Flora **Desmet**

Ph.D in Environmental Sciences
Mechanical Engineer

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Zürich, Switzerland Born 1995 (age 27) | French

Education

December 2022 – September 2018 | **Ph.D in Environmental Sciences, Swiss Federal Institute of Technology in Zürich (ETHZ), Switzerland**
Title : "*Ocean acidity extremes and their spatiotemporal evolution, a high-resolution modeling study in the northeast Pacific*". Under the guidance of Prof. Dr. Nicolas Gruber.
climate change | extreme events | ocean modeling | large spatiotemporal datasets analysis

June 2018 – January 2018 | **Master thesis in signal processing, Collaboration between LAMCOS Insa Lyon, FEMTO-ST and La Sapienza University, France**
- Title : "*Instrumented 3D printed artificial finger and touch perception*"

signal processing | 3D printing

June 2017 – September 2016 | **Full year academic exchange, Lunds Tekniska Högskola (LTH), Sweden**
numerical modeling | fluid mechanics | hydromechanics

June 2018 – September 2013 | **B.S./ M.S. in Mechanical Engineering, Institut National Des Sciences Appliquées de Lyon (INSA Lyon), France**
- Two-year undergraduate intensive course in physics, mathematics and chemistry Ranking : 16/650 students
- Three-year undergraduate engineering course, specialising in Mechanical engineering.

mechanical conception | finite element method | thermodynamics

Professional appointments

December 2022 – April 2023 | **Postdoctoral researcher, Swiss Federal Institute of Technology in Zürich (ETHZ), Switzerland**
Environmental Physics group
climate change | extreme events | ocean modeling | large spatiotemporal datasets analysis

December 2017 – July 2017 | **R&D intern, Acri-IN, France**
Analyses of the dampening efficiency of protective structures against the swell, using Reynolds-averaged Navier-Stokes equations (RANS) numerical modeling. Development of a numerical wave tank for the company use, on coastal structures projects and offshore projects
wave models | turbulence | numerical modeling | static and dynamic mesh

August 2016 – July 2016 | **R&D intern, SKF Benelux Research Centre, Netherlands**
Wind turbines tribology experimental research
renewable energy | laboratory research

Publications

Peer reviewed

- **Desmet, F.**, Gruber, N., Köhn, E. E., Münnich, M., Vogt, M. (2022). Tracking the space-time evolution of ocean acidification extremes in the California Current System and Northeast Pacific. *Journal of Geophysical Research : Oceans, 127*. doi:10.1029/2021JC018159
- Köhn, E. E., Münnich, M., Vogt, M., **Desmet, F.**, Gruber, N. (2022). Strong habitat compression by extreme shoaling events of hypoxic waters in the Eastern Pacific. *Journal of Geophysical Research : Oceans, 127*. doi:10.1029/2022JC018429

Proceedings

- **Desmet, F.**, Raffourt, C., Magnin, A. (2018). Porous media subjected to the swell : specific surface, arrangement and shape parameter of porous media. *XVth National coastal engineering days*. doi:10.5150/jngcgc.2018.048.

Unpublished work

- **Desmet, F.**, Gruber, N., Münnich, M., Anthropogenically forced heterogeneous increase in ocean acidity extremes in the northeast Pacific.
- **Desmet, F.**, Gruber, N., Münnich, M., On the role of climate modes in modulating ocean acidity extremes in the northeast Pacific.

Conference contributions

Talks

February 2022	Ocean Sciences Meeting 2022 (online attendance). *Towards the prediction of pH-Aragonite extreme events along the U.S. West Coast*.
October 2021	IMBIZO6 Workshop (online attendance). *Decadal-modulation of ocean acidification extreme events in the California Current System*.
April 2021	13th Institute of Biogeochemistry and Pollutant Dynamics PhD Congress (online attendance). *Space-time marine acidification extremes in the Northeast Pacific : diversity and drivers*.

Poster presentations

September 2022	20th International Swiss Summer School, Grindelwald, Switzerland. *Climate change increases the severity of marine acidification extreme events.*.
April 2022	14th Institute of Biogeochemistry and Pollutant Dynamics PhD Congress, Zürich, Switzerland. *Anthropogenically forced increase in acidification extreme conditions in the Northeast Pacific ocean modulated by climate modes.*.
October 2020	IBS Conference on High-Resolution Earth System Modeling, Busan, South Korean (online attendance). *On the role of mesoscale processes for the formation of ocean acidification extreme events in a North Pacific high-resolution regional model.*.
September 2020	COMFORT European Union Horizon 2020 project annual meeting, Online. *Diversity, spatio-temporal distribution and drivers of 4D acidification extreme events in the North Pacific.*.
June 2019	12th Institute of Biogeochemistry and Pollutant Dynamics PhD Congress, Eawag, Dübendorf, Switzerland. *Ocean acidification extreme events in the California Current System.*.
April 2019	Integrated Marine Biosphere Research (IMBeR), Brest, France. *Ocean acidification extreme events in the California Current System.*.

Teaching and Mentoring

April 2022 September 2021	**Supervision of Marcel Scheiwiller for his Master Thesis, ETHZ, Switzerland** Title : *When severe pH-Aragonite-Oxygen extremes follow important Marine Heat Waves in the California Current System*
June 2021 September 2020	**701-1303-00L Term Paper 1 : Writing, ETHZ, Switzerland** Supervision of Marc Reusser for his term paper on *Ocean acidification in the Californian Current System and the contribution of climate variability*

February 2021 September 2020	**Co-supervision of Joëlle Perreten for her Master Thesis, ETHZ, EPFL, Switzerland** Title : *Model analysis of ocean compound extreme events in the North-Eastern Pacific*
August 2020 January 2019	**701-1317-00L Global Biogeochemical Cycles and Climate, ETHZ, D-USYS, Switzerland** Graduate course. Teaching Assistant.
December 2020 September 2018	**701-0033-00L Laboratory Course in Physics for Students of Environmental Sciences, ETHZ, D-USYS, Switzerland** Undergraduate course. Teaching Assistant.

Workshops and further training

2022 20th International Swiss Summer School, Bern University and Oeschger Center, Switzerland. *Extreme weather and climate : from atmospheric processes to impacts on ecosystems and society*
2022 Climate Change and AI summer school, Climate Change AI
2021 IMBIZO6 workshop, IMBeR. Marine biosphere research : Buoyant solutions for ocean sustainability
2020 Course "Enabling Entrepreneurship : From Science to Startup", ETHZ

Programming

Programming languages **Python**, Matlab, Bash, C++

Softwares

TRACE-X 2021
github.com/fDesmet/TRACEX
A Python code that detects and tracks in time spatially (3D) coherent structures of extreme conditions in large model output, such as Earth System Models output.
Python

Languages

French ●●●●●
English ●●●●●
Spanish ●●●○○
German ●○○○○

Hobbies

- Sailing *(Skipper course, Les Glénans)*, ski touring *(Piz Tomül (2946m), Pizzo Centrale (2999m), Wissigstock (2887m), Tällihorn (2855m), Rote Totz (2847m))*, volleyball playing *(three participation in the French championships)*, biking *(biking trip in Norway : 200 km in 7 days carrying food and tent)*, scuba-diving *(first level)*
- Volunteer in a scientific cruise in the Arctic, two weeks in the Fram Strait collecting water and ice samples (September 2019, Fram Strait 2019 expedition, aboard R/V Kronprins Haakon, organized by the Norwegian Polar Institute, Tromsø, Norway)
- Volunteer at Raid INSA Lyon – Orange in the logistic team - 200 participants, 30 team members, 60k € budget