

CURRICULUM VITAE

Alik Ismail-Zadeh



PRESENT ACADEMIC POSITIONS

- Research Scientist, Institute of Applied Geosciences, **Karlsruhe Institute of Technology**, GERMANY (since June 2012)
- Professeur invite 1ère classe, **Institut de Physique du Globe de Paris**, FRANCE (since 2005)
- Chief Scientist, Research Professor, and Head of Research Group “*Computational Geodynamics*”, International Institute of Earthquake Prediction Theory and Mathematical Geophysics (IIEPT), **Russian Academy of Sciences**, Moscow, RUSSIA (since 2004)
- Visiting Lecturer, **Abdus Salam International Centre for Theoretical Physics**, Trieste, ITALY (since 2001)

PROFESSIONAL EDUCATION

1982	B.Sc. (magna c.l.) in Math	S. Kirov Baku State University, Azerbaijan
1983	M.Sc. (magna c.l.) in Math & Physics	M. Lomonosov Moscow State University, Russia
1990	Ph.D. in Geophysics	Russian Academy of Sciences, Moscow, Russia
1997	D.Sc. (Habilitation) in Geophysics	Russian Academy of Sciences, Moscow, Russia

PROFESSIONAL EXPERIENCE / PREVIOUS APPOINTMENTS

2003-2012	Research Scientists, Project Director	Geophysikalisches Institut, Karlsruher Institut für Technologie , GERMANY
2005-2008 (5 months)	Visiting Professor	University of Tokyo , Earthquake Research Institute, Tokyo, Japan
2003 (4 months)	Invited Professor	University of California , Department of Earth & Space Sciences, Los Angeles, USA
2003 -	Co-Leader of Research Group	Russian Academy of Sciences , Institute of Mathematics and Mechanics, Yekaterinburg, RUSSIA
2002-2003 (6 months)	Senior Researcher	Heidelberg Academy of Sciences , WSM Project, Germany
2001-2002	A. Humboldt Research Fellow	Universität Karlsruhe , Geophysikalisches Institut, Germany
2000 (9 months)	Royal Society Visiting Scholar	University of Cambridge , Institute of Theoretical Geophysics, DAMTP, Cambridge, UK
1999	Invited Professor	University of Roma “La Sapienza” , Department of Physics, Roma, Italy
1999	Invited Professor	Hebrew University of Jerusalem , Institute of Earth Sciences, Israel
1998-2000	Associate Professor	M. Gubkin Russian State University of Oil and Gas , Moscow, Russia
1998-2000	Visiting Scientist	Uppsala University , Department of Earth Sciences, Uppsala, Sweden

1996-1999	Visiting Scientist	Royal Institute of Technology , Center for Parallel Computers, Stockholm, Sweden
1996	Visiting Scientist	Universität Mainz , Institut für Geowissenschaften, Mainz
1995-1996 (9 months)	Post-doc	University of Trieste , Division of Applied Geophysics, Trieste, Italy
1995	Visiting Scientist	Vrije Universiteit , Faculty of Earth Science, Amsterdam, The Netherlands
Since 1998	Research Professor	Russian Academy of Sciences , IIEPT, Moscow, Russia
1990-1998	Senior Researcher	
1987-1990	Full-time post-graduate student	Russian Academy of Sciences , Institute of Physics of the Earth, Moscow, Russia
1983-1986	Junior Researcher	Azerbaijan National Academy of Sciences , Institute of Geology, Baku, Azerbaijan

BRIEF DESCRIPTION OF SCIENTIFIC WORK

Studies of dynamics of the crust, lithosphere, and mantle and their surface manifestations (including sedimentary basin evolution, salt tectonics, seismicity, seismic hazard, and orogeny) through multidisciplinary synthesis, theoretical analysis, and numerical experiments.

Ongoing research (key words): computational geodynamics; data assimilation (inverse problems) in models of crustal and mantle dynamics; development of quantitative methods for geodynamics; geothermal evolution of sedimentary basins; salt diapirism; modelling of seismicity; block-and-fault dynamics of the lithosphere; evolution of descending lithosphere; mantle plume evolution.

MAJOR SCIENTIFIC RESULTS

Crust and mantle evolution

Introduction of data assimilation in problems of crust and mantle dynamics. Numerical methodology for solving the direct and inverse problems of thermal convection with infinite Prandtl number (development of backward advection, variational/adjoint, and quasi-reversibility methods).

Crust and lithosphere instability

Theoretical results in problems of gravitational (Rayleigh-Taylor), thermal (Rayleigh-Bernard) and buckling (Kelvin-Helmholtz) instabilities of the (geo)structures including analysis of Newtonian, Maxwell, non-Newtonian power law, and perfectly plastic rheologies.

Salt diapirism

Models of geothermal evolution of the Astrakhan Arch of the Pricaspian Basin and recognition of the regions of possible hydrocarbon generation.

Models of salt structure evolution in the Pricaspian Basin and in the Gulf of Mexico.

Introduction of quantitative dynamic structural restoration of salt diapirs and their overburden.

Models of salt extrusion and gravity current.

Sedimentary basins

Introduction of eclogitization-induced mantle flow mechanism for sedimentary basin evolution.

Quantitative models of the evolution of intracratonic sedimentary basins in the North American (Michigan, Illinois, Williston), East European (Timan-Pechora, Dnepr-Donets, Moscow, and Pre-Uralian), and Siberian (Tunguska and Vilyui) platforms.

Seismicity and seismic hazard

Introduction of mantle dynamics into analysis of lithospheric rigid block-and-fault systems and earthquake studies.

Quantitative models of a fault network interaction in the Tibet-Himalayan region to explain seismicity and slip rates at major regional faults.

Seismic hazards and earthquake loss estimation for Baku (Azerbaijan) and seismic hazard conditions at the Vrancea region (Romania).

Tectonic stress

Understanding of stress accumulation and its change in the lithospheric slab in terms of style of the slab subduction.

Explanation of coexisting shortening - extension and seismic activity in the Central Apennines by the lithosphere buoyancy.

Numerical methodology in general

New numerical methods and algorithms of an enhanced accuracy to study problems of Earth's dynamics.

ACADEMIC DISTINCTIONS AND AWARDS

Honorary Fellow, Royal Astronomical Society, United Kingdom (2013)

Axford Distinguished Lecture Award, Asia Oceania Geosciences Society (2012)

International Award, American Geophysical Union (2009)

Most Cited Paper 2004-2007 Award, Elsevier (2007)

Alexander von Humboldt Research Fellowship (2001)

Royal Society Research Fellowship (2000)

Russian Presidential Research Fellowship (1999)

Swedish Institute Research Scholarship (1996, 1997)

Italian Ministry of Education Research Scholarship (1995)

Academia Europaea Award and Medal (1995)

International Science Foundation Award, New York (1993)

PROFESSIONAL SOCIETY ACTIVITIES AND PANELS OF EXPERTS

Science Panel Member (2011 -), Initiative on U.N. International Year for Global Understanding

Council Member (2010-2012), American Geophysical Union (AGU)

Chair (2008-2012), AGU Natural Hazards Focus Group

Secretary-General (2007 -), International Union of Geodesy and Geophysics (IUGG)

Vice Chair (2012 -), Member (2007 -), International Council for Science (ICSU) GeoUnions Joint Board

Member (2007-2010), Board of Directors, International Year of Planet Earth (IYPE)

Council member (2007-2009), ICSU Federation of Astronomical and Geophysical Data Services.

Member (2007-2008), Panel on Natural Hazards, American Geophysical Union.

Immediate Past President (2007-2011), President (2004-2007), Vice-President (2000-2004), IUGG Commission on Geophysical Risk and Sustainability.

Member (2005-2007), Science Working Group, UNESCO-IGOS - Geohazards.

Executive Director (2001-2010), AGU Russian Outreach Center.

Member (2000-2006, 2008-2010), AGU Committee on International Participation.

Member (1997-2002), Governing Board, EUROSCIENCE – European Association for the Promotion of Science and Technology.

Chair (1998-), EuroScience Working Group “Science and Urgent Problems of Society”

Member, EUROPROBE Task Group “GeoRift: Geodynamics of Intracratonic Rifting” (1993-1995)

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Association of Petroleum Geologists (2004-)

American Geophysical Union (life member, 1993-)

European Geosciences Union (2003-)

European Geophysical Society (1996 – 2002)

European Association for Promotion of Science - EUROSCIENCE (founding member, 1996-)

EDITORIAL BOARDS

Editor-in-Chief (2011-), IUGG Special Publications series, Cambridge University Press

Editor (2006-2008), Associate Editor (2004-2006), Computational Seismology and Geodynamics, American Geophysical Union, USA.

Guest Editor, Natural Hazards, Springer (2006-2007).

Editor, IUGG Electronic Journal (2007-)