite scientists via a dedicated ISblue '*call for proposal*' from foreign countries during field campaigns in order to compare our data, to share good practices and to enhance new international collaborations.

The instruments used in this project are acquired as part of CPER, especially the newly developed UB-lab2C (ACVP technology) in the CPER O3DO. This thesis will be the first to exploit its promising measurements. The dataset acquired in this project will be a world first.

Vous sollicitez un financement ISblue, ou une ARED ISblue :

Précisez le lien du sujet avec les thèmes ISblue

Thème ISblue	Thème principal	Thème secondaire (si nécessaire)	Autre (si nécessaire)
la régulation du climat par l'océan			
les interactions entre la Terre et l'océan			
la durabilité des systèmes côtiers	x		
l'océan vivant et les services écosystémiques			

Expliquez/précisez en quelques lignes dans quelle mesure votre demande correspond à l'un ou plusieurs des critères ISblue ci-dessous :

1- Originalité, impact potentiel du projet (4 lignes maxi)

The erosion mechanisms during extreme events being well described in the literature, the novelty of ANR JCJC WEST project (2021-2024), coordinated by France Floc'h, is to initiate new research on sediment transport during accretive periods, leading to **beach recovery. Future progress on WBL processes and sediment transport depends on our ability to study WBL *in situ* under natural waves.** WEST proposes to address key scientific and technologic issues via original approaches. At the time of project completion, WEST will enhance our understanding of beach recovery mechanisms, leading to improvements in morphodynamic models commonly used by engineers and coastal practitioners for coastal zone management.

2- Positionnement international du sujet, cotutelle ou co-encadrement international (4 lignes maxi)

Within the framework of the present project (ANR JCJC WEST), an international scientific committee has been set up, bringing together European researchers of international renown: Daniel Conley (h-index: 76 and more than 20 000 citations) et Ad Reniers (h-index: 39 and 6800 citations) for example. ANR JCJC WEST will lay out the foundations for future collaborations with board members entity, and will constitute an excellent network for the PhD. The PhD will have also the opportunity to move for three-month in a foreign country.

3- Effet intégrateur entre unités de recherche et / ou interdisciplinarités (4 lignes maxi)

The combination between physicist/sedimentologist (France Floc'h) and expert in acoustic signal processing (G. Fromant) will lead to huge breakthrough in in situ measurement of bedload and suspended sediment transport with innovative instrumentation.

4- Potentiel d'insertion à un haut niveau dans la communauté académique ou non académique du docteur (4 lignes maxi)

ANR JCJC WEST will lay out the foundations for future collaborations with board members entity, and will constitute an excellent network for the PhD. The PhD will also have the opportunity to move in a foreign country for three-month, as well as participating to international conferences. The ACVP technology used in this project and the processing routines are unique and innovative, insuring the integration potential of the PhD student in academia or industry, measuring sediment transport in suspension and bedload being primordial in numerous industrial sector.

Le candidat

Profil souhaité du candidat (spécialité/discipline principale, compétences scientifiques et techniques requises) :

The candidate will have a background in fluid mechanics, physical oceanography and/or sedimentology. The candidate will have knowledge of the Matlab software (or equivalent). Acoustic instrumentation notions will be appreciated. A particular interest will be given to the candidate's English writing skills and ability to work in a team.

ATTENTION :

Tout dossier non déposé sur le serveur dans les délais indiqués, ne pourra être pris en compte notamment par les instances ISblue, conseil de l'EDSML.