

WILLIAM D. HIBLER, III
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Born: Brunswick, Missouri - February 8, 1943.

Education:

1961-1965 – B.Sc. Physics (cum laude), University of Missouri, Columbia.
1965-1966—MIT, Physics PhD program, full 16hr course load/semester.
1966-1969 – Ph.D. Theoretical Physics. Minor, Experimental Physics. Cornell University, Ithaca, NY: Thesis title:
“Electrical Conductivity in Pure Type II Superconductors near H_{c2} ”.

Post Graduate Appointments and Employment:

<u>Jan 2010-Present</u>	Affiliate Faculty, School of Fisheries and Ocean Sciences, University of Alaska Fairbanks__
<u>1999-May 2009</u>	Research Professor, International Arctic Research Center, University of Alaska at Fairbanks, Fairbanks, AK
1999-2004	Adjunct Prof. of Physics, Department of Physics, University of Alaska at Fairbanks
1999-2000	Adjunct Prof. of Engineering, Thayer School of Engineering, Dartmouth College
<u>1986–1999</u>	Professor of Engineering, Thayer School of Engineering, Dartmouth College, Hanover, NH.
1998-1999	Arctic Chair, Naval Postgraduate School, Monterey, CA.
1997:(Sept.-Dec.)	Visiting Scientist, University of Texas Institute of Geophysics, Austin, TX
1984–1985	Visiting Scientist, Max Planck Inst. für Meteorology, Hamburg, FRG.
1976–77; 1981–82	Visiting Fellow, Geophysical Fluid Dynamics Program, Princeton University.
<u>1970–1986</u>	Research Physicist, Cold Regions Research and Engineering Laboratory (CRREL), Hanover, NH.
1969–1970	Visiting Assistant Professor at the University of Cincinnati, Dept. of Physics

Research Interests and Experience:

Primary research interests: mesoscale and geophysical scale ice-ocean dynamics, large-scale numerical modeling of sea ice and ice-covered oceans and lakes; atmospheric and oceanic boundary layers for ice covered oceans, application of models to ice forecasting and near-shore ice characteristics; relationship of sea ice and polar oceans to climatic change. Other research has included statistical studies of sea ice pressure ridges and climate time series obtained from Greenland ice core records and world weather records. Experience includes over three months' field work on sea ice in the Arctic Ocean, two months' field work on sea ice in the marginal ice zone of the Greenland Sea.

UAF Focus: Anisotropic sea ice mechanics, theory, modeling and observation of linear kinematic features in sea ice, Modeling and Observation of Inertial and tidal variability in sea ice drift and deformation, and its relationship to climatic change, non linear dynamics of the ice ocean atmosphere system (initial emphasis on multiple equilibrium flow states of Arctic sea ice due to ice mechanics), sea ice and climate via atmosphere ice ocean boundary layer models and ice ocean circulation models including tides. Most recent work has focused on tidal/inertial variability in sea ice drift and deformation, atmosphere-ice interaction via potential multiple equilibrium states due to ice mechanics for the same atmospheric forcing. Extension to coupled Atmosphere-Ice-boundary layer model underway.

Academic Responsibilities:

Courses Taught at Dartmouth:

Applied Mechanics: Dynamics(8), Continuum Mechanics(2), Ice-Ocean Dynamics(4), Circulation of Polar Oceans(1), Principles of Climate Modeling(2).

Courses Taught at UAF: Special Topics (Physics) :Ice ocean Dynamics (3)

Research Supervision and Field Work:

Principal thesis advisor for five Ph.D. students, two M.S. students and advisor for three post-doctoral fellows at Dartmouth as well as three visiting European Scientists at CRREL. Principal advisor for three Post Doctoral Fellows at IARC, University of Alaska Fairbanks, Member of doctoral committees for two European Scientists: Matti Lepparanta, Ph.D., Finland 1981; and Marie-Noelle Houssais, Docteur d'Etat, University of Paris, 1987. Established the Ice-Ocean Dynamics Laboratory at Dartmouth for numerical investigation of Ice Covered Oceans and their role in the Polar Oceans. Field work includes Aidxex 71, 72 Ice Camp based Pilot Programs in the Beaufort Sea, Aidxex 74-75 main experiment, 1975 Prudhoe Bay Fast Ice Motion studies, a program of ice deformation measurements in the East Greenland Marginal Ice Zone as part of the MIZEX 83 and 84 Ice Margin field programs, and the CEAREX 1988 Ice Mechanics initiative.

UAF Focus: Mentor of (and recruiter for) three Post doctoral fellows at IARC, (All gainfully employed and one of which is a currently funded Scientist at UAF): Dr. Petra Heil, Dr. Jennifer Hutchings, and Dr. Andrew Roberts. Principal thesis advisor for two PhD students, both of which shifted to non ice PhD subjects in the geology department. Currently am committee member of MS student in Oceanography, Institute of Marine Science, UAF.

Selected Committees, Advisory Groups, Invited Lectures:

Past member of Glaciological subcommittee of Polar Research Board of the National Academy of Sciences, MIZEX (Marginal Ice Zone Experiment) Science Committee, and editor of MIZEX Bulletin. Member of several WMO advisory committees on Sea Ice and Climate, including most recently the SIOM committee (Sea Ice Ocean Modeling) tasked with an intercomparison study of sea ice models for use in Climate Studies. Aided NORDA in converting "Hibler" sea ice model to operational form at FNOC (Fleet Numerical Operational Center, Monterey). Member of Organizing and Papers committees for International Glaciological Society Symposium on Ice Ocean Dynamics and Mechanics, Dartmouth College, 1990.

Keynote lecturer at the Alfred Wegner Conference on Sea Ice and Climate (Bremerhaven, FRG, 1983); Invited lecturer at the NATO institute for Air-Sea-Ice Interaction (1981); European Space Agency Conference on the Use of Satellite Data in Climate Models, Austria (1985); NATO Institute on Deterministic Climate Modeling (1986); Global Change Institute on Modeling the Earth System, Colorado (1990); Workshop on Coupled Climate System Modeling, University of Wisconsin (1991); NATO Advanced Research Workshop on Ice in the Climate System (1992); American Meteorological Soc. Workshop on Polar Processes in Global Climate, Mexico (1996).

Research funding includes ONR funding related to the Arctic Ice Cover, Ice Mechanics and Ice Ocean Modeling, two and three year NASA projects related to Sea Ice Modeling; Co-Principal Investigator on a Five year ONR University Research Initiative on Ice-Ocean Dynamics and Mechanics (1986); Principal Investigator on a number of NSF grants including most notably the project entitled "Arctic and Antarctic Ice-Ocean Modeling and Investigation of the Role of Ice Dynamics in Global Ocean Thermohaline Circulation."

UAF Focus: Regular attendance at EGU meeting in Europe in April. Several Invited lectures there in either the Cryospheric section, or nonlinear atmosphere ice topics. Recent request from the president of the Cryospheric section to organize a Union Session. *Research Funding:* Principal Investigator on funded NSF sea ice mechanics grant (with E. M. Schulson), Co-PI on funded NSF sea ice and tides grant: modeling and observation grant: (with J. Hutchings). Co-Pi (Harper Simmons:PI) on funded Epscor grant on Tidal and Ice Mechanics induced turbulence in the Ocean. PI on NSF OPP Proposal on ice-ocean-tidal model and thickness comparison pending (with M. Johnson, May 2011). Sole PI on ONR letter proposal on high frequency buoy drift assimilation into ice-ocean-tidal model pending (May 2011).

Synergistic Activities:

Reviewer for Annals of Glaciology, Journal of Geophysical Research, Journal of Physical Oceanography, International Union of Theoretical and Applied Mechanics, Journal of Climate, Journal of Glaciology. Membership in the following professional activities: American Geophysical Union, International Glaciological Society.

Theses Supervised:

Gregory Mark Flato: "Numerical investigation of a variable thickness sea ice cover", PhD Thesis, June 1991.

Peter H. Ranelli: "Numerical investigation of the circulation of an ice covered Arctic ocean model", PhD thesis, June 1991.

John Eric Ries: "A numerical investigation of the interannual characteristics of an 80km ice-ocean model", MS Thesis, June 1991.

Chi Fung Ip: "Numerical investigation of different rheologies on sea-ice dynamics", PhD Thesis, May 1993.

Jin Lun Zhang: "A high resolution ice-ocean model with imbedded mixed layer", PhD thesis, June 1993.

Xiong Song: "Numerical investigation of a viscous plastic sea-ice forecasting model", MS Thesis, September 1994.

Cathleen Geiger: "Investigation of sea-ice phenomenon in the Weddell Sea using observations and a hierarchy of dynamic thermodynamic sea-ice models", PhD Thesis, Spring 1996.

Post Doctoral Fellows and Visiting Scientists Advised

Dr. Matti Lepparanta, Dr. Mari Noelle Houssais, Dr. Mark Hopkins, Dr. Gregory Flato, Dr. Jinlun Zhang, Dr. Yevgeny Aksenov, Dr. Petra Heil, Dr. Jennifer Hutchings, Dr. Andrew Roberts

W.D. Hibler III**December 2003****Publications** – Over 100 papers (90 reviewed journal/book articles; >1000 scientific citations)*Reviewed Journal Articles*

1. Hibler, W. D., III and B. W. Maxfield (1968), Surface impedance of Nb near H_{c2} , *Physical Review Letters*, 21(11), 742-749.
2. Hibler, W. D., III and M. Cyrot (1970), Electrical conductivity in pure type-II superconductors near H_{c2} , *Physical Review*, 7, 3007-3016.
3. Hibler, W. D., III and M. Cyrot (1971), Surface impedance of pure type-II superconductors, *Physica*, 55, 485-491.
4. Hibler, W. D., III and L. LeShack (1972), Power spectrum analysis of undersea and surface sea ice profiles, *Journal of Glaciology*, 2(63), 345-356.
5. Hibler, W. D., III, W. F. Weeks, and S. J. Mock (1972), Statistical aspects of sea ice ridge distributions, *Journal of Geophysical Research*, 70 (30), 5954-5970.
6. Mock, S. J., A. Hartwell, and W. D. Hibler III (1972), Spatial aspects of pressure ridge statistics, *Journal of Geophysical Research*, 70 (39), 5945-5953.
7. Hibler, W. D., III (1972), Removal of aircraft altitude variation from laser profiles of the arctic ice pack, *Journal of Geophysical Research*, 77 (36), 7190-7195.
8. Hibler, W. D., III, W. F. Weeks, S. F. Ackley, A. Kovacs, and W. J. Campbell (1973), Mesoscale strain measurements on the Beaufort sea pack ice, *Journal of Glaciology*, 12 (65), 187-207.
9. Kovacs, A., W. F. Weeks, S. F. Ackley, and W. D. Hibler III (1973), Structure of a multiyear pressure ridge, *ARCTIC*, 26(1), 22-31.
10. Hibler, W. D., III, W. F. Weeks, A. Kovacs, and S. F. Ackley (1974), Differential sea ice drift I: spatial and temporal variations in sea ice deformation, *Journal of Glaciology*, 31 (69), 437-455.
11. Hibler, W. D., III (1974), Differential sea ice drift II: comparison of mesoscale strain measurements to linear drift theory predictions, *Journal of Glaciology*, 13 (69), 457-471.
12. Hibler, W. D., III, S. J. Mock, and W. B. Tucker III (1974), Classification and variation of sea ice ridging in the western Arctic Basin, *Journal of Geophysical Research*, 79 (18), 2735-2743.
13. Hibler, W. D. III and S. F. Ackley (1975), A sea ice terrain model and its application to surface vehicle trafficability, *Journal of Terramechanics*, 12(3/4), 171-190.
14. Hibler, W. D., III and S. F. Ackley (1975), Height variations along sea ice pressure ridges and probability of finding "holes" for vehicle crossings, *Journal of Terramechanics*, 12 (3/4), 191-199.
15. Hibler, W. D., III (1975), Characterization of cold regions terrain using airborne laser profilometry, *Journal of Glaciology*, 15 (43), 329-448.
16. Mock, S. J. and W. D. Hibler III (1976), The 20-year oscillation in eastern North American temperature records, *Nature*, 261 (5560), 484-486.
17. Hibler, W. D., III and W. B. Tucker III (1977), Seasonal variations in apparent sea ice viscosity on the geophysical scale, *Geophysical Research Letters*, 4 (2), 87-90.
18. Hibler, W. D., III (1977), A viscous sea ice law as a stochastic average of plasticity, *Journal of Geophysical Research*, 82 (27), 3932-3938.
19. Weeks, W. F., A. Kovacs, S. J. Mock, W. D. Hibler III, and A. J. Gow (1977), Studies of the movement of coastal sea ice near Prudhoe Bay Alaska, U.S.A., *Journal of Glaciology*, 19 (81), 533-546.

20. Hibler, W. D., III and W. B. Tucker III (1979), Some results from a linear viscous model of the Arctic ice cover, *Journal of Glaciology*, 22 (87), 293-304.
21. Hibler, W. D., III (1979), A dynamic thermodynamic sea ice model, *Journal of Physical Oceanography*, 9 (4), 815-846.
22. Hibler, W. D., III and S. J. Johnsen (1979), The 20 year cycle in Greenland ice core records, *Nature*, 280, 481-483.
23. Hibler, W. D., III (1980), Numerical modeling of sea ice in the seasonal sea ice zone, *Cold Regions Technology*, 2, 299-321.
24. Hibler, W. D., III (1980), Modeling a variable thickness sea ice cover, *Monthly Weather Review*, 108, 1943-1973.
25. Hibler, W. D., III and S. F. Ackley (1982), On modeling the Weddell Sea pack ice, *Annals of Glaciology*, 3, 125-130.
26. Hibler, W. D., III and J. E. Walsh (1982), On modeling seasonal and interannual fluctuations of Arctic Sea ice, *Journal of Physical Oceanography*, 12, 1514-1523.
27. Hibler, W. D., III and S. F. Ackley (1983), Numerical simulation of the Weddell Sea Pack Ice, *Journal of Geophysical Research*, 88, 2873-2887.
28. Hibler, W. D., III, I. Udin, and A. Ullerstig (1983), On forecasting mesoscale ice dynamics and buildup, *Annals of Glaciology*, 4, 110-115.
29. Walsh, J. E., W. D. Hibler, III, and B. Ross (1984), A model simulation of 20 years of northern hemisphere sea ice fluctuations, *Annals of Glaciology*, 5, 170-176.
30. Hibler, W. D., III and K. Bryan (1984), Ocean circulation: its effects on seasonal sea ice simulations, *SCIENCE*, 224, 489-492.
31. Walsh, J. E., W. D. Hibler III, and B. Ross (1985), Numerical simulation of northern hemisphere sea ice variability, 1951-1980, *Journal of Geophysical Research*, 90, 4847-4865.
32. Lepparanta, M. and W. D. Hibler III (1985), The role of plastic ice interaction in marginal ice zone dynamics, *Journal of Geophysical Research*, 90, 11899-11909.
33. Shen, H. H., W. D. Hibler, III, and M. Lepparanta (1986), On applying granular flow theory to a deforming broken ice field, *Acta Mechanica*, 63, 143-160.
34. Shen, H. H., W. D. Hibler III, and M. Lepparanta (1987), The role of floe collisions in sea ice rheology, *Journal of Geophysical Research*, 92, 7085-7096.
35. Lepparanta, M. and W. D. Hibler III (1987), Mesoscale sea ice deformation in the East Greenland marginal ice zone, *Journal of Geophysical Research*, 92, 7060-7070.
36. Hibler, W. D., III and K. Bryan (1987), A diagnostic ice-ocean model, *Journal of Physical Oceanography*, 17 (7), 987-1015.
37. Flato, G. M. and W. D. Hibler, III (1989), The effect of ice pressure on marginal ice zone dynamics, *IEEE Trans. on Geoscience and Remote Sensing*, 27, 514-521.
38. Lemke, P., Owens, and W. D. Hibler III (1990), A coupled sea-ice mixed layer-pycnocline model for the Weddell Sea, *Journal of Geophysical Research*, 95, 9513-9525.
39. Flato, G. M. and W. D. Hibler, III (1990), A simple sea-ice dynamics model for climate studies, *Annals of Glaciology*, 14, 72-77.
40. Hopkins, M. A., W. D. Hibler III, and G. M. Flato (1991), On the numerical simulation of the sea ice ridging process, *Journal of Geophysical Research*, 96, 4809-4820.
41. Hopkins, M. A. and W. D. Hibler III (1991), On the shear strength of geophysical scale ice rubble, *Cold Regions Technology*, 19, 201-212.
42. Flato, G. M. and W. D. Hibler, III (1991), An initial numerical investigation of the extent of sea ice ridging, *Annals of Glaciology*, 15, 31-36.
43. Ip, C. F., W. D. Hibler III, and G. M. Flato (1991), On the effect of rheology on seasonal sea ice simulations, *Annals of Glaciology*, 15, 17-25.
44. Ranelli, P. H. and W. D. Hibler III (1991), Seasonal arctic sea ice simulations with a prognostic ice-ocean model, *Annals of Glaciology*, 15, 45-53.

45. Reis, J. E. and W. D. Hibler III (1991), Interannual characteristics of an 80km resolution diagnostic arctic ice-ocean model, *Annals of Glaciology*, 15, 155-162.
46. Zhang, J. and W. D. Hibler, III (1991), On the role of ocean circulation on seasonal and interannual ice edge variations in the Bering Sea, *Annals of Glaciology*, 15, 37-44.
47. Hopkins, M. A. and W. D. Hibler III (1991), Numerical simulations of a compact convergent system of ice floes, *Annals of Glaciology*, 15, 26-30.
48. Schulson, E. M. and W. D. Hibler, III (1991), The fracture of ice on scales large and small: arctic leads and wing cracks, *Journal of Glaciology*, 37, 319-322.
49. Tucker, W. D., D. K. Perovich, M. A. Hopkins, and W. D. Hibler III (1991), On the relationship between local stresses and strains in arctic pack ice, *Annals of Glaciology*, 15, 265-270.
50. Flato, G. M. and W. D. Hibler III (1992), On modeling pack ice as a cavitating fluid, *Journal of Physical Oceanography*, 22, 626-651.
51. Houssais, M.-N. and W. D. Hibler III (1993), Importance of convective mixing in seasonal ice margin simulations, *J. Geophys. Res.*, 98, 16427-16448.
52. Hibler, W. D., III and J. Zhang (1995), On the effect of sea-ice dynamics on ocean thermohaline circulation, *Annals of Glaciology*, 21, 361-368.
53. Flato, G. M. and W. D. Hibler III (1995), Ridging and Strength in modeling the thickness distribution of Arctic Sea Ice, *J. Geophys. Res.*, 100, 18611-18626.
54. Zhang, J. and W. D. Hibler III (1997), On an efficient numerical method for modeling sea ice dynamics, *J. Geophys. Research*, 102, 8691-8702.
55. Hibler W.D., III, and E.M. Schulson, 1997: On modeling sea ice fracture and flow in numerical investigations of climate, *Annals of Glaciol.*, 25, 26-32.
56. Lemke, P., W. D. Hibler, III, G. Flato, M. Harder, and M. Kreyscher, 1997, On the improvement of sea-ice models for climate simulations: the Sea Ice Model Intercomparison Project, *Annals of Glaciology*, 25, 183-187.
57. Geiger, C. A., S. F. Ackley, and W. D. Hibler, III, 1997, Year-round pack ice in the Weddell Sea, Antarctica: response and sensitivity to atmospheric and oceanic forcing, *Annals of Glaciol.*, 25, 269-275.
58. Geiger, C.A., W.D. Hibler, III and S.F. Ackley, 1997: Large -scale sea ice drift and deformation: Comparison between models and observations in the Western Weddell Sea during 1992, *J. Geophys. Res.*, 103, 21893-21913.
59. Zhang, J., W.D. Hibler, III, M. Steele, and D.A. Rothrock, 1998, Arctic ice-ocean modeling with and without climate restoring, *J. Phys. Oceanogr.*, 28, 191-217.
60. Hibler, W.D., III, P. Heil and V.I. Lytle, 1998: On simulating high frequency variability in Antarctic sea-ice dynamics models, *Annals of Glaciology*, 27, 443-448.

UAF Publications:

61. Hibler, W.D., III and E. M. Schulson, 2000: On modeling the anisotropic failure and flow of flawed sea ice, *J. Geophys. Res.*, 105(C7), 17105-17119.
62. Hibler, W. D., III (2001), Modeling the formation and evolution of oriented fractures in sea-ice, *Annals of Glaciology*, 33, 157-164.
63. Hibler, W. D., III (2001), Sea ice fracturing on the large scale, *Engineering Fracture Mechanics*, 68, 2013-2043.
64. Heil, Petra and Hibler, W. D., III (2002), Modelling the high-frequency component of Arctic sea-ice drift and deformation, *J. Physical Oceanography*, 32, No. 11, 3039-3057.
65. Kwok, R., G. F. Cunningham and W. D. Hibler, III, 2003: Sub-daily sea ice motion and deformation from RADARSAT observations, *Geophysical Research Letters*, Vol.30, No. 23, 2218, CRY 1, 1-4.

66. Wang, J., R. Kwok, F. J. Saucier, J. Hutchings, M. Ikeda, W. D. Hibler, III, J. Haapala, M. D. Coon, H. E. M. Meier, H. Eicken, N. Tanaka, D. Prentki, and W. Johnson, Working toward improved small-scale sea ice-ocean modeling in the Arctic Seas, (2003): *EOS, Transactions, American Geophysical Union, Vol. 84, No. 34*, 329-330.
67. Schulson, E. M. and W. D. Hibler, III, 2004: Fracture of the winter sea ice cover on the Arctic Ocean, *Comptes Rendus, C. R. Physique* 5, 753-767.
68. Hutchings, J. K., Heil, P. Heil and W. D. Hibler, III, (2005), On Modelling Linear Kinematic Features in Sea Ice, *Monthly Weather Review, Vol. 133*, 3481-3497.
69. Hibler, W. D. III, A. Roberts, P. Heil, A. Proshuntinsky, H. Simmons, and J. Lovick, (2006): Modeling M2 Tidal Variability in Arctic Sea-Ice Drift and Deformation, *Annals of Glaciology, Vol. 44*, 418-428.
70. Hibler, W. D. III, J. Hutchings and C. F. Ip, (2006): Sea-ice arching and multiple flow states of Arctic pack ice, *Annals of Glaciology, Vol. 44*, 339-344.
71. Heil, Petra, J. K. Hutchings, A. P. Worby, M. Johannson, J. Launiainen, C. Haas, W. D. Hibler, III, (2008): Tidal forcing on sea-ice drift and deformation in the western Weddell Sea in early austral summer, 2004, *Deep Sea Research, Part II, Vol. 55*, 943-962.
72. Hibler, W. D. III, E. M. Schulson and R. Kwok, 2008: Sea-Ice linear kinematic features as mathematical characteristics of coulombic faulting with dilatation, 19th IAHR International Symposium on Ice: "Using New Technology to Understand Water-Ice Interaction", Martin Jascek, edl, British Columbia, Canada, July 6-11, Vol. 2, 607-62.
73. Hutchings J. K. and W. D. Hibler III, 2008; Small-scale sea ice deformation in the Beaufort Sea seasonal ice zone, *J. Geophys. Res.*, 113, C08032, doi:10.1029/2006JC003971, 2008
74. Hibler, W. D. III, A. Roberts, P. Heil, H. Simmons, J. Hutchings, A. Proshuntinsky, D. L. Wilkerson, and J. Lovick, (2015): Modeling tidal and inertial variability in sea-ice drift and deformation, *J. Geophys. Res.*, to be submitted.
75. Hibler, W. D. III and S. J. Vavrus, 2012: Pre-Industrial multiple equilibrium sea-ice states due to ice mechanics, *Cold Regions Science and Technology*, Vol. 76-77, 92-108.
76. Heil, Petra, J. K. Hutchings, W. D. Hibler, III and A. Steer, 2011: Sub-synoptic scale spatial variability of sea ice deformation in the western Weddell Sea during early summer, *J. Geophys. Res.*, submitted.

Books, Reports and Articles (Reviewed)

77. Hibler, W. D., III (1980). Sea ice growth, drift, and decay, in *Dynamics of Snow and Ice Masses*, S. Colbeck, Ed., Academic Press: 141-209.
78. Hibler, W. D., III (1984). The role of sea ice dynamics in modeling CO₂ increases, in *Climate Processes and Climate Sensitivity*, Geophysical Monograph 29, (Maurice Ewing, Volume 5), J.E. Hansen and T. Takahoshi, Eds., American Geophysical Union: 238-253.
79. Hibler, W. D., III (1985). Modeling sea ice dynamics, in *Advances in Geophysics*, Issues in Atmospheric and Oceanic Modeling, Part A: Climate Dynamics: 549-578.
80. Hibler, W. D., III (1986). Ice dynamics, in *Geophysics of Sea Ice*, N. Untersteiner, Ed., Plenum Press: New York. 577-640.
81. Hibler, W. D., III, 1988, Modeling sea ice thermodynamics and dynamics, in *Physically-Based Modeling and Simulation of Climate and Climatic Change*, Nato Advanced study institute, Erice, Sicily, N. E. Schlesinger, Ed., Academic Publishers: Kluwar, Norwell, MA, 509-566.
82. Hibler, W. D., III, 1989, Arctic sea-ice dynamics, in *Climatology, Oceanography and Geology of the Arctic Seas*, Y. Hermann, Ed., Van Nostrand, 47-92.

83. Hibler, W. D., III and G. M. Flato (1992). Sea ice modeling, in *Climate Systems Modeling*, p413-436, K.E. Trenberth, Ed., Cambridge University Press.
84. Hibler, W. D., III and J. Zhang (1994). On the effect of ocean circulation on Arctic ice-margin variations, in *Geophysical Monograph 85, The Polar Oceans and Their Role in Shaping the Global Environment*, O.M. Johannessen, R.D. Muench and J.E. Overland, Eds., American Geophysical Union, 383-398.
85. Geiger, C. A., S. F. Ackley, and W. D. Hibler, III, 1998. Sea ice drift and deformation processes in the western Weddell Sea, in *Antarctic Sea Ice: Physical Processes, Interactions and Variability, Antarctic Research Series, Vol. 74*, American Geophysical Union, p141-160.

UAF Publications:

86. Aksenov, Ye. and W. D. Hibler, III, 2001, Failure propagation effects in an anisotropic sea ice dynamics models, in *Scaling Laws in Ice Mechanics and Ice Dynamics*, J. P. Dempsey, H. H. Shen and L. H. Shapiro, Eds., IUTAM conference, University of Alaska at Fairbanks, June, 2000, 363-372.
87. Hutchings, J. K., and W. D. Hibler, III, 2003: Modelling sea ice deformation with a viscous-plastic isotropic rheology, in *Ice in the Environment, Vol. 2* V. Squire and P. Langhorne, eds., 358-366, University of Otago Press, Dunedin, New Zealand, ISBN 1-877139-52-1.
88. Hibler, W. D. III, and J. K. Hutchings, 2003: Multiple equilibrium arctic ice cover states induced by ice mechanics, in *Ice in the Environment, Vol. 3*, V. Squire and P. Langhorne, eds., 114-123, University of Otago Press, Dunedin, New Zealand, ISBN 1-877139-52-1.
89. Heil, P., J. K. Hutchings and W. D. Hibler, III, 2003: Modes of variability of arctic sea-ice motion from 1949 to 2001, in *Ice in the Environment, Vol. 2* V. Squire and P. Langhorne, eds., 367-374, University of Otago Press, Dunedin, New Zealand, ISBN 1-877139-52-1.
90. Hibler, W. D., III, 2003, Modelling the dynamic response of sea ice, in *Mass Balance of the Cryosphere: Observations and Modelling of Contemporary and Future Changes*, J. L. Bamber, A. J. Payne, Eds., Cambridge University Press, ISBN 0521808952, 227-336.

References

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