Valerio Lucarini

List of Publications by Year
in descending order

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148 papers	4,912 citations	94433 37 h-index	138484 58 g-index
215 all docs	215 docs citations	215 times ranked	3856 citing authors

#	Article	IF	Citations
1	Stochastic Parameterization: Toward a New View of Weather and Climate Models. Bulletin of the American Meteorological Society, 2017, 98, 565-588.	3.3	247
2	The physics of climate variability and climate change. Reviews of Modern Physics, 2020, 92, .	45.6	159
3	Numerical Bifurcation Methods and their Application to Fluid Dynamics: Analysis beyond Simulation. Communications in Computational Physics, 2014, 15, 1-45.	1.7	136
4	Seasonal cycle of precipitation over major river basins in South and Southeast Asia: A review of the CMIP5 climate models data for present climate and future climate projections. Atmospheric Research, 2016, 180, 42-63.	4.1	116
5	Early 21st century snow cover state over the western river basins of the Indus River system. Hydrology and Earth System Sciences, 2014, 18, 4077-4100.	4.9	115
6	Stochastic climate theory and modeling. Wiley Interdisciplinary Reviews: Climate Change, 2015, 6, 63-78.	8.1	110
7	Mathematical and physical ideas for climate science. Reviews of Geophysics, 2014, 52, 809-859.	23.0	104
8	Prevailing climatic trends and runoff response from Hindukushâ€“Karakoramâ€“Himalaya, upper Indus Basin. Earth System Dynamics, 2017, 8, 337-355.	7.1	96
9	ENERGETICS OF CLIMATE MODELS: NET ENERGY BALANCE AND MERIDIONAL ENTHALPY TRANSPORT. Reviews of Geophysics, 2011, 49, .	23.0	94
10	A statistical mechanical approach for the computation of the climatic response to general forcings. Nonlinear Processes in Geophysics, 2011, 18, 7-28.	1.3	78
11	Thermodynamic analysis of snowball Earth hysteresis experiment: Efficiency, entropy production and irreversibility. Quarterly Journal of the Royal Meteorological Society, 2010, 136, 2-11.	2.7	77
12	Predicting Climate Change Using Response Theory: Global Averages and Spatial Patterns. Journal of Statistical Physics, 2017, 166, 1036-1064.	1.2	74
13	Analysis of rainfall seasonality from observations and climate models. Climate Dynamics, 2015, 44, 3281-3301.	3.8	70
14	A new framework for climate sensitivity and prediction: a modelling perspective. Climate Dynamics, 2016, 46, 1459-1471.	3.8	70
15	Intercomparison of the northern hemisphere winter mid-latitude atmospheric variability of the IPCC models. Climate Dynamics, 2007, 28, 829-848.	3.8	69
16	Earth System Model Evaluation Tool (ESMValTool) v2.0 â€“ an extended set of large-scale diagnostics for quasi-operational and comprehensive evaluation of Earth system models in CMIP. Geoscientific Model Development, 2020, 13, 3383-3438.	3.6	69
17	Bistability of the climate around the habitable zone: A thermodynamic investigation. Icarus, 2013, 226, 1724-1742.	2.5	68
18	Climate of Earth-like planets with high obliquity and eccentric orbits: Implications for habitability conditions. Planetary and Space Science, 2015, 105, 43-59.	1.7	68

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19	Multi-level Dynamical Systems: Connecting the Ruelle Response Theory and the Mori-Zwanzig Approach. Journal of Statistical Physics, 2013, 151, 850-860.	1.2	65
20	Hydrological cycle over South and Southeast Asian river basins as simulated by PCMDI/CMIP3 experiments. Earth System Dynamics, 2013, 4, 199-217.	7.1	65
21	Projected changes of rainfall seasonality and dry spells in a high greenhouse gas emissions scenario. Climate Dynamics, 2016, 46, 1331-1350.	3.8	65
22	Thermodynamic efficiency and entropy production in the climate system. Physical Review E, 2009, 80, 021118.	2.1	64
23	Universal Behaviour of Extreme Value Statistics for Selected Observables of Dynamical Systems. Journal of Statistical Physics, 2012, 147, 63-73.	1.2	63
24	Regional climate models' performance in representing precipitation and temperature over selected Mediterranean areas. Hydrology and Earth System Sciences, 2013, 17, 5041-5059.	4.9	57
25	Edge states in the climate system: exploring global instabilities and critical transitions. Nonlinearity, 2017, 30, R32-R66.	1.4	57
26	Kramers-Kronig relations and sum rules of negative refractive index media. European Physical Journal B, 2004, 41, 61-65.	1.5	56
27	Transitions across Melancholia States in a Climate Model: Reconciling the Deterministic and Stochastic Points of View. Physical Review Letters, 2019, 122, 158701.	7.8	56
28	Hayashi spectra of the northern hemisphere mid-latitude atmospheric variability in the NCEPâ€“NCAR and ECMWF reanalyses. Climate Dynamics, 2005, 25, 639-652.	3.8	55
29	Response Theory for Equilibrium and Non-Equilibrium Statistical Mechanics: Causality and Generalized Kramers-Kronig Relations. Journal of Statistical Physics, 2008, 131, 543-558.	1.2	53
30	Numerical Convergence of the Block-Maxima Approach to the Generalized Extreme Value Distribution. Journal of Statistical Physics, 2011, 145, 1156-1180.	1.2	53
31	Evidence of Dispersion Relations for the Nonlinear Response of the Lorenz 63 System. Journal of Statistical Physics, 2009, 134, 381-400.	1.2	49
32	From Symmetry Breaking to Poisson Point Process in 2D Voronoi Tessellations: the Generic Nature of Hexagons. Journal of Statistical Physics, 2008, 130, 1047-1062.	1.2	47
33	Statistical and dynamical properties of covariant lyapunov vectors in a coupled atmosphere-ocean modelâ€”multiscale effects, geometric degeneracy, and error dynamics. Journal of Physics A: Mathematical and Theoretical, 2016, 49, 224001.	2.1	46
34	Thermodynamics of climate change: generalized sensitivities. Atmospheric Chemistry and Physics, 2010, 10, 9729-9737.	4.9	45
35	Disentangling multi-level systems: averaging, correlations and memory. Journal of Statistical Mechanics: Theory and Experiment, 2012, 2012, P03003.	2.3	43
36	Lessons on Climate Sensitivity From Past Climate Changes. Current Climate Change Reports, 2016, 2, 148-158.	8.6	42

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37	Comparison of mean climate trends in the Northern Hemisphere between National Centers for Environmental Prediction and two atmosphere-ocean model forced runs. Journal of Geophysical Research, 2002, 107, ACL 7-1.	3.3	41
38	Mechanisms of femtosecond laser-induced refractive index modification of poly(methyl) Tj ETQq0 0 0 rgBT /Overlock 10 Tf 50 702 Td (m	2.1	40
39	Seasonality of the hydrological cycle in major South and Southeast Asian river basins as simulated by PCMDI/CMIP3 experiments. Earth System Dynamics, 2014, 5, 67-87.	7.1	40
40	Fluctuations, response, and resonances in a simple atmospheric model. Physica D: Nonlinear Phenomena, 2017, 349, 62-76.	2.8	40
41	Extreme value theory for singular measures. Chaos, 2012, 22, 023135.	2.5	39
42	Towards a General Theory of Extremes for Observables of Chaotic Dynamical Systems. Journal of Statistical Physics, 2014, 154, 723-750.	1.2	39
43	Stochastic Perturbations to Dynamical Systems: A Response Theory Approach. Journal of Statistical Physics, 2012, 146, 774-786.	1.2	38
44	A new mathematical framework for atmospheric blocking events. Climate Dynamics, 2020, 54, 575-598.	3.8	38
45	New Results on the Thermodynamic Properties of the Climate System. Journals of the Atmospheric Sciences, 2011, 68, 2438-2458.	1.7	37
46	Detection and correction of the misplacement error in terahertz spectroscopy by application of singly subtractive Kramers-Kronig relations. Physical Review B, 2005, 72, .	3.2	35
47	Habitability and Multistability in Earthâ€like Planets. Astronomische Nachrichten, 2013, 334, 576-588.	1.2	34
48	Crisis of the chaotic attractor of a climate model: a transfer operator approach. Nonlinearity, 2018, 31, 2221-2251.	1.4	33
49	Three-Dimensional Random Voronoi Tessellations: FromÂCubic Crystal Lattices to Poisson Point Processes. Journal of Statistical Physics, 2009, 134, 185-206.	1.2	32
50	Equivalence of Non-equilibrium Ensembles and Representation of Friction in Turbulent Flows: The Lorenz 96 Model. Journal of Statistical Physics, 2014, 156, 1027-1065.	1.2	32
51	A proof of concept for scaleâ€adaptive parametrizations: the case of the Lorenz '96 model. Quarterly Journal of the Royal Meteorological Society, 2018, 144, 63-75.	2.7	32
52	Extreme Value Statistics of the Total Energy in an Intermediate-Complexity Model of the Midlatitude Atmospheric Jet. Part I: Stationary Case. Journals of the Atmospheric Sciences, 2007, 64, 2137-2158.	1.7	31
53	Parametric smoothness and self-scaling of the statistical properties of a minimal climate model: What beyond the mean field theories?. Physica D: Nonlinear Phenomena, 2007, 234, 105-123.	2.8	30
54	Hydrological cycle in the Danube basin in presentâ€day and XXII century simulations by IPCCAR4 global climate models. Journal of Geophysical Research, 2008, 113, .	3.3	30

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55	Total cloud cover from satellite observations and climate models. Atmospheric Research, 2012, 107, 161-170.	4.1	30
56	Global instability in the Ghilâ€“Sellers model. Climate Dynamics, 2015, 44, 3361-3381.	3.8	29
57	Revising and Extending the Linear Response Theory for Statistical Mechanical Systems: Evaluating Observables as Predictors and Predictands. Journal of Statistical Physics, 2018, 173, 1698-1721.	1.2	29
58	Multiply subtractive Kramersâ€“KrÃ¶nig relations for arbitrary-order harmonic generation susceptibilities. Optics Communications, 2003, 218, 409-414.	2.1	28
59	Extreme Value Statistics of the Total Energy in an Intermediate-Complexity Model of the Midlatitude Atmospheric Jet. Part II: Trend Detection and Assessment. Journals of the Atmospheric Sciences, 2007, 64, 2159-2175.	1.7	28
60	Does the subtropical jet catalyze the midlatitude atmospheric regimes?. Geophysical Research Letters, 2006, 33, .	4.0	27
61	Extreme value statistics for dynamical systems with noise. Nonlinearity, 2013, 26, 2597-2622.	1.4	26
62	Response Operators for Markov Processes in a Finite State Space: Radius of Convergence and Link to the Response Theory for Axiom A Systems. Journal of Statistical Physics, 2016, 162, 312-333.	1.2	26
63	Exploring the Lyapunov instability properties of high-dimensional atmospheric and climate models. Nonlinear Processes in Geophysics, 2018, 25, 387-412.	1.3	26
64	The Forced Response of the El NiÃ±oâ€“Southern Oscillationâ€“Indian Monsoon Teleconnection in Ensembles of Earth System Models. Journal of Climate, 2020, 33, 2163-2182.	3.2	26
65	Does the Danube exist? Versions of reality given by various regional climate models and climatological data sets. Journal of Geophysical Research, 2007, 112, .	3.3	25
66	Beyond the linear fluctuation-dissipation theorem: the role of causality. Journal of Statistical Mechanics: Theory and Experiment, 2012, 2012, P05013.	2.3	25
67	Beyond Forcing Scenarios: Predicting Climate Change through Response Operators in a Coupled General Circulation Model. Scientific Reports, 2020, 10, 8668.	3.3	25
68	Kramersâ€”Kronig Relations and Sum Rules in Nonlinear Optical Spectroscopy. Applied Spectroscopy, 2004, 58, 499-509.	2.2	23
69	Covariant Lyapunov vectors of a quasiâ€geostrophic baroclinic model: analysis of instabilities and feedbacks. Quarterly Journal of the Royal Meteorological Society, 2015, 141, 3040-3055.	2.7	23
70	Dynamical analysis of blocking events: spatial and temporal fluctuations of covariant Lyapunov vectors. Quarterly Journal of the Royal Meteorological Society, 2016, 142, 2143-2158.	2.7	23
71	Southern Hemisphere midlatitude atmospheric variability of the NCEP-NCAR and ECMWF reanalyses. Journal of Geophysical Research, 2007, 112, .	3.3	22
72	Nambu representation of an extended Lorenz model with viscous heating. Physica D: Nonlinear Phenomena, 2013, 243, 86-91.	2.8	22

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73	On using extreme values to detect global stability thresholds in multi-stable systems: The case of transitional plane Couette flow. Chaos, Solitons and Fractals, 2014, 64, 26-35.	5.1	22
74	Reduced-order models for coupled dynamical systems: Data-driven methods and the Koopman operator. Chaos, 2021, 31, 053116.	2.5	22
75	Resonances in a Chaotic Attractor Crisis of the Lorenz Flow. Journal of Statistical Physics, 2018, 170, 584-616.	1.2	21
76	Towards a definition of climate science. International Journal of Environment and Pollution, 2002, 18, 413.	0.2	20
77	Symmetry breaking, mixing, instability, and low-frequency variability in a minimal Lorenz-like system. Physical Review E, 2009, 80, 026313.	2.1	20
78	TheDiaTo (v1.0) â€“ a new diagnostic tool for water, energy and entropy budgets in climate models. Geoscientific Model Development, 2019, 12, 3805-3834.	3.6	20
79	Global stability properties of the climate: Melancholia states, invariant measures, and phase transitions. Nonlinearity, 2020, 33, R59-R92.	1.4	20
80	Multiply subtractive generalized Kramersâ€“Kronig relations: Application on third-harmonic generation susceptibility on polysilane. Journal of Chemical Physics, 2003, 119, 11095-11098.	3.0	19
81	Linear and fractional response for the SRB measure of smooth hyperbolic attractors and discontinuous observables. Nonlinearity, 2017, 30, 1204-1220.	1.4	19
82	A large deviation theory-based analysis of heat waves and cold spells in a simplified model of the general circulation of the atmosphere. Journal of Statistical Mechanics: Theory and Experiment, 2019, 2019, 033404.	2.3	19
83	Fingerprinting Heatwaves and Cold Spells and Assessing Their Response to Climate Change Using Large Deviation Theory. Physical Review Letters, 2021, 127, 058701.	7.8	19
84	Thermohaline Circulation Stability: A Box Model Study. Part I: Uncoupled Model. Journal of Climate, 2005, 18, 501-513.	3.2	18
85	GENERALIZED EXTREME VALUE DISTRIBUTION PARAMETERS AS DYNAMICAL INDICATORS OF STABILITY. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 2012, 22, 1250276.	1.7	18
86	Bistable systems with stochastic noise: virtues and limits of effective one-dimensional Langevin equations. Nonlinear Processes in Geophysics, 2012, 19, 9-22.	1.3	18
87	Advancing Research for Seamless Earth System Prediction. Bulletin of the American Meteorological Society, 2020, 101, E23-E35.	3.3	18
88	Can we use linear response theory to assess geoengineering strategies?. Chaos, 2020, 30, 023124.	2.5	18
89	Dynamical landscape and multistability of a climate model. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2021, 477, 20210019.	2.1	18
90	Symmetry-Break in Voronoi Tessellations. Symmetry, 2009, 1, 21-54.	2.2	17

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91	Elements of a unified framework for response formulae. Journal of Statistical Mechanics: Theory and Experiment, 2014, 2014, P01002.	2.3	17
92	General properties of optical harmonic generation from a simple oscillator model. Nuovo Cimento Della Societa Italiana Di Fisica D - Condensed Matter, Atomic, Molecular and Chemical Physics, Biophysics, 1998, 20, 1117-1125.	0.4	16
93	Verification of generalized Kramersâ€“Kronig relations and sum rules on experimental data of third harmonic generation susceptibility on polymer. Journal of Chemical Physics, 2003, 119, 620-627.	3.0	16
94	Vertical and horizontal processes in the global atmosphere and the maximum entropy production conjecture. Earth System Dynamics, 2012, 3, 19-32.	7.1	16
95	Entropy production and coarse graining of the climate fields in a general circulation model. Climate Dynamics, 2014, 43, 981-1000.	3.8	16
96	Stochastic resonance for nonequilibrium systems. Physical Review E, 2019, 100, 062124.	2.1	16
97	Parameterization of stochastic multiscale triads. Nonlinear Processes in Geophysics, 2016, 23, 435-445.	1.3	16
98	Nonequilibrium thermodynamics of circulation regimes in optically thin, dry atmospheres. Planetary and Space Science, 2013, 84, 48-65.	1.7	15
99	The impact of oceanic heat transport on the atmospheric circulation. Earth System Dynamics, 2015, 6, 591-615.	7.1	15
100	Return levels of temperature extremes in southern Pakistan. Earth System Dynamics, 2017, 8, 1263-1278.	7.1	15
101	Climate sensitivity to ozone and its relevance on the habitability of Earth-like planets. Icarus, 2019, 321, 608-618.	2.5	15
102	Asymptotic behaviour and general properties of harmonic generation susceptibilities. European Physical Journal B, 2000, 17, 567-573.	1.5	14
103	Thermohaline Circulation Stability: A Box Model Study. Part II: Coupled Atmosphereâ€“Ocean Model. Journal of Climate, 2005, 18, 514-529.	3.2	14
104	Interrupting vaccination policies can greatly spread SARS-CoV-2 and enhance mortality from COVID-19 disease: The AstraZeneca case for France and Italy. Chaos, 2021, 31, 041105.	2.5	14
105	Applications of large deviation theory in geophysical fluid dynamics and climate science. Rivista Del Nuovo Cimento, 2021, 44, 291-363.	5.7	14
106	Destabilization of the thermohaline circulation by transient changes in the hydrological cycle. Climate Dynamics, 2005, 24, 253-262.	3.8	13
107	Testing the validity of terahertz reflection spectra by dispersion relations. Physical Review B, 2005, 72, .	3.2	13
108	Equivalence of nonequilibrium ensembles in turbulence models. Physical Review E, 2018, 98, 012202.	2.1	13

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109	Evaluating the Performance of Climate Models Based on Wasserstein Distance. Geophysical Research Letters, 2020, 47, e2020GL089385.	4.0	13
110	Response formulae forn-point correlations in statistical mechanical systems and application to a problem of coarse graining. Journal of Physics A: Mathematical and Theoretical, 2017, 50, 355003.	2.1	12
111	Pump and probe nonlinear processes: new modified sum rules from a simple oscillator model. European Physical Journal B, 1999, 12, 323-330.	1.5	11
112	Accessing extremes of mid-latitudinal wave activity: methodology and application. Tellus, Series A: Dynamic Meteorology and Oceanography, 2009, 61, 35-49.	1.7	11
113	Convergence of Extreme Value Statistics in a Two-Layer Quasi-Geostrophic Atmospheric Model. Complexity, 2017, 2017, 1-20.	1.6	11
114	Baroclinic Stationary Waves in Aquaplanet Models. Journals of the Atmospheric Sciences, 2011, 68, 1023-1040.	1.7	10
115	Spectral Decomposition and Extremes of Atmospheric Meridional Energy Transport in the Northern Hemisphere Midlatitudes. Geophysical Research Letters, 2019, 46, 7602-7613.	4.0	10
116	Lyapunov analysis of multiscale dynamics: the slow bundle of the two-scale Lorenz 96 model. Nonlinear Processes in Geophysics, 2019, 26, 73-89.	1.3	10
117	Response and Sensitivity Using Markov Chains. Journal of Statistical Physics, 2020, 179, 1572-1593.	1.2	10
118	Experimental mathematics: Dependence of the stability properties of a two-dimensional model of the Atlantic ocean circulation on the boundary conditions. Russian Journal of Mathematical Physics, 2007, 14, 224-231.	1.5	9
119	Evaluating a stochastic parametrization for a fastâ€“slow system using the Wasserstein distance. Nonlinear Processes in Geophysics, 2018, 25, 413-427.	1.3	9
120	Water Pathways for the Hindu-Kush-Himalaya and an Analysis of Three Flood Events. Atmosphere, 2019, 10, 489.	2.3	9
121	Climate Sensitivity to Carbon Dioxide and the Moist Greenhouse Threshold of Earth-like Planets under an Increasing Solar Forcing. Astrophysical Journal, 2018, 869, 129.	4.5	8
122	Modeling Complexity: The Case of Climate Science. , 2013, , 229-254.		8
123	Robustness of Competing Climatic States. Journal of Climate, 2022, 35, 2769-2784.	3.2	8
124	LÃ©vy noise versus Gaussian-noise-induced transitions in the Ghilâ€“Sellers energy balance model. Nonlinear Processes in Geophysics, 2022, 29, 183-205.	1.3	7
125	Avalanches, breathers, and flow reversal in a continuous Lorenz-96 model. Physical Review E, 2013, 88, 013201.	2.1	6
126	Rough basin boundaries in high dimension: Can we classify them experimentally?. Chaos, 2020, 30, 103105.	2.5	6

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127	Analysis of a bistable climate toy model with physics-based machine learning methods. European Physical Journal: Special Topics, 2021, 230, 3121-3131.	2.6	6
128	Response theory and phase transitions for the thermodynamic limit of interacting identical systems. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2020, 476, 20200688.	2.1	6
129	Decomposing the dynamics of the Lorenz 1963 model using unstable periodic orbits: Averages, transitions, and quasi-invariant sets. Chaos, 2022, 32, 033129.	2.5	6
130	Effects of stochastic parametrization on extreme value statistics. Chaos, 2019, 29, 083102.	2.5	5
131	Mechanics and thermodynamics of a new minimal model of the atmosphere. European Physical Journal Plus, 2020, 135, 1.	2.6	5
132	Spatial-dispersion and relativistic effects in the optical sum rules. European Physical Journal B, 2001, 23, 319-323.	1.5	4
133	Environmental Science, Physical Principles and Applications. , 2005, , 146-156.		4
134	Spectroscopy of phase transitions for multiagent systems. Chaos, 2021, 31, 061103.	2.5	3
135	Self-Scaling of the Statistical Properties of a Minimal Model of the Atmospheric Circulation. , 2007, , 197-219.		3
136	Parametrization of Cross-scale Interaction in Multiscale Systems. World Scientific Series on Asia-Pacific Weather and Climate, 2015, , 67-80.	0.2	2
137	Inferring the instability of a dynamical system from the skill of data assimilation exercises. Nonlinear Processes in Geophysics, 2021, 28, 633-649.	1.3	2
138	Nonequilibrium ensembles for the three-dimensional Navier-Stokes equationsÂ. Physical Review E, 2022, 105, .	2.1	2
139	Twenty Years of Nonlinear Dynamics in Geosciences. Eos, 2007, 88, 29.	0.1	1
140	Relevance of sampling schemes in light of Ruelle's linear response theory. Nonlinearity, 2012, 25, 1311-1327.	1.4	1
141	Introduction to the Special Issue on the Statistical Mechanics of Climate. Journal of Statistical Physics, 2020, 179, 997-1009.	1.2	1
142	Predictors and predictands of linear response in spatially extended systems. European Physical Journal: Special Topics, 0, , 1.	2.6	1
143	All Kinds of Integration: WMOâ€™s Strategy for Seamless Prediction. Bulletin of the American Meteorological Society, 2020, 101, 509-512.	3.3	1
144	General properties of harmonic generation susceptibilities. , 2001, 4350, 144.		0

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145	Symmetry-Break in a Minimal Lorenz-Like System. , 2010, , .		0
146	Thermodynamic Insights into Transitions Between Climate States Under Changes in Solar and Greenhouse Forcing. Understanding Complex Systems, 2014, , 201-223.	0.6	0
147	Eddy saturation in a reduced two-level model of the atmosphere. Geophysical and Astrophysical Fluid Dynamics, 0, , 1-18.	1.2	0
148	Statistical Properties of Mid-latitude Atmospheric Variability. , 2007, , 369-391.		0