

Introduction to the proceedings volume for the 2007 AGS Ores and Orogenesis Symposium

Jon E. Spencer

Arizona Geological Survey, 416 W. Congress St., #100, Tucson, Arizona, 85701, USA

Spencer R. Titley

Department of Geosciences, University of Arizona, Tucson, Arizona, 85721, USA

The Arizona Geological Society (AGS) held a symposium titled “Ores and Orogenesis: Circum-Pacific Tectonics, Geologic Evolution, and Ore Deposits” on September 26-29, 2007, at the Hilton Tucson El Conquistador Golf and Tennis Resort in Oro Valley, a suburb of Tucson, Arizona (USA). The subject of the symposium reflects a long history of interaction between the fields of tectonics and economic geology. Tectonics provides understanding of the context and sometimes the cause of mineral-deposit genesis and dismemberment. Economic geology focuses directly on the enormous and commonly under-appreciated mineral wealth that forms much of the foundation for human economic well being, but also may inform tectonics with insights gained through study of deposit genesis and deformation. The Symposium was specifically intended to stimulate interchange of knowledge and ideas among a diverse community of geoscientists, and especially among those concerned with tectonics and ore deposits.

It is fitting that the Ores and Orogenesis Symposium honored the career of William R. (Bill) Dickinson, emeritus professor of geology at the University of Arizona and participant in the plate-tectonic revolution. Bill was one of the first to promote scientific interchange between the fields of tectonics and economic geology when he chaired (with William Payne) a 1981 AGS symposium titled “Relations of Tectonics to Ore Deposits in the Southern Cordillera.” The 45 papers in this new volume, which represent a fraction of the 168 oral and 84 poster presentations at the Ores and Orogenesis Symposium, are a measure of the current level of scientific cross-pollination between the tectonics and economic geology communities, and of the advances that have occurred in the two fields since the first AGS tectonics and ore-deposits symposium.

THE PACIFIC RIM

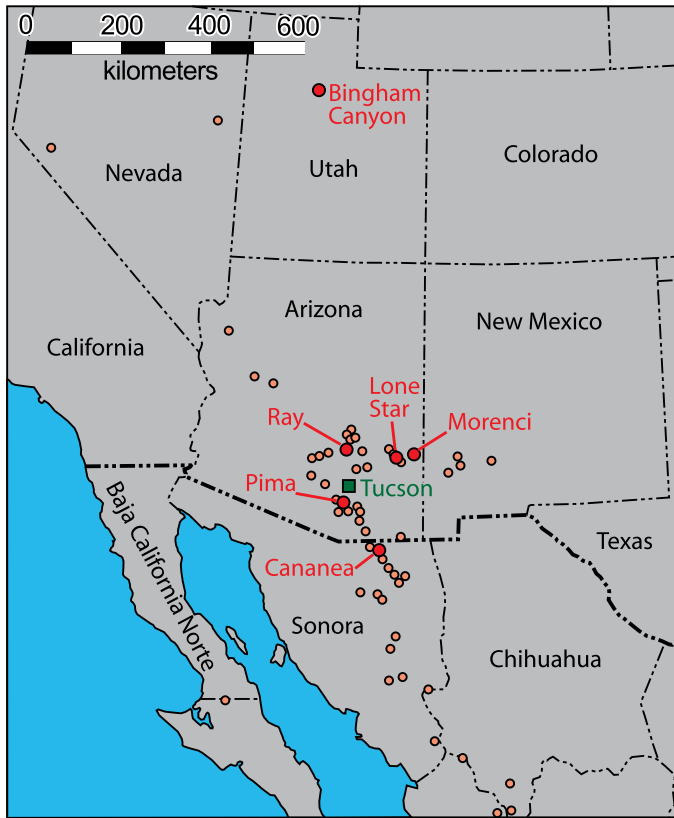
The AGS Ores and Orogenesis Symposium occurred in the context of geologic, economic, and societal factors that all came together to support a well attended and memorable conference. The Pacific basin covers a third of Earth’s surface, and its margins include most of the world’s subduction zones and volcanoes. The geology of the Pacific Rim, known since before plate-tectonic theory as the “ring of fire,” is dominated by the consequences of subduction tectonics, including arc magmatism and batholith emplacement, forearc and back-arc basin genesis, and accretionary wedge construction and accretion of exotic terranes. Because of its highly active Phanerozoic geologic history, as well as ongoing activity, it has been and continues to be superb laboratory for understanding many of the processes that lead to continent creation and to genesis of some major mineral deposit types, including porphyry copper, epithermal vein, and disseminated gold.

SOUTHWEST NORTH AMERICA PORPHYRY COPPER PROVINCE

Southwestern North America, and specifically the area within 300 km of Tucson, Arizona, represents one of Earth’s two great porphyry copper provinces (the other is in the Atacama Desert region of northern Chile) and includes five of the 25 largest-known porphyry copper deposits (Fig. 1). The concentration of mineral wealth centered on the Tucson region was one of the driving factors for settlement and population growth since deposit exploitation began in the late 1800s. Population growth in an area with many mines was associated with development of strong exploration, mining, and mineral-

e-mail: Spencer: jon.spencer@azgs.az.gov; Titley: stitley@email.arizona.edu

Spencer, J.E., and Titley, S.R., 2008, Introduction to the proceedings volume for the 2007 AGS Ores and Orogenesis Symposium, *in* Spencer, J.E., and Titley, S.R., eds., Ores and orogenesis: Circum-Pacific tectonics, geologic evolution, and ore deposits: Arizona Geological Society Digest 22, p. 1-3.



Porphyry copper deposits

- One of Earth's 25 largest porphyry deposits for contained Cu
- Smaller porphyry copper deposits

Figure 1. Porphyry copper deposits in southwestern North America. Largest deposits from Cooke et al. (2005).

processing industries, as well as development of world-class economic geology and mining engineering programs at the University of Arizona in Tucson. More recently, growth of environmental-geology science and industry are being driven by concerns such as long-term protection and conservation of ground water.

THE ARIZONA GEOLOGICAL SOCIETY

The Arizona Geological Society was founded in 1948 in Tucson, which by then had a large and growing community of geoscientists and mining engineers: "The object of the society shall be the promotion and encouragement of interest in the science of geology and in the geology of the State of Arizona" (AGS Bylaws). Society membership is open to anyone with a professional interest in the geology of Arizona. The society occasionally hosts symposia on topics in geosciences related to economic geology. In addition to the conference mentioned above (Dickinson and Payne, eds., 1981, AGS Digest 14), these include "Frontiers in geology and ore deposits of Arizona and the Southwest" (Beatty and Wilkinson, eds., 1986, AGS Digest 16), and "Porphyry copper deposits of the American Cordillera" (Pierce and Bolm, eds., 1995, AGS Digest 20). These symposium-related publications and several other AGS

digests are still in print, as AGS usually opts for large print runs because of the long shelf life of its scientific publications. AGS also hosts geology field trips and monthly dinner meetings with guest speakers, both of which foster interchange and education within the local geosciences community and visiting geoscientists.

THE ORES AND OROGENESIS SYMPOSIUM

In 2004, when the AGS Executive Committee committed AGS to the 2007 Ores and Orogenesis Symposium, it was clear that the attendance as well as the economic success of the Symposium would depend on global economic conditions in general and metal prices specifically. What followed this commitment was a remarkable run-up in metal prices and a large increase in activity within the exploration community (e.g., Fig. 2). Because of this fortuitous development, as well as the hard work and dedication of the AGS Symposium Committees (Table 1), an excellent and diverse program that included 12 field trips and 4 short courses, and \$165,555 in corporate and individual sponsorships (Table 2), the symposium was a complete success by every measure, with 869 registrants from 27 countries.

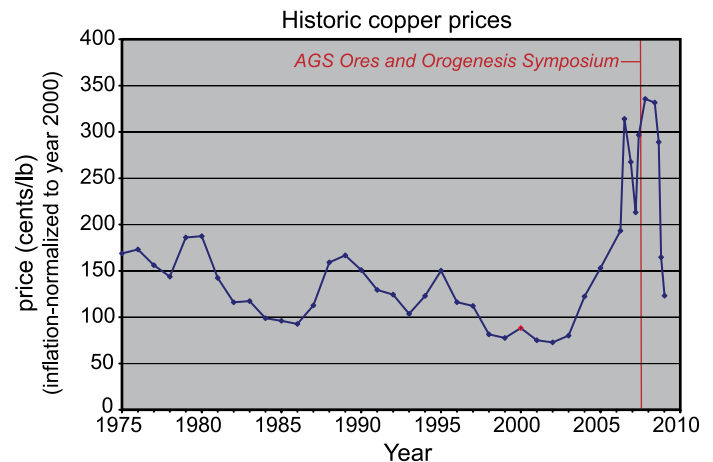


Figure 2. Copper prices 1975-2008, normalized to year 2000 dollars using Bureau of Economic Analysis (U.S. Department of Commerce) National Income and Product Account (NIPA) historical tables. (Normalization removes changes in price due to changes in currency value.)

ACKNOWLEDGMENTS

We thank manuscript reviewers for their time and effort in improving the quality of this volume (Table 3), and Corolla (Cori) Hoag and Kevin Horstman for copy editing. J.S. thanks Gordon Haxel for tips and discussions about book formatting in Adobe® InDesign®, and Keith Long for assistance with inflation-normalization of copper prices represented in Figure 2.

TABLE 1. AGS 2007 SYMPOSIUM COMMITTEES

Committee	Members
General Co-Chairs	Eric Seedorff Susan L. Beck
Secretary	Marilee A. Crawford
Treasurer	Corolla Hoag
Advertising	M. Dean Kleinkopf* Greta J. Orris James N. Mayor
Proceedings Volume	Jon E. Spencer Spencer R. Titley Claudia Stone
Exhibits	Karen S. Bolm*
Facilities	Michael L. Alter*
Field Trips	Robert B. Cummings* Thomas M. Simpson Stephen M. Richard Richard H. Lefebvre
Field Trip Guidebooks	Claudia Stone* Esty Pape
Fund Raising and Sponsorship	Donald F. Hammer*
Guest Activities	Marilee A. Crawford
Legal and Insurance	Corolla Hoag
Posters and Core Shack	Robert J. Kamilli* David S. Boyer
Publicity	Donald F. Earnest
Registration	Barb Thomssen† Greta J. Orris†
Reunions	Eric Seedorff† Charles P. Miller† Bruce E. Kilpatrick
SEG Symposium	Richard B. (Dick) Jones M. Stephen Enders Spencer R. Titley
Short Courses	Elizabeth Miksa* Ann D. Pattison
SME	Diane Archer Larry Dykers Richmond Fenn Volker Spieth
Spanish Translation & Commun.	Bruce E. Kilpatrick*
Student Activities	Lukas Zurcher* Greta J. Orris
Technical Program	Robert J. Kamilli* Jon E. Spencer Spencer R. Titley
Website and Audio-visual	Greta J. Orris* Harry McGregor Nicolas Lopez

*Chair

†Co-Chair

TABLE 2. SYMPOSIUM SPONSORS

Platinum sponsors - \$20,000
Bell Resources Corporation BHP Billiton Freeport-McMoRan Copper & Gold Rio Tinto
Gold sponsors - \$10,000-19,999
Exxon Mobil Corporation Anglo American Newmont Mining Corporation
Silver sponsors - \$5,000-9,999
ASARCO LLC Augusta Resource Corporation Clear Creek Associates, PLC. Coeur d'Alene Mines Errol L. Montgomery & Associates Geotemps, Inc. SRK Consulting (U.S.), Inc.
Copper sponsors - \$1,000-4,999
Bronco Creek Exploration, Inc. Galway Resources Ltd. Gold Fields Ltd. Donald F. Hammer International Royalty Corporation Newcrest Resources Inc. Redhawk Resources, Inc. Resolution Copper Company Skyline Labs Volker Spieth Stewart Brothers Drilling Company SWCA Environmental Consultants VANE Minerals Plc
Molybdenum sponsors - up to \$999
Auric Resources International, Inc. Robert L. Clayton Connors Drilling LLC Vernon DeRuyter James F. Hays Robert J. Kamilli Elaine Padovani Eric Seedorff W. Gordon Wieduwilt

TABLE 3. REVIEWERS OF PAPERS

Bundtzen, Tom	Luddington, Steve
Davis, Greg	McLemore, Virginia
Dickinson, Bill	Mortensen, James
Gill, Jim	Nokleberg, Warren
Goldfarb, Richard	Russin, Daniel
Goodge, John	Schalamuk, I.B.
Hoag, Corolla (Cori)	Seedorff, Eric
Horstman, Kevin	Tosdal, Richard
Iriondo, Alex	Webb, Mike
Krewedl, Dieter	Zandt, George

REFERENCES CITED

- Beatty, B., and Wilkinson, P.A.K., eds., 1986, *Frontiers in geology and ore deposits of Arizona and the Southwest*: Arizona Geological Society Digest 16, 554 p.
- Cooke, D.R., Hollings, P., and Walshe, J., 2005, *Giant porphyry deposits: Characteristics, distribution and tectonic controls*: Economic Geology, v. 100, p. 801-818.
- Dickinson, W.R., and Payne, W.D., eds., 1981, *Relations of tectonics to ore deposits in the southern Cordillera*: Arizona Geological Society Digest 14, 288 p.
- Pierce, F.W., and Bolm, J.G., eds., 1995, *Porphyry copper deposits of the American Cordillera*: Arizona Geological Society Digest 20, 656 p.

