Farid Ait-Chaalal, PhD French and British citizen

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Work experience

05.2016 - present

Moody's RMS (Risk Management Solutions), London, UK
Moody's RMS has been an industry-leading risk management solutions for insurers, reinsurers, financial services organizations, and the public sector for over 30 years.

Associate Director *(10/2023 - present)*; *Principal modeller (12/2021 - 09/2023)*; *Lead modeller (12/2018 - 11/2021)*; *Senior modeller (11/2017 - 11/2018)*; *Modeller (05/2016 - 10/2017)*

I have been collaborating on several weather and climate risks R&D projects:

- North America winter storm hazard modelling (lead).
- Wind hazard for European windstorms (dynamical and statistical modelling, hazard and loss calibration, client requests).
- Effects of climate change on winter storms losses.
- Cross-peril correlation between wind and flood.
- Drought hazard for the financial sector.
- Transition risks and carbon emissions.

01.2014 - 03.2016

ETH, Zürich, Switzerland
Postdoctoral research associate in climate dynamics

- Investigated novel approaches to computing climate statistics.
- Conducted fundamental research in atmospheric dynamics (numerical modelling and theory).
- Updated a high-performance atmospheric general circulation model.

12.2011 - 12.2013

Califronia Institue of Technology, Pasadena, California, USA
Brown University, Providence, Rhode Island, USA
Joint postdoctoral position in climate dynamics and theoretical physics

Relocation of the research group from Caltech to ETH Zürich in 2013.

09.2006 - 12.2011

McGill University, Montreal, Quebec, Canada
Graduate research position in atmospheric sciences

- Used statistical approaches to understand chemical reactions in chaotic flows.
- Developed a code to compute chemical reactions in turbulent flows.

04.2005 - 07.2005

Ouranos and **UQAM**, Montreal, Quebec, Canada
Internship

- Developed a code to process large meteorological data sets with an artificial neurons network in order to determine modes of variability of the Arctic climate.

Leadership

2016 - present

Member of the board, *Climanosco,* Swiss non-profit association to make state-of-the-art climate science free and accessible to everyone.

06.2012 - 03.2015

Lead co-organiser of the workshop *Theoretical Advances in Planetary Flows and Climate Dynamics* (Les Houches, France, March 1-6 2015). Initiated the project, designed the scientific program, and led the practical organisation.

09.2006 - 06.2011

Assisted in teaching 8 undergraduate or graduate courses in geophysical fluid dynamics, turbulence, climate dynamics and meteorology. **Co-supervised** research projects.

06.2006 - 05.2007

President of the atmospheric and oceanic sciences graduate students society at McGill University. Organised events for the student community, represented the student body before the faculty, helped new students to relocate in Montreal.

Technical skills

Advanced knowledge of **climate and weather numerical models** (including running them), of CMIP models, of reanalysis products, and of various climate and weather data sets. Very solid **mathematical and statistical skills**. Learning **Machine Learning and AI** algorithms.

Computer: Advanced knowledge of Linux, R, Fortran, and Latex. Solid experience with HPC clusters. Experience with Python.

Languages: French (native), English (fluent), Spanish (elementary proficiency), German (elementary proficiency), Italian (Duolingo proficiency)

Certifications: RMS CCRA® (Certified Catastrophe Risk Analyst).

Education

McGill University, Montréal, Canada

02.2007 - 11.2011 **Doctor of Philosophy**, *Atmospheric and Oceanic Sciences*
"Bimolecular Chemical Reaction in a Two-Dimensional Navier-Stokes Flow"

Thesis graded respectively in the top 10% and top 25% by the two examiners.

09.2005 - 01.2007 **Master of Science** program, *Atmospheric and Oceanic Sciences*
Transfer to the PhD program in 2007 (GPA 3.8/4.0)

Geophysical fluid dynamics, ocean dynamics, turbulence, climate dynamics, synoptic meteorology, mathematical statistics.

Ecole Polytechnique, Palaiseau, France

09.2004 - 06.2005 **Master of Science & "Diplôme d'ingénieur de l'Ecole Polytechnique"**
Majors in fluid mechanics and Earth sciences.

09.2002 - 08.2004 **Bachelor of Science**
Mathematics, applied mathematics, physics, mechanics, computer sciences.

Publications

L. Novak, T. Schneider, and F. Ait-Chaalal, 2020: **Midwinter suppression of storm tracks in an idealized zonally symmetric setting**, Journal of the Atmospheric Sciences, **77**, 297-313.

F. Ait-Chaalal, T. Schneider, B. Meyer and JB. Marston, 2016: **Cumulant expansions for atmospheric flows**, New Journal of Physics, **18**, 025019.

F. Ait-Chaalal and T. Schneider, 2015: **Why eddy momentum fluxes are concentrated in the upper troposphere**, Journal of the Atmospheric Sciences, **72**, 2744-2761.

F. Ait-Chaalal, M.S. Bourqui and P. Bartello, 2012: **Fast chemical reaction in two-dimensional Navier-Stokes flow: initial regime.**, Physical Review E, **85**, 046306.

Miscellaneous

- Visiting researcher at the Aspen Center for Physics (07.2012), and at the Kavli Institute for Theoretical Physics (04.2014 – 05.2014).

Interests

- Sports (long-distance and trail running, cycling, climbing, ski touring, mountaineering).
- Photography (nature and urban landscapes, street photography, architecture, travels). Portfolio: https://www.faridaitchaalalphoto.com/