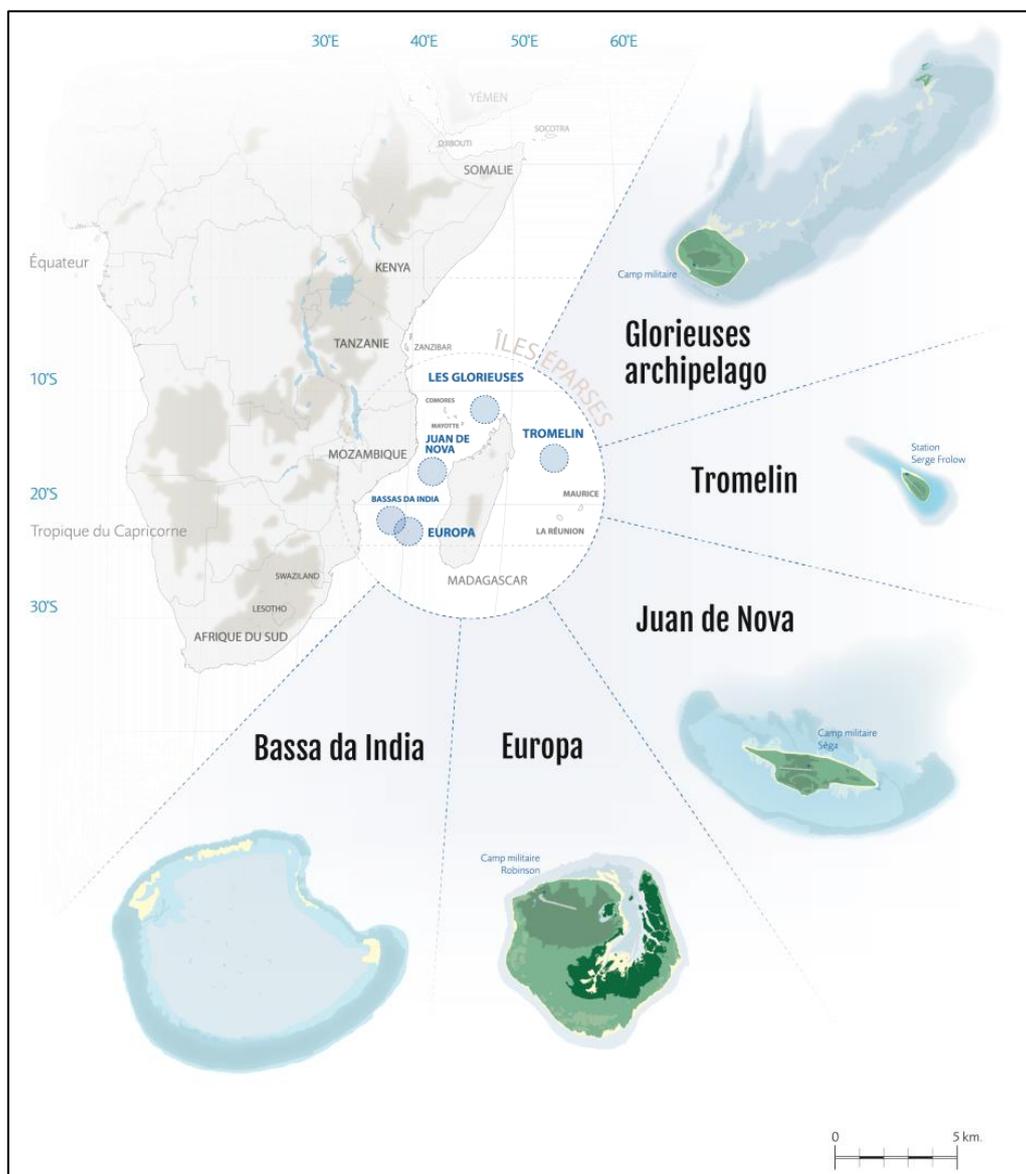


Call for Multidisciplinary Projects
« Eparses Islands »
2017 - 2020

CONTEXT AND OBJECTIVES OF THE CALL FOR PROJECTS

The Eparses Islands have been integrated into the French Southern and Antarctic Lands (Taaf) in 2007 (law n° 2007-224, february 21st 2007), featuring now as their 5th district. They are located in the tropical southwestern Indian Ocean. Tromelin is situated north of Reunion Island and Glorieuses, Juan de Nova, Bassas da India and Europa spread inside the Mozambique Channel.



Location of the Eparses Islands in the south western Indian Ocean

Following a first multi-institution “Eparses Islands” program (2011-2014), the Taaf aims to pursue and support the development of research programs in these territories. The 2011-2014 program produced a corpus of data and knowledge to better understand past and present Eparses Islands’ ecosystems functioning and biodiversity assets. This first program supported 18 research projects related to geological sciences, microbiology, ecology and biodiversity sciences in both marine and terrestrial environments. More than 60 articles were published in international journals and a closing symposium was held on april 28-29th 2014.

The 2011-2014 program underlined the exceptional biodiversity asset of the Eparses Islands. As direct anthropogenic pressures are extremely low this group of islands represents a unique set of ecosystems to evaluate past and present climate variations and their effects on the environment.

This present call for projects is supported by a multi-institution¹ consortium incited by the Taaf. The Taaf is also in charge of the consortium coordination for the 2017-2019 period. Through this call for projects, the consortium invites the scientific community to undertake research activities on subjects related to three thematic axes. Several scientific questions are developed inside each axis to better constrain a project’s scope. The scientific questions exposed here are not exhaustive and can be implemented if relevant knowledge is added to the thematic axes.

1- The Eparses Islands as an « observatory » of climate variability effects

Due to the lack of significant anthropogenic activities, the Eparses Islands offer the opportunity to build a multidisciplinary observatory to better understand evolutions of climatic changes effects on the terrestrial and marine ecosystems. Proposals may include the monitoring of different types of processes, such as:

- *Meteorological and oceanographical processes and their past (paleoclimatology) and present expressions. Spatio-temporal evolution of climate change induced phenomena (ocean acidification, elements cycle modification, etc.)*
- *Geophysical processes such as seismic activity or shoreline evolution. Regarding this last point, is sea-level rise always associated with a loss of coralline islands surface and essential habitats for species during all or part of their life cycle?*
- *Marine and terrestrial ecosystems health state (habitats, diversity and biomass of animals, vegetals and microbial communities etc.)*
- *Communities composition (biodiversity inventories) and marine megafauna monitoring (mainly spatial)*

These observatories must integrate the protection status of the different territories and be open to comparative approaches with other protected areas or territories along the Indian Ocean tropical to polar gradients (climatic, geological, etc.). In addition to the biotic and

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abiotic variables, these observatories can also integrate sociological parameters in a broader way to evaluate the ecosystem services rendered by the remarkable terrestrial or marine ecosystems.

2- The Eparses Islands as research « laboratories » to study biological diversity and ecosystem functioning in a low anthropological footprint context

The Eparses Islands are part of a limited group of islands where direct human pressure on biological communities is extremely limited. Besides being references for the definition of conservation and biodiversity reconquest objectives, these islands represent unique opportunities to address many fundamental issues, particularly in a changing climate context, and as for example:

- *How the high biodiversity of the Eparses Islands is maintained? What are or will be the consequences of biodiversity changes on the functioning of Eparses Islands ecosystems and associated ecosystem services?*
- *Are the Eparses Islands not only a reservoir but also a source of biodiversity for adjacent ecosystems or territories?*
- *What is the functional role (and importance) of rare species in terrestrial and marine ecosystems? What are the roles of climate change and stochastic events in the processes of rarefaction or even extinction of species present in the Eparses Islands (Allee effect, etc.)?*
- *What are the relationships between biodiversity, community structure and ecosystem functioning when exempted from direct human pressure?*
- *What are the biogeochemical processes that influence the maintenance, growth or loss of reef structures in the Eparses Islands (carbonate balance, coral calcification, reef bioerosion processes, etc.)?*
- *What are or will be the impact of resources exploration or exploitation activities and climate change on the Eparses Islands ecosystems (biogeochemical fluxes, biodiversity, functional diversity, connectivity, resilience, etc.)? Can the effects of these anthropogenic pressures be modeled? Can we measure "background level" of relevant indicators (molecules or compounds, habitats, key species, functional groups etc.) before exploration or exploitation that can also be used as references in regional comparative studies?*
- *What are the ecological mechanisms involved in biological invasions processes (animals and plants, marine and terrestrial) in the Eparses Islands? What are the invasive species functional roles and their impacts on native biodiversity? Can we predict an ecosystem's evolution subject to ecological restoration actions (control or eradication of invasive alien species) and thus orientate management priority plans?*

Integration of this knowledge into spatial conservation planning processes is recommended at the local and regional levels. Particular attention will be paid to heritage species weakened by habitat degradation, fishing and even climate change (seabirds, marine mammals, sharks, groupers, etc.).

3- The Eparses Islands and adjacent marine ecosystems

The Eparses Islands are located in a highly dynamic Mozambique Channel oceanic environment, particularly rich in natural resources. Biological resources are concentrated along the edges of oceanic eddies and around seamounts. The proximity to remarkable ecosystems in the Mozambique Canal can lead to exploratory and / or comparative research on:

- *What are the physical and/or biological links (productivity, connectivity, coastal-pelagic coupling etc.) between these ecosystems? What are the roles of the Eparses Islands in the dynamics of the Mozambique Channel ecosystem (connectivity issues).*
- *Are the Eparses Islands not only a reservoir but also a source of biodiversity for adjacent territories?*
- *What are the biological and functional diversity and other metrics (biomass, abundance etc.) of the biological communities?*
- *What is the vulnerability level of the biological resources in relation to potential fishing activities or energy and mineral resources exploitation?*
- *What protection tools and management plans can be considered?*

Databases containing information related to the Eparses Islands marine ecosystems are available and access free, as for example:

- Catalogue of referential data from marine environments – **Sextant** : <http://sextant.ifremer.fr/en/>
- Catalogue of referential data on protected areas and species (including species inventories) – **INPN** : <https://inpn.mnhn.fr/collTerr/outreMer/choix/984>
- Data and cartography on coastal altimetry of the Eparses Islands - SHOM - **Litto3D** : <http://diffusion.shom.fr/produits/altimetrie-littorale/litto3d-eparses2012.html>
- Catalogue of referential data from coastal environments (including data on coral reef monitoring) - **Quadrigé** : <http://quadrige.eaufrance.fr/>

STUDY SITES

- All Eparses Islands (Tromelin, Juan de Nova, Europa, Bassas da India and Glorieuses) or some of them. Terrestrial, marine or open ocean ecosystems.
- If appropriate, a comparative approach with other Indian Ocean ecosystems can be proposed.

ELIGIBILITY CRITERIA AND PROJECT SELECTION

Projects proposals will be evaluated by scientific experts appointed by the inter-organization research consortium. The aim is to select a **minimum of ten projects** to allocate a maximum amount of 40,000€ within a maximum of 3 years from the date of acceptance of the project.

Eligibility criteria for projects selection are:

- projects must be carried by a researcher or a lecturer from a french research institution or organization recognized by the Ministère de l'éducation nationale, de l'enseignement supérieur et de la recherche (Ministry of National Education, Higher Education and Research);
- projects must be co-funded (specify in the reply form the sources and guarantees or not of co-funding at the project submission stage - Note: this co-funding can be made in kind);

Besides the **scientific quality of the projects**, the following evaluation criteria will be considered:

- Adequacy between the proposed research field(s) and the thematic axes of this present call for projects;
- Adequacy between the project scientific objectives and the fieldwork and/or experimentation design of the project (i.e. logistic, operation frequency, etc.);
- Involvement of researchers from the southwest Indian Ocean region, and more broadly collaborations with foreign laboratories;
- Multidisciplinarity or interdisciplinarity;

Projects related to the 3rd thematic axis can also consist in the processing of already acquired data (i.e. no new data acquisition) and identification of knowledge gaps and new data acquisition priorities. If new data acquisition campaigns are proposed, specific logistical operations (i.e. not listed in the submission form) must be described and proof of secured funding must be provided.

FUNDING RULES AND ADDITIONAL SUPPORT FROM THE CONSORTIUM

Each selected project will be allocated a budget not exceeding **€40 000 for the total duration of the project.**

Eligible costs can relate exclusively to:

- Eparses Islands access;
- catering costs on the Eparses Islands;
- travel between the laboratory of origin and the Eparses Islands
- fieldwork logistical costs
- small equipments
- functioning costs (except for salary and management fees)

In addition to the grant, the consortium partners might be able to provide additional support to the field operations:

- The Taaf will fund the grantees' access to the R/V *Marion Dufresne* during the Eparses Islands service road in 2018 or 2019 (dates to be announced) and use of the vessel scientific and utility apparatus (pneumatic boats, helicopter, etc.). The Taaf provides scientific stations on each islands (basic wet and dry labs, storage space, and accommodation), logistical and administrative support for fieldwork operations (activity and access authorization demands, specific logistical requirements, support to secure access means to the islands etc.) and technical supports from Taaf staff on Europa and Tromelin (to be defined with the Taaf beforehand).
- La Réunion University (based in Saint-Denis) offers access to storage space and freezers, wet laboratories and work offices for research groups transiting by Reunion Island. The conditions of spaces and materials use listed above will be determined according to the research project and will be the subject of an agreement with the University of La Réunion;
- Mayotte University Center for Education and Research (Centre Universitaire de Formation et de Recherche de Mayotte) offers access to a biological sample platform (-20°C, -80°C, cold room, liquid nitrogen, etc.), use of material (microscopes, stereo-microscopes, hood, centrifuge, drying-oven, grinding apparatus with balls, autoclave, microplate readers, wet lab) as well as their semi-rigid pneumatic boat (Milpro, 6.5 meters) and off- road vehicule in Mayotte. The conditions of materials use listed above will be determined according to the research project and will be the subject of an agreement with the Mayotte University Center for Education and Research;

It can be noted that shared use of maritime logistics resources to charter the field expeditions (excluding the R/V *Marion Dufresne*) is strongly encouraged between the projects. If shared use possibilities between projects have not been identified by the PIs before the project submission stage, the consortium coordinator will make sure to evaluate the opportunities during the evaluation stage together with the concerned PIs.

A project coordinator must be identified in the proposal. The project coordinator will be the Consortium contact reference in charge of the project follow-up.

For each granted project a bilateral agreement between the Taaf and the PI contractual institution or organization will be established to define the grant payment modalities as well as the financial and scientific reporting methods for this program. Each project PI must ensure that the potential associated institutions or organizations will be able to contribute to the scientific and financial reporting if appropriate.

The project coordinator will be in charge of the annual reporting of the progress and results of the project to the consortium. A final report will be submitted to the consortium at the end of the program.

GUIDELINES FOR PROPOSAL SUBMISSION

*Proposal submission forms must be transmitted by email to:
consortium-iles-eparses@taaf.fr
before **july 17th 2017** (11:59 pm, Paris time zone)*

The proposal submission form associated to this call for projects can be downloaded at: <http://www.taaf.fr/IMG/pdf/-162.pdf>

The section related to logistical operations and associated requirements (vessels, aircraft, helicopter etc.) must be carefully detailed and argued.

Attention is drawn to :

- 1- the detailed calendar of the proposed operations and associated logistical resources
- 2- the detailed financial calendar for each year

CONTACT

If you have any questions regarding this call for projects, please contact the Direction of Environment at the French southern and antarctic lands using the following e-mail address: consortium-iles-eparses@taaf.fr