

GENERAL INFORMATION

He is an Associate Professor in the Department of Meteorology and Climatology within the School of Geology of the Aristotle University of Thessaloniki, Greece (DMC/AUTH) where he has been a faculty member since 2006.

His main research interests lie in Synoptic Meteorology and Numerical Weather Prediction focusing on extreme weather events. He is an expert on using, developing, optimizing and validating a large number of atmospheric numerical models such as WRF, MM5, SKIRON/Eta and FLEXPART. He is responsible for the operational forecasts of WRF model (<http://meteo.geo.auth.gr>) and their verification in DMC/AUTH.

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EDUCATION

2000: Doctor of Philosophy (Ph.D.) in Meteorology. Department of Meteorology, University of Reading, United Kingdom

1995: Master of Science (M.Sc.) in Weather, Climate and Modelling. Department of Meteorology, University of Reading, United Kingdom

1994: Bachelor (Ptychio) in Mathematics. Department of Mathematics, Faculty of Sciences, Aristotle University of Thessaloniki, Greece

WORKING EXPERIENCE

- **Associate Professor (2019-today), Assistant Professor (2013-2019) and Lecturer (2006-13) in DMC/AUTH,**
- **Meteorologist in the Numerical Weather Prediction Division of the Hellenic National Meteorological Service (2005-06),**
- **Postdoc researcher (meteorologist – mathematician) in the Atmospheric Modelling and Weather Forecasting Group of the Physics Department of the National and Kapodistrian University of Athens, Greece (2000-05),**
- **Laboratory instructor at the Technological Educational Institute (T.E.I.) of Piraeus, Greece (2004-06),**
- **Weather forecaster and scientific consultant in the private sector (2002-05),**
- **Research assistant and a research officer in the Department of Meteorology of the University of Reading, UK (1997-99).**

Moreover, he was recruited as a meteorologist-observer in the Hellenic Air Force during his military service (2000-02).

OTHER SCIENTIFIC ACTIVITIES

- **Guest Editor in a special issue of the international journal Atmosphere** (https://www.mdpi.com/journal/atmosphere/special_issues/atmospheric_numerical_models)
- **Guest Editor in 2 special issues of the international journal Climate** (https://www.mdpi.com/journal/climate/special_issues/Atmospheric_Dynamics & https://www.mdpi.com/journal/climate/special_issues/precipitation_climate_forecasting)
- **Research proposal evaluator**
- **Article reviewer in International Scientific Journals**
- **Invited speaker, e.g. on Mediterranean Tropical-Like Cyclones (medicanes), EUMETRAIN** (http://www.eumetrain.org/resources/mew_2018_s4f.html) and EUMETSAT Autumn Schools.

RESEARCH INTERESTS

Major Research Interests:

- **Analysis of meteorological data and synoptic, meso scale systems – Study of extreme weather events.**
- **Modification and use of global, regional and mesoscale numerical weather prediction models.**
- **Optimization of numerical weather prediction models and use/exploitation of their products in weather forecasting.**
- **Evaluation of atmospheric numerical models.**
- **Applications with the use of atmospheric numerical models (WRF, SKIRON/Eta, FLEXPART, COBEL).**

Associated Research Activities:

- **Operational Weather Forecasting using Atmospheric Numerical Models**
- **Renewable Energy Sources**
- **Subseasonal and Seasonal Forecasting**
- **Fire Meteorology**
- **Algorithm Development for the Analysis of Meteorological Data**
- **Meteorological Measurements**
- **Study of Atmospheric Mercury Cycle**
- **Study of Particles' Atmospheric Cycle and its effect of the atmosphere**
- **Climate simulations**
- **Use of numerical models for weather modification**

PROJECTS

1. EC, MARIE CURIE/TMR, *African Easterly Waves and their transformation into tropical cyclones*, 1997-1998
<https://cordis.europa.eu/tmr/src/grants/fmbi/961444.htm>
2. TSUNAMI initiative (Corporation of Insurance Companies and the British Government), *Seasonal prediction of tropical cyclogenesis in northern Atlantic with the use of atmospheric numerical models*", 1999
3. EC & GSRT, *A high-resolution forecasting system for maritime and other applications* (NIREAS), 1999-2001
4. EC, *Mediterranean Atmospheric Mercury Cycle System* (MAMCS), 1998-2000
5. New York State Energy Research and Development Authority, USA, *Modelling of the Mercury Processes over NE USA* (NYSERDA), 2001-2002

6. EC, *An integrated approach to assess the MERCURY CYCLE into the Mediterranean basin* (MERCYMS), 2002-2005
7. EC, *Automated fire and flood hazard protection system* (AUTOHAZARD-PRO), 2002-2004
http://cordis.europa.eu/project/rcn/60351_en.html
8. EC, *Development of a Next Generation Wind Resource Forecasting System for the Large-Scale Integration of Onshore and Offshore Wind Farms* (ANEMOS), 2002-2006
http://cordis.europa.eu/project/rcn/64848_en.html
9. EC, *Mediterranean Forecasting System Toward Environmental Predictions* (MFSTEP), 2003-2006
<http://mfstep.bo.ingv.it/>
10. GSRT, *Weather forecasting services through the internet and mobile telephones* (PRAXE), 2003
11. Ministry of Culture/General Secretariat of Olympic Games – ATHENS2004, *Development and installation of special versions of the numerical weather and wave prediction models SKIRON/Eta, RAMS, LAPS, WAM for the Olympic Games of 2004*, 2002-2004
12. EC, *Development and Application of Validated Geophysical Ocean Wave Products from ENVISAT ASAR and RA-2 Instruments* (ENVIWAVE), 2002-2005
http://cordis.europa.eu/project/rcn/60471_en.html
13. EC, TEMPUS, *Master Degree on Pollution Dispersion Modelling at the University of Oran, Algeria* (MADEPODIM), 2004-2007
14. EC, *Grid enabled Remote Instrumentation with Distributed Control and Computation* (GRIDCC), 2004-2007
http://cordis.europa.eu/project/rcn/71831_en.html
15. Information Society, *Supercomputing system for the analysis of meteorological data*, 2005-2006
16. GSRT, *Modern and innovative methodologies for the identification, study, prediction and prevention of intense weather events with application in Thessaly and Macedonia*, 2007-2008
17. AUTH, *Monitoring of meteorological parameters along the valley of Axios river*, 2007-2008
18. Hellenic Public Power Corporation S.A, *Maintenance, Documentation and Updating of the environmental monitoring system in the Nestos river*, 2008-2010
19. AUTH Property Development and Management Company, *Study of wind and solar power in the AUTH regions of Taxiarchis - Chalkidiki, Kolchiko – Thessaloniki and Pertouli – Trikala*, 2010-2012
20. Municipality of Naousa, *Study of wind potential in the Vermion area of Naousa*, 2011-2012
21. AUTH / Research Committee, *Upgrading computational resources for the realization of climate simulations over Europe*, 2011-2015 (**Principal Investigator**)
22. EC, *Integrated web-based platform and e-government applications for an environmental permits process that uses “cloud computing”* (e-ENVIPER), 2012-2014
23. E.ON NEW BUILD & TECHNOLOGY GMBH, *On the study of the climatic characteristics at four distinct sites of Northern Greece*, 2012-2013
24. NSRF 2007-2013 (National Strategic Reference Framework) & ERDF, *An Innovative and Integrated Conceptual Model to Mitigate the Impact of Climate Change on Drought: Potentiality and Applicability of a Precipitation Enhancement Project in Thessaly* (DAPHNE), 2013-2015
<http://www.daphne-meteo.gr>
25. NSRF 2007-2013 (National Strategic Reference Framework) & ERDF, *A pilot system for the development and delivery of daily wave and circulation forecasts for public and emergency use in the Thermaikos Gulf* (WaveForUs), 2013-2015 (**Principal Investigator**)

<http://wave4us.web.auth.gr>

26. GRNET S.A., *Large Eddy Simulations in Wildland Fires (LESinFIRE)*, 2015-2016.
27. GRNET S.A., *Cloud Resolving Climate Simulations (CORRECT)*, 2015-2016 (**Principal Investigator**)
28. EC-H2020, *Enhancing Food Security in AFRican AgriCULTUral Systems with the Support of REMote Sensing (AfriCultuReS)*, 2017-2021
29. EC-H2020, *reSilienT fARminG by Adaptive microclimaTe managEment (Stargate)*, 2019-2023

TEACHING

1) **1997: Laboratory demonstrator in the undergraduate courses of "Tropical Meteorology" and "Numerical Methods". Department of Meteorology, University of Reading, United Kingdom.**

2) **2004-06: Teaching of the lab courses VISUAL BASIC, QBASIC and EXCEL. General Department of Mathematics, T.E.I. of Piraeus, Piraeus, Greece.**

3) **2006 – today: Aristotle University of Thessaloniki, Greece**

- **Undergraduate courses offered by the School of Geology in AUTH:**
 - “Synoptic and Dynamic Meteorology”
 - “General Meteorology”
 - “General Mathematics I”
 - “General Mathematics II”
 - “General Mathematics III”
 - “Introduction in computer programming”
 - “Foreign Language Geological Terminology II”
- **Undergraduate course offered by the Department of Mathematics in AUTH:**
 - “General and Dynamic Meteorology”
- **Postgraduate courses offered by the School of Geology in AUTH in the framework of the postgraduate programme “Meteorology, Climatology and Atmospheric Environment”:**
 - “Synoptic Meteorology”
 - “Numerical Weather Prediction”
 - “Practical Meteorology”
- **Postgraduate course offered by the School of Geology in AUTH in the framework of the inter-faculty master programme “Networks and Complexity”:**
 - “Analysis of Extreme Physical Phenomena”
- **Postgraduate course offered by the School of Geology in AUTH in the framework of the inter-faculty master programme “Health and Environmental Factors”:**
 - “Introduction to the Environmental Sciences”

Moreover, he has been:

- the supervisor of 8 completed and 2 in progress postgraduate theses.
- the supervisor of 13 completed and 6 in progress undergraduate dissertations.
- a member of the examination committee in 15 completed PhD (advisory committee in 4 of them),
- a member of the advisory committee in 9 PhDs in progress.
- a member of the examination committee in 26 postgraduate theses.

PUBLICATIONS

Peer Reviewed Articles in Journals

1. Holden J. J., S. E. Belcher, A. Horvath and **I. Pytharoulis**, **1995**: Raindrops keep falling on my head. *Weather*, 50, 367-370.
2. **Pytharoulis I.**, G. C. Craig and S. P. Ballard, **1999**: Study of the hurricane-like Mediterranean cyclone of January 1995. *Phys. Chem. Earth (B)*, 24, 627-632.
3. **Pytharoulis I.** and C. Thorncroft, **1999**: The low-level structure of African Easterly Waves in 1995. *Monthly Weather Review*, 127, 2266-2280.
4. **Pytharoulis I.**, G. C. Craig and S. P. Ballard, **2000**: The hurricane-like Mediterranean cyclone of January 1995. *Meteorological Applications*, 7, 261-279.
5. Thorncroft C. and **I. Pytharoulis**, **2001**: A dynamical approach to seasonal prediction of Atlantic tropical cyclone activity. *Weather and Forecasting*, 16, 725-734.
6. Pirrone N., R. Ferrara, I. Hedgecock, G. Kallos, Y. Mamane, J. Munthe, J. Pacyna, **I. Pytharoulis**, F. Sprovieri, A. Voudouri and I. Wangberg, **2003**: Dynamic processes of mercury over the Mediterranean region: results from the Mediterranean Mercury Cycle System (MAMCS) project. *Atmospheric Environment*, 37, 21-39.
7. Voudouri A., **I. Pytharoulis** and G. Kallos, **2005**: Mercury budget estimates for the State of New York. *Environmental Fluid Mechanics*, 5, 87-107.
8. Galanis G., P. Louka, P. Katsafados, **I. Pytharoulis** and G. Kallos **2006**: Applications of Kalman filters based on non-linear functions to numerical weather predictions. *Annales Geophysicae*, 24, 2451-2460
9. Louka P., G. Galanis, N. Siebert, G. Kariniotakis, P. Katsafados, **I. Pytharoulis** and G. Kallos **2008**: Improvements in wind speed forecasts for wind power prediction purposes using Kalman filtering. *Journal of Wind Engineering and Industrial Aerodynamics*, 96, 2348-2362. DOI: 10.1016/j.jweia.2008.03.13
10. Kallos G., C. Spyrou, M. Astitha, C. Mitsakou, S. Solomos, J. Kushta, **I. Pytharoulis**, P. Katsafados, E. Mavromatidis, N. Papantoniou and G. Vlastou, **2009**: Ten-year operational dust forecasting – Recent model development and future plans. *IOP Conf. Series: Earth and Environmental Science*, 7, 012012. DOI: 10.1088/1755-1307/7/1/012012
11. Zoras S., V. Evagelopoulos, **I. Pytharoulis**, A.G. Triantafyllou, I. Skordas and G. Kallos, **2010**: Development and validation of a novel-based combination operational air quality forecasting system in Greece. *Meteorology and Atmospheric Physics*, 106, 127-133. DOI: 10.1007/s00703-010-0058-z
12. Akritidis D., P. Zanis, **I. Pytharoulis**, A. Mavrakis and Th. Karacostas, **2010**: A deep stratospheric intrusion event down to the earth's surface of the megacity of Athens. *Meteorology and Atmospheric Physics*, 109, 9-18. DOI: 10.1007/s00703-010-0096-6
13. Amiridis V., E. Giannakaki, D.S. Balis, E. Gerasopoulos, **I. Pytharoulis**, P. Zanis, S. Kazadzis, D. Melas and C. Zerefos, **2010**: Smoke injection heights from agricultural burning in Eastern Europe as seen by CALIPSO. *Atmospheric Chemistry and Physics*, 10 (23), 11567-11576. DOI: 10.5194/acp-10-11567-2010.
14. Katsafados P., E. Mavromatidis, A. Papadopoulos and **I. Pytharoulis**, **2011**: Numerical simulation of a deep Mediterranean storm and its sensitivity on sea surface temperature. *Natural Hazards and Earth System Sciences*, 11, 1233-1246. DOI: 10.5194/nhess-11-1233-2011
15. Knorr W., **I. Pytharoulis**, G.P. Petropoulos and N. Gobron, **2011**: Combined use of weather forecasting and satellite remote sensing information for fire risk, fire and fire impact monitoring. *Computational Ecology and Software*, 1, 112-120.
16. Matsangouras I.T., P.T. Nastos and **I. Pytharoulis**, **2011**: Synoptic-mesoscale analysis and numerical modelling of a tornado event on 12 February 2010 in northern Greece. *Advances in Science and Research*, 6, 187-194. DOI: 10.5194/asr-6-187-2011

17. Tolika K., **I. Pytharoulis** and P. Maheras, **2011**: The anomalous high temperatures of November 2010 over Greece: meteorological and climatological aspects. *Natural Hazards and Earth System Sciences*, 11, 2705-2714. DOI: 10.5194/nhess-11-2705-2011
18. Stolaki S., **I. Pytharoulis** and Th. Karacostas, **2012**: A study of fog characteristics using a coupled WRF-COBEL model over Thessaloniki Airport, Greece. *Pure and Applied Geophysics*, 169, 961-981. DOI: 10.1007/s00024-011-0393-0
19. Zanis P., C. Ntogras, A. Zakey, **I. Pytharoulis** and Th. Karacostas, **2012**: Regional climate feedback of anthropogenic aerosols over Europe using RegCM3. *Climate Research*, 52, 267-278. DOI: 10.3354/cr1070
20. **Pytharoulis I.**, H. Feidas and T. Karacostas, **2012**: Study of lightning activity with the use of high-resolution simulations. *Geographies*, 20, 51-78 (in Greek with English abstract)
21. Leventidou E., P. Zanis, D. Balis, E. Giannakaki, **I. Pytharoulis** and V. Amiridis, **2013**: Factors affecting the comparisons of planetary boundary layer height retrievals from CALIPSO, ECMWF and radiosondes over Thessaloniki, Greece. *Atmospheric Environment*, 74, 360-366. DOI: 10.1016/j.atmosenv.2013.04.007
22. Akritidis D., P. Zanis, E. Katragkou, M.G. Schultz, I. Tegoulis, A. Poupkou, K. Markakis, **I. Pytharoulis** and Th. Karacostas, **2013**: Evaluating the impact of chemical boundary conditions on near surface ozone in regional climate-air quality simulations over Europe. *Atmospheric Research*, 134, 116-130. DOI: 10.1016/j.atmosres.2013.07.021
23. Tolika K., P. Maheras, **I. Pytharoulis** and C. Anagnostopoulou, **2014**: The anomalous low and high temperatures of 2012 over Greece – an explanation from a meteorological and climatological perspective. *Natural Hazards and Earth System Sciences*, 14, 501-507. DOI: 10.5194/nhess-14-501-2014
24. Matsangouras I., **I. Pytharoulis** and P.T. Nastos, **2014**: Numerical modeling and analysis of the effect of complex Greek topography on tornadogenesis. *Natural Hazards and Earth System Sciences*, 14, 1905-1919. DOI: 10.5194/nhess-14-1905-2014
25. Akritidis D., P. Zanis, **I. Pytharoulis** and Th. Karacostas, **2014**: Near-surface ozone trends over Europe in RegCM3/CAMx simulations for the time period 1996-2006. *Atmospheric Environment*, 97, 6-18. DOI: 10.1016/j.atmosenv.2014.08.002
26. Spiridonov V., Th. Karacostas, D. Bampzelis and **I. Pytharoulis**, **2015**: Numerical simulation of airborne cloud seeding over Greece, using a convective cloud model. *Asia-Pacific Journal of Atmospheric Sciences*, 51(1), 11-27. DOI: 10.1007/s13143-014-0056-z
27. Katragkou E., M. García-Díez, R. Vautard, S. Sobolowski, P. Zanis, G. Alexandri, R.M. Cardoso, A. Colette, J. Fernandez, A. Gobiet, K. Goergen, T. Karacostas, S. Knist, S. Mayer, P.M.M. Soares, **I. Pytharoulis**, I. Tegoulis, A. Tsikerdekis and D. Jacob, **2015**: Regional climate hindcast simulations within EURO-CORDEX: evaluation of a WRF multi-physics ensemble. *Geoscientific Model Development*, 8, 603-618. DOI: 10.5194/gmd-8-603-2015
28. Karacostas T., V. Spiridonov, D. Bampzelis, **I. Pytharoulis**, I. Tegoulis and K. Tympanidis, **2016**: Analysis and numerical simulation of a real cell merger using a three-dimensional cloud resolving model. *Atmospheric Research*, 169, 547-555. DOI: 10.1016/j.atmosres.2015.09.011
29. **Pytharoulis I.**, S. Kotsopoulos, I. Tegoulis, S. Kartsios, D. Bampzelis and T. Karacostas, **2016**: Numerical modeling of an intense precipitation event and its associated lightning activity over northern Greece. *Atmospheric Research*, 169, 523-538. DOI: 10.1016/j.atmosres.2015.06.019
30. Matsangouras I.T., P.T. Nastos and **I. Pytharoulis**, **2016**: Study of the tornado event in Greece on March 25, 2009: Synoptic analysis and numerical modeling using modified topography. *Atmospheric Research*, 169, 566-583. DOI: 10.1016/j.atmosres.2015.08.010

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31. Matsangouras I.T., P.T. Nastos, H.B. Bluestein, **I. Pytharoulis**, K. Papachristopoulou and M.M. Miglietta, **2017**: Analysis of waterspout environmental conditions and of parent-storm behaviour based on satellite data over the southern Aegean Sea of Greece. *International Journal of Climatology*, 37, 1022-1039. DOI: 10.1002/joc.4757
 32. Avgoustoglou E., I.T. Matsangouras, **I. Pytharoulis**, N. Kamperakis, M. Mylonas, P.T. Nastos and H.W. Bluestein, **2018**: Numerical modeling analysis of the mesoscale environment conducive to two tornado events using the COSMO.Gr model over Greece. *Atmospheric Research*, 208, 148-155. DOI: 10.1016/j.atmosres.2017.07.022
 33. Karacostas T., S. Kartsios, **I. Pytharoulis**, I. Tegoulis and D. Bampzelis, **2018**: Observations and modelling of the characteristics of convective activity related to a potential rain enhancement program in central Greece. *Atmospheric Research*, 208, 218-228. DOI: 10.1016/j.atmosres.2017.08.014
 34. Michaelides S., T. Karacostas, J.L. Sánchez, A. Retalis, **I. Pytharoulis**, V. Homar, R. Romero, P. Zanis, C. Giannakopoulos, J. Bühl, A. Ansmann, A. Merino, P. Melcón, K. Lagouvardos, V. Kotroni, A. Bruggeman, J.I. López-Moreno, C. Berthet, E. Katragkou, F. Tymvios, D.G. Hadjimitsis, R.-E. Mamouri, A. Nisantzi, **2018**: Reviews and perspectives of high impact atmospheric processes in the Mediterranean. *Atmospheric Research*, 208, 4-44. DOI: 10.1016/j.atmosres.2017.11.022
 35. **Pytharoulis I.**, **2018**: Analysis of a Mediterranean tropical-like cyclone and its sensitivity to the sea surface temperatures. *Atmospheric Research*, 208, 167-179. DOI: 10.1016/j.atmosres.2017.08.009
 36. Akritidis D., E. Katragkou, P. Zanis, **I. Pytharoulis**, D. Melas, J. Flemming, A. Inness, H. Clark, M. Plu, H. Eskes, **2018**: A deep stratosphere-to-troposphere ozone transport event over Europe simulated in CAMS global and regional forecast systems: analysis and evaluation. *Atmos. Chem. Phys.*, 18, 15515–15534. DOI: 10.5194/acp-18-15515-2018
 37. **Pytharoulis I.**, S. Kartsios, I. Tegoulis, H. Feidas, M.M. Miglietta, I. Matsangouras, T. Karacostas, **2018**: Sensitivity of a Mediterranean Tropical-Like Cyclone to Physical Parameterizations. *Atmosphere*, 9, 436. DOI:10.3390/atmos9110436
 38. Mentzafou A., G. Varlas, E. Dimitriou, A. Papadopoulos, **I. Pytharoulis**, P. Katsafados, **2019**: Modeling the Effects of Anthropogenic Land Cover Changes to the Main Hydrometeorological Factors in a Regional Watershed, Central Greece. *Climate*, 7, 129. DOI:10.3390/cli7110129

He also has 20 articles in book chapters, 66 research articles in conference proceedings and 63 announcements (abstracts only) in conferences. He has more than 800 citations (excluding self-citations of all authors) in the international scientific literature (h-index = 15).