



Professor Ioannis K. Tsanis Biography

- Full Professor in the School of Environmental Engineering at the Technical University of Crete (TUC)
- Director of the Water Resources Management and Coastal Engineering Laboratory at TUC
- Professor Emeritus in the Department of Civil Engineering at McMaster University in Hamilton, Canada
- Adjunct Professor in the Department of Civil Engineering at York University in Toronto, Canada
- Associate Fellow Member of Climate Service Center in Hamburg, Germany.

Dr. Tsanis is a graduate of Aristotle University of Thessaloniki, Greece (Dipl. Civ. Eng. (entrance scholarship) and University of Toronto (M.A.Sc. and Ph.D., Civil Engineering). He received a prestigious fellowship (Visiting Fellowship in Government Research Laboratories) and worked as a NSERC Visiting Fellow in the National Water Research Institute (NWRI) in Burlington, Ontario. He also received the highly prestigious fellowship URF (University Research Fellowship) in Canada and worked as a University Research Fellow (URF) and Professor in the Department of Civil Engineering at McMaster University. He is a Full Professor in the School of Environmental Engineering at the Technical University of Crete, a Professor Emeritus at McMaster University, an Adjunct Professor at York University and an Associate Fellow Member of Climate Service Center in Hamburg, Germany. He was a Visiting Professor in Lake Biwa Research Institute, Otsu, Japan, in NWRI and for short periods in the Institute of Marine Biology, Crete, and in Max-Planck Institute for Meteorology, Hamburg, Germany.

His research has advanced our understanding in the fundamental fluid mechanics of the generalized Couette flow, and these results on the structure of the countercurrent flow are used in 3D coastal circulation models including the one that he developed for use in the Great Lakes of Canada, in Lake Biwa of Japan, in the nearshore coastal areas of Crete and other coastal areas around the world. He, with his research team, developed a 3D hydrodynamic and pollutant transport model for effective engineering design of submerged outfalls and water intakes built in nearshore areas. In collaboration with a number of international teams, his research advanced our fundamental knowledge in pollutant dispersion in water bodies and advanced our understanding on the wave-current interaction and wave directional spectra in Lake Ontario, Lake St. Clair and in the Atlantic Ocean.

Dr. Tsanis worked in Hydroinformatics with the use of new technologies such as Geographical Information Systems (GIS) in hydraulic/hydrology/water quality/coastal applications and contributed in the fundamentals of flash floods, with radar observations and flood mapping with the use of Very High Resolution (VHR) satellite remote sensing. Dr. Tsanis is participating in several research projects (NSERC, FP7 & H2020, ESA, EEA) about the impact of climate change on extreme events, ecosystem tipping points, agriculture, tourism, energy and climate change adaptation and governance in water management and forecasting of hydrometeorological extremes that produce floods with radar and satellite remote sensing and lightning activity.

Professor Tsanis is first author of two books on mixing zone models and hydrodynamic and pollutant transport modelling in lakes and coastal waters and sole author of a third book (in Greek) on problems in computational hydraulics and environmental engineering. He has published over 400 scientific journal and conference papers/posters and technical reports (including one highly cited paper in the top 1% of the academic field of Engineering based on a highly cited threshold for the field and publication year, two papers cited in IPCC report on Climate Change 2014 and 6 papers cited in the IPCC Special Report 1.5°C Climate Change 2018) and book chapters. He has participated as coordinator or partner in more than sixty (60) research projects in the thematic areas of hydroinformatics, integrated water resources management and coastal areas, hydraulic/hydrologic modeling, extreme events (floods and droughts), climate change and impacts on tourism, water resources, energy and agriculture.

He was a Member of the Board of Governors and Scientific Committee (Environmental Sector) of the Ministry of Industry in Greece, (2001-2004) and was the director of the Graduate Program entitled: “Environmental and Sanitary Engineering” in the Technical University of Crete that he submitted and was funded by the European Union (2003-2006) and is still in operation now. He delivered many invited lectures and keynote addresses around the world on the subject of climate change and its impact on water resources in Europe and Canada. He is also a member of expert international panels and proposal evaluation teams in the European Community (EU) in areas of water resources, ICT, climate change and extreme events, desertification, innovative training networks and in “Smart Cities”.

He is an Associate Editor of the Climate Services Journal and the Journal of Hydrology and a Member of EURO-CORDEX (European Climate Change Research in Europe), CCLM-COSMO-Climate Limited-area Modelling Community, MedCLIVAR (Mediterranean CLimate VARIability and Predictability), HYMEX (Hydrological Cycle of Mediterranean Experiment) and European Drought Center (EDC). During the last 10 years he was involved as a partner and/or coordinator in FP6 (WATCH, HYDRATE, SCENES) and FP7 (COMBINE, ECLISE, IMPACT2C, CASCADE, HELIX, RECARE) projects, European Space Agency (ESA) (SIMFLOOD), GSRT ARISTEIA II Action (REINFORCE) and bilateral cooperation projects (Greece & USA/Canada, Cyprus (FLASH FLOOD FORECASTING, SATFLOOD) and a European Economic Area (AQUAMAN) grant. Dr. Tsanis is currently involved in EU-funded Horizon2020 (IMPRES, SOILCARE) projects, in one funded by E.A.I.Δ.E.K. (5DARE) project and in a NSERC Discovery Grant (Canada) in areas of CC impact on water resources (hydraulics/hydrology) and adaptation to climate extremes, response to soil erosion dynamics to land use and climatic changes in Mediterranean watersheds and sustainable crop production.

Education

Post Doc (Visiting Fellow) in National Water Research Institute, Burlington, Canada
Wave directional Spectra and Wave-current Interaction in Lakes and Oceans and Application and Verification of a 3D Coastal Circulation/Pollutant Transport simulation model for nearshore areas

Ph.D. in Civil Engineering, University of Toronto, Ontario, Canada. Dissertation title: "Characteristics of Shear-Induced Counter-current Flow". Specializing in Environmental Fluid Mechanics

Dipl. Ed. In School of Education (SELETE), Greece

Dipl. Army Officer, Mechanical Division of the Greek Army

M.A.Sc. in Dept. of Civil Engineering, University of Toronto, Ontario, Canada. Thesis Title: "Gradually Varied Laminar Open Channel Flow in Horizontal Rectangular Channels", Specializing in Environmental Hydraulics

Dipl. Eng., Dept. of Civil Engineering, Aristotle University Thessaloniki, Greece. Thesis Title: "Urban Hydraulic Networks" Specializing in Water Resources

Professional Experience

Professor at Technical University of Crete (TUC), School of Environmental Engineering, Chania, Greece.

Professor Emeritus at McMaster University, Dept. of Civil Engineering, Hamilton, Ontario, Canada.

Professor at McMaster University, Dept. of Civil Engineering, Hamilton, Ontario, Canada.

Associate Professor & University Research Fellow at McMaster University, Dept. of Civil Engineering.

Assistant Professor & University Research Fellow at McMaster University, Dept. of Civil Engineering.

NSERC Visiting Fellow at National Water Research Institute, Canada Centre for Inland Waters, Environment Canada, Burlington, Ontario, Canada.

Coordinator for Hydraulics and Fluid Mechanics courses in the Dept. of Mechanical Engineering, University of Toronto.

Road and Quarry Engineer, Special Constructive Division of the Greek Army.

Consultant and Structural Engineer, Mechanical Division of the Greek Army.

Officer Training, Mechanical Division of the Greek Army.

Funded Research Projects

1. **CCIWRACE**: CC Impact on Water Resources and Adaptation to Climate Extremes, NSERC Discovery Grant (2019-2023)
2. **SDARE**: Development of an integrated 5-dimensional space based methodology for Assessing and modelling the Response of Erosion dynamics to land use and climatic changes in Mediterranean watersheds, Greek Institute for Research and Innovation (E.A.I.Δ.E.K.) (2019-2021) (Dr. D. Alexakis)
3. **SOILCARE**: SoilCare for profitable and sustainable crop production in Europe, Horizon 2020 (2016-2021)
4. **IMPRESX**: IMProving PRedictions and management of hydrological Extremes, Horizon 2020 (2015-2019)
5. **RE CARE**: Preventing and Remediating degradation of soils in Europe through Land Care (2014-2019)
6. **ICCWRHE**: Impact of CC on Water Resources and Hydrological Extremes, NSERC Discovery Grant (2014-2018)
7. **HELIX**: High-End cLimate Impacts and eXtremes (2013-2017)
8. **CASCADE**: CAstrophobic Shifts in drylands: how CA n we prevent ecosystem DEgradation? (2012-2017)
9. **AQUAMAN**: Innovative solutions to climate change adaptation and governance in the water management of the Region of Crete, EEA Grants (2015-2017)
10. **REINFORCE**: Remote sEnsing meteorologIcal data fusioN for effective Flood mitigatiOn and foReCasting over Eastern Mediterranean, GSRT, ARISTEIA II Action, Greece (2014-2015)
11. **IMPACT2C**: Quantifying projected impacts under 2°C warming (2011-2015)
12. **ECLISE**: Enabling CLimate Information Services for Europe (2011-2014)
13. **SATFLOOD**: Integrated Use of Satellite Remote Sensing and Hydraulic Modelling for the Flood Risk Assessment at Catchment Scale in Cyprus, Institute for Research Advancement, Nicosia, Cyprus (2011-2013)
14. **COMBINE**: Comprehensive Modelling of the Earth System for better climate prediction and projection (2009-13)
15. **WANEMAS**: Watershed/Nearshore Water Quality Management System, NSERC Discovery Grant (2009-2013)
16. **SIMFLOOD**: High Resolution Satellite Imagery for Floodplain Mapping, ESA (2009-2011)

17. **WATCH:** WAtEr & global CHange, FP6 – Global Change and Ecosystems Priority (2008-2012)
18. **SCENES:** Water Scenarios for Europe and for Neighbouring States (2007-2011)
19. **EOS:** Observing ground subsidence due to over-exploitation of water resources in Crete, ESA (2009-2010)
20. **HYDRATE:** Hydrometeorological data resources and technologies for effective flash flood forecasting, FP6 – Global Change and Ecosystems Priority (2007-2010)
21. **Flash Flood Forecasting** with the Use of C-Band Radar in the Island of Crete: General Secretariat for Research and Technology, International S & T Cooperation Directorate - Bilateral Relations Division, Scientific and Technological Cooperation between RTD Organizations in Greece and RTD Organizations in USA & Canada (2007-2009).
22. **ENCORA**, European Network on Coastal Research Coordination Action (2005-2008).
23. **Postgraduate Academic and Research Program**, “Environmental and Health Engineering”, European Community Education Program (2003-2006).
24. **HarmoniRiB:** Harmonized Techniques and Representative River Basin Data for Assessment and Use of Uncertainty Information in Integrated Water Management (HarmoniRiB), a Specific Targeted Research Projects (STREP), Key Action 1: Sustainable Management and Quality of Water, (2003-2006).
25. **BEWARE:** Best Water use innovative Practices towards a Sustainable Water Resources Management, CRINNO-Regional Program of Innovative Action, European Community innovative Program (2003-2005).
26. **Environmental Database for Chania Prefecture**, Web-Site Development, Local Authority of Municipalities of Chania, Crete (2003-2004).
27. **NSERC Research Grant:** An Integrated Approach to Mixing of Pollutants in Nearshore Areas in the Great Lakes (2001-2006).
28. **NSERC/Equipment Grant**, "An external tape library option for EIS/WR applications" (2000-2001).
29. **Regional Municipality of Hamilton Wentworth:** A GIS Approach to Real Time Rainfall Prediction and Storm Tracking for H-W Region (1999-2001).
30. **NSERC Innovative Grant:** IDOR-2D Coupled Hydrodynamic/Pollutant Transport Model (1999-2000).
31. **Halton Region:** Far-Field Modelling of the Proposed Burlington Skyway WWTP Outfall (1997-98).
32. **McMaster International:** Applied GIS and Remote Sensing Applications in Water Resources Management International Short Course Training (1996-97).
33. **Regional Municipality of Hamilton Wentworth:** Storm Dynamics Model for Urban Runoff Rear Time Control System for Combined Sewer Overflows (1997-98).
34. **Atomic Energy Control Board Contract:** Water Dispersion Model for Lake Ontario (1996-98).
35. **Cooperative Study Agreement (MOEE - McMaster University)**, MOEE Great Lakes Section, MOEE Central Region, Environment Canada, Regional Municipality of Metropolitan Toronto, Waterfront Regeneration Trust, Metropolitan Toronto Waterfront Receiving Water Modelling Study (1993-1998)
36. **NSERC Operating Grant**, "Mixing and Transport of Toxic Substances in Nearshore Areas in the Great Lakes" (1988-2001).
37. **Cooperative Study Agreement** (Institute of Marine Biology of Crete - McMaster University) North Crete Receiving Water Modelling Study (Blue Plan - UNEP) (1994-1996).
38. **NSERC/ Green Plan's Tri-Council Eco-Research Program**, Hamilton Harbour: Towards Restoring and Sustaining a Healthy Ecosystem (1993-96).
39. **Japan Science and Technology Fund (JSTF)**, A GIS Approach to Ecosystem Modelling - Lake Biwa (1994-1996).
40. **NSERC / AES (Atmospheric Environment Canada) Grant**, "Gas Transfer at Air-Water Interfaces and its Implications in Climate Change" (1994-96).
41. **NSERC/Equipment Grant**, "A digitizing table for use with GIS ARC-INFO in mapping toxic pollutants in the Great Lakes" (1994-1995).
42. **DEFO Contract**, "Modelling Current Movements in Cootes Paradise" (1994-1995).
43. **Trent-Severn Waterway Contract**, "Hydrodynamic Model of Little Lake, Peterborough" (1994-1995).
44. **Research and Technology Branch (RAC) Grant, Ontario Ministry of the Environment (MOE)** "3D Circulation and Pollutant Transport Modelling for the Toronto Waterfront" (1992-94)
45. **NSERC/Great Lakes University Research Grant (GLURF)**, "Gas Transfer at Air-Water Interfaces" (1992-94)
46. **NSERC / AES (Atmospheric Environment Canada) Grant**, "An Automated Image Analysis System for Studying Gas Transfer at Air-Water Interfaces and its Implications for Climate Change" (1991-94)
47. **NSERC / DEFO (Department of Fisheries and Oceans) Grant**, "Directional Wave Spectra during SWADE, Continental Shelf off Virginia, Atlantic Ocean" (1991-94)
48. **Fisheries & Oceans Contract**, "Modelling Current Movements in Cootes Paradise" (1993-94)

49. **Environment Canada-NWRI Contract**, "Analysis of Current Meter Data in Hamilton Harbour" (1993-94)
50. **Office of Naval Research (ONR-USA) - NWRI Grant**, "Surface Wave Dynamics Experiment" (1990-93)
51. **NSERC/Great Lakes University Research Grant (GLURF)**, "3D Circulation Modelling of Hamilton Harbour" (1992-93)
52. **Environment Canada, NWRI Contract**, "Modelling Current Movements in Hamilton Harbour, Phases I & II" (1991-93)
53. **Fisheries and Oceans Contract**, "Wave Directional Spectra from Pitch-Roll Buoy Data" (1992-93)
54. **NSERC Equipment Grant**, "A SVHS VCR with a time code generator for near-surface turbulence studies" (1991-92)
55. **Fisheries and Oceans Contract**, "Directional Wave Spectra during the Surface Wave Dynamics Experiment (SWADE)" (1990-92)
56. **Environment Canada, NWRI Contract**, "Stormwater Modelling"(1991-92)
57. **Ontario Ministry of Environment Contract**, "Mixing Zone Modelling for the Great Lakes" (1991-92)
58. **NSERC Equipment Grant**, "Disc-based server for dynamic modelling of natural and engineered environmental systems" (1990-91)
59. **NSERC - Atmospheric Environment Canada (AES) Grant**, "Image Analysis System for Gas Transfer Studies" (1990-91)
60. **Atmospheric Environment Canada Contract**, "Hydrodynamic Modelling of Lake St. Clair" (1990-91)
61. **National Water Research Institute Contract**, "Modelling the Near Surface Currents in the Great Lakes" (1990-91)
62. **National Water Research Institute Contract**, "Modelling Bacteria in the St. Clair River in Sarnia" (1990-91)
63. **National Water Research Institute Contract**, "Probabilistic Model of Stormwater Quality" (1990-91)
64. **Teaching and Learning Grant**, McMaster University, "Teaching and Learning Materials for the Hydraulics Laboratory" (1989-90)
65. **Environment Canada, NWRI Contracts**, "Chemical Loading Estimates in St. Lawrence River from Lake Ontario" (1989-90); "Determination of Flow Distribution and Loadings in the St. Lawrence System" (1989-90)
66. **SERB Grant, McMaster University**, "Gas Transfer at Air-Water Interfaces" (1988-90)

Distinctions and Awards

Associate Editor of the Climate Services Journal
 Adjunct Professor, York University, Canada
 Professor Emeritus, McMaster University, Canada
 Associate Fellow Member of Climate Service Centre Germany
 Six papers cited in IPCC Special Report 1.5⁰C Climate Change 2018
 One-highly cited paper (top 1% - Web of Science)
 Coordinator of REINFORCE: ARISTEIA II Action, GSRT
 Two papers cited in IPCC Report Climate Change 2014
 Associate Editor of the Journal of Hydrology
 Coordinator of SIMFLOOD (European Space Agency)
 NSERC University Research Fellowship, McMaster University, Canada
 NSERC Visiting Fellowship, National Water Research Institute, Canada
 Research and Teaching Assistantship, Fluids Lab Coordinator
 SELETE Fellowship, School of Education, Greece
 Research and Teaching Assistantship
 Aristotle University Entrance Scholarship, Greece

Advising

Academic supervisor of nine (9) Post-Doctoral fellows, eleven (11) Ph.D., twelve (12) M.A.Sc, two (2) research engineers and fifteen (15) undergraduate students; Participation in numerous diploma thesis examination committees, M.Sc. advisory committees and Ph.D. dissertation defence committees.

Synergistic and administration activities - Ongoing research projects

I have established research collaboration and partnerships with a wealth of **over 150 European and International Institutes and Universities**, through my involvement in several European funded research projects.

Director of the Graduate Program entitled: "Environmental and Sanitary Engineering", Technical University of Crete, Department of Environmental Engineering, Chania, Crete, Greece 2003-2004 (2004-2006 Associate Director) (funded by the EU and the Greek Ministry of National Education and Religious Affairs, (2003-2006).

Member of the Board of Governors and Scientific Committee (Environmental Sector) of the Ministry of Industry in Greece, 2001-2004.

Scientific Advisor for the European Project, Integrated Water Resources Management of Crete, Prefecture of Crete, Iraklion, Crete, 1999-2002.

Member of an Experts Panel in European Commission Research Directorate-General, Key Action 1 "Sustainable Management & Quality of Water", Brussels, Belgium, March 2000,

Member of an Experts Panel invited by the Technical Chamber of Greece to present the application of new technologies in hydroinformatics, Thessaloniki, Greece, 3-6 June 1999.

Member of an Experts Panel invited by the Technical Chamber of Cyprus to propose solutions to water shortage in Cyprus, 27 June, 1998, Nicosia, Cyprus.

Expert invited by the Technical Chamber of Greece to present the Water Resources Management for the Island of Crete, Chania, Crete, Greece, November 17, 1997.

Member of an Experts Panel in Postgraduate Programme in Technology, Athens, 1997.

Member of an Experts Panel in European Water Resources Environment and Climate Programme, Brussels, Belgium (95-97).

International Training in Water Resources Research and Environmental Information Systems (Mexico, Palestine, Taiwan, Korea) (96-98).

Geographical Information Systems (GIS) Technology in Education (96-97) K-12 program between the Hamilton Board of Education and McMaster University.

Member of Dean's Advisory Committee on Computing-Faculty of Engineering (88-2000)

Member of the Undergraduate Admissions & Recruiting Committee (96-97).

Chairman of Word Processing User's Committee-Faculty of Engineering, 1994.

Member of Computer Graphics Committee (Information Services) (89-93).

Member of Word Processing User's Committee (88-91).

Undergraduate Advisor for the Civil Engineering and Computer Systems Program (90-91).

Member of the Undergraduate & Graduate Curriculum Committees, 1989.

Member of the Organizing Committee for the I.A.H.R Workshop on Instrumentation for Hydraulics Laboratories held in Canada Centre for Inland Waters, 1989.

Member of the Organizing Committee for the SWADE/SWAPP Workshop, CCIW, 1989.

I am currently participating in two EU funded projects (IMPREX, SOILCARE), in one project funded by ΕΛ.Ι.Δ.Ε.Κ. (5DARE) and in one NSERC Discovery Grant on the impact of climate change on hydrological extremes.

Courses Taught

ENVE 331 – Hydrology

ENVE 326 - Hydraulics I

ENVE 531 - Design of Hydraulic Structures

ENVE 433 - Hydraulics II

ΠΜΠ 860.3 – Climate Change and Extreme Events

ΠΜΠ 860.2 – Hydrometeorology and Climate Change

CE2E3 - Numerical Methods in Civil Engineering

CE203 - Fluid Mechanics

CE304 - Advanced Hydraulics

CE3M4 - Municipal Hydraulics

CE 734 - Mechanics of Flow and Wave Motion

CE774 - Environmental Hydraulics

CE701B Environmental Fluid Mechanics

CE 775- Computational Hydraulics

Service to the Scientific Community

Expert Reviewer of Innovative Training Networks (ITN) February 2016; ITN brings together universities, research centres and companies from different countries worldwide to train a new generation of researchers. IPCC SREX report (Managing the risks of extreme events and disasters to advance climate change adaptation – two of our journal papers are cited in IPCC 2014 report: Climate Change 2014: Impacts, Adaptation and Vulnerability – Part B: Regional Aspects);

Expert Evaluator of EC HORIZON 2020 proposals; Dissemination and exploitation, ICT, knowledge, gaps, research needs WATER-4a-2014, April-May 2016, Brussels; Effective use and market exploitation of water research results; The integration of the water and waste sectors in the 'Smart Cities and Communities'; WATER-1a-2014 "Bridging the gap: from innovative water solutions to market replication; WATER-4a-2014 "Harnessing EU water research and innovation results for industry, agriculture, policy makers and citizens, May 11th-15th, Brussels, Belgium"

Expert Evaluator of EC FP7 proposals; ICT for efficient water resources management": February 27th – March 2nd, 2012, Brussels, Belgium; Integrated management of Water and Natural Resources in Africa, March 2010, Brussels, Belgium; Land Use and Desertification, March 2009, Brussels, Belgium

Expert Evaluator of EC-funded Ongoing Integrated Projects on:
Vital and viable services for natural resource management in Latin America; FP6-VIVACE – December 2010, EC-Brussels, Belgium; Desertification mitigation and remediation of land – a global approach for local solutions: FP6-DESIRE – June 2010, EC-Brussels, Belgium

Expert Evaluator of EC FP7 proposals, 7-11 April 2008, Brussels, Belgium.

Expert Evaluator of FP7 proposals: 9-10 July 2007, DG Environment, Brussels, Belgium.

Expert Evaluator of EC-funded Integrated Projects (IPs): 27-29 March 2006 EURO-LIMPACS (Impacts of Global Change on European Freshwater Ecosystems) (2004-08).

Advisor to the Ontario Ministry of Research and Innovation on collaborative programs between EC and Canada (2006) (volunteer position).

Evaluator of NSF and NSERC proposals in USA and Canada (1990-2006).

Director of the Graduate Program entitled: "Environmental and Public Health Engineering", Technical University of Crete, Department of Environmental Engineering, Chania, Crete, Greece 2003-2004 (2004-2006 Associate Director) (funded by the European Union and the Greek Ministry of National Education and Religious Affairs, (2003-2006).

Member of the Board of Governors and Scientific Committee (Environmental Sector) of the Ministry of Industry in Greece, 2001-2004.

Grant proposal reviewer of NSERC and NSF proposals in Canada and USA

Peer reviewer: J. of Hydrology, Climate Services, etc...

Invited Lectures

Invited Speaker, Dept. Civil Engineering, McMaster University (FloodNet) (December 16th, 2019)

Invited Expert Speaker, Dept. Civil Engineering, Tsinghua University, Beijing, China (July 2nd 2019)

Invited Speaker and Panelist, Ontario Climate Consortium, OCAD, Toronto, Canada (October 2018)

Invited Expert Speaker, Dept. Civil Engineering, Tsinghua University, Beijing, China (June 22nd 2018)

Invited Speaker, Department of Civil Engineering, York University, Toronto, Canada (October 2017)

Invited Speaker, Department of Civil Engineering, University of Toronto, Toronto, Canada (November 2017)

Invited Speaker, Department of Civil Engineering, Ryerson University, Toronto, Canada (November 2017)

Invited Speaker and Panelist, Ontario Climate Consortium, York University, Toronto, Canada (May 2017)

Keynote Speaker, CLM/COSMO, DWD, Offenbach, Germany, March 6th-8th, 2017.

Keynote Speaker in Chinese-German Symposium on climate service science, Hamburg, (Nov. 2016).

Qatar University, Qatar National Research Center (QNRF), Environmental Studies Center (Nov. 2013, 2014)
 Helmholtz Centre Potsdam GFZ Germany Research Centre for Geosciences (June 2013)
 Ontario Climate Consortium (May 2013)
 City of Hamilton, Infrastructure & Source Water Planning (Nov. 2012)
 UNU Institute for Water, Environment and Health-INWEH, Hamilton (Nov. 2012)
 National Water Research Institute, Environment Canada, Burlington (Nov. 2012)
 Ontario Ministry of the Environment, Toronto (Nov. 2012)
 Climate Research Division, Environment Canada, Toronto (Oct. 2012)
 Ryerson University, Toronto (Sept. 2012)
 Hamilton Conservation Authority (Sept. 2012)
 Potsdam Institute for Climate Research (PIK), Germany (July 2012)
 Météo-France & CNRM Centre National de Recherches Météorologiques, Toulouse, France (June 2012)
 University of Graz, Wegener Center of Climate and Global Change, Graz, Austria, (April 2012)
 University of Oslo and Norwegian Meteorological Institute, Oslo, Norway (Nov. 2011)
 Water Development Dept., Nicosia, Cyprus (Nov. 2011)
 University of Bergen, Geosciences Institute (Sept. 2011)
 Swedish Meteorological and Hydrological Institute (SMHI), Norrköping, Sweden (Sept. 2011)
 Free University of Berlin, Institute of Meteorology, Berlin, Germany, (Aug. 2011)
 Climate Service Center (CSC): An Institution at the HZG, Hamburg, Germany (July 2011)
 McMaster Centre for Climate Change (March 2011)
 York University, Toronto, Ontario Canada (April 2011)
 Dept. of Civil and Environmental Engineering, University of Cyprus, Nicosia, (June 2009)
 Dept. of Civil Engineering, Cyprus University of Technology, Lemesos, (June 2009)
 Max-Planck-Institute of Meteorology, Hamburg, Germany (July 2008)
 Universitat Politècnica de Catalunya in Barcelona, Spain (June 2008)
 Technical Chamber of Cyprus, 27 June 1998, Nicosia, Cyprus.
 Technical Chamber of Greece, Chania, Crete, Greece, November 17, 1997.
 Organization of Development of Eastern Crete", Iraklion, Crete, Greece, October 19, 1995.
 GLERL Seminar Series, Great Lakes Env. Research Laboratory, Ann Arbor, Michigan, August 10, 1993.
 Institute of Marine Biology of Crete, Iraklion, Crete, October 21 1993
 Division of Hydraulics and Environmental Engineering, Department of Civil Engineering, Technical University of Athens, Athens, Greece, June 28 1993.
 Institute of Marine Biology, Iraklion, Crete, Greece, June 30 1992.
 National Water Research Institute, Canada Centre for Inland Waters, February 23 1989.
 Research and Applications Branch, National Water Research Institute, CCIW, February 23 1989.
 Division of Hydraulics and Environmental Engineering, Department of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece, June 27 1988.
 The Boundary Layer Wind Tunnel Laboratory, University of Western Ontario, Faculty of Engineering Science, London, Ontario, April 8 1987.
 Division of Hydraulics and Environmental Engineering, Department of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece, June 17 1987.
 Hydraulics Division, National Water Research Institute, Canada Centre for Inland Waters, February 24 1987.
 National Water Research Institute, Canada Centre for Inland Waters, October 2 1986.

Memberships to Editorial Boards

2017 - Associate Editor of the Climate Services Journal
 2012 – 2019 Associate Editor of the Journal of Hydrology

Memberships in Professional Research Organizations and Academic memberships

- CCLM - COSMO-Climate Limited-area Modelling (2013 - present)
- EURO-CORDEX (European Climate Change Research in Europe) (2011 – present)
- MedCLIVAR (Mediterranean CLimate VARIability and Predictability (2011 – present)
- HYMEX (Hydrological Cycle of Mediterranean Experiment) (2009 – present)
- McMaster Centre for Climate Change (<http://climate.mcmaster.ca/>)
- European Drought Center (EDC) (2008 – present)
- Association of Professional Engineers, Ontario (APEO)

Publications

Author of a book (2005); Co-author (first author) of two books (2007, 1994); Author of a chapter in four books (2015, 2013a-b, 1995); Over 400 scientific journal and conference papers/posters and technical reports, participated as coordinator or partner in over 60 research projects, numerous meetings/workshops and invited seminars. I published my research in journals, peer-reviewed conference proceedings, technical reports, meetings/workshops and invited seminars. The topics covered include Hydrology and Hydraulics, Water Resources Management, Meteorology & Environmental Sciences, Remote Sensing, Meteorological Radars, Climate Change and Extreme Events (floods and droughts).

Books

- **Tsanis, I.K.**, H. Shen, J. Wu and Valeo, C. "Hydrodynamic and Pollutant Transport Modeling of Lakes and Coastal Waters", Elsevier Science Ltd, England, 2007.
- **Tsanis I.K.**, "Solved Problems in Computational Hydraulics and Environmental Engineering", Tziolas Ltd., Greece, July 2005.
- **Tsanis, I.K.** and Valeo, C. "Mixing Zone Models for Submerged Discharges", Computational Mechanics Publications, Ashurst, Southampton, September 1994.

Contributions to books (chapter)

- Taesam Lee, Vijay P Singh, A Bardossy, E Plate, L Brekke, BL Thrasher, EP Maurer, ... MG Grillakis, AG Koutroulis, **IK Tsanis**, ..., "A multivariate chain model for simulating climatic parameters from daily data", Statistical Downscaling for Hydrological and Environmental Applications, 28, Cambridge University Press 28, 2019
- **Tsanis, I.K.**, Daliakopoulos, I.N., Koutroulis, A., Karatzas, P., Varouchakis, E., Kourgialas, N., 2015. "Soil Salinization" in "Soil threats in Europe: Status, methods, drivers and effects on ecosystem services". Editors: Stolte, J., Tesfai, M., Øygarden, L., Kværnø, S., Keizer, J., Verheijen, F., Panagos, P., Ballabio, C., Hessel, R. EUR 27607 EN; doi: 10.2788/488054 (print); doi: 10.2788/828742 (online), Luxembourg
- D.D. Alexakis, DG Hadjimitsis, S Michaelides, **Tsanis, I.K.**, A Retalis, C Demetriou, A Agapiou, K Themistokleous, S Pashiardis, K Aristeidou, F Tymvios, "Application of GIS and Remote Sensing Techniques for Flood Risk Assessment in Cyprus", Advances in Meteorology, Climatology and Atmospheric Physics, 3-8, 2013
- **Tsanis, I. K.** and Koutroulis A. "Impact of Climate Change on Water Resources in Crete", Chapter in the book to Honour the Emeritus Professor Dimitrios Tolikas, Aristotle University of Thessaloniki, 77-87, 2013.
- **Tsanis, I.K.** and Brissette, F.P. "Global Warming and Gas Transfer at the Air-Water Interface", Diachronic Climatic Impacts on Water Resources with Emphasis on Mediterranean Region, NATO ASI series, 45 pages, 1995.

Journal articles

1. Sofia Sarchani, Konstantinos Seiradakis, Paulin Coulibaly, Ioannis Tsanis “Flood Inundation Mapping in an Ungauged Basin”, *Water* 2020, 12(6) <https://doi.org/10.3390/w12061532>
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Research Branch, Canada Centre for Inland Waters, March 1990.

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Collaborative Research Work

I have been a member of International Research Teams on large scale projects during the last twelve years. These projects, International (EC) or joint (USA-Canada) involve field, laboratory studies and modelling and some of these are in the data analysis stages while others are in the design stages and will end within the next two years. Specifically the titles of these projects are:

H2020 SOILCARE: SoilCare for profitable and sustainable crop production in Europe (28 International Partners)	2017-2021
AQUAMAN: Innovative solutions to climate change adaptation and governance in the water management of the Region of Crete, EEA Grants	2015-2017
H2020 IMPREX: IMproving PRedictions and management of hydrological Extremes (23 International Partners)	2015-2019
RECARE: Preventing and Remediating degradation of soils in Europe through Land Care (27 International Partners)	2013-2018
HELIX: High-End cLimate Impacts and eXtremes, ENV.2013.6.1-3 Impacts of higher-end scenarios (16 International Partners)	2013-2017
CASCADE: CAstrophobic Shifts in drylands: how CAn we prevent ecosystem DEgradation? Collaborative Project/ Large Scale Integrated Project (14 Int. Partners)	2012-2017
IMPACT2C: Quantifying projected impacts under 2°C warming. Collaborative project/Large-scale integrating project, FP7-ENV-2011 (29 Int. partners).	2011-2015
ECLISE: Enabling CLimate Information Services for Europe. Collaborative Project. FP7-ENV-2010. Underpinning work to enable provision of local scale climate information (annual to decadal timescales) (13 International partners).	2011-2014
SATFLOOD: Integrated Use of Satellite Remote Sensing and Hydraulic	2010-2013

Modelling for the Flood Risk Assessment at Catchment Scale in Cyprus
Cyprus Research Promotion Foundation (RPF)

- COMBINE:** Comprehensive Modelling of the Earth System for better climate prediction and projection (Integrated Project - 22 International partners) 2009-2013
- SIMFLOOD:** High Resolution Satellite Imagery for Floodplain Mapping
European Space Agency 2009-2011
- WATCH:** WATER & global CHance (Integrated Project), Sixth Framework Programme – Global Change and Ecosystems Priority – 4th Call Paragraph II.1.1 Global Water Cycle, Water Resources and Droughts (25 International partners) 2007-2011
- SCENES:** Water Scenarios for Europe and for Neighbouring States
Sub-Priority 6.3 – Global Change and Ecosystems, Scenarios of water demand and availability (Integrated Project – 29 International partners), 2007-2010
- HYDRATE:** Hydrometeorological data resources and technologies for effective flash flood forecasting, Sixth Framework Programme, Global Change and Ecosystems Priority – 4th Call Paragraph II.1.2 “Flash Flood forecasting (12 EU partners) 2007-2009
- ENCORA,** European Network on Coastal Research Coordination Action 2005-2008
- Harmonized Techniques and Representative River Basin Data for Assessment and Use of Uncertainty Information in Integrated Water Management (HarmoniRiB)**
European Community EC-RS (Energy, environment and sustainable development) 2003-2006
- CRINNO,** Best Water use Innovative Practices towards a Sustainable Water Resources Management, Regional Program of Innovative Action for Crete, EC innovative Program 2003-2005
- A GIS Approach to Real Time Rainfall Prediction and Storm Tracking for Hamilton-Wentworth Region,** Regional Municipality of Hamilton-Wentworth
Environment Canada - McMaster University 1998-2001
- Metropolitan Toronto Waterfront Receiving Water Modelling Study**
MOEE Great Lakes Section, MOEE Central Region, City of Toronto
Regional Municipality of Metropolitan Toronto, City of Etobicoke,
City of Scarborough, Environment Canada - McMaster University 1993-1998
- Transfer of Toxic Gases at the Air-Water Interface**
Lakes Research Branch (LRB), Research and Applications Branch (RAB) (NWRI) 1987-1997
- Hamilton Harbour: Towards Restoring and Sustaining a Healthy Ecosystem**
McMaster University (30 partners) 1993-1996
- The Surface Wave Dynamics Experiment (SWADE)**
Office of Naval Research (ONR), NWRI - NASA 1989-1994
- A GIS Approach to Ecosystem Modelling**
Disaster Prevention Research Institute, Lake Biwa Research Institute 1994-1995
- Deep-Water Breaking and Wave Turbulence Interaction**
National Water Research Institute (NWRI), John Hopkins University
Woods Hole Oceanographic Institute, Finish Research Laboratory 1988-1994
- Statistics of Shoaling Waves for Engineering Applications (NWRI)** 1987-1988
- Loading and Transport of Toxic Contaminants into St. Lawrence River System from Lake Ontario,** NWRI, LRB 1988-1990

Evaluation of Water Quality Parameters in the Niagara and St. Lawrence Rivers
Water Quality Branch (WQB), Lakes Research Branch, NWRI

1989-1991

Other Research Activities

I was supported by various funding agencies in the form of grants or contracts. Most of the projects I have undertaken are directly relevant to the engineering practice, and the technology transfer is evident in the form of technical reports/government publications; many of these led to journal publications. The research funding permitted me to build a state-of-the-art Water Resources Research Laboratory. The following computer programs in the areas of Environmental Hydraulics, Wave Dynamics, Hydrology, Water Quality and Environmental Information Systems (EIS) were developed by my research group:

MIDSAP (Multi-Instrument Directional Spectrum Analysis Program) is an interactive program for PC-486 and SPARC workstations that uses state-of-the-art wave directional spectra techniques for the analysis of directional seas for heave-pitch-roll signals or wave-gauge arrays of any geometry.

PMSQ (Probabilistic Model of Stormwater Quality) is an interactive computer program for PC that uses AES (Atmospheric Environment) rainfall and temperature data as an input to the STORM (Storage, Treatment, Overflow, Runoff Model) to simulate the runoff and concentration files to calculate the toxic organic loadings in different urban areas. The mean concentrations are calculated by using three techniques.

WQSA (Water Quality Statistical Assessment) is an interactive program for PC-486 that uses parametric and nonparametric statistical methods to test for the existence of trends in water quality data. The NAQUADAT and ORLICON databases are used to provide the necessary water quality data from a number of stations in the Great Lakes.

IDOR3D (3D Nested Hydrodynamic/Pollutant Transport Model) is a program for SPARCstation and PC that calculates the circulation and pollutant transport in nearshore areas in the Great Lakes. Geographic Information Systems (GIS) modules are used as an automatic interface to prepare and input data.

EIS (Environmental Information Systems) Technology was used to develop a database management system for ecosystem analysis. Automatic interface modules were developed within GIS for environmental hydraulic and hydrology simulations. I gave a number of invited seminars in Universities and Research Institutes in Canada, USA, Japan and Europe on air-water interaction, wave dynamics, lake circulation, pollutant transport and environmental assessments. The seminars were given at: (1) Great Lakes Environmental Research Laboratory, Ann Arbor, Michigan, USA, (2) The Boundary layer Wind Tunnel Laboratory, University of Western Ontario, London, Ontario, (3) National Water Research Institute, Burlington, Ontario, (4) Aristotle University, Thessaloniki, Greece, Institute of Marine Biology, Crete, Greece, (5) Kyoto University, Japan, (6) Disaster Prevention Research Institute (DPRI), Japan, (7) Lake Biwa Research Institute, Otsu, Japan etc.

I was involved in a number of International collaborative studies with the:

National Oceanic Atmospheric Administration (NOAA) of the U.S. Department of Commerce, Ann Arbor, Michigan, USA

Research subject: Remote Sensing Research in the Great Lakes

Lake Biwa Research Institute, Otsu, Japan

Research Subject: GIS approach to Lake Biwa Ecosystem

Kyoto University, Kyoto, Japan

Department of Civil Engineering

Research Subject: Sediment Transport

Applied Research Institute, Bethlehem, West Bank

Research Subject: An Environmental Decision Support System for Water Resources and Ecosystem Management

I was asked to provide my expert opinion on the following international and domestic projects:

Member of the Board of Governors and Scientific Committee (Environmental Sector) of the Ministry of Industry in Greece, 2001-2004

Sustainable Management & Quality of Water Member of an Experts Panel in European Commission Research Directorate, Brussels, Belgium, March 2000, Presentation in InfoDay, Brussels, July 2001.

Integrated Water Resources Management of Crete Scientific Advisor for the European Project, Prefecture of Crete, Iraklion, Crete, 1999-2002

An Integrated Hydrodynamic/Pollutant Transport Model

Technical Chamber of Greece, Thessaloniki, Greece, 1999

Water Resources Management for the Island of Cyprus

Technical Chamber of Cyprus, Nicosia, Cyprus, 1998

Impact of the Proposed Burlington Skyway WWTP Outfall, Lake Ontario

Halton Region, Ontario, Canada, 1998

Water Resources Management for the Island of Crete

Technical Chamber of Greece, Chania, Crete, Greece, 1997

Impact of Pickering Nuclear Generating Station (NGS) on the Proposed Water Intake for the Region of York, Lake Ontario, York Region, Ontario, Canada, 1996

A GIS Approach to Lake Biwa Ecosystem Modelling

Lake Biwa Research Institute, Otsu, Japan, 1995

A GIS Approach to Water Resources Management

Organization of Development of Eastern Crete Iraklion, Crete, Greece, 1995

An Evaluation of the Impact that Thermal Discharges from the Roseton, Indian Point and Bowline Power Plants have on Temperature Distribution in the Hudson River, New York State, U.S.A. (Review of the Temperature Modelling Component of the Draft Environmental Impact Statement (DEIS)), ESSA Inc. for NY Power Companies, 1994

Review and Field Verification of a Hydrodynamic Computer Model that Predicts Major Water Movement Patterns in Lake Simcoe, Ontario, Canada, 1993

Lake Simcoe Conservation Authority

Review of the Mixing Zone Modelling Regulations for the Great Lakes, 1992

Ontario Ministry of the Environment and Energy, 1992

During my research retirement from McMaster University in 1994-95 I was implicated in a number of international research / management activities in Greece, Belgium and Japan. The titles of the research projects are listed below:

Impact of Climate Change and Other Environmental Factors on Natural Resources

Revision of the Environment and Climate Research Workprogramme
(Canada - European Community Collaboration), Brussels, Belgium

A Geographic Information Systems (GIS) Approach to Ecosystem Modelling

Lake Biwa Research Institute, Otsu, Japan.

Development of a Quantitative and Qualitative Water Resources Management Master Plan for Greece

(Environmental Information Systems (EIS) Section), Ministry of the Environment, Athens, Greece

A GIS Approach to Water Resources Management and Coastal Protection

Ministry of the Environment, Technical Chamber of Greece, Athens, Greece

Other Responsibilities

(Contributions to Teaching and Learning)

Use of WebCT for course instruction (CE2E03 Computer Applications in Civil Engineering, CE2004 Fluid Mechanics).

Preparation of **Lab Manuals and flash player presentations** (produced with the aid of Learning Technologies Resource Centre (LTRC)) for Fluid Mechanics and Hydraulic experiments. (Bernoulli principle, V-notch weir experiment, energy principle, hydraulic jump, hydrostatic force, momentum principle, stability of floating bodies).

Postgraduate Academic and Research Program, “Environmental and Health Engineering”, European Community Education Program (I.K. Tsanis) (2003-2006).

Environmental Database for Chania Prefecture, Web-Site Development, Local Authority of Municipalities of Chania, Crete (I.K. Tsanis) (2003-2004).

Development of Educational CD-ROMs for applying Geographic Information Systems (GIS) Technology in Municipal and Environmental Hydraulics and Hydrology courses in the Civil Engineering Graduate and Undergraduate Curriculum (assignments and lectures were designed by using Power Point and Netscape).

International Training in Water Resources Research and Environmental Information Systems (Mexico, Palestine, Taiwan, Korea)

Geographical Information Systems (GIS) Technology in Education K-12 program between the Hamilton Board of Education and McMaster University

Reorganization of both graduate and undergraduate programs in hydraulics and fluid mechanics and the hydraulics laboratory (video tapes and transcripts for experiments)

Educational grant for improving teaching and laboratory facilities (educational video tapes, transcripts)

Educational trips to National Water Research Institute (demonstration of field and laboratory facilities - Gifted Students Programme)