

Curriculum Vitae

Dr. Anvar Kacimov – Fluid Mechanics



Professor
Department of Soils, Water and Agricultural Engineering
College of Agricultural and Marine Sciences
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1. PERSONAL DETAILS

Full name	Dr. Anvar Kacimov
Present position	Professor; Sultan Qaboos University (SQU)
Address	College of Agricultural and Marine Sciences, Sultan Qaboos University, Al-Khoud 123, PO Box 34, Sultanate of Oman
Date of birth	30/11/1960
Nationality	Russian
Marital status	Married
Date of appointment	1998
Degrees awarded (years)	PhD in Mechanics of Fluids, Kazan State University, USSR (1983-1987) MSc. (cum laude) in Hydromechanics, Kazan State University, USSR (1980-1982) BSc. in Hydromechanics, Kazan State University, USSR (1977-1979)
Work experience (Position and Dates)	<ul style="list-style-type: none">• Dean, College of Agricultural and Marine Sciences, SQU, Oman (2012-2015)• Director of Water Research Center, SQU, Oman (2011-2012)• Head of Department, Department of Soils, Water and Agricultural Engineering, SQU, Oman (2007-2012)• Professor, Department of Soils, Water and Agricultural Engineering, SQU, Oman (2007-present)• Associate professor, Department of Soil and Water Sciences, SQU, Oman (2001-2007)• Assistant professor, Department of Soil and Water Sciences, SQU, Oman (1998-2001)• Senior researcher, leading researcher, researcher, junior researcher at the Institute of Mathematics & Mechanics (Department of Boundary Value Problems-> Department of Seepage Theory->Department of Mathematical Analysis), KSU, USSR-Russia (1986-2012)• Lecturer, Department of Ecology, KSU, Russia (1993)• Lecturer, Kazan Institute of Energy, USSR (1988)• Engineer and postgraduate at Institute of Mathematics & Mechanics, KSU, USSR (1982-1986)
Research Interests and Professional Expertise	<ul style="list-style-type: none">• Groundwater hydrology; Mathematical modeling in subsurface mechanics; Vadose zone hydrology; Irrigation and drainage; Multiphase flows in Porous media; Microfluidics
Websites ORCID G.Scholar ResearchGate WoS/Publons Scopus Detailed CV	orcid.org/0000-0003-2543-3219 https://scholar.google.com/citations?user=94sjvrQAAAAJ&hl=ru&authuser=1&oi=ao https://www.researchgate.net/profile/Anvar_Kacimov https://www.scopus.com/authid/detail.uri?authorId=7004121216 SQU: https://www.squ.edu.om/agriculture/Academic-Department/Soils-Water-and-AgriculturalEngineering/Faculty

2. Awards, Honors, Recognition and Achievements

Award, achievement, recognition

- The Best Research Group Awards, Sultan Qaboos University (group leader –Ali Al-Maktoumi) (2021)
- National Research Award for the best published research led by young researcher in the Environment and Biological Resources sector, The Research Council, Oman.
Paper awarded: Al-Mayahi, Al-Ismaily, S., Gibreel, T., and **Kacimov, A.**, Al-Maktoumi, A. Home gardening in Muscat, Oman: Gardeners' practices, perceptions and motivation. *Urban Forestry and Urban Greening* (Elsevier), 2019, 38, 286-294. (2019)
- National Research Award for the best published research led by a PhD-Holder researcher in the Education and Human Resources sector, The Research Council, Oman. Paper awarded: Al-Ismaily, S.S., **Kacimov, A.R.**, AlMaktoumi, A.K. and Al-Busaidi, H.A. Progressing from direct instruction to structured and open inquiry-based teaching in a bachelor of soil sciences program: Experience at the National University in Oman. *J. Geoscience Education*, 67(1), 3-19. (2019)
- Research and Innovation Award in Water Sciences, The Research Council, Oman (2018)
- Best Reviewer Award, Journal of Irrigation and Drainage, ASCE (2013)
- Omani Green Research Award with a Special Commendation of Mitsubishi Corporation (2010)

3. Teaching

Teaching courses

Undergraduate courses

“Groundwater Hydrology”, “Elements of Hydrology”, “Chemical Movement in Soil and Ground Water”, “Water Control and Supply”, “Fundamentals of Fluid Mechanics”, “Soil Physics”, “Microcomputers”, “Hydropedology for Soil-Water-Landscape Interaction”, “Arid Zone Hydrology”, “Modeling and Analysis of Biophysical Systems”

Postgraduate courses

“Research Methodology”, CAMS6002
“Multiphase Flow and Chemical Transport”, SOIL 6311

4. Scholarly Activities

Selected Refereed Journal Publications

- Kacimov A.**, Obnosov Yu.V., Hydraulically optimal porous liner around a porous lens: Strack's problem revisited. *ISH J. of Hydraulic Engineering* (Taylor & Francis), 2021, v.27, N1, 79-89.
- Kacimov, A.**, Obnosov, Yu.V. Infiltration-induced phreatic surface flow to periodic drains: VedernikovEngelund- Vasil'ev's legacy revisited. *Applied Mathematical Modelling* (Elsevier), 2021, 91, 989-1003.
- Al-Ismaily, S., Al-Mayhai, A., Al-Busaidia, H., **Kacimov, A.**, Blackburn, D., Al-Maktoumi, A., and AlSiyabi, B. Soil Skills challenge: A problem-based Field competition towards active learning for BSc. geoscience students. *Geoderma* (Elsevier), 2021, 385, 114903, <https://doi.org/10.1016/j.geoderma.2020.114903>
- Kacimov, A.R.**, Al-Shukaili, A., Al-Mayahi, A., Al-Maktoumi, A. Triangular ditch of fastest infiltration into porous substratum. *J. Irrigation and Drainage ASCE*, 2021, v. 147, N 7, p.06021002.
- Kacimov A.**, Obnosov Yu.V., Hydraulically optimal porous liner around a porous lens: Strack's problem revisited. *ISH J. of Hydraulic Engineering* (Taylor & Francis), 2021, v.27, N1, 79-89.
- Kacimov A.**, and Šimůnek J., Analytical travelling-wave solutions and HYDRUS modeling of wet wedges propagating into dry soils: Barenblatt's regime for Boussinesq's equation generalized. *J. Hydrology* (Elsevier), 2021, v. 598, 126413.
- Kacimov, A.**, A-Maktoumi, A., Al-Ismaily, S., Al-Mayahi, A., Al-Shukaili, A., Obnosov, Yu., and Osman, A. Water table rise in arid urban area due to evaporation impedance and its mitigation by intelligently designed capillary chimney siphons. *Environmental Earth Sciences* (Springer), 2021, 80(17), 1-17.
- Al-Yaqoubi, S., Al-Maktoumi, A., **Kacimov, A.**, Al-Belushi, M., Fresh-saline water dynamics in coastal aquifers: Sand tank experiments with MAR-wells injecting at intermittent regimes. *Journal of Hydrology* (Elsevier), 2021, v. 601, 126826.
- Kacimov A.**, Obnosov, Yu. V., and Šimůnek J. Seepage-evaporation controlled depletion of initially waterfilled reservoirs on Earth and Mars: Analytic versus HYDRUS modeling. *Icarus* (Elsevier), 2022, v.372, 114719
- Houben, G.J., Collins, S., Bakker, M., Daffner A., Triuller, F., **Kacimov, A.**, 2022
- Review: Horizontal, directionally drilled and radial collector wells. *Hydrogeology Journal* (Springer), 30, 329–357.
- Al-Yaqoubi, S., Al-Maktoumi, A., Obnosov Yu. V., **Kacimov, A.** 2022. Drawdown of urban drain trenches triggering 2-D transient seepage in soil massifs subject to managed aquifer discharge: Sandbox experiments, analytical and HYDRUS2D modeling. *Urban Water J.* (Taylor & Francis), 19(3), 299–313.

12. **Kacimov, A.**, Obnosov Yu.V. and Simunek, J., 2022. Seepage to staggered tunnels and subterranean cavities: analytical and HYDRUS modeling. *Advances in Water Resources* (Elsevier), 164, 104182.
13. **Kacimov A.**, Obnosov Yu.V. 2022. Profiling ponded soil surface in saturated seepage into drain-line sink: Kalashnikov's method of lateral leaching revisited. *European J. of Applied Mathematics* (Cambridge University Press), doi:10.1017/S0956792522000171.
14. Al-Yaqoubi, S., Al-Maktoumi, A., **Kacimov, A.**, Abdalla, O., Al-Belushi M.2022.
15. Understanding saline water dynamics in coastal aquifers using sand tank experiment and numerical modeling. *Desalination and Water Treatment* (Desalination Publications), .263, 220-229
16. Al-Maktoumi, A., **Kacimov, A.**, Al-Busaidi, H., Al-Mayahi, A., Al-Ismaily, S., Al-Khanbashi, S., Al-Battashi, M. 2022. A hydroecological technique to improve infiltration of clogged bed of recharge dam in Oman. *Desalination and Water Treatment* (Desalination Publications), .263, 188-196.
17. 16. Avkhadiyev, F.G. and **Kacimov, A.R.**, 2022. The Saint-Venant type isoperimetric inequalities for assessing saturated water storage in lacunary shallow perched aquifers. *Zeitschrift für Angewandte Mathematik und Mechanik - J. of Applied Mathematics and Mechanics* (Wiley), <https://doi.org/10.1002/zamm.202100069>.

Refereed Conference Papers/ Proceedings/ Books and Chapters in Books

1. Izady, A., Abdalla, O., Amerjeed, M., Chen, M., Al-Maktoumi, A., **Kacimov, A.** and Al-Mamari, H., 2019. Recharge Estimation of Hardrock-Alluvium Al-Fara Aquifer, Oman Using Multiple Methods. In "Advances in Sustainable and Environmental Hydrology, Hydrogeology, Hydrochemistry and Water Resources" (pp. 313315). Springer, Cham.
2. **Kacimov, A.R.**, Obnosov, Yu. Al-Maktoumi, A., Dipolic MAR "bubble" inside confined brine formation or floating "lens" on top of unconfined saline aquifer. In Proceedings of the International Symposium on Managed Aquifer Recharge (ISMAR 10) "Managed Aquifer Recharge: Local solutions to the global water crisis", Ed. Enrique Fernández Escalante, Madrid, Spain pp.333-340.
3. Al-Mazroui, M.S. and Al-Yahyai, R.A., Al-Ismaily, S.S., **Kacimov, A.R.** Effects of layered artificial substrates on marigold plant growth and production. In "III International Symposium on Growing Media, Composting and Substrate." *Acta Horticulture*. 2021, 1305, 1-6 DOI: 10.17660/ActaHortic.2021.1305.1 <https://doi.org/10.17660/ActaHortic.2021.1305.1>
4. **Kacimov, A.** and Šimůnek, J. Optimization of MAR and demarcation of disputed groundwater storage/fluxes in a transboundary unconfined aquifer with natural accretion and smartly located infiltration basin. In Abstracts of "Transboundary aquifers. Challenges and the way forward." ISARM2021, 2nd International Conference, 2021, Dec. 6-9, UNESCO, Paris, pp.139-140.
5. Al-Yaqoubi, S., Al-Maktoumi, A., **Kacimov, A.**, Al-Ismaily, A., and Al-Mayahi, A., 2022. Field Bailout Experiments, HYDRUS-2D and Analytical Modeling for Determination of Hydraulic Parameters of Porous Bed of Ephemeral Stream Abstracts of the International Conference "Water Resources Management and Sustainability: Solutions for Arid Regions", Dubai, March, 22-24, 2022.
6. **Kacimov, A.**, Obnosov, Yu., V., and Šimůnek, J., 2022. Subterranean holes in the arid vadose zone as perturbations of descending pore water fluxes: J. R. Philip's legacy revisited. Abstracts of the International Conference "Water Resources Management and Sustainability: Solutions for Arid Regions", Dubai, March, 22-24, 2022. Pp. 46-49. Edited by M.Sherif, M.A.Faiz and A. Sefelnasr.
7. Al-Shukaili, A., Al-Mamari, H., and **Kacimov, A.** 2022. Moisture-vegetation relationships of Omani coastal dunes (nabkhas). Abstracts of the International Conference "Water Resources Management and Sustainability: Solutions for Arid Regions", Dubai, March, 22-24, 2022. P 117. Edited by M.Sherif, M.A.Faiz and A. Sefelnasr.
8. Al-Maktoumi, A., **Kacimov, A.**, El-Rawy, M. 2022. Managed Aquifer Recharge as a reliable and sustainable water supply in Duqm area, Sultanate of Oman. Abstracts of the International Conference "Water Resources Management and Sustainability: Solutions for Arid Regions", Dubai, UAE, March, 22-24, 2022, pp. 138-143. Edited by M.Sherif, M.A.Faiz and A. Sefelnasr.
9. Al-Yaqoubi, S., Al-Maktoumi, A., **Kacimov A.**, Al-Ismaily, S. and Al-Mayahii, A., 2022. Field bailout experiments, HYDRUS-2D and analytical modeling for determination of hydraulic parameters of a porous bed of ephemeral stream. Abstracts of the International Conference "Water Resources Management and Sustainability: Solutions for Arid Regions", Dubai, UAE, March, 22-24, 2022, pp.59-61. Edited by M.Sherif, M.A.Faiz and A. Sefelnasr.

10. **Kacimov, A.R.** Revisiting Dupuit-Forchheimer's quasi-3D seepage. Proceedings of the Mathematical Centre named after N.I.Lobachevsky, 2022, V.64. Proceeding of the International Conference "Extreme Problems in the Theory of Functions" Kazan, Kazan University Press, p.10.

Conference Abstracts /Poster/Chapters

1.**Kacimov, A.**, Al-Shukaili, A., Al-Mayahi, A., & Al-Maktoumi, A. (2019, December). Optimization of geometry of infiltrating wadis-trenches for MAR schemes with flash flood and treated wastewater pulses in desert dunes. In *AGU Fall Meeting 2019*. AGU <https://agu.confex.com/agu/fm19/meetingapp.cgi/Person/155824>

2. Al-Shukaili, A., Al-Busaidi, H., **Kacimov A.R.**, 2019. "Coupled surface-seepage flow through rectangular trenches: MAR applications in sand dunes. Abstracts of the Third Cambridge – Sultan Qaboos Universities Symposium on Mathematical Modelling, April 9-11, 2019, p. 25.

3.**Kacimov, A.** and Šimůnek, J. 2021. HYDRUS and analytical modeling of seepage in porous banks of commingled ephemeral streams having triangular flash-flood hydrographs: emergence and extinction of an "ephemeral" unconfined aquifer. In book of Abstracts of InterPore-2021, MS25 "Subsurface Water Flow and Contaminant Transport Processes – Special Session in Honour of Harry Vereecken", pp. 222-223. <https://events.interpore.org>

4. Al-Ismaily, S., Al-Maktoumi, A., Al-Busaidi, H., Al-Mayahi, A., Bouma, J., **Kacimov, A.** 2022. Morphogenesis of naturally formed capillary barrier in the fluvial-lacustrine soils of arid Oman: Opportunities towards saving water and mitigating salinity in a desert farming. Abstracts of the 22nd World Congress of Soil Science, 31 July - 5 August 2022, Glasgow, United Kingdom.

Books

1. Elizarov A.M., **Kacimov A.R.** Methods of Complex Analysis in Problems of Shape Optimisation. Kazan, Kazan University Press, 2007, 246 p. (in Russian).
2. Elizarov A.M., **Kacimov A.R.**, Maklakov D.V. Optimal Shape Design Problems in Aerohydrodynamics. ISBN: 978-5-9221-0999-4. Moscow, Fizmatlit, 2008, 478 p. (in Russian).

Research projects - Selected

#	Role	Year/ Completion	Project title	Fund by	Fund value	
					OMR	USD
1	PI	Completed (2018-2020)	Experiments and Modeling of Infiltration and Recharge in Sand Dunes With Application to Ash Sharqiya High Sands, Oman	SQU	4000	10,000
2	Co-PI	2020-2023 In Progress	Rise of Water-table and Its Mitigation at SQU Campus	HH Grant, SQU, Oman		
3	Co-I	2021 In Progress	Integrating modern soil and water smart technologies for salinity management in the Sultanate of Oman	His Majesty Fund, SQU	73,000	190,000

Collaborations and Consultancies

Collaborators	Institute/University/Organization	Country
1- Prof. Otto Strack	University of Minnesota	USA
2- Prof. Dani Or	ETH, Zurich, Switzerland (Swiss Federal Institute of Technology)	Switzerland
3- Prof. Jirka Simunek	University of California at Riverside	USA
4- Prof. Yuri Obnosov	Kazan Federal University	Russia
5- Prof. Mark Bakker	Delft University of Technology	Holland
6- Dr. Georg Houben	Federal Institute of Geosciences and Natural Resources	Germany
7- Dr. Erik Anderson	INTERA Inc.	USA
8- Prof. Vitaly Zlotnik	University of Nebraska	USA