PERSONAL INFORMATION

Franco Catalano

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- Google scholar profile: https://scholar.google.it/citations?user=o-Xosr8AAAAJ
- Scopus: https://www.scopus.com/authid/detail.uri?authorId=36135473500

Sex Male | *Date of birth* 21/09/1981 | *Nationality* Italian

Enterprise	University	EPR
☐ Management Level	☐ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	**X Level III Researcher** and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

From 01/02/2019-present

Research Scientist

ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Climate Modelling and Impacts Laboratory

- Seasonal to inter-annual climate variability and predictability;
- Interactions and feedbacks between atmosphere and land-surface;
- Multi-model prediction methodologies for climate services;
- Responsible of the ENEA contribution to the EC-Earth Consortium for the development of the European Earth System Model;
- Responsible of the ENEA contribution to CMIP6 climate projections.

From 01/07/2010 to 31/01/2019

Postdoctoral Researcher

ENEA - Climate Modelling and Impacts Laboratory

CINECA - Inter-University Consortium for Research HPC applications

Sapienza University of Rome, Department of Civil and Environmental Engineering

- Global climate variability and predictability;
- Development of the Earth System Model EC-Earth and the land-surface model HTESSEL;
- Contribution to H2020 CRESCENDO, SECLI-FIRM and EU-FP7 SPECS projects;
- Orographic winds dynamics and the Urban Heat Island phenomenon;
- Large Eddy Simulation with WRF (Weather Research and Forecasting) model;
- Laboratory-scale (water tank) measurements;
- Teaching and supervision of graduate and undergraduate students.

Visiting Research Fellow

From 08/03/2010 to 11/06/2010

UCLA - University of California, Los Angeles, Institute for Pure and Applied Mathematics (IPAM)

- Grantee core participant to the NSF-funded long program “Model and Data Hierarchies for Simulating and Understanding Climate”.

From 13/10/2008 to 13/01/2009

NCAR - National Center for Atmospheric Research, Mesoscale and Microscale Meteorology (MMM) division

- Grantee of the NSF-funded NCAR Graduate Student Visitor program to develop the project: Large Eddy Simulation (LES) of the turbulence of a valley flow using WRF.

From 02/01/2008 to 30/11/2008

Research Fellow

University of Naples Federico II, Department of Aerospace Engineering

- Development of mesoscale models for the research project: “Pollutants dispersion in urban areas under the typical climate of mediterranean regions”, funded by Italian Ministry for University;
- Atmospheric turbulence and pollutants field measurements with weather balloon.

EDUCATION AND TRAINING

From 01/11/2006 to 14/06/2010

PhD in Hydraulic Engineering

Level 8EQF

Sapienza University of Rome

- Title of the dissertation: High resolution numerical modeling of the atmospheric circulation over complex terrain

From 01/09/2004 to 26/05/2006

Master degree in Civil and Environmental Engineering

Level 7EQF

Score: 110/110 cum laude

Sapienza University of Rome

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s) English (C1), Spanish (B2)

Digital skills

- Good command of UNIX environment, in particular Linux;
- Strong expertise with various HPC systems;
- programming languages: Bash, Ksh, NCL, Matlab, Fortran, C++, R, Python;
- development of parallel computing codes using MPI, OpenMP and parallel R libraries;
- large datasets management: NetCDF, GRIB, CMOR, CDO, NCO, GRIBEX, ECCODES;
- Development of Global and Regional climate models: EC-Earth, WRF.

Other skills

- Field and laboratory-scale meteorological measurements
- Caving Instructor of the Italian Speleological Society (SSI)

WORK ACTIVITIES

Selected projects

- 2022-ongoing: PNRR ICSC Earth & Climate (Spoke 4) Research Program
- 2018-2021: HORIZON 2020 SECLI-FIRM (the added value of Seasonal Climate Forecasting for Integrated Risk Management).
- 2018-2020: HORIZON 2020 S2S4E (Sub-seasonal to seasonal climate predictions for energy).
- 2016-2021: Responsible of the ENEA contribution to LS3MIP (Land Surface, Snow and Soil Moisture) experiment of CMIP6 (Coupled Models Intercomparison Project Phase 6).
- 2015-2021: HORIZON 2020 CRESCENDO (Coordinated Research in Earth Systems and Climate : Experiments, kNowledge, Dissemination and Outreach).
- 2019-2021: ECMWF Special project “Towards seamless development of land processes for Earth System prediction and projection”.
- 2012-2017: EU-FP7 SPECS (Seasonal-to-decadal climate Prediction for improvement of European Climate Services).
- 2010-2011: funded by NSF (National Science Foundation) through IPAM “Model and Data Hierarchies for Simulating and Understanding Climate”.
- 2008-2009: funded by NSF through NCAR “Large Eddy Simulation of the turbulence of a valley flow using WRF”.

Tutoring activities

- Teaching and supervision of graduate and undergraduate students during my post-doc contracts at Sapienza University of Rome.
- Co-supervisor of 3 degree and master degree thesis in Environmental Engineering
- Co-supervisor of 1 PhD Thesis in Hydraulics Engineering.

Editorial activity

- Reviewer for: Journal of Climate, Journal of Hydrometeorology, Weather and Forecasting, Journal of Geophysical Research-Atmospheres, Journal of the Atmospheric Sciences, Journal of Applied Meteorology and Climatology, Bulletin of the American Meteorological Society, Climate Dynamics, Hydrology and Earth System Science, Boundary Layer Meteorology, Geophysical Research Letters, Environmental Research Letters, Physics of Fluids
- Expert reviewer of the IPCC Sixth Assessment Synthesis Report (AR6 SYR)
- Evaluator for Italian National Research projects PRIN 2020

Invited presentations

- **Catalano F.**: Skill of seasonal forecasting and multi-model combinations: MME combination and independence, Summer School: Mastering the development of a climate service from start to end, Session 3, online, 28/09/2021, recorded session available at: https://www.youtube.com/watch?v=GtKcye0sEtE&list=PLIlrYnvezIVqTYPRsS5V59yKQ1fzgnw0l&index=28
- **Catalano F.**, Alessandri A., De Felice M., Lee J.-Y., Wang B., Lee D. Y., Yoo J.-H., 2016: Grand European and Asian-Pacific Multi-Model Seasonal forecasts: Maximization of Skill and of Potential Economical Value to End-Users. ECOMS International Conference on Climate Science and Climate Services, Exeter, UK, 5-7 October 2016.
- **Catalano F.**, 2011: Large-Eddy Simulation of the idealized Urban Heat Island circulation. Climate modeling reunion conference for the program: Model and Data Hierarchies for Simulating and Understanding Climate, IPAM, UCLA, Lake Arrowhead (CA), 11 - 16 December 2011.
- **Catalano F.**, 2010: Microscale modeling of the valley circulation. Department of Civil and Environmental Engineering, University of Trento, Trento (Italy), 14 December 2010.
- **Catalano F.**, 2010: Turbulence structure in a valley investigated by Large Eddy Simulation. Culminating conference for the program: Model and Data Hierarchies for Simulating and Understanding Climate, IPAM, UCLA, Lake Arrowhead (CA), 7 June 2010.
- **Catalano F.**, 2010: Large Eddy Simulation of the thermally driven circulation over variable orography. JPL, CALTECH, Pasadena (CA), 18 May 2010.

Grants

- 2010: Grantee core participant to the NSF-funded long program “Model and Data Hierarchies for Simulating and Understanding Climate”.
- 2008-2009: Grantee of the NSF-funded NCAR Graduate Student Visitor program to develop the project: Large Eddy Simulation (LES) of the turbulence of a valley flow using WRF.
- 2006-2010: Ministry of University PhD grant.

ADDITIONAL INFORMATION

Peer-reviewed publications

Bibliometric indices (Scopus):
h-index: **10**
total citations: **461**

- Alessandri A., **Catalano F.**, De Felice M., van den Hurk B., Balsamo G., 2021: Varying snow and vegetation signatures of surface-albedo feedback on the Northern Hemisphere land warming. Environmental Research Letters 16, 034023, doi:10.1088/1748-9326/abd65f
- Döscher, R., Acosta, M., Alessandri, A., Anthoni, P., Arneth, A., Arsouze, T., Bergmann, T., Bernadello, R., Bousetta, S., Caron, L.-P., Carver, G., Castrillo, M., **Catalano, F.**, Cvijanovic, I., Davini, P., Dekker, E., Doblas-Reyes, F. J., Docquier, D., Echevarria, P., Fladrich, U., Fuentes-Franco, R., Gröger, M., v. Hardenberg, J., Hieronymus, J., Karami, M. P., Keskinen, J.-P., Koenigk, T., Makkonen, R., Massonnet, F., Ménégoz, M., Miller, P. A., Moreno-Chamarro, E., Nieradzik, L., van Noije, T., Nolan, P., O’Donnell, D., Ollinaho, P., van den Oord, G., Ortega, P., Prims, O. T., Ramos, A., Reerink, T., Rousset, C., Ruprich-Robert, Y., Le Sager, P., Schmith, T., Schrödner, R., Serva, F., Sicardi, V., Sloth Madsen, M., Smith, B., Tian, T., Tourigny, E., Uotila, P., Vancoppenolle, M., Wang, S., Wårlind, D., Willén, U., Wyser, K., Yang, S., Yepes-Arbós, X., and Zhang, Q., 2021: The EC-Earth3 Earth System Model for the Climate Model Intercomparison Project 6, Geosci. Model Dev., https://doi.org/10.5194/gmd-2020-446
- Alessandri A., De Felice M., **Catalano F.**, Lee J.-Y., Wang B., Lee D. Y., Yoo J.-H., Weisheimer A., 2018: Grand European and Asian-Pacific multi-model seasonal forecasts: maximization of skill and of potential economical value to end-users. Clim. Dyn. 50, 2719-2738, doi:10.1007/s00382-017-3766-y
- Alessandri A., **Catalano F**., De Felice M., van den Hurk B., Doblas-Reyes F., Boussetta S., Balsamo G., Miller P. A., 2017: Multi-scale enhancement of climate prediction over land by increasing the model sensitivity to vegetation variability in EC-Earth. Clim. Dyn., 49, 1215-1237, doi:10.1007/s00382-016-3372-4

- **Catalano F.**, Alessandri A., De Felice M., Zhu Z., Myneni R. B., 2016: Observationally based analysis of land-atmosphere coupling. Earth Syst. Dynam., 7, 251-266, doi:10.5194/esd-7-251-2016
- Fan Y., Li Y., Wang X., **Catalano F.**, 2016: A new convective velocity scale for studying diurnal urban heat island circulation. J. Appl. Meteor. Climatol. 55, 2151–2164, doi: 10.1175/JAMC-D-16-0099.1
- Alessandri A., **Catalano F.**, 2016: Lo studio del cambiamento globale e della predicibilità climatica in ENEA tramite l'utilizzo di modelli del Sistema Terra. Energia, Ambiente e Innovazione, 1, doi:10.12910/EAI2016-010
- Falasca S., **Catalano F.**, Moroni M., 2016: Numerical Study of the Daytime Planetary Boundary Layer over an Idealized Urban Area: Influence of Surface Properties, Anthropogenic Heat Flux, and Geostrophic Wind Intensity. J. Appl. Meteor. Climatol., 55, 1021-1039, doi:10.1175/JAMC-D-15-0135.1
- Amicarelli A., Di Bernardino A., **Catalano F.**, Leuzzi G., Monti P., 2015: Analytical Solutions of the Balance Equation for the Scalar Variance in One-Dimensional Turbulent Flows under Stationary Conditions, Adv. Math. Phys., vol. 2015, Article ID 424827, doi:10.1155/2015/424827
- De Felice M., Alessandri A., **Catalano F**., 2015: Seasonal Climate Forecasts for medium-term Electricity Demand Forecasting, Applied Energy. 137, 435-444, doi:10.1016/j.apenergy.2014.10.030
- **Catalano F.**, Moroni M., Dore V. and Cenedese A., 2012: An alternative scaling for unsteady penetrative free convection. J. Geophys. Res. 117, D18102, doi:10.1029/2012JD018229
- **Catalano F.**, Cenedese A., Falasca S., and Moroni M., 2012: Numerical and experimental simulations of local winds. National security and human health implications of climate change, H. Fernando, Z. Klaiic, and J. L. McCulley, Eds., Springer. pp. 199-218. doi:10.1007/978-94-007-2430-3_17
- **Catalano F.** and Moeng C.-H., 2010: Large-Eddy Simulation of the daytime boundary layer in an idealized valley using the Weather Research and Forecasting numerical model. Boundary-Layer Meteor. 137, 49-75. DOI: 10.1007/s10546-010-9518-8
- **Catalano F.** and Cenedese A., 2010: High resolution numerical modeling of thermally driven slope winds in a valley with strong capping. J. Appl. Meteor. Clim. 49, 1859-1880. DOI: 10.1175/2010JAMC2385.1
- **Catalano F.**, 2010: High resolution numerical modeling of the atmospheric circulation over complex terrain. Ph.D. Dissertation, Sapienza University of Rome, Italy, 112 pp.

Roma, 05/10/2023