

MAXIM V. BUDYANSKY

PH.D.

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EDUCATION

M.S. degree in Physics, Far East State University, Vladivostok, 2001.

POSITIONS

Doctoral Fellowship, Pacific Oceanological Inst., 2001 - 2004

Research Scientist, the same place, 2004 - present.

RESEARCH GRANTS

2003-2005 Far-East. Br. Russ. Ac. Sci. Program "Basic Research"

HOBBIES

Pantomime (Le Mime)

ACRTIVITY FIELDS

MAXIM V. BUDYANSKY is working in the fields of Nonlinear Science and Theoretical Physics. His major current interests include investigation of manifestations of dynamical symmetry and dynamical chaos in hydrodynamics. In particular, he studies nonlinear dynamical processes, chaos, fractals and transport in the ocean, chaotic advection.

SELECTED PUBLICATIONS

PAPERS in REFEREED JOURNALS

1. M.V. Budyansky and S.V. Prants. Universal mechanism of chaotic mixing in an elementary deterministic flow. JTP Letters. V.27 N6 (2001) 508-510. [Pis'ma ZTP. V.27 N12 (2001) 51-56].
2. M.V. Budyansky, S.V. Prants, M.Yu. Uleysky. Fractals and dynamical traps in a simplest model of chaotic advection with a topographic vortex. Doklady Earth Sciences V.387 N8 2002 929-932 [Dokl. Akad. Nauk. V.386 N5 2002 686-689].
3. M. Budyansky, M. Uleysky, S. Prants. Hamiltonian fractals and chaotic scattering by a topographical vortex and an alternating current. Physica D V.195 N3-4 (2004) 369-378.
4. M.V. Budyansky, M.Yu. Uleysky, S.V. Prants. Chaotic scattering, transport, and fractals in a simple hydrodynamic flow. JETP. V.99 N5 (2004) 1018-1027. [JETP. V.126 N5(11) (2004) 1167-1179].

PAPERS in PROCEEDINGS BOOKS

1. M.V. Budyansky and S.V. Prants. Lagrangian turbulence in a simple deterministic flow: a mechanism and properties. "Progress in Nonlinear Science". Proc. International Conference dedicated to the 100th Anniversary of A.A. Andronov (Nizhny Novgorod, Russia, 2-6 July 2001), vol.2, "Frontiers of Nonlinear Physics", ed. by A.G. Litvak, Nizhny Novgorod, 215-220 (2002).
2. M.V. Budyansky, S.V. Prants. Chaotic advection of passive particles in an open hydrodynamic flow. In: Nonlinear Dynamical Processes (ed. S.V. Prants.). Vladivostok, Dalnauka. 2004. P.63-75.

2005

1. M. Budyansky, M. Uleysky, S. Prants. Chaotic scattering in a simple Hamiltonian system modeling transport in a topographic eddy In: Proc. ENOC-2005, Fifth EUROMECH Nonlinear Dynamics Conference, Eindhoven Technical University, Netherlands, 2005, P.1489-1495
2. M. Budyansky, S. Prants. Nonlinear fractal dynamics and clustering of passive particles by a hydrodynamic vortex and a current. In: Proc. IEEE: Physics and Control 2005, Saint Peterburg, 2005, P.556-560.
3. M. Budyansky, S. Prants. Visualizing Coherent and Fractal Structures in Numerical Experiments on Chaotic Advection in Fluids In: Proc. 20th Biennial Conference on Mechanical Vibration and Noise, ed. by A. Luo, Long Beach, California, N84090, 2005, P.10-16.
4. М.В. Будянский. Хаотическая адвекция и фракталы в нестационарном плоском потоке. Дисс. на соис. уч. ст. канд. физ.-мат. наук под рук. С.В. Пранца. Владивосток, 2005, 113с.
5. M. Budyansky, M. Uleysky, D. Makarov. Domains of stability in phase space of a nonlinear oscillator driven by a random force Thesis of XXV Dynamics Days Europe 2005, Berlin, Germany, 2005. 2p.
6. M. Budyansky, M. Uleysky, D. Makarov, S. Prants. Noise-induced clustering in Hamiltonian systems www.arxiv.org e-print arXiv.CD/0507010. 10 p.

2006

1. M. Budyansky, M. Uleysky, S. Prants. Fractal advection of passive scalars in a wavy jet. In: Proc. IUTAM Symposium on Hamiltonian Dynamics, Vortex Structures, Turbulence, Moscow, 2006, 2p.
2. Makarov D.V., Uleysky M.Yu., Budyansky M.V., Prants S.V. Clustering in randomly driven Hamiltonian systems // Physical Review E, 2006, V.73, 066210, 10p.
3. Будянский М.В., Улейский М.Ю., Пранц С.В. Хаотическая адвекция в меандрирующем струйном потоке // Нелинейная динамика, 2006, Т.2, 2, С.165-180.
4. D.V. Makarov, M.Yu. Uleysky, M.V. Budyansky, and S.V. Prants. Clustering in randomly-driven Hamiltonian systems. Physical Review E. V.73 (2006) art.no 066210.
5. S.V. Prants, M.V. Budyansky, M.Yu. Uleysky, G.M. Zaslavsky. Chaotic mixing and transport in a meandering jet flow. Chaos. V.16 (2006) art.no 033117.

2007

1. M.V.~Budyansky, M.Yu.~Uleysky, S.V.~Prants. Lagrangian coherent structures, transport and chaotic mixing in □ simple kinematic ocean models. Communications in Nonlinear Science and Numerical Simulation. V.12, Is. 1 (2007) □ 31-44.

2. M.Yu. Uleysky, M.V. Budyansky, and S.V. Prants. 8 Effect of dynamical traps on chaotic transport in a meandering jet flow. Chaos. V.17. Is.4 (2007) □ art. no. 024703. □ [doi:10.1063/1.2783258](https://doi.org/10.1063/1.2783258)

2008

1. M.V~Budyansky, and S.V.~Prants. Chaotic transport and fractals in a geophysical jet. Communications in □ Nonlinear Science and Numerical Simulation. V.13. Is.2 (2008) 434-443.

2. M.Yu. Uleysky, M.V. Budyansky, S.V. Prants. Genesis and bifurcations of □ unstable periodic orbits in a jet flow. Journal of Physics A: Math. Theor. □ V. 41 (2008) 215102. □ [doi: 10.1088/1751-8113/41/21/215102](https://doi.org/10.1088/1751-8113/41/21/215102)

2009

1. M.V. Budyansky, M.Yu. Uleysky, and S.V. Prants. □ Cross-frontal chaotic transport in ocean jet currents. In: □ "Topics on Chaotic Systems, Selected Papers from CHAOS 2008 International Conference". Singapore: World Scientific. P.202-213. 2009.

2. M.V. Budyansky, M.Yu. Uleysky, and S.V. Prants. Detecting barriers □ to cross-jet Lagrangian transport and its destruction in a meandering flow. □ Physical Review E. V.79 N5 (2009) art. no 056215. □ [DOI: 10.1103/PhysRevE.79.056215](https://doi.org/10.1103/PhysRevE.79.056215)

2010

1. M.Yu. Uleysky, M.V. Budyansky, and S.V. Prants. Mechanism of destruction □ of the transport barriers in geophysical jets with Rossby waves. □ Physical Review E. V.81 (2010) art. no 017202. □ [DOI: 10.1103/PhysRevE.81.017202](https://doi.org/10.1103/PhysRevE.81.017202)

2. М.Ю. Улейский, М.В. Будянский, С.В. Пранц. Хаотический поперечный транспорт в двумерных струйных потоках. Журнал экспериментальной и теоретической □ физики. □ 2010

2011 1. S.V. Prants, M.V. Budyansky, V.I. Ponomarev, M.Yu. Uleysky Lagrangian study of transport and mixing in a mesoscale eddy street // Ocean Modelling V.38 (2011) p. 114–125 DOI:10.1016/j.ocemod.2011.02.008 2. M.V. Budyansky, V.I. Ponomarev, P.A. Fyman, M.Yu. Uleysky and S.V.Prants. Lagrangian approach to chaotic transport and mixing in the Japan Sea. Chaos Theory: Modeling, Simulation and Applications. Selected Papers from the 3rd Chaotic Modeling and Simulation International Conference (CHAOS2010) (eds. C.H. Skiadas, I. Dimotikalis, C. Skiadas). Singapore: World Scientific. P.3-13. 2011. 468p. <http://eproceedings.worldscinet.com/9789814350341/toc.shtml>

3. S.V. Prants, M.Yu. Uleysky, M.V. Budyansky. Numerical simulation of propagation of radioactive pollution in the ocean from the Fukushima-Dai-ichi nuclear plant. Doklady Earth Sciences. V. 439 (2011) 1179-1182 [Dokl. Akad. Nauk. V.439 N6 (2011) 811-814].

2012

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3. S.V. Prants, A.G. Andreev, M.Yu. Uleysky, M.V. Budyansky. Lagrangian study of temporal changes of a surface flow through the Kamchatka Strait. *Ocean Dynamics*.

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1. M.V. Budyansky, V.A. Goryachev, D.D. Kaplunenko, V.B. Lobanov, S.V. Prants, A.F. Sergeev, N.V. Shlyk, M.Yu. Uleysky. Role of mesoscale eddies in transport of Fukushima-derived cesium isotopes in the ocean. *Deep Sea Research I*. (2015), V.96, pp. 15-27□

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2. S.V. Prants, M.V. Budyansky, V.I. Ponomarev, M.Yu. Uleysky, P.A. Fayman Lagrangian analysis of the vertical structure of eddies simulated in the Japan Basin of □ the Japan/East Sea. *Ocean Modelling*. V.86 pp.128-140 (2015)□

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3. S.V. Prants, A.G. Andreev, M.V. Budyansky, M.Yu. Uleysky. Impact of the Alaskan Stream flow on surface water dynamics, temperature, ice extent, plankton biomass and walleye pollock stocks in the eastern Okhotsk Sea. J. Marine Systems. V.151 pp.47-58 (2015).

[doi:10.1016/j.jmarsys.2015.07.001](https://doi.org/10.1016/j.jmarsys.2015.07.001)

4. S.V. Prants, M.V. Budyansky, M.Yu. Uleysky, J. Zhang. Hyperbolicity in the ocean. Discontinuity, Nonlinearity, and Complexity. V.4, N3 pp. 257-270 (2015).

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2016

1. S.V. Prants, V.B. Lobanov, M.V. Budyansky, M.Yu. Uleysky. Lagrangian analysis of formation, structure, evolution and splitting of anticyclonic Kuril eddies. Deep Sea Research I. V.109 pp.61–75 (2016).

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2. S.V. Prants, A.G. Andreev, M.V. Budyansky, M.Yu. Uleysky. Mesoscale circulation along the Sakhalin Island eastern coast. Ocean Dynamics. (2017) V. 67. Is.3 P. 345-356. doi:10.1007/s10236-017-1031-x

3. S.V. Prants, M.V. Budyansky, M.Yu. Uleysky. Statistical analysis of Lagrangian transport of subtropical waters in the Japan Sea based on AVISO altimetry data. Nonlin. Processes Geophys. V.24, p. 89-99, 2017 doi:10.5194/npg-24-1-2017.

4. S.V. Prants, M.V. Budyansky, M.Yu. Uleysky. Lagrangian simulation and tracking of the mesoscale eddies contaminated by Fukushima-derived radionuclides. *Ocean Science*. V.13 P.453-463 (2017). <https://doi.org/10.5194/os-13-453-2017>

5. M.V. Budyansky, S.V. Prants, E.V. Samko, M.Yu. Uleysky. Identification and Lagrangian analysis of oceanographic structures favorable for fishery of neon flying squid (*Ommastrephes bartramii*) in the South Kuril area. *Oceanology*, 2017, Vol. 57, No. 5, pp. 648–660.

6. M.V. Budyansky, M.Yu. Uleysky, A.G. Andreev, S.V. Prants. A Lagrangian analysis of Kuril eddies. *Vestnik DVO*. N4 P.81-88 (2017) (in Russian)

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3. Ponomarev V.I., Fayman P.A., Prants S.V., Budyansky M.V., Uleysky M.Yu. Simulation of mesoscale circulation in the Tatar Strait of the Japan Sea. *Ocean Modelling*. 2018. V. 126. P. 43-55. <https://doi.org/10.1016/j.ocemod.2018.04.006>

4. Prants S.V., Uleysky M.Yu., Budyansky M.V. Lagrangian analysis of transport pathways of subtropical water to the Primorye coast. *Doklady Earth Sciences*. 2018. Vol. 481. Part 2. P. 1099–1103. [Doklady Akademii Nauk, 2018, Vol. 481, No. 6.]. doi: 10.1134/S1028334X18080329

5. Andreev A, Budyansky M., Uleysky M., Prants S. Mesoscale dynamics and walleye pollock catches in the Navarin Canyon area of the Bering Sea. *Ocean Dynamics*. 2018. V.68, N 11. P. 1503-1514.
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2019

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2. P.A. Fayman, S.V. Prants, M.V., Budyansky, M.Yu. Uleysky. Coastal summer eddies in the Peter the Great Bay of the Japan Sea: in situ data, numerical modeling and Lagrangian analysis. Continental Shelf Research. V.181. 143-155. 2019 <https://doi.org/10.1016/j.csr.2019.05.002>

2020

1. S.V. Prants, V.V. Kulik, M.V. Budyansky, M.Yu. Uleysky. Relationship between Saury Fishing Grounds and Large-Scale Coherent Structures in the Ocean, According to Satellite Data Izvestiya, Atmospheric and Oceanic Physics. 2020, Vol. 56, No. 12 pp. 1638–1644. DOI: [10.1134/S000143382012050](https://doi.org/10.1134/S000143382012050)
2. S.V. Prants, M.V. Budyansky, V. B. Lobanov, A. F. Sergeev and M.Yu. Uleysky. Observation and Lagrangian analysis of quasi-stationary Kamchatka trench eddies. Journal of Geophysical Research (Oceans) 2020 V.125 , Issue 6. e2020JC016187 <https://doi.org/10.1029/2020JC016187>
3. P.A. Fayman, S.V. Prants, M.V. Budyansky, M.Yu. Uleysky. New circulation features in the Okhotsk Sea from a numerical model. Izvestiya, Atmospheric and Oceanic Physics. 2020, Vol. 56, No. 6, pp. 618–631. DOI: [10.1134/S0001433820060043](https://doi.org/10.1134/S0001433820060043)
4. P.A. Fayman, M.V. Budyansky, M.Yu. Uleysky, S.V. Prants, V.L. Vysotsky, D.A. Pripachkin.

Modeling the transport of radioactive pollution in the Ussuri Gulf during the first days after the nuclear accident in the Chazhma Bay in August 1985. Vestnik DVO RAN (In Russ. English abstract) N5 2020. p.18-31.

5. Kulik V.V., Prants S.V., Budyansky M.V., Uleysky M.Yu., Fayman P.A., Glebov I.I., Glebova S.Yu., Novikov R.N. Relationship of the greenland halibut stocks in the Okhotsk sea with environmental factors. Izvestiya TINRO. 2020. V.200. pp. 58-81. (In Russ. English abstract) <https://doi.org/10.26428/1606-9919-2020-200-58-81>

2021

1. T. V. Belonenko, V.A. Zinchenko, A. M. Fedorov, M.V. Budyansky, S.V. Prants, M. Yu. Uleysky. Interaction of the Lofoten Vortex with a satellite cyclone. Pure and Applied Geophysics.V.178 2021 p. 287-300.
<https://doi.org/10.1007/s00024-020-02647-1>

2. P.A. Fayman, S.V. Prants, M.V. Budyansky, M.Yu. Uleysky. Simulated pathways of the Northwestern Pacific Water in the Okhotsk Sea and ocean-sea exchange transport. Izvestiya, Atmospheric and Oceanic Physics. 2021 Vol. 57, No. 3, pp. 329-340. DOI:
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3. S.V. Prants, M.V., Budyansky, M.Yu. Uleysky, Kulik V.V. Lagrangian fronts and saury catch locations in the Northwestern Pacific in 2004-2019. J. Marine Systems. 2021. V. 222. Art. No. 103605 DOI:
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3. M.V. Budyansky, S.V. Prants, M.Yu. Uleysky. Odyssey of Aleutian eddies. Ocean Dynamics. 2022.V.72, p. 455-476. DOI
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5. V.V. Kulik, S.V. Prants, M.Yu. Uleysky, M.V. Budyansky. Lagrangian characteristics in the western North Pacific help to explain variability in Pacific saury fishery. Fisheries Research. 2022.V.252 106361. DOI
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[10.1016/j.cnsns.2022.1068822](https://doi.org/10.1016/j.cnsns.2022.1068822)
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