UPEC
UNIVERSITÉ PARIS-EST CRÉTEIL VAL DE MARNE
Connaissance - Action

UPEC POST-DOCTORAL FELLOWS for one academic year 2023-2024

Title of the scientific project
ASEAA : Archéologie, Sociétés et Environnements Anciens en Asie **ASEAA: Archaeology, Societies and Ancient Environments in Asia**

Host laboratory
Name of laboratory : Laboratoire de Géographie Physique (LGP CNRS-UMR 8591)

Description of the scientific project

The research project is based on the French-Bangladeshi Joint Archaeological Mission in Bangladesh – Mahasthangarh (dir. Vincent Lefèvre, Director of conservation and collections of the National Museum of Asian Arts-Guimet and Naheed Sultana, Director of Rajshahi and Rangpur divisions at the Department of Archaeology in Bangladesh; deputy dir. Coline Lefrancq, postdoctoral fellow in the ERC (European Research Council) Syn. project n°8099994 – DHARMA (dir. Emmanuel Francis, CNRS, CESAH UMR 8077, Paris; Arlo Griffiths, EFEO, Paris; Annette Schmiedchen, Humboldt University, Berlin; Florinda De Simini, University "L'Orientale", Naples) and affiliated to the laboratory CNRS – CESAH UMR 8077. **DHARMA** (*The Domestication of 'Hindu' Asceticism and the Religious Making of South and Southeast Asia*) is a project that deals with the political, economic, and social history of Hinduism. The project has two components: (1) an epigraphic component, centered on the development of an online database giving access to several thousand editions of inscriptions (ancient texts engraved on stone or metal, written in Sanskrit or in other Asian languages, concerning the history of the Hindu world) ; (2) an archaeological component focusing on religious structures in South and Southeast Asia, specifically at Mahasthangarh (Bangladesh), Prasat Khnar (Cambodia), and Bumiayu (Indonesia).

The post-doctoral fellow will join **the French-Bangladeshi Joint Archaeological Mission in Bangladesh** that excavate the site of **Mahasthangarh** for the past 30 years and will develop an **interdisciplinary (paleo)environmental study to understand the landscape changes of Mahasthangarh and its region**. Mahasthangarh also known as Pundranagara in the ancient written sources, is an important ancient walled city in the Bengal delta, founded around the 4th century BCE and continuously occupied until now with however a decline from 13th/14th c. CE onwards. Systematic and regular excavations are conducted since 1993 by this joint mission bringing together Bangladeshi and French archaeologists. The numerous filed campaigns have led to the discovery of religious and secular structures associated with a rich material culture. In addition to an exceptional archaeological context, Mahasthangarh also presents a specific environment. The city was built on the edge of an alluvial terrace called the Barind Tract. It overlooks the alluvial plain of the Karatoya River to the east. Today, the Karatoya is a small river, but in ancient times it was an important river that served as a border and trade route between the Bengal lowlands linked to the Gulf of Bengal and the Himalayan foothills. Over the last two millennia, and especially in the last two centuries, the river has undergone many hydrographic and hydrological changes. According to written sources, in the 12th century CE, the Karatoya was three times wider than the Ganges. In the 17th and 18th century CE, ancient maps show the river as one of the major rivers of Bengal. Until the end of the 18th century CE, the river was part of the old Tista river system. This Himalayan hydrosystem was disrupted in 1787 by a major avulsion in the course of the Brahmaputra and then the Tista due to a major flood. This extreme hydrological event ended the Himalayan supply to the Karatoya. The decline of the river accelerated during the 19th century CE and the Karatoya was no longer navigable before the end of the

century. This very active river dynamic, its evolution over time and its environmental and societal impacts have never been the subject of in-depth research. However, river systems, through their sensitivity to environmental changes, natural and/or anthropogenic, are markers of landscape change. In Bangladesh, research projects on environmental change involving archaeologists and geographers are still underdeveloped. The available data are mainly based on written sources and old maps, with uncertain and incomplete reliability. For Mahasthangarh, the question of the environment has not been studied since the pioneering work of Christine Jacqueminet and Jean-Paul Bravard in the 1990s.

This context has motivated the revival of environmental researches by integrating within the archaeological mission **a geoarchaeological investigation of the (paleo)environmental changes implied by the mobility of the Karatoya River and its interaction with the human occupation of Mahasthangarh**. How has the course of the Karatoya river evolved over time and what impact has the active fluvial dynamics had on the organization of society and in particular on the ancient city? Inherited fluvial forms, such as paleomanders, are well preserved in the present landscape and attest to a strong lateral mobility of the river in the surroundings of the site. This specific context led to an initial in-situ survey in 2022 conducted by Dr. Yohan Chabot. A sedimentary record was made from about thirty auger holes, complemented by sedimentological analyses at the LGP. This pioneering work made it possible to identify the geomorphologic contexts of the site and its surroundings, and to reveal remarkable paleoenvironmental changes. However, these observations, while useful, remain preliminary. Additional investigations and further study are needed to more robustly define the river dynamics and stresses to which the riparian societies of Mahasthangarh were subjected. This includes the need to support paleogeographic (evolution of the Karatoya, succession of the paleomeanders, and reconstructions of its floodplain landscapes), ecological (dynamics of aquatic and palustrine environments, fluctuations in water levels - seasonal, decadal, secular), and chronological interpretations. In this context, the question of the flood risks of the site during its occupation will also be considered in relation to the active fluvial dynamics. Finally, the adaptation of societies to this constraining environment is also at the core of the research, both in ancient times and today, in the context of climate change.

Description of the job

The post-doctoral researcher will be integrated into the paleoenvironmental team led by Dr. Yohan Chabot and will develop an interdisciplinary and multiscalar research approach. The study will focus on: (1) the development of a spatial analysis using satellite imagery to analyse the distribution, morphology and Holocene mutations of the hydrographic patterns of the Karatoya in the Mahasthangarh area; (2) a collaboration on the recording and study of the sedimentary records in the vicinity of the archaeological site. This line of research, little used in the archaeological context in South Asia, is based on a **spatial approach** through the digital processing of geographical information (GIS, spatial analysis, photo-interpretation, remote sensing, etc.) and a **geomorphological field approach** (topographical surveys, geomorphological mapping, acquisition of sedimentary archives, etc.). Most of the study will be done face-to-face at the Laboratory of Physical Geographical in Thiais. A field study, in which the post-doctoral student will participate, could take place at the end of 2023 or the beginning of 2024. The post-doctoral fellow will conduct the acquisition and processing of digital data (old maps, satellite images, etc.), observations and field surveys (auger and stratigraphic surveys). This will be supported by a local team and the post-doctoral fellow will collaborate with other members of the mission. The person recruited will develop a sampling strategy for analyses (granulometry, organic matter content, fire signal and magnetic susceptibility) to be carried out at the Laboratory of Physical Geographical in Thiais. This approach will allow a synthesis of the morphosedimentary dynamics that have affected Mahasthangarh and its region in the past.

During the field work, the post-doctoral fellow will train a member of the Department of Archaeology in

Bangladesh to the digital processing of geographic information. On his or her return to France, he or she will follow up on the training of the Bangladeshi colleague.

This research project, developed as a complement to the Mahasthangarh Archaeological Mission and the ERC project DHARMA, aims **to provide new insights into the environmental history of South Asia in relation to ancient human occupation**. The research approach involves a new **geoarchaeological reflection within an interdisciplinary team** (archaeology, geoarchaeology, geography, epigraphy, art history, ceramology). In a context where Bangladeshi archaeological research is active, but where the environmental angle is still little considered, this project represents a great opportunity **to explore a new terrain and bring new knowledge on (1) environmental dynamics and changes; (2) the geomorphological evolution of fluvial systems; (3) the impact of environmental changes on human occupations**. The purpose of this research is **to propose a reconstruction of the contemporary environmental contexts of human occupations in Mahasthangarh and its region**. This study will allow **a better understanding of the material organization of this society and its interaction with the environment.** The data and the results obtained will be presented and discussed during **workshops of the ERC project DHARMA project, in which the post-doctoral fellow will participate; to the Department of Archaeology in Bangladesh; to the Excavation Commission of the Ministry of Europe and Foreign Affairs (MEAE), with the submission of a report in the fall of 2024; and at least one international symposium**. The valorization of the results will also include the co-publication of an **article in an international journal.**

The collaborations, which are already in place, are part of a solid international network, bringing together various disciplinary fields and the following people and institutions:

- **Laboratory of Physical Geography (LGP) – UMR 8591**

Laurent Lespez, Professor, Université Paris-Est Créteil Val de Marne.
Yohan Chabot, Geomorphologist.

- **National Museum of Asian Arts – Guimet, Research Group in Indian Studies (GREI)**

Vincent Lefèvre, Director of the collections.

- **Centre of South Asian and Himalayan Studies – CESAH, EHESS – CNRS UMR 8077**

Emmanuel Francis, Researcher CNRS and Coline Lefrancq, Contractual basis Researcher CNRS.

- **Department of Archaeology du Bangladesh (DOA)**

Chandan Jumar Dey, Director of the Department, and Naheed Sultana, Regional director.

- **French Embassy in Bangladesh**

Service of cooperation and cultural action.

Supervision and Working Environment

Postdoctoral supervision

The post-doctoral fellow will be supervised by a multidisciplinary team. The scientific supervision will be provided by Laurent Lespez. His thematic and methodological skills, as well as his good knowledge of tropical environments, will provide solid scientific support to the person recruited. In addition, the supervisor will accompany the post-doctoral fellow in the development of his or her career by advising and supporting him or her in the preparation of the CNRS, other research institutions or ERC competitions. Ségolène Saulnier Copard, study engineer and head of the sedimentology analysis platform of the Laboratory of Physical Geographical, will provide analytical supervision. She will also provide advices for the scientific protocols. Field supervision in Bangladesh will be provided by the French directors of the Mahasthangarh Archaeological Mission, archaeologist Coline Lefrancq and art historian Vincent Lefèvre. Their knowledge and long experience in the field in Bangladesh will be an asset in managing the logistical aspects (manpower, transportation, communication, administrative formalities, etc.) and in contributing to

the smooth running of the mission. Finally, the post-doctoral fellow will work in collaboration with the geomorphologist Yohan Chabot.

Workplace and working conditions

The post-doctoral fellow will be hosted in the Laboratory of Physical Geography (CNRS, 2 rue Henry Dunant, 94320 Thiais). He/she will have his/her own desk in the postdoc room and will have access to PC equipment. The laboratory will also provide the field equipment necessary to acquire sedimentary data (corer, hand auger), geophysical equipment (GPS, laser rangefinder, etc.), as well as the analytical platforms to perform the analyses. Furthermore, the diversity of the disciplinary communities (geographers, geologists, statisticians, geophysicists, etc.) and the scientific skills of the laboratory (geochemistry, sedimentology, geomatics, etc.) provide an ideal and dynamic working environment to carry out the research project.

The project also benefits from strong logistical and financial support from the partners. Accommodation in the field will be in the excavation house built around the site of Mahasthangarh within the framework of the Joint Archaeological Mission. Logistical expenses related to the field mission (travel, food, labor) and expenses related to administrative formalities (visa, research permit) as well as air tickets will be covered by the research project. Finally, the Laboratory of Physical Geographical will provide support for the analytical costs.

Expected skills and proficiencies

- Hold a PhD in one of the following fields: geography, geosciences, environmental archaeology
- The candidate will have research experience in the reconstruction of paleoenvironments and river systems, in particular in tropical and subtropical environments
- Excellent knowledge of GIS and remote sensing
- Ability to conduct research autonomously and independently, both in the field and in the laboratory, and to manage the logistical aspects (preparation of the mission, management of equipment, etc.)
- Willingness to integrate into the scientific project and the research team
- Good adaptability in an Asian cultural context in a tropical environment
- Good level of English (oral and written)

Employment

- Obligation to reside in France (in Paris) for the duration of the contract
- 1 year (12 months) from 01/10/2023
- 33600€ annual gross salary (UPEC postdoctoral contract conditions)

Contact details of the Scientific supervisor	
Lespez Laurent Professor and Deputy director of the Laboratory of Physical Geography Department of Geography, LGP CNRS UMR 8591	laurent.lespez@u-pec.fr laurent.lespez@lgp.cnrs.fr **Office phone number**: 0033 624970597

Summary of documents to be included in the application file
□ A detailed CV □ A cover letter explaining the application (3 pages maximum) □ Two letters of recommendation

Applications must be submitted by June 25, 2023 at 4:00 pm (CEST Paris time) in:

- one scanned copy via email to: laurent.lespez@u-pec.fr