Odilon J. HOUNDEGNONTO

Ph.D. - Physical Oceanography and Environment

NASA Jet Propulsion Laboratory/Caltech,
M/S 300-323, 4800 Oak Grove Drive,
Pasadena, CA 91109, United States
+1 (626) 563-4421 or +33 7 52 10 99 00
odilon.joel.houndegnonto@jpl.nasa.gov

ResearchGate • ORCID • LinkedIn •
https://ojhoundegnonto.github.io/

Research interests: ocean physics and applications to societal needs - Oceanic responses to the climate change - Air-Sea interactions - Freshwater plumes dynamics (Rivers, Sea-ice & precipitation) - Thermohaline stratification and Sea Surface Temperature conditioning - Thermohaline contributions on Sea Level Changes - Ocean Heat Content variations from regional to global scales. I am proficient in processing in-situ observations and satellite remote sensing data, combined with 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 : 1**st

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 Republic for my PhD project and co-funded by **Institut de Recherche pour le Développement - IRD**, France, **(Rank:** 8^{th})

Professional Experiences and Research Training

Jan. 2023-present - **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, and the relevance OHC and surface heat fluxes.

Mar-Dec 2022 - **PostDoc Researcher**, *CNRS/LOPS, Brest, France (ESA 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

- **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 1^{st} to 12^{th} July, 2019

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

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

- **Participant of Oceanographic research cruise**, (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

2017 - **Participant of research cruises on the Lake Nokoué in Benin (ADCP, CTD, Turbidity, Ph and, Bathymetry with echo-sounder measurements)** , IRD Benin & 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

Dissertations and Reports

Thesis: - **Ph.D thesis**, *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

- **M.Sc thesis**, *CIPMA-Chaire UNESCO/UAC-Benin and Univ.-Paul Sabatier, Toulouse, France*, Caractérisation des Panaches des Fleuves Niger et Congo dans le Golfe de Guinée., May-Aug. 2017

Report: - **Co-author of 4DAtlantic OHC data validation report**, *CNRS-UBO/**LOPS**, Plouzané-Brest, France*, ESA **4DATLANTIC-OHC** project hold by **Magellium, Artal group**, Toulouse, France., Mar-Dec. 2022

- **Calibration and validation of TSG salinity and temperature measurements**, *GEOMAR & POGO, Kiel, Germany*, 2018 NF-POGO- GEOMAR Fellowship for Ship-board Training on-board RV Meteor cruise M148, May-Jul. 2018.

Publications

Peer Reviewed Publication

[04] ***Houndegnonto O. J.***, Fenty, I. and Fournier, S. (**2024**), Thermohaline preconditioning for sea-ice formation in the Beaufort Sea. *Journal of Geophysical Research Letter (Submitted)*

[03] ***Houndegnonto O. J.***, Fournier, S., Fenty, I. G., Steele, M. and Pacini, A. (**2024**), Assessment of SMOS and SMAP Sea Surface Salinity against SASSIE In Situ Measurements in the Arctic Ocean. *Journal of Atmospheric and Oceanic Technology. (Submitted)*

[02] ***Rousseau, V.***, Fraudeau, R., Hammond, M., **Houndegnonto, O. J.**, Ablain, M., Blazquez, A., Calafat, F. M., Desbruyères, D., Foti, G., Llovel, W., Marti, F., Meyssignac, B., Restano, M. & Benveniste, J., (**2023**), Monitoring the regional **Ocean Heat Content** change over the Atlantic Ocean with the space geodetic approach. *Earth Syst. Sci. Data Discuss. [preprint]*, `https://doi.org/10.5194/essd-2023-236`

[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`

In Preparation

[01] ***Houndegnonto O. J.***, Kolodziejczyk, N., Maes, C., Bourlès, B., Dobler, D., Grima, N., & Reul, N (**2024**), Upper Ocean staircases thermohaline stratification of the far field Congo River freshwater plume. *Journal of Geophysical Research: Oceans. (in pre.)*

Mentorship

2023 - **Collaborative mentorship work with Bingham Frederick (UNCW, USA) for John Oklu (intern) on Investigating fresh water pathways in the Arctic Ocean using modeling.**, *August, 2023 to present*

Review activities

Since 2024 - **Reviewer for the Journal of Geophysical Research Letters**

Since 2023 - **Reviewer for NASA Solicitation and Proposal Integrated Review and Evaluation System - NSPIRES/FINESST: Physical Oceanography**, for 2023 and 2024 sollicitations

- **Reviewer for IOP Science, Environmental Research Letters**

- **Reviewer for Marine Pollution Bulletin**

Since 2022 - **Reviewer for the Journal of Geophysical Research: Oceans**

Languages, Computing and Driving Skills

Speaking: **French – English – Fongbé (Mother tongue)**

OS: **Mac, Linux, Docker images and Windows + WSL**

Scripting: **Matlab, Python, GitHub, Shell Bash, Fortran**$^{beg.}$**, Julia**$^{beg.}$

Editing: **LaTeX, Microsoft Office, LibreOffice, JupyterNote book and Visual Studio Code**

Remote Computing: - **IFREMER Super Computer - Datamor - computing capabilities**

- **Amazon Elastic Compute Cloud (EC2), NASA-JPL, California, U.S.A. (certification: ongoing).**

Model: **MIT general circulation model - KPP 1D Diffusion-Convection model -**, **ARIANE** - Oceanic langrangian analysis software/Model – **SYMPHONIE**, Coastal oceanography model

Driving : **Car driving license B — Boat driving license: coastal option**

Voluntary Positions and Community Services

2024 - **Co-organizer of the weekly seminar**, for the **Ocean Circulation and Air-Sea Interaction** group of the **Earth Science Division** at the **Jet Propulsion Laboratory**, Pasadena, CA, USA | since Jan. 2024

- **Volunteer**, Judge-Reviewer of the **AGU Student Travel Grant** for helping students attend the AGU annual meeting in Washington D.C., USA | 9-13 December 2024

- **Volunteer**, Judge-Reviewer of the **AGU Lloyd V. Berkner Travel Fellowship** for supporting Students and Early Career Scientists from around the world to attend the AGU annual meeting in Washington D.C., USA | 9-13 December 2024

2023 - **Volunteer**, Judge of The Doris S. Perpall SURF Speaking Award, California Institute of Technology (Caltech, Pasadena, USA) - **Period**: 21st October 2023

- **Volunteer**, Judge of The Vodopia-Hasson Summer Poster Competition, California Institute of Technology (Caltech, Pasadena, USA) - **Period**: 24th August 2023

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

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

- **Volunteer 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

Conferences

2024 - **Houndegnonto O. J.**, *Fournier, S., & Fenty, G. I.*, : Comparison of SMOS and SMAP sea surface salinity against SASSIE in-situ measurements in the Arctic Ocean. **Ocean Salinity Conference** - May 14th, ESA ESTEC, The Netherlands, (as Poster)

- **Houndegnonto O. J.**, *Fournier, S., & Fenty, G. I.*, : Assessment of SMOS and SMAP Sea Surface Salinity against SASSIE In Situ Measurements in the Arctic Ocean. **Ocean Sciences Meeting** - February 22^{nd}, New Orleans, LA, U.S.A. (as speaker)

- **S. Misra**, *M. Ogut, S. T. Brown, A. Akins, S. Fournier, I. G. Fenty,* ***O. J. Houndegnonto****, D. C Vandemark & S. Shellito*, : Passive Microwave Remote Sensing Of Cold-Water Sea-Surface Salinity: Future Instrumentation And Techniques . **Ocean Sciences Meeting** - February 19^{th}, New Orleans, LA, U.S.A. (as Poster presenter)

2023 - **Houndegnonto O. J.**, *Fournier, S., & Fenty, G. I.*, : Assessment of SMOS and SMAP Sea Surface Salinity against SASSIE In Situ Measurements in the Arctic Ocean. **JPL Postdoc Research Poster Day 2023** - November 29^{nd}, Pasadena, CA, U.S.A. (as Poster)

- **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 19^{th} (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 22^{th}-23^{th}, 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 6^{th}-9^{th}, 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 1^{st}-3^{th}, 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. 27^{th}-30^{th}, 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. 23^{th} -27^{th}, 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, 1^{st} - 12^{th}, 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, 13^{th} - 17^{th}, 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} - 12^{th}, 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. 6^{th}-9^{th}, 2018, Sorbonne University, Paris/**France** (as speaker)

Referees

01 — **Dr. Christophe Maes (HDR)**, ***Researcher*** *at* ***IRD/LOPS****, Brest, France*, (christophe.maes@ird.fr)

02 — **Dr. Nicolas Kolodziejczyk (HDR)**, ***Researcher*** *-* ***CLI/LOPS*** *at University of Brest - UBO, Brest, France*, (nicolas.kolodziejczyk@univ-brest.fr)

03 — **Dr. Ian G. Fenty**, ***Scientist at NASA-JPL*** *Earth Science Divisoin, Pasadena, California, U.S.A.*, (ian.fenty@jpl.nasa.gov)

04 — **Dr. Menemenlis Dimitris**, ***Scientist at NASA-JPL*** *Earth Science Divisoin, Pasadena, California, U.S.A.*, (dimitris.menemenlis@jpl.nasa.gov)

05 — **Dr. Bernard Bourlès (HDR)** , ***Research Director*** *at IRD-IMAGO/LOPS and* ***Director*** *of US 191 IMAGO, Brest, France*, (bernard.bourles@ird.fr)

06 — **Dr. Severine Fournier**, ***Scientist at NASA-JPL*** *Earth Science Divisoin, Pasadena, California, U.S.A.*, (severine.fournier@jpl.nasa.gov)

07 — **Dr. William Llovel**, ***Researcher - CLI-CNRS/LOPS*** *, Brest, France*, (william.llovel@univ-brest.fr)