

CURRICULUM VITA DAVID WAYNE BEATY

Business Address

Jet Propulsion Laboratory
Mail Stop 321-630
4800 Oak Grove Drive
Pasadena, CA 91109-8099
(818) 354-7968

EDUCATIONAL BACKGROUND

- 1980 Ph.D., Geology, California Institute of Technology, Pasadena, CA (see bibliography for thesis).
- 1975 A.B., Earth Sciences, Dartmouth College, Hanover, NH. Degree conferred summa cum laude with highest distinction.

EMPLOYMENT HISTORY

1999-Present. Jet Propulsion Laboratory, Pasadena, CA. **Project Manager** (1999-2000), **Project Scientist** (2001-2002), **Program Science Manager** (2002-2006), **Associate Mars Chief Scientist** (2006-2006), **Mars Chief Scientist** (2006-present).

1. **Chief Scientist, Mars Exploration Directorate** (Acting beginning June, 2006; formal appointment April 2007-present). Responsible for providing scientific leadership in 1) the development of Mars exploration strategy, 2) interfacing with the science community in advanced program and mission planning, 3) providing the vision for JPL Mars activities, and ensuring that the Mars strategy is implemented by the missions flown. Manage the interfaces with NASA HQ, the science community, Mars Exploration Program management, the science elements of Mars projects, and industry. Member of the Science&Technology Management Council.
2. **Associate Chief Scientist, Mars Exploration Program** (April, 2006-June, 2006). Continuation of previous duties, along with increased involvement in the roles of the Mars Chief Scientist.
3. **Mars Program Science Manager** (April, 2002-April, 2006). Responsibilities included managing the interface between the Mars science community and the JPL engineers, strategic planning in partnership with the Mars Program Chief Scientist (McCleese) and Lead Scientist at HQ (Garvin then Meyer), representing the program office in international negotiations led by NASA HQ, and managing topical studies within the Mars science office. Served as the informal manager of Mars subsurface exploration, especially as related to subsurface access. After 2004, served as a mentor for the new Planetary Protection manager, Dr. Karen Buxbaum.
4. **Planetary Protection Manager, Mars Program Office** (Apr. 2002-Sept., 2004). Scope included oversight of JPL's compliance with current PP requirements, planning for cross-mission PP issues (specifically including facilities needs), forecasting future PP requirements, and planning and implementing a program to meet future requirements.
5. **Project Scientist, Mars Returned Sample Handling Project** (Sept. 2001-Apr. 2002). Responsible for leading the science planning for the MRSH project. Additionally served as the Acting Deputy Project Manager, and in this role, managed the budget, led most of the daily activity, coordinated project communications (both internal and external).
6. **Program Manager, Mars Program Office** (Apr. 2000-Sept. 2001). Three areas of responsibility:
 - **Planetary Protection**. Responsible for managing a budget of \$3 million per year. Scope includes achieving compliance with current PP requirements, forecasting future PP requirements, and planning and implementing a program that will meet future requirements.
 - **Returned Sample Handling**. Responsible for continued planning for facilities, NEPA compliance, science operations, planetary protection, technology development, and public communications for MRSH pre-project activity. Major roles in building inter-center consensus and in communications with HQ.
 - **Subsurface Exploration**. Responsible for building a consensus around the scientific objectives of exploring

the martian subsurface, then designing a multi-mission set of exploration options that will achieve those objectives. Emphasis has been placed on drilling and geophysics, and the relationship between the two. My efforts have contributed significantly to the radar instrument in 2005 and to serious consideration of a drill in 2007.

7. Project Manager, Mars Returned Sample Handling Project (Nov. 1999-April, 2000). Start-up manager of a project with a planned budget of about \$350 million over 15 years, peak staffing of about 60 people, involvement of three NASA centers (JPL, JSC, and ARC), and national visibility. Project deactivated April 2000 with the announced slippage of MSR.

1988-1999 Chevron Petroleum Technology Company (Chevron Oil Field Research Co. prior to 1992), La Habra, CA. **Research geologist** (1988-1991), **Team Leader** (1991-1995), **Manager** (1995-1999)

Acting Laboratory Director, La Habra Laboratory (1999). June-Oct. 1999, Transition Manager then Acting Lab Director responsible for all operations associated with the closing of the La Habra Laboratory complex (7 major buildings, 477,000 sq. ft. of building space, 110 separate labs, 58 acre site). During this transition, the number of employees declined from about 350 to 15. Successful closure resulted in a gain to Chevron of about \$25 million.

Center of Excellence Manager: Geology, Physical and Chemical Measurements (1997-1999). Served as a member of the Center of Excellence Management Team. My roles were twofold:

1. Managed 100-110 geologists and lab-related employees (mixed earth scientists and engineers). I had responsibility for individual performance planning, interim and final reviews, and performance assessment/salary administration for these employees. In addition, I had responsibility for managing both geology and lab competencies, including strategic staffing, recruiting, transfers in/out, budget management. Results. Achieved consistently high employee morale, and a retention rate of 99% over two years. Long-range staffing plans added significant new talent, allowing us to enter new business lines. Established individual development plans for all employees. My work unit reduced team administration cost by 41%, and increased mean billing rates from 71% to 79%, resulting in a profit increase of 76% (#1 performer in company).
2. Led the COEx management team. My role was to manage communications, planning, new hire training, safety and environmental compliance, and internal management processes (e.g. meeting facilitation).

I additionally completed a number of special assignments, including the Web Coordination Team, Health and Wellness study team (1998), Cross-Company Lab Reorganization team (1998-99), Conference room technology team (1999), CPTC Repositioning Team (1999), and Editor, La Habra Commemorative Book.

Products and Services Manager (1995-96). Served as Products and Services Manager (Rock and Fluids Analysis and Interpretation) for six months following the unexpected death of Alan Daly. My responsibility was the Rock and Fluids Products and Services Line. In this position I was responsible for managing the technical output, finances, customer relations, marketing, strategic planning, and internal dynamics of about eight technical teams comprising 60-70 employees.

Geochemistry Team (1992-1997). Team Leader. Led a team of approximately 20 organic and inorganic geochemists. The group was involved in a variety of applications relating to oil field exploration and production. My personal technical effort was directed toward using the chemistry of oilfield waters to address a variety of reservoir management and production problems, including scale precipitation, formation damage, correct interpretation of hydrocarbon saturation, waterflood surveillance, water/rock interactions, and acid stimulation. I additionally made significant progress in designing and deploying a new geochemistry database. I served as the web master for the team.

Isotope geochemistry group (1990-1992). Group Leader, 1991-1992. Led a group of 3 researchers and 6 technicians to research the application of light stable isotope geochemistry to Chevron's exploration and oilfield operations. I was responsible for all inorganic isotope applications, and supervised three technicians. My team designed and built two new extraction lines, maintained and operated two mass

spectrometers, and established new mass spectrometer data reduction standards. Our work was used in support of most major Geology Division programs during this period, such as the major Green River, Beaufort Sea, and Dolomite Geochemistry projects.

Ore deposits group (1988-1993). My primary responsibility was to develop new techniques for locating unexposed ore deposits. Research projects focused on comparative geochemistry and genetic modeling, and for the first two years involved a variety of gold, base metal, and REE deposit types. Beginning in 1990, I focused on Irish-type Zn-Pb-Ag deposits, and participated in the discovery and delineation of the world-class zinc deposit at Lisheen, Ireland. In 1993 Chevron divested its mineral assets in order to concentrate on its core petroleum business. Our efforts at Lisheen resulted in a net gain to Chevron of about \$70 million.

July 1986-July 1988 **Consulting geologist.** My work involved three general aspects. First (50%), I did exploration work for Canyon Resources Corp., Golden, CO. My primary duty was to manage the exploration at Tennessee Pass (CO). I also worked on the Kendall Au deposit (MT) and on the Fernley diatomaceous earth deposit (NV). Second (45%), I did ore deposits research (partly new work, partly completion of old work). This resulted in 21 presentations at professional meetings, 5 talks at research facilities, contributions to 4 field guides, the publication of 5 major papers, and the initiation of one monograph. Third (5%), I designed, implemented, and interpreted oxygen isotope surveys in the Great Basin to support two gold exploration programs.

June 1980-July 1986 Noranda Exploration Inc., Denver, CO. **Geologist, Senior geologist** (promoted 1985). I explored throughout the Rocky Mountains for the following deposit types: Manto, skarn, porphyry Mo, Precambrian stratabound Au, Tertiary epithermal Au (vein and disseminated), and shale-hosted massive sulfide. Managerial and budgetary responsibilities increased from 1 person and \$40,000 to 7 people and \$1.1 million, respectively. As part of this work, I was involved in three discoveries: Tennessee Pass, CO (Au-rich manto deposits); Deer Trail, UT (two polymetallic mantos); Lisbon Valley, UT (sandstone-hosted Cu; 10 million tons of 0.73% Cu). My duties involved geological and alteration mapping, several types of geochemical surveys, geophysics, drilling, planning, budgeting, and directing an applied research program.

Fall-Spring 1975-1980, Summers 1977-1979 **Graduate Teaching Assistant, Graduate Research Assistant,** Caltech. Assisted with courses in general geology, petrology, and geochemistry.

Summers 1975-1976 **Geologist,** Noranda Exploration Inc. Worked on exploration projects involving volcanogenic massive sulfide, sandstone copper, and carbonatite-hosted REE targets.

Summer 1974 **Field geologist,** Instituto Geografico Nacional, Guatemala. Mapped the geology (at 1:25,000) of 130 km² of a previously unmapped region in the Guatemalan volcanic highlands.

VOLUNTEER UNIVERSITY SERVICE

Graduate Thesis Committees

David C. Keith, "Creating forward predictive models of artificial diagenesis during thermally enhanced oil recovery"; Ph.D. Colo. School of Mines, 1995.

Karen Duttweiler Kelley, "Origin and timing of alkaline magmatism and associated gold-telluride mineralization at Cripple Creek, Colorado, Ph.D. Colo. School of Mines, 1997.

Peter K. Blomquist, "Relationship of ore to paleo-cave systems in the Leadville Dolomite, Central Colorado"; M.S. Colorado School of Mines, 1993.

Ralph J. Stegen, "Geology and origin of the replacement deposits in the Smuggler mine, Aspen, Colorado"; M.S. Colorado State University, 1988.

John F. Hall, "Paleokarst and other dissolution features of the Devonian Dyer Dolomite and Mississippian Leadville Limestone, Central Colorado"; M.S. Colo. School of Mines, 1987.

Guest Lectures

1980-Present. Have lectured widely, including at Brown University, University of Southern California, Johnson Space Center, Ames Research Center, Colorado School of Mines, Colorado State University, University of Colorado, University of Texas (Austin), University of California (Davis), University of Cincinnati, Lawrence Livermore National Laboratory, U.S. Geological Survey (Reston), the Lamont-Doherty Geological Observatory, and the Irish Geological Survey (Dublin),.

Courses Taught

1984-1988 "A total concept of the mining industry" at Colorado School of Mines.

2008 Academy of Program/Project & Engineering Leadership (APPEL); Course Name: Principal Investigator Team Forum #1; Course Dates & Location: August 4-7, 2008, Annapolis, Maryland

Positions Held

Colorado School of Mines, Adjunct Assistant Professor, 1987-1989; Adjunct Associate Professor, 1989-Present. Colorado State University, Affiliate Professor, 1984-Present.

PROFESSIONAL SOCIETIES AND SERVICE

Geological Society of America:

Membership: 1978-1989 Member; 1989-present Fellow.

May 5-6, 1987, and again Nov. 4-5, 1988: Prepared and led the GSA-sponsored field trip "Geology and Mineral Resources of Central Colorado" (with J.C. Reed, Jr. and B. Bryant)

Society of Economic Geologists:

Membership: 1975-1980 Student Member; 1980-1986 Associate Member; 1986-1989 Member; 1990-present Fellow; 1991 elected Lifetime Member of SEG Pubco.

1994: Chairman, Nominating committee.

1994-1996: Member of SEG Council.

1990-1994: Member of the Editorial Board for the journal Economic Geology. Commended 1992 as one of the top Associate Editors.

1990: Senior editor, "Carbonate-hosted sulfide deposits of the central Colorado Mineral Belt", (Economic Geology Monograph 7, 424 p.).

1988: Led the SEG-sponsored field trip "Geology and Mineralization of the Gilman-Leadville area, Colorado" (with T.B. Thompson; Soc. Econ. Geol. Guidebook Series, V. 2, 126 p.)

Mineralogical Society of America: Past member.

American Geophysical Union: Past member.

Geochemical Society: Past member.

American Association of Petroleum Geologists: Past member.

HONORS AND AWARDS

- July, 2008. NASA Exceptional Achievement Medal. "For exceptional achievement in developing a consensus strategy for the next decade of Mars exploration".
- April, 2009. NASA Group Achievement Award. "For exceptional multinational collaboration in planning a potential international Mars Sample Return mission." From the nomination letter: "The International Mars Architecture for the Return of Samples (iMARS) team produced, in only 10 months, a consensus international plan for the first-ever Mars sample return mission. The iMARS team met only three times, but arrived at the consensus plan by leveraging hours of outside analyses from the participating organizations, using remote collaboration tools, and adopting a highly effective compromise-oriented approach. Achieving such multilateral consensus in such a short time was possible only because of the skill, dedication and tenacity of the iMARS team members. NASA has greatly benefited from having this foundation of international cooperation and support in developing plans for the future of the Mars Exploration Program and perhaps the most challenging and exciting mission in the planetary exploration queue."

FOREIGN LANGUAGES

Reading knowledge of French and Spanish.

COMMUNITY VOLUNTEER WORK

Primary Education

- Rolling Hills Elementary School, Fullerton, CA: School Site Council 1990-1992 (held one of four parent elective positions in a school of 550 students), President 1991-1992.
- Volunteer science teacher, Grades K-5; Science Fair judge, Grades 7-8.

Youth Athletics

- Fullerton Rangers Youth Soccer Club: Assistant coach 1989, Head coach 1990-1995.
- American Softball Association: Manager, Head coach, Board member, 1990-2006.
- Golden Hills Little League: Manager 1991-1994.
- National Junior Basketball League: Coach 1994-1999.

May 1, 2010

BIBLIOGRAPHY

Dissertation

Beaty, D.W., 1980, Part I. Comparative petrology of the Apollo 11 mare basalts. Part II. The oxygen isotope geochemistry of the Abitibi greenstone belt: Unpub. Ph.D. thesis, California Inst. of Technology, 463 p.

Publications

- Beaty, D.W.**, Dymek, R.F. and Albee, A.L., 1977, Petrographic investigation of 10003, the oldest mare basalt (abs.): Lunar Science VIII, p. 79-81. The Lunar Science Institute, Houston, Texas.
- Albee, A.L., **Beaty, D.W.**, Chodos, A.A., Quick, J.E., 1977, Quantitative measurement of petrographic properties by computer-controlled energy-dispersive analysis (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 9, p. 874.
- Beaty, D.W.** and Albee, A.L., 1978, A textural, modal, and chemical classification of the Apollo 11 low-K basalts (abs.): Lunar and Planetary Science IX, p. 58-60. The Lunar and Planetary Institute, Houston, Texas.
- Beaty, D.W.** and Albee, A.L., 1978, Comparative petrology of the Apollo 11 high-K basalts (abs.): Lunar and Planetary Science IX, p. 61-63. The Lunar and Planetary Inst., Houston, Texas.
- Beaty, D.W.** and Albee, A.L., 1978, Comparative petrology and possible genetic relations among the Apollo 11 basalts: Proc. Lunar Sci. Conf. 9th, p. 359-463.
- Beaty, D.W.** and Albee, A.L., 1979, Silica solid solution in natural plagioclase (abs.): EOS Trans. Amer. Geophys. Union, v. 60, p. 415.
- Beaty, D.W.**, Hill, S.M.R. and Albee, A.L., 1979, Low-K basaltic fragments from Apollo 11 soils (abs.): Lunar and Planetary Science X, p. 86-88. The Lunar and Planetary Institute, Houston, Texas.
- Beaty, D.W.**, Hill, S.M.R., Albee, A.L. and Baldrige, W.S., 1979, Apollo 12 feldspathic basalts 12031, 12038 and 12072: Petrology, comparison and interpretations (abs.): Lunar and Planetary Science X, p. 115-139. The Lunar and Planetary Institute, Houston, Texas.
- Beaty, D.W.**, Hill, S.M.R. and Albee, A.L., 1979, Petrology of a new rock type from Apollo 11: Group D basalts (abs.): Lunar and Planetary Science X, p. 89-91. The Lunar and Planetary Institute, Houston, Texas.
- Baldrige, W.S., **Beaty, D.W.**, Hill, S.M.R. and Albee, A.L., 1979, The petrology of the Apollo 12 pigeonite basalt suite: Proc. Lunar Sci. Conf. 10th, p. 141-179.
- Beaty, D.W.**, Hill, S.M.R. and Albee, A.L., 1979, Comparative petrology and significance of the Apollo 11 high-K vitrophyres (abs.): Lunar and Planetary Science X, p. 83-85. The Lunar and Planetary Science Institute, Houston, Texas.
- Beaty, D.W.**, Hill, S.M.R., Albee, A.L., M.-S. Ma and Schmitt, R.A., 1979, The petrology and chemistry of basaltic fragments from the Apollo 11 soil, Part I: Proc. Lunar Sci. Conf. 10th, p. 41-75.
- Beaty, D.W.** and Taylor, H.P., Jr., 1979, Oxygen isotope geochemistry of the Abitibi greenstone belt, Ontario: Evidence for seawater/rock interaction and implications regarding the isotopic composition and evolution of the ocean and oceanic crust (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 11, p. 386.
- Albee, A.L., **Beaty, D.W.**, Chodos, A.A. and Quick, J.E., 1980, Quantitative analysis of petrographic properties and of mineral compositions with a computer-controlled energy-dispersive system: Trans. 8th International Cong. on X-Ray Optics and Microanalysis, D.R. Beaman, ed., Pendell Publishing Company, p. 526-537.
- Beaty, D.W.** and ten others, 1980, Mapa Geologica de Cuilapa, Guatemala: Instituto Geografico Nacional de Guatemala, Hoja 2158 IVG.
- Beaty, D.W.** and Albee, A.L., 1980, Silica solid solution and zoning in natural plagioclase: Am. Mineralogist, v. 65, p. 63-74.
- Hill, S.M.R., **Beaty, D.W.** and Albee, A.L., 1980, Petrology of two Luna 24 samples: 24067,3200 and 24067,3600 (abs.): Lunar and Planetary Science XI, p. 447-449. The Lunar and Planetary Institute, Houston.
- Beaty, D.W.** and Albee, A.L., 1980, Petrology of a pyroxenite xenolith in mare basalt 10050 (abs.): Lunar and Planetary Science XI, p. 67-69. The Lunar and Planetary Institute, Houston.
- Beaty, D.W.** and Albee, A.L., 1980, The petrography of basaltic fragments in Apollo 11 drive tubes 10004 and 10005 (abs.): Lunar and Planetary Science XI, p. 64-66.
- Beaty D.W.** and Taylor, H.P., Jr., 1980, The oxygen isotope geochemistry of the Kidd Creek mine: Evidence for a high-¹⁸O ore-forming solution and implications regarding the genesis of volcanogenic massive sulfide

- deposits (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 12, 384.
- Beaty, D.W. and Taylor, H.P., Jr., 1980, Early crustal hydrothermal processes and the $^{18}\text{O}/^{16}\text{O}$ evolution of seawater: Evidence from the Amulet mine (abs.): EOS Trans. Amer. Geophys. Union, v. 61, p. 386.
- Grove, T.L. and **Beaty, D.W.**, 1980, Origin of textural diversity in Apollo 11 high-K basalt (abs.): Lunar and Planetary Science XI, p. 371-373. The Lunar and Planetary Institute, Houston.
- Grove, T.L. and **Beaty, D.W.**, 1980, Classification, experimental petrology and possible volcanic histories of the Apollo 11 high-K basalts: Proc. Lunar Sci. Conf. 11th, p. 149-178.
- Beaty, D.W.** and Albee, A.L., 1980, The geology and petrology of the Apollo 11 landing site: Proc. Lunar Sci. Conf. 11th, p.23-36.
- Ma, M.S., Schmitt, R.A., **Beaty, D.W.** and Albee, A.L., 1980, The petrology and chemistry of basaltic fragments from the Apollo 11 soil: Drive tubes 10004 and 10005: Proc. Lunar Sci. Conf. 11th, p. 37-48.
- Beaty, D.W.** and Taylor, H.P., Jr., 1982, The oxygen isotope geochemistry of komatiites: Evidence for water-rock interactions: in Komatiites (Arndt, N.T., and Nisbet, E., eds.), Allen and Unwin, Inc., p. 267-280.
- Beaty, D.W.** and Taylor, H.P., Jr., 1982, Some petrologic and oxygen isotopic relationships in the Amulet mine, Noranda, Quebec, and their bearing on the origin of Archean massive sulfide deposits: Economic Geology, v. 77, p. 95-108.
- Taylor, H.P., Jr., and **Beaty, D.W.**, 1984, Oxygen and hydrogen isotope studies of hydrothermal interactions in volcanic plutonic complexes, with applications to the formation of submarine ore deposits: in Recent Advances in the Geochemistry of Ore Deposits, p.53-58. The Mineral Exploration Research Institute; Montreal, Quebec.
- Beaty, D.W.** and Cunningham, C.G., 1984, Igneous-related hydrothermal origin of the Deer Trail Pb-Zn-Ag-Au-Cu manto deposits, Marysvale, Utah (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 16, p. 440-441.
- Beaty, D.W.**, Saunders, D.M., Landis, G.P., Naeser, C.W., and Tschauder, R.J., 1985, Two episodes of sulfide deposition in paleo-caves in the Leadville Dolomite at Red Cliff, Colorado: in 1985 SEPM Midyear Meeting Field Guides (De Voto, R.H., ed.), p. 6-127 to 6-136. The Society of Economic Paleontologists and Mineralogists; Denver, Colorado.
- Lynch, W.C., **Beaty, D.W.**, Gonzalez-Urien, E., and Reisbick, F., 1985, The Mt. Bellview, Colorado igneous-hydrothermal-breccia complex: A calc-alkaline molybdenite occurrence (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 17, p. 253.
- Beaty, D.W.**, 1985, The oxygen and carbon isotope geochemistry of the Leadville Formation: in 1985 SEPM Midyear Meeting Field Guides (De Voto, R.H., ed.), p. 6-71 to 6-78. The Society of Economic Paleontologists and Mineralogists, Denver, Colorado.
- Thompson, T.B., **Beaty, D.W.**, Gonzalez-Urien, E., Cunningham, C.G., and Naeser, C.W., 1985, Fission track dating, stable isotopes, and fluid inclusions related to the origin of ore deposits at the Leadville and Gilman districts, Colorado (abs.): 114th Annual Mtg. AIME Tech. Prog., p. 27.
- Thompson, T.B., **Beaty, D.W.**, Naeser, C.W., and Cunningham, C.G., 1985, Origin of the ore deposits at Gilman and Leadville, Colorado: in 1985 SEPM Midyear Meeting Field Guides (De Voto, R.H., ed.), p. 6-137 to 6-142. The Society of Economic Paleontologists and Mineralogists; Denver, Colorado.
- O'Neill, T.F., Merchant, J.S., **Beaty, D.W.**, and Whitney, G., 1985, Altered igneous rocks around Rocky Mountain manto deposits: The Gilman, Colorado, example (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 17, p. 682.
- Beaty, D.W.**, Thompson, T.B., and Solomon, G.C., 1985, The Leadville, Colo. district: Oxygen isotopic evidence for a magmatic-hydrothermal origin (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 17, p. 521.
- Saunders, D.M., **Beaty, D.W.** and Thompson, T.B., 1986, The geochemistry of the Park Utah West vein and the origin of the Park City District, Utah (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 18, p. 409.
- Beaty, D.W.**, Naeser, C.W., and Lynch, W.C., 1986, Geology and significance of the auriferous manto deposits at Tennessee Pass, Colorado (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 18, p. 537.
- Beaty, D.W.**, Lynch, W.C. and Solomon, G.C., 1986, Origin of the ore deposits at Gilman, Colorado; oxygen and hydrogen isotopic constraints (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 18, p. 537.
- Beaty, D.W.**, Cunningham, C.G., Rye, R.O., Steven, T.A., Gonzalez-Urien, E., 1986, Geology and genesis of the Deer Trail Pb-Zn-Ag-Au manto deposits, Marysvale district, West-Central Utah: Economic Geology, v. 81, p. 1932-1952.
- Stegen, R.J., Thompson, T.B., and **Beaty, D.W.**, 1987, Evidence for multiple episodes and styles of brecciation, Smuggler mine, Aspen, Colorado (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 19, p. 336.

- Beaty, D.W.**, Hahn, G.A., and Threlkeld, W.E., 1987, Comparative geochemistry of tourmaline- and albite-bearing alteration zones, Belt/Purcell Supergroup: Sullivan and a barren system (Trestle Creek, ID) (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 19, p. 583.
- Stegen, R.J., Thompson, T.B., and **Beaty, D.W.**, 1987, The origin of the Aspen district, Colorado, based on geochemistry and petrology of the Smuggler mine manto ores (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 19, p. 336.
- Beaty, D.W.**, Naeser, C.W., and Lynch, W.C., 1987, The origin and significance of the stratabound carbonate-hosted deposits at Tennessee Pass, Colorado: Econ. Geol., v. 82, p. 2158-2178.
- Beaty, D.W.**, 1987, The use of $^{18}\text{O}/^{16}\text{O}$ data to discriminate between gold-rich and barren epithermal systems, UT, NV, (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 19, p. 260.
- Beaty, D.W.** and Lynch, W.C., 1987, Metallogenesis of Precambrian-hosted vein ores, Sugarloaf and St. Kevin districts, Colorado (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 19, p. 260.
- Snow, G.G., and **Beaty, D.W.**, 1987, The recession in metals economic geology of 1982-1986: Causes and long-term implications (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 19, p. 851.
- Beaty, D.W.**, Naeser, C.W., and Cunningham, C.G., 1988, Source of the fluids responsible for the manto/chimney sulfide complex at Gilman, Colorado: Results of deep drilling beneath the orebody (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. 406.
- Beaty, D.W.**, and Thompson, T.B., 1988, Carbonate-rich alteration assemblages in porphyry around manto-type orebodies in central Colorado, and their exploration significance (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. 406.
- Beaty, D.W.**, and Taylor, H.P., Jr., and Coad, P.R., 1988, An oxygen isotope study of the Kidd Creek, Ontario volcanogenic massive sulfide deposit: Evidence for a high- ^{18}O ore fluid: Economic Geology, v. 83, p. 1-17.
- Beaty, D.W.**, Naeser, C.W., Cunningham, C.G., and Landis, G.P., 1988, Genetic model for the Gilman District, Colo., based on fluid inclusion, stable isotope, geologic, and fission-track time/temperature studies (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. A38.
- Pohl, D.C., and **Beaty, D.W.**, 1988, A telluride geothermometer assemblage from a new manto type Au-Ag deposit, Buckeye Gulch, Tennessee Pass area, Colorado (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. A38.
- Thompson, T.B., and **Beaty, D.W.**, 1988, The origin of the Leadville district: A century of research and the development of a comprehensive genetic model (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. A38-39.
- Holland, P.T., **Beaty, D.W.**, and Snow, G.G., 1988, Elemental and oxygen isotope geochemistry of jasperoid in the northern Great Basin: Implications for fluid composition and evolution in Carlin-type hydrothermal systems (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. A275.
- Stegen, R.J., and **Beaty, D.W.**, 1988, Constraints on genetic models for the Aspen District, Colo., derived from fluid inclusion, stable isotope, and geologic studies (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. A278.
- Lynch, W.C., Stegen, R.J., **Beaty, D.W.**, and Saunders, D.M., 1988, A practical classification system and exploration models for precious metal-rich manto deposits, Eastern Great Basin, NV, UT, and Central Rocky Mountains, CO (abs.): in Bulk Mineable Precious Metal Deposits of the Western United States (Schafer, R.W., Cooper, J.J., and Vikre, P.G., eds.), p. 750. The Geological Soc. of Nevada; Reno, NV.
- Blomquist, P.K., Perry, R.V., and **Beaty, D.W.**, 1988, The geology of "Sherman-type" Ag-Pb-Zn-Ba deposits in the Leadville Formation, Spring Creek area, central Colorado (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 20, p. A336-A337.
- Beaty, D.W.**, Johansing, R.J., Thompson, T.B., 1988, Stratigraphy of the Mississippian Leadville Dolomite, Gilman to Leadville, Colorado: Redefinition of the Castle Butte and Red Cliff Members: in Thompson, T.B. and Beaty, D.W., eds., Geology and Mineralization of the Gilman-Leadville area, Colorado: Soc. Econ. Geol. Guidebook Series, v. 2, p. 9-34.
- Beaty, D.W.**, Hahn, G.A., and Threlkeld, W.E., 1988, Field, isotopic and chemical studies of tourmaline-bearing rocks, Belt/Purcell Supergroup: Genetic constraints and exploration significance for Sullivan-type deposits: Can. Jour. Earth Sci., v. 25, p. 392-402.
- Beaty, D.W.**, 1988, Road log and stop descriptions, Minturn to Leadville, Colorado: in Thompson, T.B. and Beaty, D.W., eds., Geology and Mineralization of the Gilman-Leadville area, Colorado: Soc. Econ. Geol. Guidebook Series, v. 2, p. 36-53.
- Pohl, D.C., and **Beaty, D.W.**, 1988, The petrology of mixed telluride, sulfosalt, sulfide ores in Buckeye Gulch,

- Leadville area, Colorado: *in* Modreski, P.J., ed., Mineralogy of Precious Metal Deposits, p. 33-39. Friends of Mineralogy, Colorado Chapter, Denver, Colorado.
- Beaty, D.W.**, 1988, Geology of the Red Cliff District, Eagle County, Colorado, and the form, setting, and geochemistry of the constituent Ag-Zn-Pb deposits: *in* Thompson, T.B. and Beaty, D.W., eds., Geology and Mineralization of the Gilman-Leadville area, Colorado: Soc. Econ. Geol. Guidebook Series, v. 2, p. 55-65.
- Beaty, D.W.**, Naeser, C.W., Cunningham, C.G., and Landis, G.P., 1988, Genetic model for the Gilman District, Colo., based on fluid inclusion, stable isotope, geologic, and fission-track time/temperature studies (abs.): *in* Thompson, T.B. and Beaty, D.W., eds., Geology and Mineralization of the Gilman-Leadville area, Colorado: Soc. Econ. Geol. Guidebook Series, v. 2, p. 66-75.
- Stegen, R.J., **Beaty, D.W.**, and Thompson, T.B., 1988, Paragenesis of the mineralization event at Aspen, Colorado, based on structural, textural, and mineralogical studies of the orebodies in the Smuggler Mine: *in* Modreski, P.J., ed., Mineralogy of Precious Metal Deposits, p. 141-147. Friends of Mineralogy, Colorado Chapter, Denver, Colorado.
- Whitney, Gene, **Beaty, D.W.**, and Hunt, W.H., 1988, The presence of rectorite in hydrothermally altered porphyry associated with gold-rich mantos, Buckeye Gulch, central Colorado: *in* Modreski, P.J., ed., Mineralogy of Precious Metal Deposits, p. 148-156. Friends of Mineralogy, Colorado Chapter, Denver, Colorado.
- Beaty, D.W.**, 1988, History and geology of the Gilman District (p. 106-108), Stratigraphy of the Leadville Dolomite (p. 109-111), History and geology of the Leadville District (with Thompson, T.B., p. 102-105): *in* Holden, G.S., ed., Geological Society of America Field Trip Guidebook, 1988. The Geol. Soc. of Amer., Boulder, CO.
- Holland, P.T., **Beaty, D.W.**, and Snow, G.G., 1988, Comparative elemental and oxygen isotope geochemistry of jasperoid in the northern Great Basin: Evidence for distinctive fluid evolution in gold-producing hydrothermal systems: Economic Geology, v. 83, p. 1401-1423.
- Beaty, D.W.**, Cunningham, C.G., Naeser, C.W., and Landis, G.P., 1989, Genetic model for the carbonate-hosted Pb-Zn-Cu-Ag-Au manto-chimney deposits of the Gilman, Colorado District, based on fluid inclusion, stable isotope, geologic, and fission-track time/temperature studies: U.S. Geol. Survey Circular 1035, p. 4-5.
- Beaty, D.W.**, and Taylor, H.P., Jr., and Coad, P.R., 1989, An oxygen isotope study of the Kidd Creek, Ontario volcanogenic massive sulfide deposit: Evidence for a high-¹⁸O ore fluid--A reply: Economic Geology, v. 84, p. 200.
- Beaty, D.W.**, 1989, Mineral deposits and geology of central Colorado (with Bryant, B., p. 1-15), The Aspen mining district (with 3 co-authors, p. 27-32), The Gilman mining district (with 3 co-authors, p. 32-38), The Leadville mining district (with Thompson, T.B., p. 44-49): *in* Bryant, B., and Beaty, D.W., eds., Mineral Deposits and Geology of Central Colorado, Int. Geol. Cong. Field Trip Guidebook T129.
- Beaty, D.W.**, Stegen, R.J., and Thompson, T.B., 1989, Stable isotopic evidence for an evolving magmatic-hydrothermal ore-forming system at Aspen, Colorado (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 21, p. A251.
- Holland, P.T., **Beaty, D.W.**, and Snow, G.G., 1989, Comparative elemental and oxygen isotope geochemistry of jasperoid in the northern Great Basin: Evidence for distinctive fluid evolution in gold-producing hydrothermal systems--A reply: Economic Geology, v. 84, p. 1707-1712.
- Beaty, D.W.**, 1989, The development and application of genetic and exploration models for polymetallic manto deposits using isotopic data (abs.): *in* Kaplan, I., O'Neil, J., and Taylor, H.P., Jr., eds., Epstein 70th Birthday Symposium Abstracts w. Program, p. 132-134.
- Beaty, D.W.**, Landis, G.P., and Thompson, T.B., 1990, Comparative geology and genetic relationships among the Pb-Zn-Ag-Au ores hosted in the Leadville Dolomite in central Colorado (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 22, p. A181.
- Hitzman, M.W., O'Connor, P., Shearley, E., Schaffalitzky, C., Hough, D., **Beaty, D.W.**, Allan, J.R., and Thompson, T.B., 1990, Discovery and geology of the Lisheen Zn-Pb-Ag prospect, Co. Tipperary, Ireland (abs.): The Irish minerals industry--A review of the decade: Abstracts volume and Programme, p. 33-34. The Irish Association for Economic Geology.
- Beaty, D.W.**, and Merchant, J.S., 1990, Origin of the ore deposits at Gilman, Colorado. Part I: Introduction: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 198-203.

- Beaty, D.W.**, Merchant, J.S., O'Neill, T.F., and Titley, S.R., 1990, Origin of the ore deposits at Gilman, Colorado. Part II: Alteration, veining, and carbonate-replacement patterns surrounding the main manto/chimney complex: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 203-219.
- Naeser, C.W., Cunningham, C.G., and **Beaty, D.W.**, 1990, Origin of the ore deposits at Gilman, Colorado. Part III: Fission-track and fluid inclusion studies: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 219-228.
- Beaty, D.W.** and G.P. Landis, 1990, Origin of the ore deposits at Gilman, Colorado. Part IV: Stable isotope geochemistry: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 228-245.
- Wendlandt, R.F., Harrison, W.J., and **Beaty, D.W.**, 1990, Origin of the ore deposits at Gilman, Colorado. Part V: A reaction path model for the formation of the manto-type massive sulfide replacement deposits: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 246-254.
- Beaty, D.W.**, Cunningham, C.G., Harrison, W.J., Landis, G.P., Merchant, J.S., Naeser, C.W., and Wendlandt, R.F., 1990, Origin of the ore deposits at Gilman, Colorado. Part VI: Discussion and genetic model: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 255-265.
- Thompson, T.B., and **Beaty, D.W.**, 1990, Geology and the origin of ore deposits in the Leadville district, Colorado: Part II. Oxygen, hydrogen, carbon, sulfur, and lead isotope data and development of a genetic model: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 156-179.
- Stegen, R.J., **Beaty, D.W.**, and Thompson, T.B., 1990, The origin of the Ag-Pb-Zn-Ba deposits at Aspen, Colorado, based on geologic and geochemical studies of the Smuggler orebody: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 266-300.
- Pohl, D.C., and **Beaty, D.W.**, 1990, The mineralogy and petrology of telluride-sulfosalt-sulfide replacement deposits in the Leadville Dolomite, Buckeye Gulch, Colorado: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 407-416.
- Beaty, D.W.**, Johansing, R.J., Thompson, T.B., 1990, The stratigraphic position, lithologic character, and preore dissolution features of ore-bearing beds in the Leadville Dolomite, Leadville-Gilman area: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 118-129.
- Beaty, D.W.**, Landis, G.P., and Thompson, T.B., 1990, Carbonate-hosted sulfide deposits of the central Colorado Mineral Belt: Introduction, general discussion, and summary: *in* Beaty, D.W., Landis, G.P., and Thompson, T.B., eds., Carbonate-hosted Sulfide Deposits of the Central Colorado Mineral Belt, Econ. Geol. Monograph #7, p. 1-18.
- Bakke, E.L., **Beaty, D.W.**, and Hayes, J.M., 1991, Re-evaluation of isotope ratios in the PDB standard and of algorithms for the calculation of carbon and oxygen isotope abundances (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 23, p. A150.
- Beaty, D.W.**, Allan, J.R., Hitzman, M.W., and Shearley, E., 1991, The relationship of dolomitization and mineralization at the Lisheen deposit, south-central Ireland (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 23, p. A172-173.
- Hitzman, M.W., and **Beaty, D.W.**, 1992, The Lisheen Zn-Pb-Ag Deposit, Ireland - a geologically directed discovery (abs.): International Geological Congress, Kyoto, Japan, v. xx, p. xxx.
- Allan, J.R., **Beaty, D.W.**, Sturtevant, R.G., Hitzman, M.W., and Shearley, E., 1992, The origin of regional dolomite in the Waulsortian of southeast Ireland: Implications for the time of ore deposition (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 24, p. A354.
- Thompson, T.B., Hitzman, M.W., and **Beaty, D.W.**, 1992, Paragenesis and fluid inclusions of the Lisheen Zn-Pb-Ag deposit, County Tipperary, Ireland (abs.): Geol. Soc. Amer. Abs. w. Progs., v. 24, p. A354.
- Hitzman, M.W., O'Connor, P., Shearley, E., Schaffalitzky, C., **Beaty, D.W.**, Allan, J.R., and Thompson, T.B., 1992, Discovery and geology of the Lisheen Zn-Pb-Ag prospect, Rathdowney Trend, Ireland: *in* Bowden, A.A.,

- Earls, G., O'Connor, P.G., and Pyne, J.F., eds., The Irish Minerals Industry 1980-1990; p. 227-246. The Irish Association for Economic Geology.
- Kieth, D., Semimbar, H., Wendlandt, R.F., Harrison, W.J., and **Beaty, D.W.**, 1993, Laboratory and numerical simulation of fluid-rock interactions during steamflood EOR of a volcanoclastic reservoir (abs.): National American Chemical Society, v. __, p. _____.
- Hitzman, M.W. and **Beaty, D.W.**, 1996, The Irish Zn-Pb-(Ba) Orefield: in Sangster, D.F., ed., Proceedings Volume of the International Field Conference on Carbonate-Hosted Lead-Zinc Deposits; p __. The Society of Economic Geologists.
- Strickland, L.N., **Beaty, D.W.**, and Carpenter, A.B., 1996, Utilization of geological mapping techniques to track scaling tendencies in the Eunice Monument South Unit waterflood, Lea County, New Mexico: NACE National meeting, v. __, p. _____.
- Kelley, Karen D, Stein, Holly J., Snee, Lawrence W., **Beaty, D.W.**, and Thompson, T.B., 1996, Genesis of epithermal gold-telluride deposits and associated alkaline igneous rocks in the Cripple Creek district, Colorado, western U.S. (abs.): International Geological Congress, v. __, p. _____.
- Wong, T. C., Hwang, R. J., **Beaty, D.W.**, Dolan, J. D., McCarty, R. A., and Franzen, A. L. (1997) Acid sludge characterization and remediation improve well productivity and save costs in the Permian Basin. SPE Production & Facilities Journal, 51-58.
- Kelley, Karen D., Romberger, Samuel B., **Beaty, D.W.**, Pontius, Jeffrey A., Snee, Lawrence W., Stein, Holly J., and Thompson, T.B., 1998, Geochemical and geochronological constraints on the genesis of Au-Te deposits at Cripple Creek, Colorado: Economic Geology, v. 93, p. 981-1012.
- Beaty, D. W.**, G. Briggs and S. M. Clifford, (2000). Strategic planning for exploration of the Martian subsurface, Workshop on Concepts and Approaches for Mars Exploration, Abstract No. 6233.
- Beaty, D. W.**, S. M. Clifford, G. Briggs and J. Blacic, (2000). A strategic framework for the exploration of the Martian subsurface, Mars Program Office White Paper.
- Beaty, D. W.**, A. Coradini, S. Clifford, J. Grant, P. Gogineni, J. Plaut, K. Rainey and A. Safaeinili, (2001). Analysis of the potential of a Mars orbital ground-penetrating radar instrument in 2005, Mars Program Office White Paper.
- Clifford, S. M., R. Bianchi, M. C. De Sanctis, M. Duke, S. Kim, R. Mancinelli, D. Ming, Q. Passey, S. Smrekar, and **D. Beaty**, (2001). Science rationale and priorities for subsurface drilling in '07, Mars Program Office White Paper.
- Beaty, D. W.**, S. M. Clifford, P. Gogineni, R. Grimm, C. Leuschen, G. R. Olhoeft, K. Raney and A Safaeinili, (2001). Report of the virtual instrument science definition team on: Facility Orbital Radar Sounder Experiment for MRO 2005 (FORSE), Mars Program Office White Paper.
- Clifford, S. M., J. A. George, C. R. Stoker, G. Briggs and **D. W. Beaty**, (2001). A proposal for an integrated geophysical strategy to "follow the water" on Mars, submitted to the LPI Conference on Geophysical Detection of Subsurface Water on Mars.
- Tom G Farr, **D. W. Beaty**, P Gogineni, J Grant, R Grimm, C Leuschen, GR Olhoeft, A Safaeinili, (2001) Electromagnetic sounding of Mars from a lander or rover: Results of an instrument study for 2007.
- MacPherson, G.J. and the MSR Science Steering Group (2002), Groundbreaking MSR: Science requirements and cost estimates for a first Mars surface sample return mission. Unpublished white paper at <http://mepag.jpl.nasa.gov/reports/index.html>
- Beaty, D.W.**, McCleese, D.J., Syvertson, M. (eds.), 2003, Growing and Strengthening the Mars Science Community. Unpublished white paper, <http://mepag.jpl.nasa.gov/reports/index.html>.
- MSL Project Science Integration Group (2003), Final report of the Mars Science Laboratory Project Science Integration Group. Unpublished white paper, <http://mepag.jpl.nasa.gov/reports/index.html>.
- Beaty, D.W.**, S. Miller, W. Zimmerman, J. Bada, P. Conrad, E. Dupuis, T. Huntsberger, R. Ivlev, S. S. Kim, B. G. Lee, D. Lindstrom, L. Lorenzoni, P. Mahaffy, K. McNamara, D. Papanastassiou, S. Patrick, S. Peters, N. Rohatgi, J. J. Simmonds, J. Spray, T. D. Swindle, L. Tamppari, A. Treiman, J. K. Wolfenbarger and A. Zent, 2004, Planning for a Mars in situ sample preparation and distribution (SPAD) system: Planetary and Space Science, v. 52, p. 55-66.
- Mahaffy, P.R., **Beaty, D.W.**, Anderson, M., Aveni, G., Bada, J., Clemett, S., Des Marais, D., Douglas, S., Dworkin, J., Kern, R., Papanastassiou, D., Palluconi, F., Simmonds, J. Steele, A., Waite, H., and Zent, A. (2004). Science Priorities Related to the Organic Contamination of Martian Landers. Unpublished white paper, 32 p, posted Nov. 2004 by the Mars Exploration Program Analysis Group (MEPAG) at

- <http://mepag.jpl.nasa.gov/reports/index.html>.
- Steele, Andrew, **Beaty, D.W.**, and the AFL SSG, 2004, FINDINGS OF THE ASTROBIOLOGY FIELD LAB SCIENCE STEERING GROUP (AFLSSG), unpublished analysis 54 p, posted 2004 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>
- Beaty, D.W.**, Mahaffy, P.R., Anderson, M.S., Aveni, G., Bada, J.L., Clemett, S.J., Des Marais, D.J., Douglas, S., Dworkin, J.P., Kern, R.G., Papanastassiou, D.A., Palluconi, F.D., Simmonds, J.J., Steele, A., Waite, J.H., and Zent, A.P. (2004), Organic Contamination on Martian Landers: Astrobiology Implications and Mitigation Strategies (abs.): International Jour. Astrobiology, Suppl. 1, p. 86.
- Shearer, C., **Beaty, D.W.**, Anbar, A.D., Banerdt, B., Bogard, D., Campbell, B.A., Duke, M., Gaddis, L., Jolliff, B., Lentz, R.C.F., McKay, D., Neumann, G., Papanastassiou, D., Phillips, R., Plescia, J., and Wadhwa, M. (2004). Findings of the Moon→Mars Science Linkage Science Steering Group. Unpublished white paper, 29 p, posted October, 2004 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag/reports/index.html>.
- Beaty, D.W.**, Snook, K., Allen, C.C., Eppler, D., Farrell, W.M., Heldmann, J., Metzger, P., Peach, L., Wagner, S.A., and Zeitlin, C., (2005). An Analysis of the Precursor Measurements of Mars Needed to Reduce the Risk of the First Human Missions to Mars. Unpublished white paper, 77 p, posted June, 2005 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>.
- Beaty, D.W.**; Steele, A.; and the AFL SSG Team, (2005). Astrobiology Field Laboratory (AFL) – A Mars mission concept to look for signs of life (abs.). Abstract EGU05-A-11045, European Geosciences Union General Assembly 2005, *Geophysical Research Abstracts, Volume 7*.
- MEGIS Participants (2005). Report of the Mars Environmental GIS Workshop, Oct. 5-6, 2005. Unpublished presentation file, 44 p, posted November, 2005 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/workshop/index.html>.
- Beaty, D.W.**, Clifford, S.M., Borg, L.E., Catling, D., Craddock, R.A., Des Marais, D.J., Farmer, J.D., Frey, H.V., Haberle, R.M., McKay, C.P., Newsom, H.E., Parker, T.J., Segura, T., and Tanaka, K.L., 2005, Key Science Questions from the Second Conference on Early Mars: Geologic, Hydrologic, and Climatic Evolution and the Implications for Life. *Astrobiology*, 5(6): 663-689. doi:10.1089/ast.2005.5.663.
- Beaty, D.W.**, W.V. Boynton, K.L. Buxbaum, B.C. Clark, R.M. Haberle, J.W. Head, M.H. Hecht, M.T. Mellon, M.A. Meyer, G.G. Ori, D.A. Paige, J.A. Spry, THE POSSIBILITIES FOR LIQUID WATER WITHIN THE UPPERMOST MARTIAN CRUST (abs.) Posted Feb. 2006 in Mars Water Workshop Feb. 23-24, 2006 at <http://es.ucsc.edu/~fnimmo/website/mars2006.html>.
- Beaty, D.W.**, K.A. Buxbaum, M.A. Meyer and the MEPAG Special Regions Science Analysis Group (2006), Findings of the Mars Special Regions Science Analysis Group, *Astrobiology* 6, 677-732. doi:10.1089/ast.2006.6.677.
- McCleese, D.J. and the Mars Advance Planning Group, *Mars Exploration Strategy 2007-2016*, NASA, Jet Propulsion Laboratory, Pasadena, Calif., 2006. A copy may be accessed at the following web site: <http://mepag.jpl.nasa.gov/reports/index.html>.
- Beaty, D.W.**; Heldmann, J.L.; Peach, L.; Hinners, N.; Clark, B.; Easter, R.; Braun, R.; Mattingly, R.; Shearer, C.; (2006). Draft Findings of the Mars Forward Lunar Objectives Science Analysis Group, Unpublished white paper, 22 p, posted October, 2006 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>.
- Beaty, D.W.**, M.A. Meyer, and the Mars Advance Planning Group (2006), 2006 Update to “Robotic Mars Exploration Strategy 2007-2016,” Unpublished white paper, 24 p, posted Nov. 2006 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>.
- Heldmann, J.L., Levine, J., Garvin, J., **Beaty, D.W.**, Bell, M.S., Clancy, T., Cockell, C.S., Connerney, J., Delory, G., Dickson, J., Doran, P., Elphic, R., Eppler, D., Fernandez-Remolar, D., Gruener, J., Head, J.W., Helper, M., Hipkin, V., Lane, M., Levy, J., Millikan, R., Moersch, J., Ori, G., Peach, L., Poulet, F., Rice, J., Snook, K., Squyres, S., and J. Zimbelman, 2007. Interim Results from the MEPAG Human Exploration of Mars Science Analysis Group (HEM SAG), *Lunar Exploration Analysis Group*, Houston, TX, Abstract #3018, October 2007.
- Beaty, D.W.**, Budney, C.J., and McCleese, D.J. (2007). Session Summaries, 7th International Conference on Mars, July 9-13, 2007. Unpublished white paper, 22 p, posted August, 2007 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>. JPL D-39753.
- McKay, C. P., **Beaty, D.W.**, Conley, C. A., Crisp, J. A., Des Marais, D. J., Grotzinger, J. P., Karcz, J. S., Lemke, L. G., Squyres, S. W., Stoker, C. R., & Treiman, A. H. 2007, Scientific requirements for a possible Mars

- Science Laboratory sample cache, posted by the Mars Exploration Program Analysis group at http://mepag.jpl.nasa.gov/reports/MSL_cache_sdd.pdf.
- Fishbaugh, K., C.S. Hvidberg, **Beaty, D.W.**, S. Clifford, D. Fisher, A. Haldemann, J.W. Head, M. Hecht, M. Koutnik, K. Tanaka, and W.J. Ammann (2008). Introduction to the 4th Mars Polar Science and Exploration Conference special issue: Five top questions in Mars polar science. *Icarus* 196 (2), 305-317.
- MEPAG ND-SAG (2008). Science Priorities for Mars Sample Return, *Astrobiology*, 8(3): 489-535. doi:10.1089/ast.2008.0759.
- Murchie, Scott and the MEPAG MSS-SAG (2008). Mars Strategic Science Assessment Group, Unpublished presentation package, 35 p, posted March 2008 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>.
- Steele, A., L. Beegle, D. DesMarais, B. Sherwood-Lollar, C. Neal, P. Conrad, D. Glavin, T. McCollom, J. Karcz, C. Allen, E. Vicenzi, S. Cady, J. Eigenbrode, D. Papineau, V. Starke, M. Glamoclija, M. Fogel, L. Kerr, J. Maule, G. Cody, I. Ten Kate, K. Buxbaum, L. Borg, S. Symes, **Beaty, D.W.**, C. Pilcher, M. Meyer, C. Conley, J. Rummel, R. Zurek, and J. Crisp (2008). Report of the joint NAI / MEPAG Mars Science Laboratory Caching Working Group. Unpublished white paper, 17 p, posted Jan., 2008 by the Mars Exploration Program Analysis Group (MEPAG) at <http://mepag.jpl.nasa.gov/reports/index.html>.
- Beaty, D.W.**, MEPAG ND-SAG team, and IMEWG IMARS team, 2008. Preliminary Findings Related to the Use of Sample Return to Advance Our Life-Related Goals for Mars (abs.), *Astrobiology*, v. 8, p. 420.
- Grady, M.M. and the IMARS team, 2008. Planning for an international Mars Sample Return Mission (abs.). Geophysical research Abstracts, v. 10, EGU General Assembly, #04545.
- iMARS Team (2008), Preliminary Planning for an International Mars Sample Return Mission: Report of the International Mars Architecture for the Return of Samples (iMARS) Working Group. Unpublished white paper, 60 p, posted July, 2008 by the Mars Exploration Program Analysis Group (MEPAG) at http://mepag.jpl.nasa.gov/reports/iMARS_FinalReport.pdf.
- McCuiston, D., 2008, Potential International Collaboration for Mars Sample Return (abs.), 37th COSPAR Scientific Assembly, abstract #B02-0020-08, can be accessed on the web at <http://www.cospar-assembly.org/abstractcd/COSPAR-08/abstracts/data/pdf/abstracts/B02-0020-08.pdf>.
- Moura, D., et al. The Road to an International Architecture for Mars Sample Return; The iMARS Team view, International Astronautical Federation, Glasgow, Sept 2008.
- Ori, G.G., **Beaty, D.W.**, C. Allen, and the iMARS Team, 2008, Sampling Strategy for a Possible Mars Sample Return Mission (abs.) Geol. Soc. of Amer. 2008 Annual Mtg., Houston, TX, abs. #195-5; can be accessed on the web at <http://a-c-s.confex.com/crops/2008am/webprogram/Paper47766.html>.
- Bibring, J.-P., **Beaty, D.W.**, D. Bish, J. Bishop, J.F. Mustard, E. Noe Dobrea, S. Petit, F. Poulet, L.H. Roach, 2008, Martian Phyllosilicates: Recorders of Aqueous Processes: Discussion Summary. Posted November, 2008 by the Institut d'Astrophysique Spatiale (IAS) at http://www.ias.u-psud.fr/Mars_Phyllosilicates/phylo/5.%20Thursday%20morning/Phyllo_Discussion_summary.ppt
- Poulet, F., **Beaty, D.W.**, Bibring, J.-P., Bish, D., Bishop, J.L., Noe Dobrea, E., Mustard, J.F., Petit, S., and Roach, L.H., (2009) Key Scientific Questions and Key Investigations from the First International Conference on Martian Phyllosilicates. *ASTROBIOLOGY*, 9(3): 257-267. doi:10.1089/ast.2009.0335.
- Borg, L., C. Allen, D. **Beaty**, K. Buxbaum, J. Crisp, D. Des Marais, D. Glavin, M. Grady, K. Herkenhoff, R. Mattingly, S. McLennan, D. Moura, J. Mustard, L. Pratt, S. Symes, and M. Wadhwa (2009). A Consensus Vision for Mars Sample Return, 7p. white paper submitted Sept. 15, 2009 to the National Research Council's 2009 Planetary Decadal Survey. <http://www8.nationalacademies.org/ssbsurvey/DetailFileDisplay.aspx?id=170>
- Edwards, C. D. Jr., W. B. Banerdt, D. W. **Beaty**, L. K. Tamppari, and R. W. Zurek (2009). "Relay Orbiters for Enhancing and Enabling Mars In Situ Exploration", 7 p. White Paper submitted Sept. 15, 2009 to the National Research Council's 2009 Planetary Decadal Survey. <http://www8.nationalacademies.org/ssbsurvey/DetailFileDisplay.aspx?id=151>
- Neal, Clive, and 28 co-authors (2009). "The Lunar Exploration Roadmap. Exploring the Moon in the 21st Century: Themes, Goals, Objectives, Investigations, and Priorities, 2009", 7 p. White Paper submitted Sept. 15, 2009 to the National Research Council's 2009 Planetary Decadal Survey. <http://www8.nationalacademies.org/ssbsurvey/DetailFileDisplay.aspx?id=178>

- MEPAG (2009a), Why Mars Remains a Compelling Target for Planetary Exploration, J.S. Mustard, ed., 7 p. white paper submitted Sept. 15, 2009 to the National Research Council's 2009 Planetary Decadal Survey. <http://www8.nationalacademies.org/ssbsurvey/DetailFileDisplay.aspx?id=174>
- MEPAG (2009b), Seeking Signs of Life on a Terrestrial Planet: An Integrated Strategy for the Next Decade of Mars Exploration, J.S. Mustard, ed., 7 p. white paper submitted Sept. 15, 2009 to the National Research Council's 2009 Planetary Decadal Survey. <http://www8.nationalacademies.org/ssbsurvey/DetailFileDisplay.aspx?id=171>
- Pratt, L.M., and the MEPAG MRR-SAG team (2009). Mars Astrobiology Explorer-Cacher (MAX-C): A Potential Rover Mission for 2018, 7 p. white paper submitted Sept. 15, 2009 to the National Research Council's 2009 Planetary Decadal Survey. <http://www8.nationalacademies.org/ssbsurvey/DetailFileDisplay.aspx?id=169>
- Allwood, A. C., C.C. Allen, D.W. Beaty, and the Mid-Range Rover Science Analysis Group (2009), Next Generation Tools and Strategies for Mars Exploration (abs.), Paper #95-12, Geol. Soc. Amer. Ann. Mtg., Portland, OR. http://gsa.confex.com/gsa/2009AM/finalprogram/abstract_166641.htm.
- Beaty, D.W., C. C. Allen, D. S. Bass, K. L. Buxbaum, J. K. Campbell, D. J. Lindstrom, S. L. Miller and D. A. Papanastassiou (2009) Planning Considerations for a Mars Sample Receiving Facility: Summary and Interpretation of Three Design Studies, *Astrobiology* 9, no. 8, pp 14, DOI: 10.1089/ast/2009.0339.
- Pratt, L., and the Mid-Range Rover Science Analysis Group (2009), Mars Rover Proposed for 2018 to Seek Signs of Life and to Cache Samples for Potential Return to Earth (abs.), *EOS Trans. Am. Geophys. Union*.
- Beaty, D.W., C.C. Allen, and the MEPAG Mid-Range Rover Science Analysis Group (2010), THE PROPOSED MARS ASTROBIOLOGY EXPLORER - CACHER [MAX-C] ROVER: FIRST STEP IN A POTENTIAL SAMPLE RETURN CAMPAIGN (abs.). 41st Lunar and Planetary Science Conference (2010), Abstract #2571. <http://www.lpi.usra.edu/meetings/lpsc2010/pdf/2571.pdf>
- Feldman, S. M., A. C. Allwood, and the MEPAG Mid-Range Rover Science Analysis Group (2010). SCIENCE INVESTIGATION APPROACH FOR THE PROPOSED 2018 MARS ASTROBIOLOGY EXPLORER - CACHER [MAX-C] ROVER (abs.). 41st Lunar and Planetary Science Conference (2010), Abstract #2384. <http://www.lpi.usra.edu/meetings/lpsc2010/pdf/2384.pdf>
- Pratt, L. Beaty, D., Westall, F., Parnell, J., and Poulet, F., 2010. Mars Rover proposed for 2018 to seek signs of life and to cache samples for potential return to Earth. EGU, Vienna, May 3-7, 2010, abstract # 14980.
- Beaty, D.W., A.C. Allwood, J. Vago, and F. Westall, 2010, Sedimentology, Stratigraphy and Astrobiology on Mars in 2018, Potentially Using Two Rovers (abs.). First International Conference on Mars Sedimentology and Stratigraphy, Abstract #6024, <http://www.lpi.usra.edu/meetings/marssed2010/pdf/6024.pdf>.
- Levine J. S., Garvin J. B., Drake B. G., Beaty D. W., and the HEM-SAG Team (2010), *Astrobiology and the Human Exploration of Mars*, (abs.). Astrobiology Science Conference 2010, Abs. #5132, <http://www.lpi.usra.edu/meetings/abscicon2010/pdf/5132.pdf>.
- Des Marais D. J., Allwood A. C., and the MEPAG MRR-SAG Team, 2010, *The Proposed 2018 MAX-C Rover: Exploring for Signs of Life and Caching Samples for Potential Return* (abs.). Astrobiology Science Conference 2010, Abs. #5532, <http://www.lpi.usra.edu/meetings/abscicon2010/pdf/5532.pdf>.
- MEPAG MRR-SAG (2010), The Mars Astrobiology Explorer-Cacher (MAX-C): A Potential Rover Mission for 2018; Final Report of the Mars Mid-Range Rover Science Analysis Group. *Astrobiology*, 10(2): 127-163. doi:10.1089/ast.2010.0462.
- Grant, J.A., Westall, F., and the MEPAG 2R-iSAG team (15 additional co-authors), 2010, Two rovers to the same site on Mars, 2018: Possibilities for Cooperative Science, *Astrobiology* 10:663-685
- Grotzinger, John, D. Beaty, G. Dromart, S. Gupta, M. Harris, J. Hurowitz, G. Kocurek, S. McLennan, R. Milliken, G. G. Ori, and D. Sumner (2011), Mars Sedimentary Geology: Key Concepts and Outstanding Questions. *ASTROBIOLOGY*, Volume 11, Number 1, 2011.
- Bass, D. S., D. W. Beaty, C. C. Allen and K. L. Buxbaum, 2011, BALANCING CONTAMINATION AND BIOCONTAMINANT IN A SAMPLE RECEIVING FACILITY (abs.), The Importance of Solar System Sample Return Missions to the Future of Planetary Science, Mar. 2011.
- Allwood, A.C., C. Herd, D.W. Beaty, and the E2E-iSAG team (19 additional members), ANALYSIS OF THE END TO END SCIENCE OF THE POTENTIAL MARS SAMPLE RETURN CAMPAIGN (abs.), The Importance of Solar System Sample Return Missions to the Future of Planetary Science, Mar. 2011.

Manuscripts in preparation

Beaty, D.W. and Taylor, H.P., Jr., The oxygen isotope geochemistry of the Abitibi greenstone-granite terrane: Implications regarding the evolution of the ocean and oceanic crust. (51p. manuscript to be submitted to Geochim. Cosmochim. Acta.).

Bakke, E.L., **Beaty, D.W.**, and Hayes, J.M., in prep., The effect of different CO₂ ion correction methodologies on $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ results: to be submitted to Isotope Geoscience.

Other Professional Accomplishments

1989: Led the field trip: "Mineral Deposits and Geology of Central Colorado" (with B. Bryant and T.B. Thompson), sponsored by the International Geological Congress (I.G.C. Field Trip Guidebook T129, 73 p.)

1985: Led the field trip: "Sedimentology, dolomitization, karstification, and mineralization of the Leadville Limestone (Miss.), Central Colo." (with R.H. De Voto), sponsored by S.E.P.M.