David Marcolino Nielsen

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RESEARCH

I am interested in developing and applying statistical and conceptual models to address questions related to climate variability and change. Formerly, I have worked with hydrological modelling and the dynamics of the South American monsoon. Currently, I am working on representing **Arctic coastal erosion** in the **Max Planck Institute Earth system model** (MPI-ESM) in project Nunataryuk.

EDUCATION

PhD in Earth System Science, May 2021 (expected)
University of Hamburg (UHH) and International Max Planck Research School on Earth System Modelling (IMPRS-ESM), Max Planck Institute for Meteorology (MPI-M), Hamburg, Germany
Advisors: Mikhail Dobrynin (DWD), Johanna Baehr (UHH) and Victor Brovkin (MPI-M).

MSc in Biosystems Engineering, Climate and Meteorology track, 2018
Universidade Federal Fluminense (UFF), Niterói, Brazil.

BSc in Environmental Engineering, 2016
Universidade Federal Fluminense (UFF), Niterói, Brazil.
Exchange year in **BSc Earth Science** and thesis at Vrije Universiteit (VU) Amsterdam, the Netherlands.

EXPERIENCE

LOCEAN Laboratory, Sorbonne Universités, Paris, France — April - August 2018
Internship on identifying decadal variability drivers of the South American monsoon using the LMDZ atmospheric model and climate reanalyses, supervised by Dr. Myriam Khodri.

LAMMOC Laboratory, UFF, Niterói, Brazil — 2015 - 2018
Internship in several R&D projects hired to deliver rainfall and runoff predictions to the energy trading industry in Brazil. Main tasks: a) Operational seasonal climate forecasts; b) Forcing hydrological models with monthly and daily precipitation forecasts; c) Development of statistical runoff models.

Visagio Consulting, Rio de Janeiro, Brazil — 2012 - 2013, and 2014 - 2015
Internship and trainee. Interface between clients and IT team. Business process mapping for management system (SAP ERP) developments. Follow-up on implementations and training users.

ADDITIONAL SKILLS AND EXPERIENCE

Languages Fluent: English, Portuguese and Spanish. Basic: German and French.

Computing Every-day use: **Python**, CDO and simple shell scripts for post-processing and visualization. Formerly: GrADS and Matlab. Some experience with: R and NCL.

Teaching
- Introduction to Meteorology and Climate, teaching assistant, UFF, 2012 - 2013.
- English teacher at Centro Cultural Anglo-Americano (CCAA) in groups of kids and adults, from beginners to intermediate levels. Búzios, Brazil, 2007 - 2009.

Advising
1. Sophie Tessier (co-advisor with Johanna Baehr). Summer internship, UHH, April - August 2019.
2. Vitor Luis Galvez (co-advisor with Marcio Cataldi). BSc Environmental Eng. UFF, 2017
3. Thaís Moreira Guimarães (co-advisor with Marcio Cataldi). BSc Environmental Eng. UFF, 2017
4. Raphaela Fonseca (co-advisor with Marcio Cataldi). BSc Environmental Eng. UFF, 2017
5. Ana Roland Rodrigues Lima (co-advisor with André Belém). BSc Environmental Eng. UFF, 2016

Scholarships & Awards
Best scientific work (orals) at III Biosystems Engineering Workshop. Niterói, Brazil, 2017.
CNPq "Science without Borders" Scholarhip for a year-long study at VU Amsterdam, 2013.

Leadership
Co-organizer of "The Writing Club" for ECRs from UHH and MPI-M, April 2019 - present.
ECR representative in project Nunataryuk ExeCom, 2019 - present.

Field Work Laptev Sea & Lena Delta Expedition, Muostakh and Samoylov Islands, August - September 2019.

ADDITIONAL TRAINING

Earth System Modelling Summer School (EaSyMS), MPIM/UHH, Hamburg, 2018.

PUBLICATIONS

Nielsen DM, Dobrynin M, Baehr J, Razumov S and Grigoriev M. (2020). Coastal erosion variability at the southern Laptev Sea linked to winter sea ice and the Arctic Oscillation. *Geophysical Research Letters*, 47, e2019GL086876, doi.org/10.1029/2019GL086876. Featured in EOS Editor's Highlights

Nielsen DM, Belém AL, Marton E. and Cataldi, M. (2019) Dynamics-based regression models for the South Atlantic Convergence Zone. *Climate Dynamics* 52, 5527–5553, doi.org/10.1007/s00382-018-4460-4

Nielsen DM, Cataldi M, Belém AL and Albuquerque ALS. (2016) Local indices for the South American monsoon system and its impacts on Southeast Brazilian precipitation patterns. *Nat Hazards* 83, 909–928, doi: 10.1007/s11069-016-2355-4.

SELECTED ORAL AND POSTER PRESENTATIONS

Nielsen DM, Baehr J, Brovkin V, Dobrynin M. (2020). Representing Arctic coastal erosion in the Max Planck Institute Earth System Model (Display) *EGU2020 General Assembly*, Vienna, Austria. [Abstract] [Slides]

Nielsen DM, Dobrynin M, Baehr J. (2019). Interannual variability of coastal erosion at the Laptev Sea explained by large-scale atmospheric forcing (Oral) *EGU2019 General Assembly*, Vienna, Austria. [Abstract]

Nielsen DM, Guimarães TM, Pinto YMB, de Sá RV, Cataldi M, Fagundes Filho CAC, Salve G (2017) Evaluation of the monthly precipitation forecasts of the CFSv2 model for the main basins of the Brazilian National Interconnected System (Poster) *VII Simpósio Internacional de Climatologia*, Petrópolis, Brazil.

Guimarães TM, **Nielsen DM**, Vieira AS, Fonseca RC, Cataldi M, Salve G, Fagundes Filho CAC (2017) Evaluation of affluent natural energy simulations using multiple linear regressions and the SMAP conceptual model (Poster) *VII Simpósio Internacional de Climatologia*, Petrópolis, Brazil.

Galves VL, **Nielsen DM**, Cataldi M. (2017) The influence of the ENSO on the configuration of the South Atlantic Convergence Zone on its different acting regions (Poster) *VII Simpósio Internacional de Climatologia*, Petrópolis, Brazil.

Nielsen DM, Lima ARR, Belém AL, Cataldi M. (2016) Objective method for quantifying the atmospheric dynamics associated with the South Atlantic Convergence Zone (Oral - in Portuguese) *III Biosystems Engineerin Workshop*, Niterói, Brazil. Awarded "Best scientific work (orals)".

Nielsen DM, Belém AL, Cataldi M. (2015) A statistical search for the South Atlantic Convergence Zone signature-variables (Oral - in Portuguese) *Workshop ZCAS/Monção*, CPTEC/INPE Cachoeira Paulista, Brazil.

Pinto YMB, Vasconcelos GS, **Nielsen DM**, Rangel RHO, Graça FFE, Sancho LMB, de Sá RV, Graciliano RP, Cataldi M. (2015) Operational Implementation of Model CAM 3.1 for Seasonal Climate Forecasts at UFF and UFRJ (Poster) *VI Simpósio Internacional de Climatologia*, Natal, Brazil.

REFERENCES

Dr. Mikhail Dobrynin
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Bernhard-Nocht-Str. 76, 20359 Hamburg
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Tel: +49 40 42838-2996

Prof. Dr. Johanna Baehr
PhD Co-adviser
Institute of Oceanography, University of Hamburg
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