

CURRICULUM VITAE

George Christakos, Ph.D, DSc, PE

Department of Geography
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FACULTY POSITIONS

2006-Present:

Department of Geography,
San Diego State University, San Diego, California, USA:

- *S.M. Birch Distinguished Professor.*

Teaching and research activities focus on the advanced integrative space-time modelling and science-based mapping of interdisciplinary systems, including:

Uncertainty assessment of real-world systems; Integrated exposure analysis and health effects; Epidemiology and the space-time propagation of infectious diseases; Medical geography and Temporal GIS; Environmental modelling, contaminant flow and transport; Air pollution monitoring and control; Brain and behavioral sciences in quantitative problem-solving; Multi-sourced knowledge synthesis and data assimilation; Science-based risk analysis and decision making; Spatiotemporal statistics, random field models and stochastic partial differential equations.

1990-2005:

Department of Environmental Science & Engineering, School of Public Health,
University of North Carolina, Chapel Hill, N.C., U.S.A.:

- 1998-2005: *Professor.*
- 1999-2005: *Director, Center for the Integrated Study of the Environment (CISE).*
- 1999-2002: *Director, Environmental Modelling (EM) program.*
- 1994-1997: *Associate Professor.*
- 1990-1993: *Assistant Professor.*

2001-2005:

Department of Statistics & Operations Research,
University of North Carolina, Chapel Hill, N.C., USA:

Adjunct Professor

OTHER APPOINTMENTS

1. Zhejiang University, Hangzhou, China.
2. Universite Catholique de Louvain-la-Neuve, Louvain la Neuve, Belgium.
3. National Technical University of Athens, Athens, Greece.
4. Universidad Politecnica de Catalunya, Barcelona, Spain.
5. Universidad de Granada, Granada, Spain.
6. Universita' di Lecce, Lecce, Italy.
7. Russian Academy of Sciences, Moscow, Russia.
8. Stanford University, Stanford, CA, USA.
9. University of Cambridge, Cambridge, UK.
10. Kansas Geological Survey, Lawrence, KS, USA.
11. Institute of Geology & Mineral Exploration, Athens.
12. Centre de Geostatistique et de Morphologie Mathematique, Fontainebleau, France.
13. Massachusetts Institute of Technology, Cambridge, MA, USA.

14. University of Birmingham, Birmingham, UK.

EDITORIAL POSITIONS

1998-Present: Editor-in-Chief

Journal of Stochastic Environmental Research & Risk Assessment

Web site: <http://link.springer.de/link/service/journals/00477/index.htm>

2008-Present: Associate Editor

Water Quality, Exposure and Health

Web site: <http://www.springer.com/environment/water/journal/12403>

2009-Present: Advisory Editor

Chilean Journal of Statistics (ChJS)

1992-Present: Editorial Board

Journal of Environmental & Ecological Statistics

Web site: <http://www.springerlink.com/content/1573-3009/>

1997-2007: Editorial Board

Advances in Water Resources

Web site: http://www.elsevier.com/wps/product/cws_home/422913

1994-1997: Associate Editor

Journal of Stochastic Hydrology & Hydraulics

PUBLIC DOMAIN COMPUTER LIBRARIES

- SEKS-GUI (Spatiotemporal Epistematics Knowledge Synthesis software library and Graphic User Interface):

<http://geography.sdsu.edu/Research/Projects/SEKS-GUI/SEKS-GUI.html>

<http://homepage.ntu.edu.tw/~hlyu/software/SEKSGUI/SEKSHome.html>

See: Kolovos A., Yu H-L, and Christakos G., 2006. *SEKS-GUI v.0.6 User Manual*.

Dept. of Geography, San Diego State University, San Diego, CA.

- BMElib (Bayesian Maximum Entropy software library).
- SANlib (Stochastic Analysis software library).

SCIENTIFIC PUBLICATIONS

I. Books:

Christakos G., 2012. *Modern Spatiotemporal Geostatistics*. New Edition, Dover Publ. Inc., Mineola, NY, In Press.

Christakos G., 2010. *Integrative Problem-Solving in a Time of Decadence*. Springer-Verlag, New York, N.Y.

Christakos G., Olea R.A., Serre M.L., Yu H-L and Wang L-L, 2005. *Interdisciplinary Public Health Reasoning and Epidemic Modelling: The Case of Black Death*. Springer-Verlag, New York, NY.

Christakos G., 2005. *Random Field Models in Earth Sciences*. New Edition, Dover Publ. Inc., Mineola, NY.

Christakos G., Bogaert P. and Serre M.L., 2002. *Temporal GIS*. With CD-ROM. Springer-Verlag, New York, NY.

Christakos G., 2000. *Modern Spatiotemporal Geostatistics*. Oxford Univ. Press, New York, NY (Out of Print.).

Christakos G. and Hristopulos D.T., 1998. *Spatiotemporal Environmental Health Modelling: A Tractatus Stochasticus*. Kluwer Academic Publ., Boston, MA.

Christakos G., 1992. *Random Field Models in Earth Sciences*. Academic Press, San Diego, CA (Out of Print.)

Christakos G., Clark I., David M., Journel A.G., Krige D.G. and Olea R.A. (ed.), 1991, *Geostatistical Glossary and Multilingual Dictionary*. Oxford Univ. Press, Oxford, UK (Out of Print).

II. Book Chapters:

Christakos G. and Wang J.F., 2011. "Space-Time Synthesis in Health Sciences." In *Handbook of Regional Science*, Fischer MM (ed.), Springer, Berlin.

Yu H-L and Christakos G., 2009. "Lessons Learned from the Spatiotemporal Analysis of PM_{2.5} Population Exposure in Taipei, Taiwan". *Geospatial Analysis of*

- Environmental Health*, McLafferty S. and Maantay J. (eds.), Springer Series on "Geotechnologies and the Environment", New York, NY.
- Christakos G., 2008. "Bayesian Maximum Entropy". *Advanced Mapping of Environmental Data: Geostatistics, Machine Learning, and Bayesian Maximum Entropy*-Chapter 6: 247-306. Kanevski M. (ed.), J. Wiley & Sons, New York, NY.
- Yu H-L, Christakos G. and Bogaert P. 2010. "Dealing with Spatiotemporal Heterogeneity: The Generalized BME Model". In *Progress in Spatial Analysis*: 75-91, Páez A., Le Gallo J., Buliung R.N. and Dall'Erba S. (eds.), Springer Series on "Advances in Spatial Sciences", Springer, New York, NY.
- Christakos G., 2008. "Spatiotemporal Statistics and Geostatistics". *Positive Definite Functions: From Schoenberg to Space-Time Challenges*-Chapter 5: 117-153, Mateu, J. and Porcu E. (eds.), UJI Publ., Castello de la Plana, Spain.
- Modis K., Yu H-L, Christakos G., Stewart R. and Papantonopoulos G., 2007. "BME-generated temperature maps of the Nea Kessani geothermal field", Invited chapter, In *Geothermal Energy Research Frontiers*: 3-7, Ueckermann H.I. (ed.), Nova Science Publ., Inc., Hauppauge, NY.
- Yu H-L, Christakos G. and Chen J-C, 2007. "Spatiotemporal air pollution modeling and prediction in epidemiologic research". *Invited chapter*. In *Air Pollution Research Trends*: 57-75, Bodine C.G. (ed.), Nova Science Publishers, Inc., Hauppauge, NY.

III. Entries in Encyclopedias:

- Christakos G., 2011. "Space-Time Stochastic Modelling of Human Exposure". In *Encyclopedia of Enviromentrics*, El-Shaarawi A.H. and Piegorisch W.W. (eds.), J. Wiley & Sons, Chichester, UK, In press.
- Christakos G., 2008. "Bayesian Statistics in Spatial Analysis". In *Encyclopedia of Geography*: 187-189. Warf B. (ed.), Sage Publ. Inc., Thousand Oaks, CA.
- Christakos G., 2006. "Modelling with Spatial and Temporal Uncertainty". In *Encyclopedia of Geographical Information Science (GIS)*: 1189-1194, Springer, New York, NY.
- Christakos G., 2004. "The Study of Uncertainty in Life Support Systems". In *Encyclopedia of Life Support Systems*. UNESCO, London, U.K.
[On-line: <http://www.eolss.net/>].

Christakos G., 2001. "Stochastic Modelling of Human Exposure". In *Encyclopedia of Enviromentrics* **3**: 1290-1296, El-Shaarawi A.H. and Piegorsch W.W. (eds.), J. Wiley & Sons, Chichester, UK.

IV. Papers in Refereed Scientific Journals:

J. Public Health:

Kolovos A., Angulo J., and Modis K., Papantonopoulos, G. Wang J-F., and Christakos G., 2010. "Health Risk Analysis: The Spatiotemporal Spread of French Flu". Under review.

Wang J.F., Christakos G., Han W.G., and Meng B., 2008. "Data-driven exploration of 'spatial pattern-time process-driving forces' associations of SARS epidemic in Beijing, China". **122**: 1-11. [DOI:10.1093/pubmed/fdn023].

Christakos G., Olea R.A. and Yu H-L, 2007. "Recent results on the spatiotemporal modelling and comparative analysis of Black Death and bubonic plague epidemics". **121**: 700-720.

Choi K-M, Christakos G. and Wilson M.L., 2006. "El Niño effects on influenza mortality risks in the State of California". **120**: 505-516.

PLoS-One:

Wang J-F, Reis B.Y., Mao-Gui Hu M-G, Christakos G., Yang W-Z, Sun Q, Li Z-J, Li X-Z, Lai S-J, Chen H., 2011. "Area Disease Estimation Based on Sentinel Hospital Records." Accepted.

PLoS-Medicine:

Kolovos A., Angulo J., and Modis K., Papantonopoulos, G. Wang J-F, and Christakos G., 2011. "Health Risk Analysis: The Spatiotemporal Spread of French Flu". Under review.

Social Science & Medicine D: Medical Geography:

Christakos G. and Vyas V., 1998. "A novel method for studying population health impacts of spatiotemporal ozone distribution". **47(8)**: 1051-1066.

Christakos G. and Lai J., 1997. "A study of the breast cancer dynamics in North Carolina". **45**(10): 1503-1517.

J. of Sexually Transmitted Infections:

Law D.G., Serre M.L., Christakos G., Leone P.A. and Miller W.C., 2004. "Spatial analysis and mapping of sexually transmitted diseases to optimize intervention and prevention strategies". **80**: 294-299.

J. of Exposure Analysis & Environmental Epidemiology:

Choi K-M, Serre M.L. and Christakos G., 2003. "Efficient mapping of California mortality fields at different spatial scales". **13**(2): 120-133.

Christakos G. and Serre M.L., 2000. "A spatiotemporal study of exposure-health effect associations". **10**(2): 168-187.

Christakos G. and Kolovos A., 1999. "A study of the spatiotemporal health impacts of ozone exposure". **9**(4): 322-335.

BMC Public Health:

Wang J.F., Liu X., Christakos G., Liao Y-L, Gu X. and Zheng X-Y, 2009. " Assessing local determinants of neural tube defects in the Heshun region, Shanxi province, China". **10**: 52 [DOI: 10.1186/1471-2458-10-52].

Environmental Health Perspectives:

Yu H-L, Chen J-C, Christakos G. and Jerrett M., 2009. "BME estimation of residential exposure to ambient PM₁₀ and ozone at multiple time-scales". **117**: 537-544.

Human Biology:

Olea R.A. and Christakos G., 2005. "Duration of urban mortality for the 14th century Black Death epidemic". **77**(3): 291-303.

Chinese Science Bulletin

Cao C., Chang C., Wang J-F, Cao W., Kolovos A., Christakos G. and Li X., 2010. "The explanatory spatiotemporal data analysis for pandemic SARS spreading in mainland China", In press. In Chinese: 赵坚;曹春香*;常超一, 王劲峰;曹务春, Kolovos Alexander; Christakos George, 张颢;徐敏;高孟绪;李小文, 2010.

中国大陆SARS流行的时空数据分析解释。

非常感谢您对本刊的支持和信任。今后有关稿件的事宜我们将与投稿人和通讯作者联系。您也可以随时登录系统查看稿件状态。

International J. of Health Geographics:

Wang J-F, Guo Y-S, Christakos G, Yang W-Z, Liao Y-L, Li Z-J, Li X-Z, Lai S-J, Chen H-Y, 2011. "Hand-Foot-Mouth Disease (HFMD) Spatiotemporal Transmission and Climate". Accepted.

Yu H-L and Christakos G., 2006. "Spatiotemporal modelling and mapping of the bubonic plague epidemic in India". **5**(12). [On-line: <http://www.ij-healthgeographics.com/>].
Top 5 Most-Accessed Papers, 2006.

Environmetrics:

Pang W., Christakos G. and Wang J-F, 2009. "Comparative spatiotemporal analysis of fine Particulate Matter pollution." **20** [DOI: 10.1002/env.1007.]

Mateu J., Porcu E. and Christakos G., 2007. "Fitting negative spatial covariances to geothermal field temperatures in Nea Kessani (Greece)." **18**: 1-15.

International Journal of Geographical Information Science:

Wang J-F, Liu X., Christakos G., Liao Y-L, Gu X., and Zheng X-Y, 2010. "Assessing local determinants of Neural Tube defects in the Heshun region, China". **24**(1): 107–127. [DOI: 10.1080/13658810802443457.]

Environmental Science & Technology:

Kolovos A., Skupin A., Jerrett M. and Christakos G., 2010. "Multi-perspective analysis and spatiotemporal mapping of air pollution monitoring data." **44**(17): 6738-6744.
DOI: 10.1021/es1013328.

Christakos G., 2003. "Critical conceptualism in environmental modelling and prediction". **37**: 4685-4693.

Science China:

Wang J-F, Li L-F, and Christakos G., 2009. "Estimating spatial attribute means in a GIS

environment.” [DOI: dnouia:ry102.011007/sV11o4l.3503-00N9o-0.1:913-x8.]

Bull. Amer. Meteorological Soc.,

Wang J-F, G Christakos, M-G Hu, C-S Jiang, Y-S Guo, Ma A-H, 2010. "Climate change and improvement of climate monitoring network." Submitted.

Atmospheric Environment:

Bogaert P., Christakos G., Jerrett M. and Yu H-L, 2008. "Spatiotemporal modelling of ozone distribution in the state of California". **43**: 2471-2480.

Christakos G. and Serre M.L., 2000. "BME analysis of spatiotemporal particulate matter distributions in North Carolina". **34**(20): 3393-3406.

Christakos G. and Vyas V., 1998. "A composite spatiotemporal study of ozone distribution over Eastern United States". **32**(16): 2845-2857.

Vyas V. and Christakos G., 1997. "Spatiotemporal analysis and mapping of sulfate deposition data over the conterminous USA". **31**(21): 3623-3633.

Christakos G. and Hristopoulos D.T., 1996. "Characterization of atmospheric pollution using stochastic indicators". **30**(22): 3811-3823.

Christakos G. and Thesing G.A., 1993. "The intrinsic random field model and its application in the study of Sulfate Deposition data". **27A**(10): 1521-1540.

Reviews of Geophysics:

Christakos G., 2005. "Recent methodological developments in geophysical assimilation modelling". **43**: 1-10.

Physical Review E:

Hristopoulos D.T. and Christakos G., 1997. "A variational calculation of the effective fluid permeability of heterogeneous media". **55**(6): 7288-7298.

J. of Geophysical Research:

Yu H-L, Christakos G., Modis K. and Papantonopoulos G., 2007. "A composite solution method for physical equations and its application in the Nea Kessani geothermal field (Greece)". *Solid Earth* **112**(B6): B06104 [Doi: 10.1029/2006JB004900].

Christakos G., Serre M.L. and Kovitz J., 2001. "BME representation of particulate matter distributions in the state of California on the basis of uncertain measurements". **106(D9)**: 9717-9731.

Bogaert P. and Christakos G., 1997. "Spatiotemporal analysis and processing of thermometric data over Belgium". **102(D22)**: 25,831-25,846.

Bulletin of American Physical Society:

Hristopulos D.T. and Christakos G., 1999. "Monte Carlo calculations of single-phase effective permeability in 2-D anisotropic porous media". **44(6)**: 23.

Geoderma:

Savelieva E, Demyanov V., Kanevski M., Serre M.L. and Christakos G., 2005. "BME-based uncertainty assessment of the Chernobyl fallout". **128**: 312-324.

Best Paper in Pedometrics Award, 2005 [<http://www.pedometrics.org/>].

Christakos G., 1998. "Spatiotemporal information systems in soil and environmental sciences". **85(2-3)**: 141-179.

Boletín Geológico y Minero de España (BGME):

Christakos G, J.M. Angulo, and H-L Yu, 2011. "Constructing space-time pdf distributions in geosciences". Invited paper.

Water Resources Research:

Kolovos A., Christakos G., Serre M.L. and Miller C.T., 2002. "Computational BME solution of a stochastic advection-reaction equation in the light of site-specific information". **38(12)**: 1318-1334.

Christakos G., Hristopulos D.T. and Li X., 1998. "Multiphase flow in heterogeneous porous media: A stochastic differential geometry viewpoint". **34(1)**: 93-102.

Christakos G. and Hristopulos D.T., 1996. "Stochastic indicators for waste site characterization". **32(8)**: 2563-2578.

Christakos G., Hristopulos D.T., Miller C.T., 1995. "Stochastic diagrammatic analysis of groundwater flow in heterogeneous soils". **31(7)**: 1687-1703.

Christakos G. and Killam B.R., 1993. "Sampling design for classifying contaminant level using annealing search algorithms". **29(12)**: 4063-4076.

Christakos G., 1984. "On the problem of permissible covariance and variogram models". **20**(2): 251-265.

Stochastic Hydrology & Hydraulics:

Bogaert P. and Christakos G., 1997. "Stochastic analysis of spatiotemporal solute content measurements using a regressive model". **11**(4): 267-295.

Hristopulos D.T. and Christakos G., 1997. "Diagrammatic theory of nonlocal effective hydraulic conductivity". **11**(5): 369-395.

Oliver L.D. and Christakos G., 1995. "Diagrammatic solutions for hydraulic head moments in 1-D and 2-D bounded domains". **9**: 269-296.

Christakos G. and Hristopulos D.T., 1994. "Stochastic space transformation techniques in subsurface hydrology-Part 2: Generalized spectral decompositions and Plancherel representations". **8**(2): 117-155.

Christakos G., Miller C.T., and Oliver D., 1993. "The development of stochastic space transformation and diagrammatic perturbation techniques in subsurface hydrology". **7**(1): 14-32.

Christakos G., Miller C.T. and Oliver L.D., 1993. "Stochastic perturbation analysis of ground water flow. Spatially variable soils, semi-infinite domains and large fluctuations". **7**(3): 213-239.

Advances in Water Resources:

Kolovos A., Christakos G., Hristopulos D.T and Serre M.L., 2004. "Methods for generating non-separable spatiotemporal covariance models with potential environmental applications". **27**: 815-830.

Christakos G., 2002. "On the assimilation of uncertain physical knowledge bases: Bayesian and non-Bayesian techniques". **25**(8-12): 1257-1274.

Christakos G., Hristopulos D.T. and Bogaert P., 2000. "On the physical geometry hypotheses at the basis of spatiotemporal analysis of hydrologic geostatistics". **23**: 799-810.

Top 10 of Year's Most Requested Pdf (Oct 1999-Sept 2000).

Miller C.T., Christakos G., Imhoff P.T., McBride J.F., Pedit J.A. and Trangenstein J.A., 1998. "Multiphase flow and transport modelling in heterogeneous porous media: Challenges and approaches". **21**(2): 77-120.

Top 10 of Most Cited Papers, last 10 years.

- Oliver L.D. and Christakos G., 1996. "Boundary condition sensitivity analysis of the stochastic flow equation". **19**(2): 109-120.
- Christakos G. and Olea R.A., 1992. "Sampling design for spatially distributed hydrogeologic and environmental processes". **15**(4): 219-237.
- Christakos G., 1986. "Space transformations in the study of multidimensional functions in the hydrologic sciences". **9**(1): 42-48.

Nonlinear Analysis:

- Hristopulos D.T. and Christakos G., 1997. "An analysis of hydraulic conductivity upscaling". **30**(8): 4979-4984.

Institute of Electrical & Electronic Engineers (IEEE) Transactions:

- Yu H-L and Christakos G., 2009. "Modelling and estimation of heterogeneous spatiotemporal attributes under conditions of uncertainty" *Geosciences and Remote Sensing*. Accepted.
- Wang J-F, Christakos G. and Hu M-G, 2009. "Modelling spatial means of surfaces with stratified non-homogeneity". *Geosciences and Remote Sensing*. **47**(12): 4167-4174.
- Christakos G., Kolovos A., Serre M.L. and Vukovich F., 2004. "Total ozone mapping by integrating data bases from remote sensing instruments and empirical models." *Geosciences and Remote Sensing* **42**(5): 991-1008.
- Christakos G. and Bogaert P., 1996. "Spatiotemporal analysis of springwater ion processes derived from measurements at the Dyle Basin in Belgium". *Geosciences and Remote Sensing* **34**(3): 626-642.
- Christakos G. and Panagopoulos C., 1992. "Space transformation methods in the representation of geophysical random fields". *Geosciences and Remote Sensing* **30**(1): 55-70.
- Christakos G., 1991. "On certain classes of spatiotemporal random fields with application to space-time data processing". *Systems, Man, and Cybernetics* **21**(4): 861-875.

Quarterly of Applied Mathematics:

Christakos G. and Hristopulos D.T., 1997. "Stochastic Radon operators in porous media hydrodynamics". **LV(1)**: 89-112.

J. of Optimization Theory & Applications:

Christakos G. and Paraskevopoulos P.N., 1987. "On the functional optimization of a certain class of nonstationary spatial functions". **52(2)**: 191-208.

Christakos G., 1989. "Optimal estimation of nonlinear state-nonlinear observation systems". **62(1)**: 29-48.

J. of Mathematics & Computers in Simulation:

Christakos G., 1987. "The space transformations in the simulation of multidimensional random fields". **29**: 13-319.

J. of Mathematical & Computer Modelling:

Christakos, G., 1988. "A simple approach to nonlinear estimation of physical systems". **11**: 583-588.

Christakos G. and Olea R.A., 1988. "A multiple-objective optimal exploration strategy". **11**: 413-418.

Society of Industrial & Applied Mathematics (SIAM):

Yu H-L and Christakos G., 2005. "Porous media upscaling in terms of mathematical epistemic cognition". *Applied Mathematics* **66(2)**: 433-446.

Christakos G., Hristopulos D.T. and Kolovos A., 2000. "Stochastic flowpath analysis of multiphase flow in random porous media". *Applied Mathematics* **60(5)**: 1520-1542.

Hristopulos D.T., Christakos G., and Serre M., 1999. "Implementation of a space transformation approach for solving the three-dimensional flow equation". *Scientific Computing* **20(2)**: 619-647.

Theory of Probability & Mathematical Statistics:

Christakos G., 2002. "On a deductive logic-based spatiotemporal random field theory". **66**: 54-65 (*Teoriya Imovirnostey ta Matematychna Statystyka*).

Jour. of Applied Probability:

Christakos G. and Hristopulos D.T., 1997. "Stochastic indicator analysis of contaminated sites". **34**(4): 988-1008.

J. of Multivariate Analysis:

Porcu E., Mateu J. and Christakos G., 2009. "Quasi-arithmetic means of covariance functions with potential applications to space-time data". **100**: 1830-1844. [On line: DOI:10.1016/j.jmva.2009.02.013.]

Risk Analysis:

Serre M.L., Kolovos A., Christakos G. and Modis K., 2003. "An application of the holistochastic human exposure methodology to naturally occurring arsenic in Bangladesh drinking water". **23**(3): 515-528.

Stochastic Environmental Research & Risk Assessment:

Yu H-L, Yang S-J, Yen H-J and Christakos G., 2010. "Spatiotemporal analysis of climate impact on dengue fever risk in Southern Taiwan". In press.

Vilca F., Sanhueza A., and Christakos G., 2010. "An extended Birnbaum–Saunders model and its application in the study of environmental quality in Santiago, Chile". [DOI 10.1007/s00477-009-0363-6.]

Yu H-L, Kolovos A., Christakos G., Chen J-C, Warmerdam S. and Dev B., 2007. "Interactive spatiotemporal modelling of health systems: The SEKS-GUI framework". **21**(5): 555-572. Special Issue on *Medical Geography as a Science of Interdisciplinary Knowledge Synthesis under Conditions of Uncertainty*, Griffith D. and Christakos G. (eds.).

Baker R. and Christakos G., 2007. "Revisiting prior distributions, Part I: Priors based on a physical invariance principle". **21**(4): 427-434.

Baker R. and Christakos G., 2007. "Revisiting prior distributions, Part II: Implications of the physical prior in maximum entropy analysis". **21**(4): 435-446.

Christakos G. and Olea R.A., 2005. "New space-time perspectives on the propagation characteristics of the Black Death epidemic and its relation to bubonic plague". **19**(5): 307-314.

Kovitz J. and Christakos G., 2004. "Assimilation of fuzzy data by the BME method". **18**(2): 79-90.

- Kovitz J. and Christakos G., 2004. "Spatial statistics of clustered data". **18**(3): 147-166.
- Christakos G., 2003. "Soil behaviour under dynamic loading conditions: Experimental procedures and statistical trends". **17**(3): 175-190.
- Serre M.L., Christakos G., Li H. and Miller C.T., 2003. "A BME solution of the inverse problem". **17**(5-6): 354-369.
- Christakos G., 2003. "Another look at the conceptual fundamentals of porous media upscaling". **17**(5-6): 276-290.
- D'Or D., Bogaert P. and Christakos G., 2001. "Applications of BME to soil texture mapping". **15**(1): 87-100.
- Christakos G. and Papanicolaou V., 2000. "Norm-dependent covariance permissibility of weakly homogeneous spatial random fields." **14**(6): 1-8.
- Serre M.L. and Christakos G., 1999. "Modern Geostatistics: Computational BME in the light of uncertain physical knowledge -The Equus Beds study". **13**(1): 1-26.
- Hristopulos D.T. and Christakos G., 1999. "Renormalization group analysis of permeability upscaling". **13**(2): 131-160.

Mathematical Geology:

- Hristopulos D.T. and Christakos G., 2001. "Practical calculation of non-Gaussian multivariate moments in BME analysis". **33**(5): 543-568.
- Christakos G. and Li X., 1998. "Bayesian maximum entropy analysis and mapping: A farewell to kriging estimators?" **30**(4): 435-462.
- Cassiani G. and Christakos G., 1998. "Analysis and estimation of spatial non-homogeneous natural processes using secondary information". **30**(1): 57-76.
- Christakos G. and Raghu V.R., 1996. "Dynamic stochastic estimation of physical variables". **28**(3): 341-365.
- Christakos G., 1990. "A Bayesian/maximum-entropy view to the spatial estimation problem". **22**(7): 763-776.
- Christakos G., 1988. "On-line estimation of nonlinear physical systems". **20**(2): 111-133.
- Christakos G., 1987. "Stochastic simulation of spatially correlated geoprocesses". **19**(8): 803-827.
- Christakos G., 1985. "Recursive parameter estimation with applications in earth sciences". **17**(5): 489-515.

International J. of Geographical Information Science:

Wang J-F, Li X-H, Christakos G., Liao Y-L, Zhang T., Gu X. and Zheng X-Y, 2009. "Geographical getectors-based health risk assessment and its application in the Neural Tube Defects study of the Heshun Region, China". **24**(1): 107-127
[DOI: 10.1080/13658810802443457]

Sensors:

Wang J-F, Li L-F and Christakos G., 2009. "Sampling and Kriging spatial means: Efficiency and Conditions". **9**: 5224-5240 [DOI:10.3390/s90705224].

Engineering Geology:

Christakos G., 1985. "Modern statistical analysis and optimal estimation of geotechnical data". **22**(2): 175-200.

International J. of Numerical & Analytical Methods in Geomechanics:

Christakos G., 1987. "A stochastic approach in modelling and estimating geotechnical data". **11**(1): 79-102.

V. Papers in Refereed Volumes:*NATO Advanced Study Institute Book Series:*

Christakos G., 1991. "Certain results on spatiotemporal random fields and their applications in environmental research". *Probabilistic & Stochastic Methods in Analysis with Applications* **372**: 287-322. Byrnes J.S., Byrnes J.L., Hargreaves K.A. and Berry K. (eds.), Kluwer Acad. Publ., Dordrecht, the Netherlands.

Geostatistics for Environmental Applications:

Serre M., Christakos G., Howes J. and Abdel-Rehiem A.G., 2001. "Powering an Egyptian air quality information system with the BME space/time analysis toolbox: Results from the Cairo baseline year study". 91-100, Monestiez P., Allard D. and Froidevaux R. (eds.), Kluwer Acad. Publ., Dordrecht, the Netherlands.

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Spatiotemporal Modelling of Environmental Processes:

Christakos G., 2005. "Integrated modelling in space-time environments: Toward a synthetic theory of human exposure". Invited paper, *METMA '04*, Granada, Spain.

Modelling and Simulation of Systems:

Christakos G., 1989. "Modelling and estimation of nonlinear systems". *IMAC*: 221-223. Baltzer AG Sci. Publ., Red Bank, NJ.

Civil Engineering & Computers:

Christakos G. and Dimitrakopoulos R., 1991. "Developing intelligent computer models in the stochastic analysis of environmental systems". 213-218, Oxford, UK.

Geostatistics for the Next Century:

Christakos G., Miller C.T. and Oliver D.L., 1993. "Cleopatra's nose and the diagrammatic approach to flow modelling in random porous media". 341-358. Kluwer Acad. Publ., Amsterdam, Netherlands.

Calibration and Reliability in Groundwater Modelling:

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Christakos G., 2002. "Conceptual framework of physical knowledge synthesis in uncertain environments". *Keynote Talk, IAHS Proc.*: 535-539, June 17-20, 2002, Prague, Czech Rep.

VI. Papers in Conference/Symposia Proceedings:

Spatial Thinking and GIS:

Wang J.F., Christakos G., Guo Y.S., Yang W.Z., Liao Y.L., and Wang X.Z., 2011. "Spatiotemporal Types of HFMD and Climate." *STGIS2011*, Tokyo, Japan.

Modelling and Simulation:

Christakos G., 1984. "The space transformations and their applications in systems modelling and simulation". *12th Intern Confer, AMSE* **1**(3): 49-68, Athens, Greece.

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Yu H-L, Wang C-S, Chen J-C and Christakos G., 2008. "Accuracy assessment of long-term exposure estimation using modern geostatistics", In *Proc. Joint ISEE-ISEA Confer*, Oct 12-16, 2008, Pasadena, CA.

Chen J.C., Cooper G.S., Yu H-L, and Christakos G., 2008. "Ambient air pollution and increased mortality in Lupus", In *Proceed Joint ISEE-ISEA Confer*, Oct 12-16, 2008, Pasadena, CA.

Rieckermann J. and Christakos G., 2008. "Monitoring and modeling the occurrence of illicit drugs in wastewater systems", In *Proceed 11 ICUD-Edinburgh Intern Confer Centre*, Aug 31-Sept 5, 2008, Edinburgh, Scotland.

European Geophysical Union-EGU2008:

Christakos, G., Choi K-M and H-L Yu, 2008. "Climate Issues of Influenza Mortality Risks)", *EGU General Assembly*, April 13-18, 2008, Vienna, Austria.

Congreso Nacional de Física 2007:

Castro J.J., Christakos G., Carsteanu A.A., and Rios R., 2007. "No-estacionariedad de los Coeficientes de Descomposicion de la Contaminacion Atmosferica", *WTC y Galeria Plaza*, Oct. 29-Nov. 2, 2007, Boca del Rio, Veracruz, Mexico.

EcoMod2007:

Kolovos A. and Christakos G., 2007. "Statistical tools in renewable energy modelling: physical based, non-separable spatiotemporal covariance models", *EcoMod Confer. On Energy & Environmental Modeling*, Sept. 13-14, 2007, Moscow, Russia.

GeoEnv:

Kolovos A., Skupin A., Pang W., Christakos G. and Jerrett M., 2010. "Spatiotemporal geostatistics in cross-methodological monitoring of air pollution". *8th European Confer on Geostatistics for Environmental Applications*, Sept. 13-15, 2010, Ghent, Belgium.

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European Geophysical Union-EGU2007:

Yu H-L and Christakos G., Tartakovsky D., Modis K. and Papantonopoulos G., 2007. "Composite stochastic solution of a 3-D geothermal model in Nea Kessani (Greece)". *EGU General Assembly*, April 16-20, Vienna, Austria.

METMA'04:

Christakos G., 2004. "Integrated modelling in space-time environments: Toward a synthetic theory of human exposure". *2nd Spanish Workshop on Spatio-Temporal Modelling of Environmental Processes (METMA'04)*, June 1-4, Granada, Spain.

International Statistical Institute:

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Joint Intern. Symposium on Geospatial Theory, Processing & Applications

Choi K-M, Christakos G. and Wilson M.L., 2002. "A new multi-scale modelling approach for space/time random field estimation", Ottawa, Canada, July 9-12.

Air Pollution 2002:

Christakos G., Kolovos A. and Serre M.L., Abhichek C. and Vukovich F., 2002. "Towards global mapping of ozone distribution using soft information and data from TOMS and SBUV instruments on the Nimbus-7 satellite", Segovia, Spain, July 1-3.

Serre M.L. and Christakos G., 2002. "Efficient exposure mapping across space-time of particulate matter in the US", Segovia, Spain, July 1-3.

IEEE Symposia:

Christakos G., Miller C.T. and Oliver D.L., 1993. "Stochastic flow modelling in terms of interactive perturbation, Feynman diagrams and graph theory". In *Proceed of Southeastcon-93*: 77-84. April 4-7.

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Savelieva E., Demyanov V., Kanevski M., Serre M.L. and Christakos G., 2003. "BME application for uncertainty assessment of the Chernobyl fallout", *5th Conf. of Pedometrics-Intern. Union of Soil Sciences*, September 2003, Reading, UK.

International Association for Mathematical Geology:

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Christakos G., Hristopoulos D.T. and Serre M.L., 1999. "BME studies of stochastic differential equations representing physical laws-Part I". *5th Annual Confer. 1*: 63-68, Trodheim, Norway.

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Application of Statistics & Probability in Soil & Structural Engineering:

Christakos G., 1987. "Stochastic approach and expert systems in the quantitative analysis of soils". *5th International Confer. 2*: 741-748, Vancouver, Canada.

VII. National & International Conferences¹:

International Groundwater Forum:

Christakos G., 2007. "An evolutionary model for the integrated study of environmental systems", Nanjing University, June 22-23, Nanjing, China.

European Geophysical Union Meeting:

Yu H-L, Christakos G., Tartakovsky D., Modis K. and Papantonopoulos G., 2007. "Composite Stochastic Solution of a 3-D Geothermal Model in Nea Kessani (Greece)", EGU-A-01040, Vienna, Austria, April 02-07, 2007.

American Physical Society Meeting:

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American Assoc. of Geographers:

Yu H-L and Christakos G., 2007. "Integrated spatiotemporal modelling and mapping of natural systems", *American Assoc. of Geographers (AAG) Annual Meeting*, San Francisco, California, April 17-21, 2007.

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Computational Methods in Water Resources:

¹ Abstracts, Oral Presentations, Posters: Partial List

Lee S.J., Serre M.L. and Christakos G., 2004. "Improving spatial mapping of subsurface Arsenic using pH data: Synthetic examples and case study in New England groundwater". International Confer., June 13-17, 2004, Chapel Hill, NC.

Christakos G., Serre M.L., Kolovos A. and Hristopulos D.T., 2004. "New classes of non-separable spatiotemporal covariance models". International Confer., June 13-17, 2004, Chapel Hill, NC.

Arsenic in New England-A Multidisciplinary Conference:

Serre M.L., Kolovos A. and Christakos G., 2002. "A model-based framework for the spatiotemporal assessment of the health impact of naturally occurring Arsenic in the environment". May 29-31.

Society of Industrial & Applied Mathematics (SIAM):

Serre M.L., Christakos G. and Hristopulos D.T., 1997. "Using the space transform method in geosciences". *4th Confer. in Computational & Mathematical Issues in Geosciences*, Albuquerque, NM.

Superfund Basic Research Program Annual Meeting:

Kolovos A., Christakos G. and Serre M.L., 2000. "Investigations on the numerical implementation of physical laws incorporation in the BME framework", Chapel Hill, NC, December 12-14.

Choi K-M., Christakos G. and Serre M.L., 2000. "Space/time analysis the mortality rate in California as a health indicator at small spatial scale using the BME method", Chapel Hill, NC, December 12-14.

Augustinraj R., Nienhueser I., Serre M.L. and Christakos G., 2000. "Spatiotemporal exploratory data analysis of collected contaminant measurements for some NPL and non-NPL sites", Chapel Hill, NC, December 12-14.

Kolovos A., Serre M.L. and Christakos G., 2001. "Spatial mapping of arsenic in groundwater and associated population health effects." Nov 5, Chapel Hill, NC.

Augustiraj R., Serre M.L. and Christakos G., 2001. "Modelling the spatiotemporal distribution of subsurface heavy metal contamination at the Cherrypoint, North Carolina Superfund site". Nov. 5, Chapel Hill, NC.

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ICAM 91:

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American Geophysical Union-EOS Transactions:

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Iliev P. and Christakos G., 1992. "Towards the stochastic analysis of hydrologic and water quality assessments: The Danube river basin case study". Montreal, Canada.

Christakos G., Miller C.T. and Oliver D.L., 1992. "Analysis of Methods for Closure of the Stochastic Groundwater Flow Equation". 171, San Francisco, CA.

Christakos G., Hristopulos D.T., Oliver L.D. and Miller C.T., 1993. "Stochastic analysis of flow in saturated porous media systems". 251, San Francisco, CA.

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Oliver D.L., Christakos G., and Miller C.T., 1993. "New results on the diagrammatic approach to stochastic steady-state saturated flow modelling". 157, Baltimore, MD.

Thesing G., Christakos G. and Miller C.T., 1993. "Analysis and local estimation of spatial data under the intrinsic hypothesis of random fields". Baltimore, MD.

Killam B., Christakos G., and Miller C.T., 1993. "Spatial sampling design for contaminant hydrologic level using classification criteria and stochastic annealing". 157, Baltimore, MD.

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Oliver L.D., and Christakos G., 1994. "A comparison of analytic stochastic flow results with two-dimensional numerical results". 255, San Francisco, CA.

- Christakos, G., Raghu V.R. and Bogaert P., 1995. "Stochastic analysis of spatiotemporal water quality data". San Francisco, CA.
- Christakos G. and Hristopulos D.T., 1995. "Stochastic Characterization of Contaminated Sites". Baltimore, MD.
- Hristopulos D.T. and Christakos G., 1995. "Modeling of Nonlocality and Nonhomogeneity in the Hydraulic Conductivity". Baltimore, MD.
- Raghu V. and Christakos G., 1995. "Spatiotemporal analysis of sulfate deposition data over the conterminous United States". Baltimore, MD.
- Christakos G., Hristopulos D.T. and Li X., 1996. "Stochastic path analysis of multiphase flow systems: A differential geometry approach". San Francisco, CA.
- Hristopulos D.T. and Christakos G., 1996. "Nonlocal kernels and upscaling of effective parameters". San Francisco, CA.
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- Vyas V.M. and Christakos G., 1997. "Estimation and health impact assessment of tropospheric ozone concentrations over the Eastern US". San Francisco, CA.
- Kolovos A., Christakos G. and Serre M.L., 2000. "Incorporation of physical laws and other forms of knowledge in spatiotemporal prediction of hydrologic processes". San Francisco, CA.
- Christakos G., 2003. "Deriving spatiotemporal fractal and wavelet models in terms of the generalized random field theory", Dec. 8-12, San Francisco, CA.
- Serre M.L., Christakos G., Kolovos A. and Vukovich F., 2003. "Imaging ozone distributions across space-time using satellite data and physical information", Dec. 8-12, San Francisco, CA.
- Kolovos A., Christakos G., Serre M.L. and Hristopulos D.T., 2003. "Visual representations of non-separable spatiotemporal covariance models", Dec. 8-12, San Francisco, CA.

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Environmetrics:

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*Statistical & Applied Mathematics Studies Institute/Geophysical Statistics Project
Spatiotemporal Statistics Workshop 2003:*

Serre M.L. and Christakos G., 2003. "Scientific air pollution mapping across space and time: Dealing with data uncertainties and the integration of physical laws". Jun 1-5, Boulder, CO.

American Institute of Hydrology:

Serre M.L. and Christakos G., 2000. "Stochastic mapping in subsurface hydrology using soft information and physical laws: A review of some BME case studies", 2000 Annual Meeting & International Confer, Nov. 5-8, Research Triangle Park, NC.

Medical Geography:

Christakos G., 1998. "Spatiotemporal distribution of breast cancer incidence". *8th International Symposium*, 27, July 13-17, Baltimore, Maryland.

National Sexually Transmitted Diseases Prevention Conference:

Law D.G., Miller W.C., Christakos G., Blue K., Smurzynski M., Fox K.K. and Leone P.A., 2000. "Deriving a surface of Chlamydial infection rates using geostatistics." Proceedings, Dec. 4-7, Milwaukee, Wisconsin.

Committee on Space Research-35th Scientific Assembly:

Christakos G., 2004. "Multidisciplinary knowledge synthesis for human health assessment on Earth and in Space". July 18-25, Paris, France.

Stanford Center for Reservoir Forecasting:

Oliver L.D. and Christakos G., 1994. "Stochastic flow solutions without numerical flow simulation". Proceed., Stanford, CA.

VIII. Research Center Publications²:

Center for Multiphase Research News:

- Hristopulos D.T., Christakos G. and Miller C.T., 1994. "Stochastic modelling of heterogeneity in groundwater flow and transport systems". **1**(2): 1-4.
- Oliver L.D. and Christakos G., 1994. "A diagrammatic technique for stochastic flow modelling". **1**(2): pp. 5-13.
- Christakos G. and Raghu V.R., 1994. "Modelling and estimation of space/time water quality parameters". **11**(2): 14-22.
- Hristopulos D.T. and Christakos G., 1997. "Stochastic models and the scale-up problem in heterogeneous porous media," **13**(1).
- Hristopulos D.T. and Christakos G., 1998. "Renormalization and upscaling analysis: From a grain of sand to complex heterogeneities." **2**.

Advanced Projects Section, Kansas Geological Survey:

- Christakos G., 1986. "Recursive parameter estimation of nonlinear state-nonlinear observation systems, Part 1: On-line data". **OF.86-29**: 85p., Lawrence, KS.
- Christakos G., 1986. "Nonstochastic functional estimation of nonstationary spatial functions". **OF.86-28**: 31p., Lawrence, KS.

Institute of Geology & Mineral Exploration:

- Christakos G. and Pantelias E., 1985. "Geostatistical analysis and estimation of data from the mine of Lavrion". 25p., Athens, Greece.
- Christakos G., 1986. "Space transformations: An approach for studying spatial functions in geosciences". 20p., Athens, Greece.
- Christakos G., 1986. "The stochastic approach in the quantitative analysis of soil data". 43p., Athens, Greece.

University of Birmingham Research Reports:

- Christakos G., 1980. "Soil-structure interaction, Part 1: Theoretical results". 158p, Foundation Engineering, Birmingham, UK.

² Partial List

Christakos G., 1980. "Soil structure interaction, Part 2: A laboratory apparatus for studying the behavior of soils under dynamic loading". Laboratory of Materials, 91p, Birmingham, UK.

Superfund Basic Research Program News:

Christakos G., 1998. "Stochastic pollutokinetic modelling". **2**: 1-5.

National Technical University of Athens Research Reports:

Christakos G., Tsakmakidis Ch., Tsekouras D. and Daskalopoulos P., 1979. "Slope stability". Technical Report (In Greek with English abstract), 269p. Dept. of Civil Engin, Athens, Greece.

Center for the Advanced Study of the Environment News:

Kolovos A., Christakos G. and Serre M.L., 2003. "Visualization of non-separable spatiotemporal covariance models". **2**(1): 20-24.

Harvard University-Div. of Applied Sciences:

Christakos G., 1989. "Certain Aspects of Interest in the Decision Analysis Context": *Environmental Systems Program*, MA, USA, 15p, 1989.

Rogers P., Quinn J.T. and Christakos G., 1989. "Notes on Time Series and Kriging of Rainfall Records in the Ganges-Brahmaputra Basin". 21p. *Environmental Systems Program*, MA.

Christakos G., 1989. "Posterior-Preposterior Terminal Analysis": **ES 201**: 7p., Cambridge, MA.

Christakos G., 1989. "On the Choice of an Utility Function": *Environmental Systems Program*, 9p, Cambridge, MA.

Dept. of Environmental Sciences & Engineering, UNC-Chapel Hill:

Iliev P. and Christakos G., 1992. "Water quality modelling and management of the Danube river: An integrated approach". Research Notes No. **SM/2.93**: 26 p.

Christakos G., 1992. "Dynamic stochastic estimation of soil profiles using Kalman techniques". Research Notes No. **SM/2.92**: 41p.

Oliver D.L. and Christakos G., 1992. "Certain equivalence between the single and the double diagram flow representations". Research Notes No. **SM/9.92**: 21p.

- Christakos G., 1992. "A Treatise on the Stochastic Interactive Perturbation Analysis of Groundwater Flow". Research Notes No. **SM/3.92**: 63p.
- Christakos G. and Oliver D.L., 1992. "Space Transformations: New Results". Research Notes No. **SM/8.92**: 13p.
- Oliver D.L. and Christakos G., 1992. "The fast Fourier option added to the turning bands simulation program". Research Notes No. **SM/10.92**: 20p.
- Christakos G., 1990. "Spatiotemporal random field models for climate and global change analysis". Research Notes No. **SM/9.90**: 36p.
- Christakos G., 1990. "On a frequency domain approach to spatiotemporal stochastic hydrodynamics." Research Notes No. **SM/10.90**: 41p.

Environmental Science & Engineering Notes:

- Lee S.J., Serre M.L. and Christakos G., 2004. "Bayesian Maximum Entropy Mapping of Arsenic using pH-Arsenic empirical laws". Department of Environmental Sciences and Engineering, University of North Carolina, Chapel Hill.

Dept. of Applied Sciences, Harvard University, Cambridge, MA:

- Rogers P., Quinn J.T. and Christakos G., 1989. "Notes on Time Series and Kriging of Rainfall Records in the Ganges-Brahmaputra Basin". February.

IX. Book Reviews:

- Christakos G., 1988. "Geostatistical Case Studies", by G. Matheron and M. Armstrong (eds.): *Jour. of American Statistical Association* **83**(401): 279-280.
- Christakos G., 1999. "GeoEnvi-Geostatistics for Environmental Applications", by A. Soares A., Gomez-Hernandez J. and Froidevaux R. (eds.): *J. of Environmental Geosciences* **6**(1): 1-4.
- Christakos G., 2005. "Analysis and Modeling of Spatial Environmental Data" by Kanevski M. and Maignan M.: *J. of Computers & Geosciences* **31**(10): 1302-1304.

X. Forum-Debates:

Debate on Plagues of the Future:

- Christakos G., 2004. "The influence of Philistinism upon public health". *Spiked-Risk Debates on Risk and Biomedicine*: CA83F.

[<http://www.spiked-online.com/sections/risk/debates/futureplagues/responses.htm>.]

Forum on the State of Stochastic Hydrology:

Christakos G., 2004. "A sociological approach to the state of stochastic hydrogeology":
Stochastic Envir. Research & Risk Assess. **18**(4): 274-277.

UNIVERSITY TEACHING EXPERIENCE

2006-Present:

Department of Geography, San Diego State University, San Diego, California, U.S.A:

- "Spatiotemporal Data Analysis" (GEOG 385).
- "Issues of Spatiotemporal Modelling and Mapping" (GEOG 785).
- "Quantitative Health Geography" (GEOG 596).
- "Advanced Quantitative Methods in Geography" (GEOG 685).
- "Probabilistic Reasoning in Geographical Science" (GEOG 750).

1990-1993 and 1994-2005:

Department of Environmental Science & Engineering, School of Public Health

University of North Carolina, Chapel Hill, NC, U.S.A.

- "Advanced Geostatistics of spatiotemporal environmental phenomena" (ENVR 161).
- "Random field modelling of physical processes" (ENVR 162).
- "Advanced functions of Temporal GIS" (ENVR 167).
- "Model-based exposure mapping and risk assessment" (ENVR 275).
- "Stochastic environmental health modelling" (ENVR 277).
- "Knowledge processing in uncertain environments with applications in physical and biological sciences" (ENVR 278).
- "Stochastic hydrology" (ENVR 279).

1993-1994:

Department of Geological & Environmental Sciences, Stanford University, Stanford, CA,
U.S.A.

- "Stochastic analysis of earth science processes" (GES 243).

1993-1994:

Petroleum Engineering Department, Stanford University, Stanford, CA, U.S.A.

- "Geostatistics for spatial phenomena" (PE 240).

1988-1990:

Division of Applied Sciences, Harvard University, Cambridge, MA, USA.

- "Decision theory" (ES 201).
- "Introduction to Decision and Control" (ES 102).

INVITED INTERNATIONAL SHORT-COURSES

"Progress in Spatiotemporal Statistics"

Departamento de Matematica y Estadistica, Universidad de La Frontera,
Temuco, Chile.

October 9-16, 2009.

"Towards a Theory of Evolutionary Statistics"

Department of Mathematics, Universitat Jaume I, Castellon, Spain.

November 13-18, 2007.

"BME methods in Interdisciplinary SpatioTemporal Modelling and Prediction"

StatGIS Summer School 2006.

Sponsored by the University of Klagenfurt, Austria.

September 11-15, 2006.

"Efficient Risk Assessment of Environmental Systems".

UNIL Institute of Geomatics & Risk Analysis

Sponsored by the University of Lausanne, Switzerland.

October 10-14, 2005.

"The Implementation of Data Assimilation Techniques in Temporal GIS"

Sponsored by the Facultad de Ciencias, Universidad de Granada, Granada, Spain.

April 11-22, 2002.

"Physical Model-Based Statistics".

Department of Statistics, Universidad de Granada, Granada, Spain.

November 10-19, 2001.

"Advanced Methods of Knowledge Synthesis with Applications in Human Exposure".

Department of Engineering & Applied Mathematics,

Universidad Politecnica de Catalunya, Barcelona, Spain.

November 20, 2001-January 6, 2002.

"Modern Geostatistics and its Applications in Earth Sciences"

Sponsored by the National Research Council (CNR) of Italy, Naples, Italy.

October 1998

"Stochastic Space-Time analysis in Environmental Health Science"

Sponsored by Universitat Politecnica de Catalunya, Barcelona, Spain.

September 1997

INVITED SEMINARS, KEYNOTE SPEAKER³

"Spatiotemporal Reasoning in environmental exposure and health studies." Invited Speech, *Chinese Academy of Sciences*, Beijing, China, July 5, 2011.

"Spatiotemporal Knowledge Synthesis." Keynote Speech, *1st IEEE International Conference on Spatial Data Mining & Geographical Knowledge Services (ICSDM 2011)* in conjunction with the *8th Beijing International Workshop on Geographical Information Systems (BJ-IWGIS 2011)*, Fuzhou city, China, June 29-July 1, 2011.

"Geosciences in a Interdisciplinary Context." Invited Seminar, *Univ of California-Davis*, California, USA, Oct 21, 2010.

"Space-Time Geostatistics: Crossing Parmenides' 'Gates' and Morrison's 'Doors' ". Invited Keynote Speech, *Geostatistics for Environmental Applications (GeoENV)*, Gent, Belgium, Sept 13-15, 2010.

"Large Scope Integrative Problem-Solving." Keynote Speaker, *International Conference on Ecological Informatics (ISEIS 2010)*, Beijing Normal Univ, Beijing, China, Aug. 26-29, 2010.

"Stochastic reasoning: Thinking under uncertainty". Keynote Speaker, *International Workskop on Applied Probability (IWAP 2010)*, Univ. Carlos III, Madrid, Spain,

- July 5-8, 2010.
- “Interdisciplinary Health Problem-Solving”. Invited Seminar, *National Health Research Institute*, Taiwan, Dec 1, 2009.
- “Advances in Human Exposure Assessment and Epidemic Mapping”. Invited seminar, *Institute of Occupational Medicine and Industrial Hygiene, National Taiwan University*, Taipei, Taiwan, Nov 30, 2009.
- “Modern Spatiotemporal Statistics in Environmental Modelling”. Invited seminar, *Dept of Bioenvironmental Systems Engineering, National Taiwan University*, Taipei, Taiwan, Nov 11, 2009.
- “The Evolution of Modern Spatiotemporal Statistics”. Invited Keynote talk, Annual National Statistics Meeting, Temuco, Chile, Oct 5-8, 2009.
- “Spatiotemporal Conditional Probabilities: A Neuropsychological Perspective”. Invited Seminar, Dept of Statistics and Operations Research, Univ. of Granada, Spain, May 6-14, 2009.
- “Interdisciplinary SpatioTemporal modelling: It’s not where you take things from, it’s where you take them to”. Keynote Address, Workshop on *Spatial-Temporal Modeling, Harvard Center for Geographic Analysis, Harvard University*, Cambridge, MA, April 10, 2009.
- "Spatiotemporal Statistics in real world problem-solving: should we migrate to Mongolia to raise chickens?" Invited Seminar, International Workshop on *Spatio-Temporal Modelling (METMA4)*, Alghero, Sardinia, Italy, Sept 24-26, 2008.
- "An integrative framework of geographical problem-solving: The Journey to Ithaca". Invited Seminar, Dept. of Geography, *Univ of California-Santa Barbara*, Santa Barbara, USA, Nov 29, 2007.
- “Physical problem solving on the Road to Damascus”. Invited Seminar, *Departamento de Matematicas, Centro de Investigacion y de Estudios Avanzados del I.P.N.*, Mexico City, Mexico, Nov 1, 2007.
- “Revisiting the fundamentals of environmental problem solving: Concepts and applications”. Invited Seminar, Dept. of Environmental Sciences and Management, *Tsinghua University*, Beijing, China, June 23, 2007.

³ Partial List

- “Spatiotemporal reasoning in environmental health sciences”. Invited Seminar, *Chinese Academy of Sciences*, Beijing, China, June 23, 2007.
- “Evolutionary perspectives concerning the action-based mathematical study of natural systems”. Invited Seminar, College of Life Sciences, *Zhongshan University*, Gongzhou, China, June 20, 2007.
- “Epistematics: Theory and Practice”. Invited Seminar, College of Environmental Sciences & Natural Resources, *Zhejiang University*, Hangzhou, China, June 13, 2007.
- “The composite method for solving physical models under conditions of uncertainty and space-time heterogeneity”. Invited Seminar, Dept. of Geosciences, *Florida State University*, Tallahassee, Florida, April 27, 2007.
- “Dealing with spatiotemporal heterogeneity: The GBME model”. Invited Talk, *European Geophysical Union, Nonlinear Processes in Geosciences (NP3.05)*, Vienna, Austria, April 16, 2007.
- “Epistematics and its applications in physical modelling and predictive mapping under conditions of uncertainty”. Keynote Speaker, *European Geophysical Union, Stochastic-dynamic modelling of precipitation (HS.39)*, Vienna, Austria, April 20, 2007.
- “Spatiotemporal Comparative Analysis of Plague - An Interdisciplinary perspective”. Invited Commentary, Workshop on “The Identity of Plague”. The Wellcome Trust Centre for the History of Medicine at *UCL (Univ. College London)*, London, UK, April 5, 2006.
- “Developments on Interdisciplinary Spatiotemporal Modelling”. Invited Seminar, Dept. of Geosciences, Workshop on “Data Analysis and Modelling in Environmental Sciences: Toward Risk Assessment and Impact on Society”. *University of Lausanne*, Switzerland, October 10-13, 2005.
- “An Interdisciplinary Perspective of Temporal GIS: Spatiotemporal mapping as a knowledge synthesis process”. Invited Talk, dept. of Geography, *San Diego State University*, San Diego, CA, March 18, 2005.

- “The cognitive basis of physical modelling”. Invited Speaker, 2004 *Intern Confer on Computational Methods in Water Resources* (CMWR04), Chapel Hill, NC, USA, June 13-17, 2004.
- “Integrated physical and life sciences modelling and space-time prediction”. Keynote speaker, 2nd *Spanish Workshop on Spatio-Temporal Modelling of Environmental Processes* (METMA’04), Granada, Spain, June 1-3, 2004.
- "Revisiting the methodology of stochastic upscaling: In search of Prometheans?" Invited seminar, *NSF Meeting on Applications of Modern Tools of Mathematics and Physics to Subsurface Hydrology*, Purdue University, Lafayette, August 11-15, 2003.
- "Killing time: Adventures in a spatiotemporal parallel world". Invited seminar, *National Center for Atmospheric Research* (NCAR), Boulder, Colorado, USA, June 5, 2003.
- "Spatiotemporal mapping for multi-disciplinary knowledge synthesis". Invited seminar, Lamont-Doherty Earth Observatory, *Columbia University*, Palisades, N.Y., USA, October 18, 2002.
- "The emergence of Parmenidean knowledge synthesis in spatiotemporal modelling", Invited Talk, Joint Statistical Meeting of the *American Statistical Association*, New York, N.Y., USA, August 11-15, 2002.
- "Conceptual frameworks of physical knowledge synthesis in uncertain environments". Keynote speaker, *ModelCARE'2002*, Prague, Czech Republic, June 17-20, 2002.
- "Representation and prediction in terrestrial sciences", Invited Seminar, Topographic Engineering Center, *Army Corps of Engineers*, Washington DC, USA, May 6, 2002.
- "Assimilation modelling in the light of physical knowledge synthesis", Invited Seminar, Dept. of Civil & Environmental Engineering, *Duke Univ.*, USA, April 29, 2002.
- "Bayesian and Non-Bayesian conditionalization in assimilation modelling". Invited lecture, Department of Statistics, *University of Granada*, Spain, April 18, 2002.
- "A Parmenidean knowledge synthesis framework of spatiotemporal statistics". Plenary talk, Conference of the *Spanish Society for Statistics & Operations Research* (SEIO), Ubeda, Spain, November 6-9, 2001.
- "Towards an information-theoretic approach to environmental risk assessment". Invited lecture, *Russian Academy of Sciences*, Nuclear Safety Institute, Moscow, Russia, September 11, 2001.

- "The role of uncertainty in developing a realistic environmental modelling approach".
Invited lecture, *National Technical University of Athens*, Athens, Greece, August 27, 2001.
- "Physical knowledge synthesis in environmental engineering". Invited lecture,
Department of Environmental Engineering, *Yale University*, New Haven, CT, USA,
December 13, 2000.
- "Aristotle, his wives' teeth and the fate of stochastic modelling". Invited speaker,
Department of Mathematics, *Duke University*, NC, USA, March 8, 2000.
- "Sherlock Holmes' insight and the case of informativeness vs. probabiliorism in random
field prediction". Invited speaker, Department of Mathematics, *M.I.T.*, Cambridge,
Mass, USA, February 9, 2000.
- "Towards an epistemic characterization of environmental phenomena, and the prediction
of particulate matter distribution in Eastern US". Invited speaker, *U.S. EPA*, Research
Triangle Park, NC, USA, October 12, 1999.
- "The 'Citizen Kane effect' on spatiotemporal analysis and mapping". Invited speaker,
Dept. of Statistics, *North Carolina State Univ.*, Raleigh, N.C., USA, Oct. 1, 1999.
- "Modelling and prediction of space/time natural processes using a BME approach".
Invited speaker, Center for Geophysical Investigation of the Shallow Subsurface,
Boise State Univ., USA, June 23, 1999.
- "The holistochastic character of environmental health statistics". Invited speaker, 1999
Lukacs Symposium, *Bowling Green State Univ.*, OH, USA, April 25, 1999.
- "The future of environmental health engineering - Opportunities and challenges". Invited
lecture, School of Engineering, *Vanderbilt University*, Nashville, Tennessee, USA,
May 4, 1999.
- "Spatiotemporal ozone variation and its impact on human populations." Invited speaker,
XXIV European Geophysical Soc, General Assembly, The Hague, Netherlands, April
19, 1999.
- "The role of holistic modelling in spatiotemporal exposure-health effect analysis".
Invited lecture, School of Public Health, *Univ. of Alabama at Birmingham*, Alabama,
USA, January 12, 1999.

- "New perspectives in environmental engineering: The search for 'Rosebud' ". Invited lecture, Department of Civil and Environmental Engineering, *Washington Univ.*, St. Louis, Missouri, USA, January 20, 1999.
- "While God is raining brains are we holding umbrellas? The role of modern geostatistics in spatiotemporal analysis and mapping". Keynote Speaker, *International Conference on Time-Space Systems in Environmental Sciences*. Ischia, Italy, October 5-9, 1998.
- "Computational experiments of multiphase flow and transport in hierarchical porous media: Questions of concept vs. questions of fact". Invited lecture, *Los Alamos National Lab*, NM, USA, March 1998.
- "Bayesian prediction and the incorporation of entropic measures." *American Statistical Association - Joint Statistical Meeting*, Anaheim, CA, USA, August 1997.
- "Spatiotemporal random field modelling and its application in the analysis of large spatially and temporally varying data sets such as ERBE and ISCCP data-Variations of clouds and earth radiation processes." Invited talk, *NASA*, Norfolk, USA, April 1997.
- "Multiphase flow in heterogeneous porous media: A stochastic differential geometry approach". Invited speaker, *Army Research Office Workshop*, Panama City, FL, USA, January 1997.
- "Stochastic analysis of spatiotemporal natural processes." Invited speaker, *American Society of Agronomy/Crop Science Soc of America/Soil Science Soc of America Confer*, Indianapolis, IN, USA, 1996.
- "Space-time characterization and risk analysis of hazardous waste sites using indicator parameters." Invited lecture, *The University of South Carolina*, SC, USA, November 1996.
- "Multiphase flow and contaminant transport modelling in heterogeneous porous formations." Invited, seminar, Dept. of Civil & Environmental Engineering, *Duke University*, Durham, NC, USA, May 1996.
- "The role of stochastic indicators in site characterization, risk assessment, and remediation analysis." Invited speaker, *Society of Risk Analysis*, Raleigh, NC, August 1996

- "The atmospheric data assimilation cycle: New tools of objective analysis." Invited seminar, Topographic Engineering Center, *Department of Defense*, Alexandria, VA, USA, 1995.
- "Diagrammatic perturbation analysis of stochastic groundwater flow." Invited speaker, *SIAM Confer on Applied Mathematics*, San Antonio, Texas, USA, Feb. 8-10, 1995.
- "Ab initio analysis of scale dependence in porous formations." Invited seminar, *American Geophysical Union Confer*, San Francisco, USA, 1994.
- "New directions in subsurface pollution modelling and prediction." Invited seminar, *Lawrence Berkeley Laboratory*, Berkeley, CA, USA, 1994.
- "Stochastic partial differential equations of contaminant transport in heterogeneous porous media". Invited speaker, *Gordon Conference on Flow in Permeable Media*, Proctor Academy, Andover, NH, USA, 1994.
- "Revisionistic tools in the study of intermittent processes." Invited speaker, *Office of Naval Research*, Marine Boundary Layers Accelerated Research Initiative Workshop, Monterey, CA, USA, 1992.
- "Global warming-related uncertainties: the new challenge for stochastic analysis experts." Invited seminar, *Southern Regional Council*, Flatroch, NC, USA, June 13-17, 1992.
- "Certain emerging environmental exposure problems: To be or not to be stochastic?" Invited speaker, *European Economic Community (EEC) Joint Research Center Ispra*, Varese, Italy, 1991.
- "Stochastic solutions to environmental problems." Invited seminar, Dept. of Civil, Mechanical and Environmental Engineering, *George Washington University*, Washington DC, USA, 1991.
- "Certain results on spatiotemporal random fields, and their applications in environmental health research". Invited seminar, *NATO Advanced Studies Institute*, Castelvechio Pascoli (Lucca), Italy, 1991.
- "Site exploration: The synthesis of random field representations and multi-objective optimization." Invited seminar, Dept. of Statistics, *Univ. of North Carolina*, Chapel Hill, NC, USA, 1991.
- "Some applications of the Bayesian maximum-entropy concept in Geostatistics." Invited lecture, Dept. of Physics & Astronomy, *Univ. of Wyoming-Laramie*, WYO, USA, 1990.

"Recent results on random fields and certain engineering applications." Invited seminar, Dept. of Mathematics & Computer Sciences, *University of Kansas*, Kansas, USA, 1987.

"Random field simulation using the Radon transform." Invited speaker, Department of Pure Mathematics & Mathematical Statistics, *University of Cambridge*, UK., Oct., 1987.

"Nonlinear estimation of factorable random processes." Invited seminar, Dept. of Electrical Engineering, *Imperial College of Science & Technology*, London, UK, Oct., 1987.

PROFESSIONAL SERVICE

I. Scientific Advising, Expert Panels, Project Reviewing.

Scientific Advisory Board, Spatial Statistics 2011 Conference
March 23-25, 2011, University of Twente, Netherlands.

Scientific Committee, StatGIS 09 (GeoInformatics for Environmental Surveillance)
June 17-19, 2009, Milos, Greece.

Session Organizer (Climate, Water and Health),
European Geophysical Union, EGU 2008, Vienna, Austria, April 13-18, 2008.

Scientific Committee, 15th European Colloquium on Theoretical and Quantitative Geography (ecTQG'07), Montreaux, Switzerland, Sept.7-11, 2007.

Scientific Committee, 5th European Conference on Geostatistics for Environmental Applications (GeoEnv2004)
University of Neuchatel, Switzerland, Oct.13-15, 2004).

Scientific Committee, 1st International Conference on Advances in Mineral Resources Management & Environmental Geotechnology,
Chania, Crete, Greece, June 7-9, 2004.

Scientific Committee, 4th European Conference on Geostatistics for Environmental Applications (GeoEnv2002)
Technical University of Catalonia (UPC), Barcelona, Spain, Nov. 27-29, 2002.

Session Chairman, International Association for Mathematical Geology Conference
Trondheim, Norway, August, 1999.

- Program Committee, International Association for Mathematical Geology Conference,
Ischia Island, Naples, Italy, Sept 1998.
- Program Committee, International Conference on Urban, Regional, Environmental
Planning & Informatics to Planning in an Era of Transition
Athens, Greece, Sept 1997.
- Co-Organizer, International Forum on Geostatistics for the Next Century,
Montreal, Canada, August, 1993.
- Session Chairman, American Geophysical Union Meeting,
San Francisco, CA, December, 1993.
- Research Proposal Reviewer, US Department of Energy, Research & Development,
Washington DC, USA, 2006.
- Research Proposal Reviewer, US Environmental Protection Agency, Washington DC,
USA, 1997-1999.
- Research Proposal Reviewer, US National Science Foundation, Washington DC, USA,
1990-1992, 1995.
- Research Proposal Reviewer, Department of Defense, Army Research Office, Adelphi,
MD, 1992-2000.
- Research Proposal Reviewer, National Aeronautics and Space Administration (NASA),
Langley Research Center, Hampton, VA, 1990-2003.

II. Expert Consulting

- Scientific Consultant, International Experts Panel for the Evaluation of Higher Education,
Ministry of Education, Athens, Greece, Sept 17-25, 2011
- Professional Consultant,
S. Florida Water Management District, West Palm Beach, Florida, USA, June 21-
September 22, 2011.
- Professional Consultant,
GIE AXA Res Fund, ReInventon, Paris, France, Feb 1- May 31, 2011.
- Scientific Consulting, Geology Department,
University of Botswana, Gaborone, Botswana, May-July, 2011.
- Consultant to the Spanish Inter-University Doctoral Program, “Doctorado en Estadística
e Investigación Operativa - Programa de Doctorado Interuniversitario,”

UGR-USE, Spain, 2009-2012.

Professional Consultant, Assessment of Environmental Indicator Case Studies,
Versar Inc., Springfield, VA 22151, 2009.

Consultant, Report on the Environment” (ROE), Office of Research & Development,
US Environmental Protection Agency, USA, 2009.

Consultant, Science Foundation of Ireland (SFI)
Research Frontiers Programme, Dublin, Ireland, 2006.

Research Consultant, Environmental Health Program,
Swiss National Science Foundation, Berne, Switzerland, 2004-2006.

Research Consultant, P30 Research Center Review,
National Institute of Environmental Health Sciences, RTI, USA, 2005.

Expert Advisor, Environmental Benefits Mapping and Analysis Program (BenMAP),
Office of Research & Development,
US Environmental Protection Agency, USA, 2004.

Research Advisor, National Institute of Environmental Health Sciences (NIEHS)
Experts Panel on Health Effects Mapping, Carry, NC, 2000-2004.

Consultant, Consortium for Risk Evaluation with Stakeholder Participation (CRESP),
USA, 2000.

Consultant, Delft Cluster & the NWO-Council for Earth & Life Sciences
The Hague, The Netherlands, Aug.-Oct., 2000.

External Reviewer, Department of Geological Sciences,
University of South Carolina, Columbia, SC, Oct. 1-3, 2000.

III. Scientific Paper Reviewer

Jour. Advances in Water Resources
Peer Reviewer (1991-2006)

Jour. Social and Scientific Medicine
Peer Reviewer (1996-2000)

Water Resources Research
Peer Reviewer (1989-)

Mathematical Geology
Peer Reviewer (1989-2003)

- Jour. Atmospheric Environment.
Peer Reviewer (1995-2004)
- Jour. Water, Air and Soil Pollution
Peer Reviewer (1990)
- Jour. Computers & Geosciences
Peer Reviewer (2005)
- Institute of Electrical & Electronic Engineers
Trans. on Systems, Man & Cybernetics
Peer Reviewer (1992-1996)
- Institute of Electrical & Electronic Engineers
Trans. on Information Theory
Peer Reviewer (2007-)
- Jour. Environmental Science & Technology
Peer Reviewer (1992-1994; 2010-)
- Jour. Environmental Quality
Peer Reviewer (2005)
- Jour. Stochastic Processes & Their Applications
Peer Reviewer (1995)
- Jour. Methodology and Computing in Applied Probability
Peer Reviewer (2005)
- Jour. Environmental and Ecological Statistics
Peer Reviewer (1995-)
- Jour. Hydrologic Engineering
Peer Reviewer (1995-1997)
- SIAM on Scientific Computing
Peer Reviewer (1995-2005)
- Jour. Exposure Analysis & Environmental Epidemiology
Peer Reviewer (1997-2004)
- Jour. American Statistical Association
Peer Reviewer (1987-1988)
- Jour. Environmental Geosciences
Peer Reviewer (1998)

Jour. of Risk Analysis.

Peer Reviewer (2001-2005)

The Annals of Occupational Hygiene

Peer Reviewer (1999-2001)

Jour. Multivariate Analysis

Peer Reviewer (2000-Present)

Scandinavian Journal of Statistics

Peer Reviewer (2005-)

Annals of the Institute of Statistical Mathematics of Japan.

Peer Reviewer (2003-)

Jour. Professional Geographer.

Peer Reviewer (2006-)

International Journal of Health Geographics.

Peer Reviewer (2006-2011)

Jour. Royal Statistical Society-UK.

Peer Reviewer (2009-)

Jour. Biometrics.

Peer Reviewer (2006-)

Annals of Geography.

Peer Reviewer (2006-)

Jour. Geographical Analysis.

Peer Reviewer (2007-)

Jour. of Computational Physics.

Peer Reviewer (2008-)

Jour. Naturwissenschaften.

Peer Reviewer (2008-)

Intern. Jour. GIS.

Peer Reviewer (2008-)

Jour. Environmental Science & Technology.

Peer Reviewer (2006-)

Jour. of Geographical Information Science

Peer Reviewer (2008-)

International Journal of Environmental Research and Public Health.

Peer Reviewer (2011)

Environmental Modelling & Software

Peer Reviewer (2011)

Journal of Geographical Systems

Peer Reviewer (2011)

PLoS ONE

Peer Reviewer (2011)

EDUCATION

- *Harvard University*, Cambridge, MA, USA: Ph.D. in Applied Sciences, 1990.
- *National Technical University of Athens*, Athens, Greece: D.Sc. in Mining & Metallurgical Engineering, 1986.
- *Massachusetts Institute of Technology*, Cambridge, MA, USA: M.S. in Civil & Environmental Engineering, 1982.
- *University of Birmingham*, Birmingham, UK: M.Sc. in Soil Engineering, 1980.
- *National Technical University of Athens*, Greece: Diplom (Honors) in Civil Engineering, 1979.

HONORS AND AWARDS

University Chair Professor.

College of Environmental Sciences and Natural Resources

Zhejiang University

Hangzhou, China.

May 2011- .

Honorary Co-Chair

ISEIS 2010 International Conference

International Society for Environmental Information Sciences

Beijing, China.

August 27-29, 2010

Award of the National Science Council (2009)

Division of “Visiting Distinguished Researchers”

Taipei, Taiwan.

2009

Award of the Chinese Ministry of Education

Program of “Internationally Renowned Scholars”

Beijing, China.

2007.

Directorship

Center for the Integrated Study of the Environment (CISE)

N.C., USA

1999-2005

Adjunct Professorship (2001-2005)

Department of Statistics & Operations Research

University of North Carolina, Chapel Hill, N.C., USA

2001-2005

Kenan Award

Competitive Academic Leave

University of North Carolina, Chapel Hill, NC, USA

2001-2002

Award of the Spanish Ministry of Education

Ministerion de Education, Cultura Y Deporte

Madrid, Spain

2001

20th Century E. Lukacs Distinguished Service Award

For outstanding contribution to the synergistic development of statistics, ecology, environment, risk assessment and society

1999

President's Prize

International Association of Mathematical Geology.

1991

Advanced Studies Institute Award

NATO.

1984, 1991

Faculty Award

University of North Carolina, Chapel Hill, NC, USA

1990, 1995

Fellowship

Division of Applied Sciences,

Harvard University, Cambridge, MA, USA.

1988-1990

Award for Distinguished Service

State of Kansas, USA

1987

Honorary Award (1978):

Ministry of Education, Athens, Greece

1978