

## CURRICULUM VITA

### Jennifer A. Francis

Institute of Marine and Coastal Sciences, Rutgers University  
71 Dudley Rd., New Brunswick, NJ 08901-8521  
francis@imcs.rutgers.edu

#### Education:

1988-1994

**University of Washington**, Seattle, Washington

Ph.D. in Atmospheric Sciences, August 1994. Dissertation title: *Arctic Process and Climate Studies with the TOVS Satellite Sounder*.

1985-1988

**San Jose State University**, San Jose, Cal.. B.S. in Meteorology, May 1988.

1975-1978

**University of New Hampshire**, Durham, New Hampshire. Zoology major.

#### Employment:

10/1994-

**Institute of Marine and Coastal Sciences**, Rutgers University, New Jersey

7/1995-6/2003

Assistant Research Professor, member of Graduate Program faculty

7/2003-

Associate Research Professor, member of Graduate Program faculty

1/1997-

**Department of Environmental Sciences**, Rutgers University

Full member of Graduate Program, Graduate Program in Atmospheric Sciences since Jan. 2006.

1988-1994

Polar Science Center, Applied Physics Laboratory, University of Washington  
Graduate Research Assistant (Advisor: Dr. Drew Rothrock)

#### Awards:

4/1999

NASA CERES Program: Group Achievement Award

1990-1993

NASA Graduate Student Researchers Program Fellowship

#### Professional

##### Activities:

10/2003-

NSF/Arctic System Science Program science committee and Exec. Comm.

9/2000-2005

NSF/ HIAPER Advisory Council

4/1999-2002

NSF/OFAP Review Panel, Vice Chair in 2000, Chair in 2001

10/1998

NSF/ HIAPER Review Panel

1/2004-1/2005

Program Chair of 2005 AMS Annual Meeting

11/2003-

American Meteorological Society (AMS) Councilor and Exec. Committee

1/1/2007-

AMS Meetings Oversight Committee, Chair

1/1997-1/2003

AMS Committee on Polar Meteor. and Oceanog., Chair (2000-2003)

4/1996-2005

NASA Polar (NSIDC) DAAC Advisory Group

5/1996-2/2004

NASA Langley DAAC Advisory Panel

4/1995-1999

NASA Polar Pathfinder Working Group

1/2007-

AAAS Electorate Nominating Comm., Atmospheric and Hydro. Sciences Sec.

10/2003-

Study of Environmental Arctic Change (SEARCH) Science Steering Comm.

1/2002

DOE Review Panel for Unmanned Aerial Vehicle Program.

4/1996-2001

Guest Investigator on NASA CERES Team

1990-1994

NASA TOVS Pathfinder Evaluation and Implementation Committees

3-4/1992

LeadEx Experiment, participant in airborne measurement component

1986-

Member of AMS, AGU, AAAS, and Asso. Women in Science

**Graduate  
Student  
Advisees**

Ph.D. Students: Yonghua Chen (5/05), Natasa Skific (exp. 2008), Michael Foster (exp. 2008), Jaclyn Trzaska (exp. 2008).

M.S. Students: Linong Yan (10/03), Natasa Skific (11/05), Marc Chiacchio (1/01), David Groves (1/01, U. of WA).

B.S. Honors Advisor: Weihan Chan (5/05)

**Refereed  
Publications**

- Francis, J.A.** and E. Hunter, 2006: New insight into the disappearing Arctic sea ice. *Eos Trans. of AGU*, 87, 509-524.
- Kato, S. N.G.Loeb, P. Minnis, **J.A. Francis**, T.P. Charlock, D.A. Ruan, E.E. Clothiaux, and S. Sun-Mack, 2006: Seasonal and interannual variations of top-of-atmosphere irradiance and cloud cover over polar regions derived from the CERES data set. *Geophys. Res. Lett.*, 33, L19804, doi:10.1029/2006GL026685.
- Serreze, M.C. and **J. Francis**, 2006: The Arctic amplification debate. *Climatic Change*, doi: 10.1007/s10584-005-9017-y.
- Serreze, M.C. and **J. Francis**, 2006: The Arctic on the Fast Track of Change, *Weather*, 61, 65-69.
- Chen, Y., F. Aires, **J.A. Francis**, J.R. Miller, 2006: Observed relationships between Arctic longwave cloud forcing and cloud parameters using a neural network. *J. Clim.*, 19, 4087-4104.
- Liu, Y., J.R. Key, A.J. Schweiger, and **J.A. Francis**, 2006: Characteristics of satellite-derived clear-sky atmospheric temperature inversion strength in the Arctic, 1980-1996. *J. Clim.*, 19, 4902-4913.
- Francis, J.A.**, E. Hunter, and C.-Z. Zou, 2005: Arctic tropospheric winds derived from TOVS satellite retrievals. *J. Clim.*, 18, 2270-2285.
- Overpeck, J.T., M. Stur, **J.A. Francis**, D.K. Perovich, M.C Serreze, and 16 others, 2005: Arctic system on trajectory to new, seasonally ice-free state. *Eos Trans.*, 86.
- Francis, J.A.**, E. Hunter, J. Key, and X. Wang, 2005: Clues to variability in Arctic minimum sea ice extent. *Geophys. Res. Lett.*, 32, L21501, doi:10.1029/2005GL024376.
- Chen, Y., J. R. Miller, **J.A. Francis**, G.G. Russell, and F. Aires, 2003: Observed and modeled relationships among Arctic climate variables. *J. Geophys. Res.*, 108(D24), 4799, doi:10.1029/2003JD003824.
- Francis, J.A.**, 2002: Validation of reanalysis upper-level winds in the Arctic with independent rawinsonde data, *Geophys. Res. Lett.*, 29, 10.1029/2001GL014578.
- Groves, D.G. and **J.A. Francis**, 2002: The moisture budget of the Arctic atmosphere from TOVS satellite data, *J. Geophys. Res.*, D19, 4391, doi:10.1029/2001JD001191.
- Groves, D.G. and **J.A. Francis**, 2002: Variability of the Arctic Atmospheric Moisture Budget from TOVS Satellite Data, *J. Geophys. Res.*, D24, 4785, doi:10.1029/2002JD002285.
- Chen, Y., **J.A. Francis**, and J. R. Miller, 2002: Surface temperature of the Arctic: comparison of TOVS satellite retrievals with surface observations, *J. Clim.*, 15, 3698-3708.
- Chiacchio, M. and **J. Francis**, 2002: Evaluation of methods to estimate the surface downwelling longwave flux during Arctic winter, *J. Appl. Meteor.*, 41, 306-318.
- Schweiger, A.J., R.W. Lindsay, **J.A. Francis**, J. Key, J. Intrieri, and M. Shupe, 2002: Validation of TOVS Path-P data during SHEBA. *J. Geophys. Res.*, 107(C10), 8041, 10.1029/2000JC000453.
- Francis, J.A.** and A.J. Schweiger, 2000: A new window opens on the Arctic, *Eos Trans.*, AGU, 81, 77-78.

**Refereed  
Publications  
(cont.)**

- Scott, N.A., A. Chedin, R. Armante, **J. Francis**, C. Stubenrauch, J.-P. Chaboureau, F. Chevallier, C. Claud, and F. Cheruy, 1999: Characteristics of the TOVS Pathfinder Path-B dataset. *Bulletin of the Am. Meteor. Soc.*, *80*, 2679-2701.
- Schweiger, A.J., R.W. Lindsay, J.R. Key, and **J.A. Francis**, 1999: Arctic clouds in multiyear satellite data sets. *Geophys. Res. Lett.*, *26*, 1845-1848.
- Francis, J.A.**, 1997: A method to derive downwelling longwave fluxes at the Arctic surface from TOVS data, *J. Geophys. Res.*, *102*, 1795-1806.
- Lindsay, R.W, **J.A. Francis**, P.O.G. Persson, D.A. Rothrock, and A.J. Schweiger, 1997: Surface turbulent fluxes over pack ice inferred from TOVS observations, *Ann. Geophys.*, *25*, 393-399.
- Francis, J.A.**, 1994: Improvements to TOVS retrievals over sea ice and applications to estimating Arctic energy fluxes, *J. Geophys. Res.*, *99*, 10,395-10,408.
- Francis, J.A.**, T.P. Ackerman, K.B. Katsaros, R.J. Lind, and K.L. Davidson, 1991: A comparison of radiation budgets in the Fram Strait Summer marginal ice zone. *J. of Climate*, *4*, 218-235.

**Invited  
Presentations  
and Seminars**

- Francis, J.A.** and E. Hunter, 2006: Invited presentation: Changes in the fabric of the Arctic's greenhouse blanket. AAAS conference on "The State of the Arctic," October 2-4, Fairbanks, AK.
- Francis, J.A.** and E. Hunter, 2006: *Invited presentation*: Satellite-derived clues to the disappearance of Arctic perennial sea ice. 14th AMS Conference on Satellite Meteorology and Oceanography, Atlanta, GA.
- Francis, J.A.**, 2005: *Invited presentation*: Data fusion meets Arctic change: Teachings from wise elder sensors. NASA Terra Data Fusion Workshop, Williamsburg, VA.
- Francis, J.A.**, E. Hunter, J.R. Key, and X. Wang, 2005: *Invited Presentation*: Attribution of variability in Arctic minimum sea ice extent. Annual meeting of the American Meteorological Society, 11-14 Jan. 2005, San Diego, CA.
- Francis, J.A.**, 2004: *Invited Presentation*, Two decades of Arctic Change: A perspective from space, IGARSS 2004, Anchorage, AK.
- Francis, J.A.**, 2003: 20 Years of Downwelling Longwave Fluxes at the Arctic Surface from TOVS Satellite Data (Invited). Atmospheric Radiation Measurement Program Science Team Meeting, 1-3 April 2003, Broomfield, CO.
- Francis, J.A.**, 2002: *Invited Presentation*, Observations of the Arctic Atmosphere for Assimilation by and Validation of Models: New Data Sets, New Problems, and New Solutions. Workshop on Sea Ice Data Assimilation Annapolis, MD, 23-24 July 2002.
- Francis, J.A.**, 1997 (invited): Radiation and the Polar Climate: Are Clouds the Key? Conference on Polar Processes and Global Climate, Arctic Climate System Study Programme, Orcas Island, Washington, 3-6 November, 1997.
- Francis, J.A.**, 1996 (invited): What's Hot in Polar Remote Sensing. International Radiation Symposium, Fairbanks, Alaska, August 19-24, 1996.
- Francis, J.A.**, 1999 (invited): Polar clouds: Now you see them, now you don't. IUGG General Assembly, 18-30 July 1999, Birmingham, U.K.

**Invited  
Presentations  
and Seminars  
(cont.)**

Seminar, Rutgers University, IMCS, Arctic Ice: Here today, gone tomorrow? July 2006.  
Seminar, Pennsylvania State University, Dept. of Meteorology, Space-based clues to the disappearance of Arctic perennial sea ice, February 2006.  
Seminar, University of Nebraska, Dept. of Meteorology, Clues to the disappearance of Arctic perennial sea ice, November 2005.  
Seminar, Rutgers University, Institute of Marine and Coastal Sciences, Is the Arctic going where no climate has gone before? 2004.  
Seminar, University of Delaware, Two decades of Arctic Change: A perspective from space, 2004.  
Seminar, NASA Goddard Institute for Space Sciences, Arctic Change Observed from Satellite Sounders, 2004.

**Major  
Conference  
Presentations**

**Francis, J.A.**, E. Hunter, and J. Secora, 2004: Clues to sea ice change from satellite-derived atmospheric parameters. Poster. Annual meeting of Arctic Research Consortium of the U. S., 13-14 May 2004, Washington, DC.  
**Francis, J.A.**, 2004: Arctic change observed by satellite sounders. Central Arctic: Battleground of Natural and Man-made Climate Forcing, 7-9 Jan. 2004, LDEO, Palisades, NY.  
**Francis, J.A.**, J. Miller, W. Chan, Y. Chen, and D. Groves, 2004: Pieces of the Arctic freshwater puzzle: Clues from space, the surface and a GCM. Poster. NSF Science Team meeting for the Freshwater Initiative, 4-7 May, 2004, Woods Hole, MA.  
**Francis, J.A.** and J. Secora, 2004: A 22-year data set of downwelling longwave flux at the Arctic surface from TOVS satellite data. DOE/ Atmospheric Radiation Measurement Science Team Meeting, 19-23 April 2004, Albuquerque NM.  
**Francis, J.A.**, 2003: New satellite observations of recent change in the Arctic Climate. SEARCH Open Science Meeting, 27-30 October 2003, Seattle, Washington.  
**Francis, J.A.**, A. Schweiger, and J. Key, 2003: A 20-Year Data Set of Downwelling Longwave Flux at the Arctic Surface from TOVS Satellite Data. *7th Conference on Polar Meteorology and Oceanography*, Am. Meteor. Soc., 12-16 May 2003, Hyannis, MA.  
**Francis, J.A.** and E. Hunter, 2003: Arctic Upper-Level Winds from Reanalyses and TOVS Satellite Retrievals. *7th Conference on Polar Meteorology and Oceanography*, Am. Meteor. Soc., 12-16 May 2003, Hyannis, MA.  
Groves, D. and **J. A. Francis**, 2003: Variability of the Arctic Atmospheric Moisture Budget Derived from TOVS Satellite Data. *7th Conference on Polar Meteorology and Oceanography*, Am. Meteor. Soc., 12-16 May 2003, Hyannis, MA.  
Chen, Y., **J. A. Francis**, J. R. Miller, and G. L. Russell, 2003: Observed and Modeled Relationships Among Arctic Climate Variables. *7th Conference on Polar Meteorology and Oceanography*, Am. Meteor. Soc., 12-16 May 2003, Hyannis, MA.  
Wang, S.-H., **J. A. Francis**, and D. H. Bromwich, 2003: Evaluation of the NCEP/NCAR and ECMWF 15-year Reanalyses over the Data Sparse Arctic Ocean. *7th Conference on Polar Meteorology and Oceanography*, Am. Meteor. Soc., 12-16 May 2003, Hyannis, MA.

**Major  
Conference  
Presentations  
(cont.)**

Yan, L. and **J. A. Francis**, 2003: Cloud Properties in the Winter Arctic from MODIS Data. *7th Conference on Polar Meteorology and Oceanography*, Am. Meteor. Soc., 12-16 May 2003, Hyannis, MA.

Chen, Y., **J.A. Francis**, and J.R. Miller, 2002: Surface temperature of the Arctic: comparison of TOVS satellite retrievals with surface observations, *Workshop on Measurements and Modeling of Arctic Ocean Circulation*, Lamont-Doherty Earth Obs., NY, 17-20 June 2002.

**Francis, J.A.**, Y. Chen, D. Groves, A. Schweiger, E. Hunter, R. Cermak, 2001: Arctic climate parameters and changes observed with 20 years of satellite retrievals. *NSF Ocean-Atmosphere\_Ice-Interactions All-Hands Meeting*, Salt Lake City, UT, 14-16 Nov. 2001.

Chen, Y., J. Miller, and **J.A. Francis**, 2001: Arctic surface temperature: A comparison among satellite retrievals and conventional observations. *6th Conference on Polar Meteorology and Oceanography*, Am. Meteor. Soc., 14-18 May 2001, San Diego, CA.

**Research  
Grants**

P.I.: NSF, Collaborative Research: Roles of Clouds and Their Accomplices in Modulating the Trajectory of the Arctic System, 1/07-12/09, \$205,170.

Co.I.: NSF, Collaborative Research: Improving remotely sensed surface fluxes over sea ice, 1/07 - 12/09, \$154,616.

P.I.: NSF, Roles of Moist Static Energy Transport in the Changing Arctic System, 7/05 - 6/08, \$256,769.

Co.I.: NASA: Improving Arctic Energy Budget Estimates by Combining New EOS-Era Products from Multiple Satellite Sensors, 4/15/04-4/14/07, \$248,342, P.I. Dr. Eugene Clothiaux, Pennsylvania State University.

Co.I.: Polar Winds from Satellite Imagers and Sounders, NASA, 4/1/04 - 3/31/07, \$175,925, P.I. Dr. Jeffrey Key, NOAA/NESDIS.

P.I.: Interactions among Observations of Lateral Advection, Cloud, and Surface Properties in the Arctic, NSF, 6/03 - 5/07, \$288,567.

P.I.: Correction of Systematic Errors in TOVS Radiances, NOAA/U. of AK, 8/03 - 7/06, \$160,030.

Co.I.: NASA, An Improved GCM Simulation of the Arctic Hydrologic Cycle using Satellite-Derived Products, 2/02-12/06, \$278,463.

P.I.: NOAA/U. of AK, Interactions of Laterally Advected Heat and Moisture with Arctic Cloud Properties. 7/01 - 3/04, \$142,755.

P.I.: A Polar-Specific 20-year Data Set of Cloud Fraction and Height Derived from Satellite Radiances, NASA, 4/1/01 to 10/31/05, \$154,335.

P.I.: DOE/ARM, A 20-Year Data Set of Surface Longwave Fluxes in the Arctic, 11/01-10/03, \$142,417.

P.I.: NSF, Evaluation of a New Method to Retrieve Horizontal Heat and Moisture Transport from Satellite Sounder Products in the Arctic. 2/01 - 1/02, \$80,443.

**Grants (cont)**

Co.I.: NASA: Variability of Net Precipitation over Antarctic Sea Ice and its Effects on Ice-Ocean Interactions. P.I.: Dr. Axel Schweiger. 1/99 - 12/02, \$72,405.

P.I.: NASA, Retrieval of Nighttime Polar Cloud Parameters, 6/00 - 6/02, \$68,099.

P.I.: NASA Pathfinder, Generation of an 18-year TOVS Pathfinder Data Set for the Arctic Basin, with subcontract to University of Washington. 7/95 - 9/99

P.I.: NASA/EOS CERES Instrument Team, Evaluation and Development of Nighttime Cloud Base Algorithms for CERES, support for Master's student Marc Chiacchio in Meteorology, 3/97 - 8/99.

Co.I.: NASA MTPE, Polar Exchange at the Sea Surface. P.I. Dr. Drew Rothrock, University of Washington. 1990 - 5/2000.