Louis J Durlofsky

List of Publications by Year
in descending order

140 papers	7,676 citations	46984 47 h-index	56687 83 g-index
142 all docs	142 docs citations	142 times ranked	3168 citing authors

#	Article	IF	Citations
1	Numerical calculation of equivalent grid block permeability tensors for heterogeneous porous media. Water Resources Research, 1991, 27, 699-708.	1.7	658
2	Application of a particle swarm optimization algorithm for determining optimum well location and type. Computational Geosciences, 2010, 14, 183-198.	1.2	367
3	Optimization of Nonconventional Well Type, Location, and Trajectory. SPE Journal, 2003, 8, 200-210.	1.7	252
4	Efficient real-time reservoir management using adjoint-based optimal control and model updating. Computational Geosciences, 2006, 10, 3-36.	1.2	231
5	MODELING FLUID FLOW IN OIL RESERVOIRS. Annual Review of Fluid Mechanics, 2005, 37, 211-238.	10.8	211
6	Drift-Flux Modeling of Two-Phase Flow in Wellbores. SPE Journal, 2005, 10, 24-33.	1.7	210
7	Kernel Principal Component Analysis for Efficient, Differentiable Parameterization of Multipoint Geostatistics. Mathematical Geosciences, 2008, 40, 3-32.	1.4	188
8	Accuracy of mixed and control volume finite element approximations to Darcy velocity and related quantities. Water Resources Research, 1994, 30, 965-973.	1.7	175
9	Adaptive Localâ€“Global Upscaling for General Flow Scenarios in Heterogeneous Formations. Transport in Porous Media, 2006, 62, 157-185.	1.2	171
10	A nonuniform coarsening approach for the scale-up of displacement processes in heterogeneous porous media. Advances in Water Resources, 1997, 20, 335-347.	1.7	170
11	A Triangle Based Mixed Finite Elementâ€”Finite Volume Technique for Modeling Two Phase Flow through Porous Media. Journal of Computational Physics, 1993, 105, 252-266.	1.9	150
12	A deep-learning-based surrogate model for data assimilation in dynamic subsurface flow problems. Journal of Computational Physics, 2020, 413, 109456.	1.9	150
13	Joint optimization of oil well placement and controls. Computational Geosciences, 2012, 16, 1061-1079.	1.2	141
14	A derivative-free methodology with local and global search for the constrained joint optimization of well locations and controls. Computational Geosciences, 2014, 18, 463-482.	1.2	138
15	Triangle based adaptive stencils for the solution of hyperbolic conservation laws. Journal of Computational Physics, 1992, 98, 64-73.	1.9	130
16	Upscaling Discrete Fracture Characterizations to Dual-Porosity, Dual-Permeability Models for Efficient Simulation of Flow With Strong Gravitational Effects. SPE Journal, 2008, 13, 58-67.	1.7	120
17	Linearized reduced-order models for subsurface flow simulation. Journal of Computational Physics, 2010, 229, 681-700.	1.9	110
18	Production Optimization With Adjoint Models Under Nonlinear Control-State Path Inequality Constraints. SPE Reservoir Evaluation and Engineering, 2008, 11, 326-339.	1.1	109

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19	Optimal Well Placement Under Uncertainty Using a Retrospective Optimization Framework. SPE Journal, 2012, 17, 112-121.	1.7	108
20	On rotating disk flow. Journal of Fluid Mechanics, 1987, 175, 363.	1.4	107
21	A New Differentiable Parameterization Based on Principal Component Analysis for the Low-Dimensional Representation of Complex Geological Models. Mathematical Geosciences, 2014, 46, 775-813.	1.4	103
22	The sedimentation rate of disordered suspensions. Physics of Fluids, 1988, 31, 717.	1.4	102
23	Generalized Field-Development Optimization With Derivative-Free Procedures. SPE Journal, 2014, 19, 891-908.	1.7	93
24	Dynamic simulation of bounded suspensions of hydrodynamically interacting particles. Journal of Fluid Mechanics, 1989, 200, 39-67.	1.4	91
25	Optimization of nonconventional wells under uncertainty using statistical proxies. Computational Geosciences, 2006, 10, 389-404.	1.2	91
26	Drift-Flux Parameters for Three-Phase Steady-State Flow in Wellbores. SPE Journal, 2005, 10, 130-137.	1.7	78
27	Biobjective optimization for general oil field development. Journal of Petroleum Science and Engineering, 2014, 119, 123-138.	2.1	75
28	A Deep-Learning-Based Geological Parameterization for History Matching Complex Models. Mathematical Geosciences, 2019, 51, 725-766.	1.4	70
29	Optimal operation of an integrated energy system including fossil fuel power generation, CO2 capture and wind. Energy, 2011, 36, 6806-6820.	4.5	69
30	Unstructured grid optimization for improved monotonicity of discrete solutions of elliptic equations with highly anisotropic coefficients. Journal of Computational Physics, 2006, 216, 337-361.	1.9	66
31	Optimization of shale gas field development using direct search techniques and reduced-physics models. Journal of Petroleum Science and Engineering, 2013, 108, 304-315.	2.1	66
32	Use of reduced-order models in well control optimization. Optimization and Engineering, 2017, 18, 105-132.	1.3	66
33	Optimizing the performance of smart wells in complex reservoirs using continuously updated geological models. Journal of Petroleum Science and Engineering, 2005, 48, 254-264.	2.1	65
34	Deep-learning-based surrogate model for reservoir simulation with time-varying well controls. Journal of Petroleum Science and Engineering, 2020, 192, 107273.	2.1	65
35	Enhanced linearized reduced-order models for subsurface flow simulation. Journal of Computational Physics, 2011, 230, 8313-8341.	1.9	64
36	Deep-learning-based surrogate flow modeling and geological parameterization for data assimilation in 3D subsurface flow. Computer Methods in Applied Mechanics and Engineering, 2021, 376, 113636.	3.4	64

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37	Optimization of well placement, CO2 injection rates, and brine cycling for geological carbon sequestration. International Journal of Greenhouse Gas Control, 2012, 10, 100-112.	2.3	63
38	Reduced-Order Modeling for Compositional Simulation by Use of Trajectory Piecewise Linearization. SPE Journal, 2014, 19, 858-872.	1.7	63
39	A general method to select representative models for decision making and optimization under uncertainty. Computers and Geosciences, 2016, 96, 109-123.	2.0	63
40	Unstructured 3D gridding and upscaling for coarse modelling of geometrically complex reservoirs. Petroleum Geoscience, 2005, 11, 339-345.	0.9	61
41	Representation of grid block permeability in coarse scale models of randomly heterogeneous porous media. Water Resources Research, 1992, 28, 1791-1800.	1.7	59
42	Closed-Loop Field Development Under Uncertainty by Use of Optimization With Sample Validation. SPE Journal, 2015, 20, 908-922.	1.7	58
43	Application of derivative-free methodologies to generally constrained oil production optimisation problems. International Journal of Mathematical Modelling and Numerical Optimisation, 2011, 2, 134.	0.1	57
44	A New Data-Space Inversion Procedure for Efficient Uncertainty Quantification in Subsurface Flow Problems. Mathematical Geosciences, 2017, 49, 679-715.	1.4	56
45	From outcrop to flow simulation: Constructing discrete fracture models from a LIDAR survey. AAPG Bulletin, 2011, 95, 1883-1905.	0.7	54
46	Data assimilation and uncertainty assessment for complex geological models using a new PCA-based parameterization. Computational Geosciences, 2015, 19, 747-767.	1.2	54
47	Adjoint formulation and constraint handling for gradient-based optimization of compositional reservoir flow. Computational Geosciences, 2014, 18, 117-137.	1.2	49
48	Error modeling for surrogates of dynamical systems using machine learning. International Journal for Numerical Methods in Engineering, 2017, 112, 1801-1827.	1.5	49
49	Comprehensive framework for gradient-based optimization in closed-loop reservoir management. Computational Geosciences, 2015, 19, 877-897.	1.2	48
50	Reduced-order flow modeling and geological parameterization for ensemble-based data assimilation. Computers and Geosciences, 2013, 55, 54-69.	2.0	47
51	A fully-coupled flow-reactive-transport formulation based on element conservation, with application to CO2 storage simulations. Advances in Water Resources, 2012, 42, 47-61.	1.7	46
52	Upscaling of CO2 injection into brine with capillary heterogeneity effects. Journal of Petroleum Science and Engineering, 2015, 134, 60-75.	2.1	46
53	Sequentially Adapted Flow-Based PEBI Grids for Reservoir Simulation. SPE Journal, 2006, 11, 317-327.	1.7	45
54	Two-Stage Upscaling of Two-Phase Flow: From Core to Simulation Scale. SPE Journal, 2006, 11, 304-316.	1.7	45

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55	Trajectory piecewise quadratic reduced-order model for subsurface flow, with application to PDE-constrained optimization. Journal of Computational Physics, 2016, 326, 446-473.	1.9	44
56	Regularized kernel PCA for the efficient parameterization of complex geological models. Journal of Computational Physics, 2016, 322, 859-881.	1.9	43
57	Efficient Closed-loop Production Optimization Under Uncertainty. , 2005, , .		42
58	A New Approach to Automatic History Matching Using Kernel PCA. , 2007, , .		42
59	Efficient 3D Implementation of Local-Global Upscaling for Reservoir Simulation. SPE Journal, 2006, 11, 443-453.	1.7	40
60	Calculation of Well Index for Nonconventional Wells on Arbitrary Grids. Computational Geosciences, 2003, 7, 61-82.	1.2	39
61	Optimization of carbon-capture-enabled coal-gas-solar power generation. Energy, 2015, 79, 149-162.	4.5	39
62	Nonlinear two-point flux approximation for modeling full-tensor effects in subsurface flow simulations. Computational Geosciences, 2008, 12, 317-335.	1.2	38
63	Modeling Flow in Geometrically Complex Reservoirs Using Hexahedral Multiblock Grids. SPE Journal, 2002, 7, 149-157.	1.7	36
64	Production forecasting and uncertainty quantification for naturally fractured reservoirs using a new data-space inversion procedure. Computational Geosciences, 2017, 21, 1443-1458.	1.2	34
65	A General Modeling Framework for Simulating Complex Recovery Processes in Fractured Reservoirs at Different Resolutions. SPE Journal, 2018, 23, 598-613.	1.7	34
66	A Recurrent Neural Networkâ€“Based Proxy Model for Well-Control Optimization with Nonlinear Output Constraints. SPE Journal, 2021, 26, 1837-1857.	1.7	33
67	Upscaled models of flow and transport in faulted sandstone: boundary condition effects and explicit fracture modelling. Petroleum Geoscience, 2004, 10, 173-181.	0.9	32
68	Data-space approaches for uncertainty quantification of CO2 plume location in geological carbon storage. Advances in Water Resources, 2019, 123, 234-255.	1.7	32
69	Efficient Incorporation of Global Effects in Upscaled Models of Two-Phase Flow and Transport in Heterogeneous Formations. Multiscale Modeling and Simulation, 2006, 5, 445-475.	0.6	31
70	Derivative-Free Optimization for Oil Field Operations. Studies in Computational Intelligence, 2011, , 19-55.	0.7	31
71	Multilevel Field Development Optimization Under Uncertainty Using a Sequence of Upscaled Models. Mathematical Geosciences, 2017, 49, 307-339.	1.4	31
72	Use of Higher Moments for the Description of Upscaled, Process Independent Relative Permeabilities. SPE Journal, 1997, 2, 474-484.	1.7	30

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73	An Approximate Model for Well Productivity in Heterogeneous Porous Media. Mathematical Geosciences, 2000, 32, 421-438.	0.9	30
74	Uncertainty Quantification for Subsurface Flow Problems Using Coarse-Scale Models. Lecture Notes in Computational Science and Engineering, 2012, , 163-202.	0.1	30
75	Reduced-order modeling of CO2 storage operations. International Journal of Greenhouse Gas Control, 2018, 68, 49-67.	2.3	29
76	3D CNN-PCA: A deep-learning-based parameterization for complex geomodels. Computers and Geosciences, 2021, 148, 104676.	2.0	29
77	Analytical approximations for effective relative permeability in the capillary limit. Water Resources Research, 2016, 52, 7645-7667.	1.7	27
78	Operational optimization of an integrated solar combined cycle under practical time-dependent constraints. Energy, 2017, 141, 1569-1584.	4.5	27
79	Accurate Subgrid Models for Two-Phase Flow in Heterogeneous Reservoirs. SPE Journal, 2004, 9, 219-226.	1.7	26
80	Ensemble-Level Upscaling for Efficient Estimation of Fine-Scale Production Statistics. SPE Journal, 2008, 13, 400-411.	1.7	26
81	Optimal design and operation of integrated solar combined cycles under emissions intensity constraints. Applied Energy, 2018, 226, 979-990.	5.1	25
82	Modeling Fluid Flow Through Complex Reservoir Beds. SPE Formation Evaluation, 1992, 7, 315-322.	0.5	24
83	Closed-Loop Field Development Optimization Under Uncertainty. , 2015, , .		24
84	Optimizing heat integration in a flexible coalâ€“natural gas power station with CO2 capture. International Journal of Greenhouse Gas Control, 2014, 31, 138-152.	2.3	23
85	Deep-learning-based coupled flow-geomechanics surrogate model for CO2 sequestration. International Journal of Greenhouse Gas Control, 2022, 118, 103692.	2.3	22
86	Permeability upscaling of fault zones in the Aztec Sandstone, Valley of Fire State Park, Nevada, with a focus on slip surfaces and slip bands. Hydrogeology Journal, 2007, 15, 1239-1250.	0.9	21
87	Generalized Field Development Optimization Using Derivative-Free Procedures. , 2013, , .		21
88	Upscaling for Compositional Reservoir Simulation. SPE Journal, 2016, 21, 0873-0887.	1.7	21
89	Reduced-order modeling for thermal recovery processes. Computational Geosciences, 2014, 18, 401-415.	1.2	20
90	Implementation and detailed assessment of a GNAT reduced-order model for subsurface flow simulation. Journal of Computational Physics, 2019, 379, 192-213.	1.9	20

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91	Machine-learning-based modeling of coarse-scale error, with application to uncertainty quantification. Computational Geosciences, 2018, 22, 1093-1113.	1.2	19
92	Accurate Representation of Near-well Effects in Coarse-Scale Models of Primary Oil Production. Transport in Porous Media, 2010, 83, 741-770.	1.2	18
93	A multi-resolution workflow to generate high-resolution models constrained to dynamic data. Computational Geosciences, 2011, 15, 545-563.	1.2	18
94	Assessment of advanced solvent-based post-combustion CO2 capture processes using a bi-objective optimization technique. Applied Energy, 2016, 179, 1209-1219.	5.1	18
95	A new carbon capture proxy model for optimizing the design and time-varying operation of a coal-natural gas power station. International Journal of Greenhouse Gas Control, 2016, 48, 234-252.	2.3	18
96	Use of outcrop observations, geostatistical analysis, and flow simulation to investigate structural controls on secondary hydrocarbon migration in the Anacacho Limestone, Uvalde, Texas. AAPG Bulletin, 2011, 95, 1181-1206.	0.7	17
97	Statistical assignment of upscaled flow functions for an ensemble of geological models. Computational Geosciences, 2011, 15, 35-51.	1.2	17
98	Use of above-zone pressure data to locate and quantify leaks during carbon storage operations. International Journal of Greenhouse Gas Control, 2016, 52, 32-43.	2.3	17
99	Ensemble level upscaling for compositional flow simulation. Computational Geosciences, 2016, 20, 525-540.	1.2	17
100	New models for heater wells in subsurface simulations, with application to the in situ upgrading of oil shale. Computational Geosciences, 2012, 16, 519-533.	1.2	16
101	Joint Optimization of Economic Project Life and Well Controls. SPE Journal, 2018, 23, 482-497.	1.7	16
102	Multilevel Strategies and Geological Parameterizations for History Matching Complex Reservoir Models. SPE Journal, 2020, 25, 081-104.	1.7	16
103	Optimal Well Placement under Uncertainty using a Retrospective Optimization Framework. , 2011, , .		15
104	A data-space inversion procedure for well control optimization and closed-loop reservoir management. Computational Geosciences, 2020, 24, 361-379.	1.2	15
105	Global variable compact multipoint methods for accurate upscaling with full-tensor effects. Computational Geosciences, 2010, 14, 65-81.	1.2	14
106	Multilevel Field-Development Optimization Using a Sequence of Upscaled Models. , 2015, , .		14
107	Data-space inversion using a recurrent autoencoder for time-series parameterization. Computational Geosciences, 2021, 25, 411-432.	1.2	14
108	Near-well upscaling for three-phase flows. Computational Geosciences, 2012, 16, 55-73.	1.2	13

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109	Well control optimization using a two-step surrogate treatment. Journal of Petroleum Science and Engineering, 2020, 187, 106565.	2.1	13
110	Title is missing!. Computational Geosciences, 2002, 6, 29-47.	1.2	12
111	Development and Application of a New Technique for Upscaling Miscible Displacements. SPE Reservoir Evaluation and Engineering, 2005, 8, 189-195.	1.1	12
112	Field development optimization using a sequence of surrogate treatments. Computational Geosciences, 2021, 25, 35-65.	1.2	11
113	Localâ€“Global Upscaling for Compositional Subsurface Flow Simulation. Transport in Porous Media, 2016, 111, 701-730.	1.2	9
114	A two-stage optimization strategy for large-scale oil field development. Optimization and Engineering, 2022, 23, 361-395.	1.3	9
115	Reduced-Order Modeling for Compositional Simulation Using Trajectory Piecewise Linearization. , 2013, , .		8
116	Gradient-based Pareto optimal history matching for noisy data of multiple types. Computational Geosciences, 2018, 22, 1465-1485.	1.2	8
117	Multiscale Mixed-Finite-Element Modeling of Coupled Wellbore/Near-Well Flow. SPE Journal, 2009, 14, 78-87.	1.7	7
118	Use of retrospective optimization for placement of oil wells under uncertainty. , 2010, , .		7
119	Developing and Validating Simplified Predictive Models for CO2 Geologic Sequestration. , 2015, , .		7
120	Upscaling for Compositional Reservoir Simulation. , 2015, , .		7
121	Data-Space Inversion With a Recurrent Autoencoder for Naturally Fractured Systems. Frontiers in Applied Mathematics and Statistics, 2021, 7, .	0.7	7
122	Treatment of model error in subsurface flow history matching using a data-space method. Journal of Hydrology, 2021, 603, 127063.	2.3	7
123	Multigroup strategy for well control optimization. Journal of Petroleum Science and Engineering, 2022, 214, 110448.	2.1	7
124	Use of Reduced-Order Modeling Procedures for Production Optimization. , 2009, , .		6
125	Adaptive Local-Global VCMP Methods for Coarse-Scale Reservoir Modeling. , 2009, , .		6
126	Use of Approximate Dynamic Programming for Production Optimization. , 2011, , .		6

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127	Use of low-fidelity models with machine-learning error correction for well placement optimization. Computational Geosciences, 2022, 26, 1189-1206.	1.2	6
128	Effective treatment of geometric constraints in derivative-free well placement optimization. Journal of Petroleum Science and Engineering, 2022, 215, 110635.	2.1	6
129	Reduced-Order Modeling of Coupled Flow and Quasistatic Geomechanics. SPE Journal, 2020, 25, 326-346.	1.7	5
130	Computational optimization of solar thermal generation with energy storage. Sustainable Energy Technologies and Assessments, 2021, 47, 101342.	1.7	5
131	Fluid flow through porous sandstone with overprinting and intersecting geological structures of various types. Geological Society Special Publication, 2014, 374, 187-209.	0.8	4
132	History Matching Complex 3D Systems Using Deep-Learning-Based Surrogate Flow Modeling and CNN-PCA Geological Parameterization. , 2021, , .		4
133	Approximate Finite Difference Modeling of the Performance of Horizontal Wells in Heterogeneous Reservoirs. , 2000, , .		3
134	Development and Application of a New Technique for Upscaling Miscible Processes. , 2004, , .		3
135	Detailed Near-Well Darcy-Forchheimer Flow Modeling and Upscaling on Unstructured 3D Grids. , 2009, , .		3
136	Optimal Heat Integration in a Coal-Natural Gas Energy Park with CO2 Capture. Energy Procedia, 2013, 37, 2715-2726.	1.8	3
137	Reduced-Order Modeling of Coupled Flow-Geomechanics Problems. , 2019, , .		3
138	Multilevel Strategies and Geological Parameterizations for History Matching Complex Reservoir Models. , 2019, , .		3
139	Multifidelity framework for uncertainty quantification with multiple quantities of interest. Computational Geosciences, 2020, 24, 761-773.	1.2	2
140	Joint Optimization of Economic Project Life and Well Controls. , 2017, , .		0