

M. Clara Castro
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EDUCATION

- B.Sc.:** University of Porto, Portugal, 1988 (Geology, Summa Cum Laudae)
M.S.: University of Paris VI (Pierre et Marie Curie), Paris, France, 1991 (Quantitative Hydrology and Hydrogeology)
Ph.D.: University of Paris VI and Paris School of Mines, France, 1995 (Hydrogeology and Noble Gas Geochemistry)

POSITIONS HELD

- January – June 2014 Sabbatical, University of Michigan
2013 – present Professor, Earth and Environmental Sciences, University of Michigan
2008 - present Faculty Associates, Applied Physics Program
2007 (Jan.–Aug.) Visiting Professor, University Pierre et Marie Curie, Paris, France
2006 - 2013 Associate Professor (with tenure), Earth and Env. Sciences, Univ. of Michigan
2004 - present Faculty Associates, Program in the Environment, University of Michigan
1999 - 2006 Assistant Professor, Department of Geological Sciences, University of Michigan
1998 - 1999 Post-doctoral Research Associate, University of Connecticut
1996 - 1998 Post-doctoral Research Associate, Lamont-Doherty Earth Observatory, Columbia University
1989 - 1990 Hydrogeologist, Burgeap Company, Paris, France
1988 - 1989 Hydrogeologist, Foraco Company, Cameroon, Africa

HONORS AND AWARDS

- 2006 CAREER Award, National Science Foundation
2005 Prix Alfred Verdaguer, Academy of Sciences, France - Institute of France
2002 Elizabeth Caroline Crosby Research Award (NSF ADVANCE at Univ. of Michigan)
1995 Special mention on PhD dissertation - in French: “Très Honorable avec les Félicitations du Jury”
1990, 1994, 1995 - Fellowships from the Portuguese Ministry of Education

EDITORIAL SERVICE

- 2007 - present Editorial Board of Geofluids Journal
2004 - 2007 Associate Editor Hydrogeology Journal
2003 - 2007 Associate Editor Ground Water

COLLEGE AND DEPARTMENTAL SERVICE

- 2014 – 2015 Climate Change/Water Sustainability Faculty Search Committee
2014 - 2015 Turner Fund’s student Awards
2013 – 2014 Prelim Committee of Daniel Lowry and Ben Gerbarsky
2012 – 2013 Chair, Turner Postdoctoral Fellowship Search
2011 - 2012 Climate Change/Water Sustainability Faculty Search Committee

2011 - 2012	Prelim Committee of Sandra Fernando, Carli Arendt and Rich Fiorella
2010 - 2011	Turner Fund's student Awards
2005 - 2011	Graduate Student Admissions Committee
2009 - 2010	Evaluation Committee, Rackham Merit Fellowship (RMF) program
2009 - 2010	Prelim Exam Committee
2007 - 2008	Departmental Strategic Committee
2007 - 2008	Departmental Smith Lecture Series organizer
2006 - 2007	Turner Post-doctoral Fellowship Search Committee
2004 - 2005	Departmental Turner/Smith Lecture Series organizer
2002 - 2004	Graduate Student Admissions Committee
2000 - 2002	Computer Committee
2000	Graduate Assistance in Areas of National Need (GAANN) grant proposal preparation

REVIEWER FOR JOURNALS AND FUNDING AGENCIES

Geophysical Research Letters, Journal of Hydrology, Quaternary Science Reviews, Geofluids, Journal of Volcanology and Geothermal Research, Geochemistry, Geophysics, and Geosystems, Geophysical Research Letters, Hydrogeology Journal, Ground Water, Geochimica Cosmochimica Acta, Geological Society of America, Chemical Geology, Water Resources Research, Geology, Earth and Planetary Science Letters, Department of Energy (DOE), NSF (Hydrological Sciences, Marine Geology and Geophysics, Chemical Oceanography – OCE, Major Research Instrumentation, Geobiology and Low Temp. Geochem., Petrology and Geochemistry, Polar Programs, OISE – Global Scientists & Engineers), Natural Environment Research Council Proposals (UK), Swiss National Science Foundation.

PROFESSIONAL AFFILIATIONS

American Geophysical Union
Geological Society of America
American Chemical Society
National Groundwater Association
International Association of Hydrogeologists
American Association for the Advancement of Science

LABORATORY FACILITIES

The Noble Gas Laboratory at the University of Michigan includes a Helix SFT and an Argus VI mass spectrometer, in addition to a quasi-automated extraction and purification line for analysis of all stable noble gases (He, Ne, Ar, Kr, Xe) in fluids, including rainwater, snow, ice, fresh groundwater, brines and gas. It will soon include also an extraction and purification line for noble gas analyses in rocks.

RESEARCH FUNDING

CURRENT

NSF – EAR - Hydrologic Sciences. Development of Noble Gases as Tracers of Groundwater Circulation in Fractured and Karstic Systems. PI: M. Clara Castro; Co-PI – Chris M. Hall; 2/1/2014 to 1/31/2018; \$499,546.

NSF – EAR - Instrumentation & Facilities; Acquisition of a new noble gas mass spectrometer and extraction system for the University of Michigan. PI: M. Clara Castro; co-PIs: Chris M. Hall, Youxue Zhang.; 08/01/2012 – 07/31/2017; \$648,326.

Consejo Nacional de Ciencia y Tecnología (CONACYT), Mexico. Evaluation of the geothermal potential and over exploitation of geothermal energy in Mexico through noble gases (“Evaluación del potencial y la sobre-explotación de la capacidad de poder geotérmico de México usando isótopos de gases nobles”). PI: Aída López Hernández; co-PIs: Daniele Pinti, Orfan Shouakar-Stash, M. Clara Castro. Clara Castro’s portion: ~\$167,500 (January 2014 – January 2018).

Saudi Aramco Expec Annex - Noble Gas Pilot Study – Tracing Fluid Migration and Oil and Gas Reservoir Sources; \$99,822 (August 2015 – January 2018). PI: M. Clara Castro.

University of Michigan: Noble Gas Laboratory: PI: M. Clara Castro 01/09/2014 -31/08/2018: \$100,000

University of Michigan/Dept. Earth and Environmental Sciences. Cost-sharing to NSF – EAR - Instrumentation & Facilities; Acquisition of a new noble gas mass spectrometer and extraction system for the University of Michigan PI: M. Clara Castro; co-PIs: Chris M. Hall, Youxue Zhang.; 08/01/2012 – 06/31/2016; \$200,000.

POSTDOCTORAL, GRADUATE AND UNDERGRADUATE MENTORING

POSTDOCTORAL FELLOWS

Julien Amalberti (March 2015 – present; PhD University of Lorraine/CRPG Nancy, France)

Rohit B. Warrier (January 2013 – July 2014; PhD, Univ. of Michigan, now Scientist at Geosyntec Consultants)

Martin Saar (2003 – 2004; Ph.D. U.C. Berkeley; Turner Post-doctoral Fellow; now Professor at ETH, Switzerland)

Delphine Patriarche (2001- 2004; Ph.D. Paris School of Mines; now Head Scientist at STORENGY - GDF SUEZ, Bois-Colombes/Paris, France)

GRADUATE STUDENTS

Colin Ferguson, PhD candidate

Yi Niu, PhD expected 2017

Tao Wen, PhD 2016

Tao Wen, MS 2014

Rohit B. Warrier, PhD 2012

Jessica Malone, MS 2009

Tie Sun, MS 2008

Lin Ma, PhD 2008 (Now Assistant Professor, Univ. of Texas at El Paso)

ASSOCIATE RESEARCH SCIENTIST

Dr. Chris Hall (1999 – present; PhD Physics, Univ. of Toronto)

UNDERGRADUATE STUDENTS

Guolei Han (September 2015 – April 2016; Visiting Scholar; China Univ. of Geoscience, Beijing)
Kevin Wylie (Major, Mechanical Engineering, Minor Geology, May 2015 – present)
Chad Gregory (Honors, February 2012 – June 2013)
Clint Sweet (February – December 2012)
Sindhujha Sunder (Double major, Mathematics and Environmental Geosciences, April – August 2010)
Alex Costakis (Honors; January – May 2009)
Paul Joseph Hojnacki (October 2008 - May 2009)
Jessica Malone (Honors, January 2007 – August 2007)
Brian Ellis (Honors, Double Major Economics and Environmental Sciences; 2004 – 2006)
Kathy Flemming (Double major Geology and History; May - August 2003)
Ann Hoenke (Geology major; January - April 2001)

Through my class GEOSCI 210 – “Scientific Discovery in Earth Sciences - a Research Experience”, the following undergraduates participated in research projects:

Abigail DeBofsky (2008), Kelly Goodman (2008), Jacob Gross (2008), Erica Jankelovitz (2008), Julie Larson (2008), Brian Malloure (2008), Kyle Miletic (2008), Kerith Asma (2009), Alexandra Costakis (2009), Heather Elliot (2009), Keleki Gottschalk (2009), Mitchell Guc (2009), Mita Nagarkar (2009), Claire Shea (2009), Caroline Canning (2009), Monk Hooper (2009), Adrianna Katsimpalis (2009), Patrina Langford (2009), Danielle McDowell (2009), Soo Shim (2009), Kevin Zussman (2009).

CLASSES TAUGHT

Water and Society (EARTH 109; 1 credit)
Seminar Environmental Geology (GEOSCI 148; 3 credits)
Scientific Discovery in Earth Sciences: A Research Experience (GEOSCI 210; 3 credits)
Water in the 21st Century (EARTH 277; 3 credits)
Hydrogeology (EARTH 477; 4 credits)

PEER-REVIEWED PUBLICATIONS

*Student Advisee

In Preparation

Wen T., Pinti, D.L., **Castro M.C.**, Lopez-Hernandez A., A., Shouakar-Stash, O., Hall, C.M., Estrada, A., Nunez, S., Evolution of fluids in the Los Azufres geothermal field and longevity of the field as constrained by noble gas data, in preparation, Chem. Geol.
*Niu Y., **Castro M.C.**, Hall C.M., Gingerich S.B., Scholl M.A., Noble gas composition in fog, Geophys. Res. Lett.
*Foote J., **Castro MC.**, Hall CM, Fabien K., Doran P., Placing new constrains on the evolution of Lake Fryxell, Antarctica through a noble gas study, Earth and Planetary Science Letters.

*Ferguson C., **Castro M.C.**, Hall C.M., Scholl M.A., Gingerich S.B., A combined stable isotope and noble gas study of freshwater sources in Maui, Hawaii, in preparation, *Water Resources Research*.

Pinti, D.L., **Castro M.C.**, Lopez-Hernandez A., Hall CM, A noble gas study of fluids in the geothermal field of Cerro Pietro, Mexico, *Chemical Geology*.

In review, in revision

Amalberti J.V., Hall C.M., **Castro M.C.**, Development of methodologies to analyze noble gases in snow, in review, *Geochem. Cosmoch. Acta*.

Larson T., Nicot J.P., Mickler P., **Castro M.C.**, Tracing natural gas transport into shallow groundwater using dissolved nitrogen and alkane chemistry in Parker County, Texas, in review, *Water Resources Research*.

Published or in Press

*Wen T., **Castro M.C.**, J.P. Nicot, C. M. Hall, D. L. Pinti, Mickler P., Darvari, R., Larsen T. (2017) Characterizing the Noble Gas Isotopic Composition of the Barnett Shale and Strawn Group of North-Central Texas, 10.1021/acs.est.6b06447, *Env. Sci. and Tech*.

Hall C.M., **Castro M.C.**, Kenig F. and Doran P.T. (2017), Constraining the Recent Climate History of West Antarctica Using He, Kr and Xe Concentrations in the Perennially Ice-Covered Lake Bonney, East Antarctica, *Geochem. Cosmoch. Acta.*, 209, 233-253, 10.1016/j.gca.2017.04.023.

*Niu Y., **Castro M.C.**, Hall C.M., Gingerich S.B., Scholl M.A., Warrier R. (2017), Noble Gas Signatures in Groundwater and Rainwater on the Island of Maui, Hawaii – Understanding the behavior of Noble Gases in Fractured Systems, *Water Resources Research*, 53, doi:10.1002/2016WR020172.

Nicot J.P., Mickler P., Larson T., **Castro M.C.**, Darvari R., Uhlman K., Costley R. (2017), Methane occurrences in aquifers overlying the Barnett Shale with a focus on Parker County, Texas, *Groundwater*, 10.1111/gwat.12508.

Pinti, D.L., **Castro M.C.**, Lopez-Hernandez A., *Han A. G., Shouakar-Stash, O., Hall, C.M., Montes MR. (2017), Fluid circulation and reservoir conditions of the Los Humeros Geothermal Field, Mexico, as revealed by a noble gas survey, 333-334, 104-115, *Journal of Volcanology and Geothermal Research*, 10.1016/j.jvolgeores.2017.01.015

*Niu Y., **Castro M.C.**, Aciego S.M., Hall C.M., and Arendt C. (2017), Characterizing Glacial Meltwater Sources in the Athabasca Glacier, Canada, using Noble Gases as Tracers, doi.org/10.1016/j.apgeochem.2016.11.015, *Appl. Geochem.*

*Wen T., **Castro M.C.**, J.P. Nicot., Mickler P. and C. M. Hall (2016) Methane Sources and Migration Mechanisms in Shallow Groundwaters in Parker and Hood Counties, Texas – A Heavy Noble Gas analysis, DOI: 10.1021/acs.est.6b01494, *Environ. Sci. Techno*.

Birkle P., Marín E.P., Pinti D.L. and **Castro M.C.** (2016), Origin and evolution of geothermal fluids from Las Tres Virgenes and Cerro Prieto fields, Mexico - co-genetic volcanic activity and paleoclimatic constraints, *Appl. Geoch.*, 65, 36-53, 10.1016/j.apgeochem.2015.10.009.

Saby M., Larocque M., Pinti D.L., Sano Y., Barbecot F. and **Castro M.C.** (2016), Linking groundwater quality to water residence time and regional geology in a small watershed basin in southern Quebec, Canada, *Appl. Geoch.*, 65, 1-13, 10.1016/j.apgeochem.2015.10.011.

*Niu Y., **Castro M.C.**, Aciego S.M., Hall C.M., Emily I. S., Arendt C. and Sarah B. Das (2015), Noble Gas Signatures in Greenland – Tracing Glacial Meltwater Sources, in press, *Geophys. Res. Lett.*, 42, doi:10.1002/2015GL065778.

*Wen T, **M. C. Castro**, B. Ellis, C. M. Hall, and K. C. Lohmann (2015), Assessing the Compositional Variability and Migration of Natural Gas in the Antrim Shale in the Michigan Basin Using Noble Gas Geochemistry, 10.1016/j.chemgeo.2015.10.029, *Chemical Geology*.

Vautour G., Saby M., Méjean P., Meyzonnat G., Pinti D.L., Larocque M., **Castro M.C.**, Hall C.M., Sano Y., Barbecot F. (2015), Helium evidence of multiple water masses in the Bécancour River catchment basin, Québec, Eastern Canada, doi:10.1016/j.chemgeo.2015.08.003, *Chemical*

- Geology*, 413, 94-106.
- Warrier R.B., **Castro M.C.**, Hall C.M., Kenig F., and Doran P.T. (2015) Placing new constraints on the evolution of Lake Bonney, Antarctica through a noble gas study, vol. 58, 46-61, doi:10.1016/j.apgeochem.2015.02.013 *Applied Geochemistry*.
- *Wen T., **Castro M.C.**, Hall, C.M., Lohmann K. (2015), Calibration of a groundwater flow and transport model in the Saginaw aquifer using helium isotope data, DOI: 10.1111/gfl.12133, *Geofluids*.
- Boucher C., Pinti D.L., Roy M., Cloutier V., **Castro M.C.**, Blanchette D., Hall C.M., Larocque M., Sano Y. (2015), Groundwater Age Stratigraphy of Eskers in the Amos Region, Eastern Canada, Revealed by Noble Gas Isotopes, *J. of Hydrology*, vol. 524, pp 1-14.
- *Warrier R.B., **Castro M.C.**, Hall C.M., Lohmann K. (2013), Noble Gas Composition in Rainwater and Associated Weather Patterns, *Geophys. Res. Lett.*, 40, 1–5, doi:10.1002/grl.50610.
- *Warrier R.B., **Castro M.C.**, Hall C.M., Lohmann K. (2013), Large atmospheric noble gas excesses in a shallow aquifer in the Michigan Basin as indicators of a past mantle thermal event, *Earth and Planetary Science Letters*, 375, 372-382.
- Pinti, D. L., **Castro, M.C.**, Shoaukar-Stash, O., Tremblay, Garduno-Monroy, V. H., Hall C.M., Helie J.F., Ghaleb, B. (2013), Evolution of the geothermal fluids at Los Azufres, Mexico, as traced by noble gases, $\delta^{18}\text{O}$, δD , $\delta^{13}\text{C}$ and $^{87}\text{Sr}/^{86}\text{Sr}$, *Journal of Volcanology and Geothermal Research*, 10.1016/j.jvolgeores.2012.09.006.
- Castro M.C.**, *Warrier, R.B., Hall C.M., Lohmann, K. (2012), A late Pleistocene - Mid-Holocene noble gas and stable isotope climate and subglacial record in southern Michigan, *Geophys. Res. Lett.*, 39, L19709, doi:10.1029/2012GL053098.
- *Warrier, R.B., **Castro M.C.**, and Hall C.M. (2012), Recharge and Source-water Insights from the Galapagos Islands Using Noble Gases and Stable Isotopes, *Water Resources Research*, 48, W03508, doi:10.1029/2011WR010954.
- Hall, C. M., **Castro M.C.**, Lohmann K.C. and *Sun T. (2012), Testing the noble gas paleothermometer with a yearlong study of groundwater noble gases in an instrumented monitoring well, *Water Resources Research*, 48, W04517, doi:10.1029/2011WR010951.
- Pinti D.L., Béland-Otis C., Tremblay A., **Castro M.C.**, Hall C.M., Marcil J.S., Lavoie J.Y., Lapointe R. (2011), Fossil brines preserved in the St-Lawrence Lowlands, Quebec, Canada as revealed by their chemistry and noble gas isotopes, *Geochimica Cosmochimica Acta*, doi:10.1016/j.gca.2011.05.006.
- *Malone, J.L., **Castro M.C.**, Hall C.M., Doran P.T., Kenig F., and McKay C.P. (2010), New insights into the origin and evolution of Lake Vida, McMurdo Dry Valleys, Antarctica – A Noble Gas Study in Ice and Brines, *Earth Planetary Science Letters*, 289, 112–122, <http://dx.doi.org/10.1016/j.epsl.2009.10.034>.
- *Sun T., Hall, C. M., and **Castro M.C.** (2010), Statistical Properties of Groundwater Noble Gas Paleoclimate Models: Are They Robust and Unbiased Estimators? *Geochemistry Geophysics Geosystems*, 11, 2, Q02002, doi:10.1029/2009GC00027.
- Castro M.C.**, *Ma L., Hall, C.M. (2009), A Primordial, Solar He-Ne Signature in Crustal Fluids of a Stable Continental Region, *Earth Planetary Science Letters*, 279, 174-184, doi:10.1016/j.epsl.2008.12.042.
- *Ma, L., **Castro, M.C.**, and Hall, C.M. (2009), Crustal noble gases in deep brines as natural tracers of vertical transport processes in the Michigan Basin, *Geochemistry Geophysics Geosystems*, 10, 6, Q06001, doi:10.1029/2009GC002475.
- *Ma L., **Castro M.C.**, Hall C.M. (2009), Atmospheric noble gas signatures in deep Michigan Basin brines as indicators of a past thermal event, *Earth Planetary Science Letters*, 277 (137-147), doi:10.1016/j.epsl.2008.10.015.
- *Sun T., Hall, C. M., **Castro, M.C.**, K. C. Lohmann, Goblet P. (2008), Excess Air in the Noble Gas Groundwater Paleothermometer: A New Model Based on Diffusion in the Gas Phase, *Geophys. Res. Lett.*, 35, L19401, doi:10.1029/2008GL035018.

- Castro M.C.**, Hall, C.M., Patriarche D., Goblet P., and *Ellis, B.R. (2007), A New Noble Gas Paleoclimate Record in Texas - Basic Assumptions Revisited, *Earth Planetary Science Letters*, 157 (1-2), 170-187, doi:10.1016/j.epsl.2007.02.030.
- Hall, C. M., **M. C. Castro**, K. C. Lohmann, and *Ma, L. (2006), Reply to comment by Klump et al. on “Noble gases and stable isotopes in a shallow aquifer in southern Michigan: Implications for noble gas paleotemperature reconstructions for cool climates”, *Geophys. Res. Lett.*, 33, L24404, doi:10.1029/2006GL028102.
- Castro M.C.**, Patriarche D., and Goblet P. (2005), 2-D Numerical Simulations of Groundwater Flow, Heat Transfer and ^4He transport - Implications for the He Terrestrial Budget and the Mantle Helium-Heat Imbalance, *Earth Planetary Science Letters*, 237, 893-910, doi:10.1016/j.epsl.2005.06.037.
- Castro M.C.**, and Goblet P. (2005), Calculation of Groundwater ages – a Comparative Analysis, *Ground Water*, 43, 3, 368-380.
- Castro M.C.** (2005) Reply to comment by Werner Aeschbach-Hertig on "Helium sources in passive margin aquifers new evidence for a significant mantle ^3He source in aquifers with unexpectedly low in situ $^3\text{He}/^4\text{He}$ production" by M. C. Castro [Earth Planet. Sci. Lett. 222 (2004) 897-913]", *Earth Planetary Science Letters*, 240, 830-834, doi:10.1016/j.epsl.2005.09.051.
- *Ma L., **Castro M.C.**, Hall C.M., and Walter L.M. (2005) Cross-formational flow and salinity sources inferred from a combined study of helium concentrations, isotopic ratios and major elements in the Marshall aquifer, southern Michigan, *Geochem. Geophys. Geosyst.*, 6, 10, Q10004, doi:10.1029/2005GC001010.
- Hall C.M., **Castro M.C.**, and Lohmann K.C., and *Ma L. (2005) Noble Gases and Stable Isotopes in a Shallow Aquifer in Southern Michigan: Implications for Noble Gas Paleotemperature Reconstructions for Cool Climates, *Geophys. Res. Lett.*, 32, L18404, doi:10.1029/2005GL023582.
- Patriarche D., **Castro M.C.**, and Goovaerts P. (2005), Estimating Regional Hydraulic Conductivity Fields – a Comparative Study of Geostatistical Methods, *Mathematical Geology*, 37, 6, 587-613.b
- Saar M.O., **Castro M.C.**, Hall, C.M., Manga M., and Rose, T.P. (2005) Quantifying magmatic, crustal, and atmospheric helium contributions to volcanic aquifers using all stable noble gases: Implications for magmatism and groundwater flow, *Geochemistry, Geophysics, Geosystems*, 6, 3, Q03008, doi:10.1029/2004GC000828.
- *Ma L., **Castro M.C.**, and Hall C.M. (2004) A Late Pleistocene – Holocene Noble Gas Paleotemperature Record in Southern Michigan, *Geophys. Res. Lett.*, 31, L23204, doi:10.1029/2004GL021766.
- Patriarche, D., **Castro M.C.**, and Goblet P. (2004), Large-scale hydraulic conductivities inferred from three-dimensional groundwater flow and ^4He transport modeling in the Carrizo aquifer, Texas, *J. Geophys. Res.*, 109, B11202, doi:10.1029/2004JB003173.
- Castro M.C.** (2004), Helium sources in passive margin aquifers – new evidence for a significant mantle ^3He source in aquifers with unexpectedly low in-situ $^3\text{He}/^4\text{He}$ production, *Earth Planetary Science Letters*, 222, 897-913, doi:10.1016/j.epsl.2004.03.031.
- Castro M.C.**, and Goblet P. (2003), Noble Gas Thermometry and Hydrologic ages: Evidence for Late Holocene Warming in Southwest Texas, *Geophys. Res. Lett.*, 30 (24), 2251, doi:10.1029/2003GL018875.
- Phillips F.M. and **Castro M.C.** (2003) Groundwater dating and residence-time measurements, pp. 451-497. In Surface and Ground Water, Weathering, and Soils (ed. J.I.Drever) Vol. 5 *Treatise on Geochemistry* (eds. H. D. Holland and K. K. Turekian), Elsevier, Oxford.
- Castro M. C.** and Goblet P. (2003), Calibration of regional groundwater flow models – working toward a better understanding of site-specific systems, *Water Resources Research*, vol. 39, 6, 1172, doi:10.1029/2002WR001653.
- de Marsily, G., Goncalves J., Violette S., and **Castro M. C.** (2002), From nuclear fuels to waste: Current Research; Migration mechanisms of radionuclides from a clay repository toward adjacent aquifers

and the surface, *C.R. Physique 3, Academie des Sciences/Editions Scientifiques et Medicales Elsevier SAS*, S1631-0705(02)01385-3/REV, 945-959.

- Castro M. C.**, Stute M., and Schlosser P. (2000) Comparison of ^4He and ^{14}C ages in simple aquifer systems: implications for groundwater flow and chronologies, *Appl. Geochemistry*, 15, 1137-1167.
- Castro M. C.**, Jambon A., Marsily G. de, and Schlosser P. (1998) Noble gases as natural tracers of water circulation in the Paris Basin. 1. Measurements and discussion of their origin and mechanisms of vertical transport in the basin, *Water Resources Research*, vol. 34, 10, 2443-2466.
- Castro M. C.**, Goblet P., Ledoux E., Violette S., and Marsily G. de. (1998) Noble gases as natural tracers of water circulation in the Paris Basin. 2. Calibration of a groundwater flow model using noble gas isotope data, *Water Resources Research*, vol. 34, 10, 2467-2483.

OTHER MANUSCRIPTS/PUBLICATIONS

- Castro M.C. (2009), Freshwater in the Galapagos – a Resource in Peril, 21-23, Geoscience News for Alumni and Friends of the Department of Geological Sciences, University of Michigan, edited by K.C. Lohmann and N.A. Niemi, Ann Arbor, Michigan.
- Castro M. C. (1995) Transfert des Gaz Rares dans les eaux des Bassin Sedimentaires: exemple du Bassin de Paris. PhD dissertation, Univ. Paris VI, Paris, France, 240pp.
- Castro M. C. (1991) Les isotopes de l'argon et de l'hélium dans les eaux profondes du Bassin Parisien: implications hydrodynamiques, Masters dissertation, Univ. Paris VI, Paris, France, 50pp.

MEETING PRESENTATIONS/ABSTRACTS

- Niu Y., Castro M.C., Hall C.M., Aciego S.M., Emily I. S., Arendt C. and Sarah B. Das, Noble Gas Signatures in Greenland – Tracing Glacial Meltwater Sources, Goldschmidt 2015, Prague, 15-18 August.
- Castro, M.C., Niu Y., Hall C.M., Warriar R.B., Gingerich S.B., Scholl M.A., Noble Gas Signatures on the Island of Maui, Hawaii – Developing a New Noble Gas Application in Fractured Groundwater Systems Goldschmidt 2015, Prague, 15-18 August.
- T. Wen, M. C. Castro, B. Ellis, C. M. Hall, K. C. Lohmann and L. Bouvier (2015), Assessing the Compositional Variability and Migration of Natural Gas in Antrim Shale in the Michigan Basin Using Noble Gas Geochemistry, *AAPG ACE*; 2015 May 31-June 3; Denver, CO.
- Nicot, J.-P., P. Mickler, T. Larson, M. C. Castro, Z. Hildenbrand, R. Darvari, K. Uhlman, R. Smyth, L. Bouvier, B. Scanlon (Invited), Controls on methane occurrences in aquifers in the footprint of Texas shale plays, 249th ACS National Meeting, March 22-26, 2015 in Denver, CO.
- Castro, M.C., Niu Y., Warriar R.B., Hall C.M., Gingerich S.B., Scholl M.A., Laura Bouvier, Noble Gas Signatures in Groundwater and Rainwater on the Island of Maui, Hawaii – Understanding the behavior of Noble Gases in Fractured, Volcanic Systems, 2014 Fall Meeting, AGU, San Francisco, Calif., 15-19 Dec.
- Niu Y., Castro M.C., Hall C.M., Aciego S.M., Emily I. S. and Arendt C., Noble Gas Signatures in Greenland – Tracing Glacial Meltwater Sources, *AGU, Fall Meeting*; 2014 Dec 15-19.
- T. Wen, M. C. Castro, B. Ellis, C. M. Hall, K. C. Lohmann and L. Bouvier (2014), Noble Gas Signatures in Antrim Shale Gas in the Michigan Basin - Assessing Compositional Variability and Transport Processes, *AGU, Fall Meeting*; 2014 Dec 15-19.
- Abouelmagd A, McCabe M. , Castro M.C. , Sultan M., Jana R. and Al-Mashharawi S., Recharge regimes of the Saq Aquifer System, Saudi Arabia: inferences from geochemical and isotopic compositions, *Fall Meeting*; 2014 Dec 15-19.
- Warriar, R. B., Castro M. C., Hall, C. M., Kenig, F., Doran, P. T. (2013), Reconstructing the Paleo-Limnologic Evolution of Lake Bonney, Antarctica using Dissolved Noble Gases, Abstract H13I-1495 presented at 2013 Fall Meeting, AGU, San Francisco, Calif., 9-13 Dec.

- Boucher, C., Berthot, L., Pinti, D.L., Larocque, M., Cloutier, V., Blanchette, D., Castro, M.C., Hall, C.M. (2013) Estimating the groundwater residence time in eskers of the Amos region, northern Quebec by $3\text{H}-3\text{He}$ and $(\text{U}-\text{Th}/4\text{He})$ methods. *Geophys. Res. Abstr.* 15 Preview.
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