

## **Professional Background**

*James D. Miller, Jr.*

### **EMPLOYMENT HISTORY**

#### **7/06-present Precambrian Research Center, U of MN Duluth**

Position: Co-director

Duties: oversee educational, research, and business operations of the Precambrian Research Center

#### **7/83-present Minnesota Geological Survey, U of MN**

Positions: Senior Scientist (6/90-present)

Scientist (7/85 - 6/90)

Research Assistant (7/83 - 7/85)

Duties: develop, supervise, and report on bedrock geologic mapping and related petrologic and metallogenic studies of Precambrian terranes in northern Minnesota, especially the geology of the Midcontinent Rift. Perform outreach activities to educate the public about Minnesota geology.

#### **6/79 to 8/82 Phillips Petroleum Company**

Position: Geologic Assistant

Duties: conduct reconnaissance geologic and geochemical surveys of Precambrian terranes of northern Wisconsin, Upper Michigan, and central Minnesota as part of a uranium exploration program (6/79-5/81) and mineral exploration for precious and base metal deposits in central Alaska (6/82-8/82).

### **EDUCATION**

**Undergraduate** 1973-75 - Illinois Institute of Technology (Chicago)

Major: Mechanical Engineering

1975-77 - University of Illinois - Urbana

Major: Geology

**B.S. degree** received Dec. 1977

**Graduate** 1978-86 - University of Minnesota – Twin Cities

Major: Petrology and Mineralogy

Secondary fields: Structural geology, Economic geology

Advisor: Paul W. Weiblen

Dissertation: *The geology and petrology of anorthositic rocks of the Duluth Complex, Snowbank Lake quadrangle, northeastern Minnesota* (525 p.)

**Ph.D. degree** received May 1986

## **RESEARCH INTERESTS**

- Bedrock geologic mapping of Precambrian rocks associated with the Midcontinent Rift in northeastern Minnesota
- Petrologic and metallogenic studies of mafic layered intrusions of the Duluth Complex

## **MEMBERSHIP IN PROFESSIONAL SOCIETIES**

**1979-Present** Member - Institute on Lake Superior Geology

**1985- Present** Professional Member - Geological Society of America

## **PROFESSIONAL SERVICE**

- 2006-2007** Organizing Committee Member/Field Trip Coordinator – 53rd Institute on Lake Superior Geology, Lutsen, MN, May, 2007
- 2004-2005** Organizing Committee Member/Field Trip Coordinator – 39th North-central Sectional Meeting of the Geological Society of America, Minneapolis, MN, April, 2005; coordinated 12 field trips run in conjunction with annual mtg
- 2000-present** Adjunct Professor, Graduate Advisor, Department of Geological Sciences, U of MN – Duluth
- 2000-2002** Organizing Committee Member – 9<sup>th</sup> International Platinum Symposium, Billings, Montana, July 2002; organized 6-day field trip on Pt potential of the western Lake Superior region.
- 1997-1998** Cochair - 44th Institute on Lake Superior Geology (ILSG) held in Minneapolis, MN, May, 1998
- 1997-present** Adjunct Professor - Department of Geology and Geophysics, U of MN – Twin Cities
- 1997-2001** Board Member – Institute on Lake Superior Geology
- 1995** Cochair of UNESCO-sponsored International Geologic Correlation Program (IGCP) Project 336; organized a two-day symposium held August, 1995 in Duluth on the topic of mineral deposits associated intracontinental rift systems; coordinated three field trips in the western Lake Superior area

## **COURSES TAUGHT**

- Fall 97 – 99 GEO1044 Physical and Historical Geology of Minnesota, U-MN Twin Cities
- Spr 97 GEO 3804 Igneous and Metamorphic Petrology (Lab only), U-MN Twin Cities
- Fall 01 GEOL 2311 Mineralogy and Petrology, U-MN Duluth
- Spr & Fall 04 GEO 1901 Freshman Seminar- Geology of Minnesota, U-MN Twin Cities
- Spr 04 - 07 GEOL 4110 Adv. Earth Science for Teachers, U-MN Duluth
- Fall 06 GEOL 3211 (Mineralogy), U-MN Duluth
- Spr 07 GEOL 1045 Freshman Seminar – Geologic History of MN, U-MN Duluth
- Spr 03 & 07 GEOL 5100 Graduate Seminar – Geology and Mineral Deposits of the Duluth Complex, U-MN Duluth

## **MS THESES SUPERVISED**

**Greg Joslin** (completed April 2004) – Stratiform palladium-platinum-gold mineralization in the Sonju Lake Intrusion, Lake County, Minnesota

**Joy Turnbull** (in progress) – Geology and petrology of the Wilder Lake intrusion, Lake County, Minnesota

**Paul Albers** (completed September 2006) – The geology and petrology of the Leveaux Porphyritic Diorite Intrusion: Investigating possible magmatic relationships to the Anorthositic Series of the Duluth Complex, Cook County, Minnesota

**Chris White** (in progress) – Petrology and Cu-Ni-PGE mineralization of the northern South Kawishiwi intrusion of the Duluth Complex, northeastern Minnesota (tentative)

**Brian Goldner** (in progress) – Petrology and mineralization of the Tamarack Intrusion, Carlton and Itasca Counties, Minnesota

## **RESEARCH GRANTS**

**1985-91** – Principal investigator for yearly grants from the U.S. Geological Survey's COGEOMAP program. The six year project involved geologic mapping in the Beaver Bay-Finland area of northeastern Minnesota. Average grant amounts were \$4000/year. Two to five graduate students were hired each summer to assist in the mapping. Five 1:24,000 scale maps and several journal articles were produced from the project (MGS Misc. Maps M-65, M-66, M-72, M-81, and M-82)

**1989-present** – Principal investigator for a series of six biennial grants from the Minnesota State Legislature's Minerals Coordinating Committee (MCC). Specific projects and funding amounts are:

89-91: Shallow drilling project, central Duluth Complex, \$170,000

91-93: Geologic mapping in the Duluth Area, \$113,000

93-95: Petrology and metallogenesis of the Duluth Complex at Duluth, \$8,800

95-97: Geologic mapping in the Allen quadrangle, \$60,000

97-99: Digital geologic mapping of the central Duluth Complex, \$46,500  
PGE potential of the Sonju Lake Intrusion, \$12,188

99-01: Geology and mineral potential of the Duluth Complex, \$100,000

01-03: Geology and PGE potential of the Greenwood Lake Intrusion, \$100,000

03-05: PGE evaluation of mafic intrusions outside the Duluth Complex, \$100,000

**2001-present** – Principal investigator for one-year grants from the U.S. Geological Survey's STATEMAP program.

2001-02 Geologic mapping in the Babbitt NE quadrangle; resulted in 1:24,000 scale open-file map.

2003-04 Geologic mapping the Babbitt, Babbitt SE and Babbitt SW quadrangles; resulted in production of 4 geologic maps (MGS Misc. Maps M-159, M-160, M-161, M-162)

**2003-2005** – Principal investigator for one-year grants from the U.S. Geological Survey's EDMAP program, which goes toward funding student mapping.

2003-04 Geologic mapping of the Wilder Lake Intrusion, central Duluth Complex; in support of Joy Turnbull MS thesis research at UM-Duluth. Open-file map completed; thesis in progress.

2004-05 Geologic mapping of the Leveaux Porphyry near Lutsen, Minnesota; in support of Paul Albers MS thesis research at UM-Duluth; thesis completed Sept. 2006.

## **OUTREACH ACTIVITIES**

One of my duties at the Minnesota Geological Survey is to routinely conduct outreach activities that educate the general public on Minnesota's geology. These have included making numerous visits to K-12 classrooms and giving lectures and leading field trips for various organizations (e.g., AIPG, Geological Society of MN, Soc. of University Women, Sugarloaf Interpretive Center, geology class groups visiting Minnesota). Some of the more regular outreach activities I have been involved with over the past 20 years include:

**Compleat and Practical Scholar Courses** - non-credit classes on Minnesota's geology sponsored by the University of Minnesota's General College. Courses have included:  
 CS0550 – Drifting Continents/Expanding Oceans: An Introduction to the Dynamic Earth (94-98)  
 CS0551 – The Making of Laurentia – Minnesota's Geologic History (94-99)  
 CSW0722 – What's this Rock? An Introduction to the Geology of Minnesota's North Shore (03-05)

**Curoosity Camp** – non-credit one-day class sponsored by the University of Minnesota's College of Continuing Education as a Personal Enrichment Program.

CC108 (7/06) & CC121 (6/07) A Geology Tour of the Twin Cities

**Teacher Inquiry-based Minnesota Earth Science (TIMES) Project** - a federally funded program sponsored by the Science Museum of Minnesota that organizes 2-week-long summer field courses for middle school earth science teachers in Minnesota. Have served as guest lecturer and have assisted on field trips. (2000- present)

**Minnesota Mineral Education Workshop** – I am an organizer and instructor for this informal group of public, private and academic earth science professionals who organize annual 3-day workshops and field trips to educate for K-12 science teachers about the geology and mineral resources of Minnesota. (1997-present). In 2006, I was principle instructor for the workshop held at UMD in Duluth.

**Elderhostel Program** – Have intermittently given lectures on the geology of Minnesota for this national organization since 1986.

## **COMMUNITY SERVICE**

7/00-5/06      Cubmaster, Cub Scout Pack 21, Kenwood Edison School, Duluth, MN

5/06-present    Asst. Scoutmaster, BSA Troop 9, Glen Avon Pres. Church, Duluth. MN