Odilon Joël HOUNDEGNONTO

Ph.D. - Physical Oceanography and Environment

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$https://ojhoundegnonto.github.io/$

My research interests are focused on ocean physics with linkage and applications for societal needs, especially: the response of the ocean in the dynamic of climate change through air-sea interaction from regional to global scales, freshwater plumes dynamics (Rivers, sea-ice melting and precipitation), thermohaline stratification of the upper ocean layers, the role of stratification on the sea surface temperature conditions, the contribution of temperature and salinity on sea level changes and ocean heat content variations, from regional to global scales. I am used to In situ and remote sensing observations, with the combined of numerical model simulation output.

Education

2018-2021 — **Ph.D.**, *Physical Oceanography and Environment*, Topic: Analysis of freshwater plumes thermohaline variations from intra-seasonal to seasonal scales in the Gulf of Guinea, at Laboratory for Ocean Physics and Satellite remote sensing, LOPS - IRD/UBO/Ifremer/IUEM - Brest, France, with Dr. Christophe Maes and Dr. Nicolas Kolodziejczyk, with Honors

2016-2017 — **Research Master of science in Physical Oceanography and Applications /Sciences de l'océan, de l'atmosphère et du climat**, *jointly accredited by Paul Sabatier University of Toulouse (UPS, France) and International Chair in Mathematical Physics and Applications (ICMPA UNESCO- Chair) of University of Abomey Calavi (UAC, Benin)*, **Rank : 1st**

2014–2015 — **Maîtrise ès-sciences Physiques, specialization: Physics**, *Faculty of Sciences and Technologies - FAST/UAC, Benin*

2013–2014 — **Licence ès-sciences Physiques, specialization: Physics**, *Faculty of Sciences and Technologies - FAST/UAC, Benin*

2012–2013 — **DUES (Diplôme Universitaire d'Étude Scientifique), specialization: Physics and Chemistry**, *Faculty of Sciences and Technologies - FAST/UAC, Benin*

Awards

July 2018 — **Laureate of Make Our Planet Great Again - MOPGA**, of french government by **Mr. Emmanuel MACRON** for my PhD project and co-funded by IRD, France, **(Rank: 8th)**

Publications

Peer Reviewed Publication

[01] **Houndegnonto, O. J.**, Kolodziejczyk, N., Maes, C., Bourlès, B., Da-Allada, C. Y., & Reul, N. (**2021**), Seasonal variability of freshwater plumes in the eastern Gulf of Guinea as inferred from satellite measurements. *Journal of Geophysical Research: Oceans*, 126, e2020JC017041. `https://doi.org/10.1029/2020JC017041`

Submitted

[01] **Monitoring the regional Ocean Heat Content change over the Atlantic Ocean with the space geodetic approach**, V. Rousseau , R. Fraudeau , M. Hammond , **O. J. Houndegnonto** , M. Ablain , A. Blazquez , F. M. Calafat , D. Desbruyères , G. Foti, W. Llovel, F. Marti , B. Meyssignac , M. Restano, & J. Benveniste, <u>submitted to Earth System Science Data</u>

In Preparation

[01] **Upper Ocean staircases thermohaline stratification of far field Congo freshwater plume.**, Houndegnonto, O. J., Kolodziejczyk, N., Maes, C., Bourlès, B., Dobler, D., Grima, N., & Reul, N., <u>in preparation</u> for *Journal of Geophysical Research: Oceans (for 2023)*

Review activities

2023 to present - Reviewer for NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES): Future Investigators in NASA Earth and Space Science and Technology - Physical Oceanography (FINESST PO)

2022 to present - Reviewer for the Journal of Geophysical Research: Oceans

Selected Conference Attended

2023 - **Houndegnonto O. J.**, , *Kolodziejczyk, N., Maes, C., Bourlès, B., Dobler, D., Grima, N., Da-Allada, C. Y., & Reul, N*, : Upper Ocean staircases thermohaline stratification of far field Congo freshwater plume.**VEPOSSSS** - April 19th (as invited speaker, virtual)

2022 - **Houndegnonto O. J.**, , , *W. Llovel & D. Desbruyères*, : 4DAtlantic-OHC v0.4 validation against in situ observations in the Subpolar North Atlantic. **4DAtlantic - OHC project: Mid Term Review** - September 22th-23th, 2022, Magelium company site, Toulouse, **Framce** (as speaker)

- **Houndegnonto O. J.**, , *Kolodziejczyk, N., Maes, C., Bourlès, B., Dobler, D., Grima, N., Da-Allada, C. Y., & Reul, N*, : On the formation of thermohaline stratification off Congo River plume. **2022 Ocean Salinity Conference** - June 6th-9th, 2022, University of Columbia, New York, **USA** (Poster, virtual)

- **Houndegnonto O. J.**, , *Llovel, W. & Desbruyères, D.*, : Full-depth temperature and salinity contribution to regional sea level changes in the north Atlantic subpolar gyre during 2002-2018 from repeated hydrographic transects. **Sea Level Workshop 2022** - June 1st-3th, 2022, Brest, **France** (as speaker)

2021 - **Houndegnonto O. J.**, , *Kolodziejczyk, N., Maes, C., Bourlès, B., Dobler, D., Grima, N., Da-Allada, C. Y., & Reul, N*, : On the formation of thermohaline stratification off Congo River plume. **TACCOVAR 2021** - Sep. 27th-30th, 2021, Cotonou, **Benin** (as speaker, virtual)

2019 - **Houndegnonto O. J.**, *Kolodziejczyk, N., Maes, C., Bourlès, B., Da-Allada, C. Y., & Reul, N*, : Seasonal variability of Congo and Niger Rivers plumes in the Gulf of Guinea. **TACCOVAR 2019** - Sep. 23th -27th, 2019, Cotonou, **Bénin** (as speaker)

- **Houndegnonto O. J.**, *Kolodziejczyk, N., Maes, C., Bourlès, B., Da-Allada, C. Y., & Reul, N*, : Seasonal variability of Congo and Niger Rivers plumes in the Gulf of Guinea. Summer School at **École Polytechnique de Paris Saclay**, July, 1st - 12th, 2019, Palaiseau, **France** (Poster)

- **Houndegnonto O. J.**, *Kolodziejczyk, N., Maes, C., Bourlès, B., Da-Allada, C. Y., & Reul, N*, : Seasonal variability of Congo and Niger Rivers plumes in the Gulf of Guinea. **Living Planet Simposium 2019** (**LPS19**), May, 13th - 17th, 2019, Milan / **Italie** (as speaker)

- **Houndegnonto O. J.**, *Kolodziejczyk, N., Maes, C., Bourlès, B., Da-Allada, C. Y., & Reul, N*, : Seasonal variability of Congo and Niger Rivers plumes in the Gulf of Guinea. **EGU 2019** (European Geosciences Union) General Assembly, Apr. 7^{7} - 12th, 2019, Vienne/**Autriche** (as speaker)

2018 - **Houndegnonto O. J.**, *Kolodziejczyk, N., Maes, C., Bourlès, B., Da-Allada, C. Y., & Reul, N*, : Characterization of Niger and Congo rivers plumes in the Gulf of Guinea. **2018 Ocean Salinity Sciences Conference** - Nov. 6th-9th, 2018, Sorbonne University, Paris/**France** (as speaker)

Research training and professional experience

Jan. 2023- present - **JPL PostDoc Researcher**, *NASA Jet Propulsion Laboratory/Caltech - Salinity and Stratification at Sea Ice Edge - SASSIE project, supervised by Severine Fournier and Ian Fenty.*
• Quantifying the 3D structure of near-surface stratification anomalies generated by melting sea ice (summer ice retreat), and understanding its precondition into the upper ocean for autumn ice advance.

Mar-Dec 2022 - **PostDoc Researcher**, *CNRS/LOPS, Brest, France (4DAtlantic-OHC project)*
• Validation of the Ocean Heat Content derived from satellite products (estimated from Gravimetry and Altimetry) with In situ observations (CTD) along OVIDE transects (Portugal to Greenlad) and Argo floats profiles.
• Temperature and Salinity contributions to regional sea level changes in the north Atlantic subpolar gyre along the OVIDE transects (Portugal to Greenlad)

2021 - **Associate researcher** , *: Projects and Research collaboration at the CIPMA-UNESCO Chair, UAC, Benin, from Dec. 2021 to present*

- **PhD Thesis Research**, *IRD-UBO/LOPS, Brest, France*, Analysis of freshwater plumes thermohaline variations from intra-seasonal to seasonal scales in the Gulf of Guinea, (`https://hal.archives-ouvertes.fr/tel-03615021`): from Oct. 2018 to Dec. 2021
  - Study of Seasonal variability of freshwater plumes in the Gulf of Guinea
  - Study of the influence of the dynamics of the Congo River plume on the thermohaline stratification in the South-East of the Gulf of Guinea
  - The three-dimensional dynamics of interactions between the Congo River plume and subtropical water masses through a Lagrangian approach

- **Training in Scientific integrity in the research community** , *(in French: Intégrité scientifique dans les métiers de la recherche)*, University of Bordeaux via FUN MOOC, - France, from Sep. 2019 to Apr. 2021

2019 - **Summer School on Fluid Dynamics of Sustainability and the Environment at Ecole Polytechnique of Paris**, *France*, from 1st to 12th July, 2019

- **Training in Data Sciences for Geosciences: initiation to machine Learning and Deep Learning with Python**, *Plouzané - France*, from 14th to 18th January 2019

2018 - **Training in sampling techniques and methods, data analysis and interpretation of results**, *GEOMAR - Kiel, Germany*, July 2018

- **Participant of**, Oceanographic research cruises (M148 cruise) in the tropical Atlantic, R/V Meteor - from 24th May to 29th June 2018; Position: **CTD, UCTD, ADCP** measurements, Microstructure, **Argo** and **Glider** float deployment + Physical analyzes

- **Regional training in oceanographic coastal modeling (SYMPHONIE)**, *co-organized by Laboratoire d'Études en Géophysique et Océanographie Spatiales (LEGOS), Laboratoire d'Aérologie (LA) of Toulouse/France, IRD/Bénin and, ICMPA UNESCO-Chair*, Cotonou, Benin, from 2nd to 6th April 2018

2017 - **Scientific cruises on Lake Nokoué (ADCP, CTD, Turbidity, Ph and, Bathymetry with echo-sounder measurements)** , IRD Bénin & IRHOB
Period: 08-09/11/2017 and 31/09 to 01/10/2017

2012-2016 - **Tutor:**, *individual tutoring of secondary school students in Physics, Chemistry and Technics*, Abomey-Calavi, Benin

Voluntary Positions

2018 - **Volounteer**, hydrographer on board of Oceanographic research cruises (M148 cruise) in the tropical Atlantic, R/V Meteor - **Period**: 24th May to 29th June 2018

- **Volounteer researcher**, Working with new Master students in Physical Oceanography and Applications, in their training and internship. (CIMPA UNESCO-Chair / UAC, Benin) - **Period**: October 2017 to May 2018

Community Service

2020-2021 **Spokesperson for non-permanent researchers on the board and scientific college of LOPS, Brest, France**

Languages and Computing Skills

Languages spoken:	French (Full Professional), English (Good), Fongbé (Mother tongue) [Driving Skills: Car driving license B; Boat license: coastal option].
Languages and OS:	Matlab, Python, Julia (beginner), GitHub, Shell Bash, LaTeX, Microsoft Office, Open Office – Mac, Linux and Windows
Model:	**ARIANE**, Oceanic langrangian analysis software/Model – **SYMPHONIE**, Coastal oceanography model - **KPP 1D Diffusion-Convection model**