## Leone Cavicchia: Curriculum Vitae

(November 2021)

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## Professional experience

- September 2021 : CMCC Foundation (Italy) *Scientist*.
  - Development of AI algorithms for the detection, causation and attribution of extreme events.
- May 2020 August 2021: Honorary Research Fellow (University of Melbourne); Freelance data scientist.
- February 2017 April 2020: **The University of Melbourne** (Australia) *Research Fellow.* 
  - ✓ Analysis of extreme weather projections in Australia within the National Environmental Science Programme.
  - Design and implementation of algorithms for the classification of Australian East Coast Lows.
  - ✓ Engagement with industry and government stakeholders.
- Sept 2012 Dec 2016: CMCC Foundation (Italy) Postdoctoral Research Fellow.
  - Development of a coupled Regional Climate Model and production of CORDEX simulations.
  - ✓ Investigated the climatology of Mediterranean tropical-like cyclones (medicanes).
  - Coordinated and contributed to the analysis of extreme events in ensembles of climate models.
- Feb Aug 2009: Value-UP (Italy) Scientific consultant.

# Education

- 2020: Data Science Bootcamp, LeWagon (London). Machine Learning and Deep Learning algorithms, theory and Python implementation.
- 2013: PhD in "Science and management of climate change" awarded from University Ca' Foscari, Venice, Italy with *Doctor Europaeus* mention. Thesis title: "A long-term climatology of medicanes".
- 2009 2012: PhD research in Climate Science, HZG Helmoltz-Zentrum Geesthacht (Germany) and CMCC Foundation (Italy).
- 2005 2008: PhD research in theoretical physics, Scuola Normale Superiore, Pisa, Italy.
- 2005: graduation in Physics *cum laude*, La Sapienza University, Rome, Italy.

## Skills and expertise

### Computing skills:

- Advanced coding in Python, including machine learning algorithms and neural networks.
- Extensive experience with data-manipulation in Matlab.
- High Performance Computing and Cloud Computing: extensive experience of climate data production and management on several supercomputer systems.
- Climate data tools: CDO, NCO, NCL.
- Shell scripting and Fortran coding.

### Publication record:

- Main metrics of publications in scientific journals (full list attached): more than 450 citations, h-index of 10 (source: Google Scholar).
- Extensive experience in project reports, technical documentation and stakeholder briefings.

### Project scoping and management:

- Experience in drafting project proposals, both as a Principal Investigator and as a participant in large collaborative projects.
- Experience in project proposal evaluation.
- Board member of Eurodoc, the European Council of Doctoral Candidates and Junior Researchers with project management duties.

#### Editorial responsibilities:

- Served as a peer reviewer for the following journals: Climate dynamics, Journal of Climate, Monthly Weather Review, Geophysical Research Letters, Quarterly Journal of the Royal Meteorological Society, Scientific Reports, Atmospheric Research, Natural Hazards and Earth System Sciences, Meteorology Hydrology and Water Management, Global and Planetary Change, Atmosphere, Pure and Applied Geophysics, Annals of the New York Academy of Science, International Journal of Climatology, Weather and Climate Extremes.
- Guest editor in a special issue of Atmosphere.

### **Teaching and supervision:**

- Atmosphere Ocean Interaction (ATOC30003) University of Melbourne, 2019
- Wonders of the Weather (ATOC10001) University of Melbourne, 2019
- Blue Planet Intro to Marine Environments (EVSC2004) University of Melbourne, 2020
- Contributed to supervise one master student and one PhD candidate

### Publications

#### Peer reviewed:

- M. Reale, E. Flaounas, E. Sanchez, S. Somot, F. Giorgi, P. Lionello, E. Coppola, S. Salon, E. Scoccimarro, D. Conte, Z. Prodrascanin, W. Cabos, D. Sein, L. Li, <u>LC</u>, S. Gualdi, A. Hochman: Future projections of Mediterranean cyclone characteristics using the Med-CORDEX ensemble of coupled regional climate system models. *Climate Dynamics*, submitted (2021).
- F. Alemseged, A. Rocco, F. Arba, J. P. Schwabova, T. Wu, <u>LC</u>, F. Ng, J. L. Ng, H. Zhao, C. Williams, F. Sallustio, A. Balabanski, A. Tomek, M. Parsons, P. Mitchell, N. Yassi, M. Diomedi, L. Churilov, S. Davis, and B. Campbell: The posterior National Institutes of Health Stroke Scale improves prognostic accuracy in posterior circulation stroke. *Stroke*, submitted (2021).
- 3. <u>LC</u>, A. Pepler, A. Dowdy, J. Evans, A. Di Luca, K.Walsh: Future Changes in the Occurrence of Hybrid Cyclones: The Added Value of Cyclone Classification for the East Australian Low-Pressure Systems. *Geophysical Research Letters* 47, 2019GL085751 (2020).
- 4. A. Dowdy, A.Pepler, A. DiLuca, <u>LC</u>, G. Mills, J. Evans, S. Louis, K. McInnes, K, Walsh: Review of Australian east coast low pressure systems and associated extremes. *Climate Dynamics* 53, 4887-4910 (2019).
- 5. <u>LC</u>, A. Pepler, A. Dowdy, K.Walsh: A Physically Based Climatology of the Occurrence and Intensification of Australian East Coast Lows. *Journal of Climate* 32, 2823-2841 (2019).
- S. Darmaraki, S. Somot, F. Sevault, P. Nabat, W. D. N. Cabos, <u>LC</u>, V. Djurdjevic, L. Li, G. Sannino, D. Sein: Future evolution of Marine Heat Waves in the Mediterranean Sea. *Climate Dynamics* 53, 1371-1392 (2019).
- 7. H. von Storch, LC, F. Feser, D. Li: The Concept of Large-Scale Conditioning of Climate Model

Simulations of Atmospheric Coastal Dynamics: Current State and Perspectives. *Atmosphere* 9, 337 (2018).

- 8. <u>LC</u>, A. Dowdy, K.Walsh: Energetics and dynamics of subtropical Australian east coast cyclones: Two contrasting cases. *Monthly Weather Review* 146, 1511-1525 (2018).
- <u>LC</u>, E. Scoccimarro, S. Gualdi, P. Marson, B. Ahrens, S. Berthou, D. Conte, A. Dell'Aquila, P. Drobinski, V. Djurdjevic, C. Dubois, C. Gallardo, L. Li, P. Oddo, A. Sanna, C. Torma: Mediterranean extreme precipitation: a multi-model assessment, *Climate Dynamics* 51, 901-913 (2018).
- A. Dell'Aquila, A. Mariotti, S. Bastin, S.Calmanti, <u>LC</u>, M. Deque, V. Djurdjevic, M. Dominguez, M. Gaertner, S. Gualdi: Evaluation of simulated decadal variations over the Euro-Mediterranean region from ENSEMBLES to Med-CORDEX, *Climate Dynamics* 51, 857-876 (2018).
- 11. A. Harzallah, G. Jordà, C. Dubois, G. Sannino, A. Carillo, L. Li, T. Arsouze, <u>LC</u>, J. Beuvier, N. Akhtar: Long term evolution of heat budget in the Mediterranean Sea from Med-CORDEX forced and coupled simulations, *Climate Dynamics* 51, 1145-1165 (2018).
- 12. <u>LC</u>, H. von Storch, S. Gualdi: Mediterranean Tropical-Like Cyclones in Present and Future Climate, *Journal of Climate* 27, 7493–7501 (2014).
- 13. <u>LC</u>, H. von Storch and S. Gualdi: A long-term climatology of medicanes, *Climate Dynamics* 43, 1183-1195 (2014).
- 14. <u>LC</u> and H. von Storch: The simulation of medicanes in a high-resolution regional climate model, *Climate Dynamics* 39, 2273-2290 (2012).
- 15. <u>LC</u>: The NMSSM with *mh*>115 GeV and a moderate stop mass, *Nuclear Physics B* 813, 123–139 (2009).
- 16. <u>LC</u>, R. Franceschini, V. S. Rychkov: Supersymmetry without a light Higgs boson at the CERN LHC, *Physical Review D* 77, 055006 (2008).

#### **Book Chapters:**

- 17. Chapter author in: *Oxford Research Encyclopedia of Climate Science,* Oxford University Press 2021 (in preparation).
- 18. Chapter author in: *The Mediterranean Region Under Climate Change. A Scientific Update,* IRD Editions 2016 (ISBN: 978-2-7099-2219-7).
- 19. Chapter lead in *Climate change adaptation and disaster risk reduction in Europe,* edited by the European Environmental Agency 2017. (ISBN: 978-92-9213-893-6).

#### Technical/project reports:

- 20. <u>LC</u>, S. Gualdi, A. Sanna, P. Oddo: <u>The regional ocean-atmosphere coupled model COSMO-NEMO MFS</u>, *CMCC Research Paper*, RP0254 (2015).
- 21. <u>LC</u>: Assessment of the climate change signal uncertainty over the Orientgate area, ORIENTGATE project technical report (2013).

## Public talks (selected)

- Medclivar conference, *Lecce*, June 2011.
- 13<sup>th</sup> Plinius conference on Mediterranean storms, *Savona Italy*, September 2011.
- Deutsche Meteorologische Gesellschaft Kolloquium, *Hamburg Germany*, October 2012: invited talk.
- 14<sup>th</sup> Plinius conference on Mediterranean storms, *Palma de Mallorca Spain*, November 2012.
- 4<sup>th</sup> International summit on hurricanes and climate change, *Kos Greece*, June 2013.
- 12<sup>th</sup> International meeting on statistical climatology, *Jeju Republic of Korea*, June 2013.
- EGU 2014, Vienna Austria, May 2014.
- Baku World Science Forum of Young Scientists, *Baku Azerbaijan*, May 2014: invited presentation.
- Medclivar conference 2014, *Ankara Turkey*, June 2014.
- 8<sup>th</sup> Hymex Workshop, *La Valletta Malta*, September 2014.
- Meteorology department, *Reading UK*, March 2015: invited talk.
- 9<sup>th</sup> Hymex Workshop, *Mykonos Greece*, September 2015.
- HyMex-Baltic Earth Workshop, *Rome Italy*, November 2015.
- Medclivar conference 2016, *Athens Greece*, September 2016.
- 6<sup>th</sup> International summit on hurricanes and climate change, *Heraklion Greece*, June 2017.
- Joint AMOS -ICHSMO, Sydney Australia, February 2018.
- EGU 2018, Vienna Austria, May 2018.
- AGU Fall Meeting, San Francisco USA, December 2019.