

## CV - ROMAN J. MOTYKA

### PROFESSIONAL PREPARATION:

B.A. Physics, 1964, St. Mary's University, Winona, Minnesota.

Honors thesis title: Construction of a mass spectrometer.

M.S. Physics, 1966, Michigan State University, East Lansing, Michigan.

Ph.D. Geology and Geophysics, 1983, Geophysical Institute, University of Alaska, Fairbanks.

Dissertation: Increases and fluctuations in thermal activity at Mount Wrangell, Alaska, determined from glacier melt and mass balance.

### APPOINTMENTS:

Research Associate Professor, Geophysical Institute, University of Alaska Fairbanks, 1998-present

Affiliate Professor, Geophysical Institute University of Alaska Fairbanks, 1996-1998

Affiliate Professor, Environmental Sciences Program, University of Alaska Southeast, Juneau, November 1995-present.

Senior Geologist/Geophysicist, Alaska Division of Geological & Geophysical Surveys, Juneau and Fairbanks, December 1981-August 1995.

Geologist/Geophysicist, Alaska Division of Geological & Geophysical Surveys Fairbanks, August 1979-December 1981.

Physicist, Michelson-Morley Laboratory, U.S. Department of Navy, China Lake, California, July 1966-December 1970.

### PUBLICATIONS:

#### Ten most recent:

Kuriger, M Truffer, EM, RJ Motyka, and AK Bucki. 2006. Episodic reactivation of large scale push moraines in front of the advancing Taku Glacier, Alaska. *J. Geoph. Res.*, **111**(F1), doi:10.1029/2005JF000385.

Larsen, CF, RJ Motyka, JT Freymueller, KA Echelmeyer, and ER Ivins, 2004. Rapid uplift of southern Alaska caused by recent ice loss. *Geoph. Journ. Internat.*, **158**, 1118–1133.

Larsen, CF, RJ Motyka, JT Freymueller, KA Echelmeyer, ER Ivins, 2005. Rapid viscoelastic uplift in southeast Alaska caused by post-Little Ice Age glacial retreat. *Earth and Planet. Sci. Lett.*, **237**, 548– 560.

Larsen, CF, RJ Motyka, AA Arendt, KA Echelmeyer, and PE Geissler, In Press 2006. Glacier changes in southeast Alaska and contribution to sea level rise. *J. Geoph. Res.*

Motyka, RJ, S O'Neel, C Connor, and KA Echelmeyer, 2002. 20<sup>th</sup> Century thinning of Mendenhall Glacier, Alaska, and its relationship to climate, lake calving, and glacier run-off. *Global Planetary Change*, **35**(1-2) 93-112.

Motyka, RJ, 2003. Post little ice age uplift at Juneau, Alaska reconstructed from dendrochronology and geomorphology. *Quatern. Res.*, **59**, 300-309.

Motyka, RJ and KA Echelmeyer, 2003. Taku Glacier on the move again: Active deformation of proglacial sediments. *J. Glaciol.*, **10**(164), 50-59.

Motyka, RJ, L Hunter, K Echelmeyer, and C Connor, 2003. Submarine melting at the terminus of a temperate tidewater glacier, LeConte Glacier, Alaska. *Annals Glaciol.*, **36**, 57-65.

Motyka, RJ, and M Truffer, In Press, 2006. Hubbard Glacier, Alaska: 2002 Closure and Outburst of Russell Fjord and Post-Flood Conditions at Gilbert Point. *J. Geoph. Res.*

O'Neel, S, K Echelmeyer, and RJ Motyka, 2003. Short-term variations in calving at a retreating tidewater glacier: LeConte Glacier, Alaska. *J. Glaciol.*, **49**(169), 587-598.

## **COLLABORATORS AND OTHER AFFILIATIONS:**

### ***Scientific Collaborators:***

Carl Benson (Graduate Advisor) (GI-UAF), Keith Echelmeyer (GI-UAF), Jim Beget (GI-UAF), Will Harrison (GI-UAF), Austin Post (USGS ret.), Dennis Trabant (USGS), Lewis Hunter (CRREL), Dan Lawson (CRREL), Jeff Freymueller (GI-UAF), Glenn Juday (UAF), Cathy Connor (UAS), Chris Larsen (GI-UAF), Matt Nolan (UAF), Craig Lingle (GI-UAF), Eric Rignot (JPL), Felix Kaiser (Swiss Institute), Martin Truffer (GI-UAF), Gerry Wiczorek (USGS), Eran Hood (UAS), Matt Heavner (UAS), Mark Fahenstock (UNH), Ross Powell (NIU), Steve Okkonen (SFOS-UAF)

### ***Graduate Committees:***

Jason Amundsen (Ph.D.) (GI-UAF); Brent Ritchie (M.Sc.) (GI-UAF)

### ***Graduated Students ("co-chair"):***

Shad O'Neel (M.Sc) (2001); Chris Larsen (Ph.D) (2003); Elsbeth Kuriger (M Sc) (2005) ("co-chair"); Ellie Boyce (M Sc)

## **SYNERGISTIC ACTIVITIES:**

- Geological and geophysical field work, 30 years throughout Alaska.
- Geodetic survey experience, theodolite and GPS, 30 years throughout Alaska.
- Mountaineering and skiing - extensively in Alaska, U.S., and Canada, 33 years experience.
- Emergency trauma technician.
- Coast Guard captain's license, 15 years.
- Small boat operator and kayak travel throughout coastal Alaska, 30 years experience.

## **Biographical Sketch**

Dr. Motyka's recent work has focused on understanding tidewater glacier dynamics through extensive field work and digital photogrammetry. Glaciers being studied include LeConte, Taku, and Hubbard Glaciers, all located in southeast Alaska, and Jakobshavn Isbrae in Greenland. LeConte Glacier has been in rapid calving retreat since 1995. In contrast Taku Glacier is advancing, deforming proglacial sediments, and threatens closure of the Taku River. The advance of Hubbard Glacier periodically blocks Russell Fjord, creating huge glacier dam lakes. He and colleagues at University of Alaska Southeast are also studying the thinning of Mendenhall Glacier and disintegration of its calving terminus in Mendenhall Lake. Motyka has been the lead scientist in a NSF-funded multi-disciplinary study of uplift, isostatic rebound, and plate tectonics in southeast Alaska. This program uses precision GPS, tide gage measurements, dendrochronology, measurements of glacier changes, and modeling to help understand the dynamics between glacier change, isostatic rebound, and regional tectonics. Motyka is also involved in two studies funded by NASA, one related to the contribution of Alaska glaciers to global sea level raise, the other related to developing ice-load models for Glacier Bay and for the Yakutat Icefield. Motyka is based in Juneau, where he helps coordinate Geophysical Institute

and UAF fieldwork in southeast Alaska and serves as a liaison with University of Alaska Southeast faculty.