IN THIS SECTION:

PEOPLE

Complete Listing
Faculty
Adjunct Faculty
Emeritus Faculty
Administrative Staff
Research Staff
Graduate Students
Advisory Council
Cornellians of Note

NEWS:

Roof of the World: First GSC-GSA Joint Scientific Meeting

Mahlburg Kay and Brown comment on lithospheric research advances; continental collisions

Suzanne Mahlburg Kay elected GSA President

t

SUZANNE MAHLBURG KAY

Suzanne Mahlburg Kay

Dept: Earth and Atmospheric Sciences

Title: William and Katherine Snee Professor of Geological Sciences

Address: 3140 Snee Hall

Phone: 607 255-4701

email:

return to list

Biography

Kay received a PhD at Brown University and spent a year as a postdoctoral fellow and assistant professor at the University of California at Los Angeles before coming to Cornell as a post-doc in 1976. She was subsequently a research associate, senior research associate, associate professor and full professor at Cornell before becoming the William and Katherine Snee Professor of Geological Sciences in 2007. She is also a senior research associate of the IDEAN Institute of Andean studies at the University of Buenos Aires in Argentina. Kay was previously a visiting associate in petrology at the California Institute of Technology and a Fulbright fellow at the University of Buenos Aires in Argentina in 1989. Among various honors, Kay is a fellow of the Geological Society of America (GSA), a fellow of the Mineralogical Society of America, a fellow of the Society of Economic Geology, a fellow of the American Geophysical Union, an honorary foreign member of the Geological Association of Argentina and has received the GSA Distinguished Service Award, the eastern division American Association of Petroleum Geologist outstanding educator award and an University of Illinois Geology Alumni Achievement Award. Prominent activities include having been a member of the council of the Geological Society of America, president of the GSA International Division, a member of the US National Committee for Geological Sciences of the US National Research, the science editor of GSAToday, the chair of the 2006 International meeting hosted by the GSA and the Geological Association of Argentina on the "Backbone of the Americas",

the International Secretary of the Geological Society of America and on the editorial boards of a number of journals. She is currently the president of the Geological Society of America . Kay has edited 4 books, has over 125 reviewed publications in journals and books and over 50 conference proceedings along with numerous abstracts. She has an H index of 38 on ISI and of 53 on Google Scholar.

Research Interests

Kay's research concentrates on the applications of petrology, geochemistry, and mineralogy to problems of the origin and evolution of the continental crust, with particular emphasis on the relation of regional tectonics to magmatic processes, the formation of the lower crust, and the evolution of ore deposits. This work has implications for understanding natural disasters, including volcanic eruptions and earthquakes. The research involves field studies and chemical analysis of rocks and minerals; the laboratory work makes use of the instrumental-neutron-activation, ICP-MS, mass-spectrometry, and electron-microprobe facilities at Cornell.

A major focus at present is a study of the development of the Andean crust of central and southern South America and is part of an interdisciplinary effort on Andean tectonic evolution that involves Chilean and Argentine scientists as well as personnel from Cornell. This study adds the variable of pre-existing continental crust to previous work done along the oceanic, Aleutian-arc, convergent margin. An important element of the Andean work is the effect of changing subduction-zone geometries on crustal and mantle evolution. Two specific projects involve study of the evolution of mid-Tertiary to Recent magmatic rocks over the shallowest part of the modern Andean subduction zone (28-33° S) and of magmatism related to uplift of one of the world's highest plateaus, the central Andean Puna-Altiplano (22-28°S). Present studies are aimed at the transition regions between shallow and steep subduction near 28°S and 33°S. Much of this work invokes magmatic rocks that are the host rocks for the major copper and gold deposits of the Central Andes.

Other Andean projects examine crustal and mantle evolution associated with important episodes of basaltic magmatism and the terrane-accretion history of South America. Currently, the most active of these studies looks at the causes and results of large-scale continental basaltic volcanism in the Patagonian plateaus of southern South America. Present studies are concentrated in the plateau east of the triple junction where the Chile ridge is colliding with the Chile trench. Another project concerns special magmatic events related to periods of supercontinent formation and stability, particularly the formation of granite-rhyolite provinces in the late Paleozoic-early Mesozoic evolution of Gondwana. Finally, studies of basement rocks in the central Andes are relevant to recent questions concerning a possible Laurentian-Gondwana collision.

There are also plans to return to studies of the magmatism and crustal and lithospheric evolution of the oceanic Aleutian arc.

Teaching Interests

Major teaching focuses are in the areas of mineralogy and earth materials, geochemistry and petrology and integrated magmatic, geophysical and structural studies of continental margins and magmatic arcs. The mineralogy class focuses on the physical and chemical properties of minerals and their use in studies of the properties of the Earth and other planets. The Andes and other mountain belt seminars provide a format for presentation of active research and examining important questions on the evolution of mountain belts and the formation of continents. A summer field course run with the University of Buenos Aires in Argentina focuses on field observations and interpretations of major structures and magmatic systems in a spectacularly exposed terrane. Individual student projects use focus on using mineralogical, geochemical and isotopic methods in various studies of magmatic samples from continental margins.

Selected Publications

- Kay, S.M., Helen A. Jones, Robert W. Kay. 2013. "Origin of Tertiary to Recent EM- and Subduction-like Chemical and Isotopic Signatures in Auca Mahuida Region (37° to 38°S) and other Patagonian Plateau Lavas." Contributions to Mineralogy and Petrology 166: 165-192.
- Goss, Adam R., S.M. Kay, Constantino M Mpodozis. 2013. "Andean adakites from the northern edge of the Chilean-Pampean flat-slab (27-28.5º S) associated with frontal arc migration and forearc subduction erosion." Journal of Petrology 54 (11): 2193-2234.
- Kay, S.M., B. L. Coira, P. J. Caffe, C-H Chen. 2010. "Regional chemical diversity, crustal and mantle sources and evolution of the Neogene Puna plateau ignimbrites of the Central Andes." Journal of Volcanology and Geothermal Research 198 (1-2): 81-11.
- Kay, S.M., B L Coira. 2009. "Shallowing and steepening subduction zones, continental lithosphere loss, magmatism and crustal flow under the Central Andean Altiplano-Puna Plateau." In Backbone of the Americas: Shallow Subduction, Plateau and Ridge and Terrane Collisions , edited by Kay, S.M., Ramos, V.A., Dickinson, W.M. , 229-260. Boulder Colorado: Geological Society of America.
- Kay, S.M., E. Godoy, A. Kurtz. 2005. "Episodic arc migration, crustal thickening, subduction erosion, and magmatism in the south-central Andes." Geological Society of America Bulletin 117 (1-2): 67-88.

see more publications

Selected Awards and Honors

- Fellow (Society of Economic Geology) 2008
- Fellow (American Geophysical Union) 2011
- Eastern Division Outstanding Educator Award (American Association of Petroleum Geologists) 2007
- Distinguished Service Award (Geological Society of America) 2000

- Miembro Correspondiente (Asociación Geológica Argentina) 1995

Education

- BS (GEOLOGY), UNIV OF ILLINOIS, 1969
- MS (GEOLOGY), UNIV OF ILLINOIS, 1972
- Ph D (GEOLOGY), BROWN UNIVERSITY, 1975