


Name	Agnieszka Herman	
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Home page	http://herman.ocean.ug.edu.pl/	
Position	Associate Professor at Institute of Oceanography, University of Gdansk Pilsudskiego 46, 81-378 Gdynia, Poland	
Qualification level	Ph.D. (+ postdoctoral degree: <i>habilitation</i>)	
Professional experience and achievements	<p>Summary: Agnieszka Herman has a Ph.D. in Earth sciences from 2003, where she developed algorithms to parameterize diffraction processes in wind-generated water waves. She joined the Department of Physical Oceanography (Institute of Oceanography, University of Gdansk) in 1999. Her research interests include numerical modelling of physical processes in the sea, atmosphere and – especially – sea ice, in terms of both development of new algorithms and parameterizations of the analyzed processes, as well as practical applications of modelling in scientific and engineering problems. In recent years, her work concentrated on discrete-element modelling of sea ice with a self-developed model DESIgn (see http://herman.ocean.ug.edu.pl/LIGGGHTSseaice.html for details).</p> <p>Contribution to recent and current projects:</p> <p><u>Ongoing projects:</u></p> <ol style="list-style-type: none"> 1. "The impact of the sea ice conditions in the nearshore zone and shore ice on the wave propagation and coastal morphodynamics in polar regions on the example of southwestern Spitsbergen – the analysis of processes, modeling, and prediction" (grant of the Polish National Research Center; May 2014 – April 2017; <i>Principal Investigator</i>) 2. "SatBaltic: Satellite monitoring of the Baltic Sea environment" (EU project; July 2010 – December 2015) <p><u>Selected completed projects:</u></p> <ol style="list-style-type: none"> 3. "Measuring and numerical modeling of sediment transport and sandy beach erosion during storms" (grant of the Polish Ministry of Science and Education; March 2010 – March 2012; <i>Project Leader and Principal Investigator</i>) 4. "Monitoring of the seasonal and long-term variability of the Antarctic Circumpolar Current in the Atlantic sector of the Southern Ocean" (grant of the Polish Ministry of Science and Education; April 2010 – April 2012) 5. "European COastal-shelf sea OPerational monitoring and forecasting system" (ECOOP). European Union Project. Sea ice model for the Baltic Sea, Work Package 5 6. "Storm-surge security of the coast of the island Borkum (Lower Saxony, Germany)" – project of the Lower Saxony Water Management, Coastal and Environmental Protection Agency (2008/2009) 7. "Modelling of the medium-term wave climate at the German North Sea coast" (MOSES; 2003–2006) – at the Coastal Research Station Norderney (<i>Principal Investigator</i>). 8. "Storm-surge security of the port of Neuharlingersiel (Lower Saxony, Germany)" (2005/2006) – at the Coastal Research Station Norderney. (<i>Principal Investigator</i>) 	

	<p>Work experience:</p> <ol style="list-style-type: none"> 2006 – present: Institute of Oceanography, University of Gdansk, Poland (Assistant Professor; since 2015: Associate Professor) 2003 – 2006: Coastal Research Station (Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency) Norderney, Germany. August – September 2001: Delft University of Technology, Delft, the Netherlands. 1999 – 2003: Institute of Oceanography, University of Gdansk, Poland (Research Assistant) <p>Education:</p> <p>2015: postdoctoral degree (habilitation) in Earth Sciences, University of Gdansk 2003: Ph.D. in Earth Sciences, University of Gdansk Thesis topic: Diffraction effects in numerical wind wave modelling. 1999: MSc in Physical Oceanography, University of Gdansk</p>
Skills	<p>Programming: Matlab, Fortran, C++</p> <p>Numerical models: LAMMPS (Large-scale Atomic/Molecular Massively Parallel Simulator) LIGGGHTS (LAMMPS improved for general granular and granular heat transfer simulations) SWAN (Simulating WAVes Nearshore) WAM (Wave Model) Delft3D WRF (Weather Research and Forecasting) CICE (Community Sea Ice Model) XBeach</p> <p>Other computer skills: TeX, LaTeX, MSOffice</p> <p>Languages: English (fluent; Cambridge Certificate in Advanced English, grade A) German (fluent) Polish (fluent) Russian (basic)</p>

Peer-reviewed publications:

- Herman, A., 2015. Discrete-Element bonded-particle Sea Ice model DESIgn, version 1.3 – model description and implementation. *Geosci. Model Dev. Discuss.*, 8, 1–53, doi:10.5194/gmdd-8-1-2015.
- Herman, A., 2013. Numerical modeling of force and contact networks in fragmented sea ice. *Annals Glaciology*, 54, 114-120, doi:10.3189/2013AoG62A055.
- Herman, A., Glowacki, O., 2012. Variability of sea ice deformation rates in the Arctic and their relationship with basin-scale wind forcing. *The Cryosphere.*, 6, 1553-1559, doi:10.5194/tc-6-1553-2012.
- Herman, A., 2012. Influence of ice concentration and floe-size distribution on cluster formation in sea ice floes. *Cent. Europ. J. Phys.*, 10, 715-722, doi:10.2478/s11534-012-0071-6.
- Herman, A., 2011. Molecular-dynamics simulation of clustering processes in sea-ice floes. *Phys. Rev. E*, 84, 056104, doi:10.1103/PhysRevE.84.056104.
- Herman, A., Jędrasik, J., Kowalewski, M., 2011. Numerical modelling of thermodynamics and dynamics of sea ice in the Baltic Sea. *Ocean Sci.*, 7, 257-276.
- Herman, A., 2011. Neural-Network Modeling and Data Analysis Techniques in Coastal Hydrodynamic Studies: A Review. In: L.L. Wright (Ed.), *Sea Level Rise, Coastal Engineering, Shorelines and Tides* (Oceanography and Ocean Engineering Series), Nova Science Publishers, ISBN: 978-1-61728-655-1, 295-317.
- Urbański, J., Wochna, A., Herman, A., 2011. Automated granulometric analysis and grain-shape estimation of beach sediments using object-based image analysis. *J. Coastal Res.*, SI 64, 1745-1749.

9. Herman, A., 2010. Sea-ice floe-size distribution in the context of spontaneous scaling emergence in stochastic systems. *Phys. Rev. E*, 81, 066123, doi:10.1103/PhysRevE.81.066123.
10. Bradtke, K., Herman, A., Urbański, J.A., 2010. Spatial and interannual variations of seasonal sea surface temperature patterns in the Baltic Sea. *Oceanologia*, 52, 345-362.
11. Herman, A., Kaiser, R., Niemeyer, H.D., 2009. Wind-wave variability in a shallow tidal sea – spectral modelling combined with neural network methods. *Coastal Engng*, 56, 759-772.
12. Urbański, J.A., Herman, A., 2009. Water exchange between the basins of the German Wadden Sea studied with a coupled Matlab-ArcGIS model. *J. Coastal Res.*, SI 56, 1085-1089.
13. Herman, A., Kaiser, R., Niemeyer, H.D., 2007. Modelling of a medium-term dynamics in a shallow tidal sea, based on combined physical and neural network methods. *Ocean Modelling*, 17, 277-299, doi:10.1016/j.ocemod.2007.02.004.
14. Herman, A., 2007. Numerical modelling of water transport processes in partially-connected tidal basins. *Coastal Engng*, 54, 297-320, doi:10.1016/j.coastaleng.2006.10.003.
15. Herman, A., 2007. Nonlinear principal component analysis of the tidal dynamics in a shallow sea. *Geophys. Res. Lett.*, 34, L02608, doi:10.1029/2006GL027769.
16. Herman, A., 2006. Three-dimensional structure of wave-induced momentum flux in irrotational waves in combined shoaling-refraction conditions. *Coastal Engng*, 53, 545-555, doi:10.1016/j.coastaleng.2005.12.001.
17. Holthuijsen, L.H., Herman, A., Booij, N., 2003. Phase-decoupled refraction-diffraction for spectral wave models. *Coastal Engng*, 49, 291-305, doi:10.1016/S0378-3839(03)00065-6.

Recent conference contributions:

1. Herman, A., 2015. Possibilities and challenges of using discrete-element models in studies of sea ice dynamics, fragmentation and floe formation, *Floe Size Distribution Workshop*, Oban, Scotland, 6-7 July 2015.
2. Herman, A., 2013. Discrete-element sea ice modeling in the marginal ice zone – state-of-the-art, perspectives, and challenges, *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, USA, 9-13 December 2013.
3. Herman, A., 2013. Molecular-dynamics simulation of contact and force networks in fragmented sea ice under shear deformation, *3rd Conf. Particle-Based Methods (PARTICLES 2013)*, Stuttgart, Germany, 18-20 September 2013.
4. Herman, A., 2013. Sea-ice boundary conditions in a mesoscale atmospheric model of the Baltic Sea region, *Davos Atmosphere and Cryosphere Assembly (DACA-13)*, Davos, Switzerland, 8-12 July 2013.
5. Herman, A., 2012. Numerical modeling of force and contact networks in fragmented sea ice, *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, USA, 2-7 December 2012.
6. Glowacki, O., Herman, A., 2012. Sea ice deformation rates in the Arctic: from wind-driven synoptic variability to seasonal trends, *American Geophysical Union (AGU) Fall Meeting*, San Francisco, California, USA, 2-7 December 2012.
7. Herman, A., 2012. Molecular-dynamics simulation of sea-ice at medium ice concentrations, *International Symposium on Seasonal Snow and Ice*, Lahti, Finland, 28.05-1.06.2012.
8. Herman, A., Urbanski, J., Wochna, A., 2012. Numerical modeling of storm-induced morphodynamic changes at a micro-tidal sandy coast, *European Geosciences Union General Assembly*, Vienna, Austria, 22-27 April 2012.
9. Herman, A., Glowacki, O., 2012. Synoptic-scale variability of satellite-derived sea-ice deformation rates in the Arctic, *European Geosciences Union General Assembly*, Vienna, Austria, 22-27 April 2012.
10. Herman, A., 2011. Statistical model of dynamical sea ice deformation and breaking, *International Conference "Micro-DIce: Ice deformation; from the model material to ice in natural environments"*, Grenoble, France, 7-9.11.2011.
11. Herman, A., 2011. Inelastic collisions and clustering of sea ice floes – the influence of floe-size distribution on cluster formation and patterns of motion of sea ice, *International Conference on Statistical Physics "SigmaPhi 2011"*, Larnaca, Cyprus, 11-15.07.2011.

12. Herman, A., 2011. Inelastic collisions and clustering of ice floes – relationships between floe-size distribution and clustering processes in sea ice, *Gordon Research Conference "Exploring Complex Systems in Polar Marine Science"*, Ventura, California, USA, 20-25.03.2011.
13. Herman, A., 2011. Mechanisms of sea ice breaking and floe formation and their influence on floe-size distribution – a simple one-dimensional model, *Gordon Research Seminar "Polar Marine Science"*, Ventura, California, USA, 19-20.03.2011.

Teaching:

1. Physical Oceanography (undergraduate, lab.)
2. Introduction to Meteorology (undergraduate, lectures + lab.)
3. Marine Meteorology (graduate, lectures + lab.)
4. Introduction to Sea Ice Geophysics (graduate, lectures)

Personal interests:

1. Trekking, mountaineering, tourism
2. Sailing
3. Evolution in general, human evolution.
I wrote a popular-science book (in Polish) "Secrets from the past: the first stages of human evolution" (<http://ocean.ug.edu.pl/~herman/zagadki.html>)
4. Palaeolithic cave art