

### Parte A. Personal Data

Family Name and name	Maria Belén Rodríguez Fonseca		
DNI/NIE/passport	07495253J	Age	47
	Orcid Code	https://orcid.org/0000-0002-5261-7083	

#### A.1. Professional Activities

Organism	Universidad Complutense de Madrid		
Dpt./Center	Physicas of Earth and Astrophysics		
Address	Plaza de las Ciencias s/n		
Phone	913944513	correo electrónico	<a href="mailto:brfonsec@gmail.com">brfonsec@gmail.com</a>
Professional Category	Profesor Titular de Universidad	Fecha inicio	Junio 2010
Espec. cód. UNESCO	2501.03;2501.06;2502.06		
Key Words	Climate Variabilty, Air-Sea interactions, El Niño, Variabilidad Tropical Atlantica, Teleconexiones de ENSO teleconnections con Europa		

#### A.2. Academic Formation (

Tittle	University	year
Bachelor	Universiad Complutense de Madrid	1994
Doctor	Universidad Complutense de Madrid	2001

#### A.3. Quality Indicators

Number of 6-years blocks of research: 3; Last in: **2006-2011**; Number of PhD Thesis advised in the last 10 years: **11**; Number of Q1 publications: **54**; h-index (Google Scholar): **21**; h index from 2013 (Google Scholar): **19**; i10 index (Google Scholar): **35**; i10 index from 2013(Google Scholar): **31**; Total citations (Google Scholar): **1458**; Total citations from 2014 (Google Scholar): **1042**.<https://orcid.org/0000-0002-5261-7083>

### Parte B. Summary of the CV

Belen Rodríguez-Fonseca (female) is Full Professor at UCM and Principal Researcher of the TROPA group (<http://tropa.fis.ucm.es>). PhD degree from 2001 and full professor from 2010. She has more than 57 papers in SCI journals, extensive experience in tropical and extratropical climate variability and a record of national and EU projects (TRIATLAS, PREFACE and AMMA among others) dealing with tropical Atlantic Variability and teleconnections. From 2011 she has active cooperation projects with Senegal advising PhD Theses and researching in climate services in Africa (upwelling, fisheries, precipitation and malaria). During her cooperation activities she has been given courses at the University Cheikh Anta Diop, in Dakar, about statistical analysis of data for both, Master and PhD students (a total of 8 courses given since 2011).. During these 16 years of teaching, she has given more than 7 different subjects: Numerical Computation, Statistics, Physics, Physic Laboratory, Physics of the Atmosphere, Physical Oceanography and Climate Variability. Belen Rodríguez Fonseca has participated in more than 20 projects: 7 Spanish National Research projects, leading 5 of them (related to air-sea interactions and teleconnections in the Atlantic), 3 EU projects, and 6 cooperational projects with West Africa, in 5 of which she was the Principal Investigator. She is first author of a referenced paper about the influence of the Atlantic Niño on the triggering of ENSO and a review paper of the sea surface temperature impact on Sahelian droughts. Recently she has collaborated in a review paper about the Tropical Atlantic observing system. She is convener of an European Geophysical Union session about Tropical Teleconnections. In the last 10 years she has supervised 13

PhD Thesis and 25 Masters and she is currently advising 3 PhD Theses and hire 2 postdocs. Apart from these activities, Belen Rodríguez is very interested in the dissemination of climate variability and change to the society, from primary school to the university. Under this context, he is the coordinator of the Meteolab virtual workshop (<http://meteolab.fis.ucm.es>) and she has organized activities in schools, museums and guided visits in the university. Currently, Belen Rodríguez-Fonseca is the Coordinator of the Master in Meteorology and Geophysics of the University Complutense at Madrid. Also, she is co-chair of the CLIVAR-Spain panel.

## Parte C. MERITS

### C.1. Publications (From 2014, first quartil, selection)

Gómara, I., Bellocchi, G., Martin, R., Rodríguez-Fonseca, B., & Ruiz-Ramos, M. (2020). Influence of climate variability on the potential forage production of a mown permanent grassland in the French Massif Central. *Agricultural and Forest Meteorology*, 280, 107768.

Carnicer, J., Domingo-Marimon, C., Ninyerola, M., Camarero, J. J., Bastos, A., López-Parages, J., ... & Ribas, M. (2019). Regime shifts of Mediterranean forest carbon uptake and reduced resilience driven by multidecadal ocean surface temperatures. *Global change biology*, 25(8), 2825-2840.

Mohino, E., Rodríguez-Fonseca, B., Mechoso, C. R., Losada, T., & Polo, I. (2019). Relationships among Intermodel Spread and Biases in Tropical Atlantic Sea Surface Temperatures. *Journal of Climate*, 32(12), 3615-3635.

Foltz, G. R., Brandt, P., Richter, I., Rodríguez-Fonseca, B., Hernandez, F., Dengler, M., ... & Da Cunha, L. C. (2019). The tropical atlantic observing system. *Frontiers in Marine Science*, 6(206).

Castaño-Tierno, A., Mohino, E., Rodríguez-Fonseca, B., & Losada, T. (2018). Revisiting the CMIP5 Thermocline in the Equatorial Pacific and Atlantic Oceans. *Geophysical Research Letters*.

Diakhate, M., Rodríguez-Fonseca, B., Gómara, I., Mohino, E., Dieng, A. L., & Gaye, A. T. (2018). Oceanic Forcing on Interannual Variability of Sahel Heavy and Moderate Daily Rainfall. *Journal of Hydro-meteorology*, (2018).

Lübbecke, J. F., Rodríguez-Fonseca, B., Richter, I., Martín-Rey, M., Losada, T., Polo, I., & Keenlyside, N. S. (2018). Equatorial Atlantic variability—Modes, mechanisms, and global teleconnections. *Wiley Interdisciplinary Reviews: Climate Change*, 9(4), e527.

Suárez-Moreno, R., Rodríguez-Fonseca, B., Barroso, J. A., & Fink, A. H. (2018). Interdecadal changes in the leading ocean forcing of Sahelian rainfall interannual variability: Atmospheric dynamics and role of multidecadal SST background. *Journal of Climate*, (2018).

Ayarzagüena, B., López-Parages, J., Iza, M., Calvo, N., & Rodríguez-Fonseca, B. (2018). Stratospheric role in interdecadal changes of El Niño impacts over Europe. *Climate Dynamics*, 1-14.

Diouf, I., Rodríguez-Fonseca, B., Deme, A., Caminade, C., Morse, A. P., Cisse, M., ... & Gaye, A. T. (2017). Comparison of Malaria Simulations Driven by Meteorological Observations and Reanalysis Products in Senegal. *International journal of environmental research and public health*, 14(10), 1119.

Martín-Rey, M., Polo, I., Rodríguez-Fonseca, B., Losada, T., & Lazar, A. (2017). Is there evidence of changes in Tropical Atlantic Variability modes under AMO phases in the observational record?. *J. Clim.*, <https://doi.org/10.1175/JCLI-D-16-0459.1>

Gómara, I., Mohino E., Losada T., Domínguez M., Suárez-Moreno R., Rodríguez-Fonseca, B., (2017): Impact of dynamical regionalization on precipitation biases and teleconnections over West Africa, *Clim. Dyn.*, doi:10.1007/s00382-017-3886-4.

Gómara, I., Rodríguez-Fonseca, B., Zurita-Gotor, P., Ulbrich, S., & Pinto, J. G. (2016). Abrupt transitions in the NAO control of explosive North Atlantic cyclone development. *Clim. Dyn.*, 1-21.

Capa-Morocho, M., Rodríguez-Fonseca, B., Ruiz-Ramos, M. (2016) Sea surface temperature impacts on winter cropping systems in the Iberian Peninsula, *Agric. & For. Meteorol.*, 226-227, pp. 213-228., doi: 10.1016/j.agrformet.2016.06.007.

López-Parages, J., Rodríguez-Fonseca, B., Mohino, E., Losada, T. (2016) Multidecadal modulation of ENSO teleconnections with Europe in late winter: analysis of CMIP5 models. *J. Clim.*, 29, 8067-8081, doi: 10.1175/JCLI-D-15-0596.1

Losada, T. & Rodríguez-Fonseca, B. (2016): Tropical atmospheric response to decadal changes in the Atlantic Equatorial Mode. *Clim. Dyn.*, doi: 10.1007/s00382-015-2897-2.

Capa Morocho, M.; Rodríguez-Fonseca, B. & Ruiz-Ramos, M. (2015): El Niño influence on potential maize yield in Iberian Peninsula. *Int. J. Climatol.*, doi: 10.1002/joc.4426

Durán, L., Rodríguez-Fonseca, B., Yagüe, C. & Sánchez, E. (2015): Water vapour flux patterns and precipitation at Sierra de Guadarrama mountain range (Spain). *Int. J. Climatol.*, 35, 1593-1610. doi: 10.1002/joc.4079.

Gonzalez-Reviriego, N., Rodriguez-Puebla, C., Rodriguez-Fonseca, B. (2015) Evaluation of observed and simulated teleconnections over the Euro-Atlantic region on the basis of partial least squares regression, *Clim. Dyn.*, 44 (11-12), art. no. 5, pp. 2989-3014., doi: 10.1007/s00382-014-2367-2

Martín Rey, M.; Rodríguez-Fonseca, B. & Polo, I. (2015): Atlantic opportunities for ENSO prediction. *Geophys. Res. Lett.*, 42, 6802-6810.

Rodríguez-Fonseca, B.; Mohino, E.; Mechoso, C.R.; Caminade, C.; Biasutti, M.; Gaetani, M.; García-Serrano, J.; Vizzy, E.K.; Cook, K.; Xue, Y.; Polo, I.; Losada, T.; Druyan, L.; Fontaine, B.; Bader, J.; Doblas-Reyes, F.J.; Goddard, L.; Janicot, S.; Arribas, A.; Lau, W.; Colman, A.;

Vellinga, M.; Rowell, D.P.; Kucharski, F. & Voldoire, A. (2015): Variability and Predictability of West African Droughts. A review on the role of Sea Surface Temperature Anomalies. *J. Clim.* 28 , 4034-4060.

López-Parages, J., Rodríguez-Fonseca, B., Dommenges, D., & Frauen, C. (2015). ENSO influence on the North Atlantic European climate: a non-linear and non-stationary approach. *Clim. Dyn.*, 1-14.

López-Parages, J.; Rodríguez-Fonseca, B. & Terray, L. (2015): A mechanism for the multi-decadal modulation of ENSO teleconnection with Europe, *Clim. Dyn.*, doi: 10.1007/s00382-014-2319-x

Suárez-Moreno, R. & Rodríguez-Fonseca, B. (2015): S4CAST v2.0: sea surface temperature based statistical seasonal forecast model. *Geosci. Model Dev.*, 8, 3971–4018.

Capa-Morocho, M., Rodríguez-Fonseca, B. & Ruiz-Ramos, M (2014): Crop yield as a bioclimatic index of El Niño impact in Europe: Crop forecast implications. *Agr. Forest Meteorol.*, 198, 42-52.

Gómara, I.; Rodríguez-Fonseca, B.; Zurita-Gotor, P. & Pinto, J.G. (2014): On the relation between Explosive cyclones affecting Europe and the North Atlantic Oscillation. *Geophys. Res. Lett.*, 41, 2182–2190, doi: 2014GL059647

Martín-Rey, M.; Rodríguez-Fonseca, B.; Polo, I. & Kucharski, F. (2014): On the Atlantic-Pacific Niños connection: A Multidecadal modulated mode, *Clim. Dyn.*, 43, 3163-3178. DOI: 10.1007/s00382-014-2305-3

## C. 2. Projects

“(TRIATLAS South and Tropical Atlantic climate-based marine ecosystem prediction for sustainable management ”.European Commission, Horizon H2020, BG-08-2018-2019. 2019-2022. 11M€. PI: N. Keenlyside; B. Rodriguez-Fonseca: leader WP2.2, member of executive committee.

“PREFACE”. European Union.FROM 2013 TO 2018.PIUCM: Dr. Belén Rodríguez de Fonseca.. 512.000€ for UCM; 9000000 € total.

National Projects:

“PREDICTIBILIDAD DEL CLIMA EN EL SECTOR ATLÁNTICO (PRE-4CAST, CGL2017-86415R)”.Spanish Government. FROM 2018 TO 2020. PI UCM: Elsa Mohino Harris and Belén Rodríguez Fonseca. 133100 €.

“Multiscale climate variability”. Agronomical and economic impacts (MULCLIVAR; CGL2012-38923-C02-01). Proyecto coordinado entre la Universidad Complutense de Madrid y la Universidad Politécnica de Madrid.Spanish Government FROM: 2013 TO 2016. PI: Belén Rodríguez de Fonseca. 229.320. EUR

“Predictabilidad y Proyecciones de cambio climático a corto plazo (CGL2011-13564-E subprograma CLI).Spanish Government. 2012 TO 2013.PI: Elsa Mohino Harris. 35.000. EUR

“Programa de Creación y Consolidación de Grupos de Investigación BSCH-UCM GR58/08”. BSCH-UCM. UCM.FROM: 2006 up to present .PI: Carlos Yagüe Anguís & Belén Rodríguez de Fonseca

cooperation projects:

“ Investigación en variabilidad climática con el laboratorio de física de la atmósfera y del océano Simeon Fongang de UCAD, Dakar. FINANCIAL ENTITY: Programa CSIC de Cooperación Científica para el Desarrollo ICOOP (COOPC2017, Nº Anualidades : 2) TIME SPAN FROM: 2018 TO: 2019 PRINCIPAL INVESTIGATOR: Belén Rodríguez de Fonseca BUDGET: 20000 €

Fortalecimiento de los recursos en Investigación, Educación y Desarrollo Tecnológico del Laboratorio de Física de la Atmósfera y el Océano Simeon Fongang de la Universidad Cheikh Anta Diop de Dakar FINANCIAL ENTITY: Vicerrectorado Relaciones Institucionales y Relaciones Internacionales – Universidad Complutense de Madrid TIME SPAN FROM : 2018 TO: 2018 PRINCIPAL INVESTIGATOR: Elsa Mohino Harris BUDGET: 18.000€

Actualización de Recursos del Laboratorio de Física de la Atmósfera y el Océano Simeon Fongang en UCAD (Senegal). (Nº Referencia: 63 de la IX Convocatoria UCM de Proyectos de Cooperación al Desarrollo 2012. del Vicerrectorado Relaciones Institucionales y Relaciones Internacionales – UCM) FINANCIAL ENTITY: Vicerrectorado Relaciones Institucionales y Relaciones Internacionales – Universidad Complutense de Madrid TIME SPAN FROM : 2013 TO: 2014 PRINCIPAL INVESTIGATOR: Elsa Mohino Harris BUDGET: 20.534€

Investigación en variabilidad climática con el laboratorio de física de la atmósfera y del océano Simeon Fongang de UCAD, Dakar. FINANCIAL ENTITY: Programa CSIC de Cooperación Científica para el Desarrollo I-COOP (COOPC2015, Nº Anualidades : 2) TIME SPAN FROM: 2016 TO: 2017 PRINCIPAL INVESTIGATOR: Belén Rodríguez de Fonseca BUDGET: 20000 €

Impact of the MJO on West Africa in the CMIP5 simulations. Programa CSIC de Cooperación Científica para el Desarrollo I-COOP (COOPA20025, Nº Anualidades : 1) TIME SPAN FROM: 2014 TO: 2014 PRINCIPAL INVESTIGATOR: Belén Rodríguez de Fonseca BUDGET: 9700 €

PhD theses supervised since 2013

Interdecadal changes in ocean teleconnections with the Sahel. Implications in rainfall. Predictability. Roberto Suárez Moreno. 2017. Supervised by: Belén Rodríguez de Fonseca

Climate and health: Observations and Modelling of seasonal malaria incidence for its prediction over Senegal and Sahel. Ibrahima Diouf. Supervised: Amadou Thierno Gaye, Belén Rodríguez Fonseca and Jaques André Ndione.

Evaluación de las teleconexiones climáticas observadas y simuladas con modelos CMIP en la región Euro-Atlántica. Nube González Reviriego. 2015. Supervised by: Concepción Rodríguez Puebla (Universidad de Salamanca) & Belén Rodríguez-Fonseca.

Tropical Atlantic influence on the Pacific: Air-sea interactions and modulations. Marta Martín del Rey. 2015. Mención Europea. Supervised by: Belén Rodríguez-Fonseca & Irene Polo Sánchez (UCM).

Multidecadal modulation of ENSO teleconnections with the Euro-Mediterranean rainfall. Jorge López Parages. 2015. Supervised by: Belén Rodríguez-Fonseca..

Explosive cyclogenesis in the Euro-Atlantic sector: study of associated large-scale dynamics and variability. Iñigo Gomara Cardiallaguet. 2015. Supervised by: Belén Rodríguez-Fonseca, Pablo Zurita Gotor & Joaquim Pinto.

Climate variability effects on field crops in Iberian Peninsula. Predictability. Mirian Capa Morcho. 2015. Supervised by: Margarita Ruiz Ramos & Belén Rodríguez-Fonseca.

Análisis de la variabilidad pluviométrica en Angola en el periodo 1979-2003. 2013. Joaquim Adolfo Xavier. Supervised by: Belén Rodríguez de Fonseca & Elvira Zurita.

### **C. 6. Collaborations with companies and other entities**

### **C. 7. Other merits**

Three periods of 6 years on research work (sexenios) recognized

Three periods of 5 years on education tasks (quinquenios) recognized.

Coordination of the Web Educational Platform METEOLAB (<http://meteolab.fis.ucm.es>).

2011-present: Co-coordination of the spanish committee CLIVAR-ES.

2010-present: Co-convener of the session CL2.5 "Tropical Climate Variability and Teleconnections: past, present and future" en el Annual Meeting de la European Geosciences Union (EGU).

Coordinator of the "Máster en Geofísica y Meteorología" (UCM, from 2018)

Member of the scientific committee and secretary of the national journal "Física de la Tierra"

Participation in the "Desafíos de la Ciencia". Universidad para Mayores. UCM

Collaboration Agreement with the ColArte association.

Casa Encendida (from 2016) Coordinator of Scientific Outreach activities.

2016: Reviewer of ANECA projects.

2017: Reviewer of Deutsche Forschungsgemeinschaft (DFG) German Research Foundation DFG-grant projects.

2018. Reviewer and Scientific committee of La Caixa Grants.

2016: Comitee of the "AEMET exam for *Diplomados en Meteorología*"

2018: Comitee of the "AEMET exam for *Observadores en Meteorología*".

### **Invited Talks**

Rodríguez Fonseca B.: The role of Tropical Atlantic on the climate system. Tropical Atlantic Observing System Review Workshop (CLIVAR). 8 February 2018

Rodríguez Fonseca, B. A mechanism for the multidecadal modulation of the tropical interbasin teleconnections. ICTP Workshop on Teleconnections in the Present and Future Climate, 24-28 October 2016

Rodriguez-Fonseca B. El Clima actual y futuro en la región mediterránea. Seminario sobre el uso del agua en la agricultura mediterránea. 15 de junio de 2017. Observatorio del Agua de la Fundación Botín.

Rodríguez-Fonseca B. El poder del océano:adelantando a la historia. La Casa Encendida. Ciclo de conferencias “Experimentos para comprender nuestro entorno”. 31 de mayo de 2018.

Rodriguez-Fonseca B. El papel del océano en el clima. Variabilidad interanual a decadal. Agroseguros. Febrero de 2016.

Rodriguez-Fonseca, B. Variabilidad Climática y Predictabilidad en la Península Ibérica. ENESA. 25 de septiembre de 2015.

### Outreach

1. Participación en el Tropical Atlantic Observation System (TAOS). CLIVAR. <http://www.clivar.org/tropical-atlantic-observing-system-review>. B. Rodríguez-Fonseca
2. Rodriguez-Fonseca B . coordinación del Taller “Experimentos para Descubrir el Planeta”. Talleres para niños organizados en la Casa Encendida. Año 2016.
3. Rodriguez-Fonseca B . coordinación del Taller “Experimentos para Descubrir el Planeta”. Talleres para niños organizados en la Casa Encendida. Año 2017
4. Rodriguez-Fonseca B.coordinaación del Taller “Experimentos para Descubrir el Planeta”. Talleres para niños organizados en la Casa Encendida. Año 2018. <https://www.lacasaencendida.es/cursos/para-ninos/experimentos-descubrir-planeta-8618>
5. Rodriguez de Fonseca B. Organización de ciclo de conferencias para adultos: “La física en tu vida”, “física y música” y “ el poder del océano”. 2018. Casa Encendida
6. Rodriguez-Fonseca B. Coordinación de la plataforma web Meteolab <http://meteolab.fis.ucm.es>, creada en 2010.
7. Rodriguez-Fonseca B. Coordinación de visitas guiadas a diversos colegios de la CAM , para realizar experimentos de Meteolab.Organizados desde el Decanato de la Facultad de Físicas de la UCM. (2016,2017,2018)
8. Rodriguez-Fonseca B. El poder del océano en la variabilidad del clima. Un servicio a la sociedad. Universidad de Alicante. 16 de Mayo de 2018.
9. Rodriguez-Fonseca B. Participación en la Semana de la Ciencia (Taller de Atmósfera y Clima) . Desde 2006 ( de forma continuada).
10. Rodriguez-Fonseca. *El poder del océano*. 28 de Marzo de 2017. Semana de la Ciencia Indignada.
11. Rodriguez-Fonseca. Convenio de colaboración con la asociación ColArte, para realizar actividades de divulgación con colegios de la CAM. <http://www.colarte.org/colarte-en-madrid/novedades>
12. Rodríguez-Fonseca. Experimentos de física de la atmósfera en el colegio República de Venezuela (Usera, Madrid). 2015-2017-2018