

# Jennifer Katy Hutchings

FRONTIER, IARC	Born:	17/05/1975
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## Employment

Feb 2001–Present International Arctic Research Center, University of Alaska-Fairbanks

Postdoctoral Research Fellow

Working with Bill Hibler developing sea ice dynamics models which capture Arctic Basin scale deformation features. I gained experience working with Ron Kwok's SAR RGPS data product, and a strong background in modelling sea ice as a viscous-plastic material. Current interests include the use of remote sensed data to determine appropriate yield criteria for sea ice, numerical methods for sea ice modelling, understanding the mechanisms controlling lead opening, closing and ridge formation, field methods for studying mesoscale sea ice deformation, validation of rheological models with in-situ data, non-linear sea ice mechanics and multiple equilibria of Arctic sea ice.

Jan 2000–Feb 2001 Satellite Applications, The Met. Office, UK

Research Scientist

Satellite Radiances Assimilation Group, utilising satellite data in the Met. Office numerical weather prediction model. Particular interests included: designing an empirical microwave emissivity model for sea ice to improve temperature and humidity retrievals in the polar regions; designing cloud detection methods for microwave humidity sounding channels and the use of humidity data in atmospheric modelling. Attended courses in Data Assimilation and Parameterisation of Diabatic Processes. Experience developing Unified Model and NWP Model.

## Field Experience

2003 PI Mesoscale sea ice deformation experiment, ONR ICEX camp

2002 Participant NABOS Joint American–Russian cruise Sea ice observer.

1999 Participant CATS-MIAOW hydrographic/meteorological cruise General Help - hydrography, ADCP

## Education

1993-1999 University College London, London, UK

Ph.D. NERC Fellowship “On modelling the mass of Arctic sea ice”

Experience in numerical modelling and validation of large scale sea ice models, geophysical fluid dynamics and remote sensing of sea ice.

B.Sc. Physics Class 2:1

Courses in Astronomy and Physics including Mathematics, Thermodynamics, Electrodynamics, Quantum Mechanics, Atmospheric Physics, Modern Optics.

Third Year Group Project: Optical Polishing

Through group project developed understanding of leadership, management and team work.

1987-1993 Neston County High School, Neston, Cheshire. UK

Advanced Levels

Physics (B), Mathematics: Pure, Applied and Statistics (A), Chemistry (A).

General Certificates of Education

Dual Science (A,A), Mathematics (B), English Language (B,1), English Literature (B), Geography (A), Modern History (A), Art and Design (A), French (C).

## Computation Skills

7 years scientific programming in the UNIX environment, including shell scripting, working on various software projects: FOAM an object oriented environment for solving systems of partial differential equations with the finite volume method; Observation Processing and Assimilation at the Met. Office; some experience with Ocean Models (MOM). Experience handling large data sets: model output analysis and remote sensing.

Programming: C, FORTRAN (90 & 77), some C++ experience.

Operating Systems: UNIX (Linux, Sun, SGI, HP, T3E), Macintosh.

Software: LaTeX, PV-Wave/IDL, GMT, HTML, Microsoft etc.

## Work Experience

1996 Summer Undergraduate Research Fellowship, Caltech, California, USA.

Supervisor: Dr Victoria Meadows, Jet Propulsion Laboratory, NASA. "Spectral Analysis of the Comet Shoemaker-Levi impact with Jupiter". Experience in atmospheric radiative transfer modelling and experimental design.

Attended a scientific presentation course.

1995 Camp Counsellor, YMCA Camp Mohawk, Connecticut, USA.

Responsible for children's well being and organising various activities. Taught photography, arts & crafts and judo.

1994-1995 Supplementary Instructor.

As a second year undergraduate ran peer assisted learning classes for first year students. Experience directing discussions and assisting students in problem solving, often using brain storming techniques to encourage lateral thinking.

1991-1994 Various Positions as Shop Assistant and Farm Hand

1990 Work Experience.

Royal Institute Industrial Experience pilot scheme. Shadowed a research and development scientist at Capenhurst, BNFL. Presented results as a written report and poster presentation at student conference.

## Interests

Outdoor Activities Interests in ski mountaineering. Ski mountaineering class, Spring 2002. Avalanche safety class, Feb. 2003.

Scuba Diving Open water , certified Aug. 2003. AAUS scientific diver, certified Mar. 2004

Judo Captain University of London Women's Judo Team, 1993-1997. Coached UCL training sessions, London University's women's class and managed UCL Judo Club. Half-colours, University of London.

Film Society UCL 1992-1996, Projectionist. Produced short 16mm film "Doors". Planned and managed project to actively involve inexperienced film makers, from scripting to projection in 48 hours.

Duke of Edinburgh Award Bronze 1990

## Publications

Hutchings, J. K. , P. Heil, W. D. Hibler III. On modelling linear kinematic feature in sea ice. *Monthly Weather Review* submitted [2004]

Hutchings, J. K. , H. Jasak, S. W. Laxon. A Strength Implicit Correction Scheme for the Viscous-Plastic Sea Ice Model. *Ocean Modelling*7: 111-133 [2004]

Polyakov, I. , D. Walsh, I. Dmitrenko, R. L. Colony, J. K. Hutchings, L. Timokhov, M. A. Johnson, E. Carmack. A Long-term circulation and water mass monitoring program for the Arctic Ocean. *EOS*84 (90):1 [2003]

Wang, J., R. Kwok, F.J. Saucier, J.K. Hutchings, M. Ikeda, W.D. Hibler III, J. Haapala, M.D. Coon, H.E.M. Meier, H. Eiken, N. Tanaka, D. Prentki, W. Johnson. Working toward improved small-scale sea ice-ocean modeling in the Arctic Seas. *EOS*84 (34):325-336 [2003]

Heil, P. , J. K. Hutchings, W. D. Hibler III. Modes of Variability of Arctic Sea-Ice Motion from 1949 to 2000. *Proceedings of the 16th IAHR International Symposium on Ice: Ice in the Environment* (Vol. 2), 367-374 [2002]

Hibler, W. D. , J. K. Hutchings. Multiple Equilibrium Arctic Ice Cover States Induced By Ice Mechanics. *Ice in the Environment: Proceedings of the 16th IAHR International Symposium on Ice* (Vol. 3), 114-123 [2003]

Hutchings, J. K. , W. D. Hibler. Modelling Sea Ice Deformation With A Viscous-Plastic Isotropic Rheology. *Ice in the Environment: Proceedings of the 16th IAHR International Symposium on Ice* (Vol. 2), 358-366 [2002]