

Dallas Peck Outstanding Emeritus Award Nomination of Harvey Belkin

Dr. Harvey Belkin officially retired from the USGS in January 2015 after 48 years of public service. However, he has seamlessly continued his profuse scientific, educational, and collegial contributions.

Since his retirement four years ago, Harvey has been senior author on 6 and co-author on 17 peer-reviewed publications (see attached list of publications). He displays a breadth of knowledge as evidenced by his recent contributions on a wide array of topics. For example, he has played a major role in keeping the USGS at the forefront of coal research by publishing five articles, one of which includes research into the mechanisms driving Rare Earth Element (REE) enrichment in a particular Appalachian coalbed. This basic research is critical for evaluating the emerging market of REE extraction from coal. Harvey also has remained active in studying the impacts of industrial processes on the environment and human health. In this respect, he has served as an editor and contributor to an international volume on Environmental Geochemistry that covers a multitude of topics, including toxic metals in soil and water, brownfield site remediation, reuse of metallurgical slag, and advances in medical geology. This publication is a multi-chapter compendium that is over 600 pages long. His interest and especially his expertise in microchemistry and melt and fluid inclusion science have led to recent contributions to impact crater studies and to the understanding of volatiles in melts and their relationship to volcanic hazards. He recently submitted a review article on chevkinite-group minerals, which are secondary minerals in titanium- and cerium-bearing rocks. In addition to working on basic science, Dr. Belkin has been working on a biography of Henry Stevens Washington, who was one of the petrologists to devise the "CIPW norm" rock classification system. All of the above activities have occurred since Harvey's "retirement."

This rate of productivity is in keeping with Harvey's prolific publication record as a USGS employee. More importantly, the science he brings to the page is coupled with the positive attitude and supportive atmosphere he brings to the office. On a daily basis you can find Harvey in the microbeam laboratory educating users and current staff on mineralogy, petrology, and physics—and helping achieve milestones. These constant contributions to his colleagues are not easily quantified, but they are realized. In fact, his selfless efforts toward ensuring a vibrant future for the USGS and its younger scientists are perhaps what most sets Harvey's early Emeritus career apart.

One clear demonstration of his altruistic efforts is the role he played in the procurement of a new instrument for the Reston microbeam laboratory as he moved into retirement. Prior to his retirement the microbeam lab had a fully functional (circa 1980's) JEOL scanning electron microscope. Harvey easily could have finished out his career on this equipment, but he and others understood that if USGS were to continue to do cutting-edge science *after his impending retirement*, a new SEM was needed. In typical Harvey fashion, he took action without hesitation. He demonstrated the need for the new instrument by surveying his colleagues and showing that new avenues of scientific research could be opened for USGS scientists if they had access to a modern Field Emission Scanning Electron Microscope (FE-SEM). In 2014-2015, up to and after his retirement, he set up meetings and demonstrations with vendors, and—always looking to the future—ensured that potential USGS users, both young and old, had the opportunity for attendance and input. He continued to lead the process of purchasing the FE-SEM through frustrating procurement cycles that lasted for nearly two years. Consequently, due

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mostly to his dogged determination, in August 2015 a new Hitachi SU-5000 FE-SEM was installed in the Reston microbeam laboratory. The USGS will remain a leader in the analysis of various rock types, thanks to Dr. Belkin's actions.

In 48 years of research at the USGS, Harvey displayed unwavering curiosity and enthusiasm. As an Emeritus, he continues to pass on this curiosity and excitement for science to younger scientists. His leadership efforts in the acquisition of state-of-the-art instrumentation just before his retirement have had a tremendous impact for USGS by providing cutting-edge tools to move our science forward. By his example, Harvey actively shows what constitutes good science and scientific stewardship. Because of his efforts and outstanding qualities, Dr. Harvey Belkin is an Emeritus who fully meets the criteria for the Dallas Peck Award.

“Oooh, what's that?”

-Harvey Belkin (*every day in the microbeam laboratory*)

Retired – 1/4/2015

FY 2017 1054 hours

FY 2018 959 hours

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Dr. Harvey Belkin Post-retirement Publications

Edited Volumes:

De Vivo, B., **Belkin, H.E.**, Lima, A. (Eds.), 2018. *Environmental Geochemistry. Site Characterization, Data Analysis and Case Histories*. Elsevier (Netherlands), ISBN: 978-0-444-63763-5, Second Edition, 623 pp.

Coal Research:

Belkin, H.E. (2017). Environmental human health issues related to indoor air pollution from domestic biomass use in rural China: A review. In: *Environmental Geochemistry: Site Characterization, Data Analysis and Case Histories: second ed.*, De Vivo, B., Belkin, H. E., Lima, Annamaria: Elsevier, 417-434. <https://doi.org/10.1016/B978-0-444-63763-5.00017-3>

Hower, J.C., Eble, C.F., Dai, S., **Belkin, H.E.** (2016). Distribution of rare earth elements in Eastern Kentucky coals: Indicators of multiple modes of enrichment? *International Journal of Coal Geology*, v. 160-161, p. 73-81. DOI: 10.1016/j.coal.2016.04.009

Swanson, S.M., Mastalerz, M.D., Engle, M.A., Valentine, B.J., Warwick, P.D., Hackley, P.C., **Belkin, H.E.** (2015). Pore characteristics of Wilcox Group Coal, US Gulf Coast Region: Implications for the occurrence of coalbed gas. *International Journal of Coal Geology*, 139, 80-94. DOI: 10.1016/j.coal.2014.07.012

Trippi, M.H., **Belkin, H.E.** (2015). USGS compilation of geographic information system (GIS) data of coal mines and coal-bearing areas in Mongolia (No. 2015-1144). US Geological Survey.

Trippi, M.H., **Belkin, H.E.**, Dai, S., Tewalt, S.J., Chou, C. (2015). USGS compilation of geographic information system (GIS) data representing coal mines and coal-bearing areas in China. No. 2014-1219. US Geological Survey.

Sun, R., Sonke, J.E., Heimbürger, L.E., **Belkin, H.E.**, Liu, G., Shome, D., ... Streets, D.G. (2014). Mercury stable isotope signatures of world coal deposits and historical coal combustion emissions. *Environmental Science & Technology*, 48(13), 7660-7668. DOI: 10.1021/es501208a

Other research:

Belkin, H.E., Repetski, J.E., Dulong, F.T., Hickling, N.L. (2018). Lithologies, ages, and provenance of clasts in the Ordovician Fincastle Conglomerate, Botetourt County, Virginia, USA. *Stratigraphy*, 15(1), pp.1-20. DOI: 10.29041/strat.15.1.1-20

Belkin, H.E., Rolandi, G., Jackson, J.C., Cannatelli, C., Doherty, A.L., Petrosino, P., De Vivo, B. (2016). Mineralogy and geochemistry of the older (> 40ka) ignimbrites on the Campanian

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Plain, southern Italy. *Journal of Volcanology and Geothermal Research*, 323, 1-18. DOI: 10.1016/j.jvolgeores.2016.05.002

Jackson, J.C., Horton, J.W., Chou, I., **Belkin H.E.** (2016). Coesite in suevites from the Chesapeake Bay impact structure. *Meteoritics & Planetary Science* 51.5 946-965. DOI: 10.1111/maps.12638

Doherty, A.L., Cannatelli, C., **Belkin, H.E.**, Bodnar R.J., De Vivo, B. (2015). Unlocking the evolution of the Grey Porri Tuffs of Monte dei Porri, Salina, Southern Italy: A complete picture using melt inclusion geochemistry and volatile contents. ECROFI XXIII, Leeds. 27-29 June 2015.

Doherty, A.L., Cannatelli, C., Raia, F., **Belkin, H.E.**, Albanese, S., Lima, A., De Vivo, B. (2015). Geochemistry of selected lavas of the Panarea volcanic group, Aeolian Arc, Italy. *Mineralogy and Petrology*, 109(5), 597-610. DOI: 10.1007/s00710-015-0385-3

Cannatelli, C., Doherty, A.L., Petrosino, P., **Belkin, H.E.**, Rolandi, G., Lima, A., Albanese, S., De Vivo, B. (2015). Insights into pre-Campanian ignimbrite volcanism in the Campanian Plain (Southern Italy): A melt inclusions approach. ECROFI XXIII, Leeds. 27-29 June 2015.

In Prep:

Belkin, H.E. The contributions and influence of two Americans, Henry S. Washington and Frank A. Perret, to the study of Italian volcanism with emphasis on volcanoes in the Naples area (Manuscript to be submitted as a Chapter in the book *Vesuvius, Campi Flegrei, and Campanian Volcanism. Geology, petrology, and related risk*, publisher is Elsevier).

Belkin, H.E., Macdonald, R. Whole-rock compositional control on chevkinite-group minerals from the Questa complex, New Mexico.

Belkin, H.E., Macdonald, R. Zirconium-bearing accessory minerals in UK Palaeogene granites (To be submitted to *Mineralogical Magazine*).

Macdonald, R., **Belkin, H.E.**, Bagiński, B. Chevkinite-group minerals in the pantelleritic Gold Flat Tuff, Nevada (To be submitted to *European Journal of Mineralogy*).

Macdonald, R., **Belkin, H.E.**, Bagiński, B., Galanciak, J. Accessory mineral assemblages in the rhyolitic Joe Lott Tuff, Utah, with special reference to the relationships between monazite and chevkinite.

Macdonald, R., Bagiński, B., **Belkin, H.E.**, Stachowicz, M. Occurrence, composition, parageneses and alteration of the chevkinite group of minerals. *American Mineralogist* (in press).

Macdonald, R., Bagiński, B., **Belkin, H.E.**, White, J.C., Noble, D.C. The Gold Flat Tuff, Nevada: Insights into the evolution of peralkaline silicic magmas. *Lithos* (submitted).

Bagiński, B., Macdonald, R., **Belkin, H.E.**, Kotowski, J., Jokubauskas, P. Wakefieldite-(Nd) and

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wakefieldite-(Y) in the rhyolitic Joe Lott Tuff, Utah (To be submitted to *European Journal of Mineralogy*).

Galanciak, J., Bagiński, B., Macdonald, R., **Belkin, H.E.** Relationships between monazite and chevkinite-group minerals in the rhyolitic Joe Lott Tuff, Nevada (To be submitted to *Mineralogy and Petrology*).

Swanson, S.M., Mastalerz, M.D., Valentine, B.J., Stricker, G.D., **Belkin, H.E.** (2019). Porosity characteristics, maceral composition, and fractures of Powder River Basin coal in relation to microbial gas (in USGS technical review).



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Northern Rocky Mountain Science Center

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Bozeman, Montana 59715-6507

December 14, 2018

To whom it may concern:

Please accept this nomination of Kenneth L. Pierce for the Dallas Peck Outstanding Scientist Emeritus Award. Dr. Pierce has been a US Geological Survey Emeritus Scientist since 2003. Throughout the past 15 years he has provided exemplary service to the USGS, the field of quaternary geology and geomorphology, and the nation through: the advancement of science through influential publications, the mentorship of young scientists and the communication of science to broad audiences. Ken Pierce is the model emeritus scientist, and it is an honor and a pleasure to have him as a member of the Northern Rocky Mountain Science Center (NOROCK).

Dr. Pierce has produced diverse publications on the Greater Yellowstone Area (GYA) including on topics ranging from volcanology and glaciation to vegetation and climate reconstruction. He has produced videos to communicate with broad audiences. In 2012, Dr. Pierce received the Distinguished Career Award of the American Quaternary Association (AMQUA) and the Quaternary Geology and Geomorphology Division of the Geological Society of America. Full details are found on his [USGS staff profile](#).

Here we highlight several items that exemplify why Dr. Pierce merits the Dallas Peck Award.

Significant Contributions to Science: In 2009, Dr. Pierce was an editor of a special issue of the *Journal of Volcanology and Geothermal Research: The Track of the Yellowstone Hotspot: What do Neotectonics, Climate Indicators, Volcanism, and Petrogenesis Reveal about Subsurface Processes?* (Morgan et al. 2009), and he led the article "Is the track of the Yellowstone hotspot driven by a deep mantle plume? – Review of volcanism, faulting, and uplift in light of new data" (Pierce and Morgan 2009). He has authored nine publications since becoming an emeritus scientist.

Communications and Mentoring: In 2016, Dr. Pierce is featured in two videos: [Inside USGS, No. 5, Pleistocene Glaciations of Greater Yellowstone](#) and [Inside USGS, No. 6, Ken Pierce, Heavy Breathing of Yellowstone Caldera](#). In No. 6, he talks about advising Montana State University students.

Participating Member of the Northern Rocky Mountain Science Center: Though Dr. Pierce is an emeritus scientist he is an active member of our science center. He participates as available in staff meetings, all-hands meetings, and other community events. Dr. Pierce is a member of the Outreach Group and participated in the highly successful, first NOROCK Open House in June, 2018.

Thank you for your consideration of this nomination, and please do not hesitate to contact me with any questions.

Sincerely,

Claudia Regan, Center Director

Citations:

Morgan, Lisa A., Henrietta Cathey, and Kenneth L. Pierce (eds). 2009. The Track of the Yellowstone Hotspot: What do Neotectonics, Climate Indicators, Volcanism, and Petrogenesis Reveal about Subsurface Processes? *Journal of Volcanology and Geothermal Research* 188(1-3):1-304.

Pierce, Kenneth L., and Lisa A. Morgan. 2009. Is the track of the Yellowstone hotspot driven by a deep mantle plume? – Review of volcanism, faulting, and uplift in light of new data. *Journal of Volcanology and Geothermal Research* 188(1-3):1-25. <https://doi.org/10.1016/j.jvolgeores.2009.07.009>

Retired 1/2/2003

FY 2017 1140 hours

FY 2018 760 hours

CITATION
DALLAS PECK OUTSTANDING SCIENTIST EMERITUS AWARD
F.G. "BARNEY" POOLE

In recognition of his exceptional research contributions as an emeritus on the stratigraphy and geotectonic evolution of the southwestern margin of Laurentia, the origin of bedded barite deposits in sedimentary basins, and mentoring of younger colleagues.

Dr. Poole's research has focused on the stratigraphy and geotectonic evolution of sedimentary basins that host important energy and mineral resources. His work includes geologic mapping, measured sections, biostratigraphic age correlations, identification of missing and condensed sections, tectonic synthesis, petroleum source rocks, hydrothermal activity, and geochemistry. One of Barney's most significant contributions pertains to deciphering complex regional stratigraphic and tectonic relations of Devonian-Pennsylvanian rocks in the Basin and Range. In addition, his willingness to help colleagues and contribute to and support major USGS programs has been a stellar exemplar for his colleagues. Barney's multitude of coauthored publications illustrates how he interacts with his colleagues and considers them as equals. According to Google Scholar, his publications have been cited on average 49 times! After an exceptional 36 year career, Barney chose to retire in 1995 during a reduction in force operation. His sacrifice ensured that mid-career research scientists did not lose their jobs, an outcome that would have deprived the USGS of the essential expertise represented by this next generation. Over the last 24 years, he has published numerous reports, field trip guidebooks, and abstracts, and has continued to mentor younger colleagues, who continue to make important scientific contributions of their own. His recent publications have focused on filling knowledge gaps in the poorly understood Sonoran part of the Ouachita-Marathon-Sonoran orogen on the southwestern margin of Laurentia. One of these papers received the Best Publication Award by a Scientist Emeritus. He also has published papers on unusual geologic terranes in central Nevada associated with the Late Devonian Antler orogeny and Alamo Impact Breccia as well as bedded barite deposits associated with seafloor vents in sedimentary basins around the world. For his scientific achievements as an emeritus and outstanding service to the USGS, Dr. Poole is granted the Dallas Peck Outstanding Scientist Emeritus Award of the Department of the Interior.

Retired - 8/1/1995

FY2017 1655 hours

FY 2018 1553