



IN THIS SECTION:

PEOPLE

- [Complete Listing](#)
- [Faculty](#)
- [Adjunct Faculty](#)
- [Emeritus Faculty](#)
- [Administrative Staff](#)
- [Research Staff](#)
- [Graduate Students](#)
- [Advisory Council](#)
- [Cornellians of Note](#)

[Home](#) ▶ [People](#) ▶ Profile

ROBERT WOODBURY KAY

Biography

Kay is a Geochemist with emphasis on operation of large-scale Earth Systems within the framework of plate tectonics. Collaboration that involves working at areas that lie between recognized disciplines has been a thorough going research strategy, first identified-- geochemistry, petrology and geophysics-- in his note for Citation Classic paper on ocean ridges. Far-flung places --the Philippines and especially Aleutian islands-- and novel processes--slab melting, lower crustal delamination, and subduction erosion-- have served to focus his research activities. Quantifying crustal mass flux is the organizing template. At the end of 2013, Kay's citations in ISI were 5386, his h-index was 30, and his number of "home run papers" (citations exceeding 100) was 18. On Google Scholar, the 2013 numbers were 6831, 37, and 21.

Research Interests

I am interested in geochemical and petrologic aspects of the formation, modification and destruction of Earth's crust. I have focused on different aspects of this theme. Initially, I worked on oceanic crust and developed a model for Mid-Oceanic Ridge basalt genesis; the resulting paper is my most highly cited. I did influential studies of ophiolites, featuring comparisons with sediments and igneous rocks of the oceanic crust. Next, I turned to geochemically constrained mass flux models for subduction-related magmas; the mass contributions of sediment, oceanic plate, and mantle were quantified for magmas of several arcs. An example of oceanic plate melt was identified. Finally, the processes



Robert Woodbury Kay

Dept: Earth and Atmospheric Sciences

Title: Professor

Address: 4142 Snee Hall

Phone: 607 277-0055

email:

[return to list](#)

that destroy crust--delamination and subduction-erosion--have been examined in the context of the creation of an andesitic crust from mantle-derived basalt. Together with slab melting, the processes of delamination and subduction erosion represent my main transformative contributions (as indicated by citation counts) to our understanding of the role of high pressure processes on crustal formation and modification. Most recently I have analyzed radionuclides in collaborative projects investigating soil erosion and hydrofracking water.

Teaching Interests

I strive to integrate the methodologies of mass flux, especially using chemical and isotopic tracers, into definition of processes that shape planetary surfaces and interiors. The influx of Planetary Science students has been invigorating.

Service Interests

When the public has a "rock identification" question, I am often the one to whom they are referred. I have also helped with school clubs (the last, from Syracuse) competing in "Science Olympiads". I also frequently answer questions from visitors looking at the Snee Hall earthquake and mineralogy exhibits.

Selected Publications

- ▶ Kay, Robert Woodbury, Norman J. Hubbard, Paul W Gast. 1970. "[Chemical Characteristics and Origin of Oceanic Ridge Volcanic Rocks.](#)" *Journal of Geophysical Research* 75 (8): 1585-1613.
- ▶ Kay, Robert Woodbury, Paul W Gast. 1973. "Rare-Earth Content and Origin of Alkali-Rich Basalts." *Journal of Geology* 81 (6): 653-682.
- ▶ Kay, Robert Woodbury. 1978. "Aleutian Magnesian Andesites - Melts from Subducted Pacific Ocean Crust." *Journal of Volcanology and Geothermal Research* 4 (1-2): 117-132.
- ▶ Kay, Robert Woodbury, S. M. Kay. 1993. "Delamination and delamination magmatism." *Tectonophysics* 219 (1-3): 177-189.
- ▶ Kay, S. M., H. Jones, Robert Woodbury 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 (1): 165-192.

[see more publications](#)

Selected Awards and Honors

- ▶ Citation Classic-Engineering Technology and Applied Science (Thomson-Reuters Institute for Scientific Information) 1986
- ▶ Citation Classic-Physical Chemical and Earth Sciences (Thomson-Reuters Institute for Scientific Information) 1986
- ▶ Fellow (Geological Society of America) 1977
- ▶ 1963-2013 most cited paper (232 citations ISI) (*International Journal of Earth Sciences*)

- ▶ 1973-2013 13th most cited (363 citations) ISI (Journal of Geology)

Education

- ▶ AB (Chemistry), Brown University, 1964
- ▶ no degree--followed advisor to Columbia (Geology), UNIV OF MINNESOTA, 1965
- ▶ attended field camp (Geology), Indiana University, 1965
- ▶ Ph D (GEOLOGY), COLUMBIA UNIVERSITY, 1970

[College of Arts and Sciences](#)

[College of Agriculture and Life Sciences](#)

[College of Engineering](#)



[Site Map](#) [Contact us](#) [Cornell University](#)