April 21, 2024

M. Iggy Litaor

Name: M. Iggy Litaor

Born: 09 February, 1951

Citizenship: Israel & USA

Address: Kefar Yona, Israel

1. Academic Education

1972-1975- B.A., Tel-Aviv University, Department of Physical Geography.

1978-1980- M.Sc., Tel-Aviv University, Department of Geophysics and Planetary Sciences. Thesis Title: "The soils in a differentiated region of northeastern Samaria: Their character, means of formation and influence on plant associations ."

1981-1986- Ph.D., University of Colorado, Boulder CO, USA, Department of Geological Sciences, Dissertation Title: "Geochemistry of alpine soils in the Colorado Front Range with special reference to acid deposition.″

2. Academic Employment

A. Academic Employment

1995 -1997 - Associate Professor Adjunct, Department of Civil and Environmental Engineering, University of Colorado, Boulder, Colorado.

1996 – 2008- Associate Professor - Tel Hai College, Upper Galilee, Israel.

2008 – present - Professor - Tel Hai College, Upper Galilee.

2011 – present Head of the hydrogeochemistry laboratory in MIGAL – Galilee Research Institute.

B. Teaching

1993 – 1995- University of Colorado at Boulder, Department of Civil & Environmental Engineering. Course - Applied Soil Chemistry (Graduate level).

2003 – 2004- University of Colorado at Boulder, Department of Civil & Environmental Engineering. Course - Aqueous Chemistry (Graduate level).

1996 – 2023- Tel Hai College, Department of Environmental Sciences. Undergraduate Courses list: Introduction to Environmental Sciences, Applied Hydrogeology, Biogeochemistry, Soil and Water, Introduction to Environmental Sciences, Ecology of Wetlands, Introduction to Geology, Water Resources in Israel, Advanced Seminar, Honorary thesis (Undergraduate Project).

C. Administrative positions in academic institutions

Tel Hai College, Upper Galilee

1996-2005 - Head of the Environment and Society Division in the Department of Multi Disciplinary Studies.

2003-2004- Head of the Research Authority (equivalent to Dean)

2005-2010- Chair of the Department of Multi-Disciplinary Studies.

2010-2014- Head of the Research Authority MIGAL and THC (equivalent to Dean).

2016 – 2023- Chair of the water sciences M.Sc. program.

3. Academic Activities:

A. Supervision of M.Sc. and doctoral degree students

1. **1987-1989**- May S. Nitrogen behavior in alpine snowpacks. Master of Sciences, University of Colorado at Boulder, Geography Department. Supervisors: Caine, Runnells &Litaor.
2. **1992-1996**- Zika, E. Characteristics and impacts of the rainfall-runoff relationships on a radionuclide-contaminated hillslope. Master of Sciences, University Colorado at Boulder, Engineering School. Supervisors: Illangasekare, Litaor, Williams.
3. **1992-1996**- Moffitt, J.A. Monitoring and modeling of snowmelt at Rocky Flats. Master of Sciences, University of Colorado at Boulder, Engineering School. Supervisors: Illangasekare, Litaor, Qualls.
4. **1992-1996**- Daniels, H. The influence of evapotranspiration on radionuclide transport in contaminated soils. Master of Sciences, University of Colorado at Boulder Engineering School. Supervisors: Illangasekare, Litaor, Qualls.
5. **1998 -2001**- Reichman, O. The geochemistry of Phosphorus in altered wetland soils. Master of Sciences, Hebrew University of Jerusalem, Rechovot. The thesis received the Mokadi prize for the best thesis of the year (2002 – 2003) in soil sciences. Supervisors: Litaor & Shenker
6. **1999-2002**- Seitelbach, S. Redox reactions and phosphorus release in re-flooded soils of an altered wetland. Master of Sciences, Hebrew University of Jerusalem, Rechovot. Supervisors: Shenker & Litaor
7. **2000-2004**- Eshel, G. Hydrogeology of altered wetland, Hula Valley, Israel. Master of Sciences, Hebrew University of Jerusalem, Rechovot. Supervisors: Litaor & Nativ

8. **2001- 2004-** Haim, A. The influence of redox potential on P solubility in altered peat soils, Hula Valley, Israel. Master of Sciences, Hebrew University of Jerusalem, Rechovot. Supervisors: Litaor & Shenker
9. **2003-2009**- Barnea, I. Evaluation of optimal P management options in altered wetland soils using lysimeter station. Master of Sciences, Hebrew University of Jerusalem, Rechovot. Supervisors: Litaor & Shenker
10. **2003-2009**- Vilovitz, Y. The influence of changing redox conditions on the chemistry of soil leachates using lysimeter station. Master of Sciences, Hebrew University of Jerusalem, Rechovot. Supervisors: Shenker & Litaor
11. **2008 -2014**- Reichman, O. A model of diffuse P loss from soils to waterways at watershed scale. Ph.D. Dissertation. Hebrew University of Jerusalem, Rechovot. Supervisors: Litaor & Chen.
12. **2006 –2013**- Brand, S. Salinity processes in altered wetland soils. Ph.D. Dissertation. Hebrew University of Jerusalem, Rechovot. Supervisors: Shenker & Litaor
13. **2006-2009**- Sade, R. The fate and transport of P in altered wetland soils using large field experiment characterized by preferential flow. Master of Sciences, Hebrew University of Jerusalem, Rechovot. Supervisors: Litaor & Shenker
14. **2006-2009**- Shemchiov, R. Vegetation response to changing hydro-geochemical conditions in constructed wetland. Master of Sciences, Hebrew University of Jerusalem, Rechovot. Supervisors: Litaor & Shenker
15. **2009 –2014-** Sade, R Snow Dynamics in High Mediterranean Mountains: Mount Hermon as a case study. Ph.D Dissertation, Technion Supervisors: Litaor, Rimmer, Forman.
16. **2008-2011**- Mizrachi A. Removal of Methyl Tert-Butyl Ether (MTBE), Trichloroethylene (TCE) and Azo dye from drinking water by a new Plasma-based Advanced Oxidation Technology: A kinetics study. Tel-Hai College. Tel-Hai Academic College. Supervisors: Litaor and Lahav.
17. **2010-2014**- Siphron R. Characterization of mobile vertical flow constructed wetland for the treatment of wineries wastes. Tel-Hai College. Supervisors Litaor & Aziziah.
18. **2012-2019**- Barnea, I. Comparative study of Nutrient uptake in East Mediterranean and northern constructed wetlands. Ph.D Dissertation, Hebrew University, Supervisors: Litaor & Yacovi. Recipient of the Rieger Foundation fellowship.
19. **2012- 2016** - Dror Denenbum. Phosphorus capture, recycling and utilization for sustainable agriculture and a clean environment using water treatment residuals (WTR), Technion. Supervisors: Litaor & Shaviv.
20. **2012- 2016**- Nank Kadyha. Methods in proximal soil suvey. Technion, Supervisors: Litaor &

Shaviv.

21. **2012-2016**- Nimrod Levi. Treatment of organic-rich wastewater with integrated system of sedimentation and constructed wetlands. Technion, Supervisors: Litaor and Green.
22. **2013-2018**- Liran Kirshinberg. The influence of olive mill wastewater on soils and olive tree Cultivar Barnea. Master of Sciences, Tel Hai College, Supervisors: Litaor & Shenker.
23. **2015– 2018**- Shai Shechter. Phosphorus capture, recycling and utilization for sustainable agriculture and a clean environment using Al- Water Treatment Residuals. Master of Sciences, Tel Hai College, Supervisors: Litaor and Zohar.
24. **2016 – 2019 –** Simon Chernoivanov. Removal of sodium from agro-industrial wastewater using advanced treatment wetland. Master of Sciences, Tel Hai College, Supervisor: Litaor and Lechem.
25. **2016 – 2021** – Ben Hakimi. The use of zeolites to improve soil water capacity. Master of Scienecs,Tel Hai College, Supervisors: Litaor and Reichman.
26. **2016 – present –** Livia Katz. Differential irrigation of peach orchard using thermal imagery to assess spatial tree water status. PhD dissertation, Hebrew University of Jerusalem. Supervisors: Litaor and Cohen.
27. **2016 – 2019** – Adi Zarka. Characterization of dust across the Kinneret catchment. Master of Sciences, Tel Hai college, Supervisors: Reichman & Litaor.
28. **2017** – **2021** – Niztan Malachi. Spatial characterization of soils using remote and proximal survey techniques for optimization of fertilization in crops. Tel Hai College. Supervisors: Litaor and Livnat.
29. **2017** – **2020** – Assaf Israeli. Optimization of spatial soil sampling. Tel Hai College. Supervisors: Litaor & Shir.
30. **2017** – **2020 -** Ido Maor (deceased). Modeling of sodium flux in horizontal subsurface flow wetland characterized with zeolites and halophytes. Tel Hai College. Supervisors: Litaor & Zemach.
31. **2017** – **2019** – Sachar Regev. Structural Equations modelling to evaluate the trophic state of Agmon-Hula with special emphasize on phosphorous dynamics. Tel Hai College. Supervisors: Litaor & Chen.
32. **2018 – 2022 –** Hadar Gilbow. Physical and chemical characterization of farm soil using thermal imagery. Tel Hai College. Supervisors: Litaor & Chen.
33. **2018 – 2021** – Or Smaransky. Phosphorus capture, recycling and utilization for sustainable agriculture and a clean environment using Fe- Water Treatment Residuals. Master of Sciences, Tel Hai College, Supervisors: Litaor and Zohar.

34. **2018 – 2021** – Assi Asiag. Removal of sodium from agro-industrial wastewater using zeolites coupled with halophytes. Master of Sciences, Tel Hai College, Supervisor: Litaor and Orlofski.
35. **2018 – 2022** – Ariel Marish. Use of alternative P-fertilizers in hydroponics. Master of Sciences, Tel Hai College, Supervisor: Litaor and Zohar.
36. **2019** – **2022** – Shalev Malul. Appraisal of pedo-transfer functions for precision agriculture using proximal soil survey. Master of Sciences, Tel Hai College, Supervisor: Litaor.
37. **2019** – **2022** – Nimrod Metav. Examination of proximal sensing technology for precision agriculture application. Master of Sciences, Tel Hai College, Supervisor: Litaor.
38. **2019** – **2022** – Masha Melinkove. Multispectral analysis of soil properties using satellite and drone technologies. Master of Sciences, Tel Hai College, Supervisors: Litaor and Chen.
39. **2019** – **2021** – Ido Dan. Spatial soil textural analysis using machine learning algorithms. Master of Sciences, Tel Hai College, Supervisors: Shir and Litaor.
40. **2020** –**2023** – Nama Badichi. The impact of irrigation with Lake Kinneret water on the soil health of Hula Valley. Master of Sciences, Tel Hai College, Supervisors: Litaor and Reichman.
41. **2020 – present** – Assaf Israeli. Integrated Solution Systems Development for Precision Irrigation and Fertilizer Management, Ph.D., Hebrew University of Jerusalem, supervisors: Litaor and Shir.
42. **2020** – **2023** – Dor Michales. Characterization and optimization of water content sensors in apple orchard. Master of Sciences, Tel Hai College, Supervisors: Litaor and Shir.
43. **2021** – **2023** – Hasan Ganam. Kinetic isotherms of P on iron desalinization treatment residue (Fe-DTR). Master of Sciences, Tel Hai College, Supervisors: Litaor and Zohar.
44. **2021** – **present** - Mohamad Hieb. Evaluation of Phosphorus alternative fertilizer using Fe-desalinization Treatment Residuals. Master of Sciences, Tel Hai College, Supervisors: Litaor and Reichman.
45. **2021** – **present** – Avishag Amuial. Long-term appraisal of irrigation with Lake Kinneret water on the soil health of semi-commercial field. Master of Sciences, Tel Hai College, Supervisors: Litaor and Reichman.
46. **2022 – present** – Gome Shelvi. Re-afforestation experiment in Gilboa Mountain. Master of Sciences, Tel Hai College, Supervisors: Litaor and Tarin Paz.
47. **2023** – present – Gal Postolevski. Characterization of treatment wetland designed 20-2023for carbon sequestration. Supervisor: Litaor.

48. **2023** – present – Yuval Schak. Biogeochemical characterization of treatment wetland designed to remove Agro-pollutants using passive samplers. Supervisors: Litaor and O. Moshe.

B. Positions in non-academic & research Institutions

1978-1980- Research Assistant; Ministry of Agriculture: Agriculture Research Organization, The Volcani Center, Israel.

1981-1985- Research Assistant; Geological Sciences, University of Colorado, Boulder Colorado.

1984-1985- Programmer; Cooperative Institute for Research in the Environmental Sciences, University of Colorado, Boulder, Colorado.

1986-1992- Research Associate, Institute of Arctic and Alpine Research, University of Colorado.

1988-1990- Geochemist consultant for the water quality laboratory of the city of Boulder. Provide geochemical consulting and analytical expertise regarding minor and trace metals chemistry (Pb, Zn, Mo, Ni, Cu, Cd, Fe, Al & As) in mine spoil heap areas which were potentially affecting water quality in a mountainous watershed.

1990-1995 - Senior Geoscientist, EG&G Rocky Flats Environmental & Technology Site, Colorado. Lead scientist of the Environmental Restoration Division's Soil Science Team.

2011 – present - Head of the Hydro-geochemistry Laboratory. MIGAL – Galilee Research Institute.

4. Grants and Awards

A. Research Grants

1. 2024 – 2025. P cycling to make an alternative fertilizer with Fe/DTR and cowshed effluents and carbon fixation in wetlands. JNF (250,000 NIS) (PI).
2. 2024 – 2026. The RUSLE model to assess soil lost from agricultural catchment: Gliboa stream as a case study. Department of Agriculture, 510,000 NIS (PI).
3. 2023 – 2026. Treatment wetlands coupled with passive sampling to purify Gilboa stream from agriculture leachates. JNF' 450,000 NIS (Co-PI).

4. 2023 – 2025. Carbon sequestration by treatment wetland using preprocessed cowshed effluents and phosphorus recycling. Ministry of Energy, 600,000 NIS (PI).
5. 2021 – 2025. Fertigation experiment in a new re-afforestation initiative using mixed native tree species in Gilboa Mountain, Israel. JNF, 600,000 NIS (PI).
6. 2021 – 2023. Making alternative phosphate fertilizer using Fe-DTR and agro-industrial effluents. Israel Innovation Authority – NOFAR program,1.2 million NIS (PI).
7. 2020 – 2023. SOILdarity - Stepping up and bringing out the scientific excellence and innovation capacity in soil Research of the University of Lisbon. H2020 (PI), 220312 EU.
8. 2020 – 2023. The impact of irrigation with Lake Kinneret water on the soil health of Hula Valley. Israel Water Authority – Research Project (PI), 360,000 NIS.
9. 2020 – 2023. Integrated Solution Systems Development for Precision Irrigation and Fertilizer Management. BARD – Research Project (PI), IS-5221-19, $310,000.
10. 2017 – 2018. Model of Precision Agriculture – Development of Integrative System for the quantification of spatial soil fertility. MIGAL, 170,000 NIS.
11. 2016 – 2020. Bridging the Gap for Innovations in Disaster Resilience – BRIGAID. Horizon 2020 (PI), EU 395000.
12. 2016 – 2018. Co-addition of zeolites and compost for improvement of soil quality and fertility and crop yield by increasing K availability. Ministry of Agriculture (PI), 420,000 NIS.
13. 2015 – 2018. Phosphorus capture and recycling and utilization for sustainable agriculture using Al/organic composite water treatment residuals. BARD – Research Project IS-4870-15 R (PI), $295,000.
14. 2014 – 2016. Phosphorus capture, recycling and utilization for sustainable agriculture and a clean environment using Water Treatment Residuals (WTR). Ministry of Agriculture (PI), 300,000 NIS
15. 2012- 2015. Centre of Excellence for Research on Environment, Health and Aging. EU-FP-7 (CO-PI with 3 others), 4,500,000 EU.
16. 2012 – 2015. The influence of the *Grus grus* feeding practices on the soil and water quality around the Agmon Hula biosphere. Ministry of Science, (PI) 360,000 NIS.
17. 2011 – 2014. Mobile Integrated Sustainable System for Treatment of Organic Wastewater EU – FP-7 (PI) 1,500,00 EU.
18. 2011 – 2014. Comparative study of Nutrient uptake in East Mediterranean and northern constructed wetlands. JNF & Manitoba Canada, (PI), 168,000 $.

19. 2009 – 2011. Impact of global change on East-Mediterranean Environs: An integrated assessment of hydrological, agricultural, ecological and socio-economic aspects. (CO-PI). BMBF and Ministry of Science. 12000 EU.
20. 2009 – 2010. The influence of the hydro-geochemical management on *Typha domingos* and *Phragmites australis* in Agmon Hula. (PI), Reshot Teva & Ganim, 170,000 NIS.
21. 2008 – 2009. The influence of the hydro-geochemical management on *Typha domingos* and *Phragmites australis* in Agmon Hula. (PI), Reshot Teva & Ganim, 156,000 NIS.
22. 2008 – 2011. Snow dynamics in Mt. Hermon and numerical assessment of its influence on the discharge of the Dan Springs. (PI), Nezivot Hammaim, 299,000 NIS.
23. 2007 – 2010. The influence of the hydro-geochemical management on *Typha domingos* and *Phragmites australis* in Agmon Hula. (PI), Keren Kayemet L'israel, 180,000 NIS.
24. 2006 – 2011. COST action 869: Mitigation options for nutrient reduction in surface water and groundwater. FP-6, 100,000 EU, A member of the steering committee.
25. 2006. Vegetational response to hydrogeochemical changes in the water supply of altered wetland, Hula Valley Israel. (PI), Nature Reserve Authority, 86,000 NIS.
26. 2005 – 2006. Predicting the impact of climate change on butterfly and species richness of woody vegetation in Israel. (CO-PI), Ministry of the Environment, 80,000 NIS.
27. 2005 – 2008. Impact of global change on East-Mediterranean Environs (Phase II): An integrated assessment of hydrological, agricultural, ecological and socio-economic aspects. (PI with 20+ other PIs). BMBF and Ministry of Science. Total award 1.5 M EU.
28. 2005 – 2007**.** Preventive biological crop protection system against soil-borne pathogens for safe and efficient low input vegetable production. The Sixth Framework of the European community 125,000 EU.
29. 2003 – 2005. Development of sustainable agricultural practices in an altered wetland of the Hula Valley. (PI), ICA $ 51,000 for field equipment.
30. 2003 – 2004. Fellowship to study the role of phosphorous in controlling primary productivity in alpine ecosystem, Colorado Front Range. NSF, $ 42,000 sabbatical leave.
31. 2001 – 2005. Impact of global change on East-Mediterranean Environs: An integrated assessment of hydrological, agricultural, ecological and socio-economic aspects. (PI and coordinator with 3 other PIs and 22 CO-PIs). BMBF and Ministry of Science. Total award 7,500,000 DM.
32. 2001. The biogeochemistry of phosphorous in an alpine ecosystem. CU-LTER, NSF, University of Colorado, Boulder CO. $5,000.
33. 2001. Spatial analysis of phosphorous in the Hula Valley, (PI). Higher Education Project in Eastern Galilee, Jewish Agency. 32,000 NIS.

34. 2001. A feasibility study of the impact of dairy farms and cattle grazing on the water quality of the Kinneret catchment. (PI). Ministry of Science, 80,000 NIS.
35. 2000-2003. Program for the prevention of diffuse water pollution with phosphorus from degraded and re-wetted peat soils (PROWATER). (PI with 8 others CO-PIs from six European countries). Work Package manager and lead scientist on the wetland hydrology. The Fifth Framework of the European community $ 110,000.
36. 2000-2003. Geohydrology and Water Balance of Hula Valley (NIS 320,000) Nezivot Hamaim, PI.
37. 1999. Geostatistical Modeling for Optimal Sampling Design of an Alpine Ecosystem. CU-LTER, NSF, University of Colorado, Boulder CO. ($5,000).
38. 1998-2001. The hydro-geochemistry of phosphorus in a semi-arid wetland ecosystem (PI). BMBF DM 228,000.
39. 1995-1996. The hydrogeochemistry of actinides in grassland soils of Rocky Flats, Colorado. (PI) Department of Energy $ 94,000.
40. 1992-1995. Physicochemical characterization of soil interstitial waters in Rocky Flats Soil. (PI) Department of Energy $400,000.
41. 1992-1994. Vertical distribution of actinides in soils of Rocky Flats Plant: Mineralogy characterization and their relationships to the dispersion of actinides in soils. (PI) Department of Energy $120,000.
42. 1992-1994. Vertical distribution of actinides in soils of Rocky Flats Plant using sequential extraction technique. (PI) Department of Energy $120,000
43. 1991-1995. Spatial distribution of actinides in the soils of Rocky Flats Plant. (PI) USDOE $ 350,000
44. 1990-1992. Long-Term Ecological Research in the Alpine zone of the Southern Rockies NSF 1990 - 1992 (CO-PI with 14 others, head of the geochemistry subproject) $ 20,000.
45. 1988-1989. The chemistry of trace metals in streams and soil solutions of the Green Lakes Valley, Colorado Front Range. City of Boulder CO; Geochemical consultant.
46. 1986-1990. Biogeochemistry of soil interstitial waters in an alpine watershed, Colorado Front Range. Post-Doctoral Fellowship, LTER, NSF ($ 70,000 per year; salary and research expenses).
47. 1985-1987. Iron oxides geochemistry in the Roaring River alluvial fan, Rocky Mountain National Park: United States Department of Interior; $ 12,000.

5. List of Publications

A. Doctoral Dissertation

1. 1986 Ph.D. University of Colorado at Boulder, Department of Geological Sciences. Dissertation Title: "Geochemistry of alpine soils in the Colorado Front Range with special reference to acid deposition". Supervised by Prof. D.D. Runnells.

B. Chapter in books and monographs

1. Litaor, M.I., 1986. The influence of eolian dust on the buffering capacity of alpine soils in the Front Range, Colorado. In: Pieke, R.A. (ed.). Proceedings of Symposium on acid deposition in Colorado - A Potential or Current Problem; Local Versus Long Distance Transport into the State. Cooperative Institute for Research in Atmospheric Sciences, Colorado State University, Pingree Park Campus, August 13-15, 1986. 13-20.
2. Litaor, M.I. and R. Keigley, 1990. Iron oxides geochemistry in the Roaring Fork River alluvial fan, Rocky Mountain National Park, Colorado. In McCutchen, H.E. et al. (eds), Ecological effects of the Lawn Lake flood of 1982, Rocky Mountain National Park. Scientific Monograph, NPS/NRROMO/NRSM-93/21.
3. Johnson, C.E., M.I. Litaor, M.F. Billett, and O.P. Bricker. 1994. Chemical weathering in small catchments: Climate and anthropogenic influences. In Molden B. and Cerny J. (eds.). Small catchments: A tool for environmental studies. SCOPE John Wiley, London, Chapter 14: 323-342.
4. Litaor, M. I., 1993. Spatial analysis of Pu activity in soils east of Rocky Flats Plant. In Kathern, R. L. et al. (eds), Environmental Health Physics, January 24-28, 1993 Coeur d'Alene, Idaho, p. 117-136.
5. Allen, L.E. and M. I. Litaor. 1995. GSLIB Graphical user interface state of the art software for contamination modelling in soil. Environmental Restoration 95, Proceedings sponsored by US Department of Energy, Denver Colorado, August 13-17, 1995. Proceedings published as ER'95 Online, # 1191, SCAN/FAX Systems, Broomfield CO, 1995.
6. Nachabe, M.H., T.H. Illangasekare, M.I. Litaor, and G.R. Barth. 1995. Assessment of free-flowing soil solution using zero-tension samplers. In Wagner et al., (eds). Models for assessing and monitoring groundwater quality. IAHS Publication N0. 227, p. 67-74. Proceedings of an international symposium held in Boulder Colorado, July 2-14, 1995.
7. Shore, L.S., Shemesh, M., Kronfeld-Schor, N, Barel-Cohen, K., Litaor, M. I. 2003. Measurement of natural and synthetic hormones in a watershed. Proceedings of the Workshop on "Diffuse Input of Chemicals into Soil & Groundwater-Assessment & Management. pp. 127-134. Technische Universität Dresden, Dresden, Germany 26-28, February 2003.

8. Litaor, M. I., Auerswald K., Reichmann, O., Nishri, A., and M. Shenker. 2003. The Soils of the Hula Valley: Classification and Genesis. In Gophen, M. (ed.) The Hula Book, Kluwer, The Nederlands.
9. Litaor, M. I., Reichmann, O., Nishri, A., Auerswald K., and M. Shenker. 2003. The Geochemistry of Phosphorus in the Histosols of the Hula Valley, Israel. In Gophen, M. (ed.) The Hula Book, Kluwer, The Nederlands.
10. Litaor, M. I., Reichmann, O., Auerswald K., and M. Shenker. 2003. Pattern recognition analysis of phosphorus in a semi-arid altered wetland. Proceedings in Matter and particle transport in surface and subsurface flow. P. 413-418. ICWRER, 2002 Dresden, Germany.
11. Litaor, M. I. 2004. Modelling of P transport at the catchment scale. In Ralph Meissner and P. Leinweber (eds) Program for the prevention of diffuse pollution with phosphorus from degraded and re-wetted peat soils. UFZ Center for environmental research Leipzig-Halle, Germany. ISSN 0948-9452.
12. Schoumans O.F. (Ed.) W.J. Cardon (Ed.), M. Bechman, C. Gascuel-Odoux, G. Hofman, B. Kronvang, M. I. Litaor, A. Lo Porto, P. Newell-price, and G. rubaek. 2011. Mitigation options for reducing nutrient emissions from agriculture. A study amongst European member states of Cost Action 869. Wageningen, Alterra, Alterra report 214. 144 p.
13. Litaor, M.I. and A. Israeli. 2023. A New Precision Soil Sampling Approach in Support of Reforestation Experiment in Dry Mediterranean Ecosystem. Referred Proceeding in Precision Agriculture Conference, Bologna, Italy, July, 2023.

C. Articles in refereed journals

1. Andrews, J.T., P.W. Birkeland, J. Harbor, N. Dellamonte, M.I. **Litaor**, R. Kihl. 1985. Holocene sediment record, Blue Lake, Colorado Front Range. Symposium on climate and paleoclimate of lakes, Rivers and Glaciers, Innsbruck. Zeitschrift fur Gletscherkunde und Glazialgeologie 21:25-34.
2. **Litaor**, M.I., 1987. The influence of eolian dust on the genesis of alpine soils in the Front Range, Colorado. Soil Sci. Soc. Am. Jour. 51(1):142 147.
3. **Litaor**, M.I., 1987. Aluminium chemistry: fractionation, speciation, and mineral equilibria of soil interstitial waters of an alpine watershed, Front Range, Colorado. Geochem. et Cosmochim. Acta. 51:1285 1295.
4. **Litaor**, M.I., 1988. Reply to "Comments on 'The influence of eolian dust on alpine soils'". Soil Sci. Soc. Am. Jour. 52:301-302.

5. **Litaor**, M.I., 1988. Soil solution chemistry in an alpine watershed, Front Range, Colorado, U.S.A. Arctic and Alpine Res. 20:485-491.
6. **Litaor**, M.I., 1988. Review of Soil solution samplers. Water Resour. Res. 24:727-733.
7. **Litaor**, M.I. and Thurman, E.M., 1988. Acid neutralizing capacity in an alpine watershed, Front Range, Colorado I. The chemistry of dissolved organic carbon. Applied Geochemistry. 3:645-652.
8. **Litaor**, M.I. Dan, Y. and Koyumdjisky, H., 1989. Factor analysis of a lithosequence in Northeastern Samaria Steppe, Israel. Geoderma. 44:1-15.
9. **Litaor**, M.I. and Keigley, R. 1991. Geochemical Equilibria of iron in sediments of the Roaring River Alluvial Fan, Rocky Mountain National Park, Colorado. Earth Surface Processes and Landforms. 16:533-546.
10. **Litaor**, M.I. 1992. Aluminum mobility along a geochemical catena in an alpine watershed, Front Range, Colorado. Catena. 19:1-16.
11. **Litaor**, M.I. 1993. The physicochemistry of major, minor, and trace elements in streams and soil interstitial waters of the Green Lakes Valley, Front Range, Colorado. Earth Surface Processes and Landforms. 18:489-504.
12. **Litaor**, M.I., M. L. Thompson, G. R. Barth, and P.C. Molzer. 1994. Plutonium-239+240 and Americium-241 in Soils East of Rocky Flats, Colorado. Jour. Environ. Qual. 23:1231-1239.
13. **Litaor**, M.I., D. Ellerbroek, L. Allen, Erika Dovala. 1995. A Comprehensive Appraisal of Plutonium-239+240 in Soils of Colorado. Health Physics. 69:923-935.
14. **Litaor**, M.I. 1995. Spatial analysis of Pu-239+240 and Am-241 in soil around Rocky Flats, Colorado Plant. Jour. Environ. Qual. 24:506-516.
15. **Litaor**, M.I. 1995. Uranium isotopes Distribution in soils at the Rocky Flats Plant, Colorado.Jour. Environ. Qual. 24:314-323.
16. **Litaor**, M.I. and S. Ibrahim. 1996. Plutonium association with selected solid phases in soils of Rocky Flats, Colorado using sequential extraction technique. Jour. Environ. Qual. 25: 1144-1152.
17. **Litaor**, M.I., G.R. Barth, E.M. Zika. 1996. Fate and transport of actinides in soils of Rocky Flats, Colorado. Jour. Environ. Qual. 25: 671-683.
18. **Litaor**, M.I., and L. Allen. A. 1996. Comprehensive Appraisal of Am-241 in Soils of Colorado. Health Physics. 70:1213-1223.
19. **Litaor**, M.I., Mancinelli, R., Halfpenny, J. 1996. The influence of Pocket Gophers on the status of nutrients in alpine soils. Geoderma.70:37-48.

20. **Litaor**, M.I. 1997. Reply to a comment: Plutonium Association with Selected Phases in Soils of Rocky Flats, Colorado Using sequential Extraction Techniques. Jour. Environ. Qual. 26:776-777.
21. **Litaor**, M.I., G.R. Barth, E.M. Zika, G. Litus, J. Moffitt, and H. Daniels. 1998. The behavior of radionuclides in the soils of Rocky Flats, Colorado. Jour. Environ. Radio. 38(1): 17-46.
22. Ryan J.N., T.H. Illangasekare, M.I. **Litaor**, and R. Shannon. 1998. Particle and plutonium mobilization in a macroporous soil during rainfall simulations. Environ. Sci. Tech. 32: 476-482.
23. **Litaor** M. I., 1999. Plutonium loading on soils of residential areas and open space adjacent to Rocky Flats, Colorado. Health Physics. 76:171-179.
24. **Litaor**, M. I., Seastedt, T.R., and D.A. Walker. 2002. Spatial Analysis of Selected Soil Attributes across an Alpine Topographic/Snow Gradient. Landscape Ecology. 17:71-85.
25. Otabbong, E., P Leinweber, A Schlichting, R Meissner, M Shenker, M.I. **Litaor**, A. Sapek, S Robinson, A. Nidermeier, H Hacin and J. R Otabbong. 2003. Comparison of Ammonium Lactate, Sodium Bicarbonate and Double Calcium Lactate Methods for Extraction of Phosphorus from Wetland Peat Soils. Acta Agriculturea Scandinavca, Section B 54, pages 9-13.
26. **Litaor**, M. I., Reichmann, O., Belzer, M., Auerswald K., Nishri, A., and M. Shenker. 2003. Spatial Analysis of Phosphorus Sorption Capacity in a Semi-Arid Altered Wetland. Jour. Environ. Qual. 32:335-343.
27. Shore, L.S., O. Reichmann, M. Shemesh, A. Wenzel and M. I. **Litaor**. 2004. Washout of accumulated testosterone in a watershed. Science of the Total Environment. 332:193-202.
28. **Litaor**, M.I., O. Reichmann, K. Auerswald, M. Shenker. 2004. The Geochemistry of Phosphorus in an altered Wetland. Soil Sci. Soc. Am. J. 68:2078-2085.
29. **Litaor**, M.I., Reichmann, O. Haim, A. Auerswald, K. Shenker, M. 2005. Sorption Characteristics of Phosphorus in Peat Soils of a Semi-Arid Altered Wetland. Soil Sci. Soc. Am. J. 69:1658-1665.
30. **Litaor**, M. I., T.R. Seastedt, M.D. Walker, M. Carbone, and A. Townsend. 2005. The Biogeochemistry of Phosphorus in Alpine Soils. Geoderma 124:49-61.
31. Shenker, M., Seitelbach, S., Brand, S., Haim, A. & **Litaor**, M. I. 2005. Redox reactions and phosphorus release in re-flooded soils of an altered wetland. European Journal of Soil Science 56: 515-525.

32. **Litaor**, M. I., G. Eshel, O. Reichmann, M. Shenker 2006. Hydrological control of Phosphorus mobility in altered wetland soils. Soil Sci. Soc. Am J. 70:1975-1982.
33. Meissner, R., P. Leinweber, H. Rupp, M. Shenker, M.I. **Litaor**, S. Robinson and A. Schlichting. 2007. Mitigation of diffuse phosphorus pollution during rewetting of fen peat soils: A trans-European case study. Water, Air and Soil Pollution. DOI 10.1007/s11270-007-9528-4
34. Brand-Klibanski, S., M. I. **Litaor** and M. Shenker. 2007. Overestimation of Phosphorus Adsorption Capacity in Reduced Soils: An Artifact of Typical Batch Adsorption Experiments. Soil Sci. Soc. Am. J. 71:1128-1136, doi:10.2136/sssaj2006.0222
35. **Litaor**, M. I., G. Eshel, R. Sade, A. Rimmer, M. Shenker. 2008. Hydrogeological characterization of an altered wetland. Journal of Hydrology, 349: 333– 349. doi:10.1016/j.jhydrol.2007.11.007.
36. **Litaor**, M. I., M. Williams, and T. R. Seastedt. 2008. Topographic controls on snow distribution, soil moisture, and species diversity of herbaceous alpine vegetation, Niwot Ridge, Colorado, J. Geophys. Res., 113, G02008, doi:10.1029/2007JG000419.
37. **Litaor**, M. I., T.R. Seastedt, L.C. Sackett. 2008. Analysis of the Nutrient Status in Alpine Soils of the Colorado Front Range Using the N:P Ratio Index. Soil Science Society of America Journal. 72:1628-1636, DOI: 10.2136/sssaj2006.0434.
38. Sade, R., **Litaor**, M.I., Shenker M. 2010. Evaluation of groundwater and phosphorus transport in fractured altered wetland soils. J Hydrology, 393: 133–142.
39. **Litaor**, M.I., H. Brielmann, O. Reichmann, M. Shenker, 2010. Hydrochemical Analysis of Groundwater Using Tree-Based Model, J Hydrology, 387:273–282.
40. Schoumans, O., W.J. Chardon, M. Bechmann, C. Gascuel-Odoux, G. Hofman, B. Kronvang, M.I. **Litaor**, A. Lo Porto, P. Newwell-Price and G. Rubaek. 2011. Overview and evaluation of mitigation options for reducing nutrient emission from agriculture to groundwater and surface water. A Study amongst European Members States of EC-COST Action 869. Alterra Report 2141 ISSN 1566-7197.
41. Viviroli, D., D. R. Archer, W. Buytaert, H. J. Fowler, G. B. Greenwood, A. F. Hamlet, Y. Huang, G. Koboltschnig, M. I. **Litaor**, J. I. López-Moreno, S. Lorentz, B. Schädler, H. Schreier, K. Schwaiger, M. Vuille, and R. Woods. 2011. Climate change and mountain water resources: overview and recommendations for research, management and policy. Hydrol. Earth Syst. Sci., 15, 471-504.
42. Sade, R. A. Rimmer, M. **Litaor** & A. Forman. 2011. The sensitivity of snow-surface temperature equation to sloped terrain. J. Hydrology, 408: 308-313.

43. **Litaor**, M.I., O. Reichmann, and M. Shenker. 2011. Genesis, classification and human modification of peat and mineral-organic soils, Hula Valley, Israel. Mires and Peat, 9:1-9.
44. Barnea, I., M. I. **Litaor** & M. Shenker, 2012. Evaluation of phosphorus management practices in East Mediterranean altered wetland soils. Soil Use & Management 28:35-44.
45. Shemchaiov, R. M. I. **Litaor** & M. Shenker. 2012. The catastrophic dieback of Cyperus papyrus in an East Mediterranean altered wetland: Critical examination of hydrogeochemical models. Mires and Peat Research,9:1-12.
46. Haygarth, P.M., A. Delgado, W.J. Chardon, M. I. **Litaor**, F. Gil-Soters, and J. Torrent. 2013. Phosphorous in soils and its transfer to water: from fine-scale soil processes to models and solutions in landscapes and catchments. 29:1-4.
47. **Litaor**, M. I., I. Chash, I. Barnea, & M. Shenker. 2013. Assessment of Phosphorus Fertilizing Practices in Altered Wetland Soils Using Uncertainty Analysis, Soil Use Management altered wetland soils. 29:55-64.
48. Reichmann, O., Y. Chen, and M. Iggy **Litaor**. 2013. Spatial Model Assessment of P Transport from Soils to Waterways in an Eastern Mediterranean Watershed. Water, 5:262-279.
49. Mizrahi, A. and M. Iggy **Litaor**. 2013. The kinetics of the removal of organic pollutants from drinking water by a novel plasma-based advanced oxidation technology. Desalination and water treatment. Doi:10.1080/19443994.2013.808392.
50. Simhayov, R., M. Iggy **Litaor**, I. Barnea and M. Shenker. 2013. Catastrophic Dieback of Cyperus Papyrus in Response to Geochemical Changes in an East Mediterranean Altered Wetland. Wetlands, 33:747-758.
51. **Litaor** , M.I., Reichman, O, E. Denta, A. Naftali and M. Shenker. 2014. The Impact of ornithogenic inputs on phosphorous transport from altered wetland soils to waterways in East Mediterranean ecosystem. Science of the Total Environment, 473-474: 36-42. http://dx.doi.org/10.1016/j.scitotenv.2013.11.126.
52. Sade, R., A. Rimmer, M. I. **Litaor**, E. Shamir, A. Furman. 2014. Snow surface energy and mass balance in a warm temperate climate mountain. J. Hydrology. DOI: 10.1016/j.jhydrol.2014.07.048.
53. **Litaor,** M.I., N. Meir-Dinar, B. Castro, H. Azaizeh, G. Rytwo, N. Levi, M. Levi and U. MarChaim 2015. Treatment of Winery Wastewater with Aerated Cells Mobile System. Environ. Nanotech. Monitoring & Management, 4:17-26. http://dx.doi.org/10.1016/j.enmm.2015.03.001

54. **Litaor**, M.I., I. Barnea, O. Reichmann and I. Zohar. 2016. Evaluation of the ornithogenic influence on the trophic state of East Mediterranean wetland ecosystem using trend analysis. Science of the Total Environment 539:231–240.
55. Reichman, O. Chen, Y. and M. I. **Litaor**. 2016. The Impact of Rainfall-Runoff Events on the Water Quality of the Upper Catchment of the Jordan River, Israel. "Integrated Water Resources Management: Concept, Research and Implementation. Borchardt et al. (EDs). Springer, NY, p. 129-146.
56. Zohar, I. J. Ippolito, M. S. Massey, M.I. **Litaor**. 2017. Innovative approach for Recycling Phosphorous from Agro-Wastewaters Using Water Treatment Residuals (WTR). Chemoshpere, 168: 234-243.
57. **Litaor**, M.I., L. Katz and M. Shenker. 2017. The influence of compost and zeolites co-addition on the nutrients status and plant growth in intensively cultivated Mediterranean soils. Soil Use and Management, 33: 72-80.
58. **Litaor** M.I. and N. Kadyha. 2018. The impact of olive mill wastewater spreading on soils using an integrated approach of proximal soil survey, spatial and multivariate analyses. Environmental Science and Pollution Research, 25:7469-7478. DOI: 10.1007/s11356-017-1062-3
59. Zohar, I., M. S. Massey, J.A. Ippolito, and M. I. **Litaor**. 2018. Phosphorus Sorption Characteristics in Aluminum-Based Water Treatment Residuals Reacted with Dairy Wastewater, Part I: Isotherms, XRD, and SEM-EDS Analysis Journal Environmental Quality. doi:10.2134/jeq2017.10.0405
60. Massey, M.S., I. Zohar, J.A. Ippolito, and M.I. **Litaor**. 2018. Phosphorus sorption to aluminum-based water treatment residuals reacted with dairy wastewater, Part II: X-ray adsorption spectroscopy. Journal Environmental. Quality. doi:10.2134/ jeq2017.10.0407 .
61. **Litaor**, M.I., K. Suding, S.P. Anderson, G. Litus, N. Caine. 2018. Trend Analysis of Alpine Catena Response to Nitrogen Deposition. Catena. 170:108-118.
62. **Litaor,** M.I., S. Schechter, I. Zohar, M.S. Massey, J. A. Ippolito. 2019. Making Phosphorus Fertilizer from Dairy Wastewater with Al Water Treatment Residuals. Soil Science Society of America Journal. doi:10.2136/sssaj2018.07.0278
63. Israeli, A., Emmerich, M., **Litaor**, M., Shir, O.M. 2019. Statistical Learning in Soil Sampling Design Aided by Pareto Optimization. In: Proceedings of the Genetic and Evolutionary Computation Conference, GECCO-2019, New York, NY, USA, ACM Press. https://doi.org/10.1145/3321707.3321809
64. Crawford, J.T., Eve-Lyn S. Hinckley, M. Iggy **Litaor** , Janice Brahney and Jason C Neff. 2019. Evidence for accelerated weathering and sulfate export in high alpine

environments. Environ. Res. Lett. 14, 124092. Doi.org/10.1088/1748-9326/ab5d9c.124092

65. Banet, T., M.S. Massey, I. Zohar, M. Iggy **Litaor**, J.A. Ippolito. 2020. Assessing modified aluminum-based water treatment residuals as plant-available phosphorus source. Chemosphere, 247, https://doi.org/10.1016/j.chemosphere.2020.125949.
66. Ben Yona, M. A. Rimmer, E. Shamir, and **Iggy Litaor**. 2020. Hydrologic response in the karstic and basaltic hydro-geological units of Lake Kinneret Watershed. Jour. Hydrology. 583, https://doi.org/10.1016/j.jhydrol.2020.124572.
67. Zohar, I., J.A. Ippolito, and M. I. **Litaor.** 2020. Phosphorus pools in Al and Fe-based water treatment residuals (WTRs) following mixing with agro-wastewater - a sequential extraction study. Environmental Technology & Innovation, 18, https://doi.org/10.1016/j.eti.2020.100654.
68. Banet, T., Massey, M.S., Zohar, I., **Litaor**, M.I. and Ippolito, J.A. 2020. Phosphorus removal from swine wastewater using aluminum-based water treatment residuals. Resources, Conservation and Recycling: X,6, 100039. https://doi.org/10.1016/j.rcrx.2020.100039.
69. Orlofsky, E., S. Chernoivanov, A. Asiag, I. Maor and M. I. **Litaor**. 2020. Biological Reconditioning of Sodium Enriched Zeolite by Halophytes: Case study of Dairy Farm Effluent Treatment. International Journal of Phytoremediation. https://doi.org/10.1080/15226514.2020.1799932
70. Katz, L., Naor, A., **Litaor**, M. I., Ben-Gal, A., Alchanatis, V., Peres, M., Peeters, A., & Cohen, Y. (2021). Methodology for comparison between uniform and variable rate application in a drip-irrigated peach orchard. *Precision Agriculture '21*, 71–78. https://doi.org/10.3920/978-90-8686-916-9_7
71. **Litaor, M.I**. 2022. Alpine Ecosystem Response to Climate Warming: Long-Term Monitoring Data of Lakes and Streams Chemistries Revisited. Science of the Total Environment. https://doi.org/10.1016/j.scitotenv.2022.156292
72. Katz, L., Naor, A., **Litaor**, M. I., Ben-Gal, A., Alchanatis, V., Peres, M., Peeters, A., & Cohen, Y. (2022). A spatiotemporal decision support protocol based on thermal imagery for variable rate drip irrigation of a peach orchard. *Irrigation Science*, https://doi.org/10.1007/s00271-022-00830-x
73. Katz, L., A. Ben-Gal, M. I. **Litaor**, A. Naor, A. Peeters, E. Goldshtein, G. Lidor, O. Keisar, S. Marzuk, V. Alchanatis, Y. Cohen. 2023. How sensitive is thermal image-based orchard water status estimation to canopy extraction quality? Remote Sensing 15, 10.3390/rs15051448

74. Litaor, M.I., Israeli, A. 2023. A new precision soil sampling approach in support of reforestation experiment in dry Mediterranean ecosystem. 14th European Conference on Precision Agriculture, Bologna, Italy. DOI: 10.3920/978-90-8686-947-3_74
75. Ganem, H.I., M.I. **Litaor**, O. Reichmann, I. Zohar, 2023. Optimization of phosphorus removal from agro-wastewater by iron desalinization treatment residue (Fe-DTR), J. Environ. Chem. Eng. 11 (2023) 111385. https://doi.org/10.1016/j.jece.2023.111385.
76. Xiaomei Liu, Xueqing Xu, Rongnian Xu, Na Wang, Fenghong Yang, Cailing Yang, Yanrong Kong, M. **Iggy Litaor**, Ziqiang Lei. 2024, Preparation and properties of a metal-organic frameworks polymer material based on Sa-son seed gum capable of simultaneously absorbing liquid water and water vapor. International Journal of Biological Macromolecules 269 (2024) 132158.

D. Articles Submitted (2024)

Factors contributing to phosphorus sorption reversibility from iron-desalinization treatment residual (Fe-DTR) In review. J. Environ. Chem. Eng.