

MATTHEW D. CROSS

EDUCATION

Doctorate (In Progress), Civil Engineering, Specializing in Remote Sensing and GIS
University of Colorado Denver (anticipated graduation December 2017)

Master of Arts, Climatology, Anthropology Minor, Remote Sensing Specialization
University of Nebraska, Lincoln (1988)

Bachelor of Science, Meteorology/Climatology
University of Nebraska, Lincoln (1985)

PROFESSIONAL EXPERIENCE

University of Colorado Denver, Denver, CO **2015 - Present**

Faculty, Instructor, Department of Geography and Environmental Sciences

Teach graduate, upper division and introductory courses to both undergraduate majors and graduates. Primary teaching focus is on Geographic Information Systems and Remote Sensing.

- Successfully teach in a culturally diverse undergraduate and graduate program
- Teach upper division undergraduate and graduate courses in Introductory and Advanced Remote Sensing, Geographic Information Systems, Human-Climate Interactions, and Physical Geography
- Develop and update curriculum for each class as appropriate
- Manage the GIS Certificate Program within the Department of Geography

University of Colorado Denver, Denver, CO **2010 - 2015**

Faculty, Adjunct Instructor, Department of Geography and Environmental Sciences

Taught upper division and graduate courses in Remote Sensing to both undergraduate majors and graduates. Primary teaching focus was on satellite remote sensing systems and their application to environmental studies.

- Successfully taught in a culturally diverse undergraduate and graduate program
- Developed and updated curriculum for each class as appropriate
- A variety of sensor types were explored in class for research projects and analysis, including commercial imagery systems (IKONOS, Quickbird, WorldView) government imagery systems (Landsat , MODIS) and imagery from aerial platform systems (Photography, LiDAR, IFSAR)

Metropolitan State University of Denver, Denver, CO **2009 - 2015**

Faculty, Instructor of Meteorology, Department of Earth and Atmospheric Sciences

Taught both upper and lower division courses to undergraduate majors and minors. Primary teaching focus was on satellite and radar systems, physical meteorology, and geography.

- Successfully taught in a culturally diverse undergraduate program

- Taught undergraduate courses in Atmospheric Science, Radar and Satellite Meteorology, Physical Meteorology, Remote Sensing, Geographic Information Systems, Physical Geography and Map Use
- Developed and updated curriculum for each class as appropriate

Michael Baker Corporation, Lakewood, CO

2007 - 2009

Business Development Manager, Geospatial Information Technology

Promoted Baker Enterprise Geographical Information Systems (GIS) services in federal (USACE, USGS, etc.), state and local government agency markets.

- Spearheaded and won a USGS contract for data integration development for the National Map
- Petitioned members of Congress to support industry-wide mapping initiatives in the US
- Developed and implemented a marketing and business development plan for initiatives in Texas
- Positioned Baker on a multi-million dollar IDIQ contract with the US Navy
- Coordinated customer support through the entire project lifecycle, including client training

Intermap Technologies Incorporated, Englewood, CO

2001 - 2007

Business Development Manager for Defense, Civil Government, and Private Industry

Led business development efforts for high accuracy digital mapping products from airborne and satellite platforms. Focused on improving data modeling for engineering and infrastructure planning, land use, and environmental studies in federal (military and civilian), state, and county governments.

- Conceived and spearheaded a major business development and marketing program in the US
- Exceeded team business development and revenue goal by more than 2 million in 2006
- Worked directly with federal military agencies (NGA, Army, USACE, etc.) and civilian agencies (USGS, NASA, NSF, etc.) to fulfill domestic and international mapping needs
- Implemented a multi-million dollar DoD contract for mapping remote areas in foreign countries
- Successfully managed the NASA Science Data Purchase Program contract
- Developed and taught workshops and seminars on remote sensing, radar imagery, and mapping to promote Intermap Technologies in new markets
- Served as Facility Security Officer directing the security elements regarding DoD projects
- Served as expert consultant regarding climate and meteorological impacts on data collection
- Proposal Manager for a \$5 million US Military geospatial contract

Digital Globe (formerly EarthWatch Incorporated), Longmont, CO

1999 - 2000

Technical Representative

Technical expert for remotely sensed imagery applications. Assisted in developing client requirements for revenue opportunities. Collaborated with foreign and domestic customers on applications of remote sensing imagery to maximize data driven decisions.

- Led technical business development for approximately \$200 million in projects, both US and International (NGA, NASA, USGS, US Military, Foreign Governments)
- Headed technical business development effort with the Government of Colombia (valued at \$10 million) and collaborated directly with the client on project parameters to ensure objectives were achieved
- Spearheaded a program to improve satellite data by correcting for atmospheric conditions
- Created the EarthWatch Demonstration Facility for outreach and teaching of imagery applications
- Created the business and marketing plan for the EarthWatch web-based E-commerce site

University of Colorado Boulder, Boulder, CO

1993 - 1999

Manager/Associate Scientist III

Managed a staff of scientists, writers and programmers at the National Snow and Ice Data Center, Cooperative Institute for Research in Environmental Sciences, to support Arctic climate change research. Worked directly with NOAA, NSF, NCAR, NGDC and EPA, as well as with foreign environmental research agencies to promote interdisciplinary data sharing and research collaboration.

- Managed numerous teams of up to 15 employees for integrated project work
- Successfully won a \$2 million National Science Foundation contract to create a scientific data center for managing interdisciplinary data acquired through an Arctic research program
- Developed the web site for the NSF-funded scientific data coordination center

Hughes STX Corporation, USGS EROS Data Center, Sioux Falls, SD

1988 - 1993

Scientist

Developed techniques for the direct application of remotely sensed imagery for solving environmental problems. Interfaced directly with USGS offices, UNEP representatives, and USAID to maintain and enhance projects in developing countries.

- Aided international governments and organizations in identifying environmental resources for ecology, resource management, and agriculture by utilizing remotely sensed data
- Developed new climatic data products for enhancing marginal North African agricultural production by integrating remotely sensed data into GIS analysis tools

University of Nebraska, Lincoln, NE

1986 - 1988

Remote Sensing Specialist, Conservation and Survey Division (1989)

- Created and taught workshops in remote sensing at the Center for Advanced Land Management Information Technologies (CALMIT)
- Created appropriate curriculum, mentored students as needed, developed public speaking skills

Research and Teaching Assistant, Department of Geography (1986-1988)

- Investigated storm tracks across U.S. using satellite-borne passive radiometer data to enhance storm forecasting processes
- Taught undergraduate labs in physical geography, meteorology, and cartography

PUBLICATIONS

Cross, M.D. "The NEXTMap Program: Contiguous Countrywide IFSAR Datasets for Maximizing Data Integration and Feature Extraction." *Proceedings 30th International Symposium on Remote Sensing of Environment: Information for Risk Management and Sustainable Development*, (2003): pp 624-627.

McGinnis, D.L., M.D. Cross, and M.W. Wolf. "The ARCSS Data Coordination Center at NSIDC: A Catalyst for Integration. Toward an Arctic System Synthesis: Results and Recommendations." *The Arctic Research Consortium of the United States (ARCUS)*, (1998); pp 92.

McGinnis, D.L., M.D. Cross. "Arctic Modeling Data Resources: The Data Archives at the ARCSS Data Coordination Center and the National Snow and Ice Data Center, U.S.A." *Annals of Glaciology*, Vol 25, (1997); 292-295.

Cross, M.D. "Historical Landsat Data Comparisons: Illustrations of Land Surface Change." *US Department of the Interior, US Geological Survey, EROS Data Center.* (1993): 37 pp.

Falconer, A., M.D. Cross, and D.G. Orr. "Procedures For Woody Vegetation Surveys in the Kazgail Rural Council Area, Kordofan, Sudan." *Geocarto International.* Vol. 5 (1990): pp. 49-58.

SCIENTIFIC JOURNAL REVIEWS

May 2015. "Energy planning tools and CityGML-based 3D virtual city models. Experiences from Trento (Italy)." *Applied Geomatics*, Manuscript No. AGMJ-D-14-00042

May 2015. "Land Suitability Analysis for Wheat and Sorghum Crops in Wogdie District, South Wollo, Ethiopia Using Geospatial Tools." *Applied Geomatics*, Manuscript No. AGMJ-D-14-00046

May 2014. "Estimation of Nitrogen Dioxide Concentrations in the Inner Bangkok Using Land Use Regression Model and GIS." *Applied Geomatics*, Manuscript No. AGMJ-D-14-00011

May 2014. "Comparative analysis of satellite stereo images methods and traditional techniques for environmental risk monitoring." *Applied Geomatics*, Manuscript No. AGMJ-D-13-00028

UNIVERSITY TEACHING EXPERIENCE

University of Colorado Denver (2010 – Present)

Department of Geography and Environmental Sciences

GEOG 1202: Introduction to Physical Geography

GEOG 2080: Mapping and Map Analysis

GEOG 4020/5020: Earth Environments and Human Impacts

GEOG 4060/5060: Remote Sensing I.

GEOG 4070/5070: Remote Sensing II.

GEOG 4080/5080: Introduction to Geographic Information Systems.

GEOG 6700: Integrated Methods

Metropolitan State University of Denver (2009 – 2015)

Department of Earth and Atmospheric Sciences

GEG 1100: Introduction to Physical Geography.

GEG 1220: Map Use

GEG 190B: Introduction to Geospatial Methods

GIS 4840: Remote Sensing

MTR 1400: Weather and Climate

MTR 2400: Introduction to Atmospheric Science

MTR 3420: Radar and Satellite Meteorology

MTR 3440: Physical Meteorology

Naval Post Graduate School, Monterey CA (2005, 2006)

The Center for Defense and Homeland Security

Guest Instructor, Remote Sensing and Situational Awareness.

American River University, Sacramento, CA (2005)

Guest Lecturer, GIS and Remote Sensing.

CURRENT RESEARCH

PhD Dissertation

University of Colorado Denver, Department of Civil Engineering

Topic: Improved Understanding of the Carbon Cycle through Accurate Above-Ground Biomass Measurements of Central American Forests

Doctoral Committee: Dr. Rafael Moreno (Chair), Dr. Wesley Marshall (Advisor), Dr. Jacek Grodecki, Dr. Ted Scambos, Dr. Austin Troy

PRESENTATIONS AT MEETINGS AND SEMINARS

AAG Annual Meeting, March 29 - April 2, 2016, San Francisco, CA

Principal Author: Matthew Cross, University of Colorado Denver

Co-Author: Dr. Ted Scambos, University of Colorado Boulder

Title: Employing High Resolution Satellite Imagery in Delineating Forest Types in a Complex Tropical Forest Setting

SPAR 2014 International Conference, April 14 – 7, 2014, Colorado Springs, CO

Principal Author: Matthew Cross, University of Colorado Denver

Co-Author: Dr. Apostol Panayotov, University of Colorado Denver

Title: HDS Point Cloud Data in a GIS Environment: Two real-world examples of the modification of HDS data for GIS Applications

GRANTS AND CONTRACTS

Arctic System Science Data Coordination Center at NSIDC (Nov. 1997 – Dec. 2004)

Funding Source: NSF, Division of Polar Programs

Project Number: 9726988

Amount: \$1,956,787

Principal Investigator: Matthew Cross

Co-Investigators: Richard Armstrong, Roger Barry, Barbara Battenfield, Clare Hanson, Michelle Holm, Rudolph Dichtl

Summary: This funding is for continued support of the Arctic System Science (ARCSS) Data Coordination Center at the National Snow and Ice Data Center. Data collected by ARCSS researchers studying all aspects of global change in the Arctic are accumulated in a central data storage facility for dissemination to other ARCSS researchers and, after 1-2 years, are made available to the entire scientific community. The ARCSS Center works closely with individual and coordinated groups of researchers to facilitate transfer data into the archive and to tailor data products relevant to researcher needs. The Data Center is an important component in the integration of multidisciplinary research efforts to study the complex interactions and feedbacks of global climate with the Arctic system.

Arctic System Science Data Coordination Center at NSIDC (Sept. 1994 – Aug. 1998)

Funding Source: NSF, Division of Polar Programs

Project Number: 9321416

Amount: \$525,298

Principal Investigator: Clare Hanson

Co-Investigators: Matthew Cross, David McGinnis, Richard Armstrong, Roger Barry, Jeffrey Key

Summary: The National Snow and Ice Data Center (NSIDC) proposes an ARCSS (Arctic System Science) Data Coordination Center at NSIDC to integrate management of data for LAII, OAI, GISP2, PALE, and the emerging Arctic Archaeology component. In this three-year view, NSIDC envisions a distributed set of ARCSS data archives with data sets held in appropriate centers (including NSIDC), linked by NSIDC's "front end" coordination to ensure that ARCSS-funded researchers can easily obtain required data, and to guarantee archival of data they collect during ARCSS. Tailored data products, on CD-ROM, diskette, and via electronic file transfer will be delivered to ARCSS investigators. NSIDC will work with the ARCSS Data Management Working Group, ARCSS Modeling Working Group, and ARCSS Science Steering Committees to identify data priorities for ARCSS- funded research.

PROGRAMMING AND SOFTWARE

Programming Languages

MATLAB

Python

Software Skill-Set

ENVI 5.2

eCognition

ERDAS

ArcGIS 10.2

Microsoft Office

SPSS, Vers. 23

RECOGNITIONS AND HONORS

Civil Engineering Faculty Scholarship (2015-2016 academic year)

ASPRS National Ta Liang Memorial Award (2015)

Civil Engineering Faculty Scholarship (2014-2015 academic year)

ASPRS Rocky Mountain Region Scholarship (Fall 2014)

ARCS National Scholarship (2013-2014 academic year)

Civil Engineering Faculty Scholarship (2013-2014 academic year)

ASPRS National William A. Fischer Memorial Scholarship (2013)

Civil Engineering Faculty Scholarship (Spring 2013)

Tau Beta Pi, Colorado Epsilon Chapter, Denver, CO (2013)

PROFESSIONAL ORGANIZATIONS

American Society for Photogrammetry and Remote Sensing (ASPRS) (2004 – present)

American Council of Engineering Companies (ACEC) of Colorado (2008 to present)

Society of American Military Engineers (SAME) (2009 to present)

LEADERSHIP AND ADDITIONAL INFORMATION

Tau Beta Pi, Colorado Epsilon Chapter, Denver, CO (2014 – 2015)

Board Member.

American Society for Photogrammetry and Remote Sensing (ASPRS) (2007 – 2011)

Rocky Mountain Region (RMR) Board Member.

ISO 9000 Internal Auditor (2000)

Perry Johnson, Inc.

US Secret Clearance (Inactive)