Christina Kalogeri

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Synopsis

Dr. Christina Kalogeri received her PhD on the combined exploitation of offshore wind and wave energy resource in 2017. She has been working as a research associate at the Atmospheric Modeling and Weather Forecasting Group (AMW&FG) of the National and Kapodistrian University of Athens (NKUA), since 2008. She has experience in atmospheric and air pollution/dust modeling, wave modeling, weather forecasting and high-resolution wind and wave energy resource assessments. She is responsible for the operational weather forecasting system SKIRON and the operational wave forecasting system WAM/UOA that operates at the NKUA. She has participated in several projects funded by the EU and the Greek Government as a researcher. She has been also responsible for the development and operational use of a Weather Analysis and Sea State Forecast system for Saudi Aramco (WASSF). She has participated in meteorological modeling and training projects in the Middle East, funded by the Civil Aviation Authority of Qatar and the National Center of Meteorology of Saudi Arabia (NCM). She has 19 publications in peer reviewed scientific journals, more than 25 papers in conference proceedings, two contributions in book chapters and also teaching and hands-on training experience on wave, atmospheric and dust modeling.

Education

- **PhD**, University of Athens, Department of Physics, 2017
  Thesis title: Offshore wind and wave energy resource characterization:
  An integrated approach for combined exploitation
- **MSc**., University of Athens, Department of Physics, Environmental Physics, 2010
- **BSc.**, University of Athens, Department of Physics, 2008

Foreign Languages

- English (Certificate of Proficiency, Michigan)
- Greek

Fields of Scientific Activities

- Atmospheric Modeling and Weather Forecasting
- Wave Modeling and Marine Meteorology
- Air-Sea Interaction
- Renewables - Offshore Wind and Wave Energy Resource Assessment
- Air Pollution Modeling – Desert Dust
- Urban Modeling – Natural based solutions
- Climate change
- Coastal Flooding

Technical Skills – Atmospheric Applications

- Operating Systems: Unix, Linux, Windows
- Programming: Fortran, Shell scripting
- Atmospheric Models: SKIRON, RAMS, WRF
- Wave Models: WAM, SWAN, DELFT3D
- Data Visualization Programs: NCL, REVU
- Statistical analysis Programs: MATLAB, R
- Data Handling: HDF, GRIB, NETCDF

Research Experience

2023 - 2024 **Academy of Athens**
Research Centre for Atmospheric Physics and Climatology
Research Associate

Project Title**: MegDETH**
Description**:** Study the Mineralogy of Dust Emissions and impacts on Environment and Health. Funded by the Hellenic Foundation for Research and Innovation (H.F.R.I.).

2022 – 2024 **Harokopio University of Athens**
Geography department
Research Associate

Project Title: **NESTOR**
Description: Nature based Solutions for addressing urban heat island, co-financed by the European Regional Development Fund of the European Union and Greek national funds through the Regional Operational Program 'ATTIKI'–ESPA 2014-2020.

2008 – present: **National and Kapodistrian University of Athens**
Department of Physics/ Section of Environmental Physics and Meteorology

Member of the Atmospheric Modeling and Weather Forecasting Group (AMW&FG). Responsible for the Operational Weather Forecasting Services of NKUA (https://forecast.uoa.gr). In particular, for the weather prediction system SKIRON, the dust prediction system SKIRON/dust, the wave model WAM and the air quality model CAMx.

Research Associate in the following projects:

Project Title: **MARINA Platform**
Description: Marine Renewable Integrated Application Platform, funded by EU (FP7), 2011-2013. (http://www.marina-platform.info/). Development of a 10-year high resolution wind-wave dataset for Europe designed for renewable energy applications with the use of state-of-the-art numerical modeling systems (SKIRON and WAM). In the framework of this project the offshore wind and wave energy resource of Europe has been assessed with main scope to support offshore renewable energy industry.

Project Title: **E-Wave**

· Description: Integrated high resolution system for monitoring and quantifying the wave energy potential in the EEZ of Cyprus. The project funded by the Research Promotion Foundation of Cyprus 2012 (http://www.oceanography.ucy.ac.cy/ewave). In the framework of this project the wave energy resource of Eastern Mediterranean has been assessed utilizing high resolution data retrieved form a numerical modeling system (SKIRON and WAM) that has been optimally set up based on the characteristics of the area.

Project Title: **IRPWIND**
Description: Integrated Research Programme on Wind Energy funded by EU (FP7) 2017 – present (http://cordis.europa.eu/project/rcn/111468_en.html). The aim of the IRPWIND was to foster better integration of European research activities in the field of wind energy research with the aim of accelerating the transition towards a low-carbon economy and maintain and increase European competitiveness. The IRPWIND comprised 24 partners, who were all European research institutions and universities working in the area of wind energy research.

2013 – 2014: **Technological Educational Institute of Athens**
Research Associate

Project Title: **Archimedes III**
Description: A Research program (EPEAEK) on the development of New Numerical and computational methods of the solution of differential equations with applications in environmental issues, financed by the European Union and Greek Ministry of Education 2012-2014. (http://users.teiath.gr/ifamelis/archimedes/index.html)

2013 – 2014: **Hellenic Naval Academy**
Research Associate

Project Title: **MOSEP**
Description: Monitoring the Wind and Sea Wave Energy Potential in the region of Eastern Mediterranean Sea with special emphasis to the Greece Sea Area. - The project funded by the General Secretariat for Research and Technology of Greece and is hosted by the Hellenic Naval Academy and the Oceanography Center of Cyprus. 2013-2014 (http://www.oceanography.ucy.ac.cy/mosep/oceanography-center-university-of-cyprus/)

2011: **Institute of Accelerating Systems and Applications (IASA)**
Research Associate

Project Title: **ANEMOS PLUS**
Description: A European Specific Targeted Research Project Funded by EU (FP6). Priority 6.1-Sustainable Energy Systems. It is a continuation of the FP5 project ANEMOS (ENK5-CT-2002-0665) that developed new forecasting techniques for a wide range of end-user requirements in Wind energy industry. The aim of the ANEMOS.PLUS was to fully integrate the forecasts and their uncertainty into the management and decision support tools.

2009 – 2011: **Cyprus Institute**
Research Fellow

Project Title: **CIMME**
Description: Construction of the Wind Atlas of Cyprus in the Framework of the Research Project Climate Change and Impacts in the Eastern Mediterranean and Middle East.

Related Professional Experience

2015 – present: **Weather and Marine Engineering Technologies P.C.**
Research Associate – Contractor

Project Title**: Sand and Dust Storm Early warning system for Middle East**
Description: Development of a dust prediction system for the sand and dust storm early warning center of the National Center of Meteorology of Saudi Arabia (NCM). The project funded by the National Center of Meteorology of Saudi Arabia (NCM).

Project Title**: NCM (former GAMEP):**
Description: Development of a Weather Analysis and Sea State Forecast system for Saudi Arabia. The project funded by the National Center of Meteorology of Saudi Arabia (NCM).

Project Title: **WASSF II**
Description: Development of statistical tools for the evaluation of the operational Weather and Sea State Forecast system WASSF. The updated system WASSF includes weather, dust, flood, fog, wave, ocean currents and tides forecasting system (7- day). Regular operational products as well as specialized data sets are prepared on daily base for 9 specialized applications. The area covered is the Arabian Peninsula, Red Sea and Arabian Gulf. Period of operations is 2016-today.

Project Title: **ENI marine forecasts**
Description: Weather forecasting for 18 locations around the earth. This forecasting system is set up and runs operationally for the ENI oil Company of Italy.

Project Title: **SAUDI ARABIA CLIMATIC DATABASE**
Description: Development of a 30-year meteorological and dust climatological database of high spatial and temporal resolution. It includes several meteorological and dust parameters useful for several engineering applications in Saudi Arabia and nearby countries.

Project Title**: QMD**
Description: Meteorological modelling in the context of the NWP and HPC Project of Qatar Civil Aviation Authority, Meteorology. The project funded by the Civil Aviation authority of Qatar. Development of a weather analysis, dust prediction and sea state forecast system for the meteorology department of Qatar.

2013 – 2014: **Innovative Technologies Center S.A.**
Research Associate – Contractor

Project Title: **WASSF I**
Description: Development of a Weather Analysis and Sea State Forecast system for Saudi Arabia, funded by Saudi Aramco (2010-until present).

Publications in peer reviewed journals

- Solomos, S., Spyrou, C., Barreto, A., Rodríguez, S., González, Y., Neophytou, M.K., Mouzourides, P., Bartsotas, N.S., **Kalogeri, C.,** Nickovic, S. and Vukovic Vimic, A., 2023. The Development of METAL-WRF Regional Model for the Description of Dust Mineralogy in the Atmosphere. Atmosphere, 14(11), p.1615.
- Patlakas, P., Stathopoulos, C., **Kalogeri, C**., Vervatis, V., Karagiorgos, J., Chaniotis, I., Kallos, A., Ghulam, A.S., Al-omary, M.A., Papageorgiou, I. and Diamantis, D., 2023. The Development and Operational Use of an Integrated Numerical Weather Prediction System in the National Center for Meteorology of the Kingdom of Saudi Arabia. Weather and Forecasting, 38(11), pp.2289-2319.
- Oikonomou, C.L.G., Gradowski, M., **Kalogeri, C**., Sarmento, A.J.N.A. On defining storm intervals: Extreme wave analysis using extremal index inferencing of the run length parameter (2020) Ocean Engineering, 217.
- Buscemi, A., Lo Brano, V., Chiaruzzi, C., Ciulla, G., **Kalogeri, C**. A validated energy model of a solar dish-Stirling system considering the cleanliness of mirrors (2020) Applied Energy, 260.
- **Kalogeri C**, Lekas TI, Kallos G. Assessing the availability of seaplane operations in the Aegean Sea. Aeron Aero Open Access J. 2019,3(2):76-82.
- Patlakas, P., Stathopoulos, C., Flocas, H., **Kalogeri, C**., Kallos, G. Regional Climatic Features of the Arabian Peninsula. Atmosphere 2019, 10, 220.
- **Kalogeri, C**., Galanis, G., Spyrou, C., Diamantis, D., Baladima, F., Koukoula, M., Kallos, G. Assessing the European offshore wind and wave energy resource for combined exploitation (2017) Renewable Energy, 101, pp. 244-264.
- Emmanouil, G., Galanis, G., **Kalogeri, C.**, Zodiatis, G., Kallos, G. 10-year high resolution study of wind, sea waves and wave energy assessment in the Greek offshore areas (2016) Renewable Energy, 90, pp. 399-419.
- Liakatas, A., Galanis, G., Kalogeri, C. and Kallos, G., 2017. Wave power estimation by means of spectral wave models and satellite records. Journal of Operational Oceanography, 10(1), pp.93-113.
- Cradden, L., **Kalogeri, C.,** Barrios, I.M., Galanis, G., Ingram, D., Kallos, G. Multi-criteria site selection for offshore renewable energy platforms (2016) Renewable Energy, 87, pp. 791-806.
- Zodiatis, G., Galanis, G., Kallos, G., Nikolaidis, A., **Kalogeri, C.**, Liakatas, A., Stylianou, S. The impact of sea surface currents in wave power potential modeling (2015) Ocean Dynamics, 65 (11), pp. 1547-1565.
- Larsén, X.G., **Kalogeri, C.**, Galanis, G., Kallos, G. A statistical methodology for the estimation of extreme wave conditions for offshore renewable applications (2015) Renewable Energy, 80, pp. 205-218.
- Edwards, E.C., Cradden, L.C., Ingram, D.M., **Kalogeri, C.** Verification within wave resource assessments. Part 1: Statistical analysis (2014) International Journal of Marine Energy, 8, pp. 50-69.
- Edwards, E.C., Cradden, L.C., Ingram, D.M., **Kalogeri, C.** Verification within wave resource assessments. Part 2: Systematic trends in the fit of spectral values (2014) International Journal of Marine Energy, 8, pp. 70-83.

- Kallos, G., Solomos, S., Kushta, J., Mitsakou, C., Spyrou, C., Bartsotas, N., **Kalogeri, C.** Natural and anthropogenic aerosols in the Eastern Mediterranean and Middle East: Possible impacts (2014) Science of the Total Environment, 488-489 (1), pp. 389-397.
- Zodiatis, G., Galanis, G., Nikolaidis, A., **Kalogeri, C.**, Hayes, D., Georgiou, G.C., Chu, P.C., Kallos, G. Wave energy potential in the Eastern Mediterranean Levantine Basin. An integrated 10-year study (2014) Renewable Energy, 69, pp. 311-323.
- Spyrou, C., Kallos, G., Mitsakou, C., Athanasiadis, P., **Kalogeri, C.**, Iacono, M.J. Modeling the radiative effects of desert dust on weather and regional climate (2013) Atmospheric Chemistry and Physics, 13 (11), pp. 5489-5504.

Selected Conferences

- Solomos, S., Mitsakou, C., Thompson, S., Macintyre, H., Exley, K., Aldridge, S., Zerefos, C., Bartsotas, N. S., **Kalogeri, C**., and Spyrou, C.: Investigation of the mineralogical composition of desert dust particles during a transboundary pollution episode in the UK and implications for health effects , EGU General Assembly 2024, Vienna, Austria, 14–19 Apr 2024, EGU24-1827, https://doi.org/10.5194/egusphere-egu24-1827, 2024.
- **Kalogeri C.,** Rizou D. and Kallos G. Identifying the different spatio-temporal characteristics of offshore wind and wave energy resource for delivering a more stable power output onto the electric grid", EGU General Assembly 2018, Vienna, Austria, 7-12 April, 2019.
- Oikonomou C., Gradowski M. and **Kalogeri C.** "Location dependence of extreme wave analysis using runs de-clustering via extremal index estimation". RENEW 2018, Lisbon, Portugal 8-10 October 2018.
- Patlakas, P., Galanis, G., Péray, M., Filipot, J.F., **Kalogeri, C**., Spyrou, C., Diamantis, D. and Kallos, G. "An Integrated Methodology on the Suitability of Offshore Sites for Wind Farm Development". EGU General Assembly 2016, Vienna, Austria, 17-22 April, 2016.
- George Emmanouil, George Galanis, George kallos, George Zodiatis, **Christina Kalogeri**, Wind-Wave energy potential over Greek Seas, offshore EWEA 2015, Copenhagen, Denmark, 10-12 March 2015.
- **Kalogeri C.**, Galanis G. and Kallos G., Forecasting maximum wave height at selected sites based on high resolution hindcast modeling and local adaptation techniques, EGU General Assembly 2014, Vienna, Austria, 27 – 2May 2014.
- Galanis, G., Famelis, I. and **Kalogeri, C.,** 2014, October. Optimization of numerical weather/wave prediction models based on information geometry and computational techniques. In AIP Conference Proceedings (Vol. 1618, No. 1, pp. 828-832). American Institute of Physics.
- Kallos G., Galanis G., Stathopoulos C., **Kalogeri** C. and Barranger N., Operational wind power forecasting systems based on physical and statistical models, EWEA 2014, Barcelona, 10-13 March 2014.
- George Galanis, Ioannis Famelis, **Christina Kalogeri** and George Kallos, Numerical and Geometric Optimization Techniques for Environmental Prediction Systems, SIAM Conference on Mathematical and Computational Issues in the Geosciences, Padova, Italy, 2013.
- George Kallos, George Galanis, Christos Spyrou, Christina Mitsakou, Stavros Solomos, Nikolaos Bartsotas, **Christina Kalogeri**, Ioannis Athanaselis, Sarantis Sofianos, Vassilios Vervatis, Panagiotis Axaopoulos, Alexandros Papapostolou, Jumaan Al Qahtani, Elyas Alaa, Ioannis Alexiou, and Daniel Beard, An integrated weather and sea-state forecasting system for the Arabian Peninsula (WASSF), Vienna, Austria, 7 – 12April 2013.

- Cradden L., Kalogeri C., Spyrou C., Adam A., Stathopoulos C., Galanis G., Sofianos S., Ingram D., Kallos G., Papapostolou A., Axaopoulos P., A combined resource atlas for marine energy, 4th International Conference on Ocean Energy, 2012, Dublin, Ireland. (Received award)
- G. Kallos, G. Galanis, C. Spyrou, C. Kalogeri, A. Adam, and P. Athanasiadis, 2012: Offshore Energy Mapping for Northeast Atlantic and Mediterranean: MARINA PLATFORM project, EGU General Assembly 2012, Vienna, Austria, 22 – 27 April 2012.

Book chapters

- Dust Climatology for the kingdom of Saudi Arabia. Editors: G. Kallos & J. Al Qahtani. ISBN: 978-618-00-1857-8.
- Qahtani, J.A., Alaa, E., Kallos, G., Galanis, G., Sofianos, S., Mitsakou, C., Spyrou, C., Kalogeri, C., Bartsotas, N., Athanaselis, J. and Vervatis, V., 2014. An Integrated Weather and Sea State Forecasting System for the Arabian Peninsula (WASSF). In Air Pollution Modeling and its Application XXIII (pp. 173-177). Springer International Publishing.

Lectures

- 2022-2024: The role of Desert Dust in Climate Change: Lecture as part of the "Environmental Hazards and Security" course (Master) in Harokopio University of Athens.

Teaching Experience

- 2023-2024: Autonomous teaching at Harokopio University of Athens, Department of Geography: BSc course "Renewable Energy"
- 2020-2023: Teaching the renewable energy section of the MSc course of the National and Kapodistrian University of Athens, department of Physics, section of Environmental Physics and Meteorology, named "Applied Energy Design".
- 2023: Knowledge transfer regarding wave modeling and the basic theory that describes the sea waves. Hands on training of the Wave forecasting system that has been set-up and runs operationally, at the National Center of Meteorology of Saudi Arabia (NCM).
- 2024: Knowledge transfer regarding dust model SKIRON and the basic theory that describes dust properties, emission and transport. Hands on training of the dust modeling system SKIRON that has been set-up and runs operationally, at the National Center of Meteorology of Saudi Arabia (NCM).
- 2017 και 2018 – Autonomous teaching at National and Kapodistrian University of Athens, department of physics – Laboratory Physics II (Mechanics-Thermodynamics)
- 2016: Knowledge transfer regarding wave modeling and the basic theory that describes the sea waves. Hands on training of the Wave forecasting system that had been set-up and run operationally at the Meteorological department of the Qatar Civil Aviation Authority.