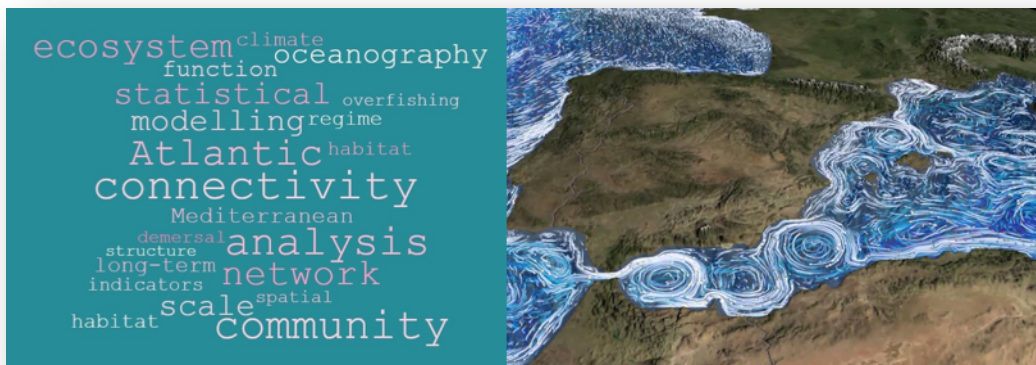




## FPU project

### ‘Marine communities connectivity and recent regime shifts in the Mediterranean Sea’

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### Proposal of PhD

The Mediterranean is a world hotspot of marine biodiversity under threat and one of the most impacted areas in the planet. Cumulative number of impacts interact with other ecosystem stressors, such as overfishing, climate change, habitat modification and the introduction of non-indigenous species, and altogether generate several alterations on innumerable ecosystem services and functions. At regional scale, Mediterranean ecosystems are composed by biological connected communities over heterogenous environmental gradients with different properties and sensitivities to the diversity of impacts. Recent studies evidenced drastic changes (i.e. regime shifts or ecosystems transitions) in the species composition that have triggered changes in the ecosystem functions [1]. However, there is still no clear understanding on the role of the spatial and trophic structure of neighboring communities on the responses observed changes at temporal scale.

The FPU project will be framed in a project funded by the Spanish Ministry, [COCOCHA](#) (*‘COnnectivity processes on fish populations and COmmunities of Atlantic and Mediterranean ecosystems: linking ecological functions to management CHallenges’*, 2020-2023, PID2019-110282RA-I00), which will investigate ecosystems connectivity from a multidisciplinary perspective. Within this PhD, we propose to analyze spatial and temporal changes in the community structure and connectivity in several neighboring sub-regional systems, that will help to understand temporal dynamics in the biodiversity and ecosystem functioning (BEF), including observed long-term trends and sudden regime shifts. The PhD candidate will use available biological and oceanographic information from scientific surveys, that will be analyzed using ecological network tools and advanced statistical modeling. Particularly, network tools have arisen as a most straightforward method to describe ecological communities, in which a plethora of metrics and indicators can be calculated to describe their stability, their structural properties and, to establish the relationships and feedbacks with important ecosystems functions [2]. This FPU project is expected to provide a synthesis of the self-structuring and connectivity of marine



ecosystems to provide sound scientific information to be used for management and conservation purposes.

We are searching for a highly motivated PhD candidate, who is willing to get proficient levels at data analyses and ecological modeling of marine ecosystem, but also to be trained in the difficult interface between science and management. The candidate should have a high academic record (see link below of the FPU call) and a good level of English.

**DEADLINE:** Contact supervisors as soon as possible; deadline for submitting the proposal **mid-late November.**

2020 call is not available yet, but more information of 2019 call can be found here:

<http://www.educacionyfp.gob.es/servicios-al-ciudadano/catalogo/general/99/998758/ficha/998758-informacion-comun.html>  
<http://www.educacionyfp.gob.es/dam/jcr:4c937465-776b-4bac-b1a5-0b96e49ef0cf/guiainformativaequivalencianotamedia.pdf>

More information about the framework project:

<https://bit.ly/3k7YitL>

More information of the research group:

<https://grecoresearch.wordpress.com>

## REFERENCES

- <sup>1</sup>Vasilakopoulos, P., Raitos, D. E., Tzanatos, E., & Maravelias, C. D. (2017). Resilience and regime shifts in a marine biodiversity hotspot. *Scientific reports*, 7(1), 1-11.
- <sup>2</sup>Ings, T. C., Montoya, J. M., Bascompte, J., Blüthgen, N., Brown, L., Dormann, C. F., et al. (2009). Ecological networks—beyond food webs. *Journal of Animal Ecology*, 78(1), 253-269.