

## CURRICULUM VITAE

### Prof. Haim Gvirtzman, Groundwater Hydrologist

#### PERSONAL

Born: Jerusalem, Israel; May 31, 1957  
Nationality: Israeli; ID: 054856570  
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#### EDUCATION

<u>From-to</u>	<u>Institute</u>	<u>Degree</u>	<u>Advisors</u>	<u>Specialization</u>
1981-1984	Hebrew University	B.Sc.	-	Soil and Water
1984-1988	Weizmann Institute	Ph.D.	Mordekhay Magaritz	Isotope's Hydrology
1989-1991	Stanford University	Post-doc.	Paul V. Roberts and Steven M. Gorelick	Groundwater hydrology

#### APPOINTMENTS AT THE HEBREW UNIVERSITY

<u>From-to</u>	<u>Rank</u>	<u>Institute</u>	<u>Field</u>
1991-1992	Lecturer	Institute of Earth Sciences	Hydrology
1992-2001	Senior Lecturer	Institute of Earth Sciences	Hydrology
2002-2007	Associate Professor	Institute of Earth Sciences	Hydrology
2007-now	Full Professor	Institute of Earth Sciences	Hydrology

#### ACADEMIC DUTIES AT THE HEBREW UNIVERSITY

<u>From-to</u>	<u>Faculty / Institute</u>	<u>Title</u>
1997-2000	Inst. of Earth Sciences	Member, Teaching Committee
2003-2006	Faculty of Science	Director, Multi-Disciplinary Center for Environ. Research (and organizer of 4 conferences)
2004-2006	Inst. of Earth Sciences	Member, Professional Committee
2004-2014	Faculty of Agriculture, Dept. of Soil and Water	Member, Professional Committee
2009-2013	Faculty of Science	Head, Hydrology and Water Resources Program

## OTHER ACADEMIC ACTIVITIES

<u>From-to</u>	<u>Institute</u>	<u>Title</u>
1992	Israel Geological Society	Convener
1992-1994	Ministry of Environmental Quality, Israel	Member, Evaluation Committee on waste disposal sites
1993-1999	Water Commission, Israel	Member, Executive Committee, Sea of Galilee Research
1994-1995	Foreign Ministry, Israel	Member, Advisory Committee on Water, Peace-Process Multi-lateral Talks
1995-1997	Water Commission, Israel	Member, Scientific Council
1997-2000	Mekoroth Water Company, Israel	Member, Board of Directors
2002-2004	Israel Association of Water Resources	Chairman (and organizer of 4 conferences)
2002-2005	Nature and National Parks Protection Authority, Israel	Member, Board of Directors
2002-2007	Israel National Commission for UNESCO	Member, Hydrological Program
2006-2007	Water Commission, Israel	Chairman, Committee for determining future research direction
2008	Water Commission, Israel	Member, Executive team - Facing the draught
2008-2010	Water Commission, Israel	Member, Committee for preparing the permanent water agreement with Palestinians
2011-2017	Water Commission, Israel	Member, Water Authority Council

## AWARDS

<u>Year</u>	<u>Institute</u>	<u>Title</u>
1982	Hebrew University of Jerusalem	The Rector Distinguished Student Award
1986	Weizmann Inst. of Science	Wolf Foundation Fellowship
1989	Israel Association of Hydrology	Goldshmidt Award
1989	Weizmann Inst. of Science	Dr. Chaim Weizmann Post-doctoral Fellowship
1990	Israel Geological Society	Peretz Grader Award for a young scientist
2000	Hebrew University of Jerusalem	Harry P. Kaufman Senior Lectureship in Environmental Water Technology
2003	Yad Yitzchak Ben-Zvi	Ish-Shalom Award for publishing the distinguish book "Israel Water Resources"
1992 - 2021	Hebrew University of Jerusalem	25 times on the Rector's list of distinguished teachers (top 10%).

## GRADUATE STUDENTS

### M.Sc. Students

1. Ori Gonen: 1992-1994: Aquifer remediation by in-situ vapor stripping: laboratory simulation. Currently, she is working as a researcher at the Ministry of Environmental Protection.
2. Dorit Matmon: 1993-1995: Simulations of groundwater flow between the Mediterranean Sea and the Jordan Rift Valley. Currently, she is working as a hydrologist at the Tahal Consulting Company.
3. Chagay Etinger: 1994-1996: Flood reconstruction at the Yarqon-Ayalon drainage basin. Currently, he is working as an officer at the Israel Defense Force.
4. Oded Laub: 1995-1996: Effect of land usage on flood propagation. Currently, he is working as a high-school teacher.
5. Yoram Katz: 1996-1998: Flow, transport and volatilization processes in an artificial aquifer: Lab experiments and numerical simulations. Currently, he is working as a hydrologist at "Mekorot", the National Water Company.
6. Eyal Stanislavsky: 1997-1999: Paleohydrological modeling of brine, oil and gas migration at the Dead Sea rift. Currently, he is working as a hydrologist at the Geological Institute of Israel.
7. Ofra Klein: 1997-1999: Geochemical and hydrological features of the Kinneret saline springs. Currently, she is working as a researcher at the Dimona Nuclear Research Center.
8. Laronne Leehee: 2000-2002: Modeling of groundwater flow at the eastern Judea Mountain aquifer. Currently, she is a Ph.D. student at the Weizmann Institute of Science.
9. Elad Dafny: 2001-2003: The hydrogeology of the Golan Heights aquifer, Israel. Currently, he is working as a consultant at Geo-Prospect Consulting Ltd.
10. Ariel Lazar: 2002-2004: Sea-tide effect of fresh/seawater interface in coastal aquifers. Currently, he is working as a hydrologist at the Dead Sea Works.
11. Lena Levi: 2003-2005: Transport experiments of Fe in laboratory columns. Currently, she is working as a researcher at the Ministry of Environmental Protection.
12. Eldad Levi: 2004-2006: Mapping of groundwater salinity beneath the Judea desert using the deep TDEM technique. Currently, he is working as a hydrologist at the Geophysical Institute of Israel.
13. Josh Shteinberg: 2005-2006: Structure and stratigraphy of the Yarqon-Taninim aquifer. Currently, he is working as a geologist at Ratzyo Oil Research Comp.
14. Michal Laskov: 2006-2008: Sub-surface paleo-karst at the Judea Group aquifer. Currently, she is working as a consultant at Geo-Prospect Consulting Ltd.

15. Israel Na'aman: 2006-2009: Karst features of the Yarqon-Taninim aquifer. Currently he is a Ph.D. student at Sidney, Australia.
16. Nadav Peleg: 2007-2009: Flow and transport modeling of perched karstic aquifers at the Jerusalem vicinity. Currently he is a professor of hydro-meteorology at the University of Lausanne, Switzerland.
17. Matanya Kaspi: 2007-2009: Paleohydrology processes at the Coastal Plain aquifer during the Glacial-interglacial fluctuations. Currently, he is working as a manager at the National Soil Remediation Comp.
18. Noam Barnoy: 2008-2010: The effect of the Dead Sea springs discharge on the regional geothermal gradient.
19. Avihai Zinober: 2014-2016: Unsaturated flow and transport at the Shafdan Recharge Basins.
20. Elad Ben-Zur: 2017-2019: Laboratory experiments of interface dynamics at coastal aquifers. Currently, he is a Ph.D. student of mine.

### **Ph.D. Students**

1. Shaul Hurwitz: 1995-1999: The structure and hydrodynamics of a groundwater-lake system in a continental rift: an example from the Sea of Galilee. Currently, he is an active scientist at the USGS at Menlo Park, California.
2. Nathan Sheffer: 2004-2008: Developing hydrometeorological model for the Yarqon-Taninim aquifer. Currently, he is working as a hydrologist at the Dead Sea Works.
3. Elad Dafny: 2004-2009: Flow and transport modeling at the Yarqon-Taninim Aquifer. Currently, he is working as a consultant at Geo-Prospect Consulting Ltd.
4. Josh Steinberg: 2007-2010: Tertiary tectonics at the eastern Mediterranean Sea. Currently, he is working as a geologist at Ratzyo Oil Research Comp.
5. Michael Rona: 2009-2014: Modeling of micro-pollutant transport at the coastal aquifer, beneath the Shafdan plant. Currently, he is working as a researcher at the Water Authority.
6. Imri Oz: 2010-2015: The fresh-water interface at the Dead Sea shore under operation of the Seas Canal. Currently, he is working as an officer at the Israel Defense Force.
7. Elad Levanon: 2012-2016: Sea-tide effect of fresh/seawater interface in coastal aquifers. Currently, he is working as a manager at Etgar Consulting Ltd.
8. Yehuda Levi: 2015-2020: Flow and transport modeling at the Eastern Mountain Aquifers. Currently, he is working as a hydrologist at the Geological Institute of Israel.
9. Ohad Shalom: 2020-now: Perched aquifer and springs in southwestern Jerusalem.
10. Elad Ben-Zur: 2021-now: Basin water management at Lake Kinneret.

11. Harel Lusky: 2023-now: Response of wells to earthquakes.

### **Post-docs**

1. Dr. Michael Zilberbrand: 1993-1995: Flow and transport in the unsaturated zone. Currently, he is an active scientist at the hydrological Service, Water Commission, Israel.
2. Dr. Orna Amir: 2002-2003. Modeling of sea-tide induced fluctuations of coastal aquifers.
3. Dr. Menachem Weiss: 2005-2006: Estimating ground water recharge using flow models of perched karstic aquifers. Currently, he is an active scientist at the hydrological Service, Water Commission, Israel.

## **LIST OF PUBLICATIONS** **Haim Gvirtzman, Groundwater Hydrologist**

Symbols: D=Dissertation; B=Book; J=Journal; C=Chapter; H=Hebrew; P=Patent.

### **Ph.D. dissertation:**

- D1. **Gvirtzman, H.**, 1988. Transport processes and flow mechanisms in the unsaturated zone, as traced by environmental tritium. Ph.D Thesis, Supervised by M. Magaritz, Weizmann Institute of Sciences, Rehovot, 107 p.

### **Text Books:**

- B1. **Gvirtzman, H.**, 2002. Israel Water Resources, Chapters in Hydrology and Environmental Sciences, Yad Ben-Zvi Press, Jerusalem, 301 p (in Hebrew).
- B2. **Gvirtzman, H.**, 2019. Israel Water Resources, Expanded and Updated Edition, Yad Ben-Zvi Press, Jerusalem, 426 p (in Hebrew).

### **Reviewed Papers in International Journals:**

- J1. **Gvirtzman, H.** and Magaritz, M., 1986. Investigation of water movement in the unsaturated zone under an irrigated area using environmental tritium. Water Resources Research, 22: 635-642.
- J2. **Gvirtzman, H.**, Ronen, D. and Magaritz, M., 1986. Anion exclusion during transport through the unsaturated zone. Journal of Hydrology, 87: 267-283.
- J3. **Gvirtzman, H.**, Magaritz, M., Klein, E. and Nadler, A., 1987. A scanning electron microscopy study of water in soil. Transport in Porous Media, 2: 83-93.
- J4. Ronen, D., Magaritz, M., **Gvirtzman, H.** and Garner, W., 1987. Microscale chemical heterogeneity in groundwater. Journal of Hydrology, 92: 173-178.
- J5. **Gvirtzman, H.**, Magaritz, M., Kanfi, Y. and Carmi, I., 1988. Matrix and fissure water transport through unsaturated calcareous sandstone. Transport in Porous Media, 3: 343-356.

- J6. **Gvirtzman, H.**, Paldor, N., Magaritz, M. and Bachmat, Y., 1988 Mass exchange between mobile fresh water and immobile saline water in the unsaturated zone. Water Resources Research, 24: 1638-1644.
- J7. Magaritz, M., **Gvirtzman, H.** and Nadler, A., 1988. Salt accumulation in the Loessial sequence in the Be'er Sheva Basin, Israel. Environmental Geology and Water Sciences, 11: 27-33.
- J8. Bachmat, Y., **Gvirtzman, H.** and Magaritz, M., 1989. Evaluation of groundwater replenishment coefficients from the record of a borehole penetrating the unsaturated zone. Water Resources Research, 25: 973-978.
- J9. **Gvirtzman, H.**, Magaritz, M. and Nadler, A., 1990. Dual water flow pattern in the unsaturated zone under a gypsum-amended soil. Journal of Soil Science, 41: 177-187.
- J10. **Gvirtzman, H.** and Roberts, P.V., 1991. Pore-scale spatial analysis of two immiscible fluids in porous media. Water Resources Research, 27: 1165-1176.
- J11. Dvorkin, J., **Gvirtzman, H.** and Nur, A., 1991. Kozeny - Carmen relation for a medium with tapered cracks. Geophysical Research Letters, 18: 877-880.
- J12. **Gvirtzman, H.** and Gorelick, S.M., 1991. Dispersion and advection in unsaturated porous media enhanced by anion exclusion. Nature, 352: 793-795.
- J13. **Gvirtzman, H.** and Gorelick, S.M., 1992. The concept of in-situ vapor-stripping for removing VOCs from groundwater. Transport in Porous Media, 8: 71-92.
- J14. **Gvirtzman, H.** and Gorelick, S.M., 1993. Using air-lift pumping as an in-situ aquifer remediation technique. Water Science Technology, 27: 195-201.
- J15. Benvenisti, E. and **Gvirtzman, H.**, 1993. Harnessing international law to determine Israeli-Palestinian water rights. Natural Resources Journal, 33: 543-567.
- J16. Yair, A. and **Gvirtzman, H.**, 1995. Bilan d'eau d'israel: situation presente et perspectives d'avenir. Secheresse, 6: 59-65, in French.
- J17. **Gvirtzman, H.** and Gonen, O., 1995. Feasibility study of in-well vapor stripping using air-lift pumping. Ground Water Monitoring and Remediation, Fall-95: 155-162.
- J18. Zilberbrand, M. and **Gvirtzman, H.**, 1996. Monitoring of water flow and solute transport through the unsaturated zone using a large-diameter borehole. Ground Water, 34: 57-65.
- J19. Goldman, M, Hurwitz, S., **Gvirtzman, H.**, Rabinowich, B. and Rotshtein, Y., 1996. Application of the marine time domain electromagnetic method in lakes: the Sea of Galilee, Israel. European J. of Environmental and Engineering Geophysics, 1: 125-138.
- J20. Gonen, O. and **Gvirtzman, H.**, 1997. Laboratory scale analysis of aquifer remediation by in-well vapor stripping: 1. laboratory experiments. Journal of Contaminant Hydrology, 29: 23-39.
- J21. Pinto, M., **Gvirtzman, H.** and Gorelick, S.M., 1997. Laboratory scale analysis of aquifer remediation by in-well vapor stripping: 2. modeling results. Journal of Contaminant Hydrology, 29: 41-58.

- J22. **Gvirtzman, H.**, Garven, G. and Gvirtzman, G., 1997. Hydrogeological modeling of the saline hot springs at the Sea of Galilee, Israel. Water Resources Research, 33: 913-926.
- J23. **Gvirtzman, H.**, Garven, G. and Gvirtzman, G., 1997. Thermal anomalies associated with forced and free convective groundwater systems at the Dead-Sea Rift Valley. Geological Society of America Bulletin, 109: 1167-1176.
- J24. Rimmer, A., Hurwitz, S. and **Gvirtzman, H.**, 1999. Spatial and temporal characteristics of saline springs: Sea of Galilee, Israel. Ground Water, 37: 663-673.
- J25. **Gvirtzman, H.**, Garven, G. and Gvirtzman, G., 1999. Thermal anomalies associated with forced and free convective groundwater systems at the Dead-Sea Rift Valley: Reply. Geological Society of America Bulletin, 111: 1101-1102.
- J26. Hurwitz, S., Goldman, M., Ezersky, M. and **Gvirtzman, H.**, 1999. Geophysical (TDEM) delineation of a shallow brine beneath a fresh-water lake, the Sea of Galilee, Israel. Water Resources Research, 35: 3631-3638.
- J27. Stanislavsky, E. and **Gvirtzman, H.**, 1999. Basin-scale migration of continental-rift brines: Paleohydrologic modeling of the Dead Sea basin. Geology, 27: 791-794.
- J28. Katz, Y. and **Gvirtzman, H.**, 2000. Capture and cleanup of a migrating VOC plume by the in-well vapor stripping. Journal of Contaminant Hydrology, 43: 25-44.
- J29. Hurwitz, S., Lyakhovsky, V. and **Gvirtzman, H.**, 2000. Transient salt transport modeling of a shallow brine beneath a fresh water lake, the Sea of Galilee. Water Resources Research, 36: 101-107.
- J30. Hurwitz, S., Stanislavsky, E., Lyakhovsky, V. and **Gvirtzman, H.**, 2000. Transient groundwater-lake interactions in a continental rift: Sea of Galilee, Israel. Geological Society of America Bulletin, 112: 1694-1702.
- J31. **Gvirtzman, H.** and Stanislavsky, E., 2000a. Paleohydrology of hydrocarbon maturation, migration and accumulation at the Dead Sea Rift. Basin Research, 12: 79-93.
- J32. **Gvirtzman, H.** and Stanislavsky, E., 2000b. Large-scale flow of geofluids at the Dead Sea Rift. Journal of Geochemical Exploration, 69-79: 207-211.
- J33. Hurwitz, S., Garfunkel, Z., Ben-Gai, Y., Reznikov, M., Rotstein, Y. and **Gvirtzman, H.**, 2002. The tectonic framework of a complex pull-apart basin: seismic reflection observations in the northern Kinarot-Beit-Shean Basin, Dead Sea Transform. Tectonophysics, 359: 289-306.
- J34. Fishhandler, I., Enzel, Y., and **Gvirtzman, H.**, 2003. Sedimentation rates at the Mishmar Ayalon Reservoir, Israel. Israel Journal of Earth Sciences, 52: 21-29.
- J35. Enzel, Y., Bookman, R., Sharon, D., **Gvirtzman, H.**, Dayan, U., Ziv, B. and Stein, M., 2003. Late Holocene climates of the Near East deduced from Dead Sea level variations and modern regional winter rainfall. Quaternary Research, 60: 263-273.
- J36. Dafny, E., **Gvirtzman, H.**, Burg, A. and Fliescher, L., 2003. The hydrogeology of the Golan basalt aquifer. Israel Journal of Earth Sciences, 52: 139-153.

- J37. Reznikov, M., Ben-Avraham, Z., Garfunkel, Z., **Gvirtzman, H.**, and Rotstein, Y., 2004. Structural and stratigraphic framework of the Lake Kinneret. Israel Journal of Earth Sciences, 53: 131-149.
- J38. Goldman, M., **Gvirtzman, H.** and Hurwitz, S., 2004. Mapping saline groundwater beneath the Sea of Galilee and its vicinity using time domain electromagnetic (TDEM) geophysical technique. Israel Journal of Earth Sciences, 53: 187-197.
- J39. Klein Ben-David O., **Gvirtzman, H.** and Katz, A., 2005. Geochemical Identification of Freshwater Diluting Brines; the Sea of Galilee, Israel. Chemical Geology, 214: 45-59.
- J40. Laronne Ben-Itzhak, L. and **Gvirtzman, H.**, 2005. Groundwater Flow Along and Across Structural Folding: An Example from the Judean Desert, Israel. Journal of Hydrology, 312: 51-69.
- J41. Frumkin, A. and **Gvirtzman, H.**, 2006. Cross-Formational Rising Groundwater at an Artesian Karstic Basin, the Ayalon Saline Anomaly, Israel. Journal of Hydrology, 318: 316-333.
- J42. Dafny, E., Burg, A., and **Gvirtzman, H.**, 2006. Reconstruction of groundwater flow-paths in basaltic aquifers using  $\delta^{18}\text{O}$  and tritium: the Golan-Heights, Israel. Journal of Hydrology, 330: 506-524.
- J43. Weiss, M. and **Gvirtzman, H.**, 2007. Estimating transient ground water recharge using flow models of perched karstic aquifers and springs. Ground Water, 45: 761-773.
- J44. **Gvirtzman, H.**, Shalev, E., Dehan, O. and Hazor, Y.H., 2008. Large-scale infiltration experiments into unsaturated stratified loess sediments: monitoring and modeling. Journal of Hydrology, 349: 214-229.
- J45. Shteinberg, J., Gvirtzman, Z., **Gvirtzman, H.** and Ben-Gay, Y., 2008. Late Tertiary faulting along the coastal plain of Israel. Tectonics, 27: TC4014, doi:10.1029/2007TC002151.
- J46. Levi, E., Goldman, M. and **Gvirtzman, H.**, 2008. Spatial delineation of groundwater salinity using deep TDEM geophysical measurements: a feasibility study. Water Resources Research, 44, W12404, doi:10.1029/2007WR006459.
- J47. Matthews, A., Emmanuel, S., Levi, L., **Gvirtzman, H.** and Erel, E., 2008. Kinetic fractionation of Fe isotopes during transport through a porous quartz sand column. Geochimica Cosmochimica Acta, 72: 5908-5918.
- J48. Shalev, E., Lazar, A., Wollman, S., Kington, S., Yechieli, Y. and **Gvirtzman, H.**, 2009. Biased monitoring of freshwater-saltwater mixing zone in coastal aquifers. Ground Water, 47, 49-56.
- J49. Hatzor, Y.H., **Gvirtzman, H.**, Wainstein, I. and Orian, I., 2009. Induced liquefaction experiment in relatively dense, clay-rich, sand deposits. Journal of Geophysical Research, 114, B02311, doi:10.1029/2008JB005943.
- J50. Sheffer, N.A., Dafny, E., **Gvirtzman, H.**, Navon, S., Frumkin, A and Morin, E., 2010. The hydrometeorological DReAM (Daily Recharge Assessment Model) for the Western Mountain Aquifer (WMA), Israel: Model application and effects of temporal patterns. Water Resources Research, 46, W05510, doi:10.1029/2008WR007607.

- J51. Peleg, N. and **Gvirtzman, H.**, 2010. Groundwater flow modeling of two-levels perched karstic leaking aquifers as tool for estimating recharge and hydraulic parameters. J. of Hydrology, 388: 13-27.
- J52. Dafny, E., Burg, A. and **Gvirtzman, H.**, 2010. Effects of karst and geological structure on groundwater flow: the case of Yarkon-Tananim Aquifer, Israel. J. of Hydrology, 389: 260-275.
- J53. Dafny, E., Burg, A., Sheffer, N.A., Weinberger, G. and **Gvirtzman, H.**, 2011. The dynamic groundwater flow field at the central Yarqon-Tananim basin, Israel: a 3D geological-based numerical model. Israel Journal of Earth Sciences, 58: 99-111, doi: 10.1560/IJES.58.2.99.
- J54. Sheffer, N.A., Cohen, M., Morin, E., Grodeck, T., Gimburg, A., Magal, E., **Gvirtzman, H.**, Nied, M., Isele, D. and Frumkin, A., 2011. Integrated cave drip monitoring for epikarst recharge estimation in a dry Mediterranean area, Sif Cave, Israel. Hydrological Processes, 25: 2837-2845, doi: 10.1002/hyp.8046.
- J55. Laskow, M., Gendler, M., Goldberg, I., Gvirtzman, H. and Frumkin, A., 2011. Deep confined karst detection, analysis and paleohydrology reconstruction at a basin-wide scale using new geophysical interpretation of borehole logs. J. of Hydrology, 406: 158-169.
- J56. Oz, I., Shalev, E., **Gvirtzman, H.**, Yechieli, Y. and Gavrieli, I., 2011. Groundwater flow patterns adjacent to long-term stratified (meromictic) lake. Water Resources Research, 47: W08528, doi:10.1029/2010WR010146.
- J57. Peleg, N., Morin, E., **Gvirtzman, H.** and Enzel, Y., 2012. Rainfall, spring discharge and past human occupancy in the Eastern Mediterranean. Climate Change, 112: 769-789, doi: 10.1007/s10584-011-0232-4.
- J58. Levanon, E., Yechieli, Y., Shalev, E., Friedman, V. and **Gvirtzman, H.**, 2013. Reliable monitoring of the Transition Zone between Fresh and Saline Waters in coastal aquifers, Ground Water Monitoring and Remediation, doi: 10.1111/gwmr.12020.
- J59. Dafny, E., **Gvirtzman, H.** and Burg, A., 2013. Identifying watershed-scale groundwater flow barriers: the Yoqne'am Fault, Israel, Hydrogeology Journal, doi: 10.1007/s10040-013-0982-3.
- J60. Oz, I., Shalev, E., Yechieli, Y., Gavrieli, I. and **Gvirtzman, H.**, 2014. Flow dynamics and salt transport in a coastal aquifer driven by a stratified saltwater body, Journal of Hydrology, 511: 665-674.
- J61. Rona, M., Gasser, G., Negev, I., Pankratov, I., Elhanany, S., Lev, O. and **Gvirtzman, H.**, 2014. A 3D Hydrologic Transport Model of a Water Recharge System using Carbamazepine and Chloride as Tracers, Water Resources Research, doi: 10.1002/2013WR014759.
- J62. Oz, I., Shalev, E., Yechieli, Y. and **Gvirtzman, H.**, 2015. Saltwater circulation patterns within the freshwater–saltwater interface in coastal aquifers: Laboratory experiments and numerical modeling, Journal of Hydrology, 530: 734-741.
- J63. Levanon, E., Shalev, E., Yechieli, Y. and **Gvirtzman, H.**, 2016. Fluctuations of fresh-saline water interface and of water table induced by sea tides in unconfined aquifers, Advances in Water Resources, 96: 34-42.
- J64. Oz, I., Shalev, E., Yechieli, Y., Gavrieli, I., Levanon, E. and **Gvirtzman, H.**, 2016. Salt dissolution and sinkholes formation: results of laboratory experiments,

Accepted for publication, Journal of Geophysical Research - Earth Surface, doi: 10.1002/2016JF003902.

- J65. Levanon, E., Yechieli, Y., **Gvirtzman, H.** and Shalev, E., 2017. Tide-induced fluctuations of salinity and groundwater level in unconfined aquifers - field measurements and numerical model. Journal of Hydrology, 551: 665-675.
- J66. Rona, M., Lev, O. and **Gvirtzman, H.**, 2017. Optimal remediation scheme for a wastewater recharge site: Contaminant fate and transport model, Groundwater, doi: 10.1111/gwat.12628.
- J67. Levanon, E., **Gvirtzman, H.**, Yechieli, Y., Oz, I., Ben Zur, E. and Shalev, E., 2019. The dynamics of sea-tide-induced fluctuations of groundwater level and freshwater-saltwater interface in coastal aquifers - laboratory experiments and numerical modeling, Geofluids, doi: 10.1155/2019/6193134.
- J68. Levy, Y., Goring-Morris, A.N., Yechieli, Y. Burg, A. and **Gvirtzman, H.**, 2019. Harnessing Paleo-hydrologic Modeling to Solve a Prehistoric Mystery. Scientific Reports, 9 (1): 1-9.
- J69. Levy, Y., Burg, A., Yechieli, Y. and **Gvirtzman, H.**, 2020. Displacement of springs and changes in groundwater flow regime due to the extreme drop in adjacent lake levels: The Dead Sea rift, Journal of Hydrology, 587: 124928.
- J70. Levy, Y., Shalev, E., Burg, A., Yechieli, Y. and **Gvirtzman, H.**, 2021. Three dimensional configuration and dynamics of the fresh-saline water interface near two saline lakes with different levels, Hydrogeology Journal, doi.org/10.1007/s10040-021-02348-6.
- J71. Levy, Y. and **Gvirtzman, H.**, 2021. Industry-Driven Versus Natural Groundwater Flow Regime at the Dead Sea Coastal Aquifer, Water, 13: 498.
- J72. Ben-Zur, E., **Gvirtzman, H.** and Shalev, E., 2021. Haline convection within a fresh-saline water interface in a stratified coastal aquifer induced by sea-tide, Water, 13: 1780.
- J73. Levy, Y, Levi, E., Artzi, Y. and **Gvirtzman, H.**, 2024. Harnessing Modeling of Heat Transport to Delineate Brine Leakage Through a Karst System: the Dead Sea Works' Evaporation Ponds Case Study, Hydrogeological Processes, in press.
- J74. Shalom, O., Lev, O., Lifshitz, Y. and **Gvirtzman, H.**, 2024. Groundwater flow modeling in two-story perched aquifers, feeding dozens of springs, the Jerusalem Mountains. To be submitted to Journal of Hydrology.
- J75. Ben Zur, E., Shalev-Salvin, Y., Gal, G. and **Gvirtzman, H.**, 2024. Hydrogeological modeling of a poorly gauged basin - the Hermon Jurassic aquifer. To be submitted to Journal of Hydrology.
- J76. Lusky, H., Kurzon, I., **Gvirtzman, H.** and Shalev, E., 2024. The differences between water level response to EQ in artesian and in open water wells – field measurement analysis. To be submitted to Journal of Geophysical Research: Solid Earth.

### Chapters in Books:

- C1. **Gvirtzman, H.** and Magaritz, M., 1988. Mass exchange between mobile fresh water and immobile saline water in the unsaturated zone. 7th International Conference on Computational Methods in Water Resources, Massachusetts Institute of Technology, Cambridge, June, 1988, Vol. 2, pp: 235-241.
- C2. **Gvirtzman, H.** and Magaritz, M., 1989. Water and anion transport in the unsaturated zone traced by environmental tritium. In: Inorganic Contaminants in the Vadose Zone, edited by B. Bar-Yosef, N.J. Barrow and J. Goldshmidt, Ecological Studies, 74, Springer-Verlag, Berlin, pp: 190-198.

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