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CLIMET SYSTEMS

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*Accredited Consulting Meteorologist (ACM) by the Canadian Meteorological & Oceanographic Society
Member of the Canadian Society of Forensic Science*

EDUCATION

- 1994** Ph.D., School of Earth Sciences (Dept. Geography), Macquarie University, Sydney, Australia.
1989 M.A., Department of Geography, University of Colorado at Boulder, CO, U.S.A..
1988 B.Sc. (Hons.), Department of Geography, Trent University, Peterborough, ON, Canada.

Selected Coursework: Climatology, hydrometeorology, hydrology, remote sensing, climate change, snow-ice processes, geomorphology, pedology, statistics, linear algebra.

Involving: Satellite & radar image analysis, weather instrumentation & measurement, snow & river measurement, computer modelling.

General Technical: Understanding of weather data formats and dissemination process, including radar, satellite, instrumentation logistics, station reports, meteorological codes, forecast reporting, lightning strike information, climate databases.

EMPLOYMENT HISTORY

1996–Present Forensic/Consulting Climatologist, Newmarket, Ontario, Canada

- An independent consulting business registered under the name CLIMET SYSTEMS, providing forensic and applied climatology services: Reconstruction of past weather conditions, expert testimony, site investigations & risk management support. **Case work** – involved reconstruction of weather conditions in relation to: motor vehicle accidents (car, truck, snowmobile, motorcycle), slip & falls, structural collapses, pipeline failures, water contamination, radioactive waste storage, aviation accidents, floods, fires, property loss, DUI, suicide, well levels, construction & transportation activities.

1993–1996 Research Scientist, Earth-Observations Laboratory, University of Waterloo

- Analyzing meteorological model output data to discern weather patterns/change.
- Sea ice-atmosphere model development and simulation.
- Observation of sea ice properties for database creation and atmospheric modelling.
- Statistical analysis of clouds and sea ice from satellite imagery.
- Analysis of freeze-up/break-up dates of sea/lake ice related to temperature change.
- Development of atmospheric/snow-ice database for use by scientific, educational, administrative and public communities.

1990–1992 Lab Instructor, Macquarie University, School of Earth Sciences, Australia

- Undergraduate instruction for courses in climatology and natural hazards.

1988–1989 Research Assistant, Cooperative Inst. for Research in Environmental Sciences, USA

- Investigation of weather and sea ice interactions in the Arctic by the simulation of mathematical atmospheric models and the assessment of military satellite imagery.
- Examination of the sensitivity of atmospheric models to inputs of observational data so as to create scenarios of climate change.

1986–1988 Research Assistant, Atmospheric Environment Service, Environment Canada

- Field work and statistical analyses of Canadian snowfall/snowcover data collected by precipitation gauges of various designs, under differing environmental conditions.
- Precipitation observation and recording at Trent University weather station.

REFEREED JOURNAL PUBLICATIONS

- Albedo and depth of melt ponds on sea ice, *International Journal of Climatology*, 1996, 6, 1–22.
- Australian runoff scenarios from a runoff-climate model, *International Journal of Climatology*, 1992, 12, 797–813.
- Component reflectance scheme for DMSP-derived sea ice reflectances in the Arctic Basin, *International Journal of Remote Sensing*, 1992, 13, 647–662.
- Climate model sensitivity to sea ice albedo parameterization, *Theoretical and Applied Climatology*, 1991, 44, 25–36.
- Surface albedo parameterization in sea-ice models, *Progress in Physical Geography*, 1989, 13, 348–366.
- CLOUD: A computer program to calculate the fractional cover and optical depth of high-level, middle-level, low-level and convective cloud, *Computers and Geosciences*, 1989, 15, 1163–1167.
- A one-dimensional Markov chain model for predicting changes in annual snowfall at Peterborough, Ontario, *Canadian Water Resources Journal*, 1987, 12, 53–61.

CONFERENCE PROCEEDINGS

- Climate Change Considerations for the Port Hope Area Initiative (contributor), *EIC Climate Change Technology*, 2006 IEEE, pp. 1–8.
- Determination of Cloud Structure Using Multi-Sensor Remote Sensing Data (contributor), *35th CMOS Congress: Extreme Weather*, May 2001, Winnipeg, MB, pp. 105–106.
- Forensic Climatology: An Overview and Some Applications, *52nd Annual Meeting of the American Academy of Forensic Sciences*, 21–26 February 2000, Reno, NV, USA, Paper D3, p. 115.
- Treatment of Remotely-Sensed Cryospheric Parameters as a Two-Dimensional Markov Process, *17th Canadian Symposium on Remote Sensing, Radar Remote Sensing: A Tool for Real-Time Land Cover Monitoring and GIS Integration*, Saskatoon, Saskatchewan, 13–15 June 1995, vol. 1, pp. 147–152.
- Measurement, Analysis and Parameterization of Melt Pond Albedo, *Proceedings of the ACSYS Conference on the Dynamics of the Arctic Climate System*, 7–10 November, 1994, Göteborg, Sweden, WCRP-94, WMO/TD-760, September 1996, pp. 311–315.

NEWSPAPER / TRADE PERIODICAL / MAGAZINE PUBLICATIONS

- “The Devil’s Music: In the Eye of the Hurricane”, *Books in Canada*, July 2001, vol. 30, Issue 1, p. 35 (Book Review).
- “Weather Evidence is Highly Probative”, *The Lawyers Weekly*, August 18, 2000, vol. 20, no. 14, pp. 21–22.
- “The Weather Factor”, *Montreal Gazette*, June 17, 2000, p. K5 (Book Review).
- “Green with Envy”, *Ottawa Citizen*, April 22, 2000, p. A15 (Op-Ed. Article).
- “Forensic Climatology”, *Without Prejudice*, October 1999, vol. 64, no. 2, pp. 6–13.
- “Cassandras of Climate Change”, *Calgary Herald*, October 23 1999, p. OS6 (Ideas Page).
- “Adjusting for the Weather”, *Canadian Underwriter*, September 1998, vol. 65, no. 9, pp. 30–32.

THESES

- **Doctoral:** *Annual Riverflow and Climatic Change In Australia (1994)* Macquarie University (Australia), 280 pp. + appendices.
- **Masters:** *Climate Model Sensitivity to Sea Ice Albedo Parameterization (1989)* University of Colorado at Boulder (USA), 151 pp.
- **Bachelor’s:** *Climate Model–Snow Albedo Parameterizations: Theory, Comparisons and Spatial Distributions (1988)* Trent University (Canada), 75 pp.

INSTITUTIONAL REPORTS / ARTICLES

- **Feasibility Study of a Snow and Sea/Lake Ice Archive and Distribution Centre for Canadian Scientists**, CRYSYS Project Report, March, 1996, 29 pp. + appendices.
- **Melt Pond Dataset for Use in Sea-Ice and Climate-Related Studies**, 1995, ISTS-EOL-TR95-001, Institute for Space and Terrestrial Science, Earth Observations Laboratory, University of Waterloo, 53 pp.
- Spectral Reflectance of Melt Ponds, **SIMMS 94 Data Report**, ed. K. Misurak, D.G. Barber and E.F. LeDrew, ISTS-EOL-TR94-001, 1994, Institute for Space and Terrestrial Science, Earth Observations Laboratory, University of Waterloo, Sec. 5.3, pp. 5.3-1 to 5.3-6.
- Energy, Carbon Dioxide and Climate (contributor), **Bi-Annual Reports for the Electricity Commission of New South Wales**, Jan-Jun 1990 (pp. 15-22) / Jul-Dec 1990 (pp. 17-21).
- **SI-REFLECTAR: A Satellite-Derived Broadband, Visible and Near-Infrared Sea Ice REFLECTance Database for the ARctic Basin**, Internal report for the National Snow and Ice Data Center, Boulder, CO, USA., May 1989 (updated Oct. 1999), 4 pp.

FIELD EXPEDITIONS

- **May-June 1994** – Resolute Bay, NWT: Measurement and observation of atmospheric conditions and snow/ice properties. Assembly and maintenance of weather towers.
- **May 1987** – Expedition Fjord, Axel Heiberg Is., NWT: Weather, snow, lake ice & glacier research.
- **February 1987** – Lac Laflamme, Québec: Measurement & analysis of snow/lake ice properties.

LECTURES / PRESENTATIONS

- **2000** – **Forensic Climatology: An Overview and Some Applications**. Presented at 52nd Annual Meeting, American Academy of Forensic Sciences, Reno, NV.
- **1996** – **A Snow and Sea/Lake Ice Archive and Distribution Centre for Canadian Scientists**. Delivered to Atmospheric Environment Service, Downsview, ON.
- **1994** – **Albedo of Melt Ponds at the SIMMS Site**. Delivered to Seasonal Sea Ice Monitoring Modelling Workshop, University of Waterloo.
- **1993** – **Sea Ice Processes in Global Climate Models**. Delivered to Seasonal Sea Ice Monitoring & Modelling Workshop, University of Waterloo.
- **1992** – **Climatic Change and Annual Runoff in Australia**. Delivered to the School of Earth Sciences, Macquarie University, Sydney, Australia.
- **1991** – **Land-Surface Storage, CO₂ and Riverflow**. Delivered to Bureau of Meteorology, Sydney, Australia.
- **1990** – **Model Output Statistics (MOS) System and Climatic Change in New South Wales**. Delivered to Electricity Commission of New South Wales, Sydney, Australia.

AWARDS / HONOURS

- **2008** – Paper referee-reviewer for *Journal of Geophysical Research (Atmospheres)*.
- **2002** – Paper referee-reviewer for the journal *Natural Hazards*.
- **1994-97** – Paper referee-reviewer for the *International Journal of Remote Sensing*.
- **1990-92** – Postgraduate Scholarship, Natural Sciences & Engineer. Research Council (Canada).
- **1990-92** – Overseas Postgraduate Research Award, Macquarie University, Australia.
- **1990** – ELCOM Scholarship, Electricity Commission of New South Wales, Australia.
- **1988-89** – Office of Naval Research Funding, University of Colorado at Boulder, USA.
- **1988-89** – National Science Foundation Funding, University of Colorado at Boulder, USA.
- **1988** – Canadian Association of Geographers Undergraduate Student Award.
- **1988** – Dean's Honour List, Trent University, Peterborough, Ontario.

PROFESSIONAL AFFILIATIONS

- **2000–Present** – Canadian Society of Forensic Science (CSFS).
- **1996–Present** – Canadian Meteorological and Oceanographic Society (CMOS).
- **1989** – Canadian Association of Geographers (CAG).
- **1988** – Canadian Water Resources Association (CWRA).

PROJECT PARTICIPANT

- **1995–1996** – Cryospheric Systems Project (CRYSYS), Environment Canada.
- **1993–1996** – Seasonal Sea Ice Monitoring & Modelling Site Project (SIMMS), Univ. of Waterloo.
- **1986–1988** – Precipitation Gauge Intercomparison Study, World Meteorol. Organization (WMO).

MEDIA COVERAGE

- Profiled in **Waves**, a publication of the Institute for Space and Terrestrial Science at York University (Ontario, Canada), July 1995, vol. 7, Issue 4, pp. 1,4.

EXPERT WITNESS LISTINGS

Listed as an expert witness at the following law associations (* indicates external recommendation by attorney is requisite for listing):

CANADA: Ontario Trial Lawyers Association*, Canadian Criminal Lawyers Association*, The Advocate's Society*, Legal Aid Ontario, British Columbia Trial Lawyers Association*, Alberta Civil Trial Lawyer's Association, Saskatchewan Trial Lawyers Association.

USA: Association of Trial Lawyers of America & other law associations at state level.

COURT EXPERIENCE

- **Expert Witness (qualified):** *Billings v. City of Mississauga*. Reconstruction of weather and surface conditions in relation to a slip and fall (civil court, Ontario).
- **Expert Witness (qualified):** *Giuliani v. Region of Halton*. Reconstruction of weather conditions in relation to motor vehicle accident (civil court, Ontario).
- **Expert Witness (qualified):** *Regina v. Ruesch*. Reconstruction of visibility conditions during darkness–moonlight, in relation to fatal motor vehicle accident (criminal court, British Columbia).
- **Expert Witness (qualified):** *Rhonmont Properties v. Airstruc Technology et al.* Reconstruction of wind and atmospheric conditions, including radar image assessment, in relation to structural collapse (civil court, Ontario).
- **Expert Witness (qualified):** *Regina v. Transnorthern Pipelines Inc.* Weather and surface conditions, incl. formation of ice and snow, in relation to pipeline failure (civil court, Ontario).
- **Expert Witness (qualified):** *Regina v. Smallwood*. Reconstruction of weather-road conditions, incl. visibility/snowcover processes, in relation to DUI charge (criminal court, Ontario).

SELECTED PAST CONTRACT WORK

- *Port Hope Area Initiative* (Port Hope, ON) – Development of future climate scenarios in relation to the underground storage of low-level radioactive waste.
- *CEA Technologies Inc.* (Montreal, QC) – Evaluation of quantitative precipitation and temperature forecast translation methods for use in hydrologic models.
- *Enbridge Gas Distribution* (Toronto, ON) – Humidex and wind chill determination in southern Ontario for environmental health and safety purposes.
- *Duke Energy* (Texas, USA) – Acquisition of weather data at international marine ports in relation to cargo losses and damages.
- *Centre for Research in Earth and Space Technology* (Toronto) – **(1)** Rainfall determination from satellite/radar in relation to water contamination at Walkerton; **(2)** Assessment of European Commission provisions on Earth observation data in the insurance industry; **(3)** Evaluation of Lake Ontario's atmospheric conditions in relation to the development of the Toronto Waterfront.