

PERSONAL INFORMATION

Stan Beaubien



PERSONAL STATEMENT

A geochemist / hydrogeologist / geologist who has been involved in over 20 European Community funded research projects dealing with a wide range of environmental and resource-based issues.

WORK EXPERIENCE

June 1996 to Present

Research Geochemist

Dip. Scienze della Terra, Università di Roma La Sapienza, Ple. Aldo Moro 5, Roma, Italia;
<http://www.dst.uniroma1.it/>

- Specialized in Carbon Capture and Storage research (monitoring, impacts)
- Developing, executing, and managing scientific research projects
- Organizing and conducting marine, lacustrine, soil gas, and groundwater field sampling and mapping campaigns
- Performing laboratory chemical analyses
- Developing and executing laboratory experiments
- Data management, interpretation, and presentation
- Writing ad hoc computer code
- Writing scientific reports and research articles

Business or sector University research

Sept. 1994 to Present

Translator

Freelance

- Translation of scientific articles from Italian to English
- Language revision of scientific articles written in English

Business or sector Translation

Sept. 1993 to Sept. 1994

Research Hydrogeologist / Geochemist

Waterloo Centre for Groundwater Research, University of Waterloo, 200 University Avenue West, Waterloo, Canada; <https://uwaterloo.ca/groundwater-research/>

- Designing and implementing field experiment for remediation of DNAPL in clay
- Organizing and conducting field sampling and mapping campaigns
- Performing laboratory chemical analyses
- Data management, interpretation, and presentation
- Writing scientific reports and research articles

Business or sector University research

June 1988 to August 1990

Exploration Geologist

Noranda Exploration Ltd.; Rhino Resources Ltd; and Northwest Territories Government, Canada

- Geological mapping for gold and base metal exploration
- Drill core logging, writing of map and drill reports

Business or sector Mineral exploration

EDUCATION AND TRAINING

October 2010 to January 2015

PhD – Thesis Title: The mapping and quantification of CO₂ leakage and its potential impact on groundwater quality.

Dipartimento Scienze Ambientale, Università Ca' Foscari Venezia, Italy

- Research related to monitoring Carbon Capture and Storage (CCS) sites
- Research related to potential impact of a CO₂ leak from a CCS site

Sept. 1990 to Sept. 1993

MSc – Thesis Title: Chromium in Lake Ontario: Geochemical Cycling and the Role of Redox Speciation in Controlling Dissolved Phase Concentrations.

Department of Earth Sciences, University of Waterloo, Waterloo, Canada

- Research related to anthropogenic inorganic contamination of the Great Lakes
- Development of analytical technique for chromium speciation
- Course study of physical and chemical hydrogeology, environmental geochemistry

Sept. 1983 to April 1988

BSc – Thesis Title: Contact Metamorphism in the Host Rocks Surrounding the Falcon Lake Igneous Complex.

Department of Geological Sciences, University of Manitoba, Winnipeg, Canada

- Research into contact metamorphism
- Course study of basic geology (structural, geochemistry, petrology, mineralogy, sedimentology, etc.)

PERSONAL SKILLS

Mother tongue(s)

English

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
Italian	C1	C2	C1	C1	B1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Communication skills

- excellent written communication skills gained through my experience as translator / reviser of articles
- excellent oral communication skills gained through experience presenting at conferences / teaching

Organisational / managerial skills

- responsible for organisation of extensive offshore and onshore field campaigns
- extensive managerial skills based on experience and responsibilities in over 20 EC research projects

Job-related skills

- have participated in 4 large campaigns on oceanographic research vessels, as well as a large number of offshore studies from small boats
- extensive analytical chemistry experience with GC, CRDS, GFAAS, ICP-MS, IC
- have contributed to, or led, the writing and submission of numerous funding proposals
- responsible for data management, data interpretation, and report writing on numerous projects
- extensive groundwater, surface water, soil gas and rock sampling experience

Digital competence

- highly proficient using Office suite (Word, Excel, PowerPoint, Access), graphical software (CorelDraw X7, Adobe CS5), and geological software (Golden Software suite)
- competent using GIS software (QGIS, ESRI) and writing computer programs (Visual Basic)

ADDITIONAL INFORMATION

Memberships

- American Geophysical Union (AGU) since 2005

Peer Review

- Have reviewed articles for the following journals: Int. J. Greenhouse Gas Control, Science of the Total Environment, Environmental Science & Technology, Geoderma, Greenhouse Gas Science and Technology, Oil & Gas Science and Technology, Terra Nova, Applied Geochemistry, Chemical Geology, Pure and Applied Geophysics, Geochemical Journal, Scientific Reports, J. of Hydrology, Environmental Monitoring and Assessment, Journal of Marine and Petroleum Geology.

Editor

- Jenkins, C., Wright, I., Beaubien, S.E. and Kita, J. (Editors), 2021. Special Issue on Monitoring, Measurement and Verification for Offshore CCS: Outcomes of the STEMM-CCS project. International Journal of Greenhouse Gases.
- Lombardi, S., Altunina, L.K. and Beaubien, S.E. (Editors), 2006. Advances in the geological storage of carbon dioxide. NATO Science Series. IV. Earth and Environmental Sciences 65. Springer, 362 pp. 10.1007/1-4020-4471-2.

Selected Publications

- Beaubien, S.E., Schirripa Spagnolo, G., Ridolfi, R.M., Aldega, L., Antoncecchi, I., Bigi, S., Billi, A., Carminati, E., 2023. Structural control of gas migration pathways in the hydrocarbon-rich Val d'Agri basin (Southern Apennines, Italy). Marine and Petroleum Geology 154, 106339. <https://doi.org/10.1016/j.marpetgeo.2023.106339>.
- Proietti, G., Conti, A., Beaubien, S.E., Bigi, S., 2023. Screening, classification, capacity estimation and reservoir modelling of potential CO₂ geological storage sites in the NW Adriatic Sea, Italy. International Journal of Greenhouse Gas Control 126, 103882. <https://www.sciencedirect.com/science/article/pii/S15058362300052X>
- Graziani, S., Beaubien, S.E., Ciotoli, G. and Bigi, S., 2022. Development and testing of a rapid, sensitive, high-resolution tool to improve mapping of CO₂ leakage at the ground surface. Applied Geochemistry, 145: 105424. <https://doi.org/10.1016/j.apgeochem.2022.105424>.
- Beaubien, S. E., Ciotoli, G., Finoia, M. G., Lombardi, S., and Bigi, S., 2022, Monte Carlo simulations to assess the uncertainty of locating and quantifying CO₂ leakage flux from deep geological or anthropogenic sources: Stochastic Environmental Research and Risk Assessment. <https://doi.org/10.1007/s00477-021-02123-9>.
- Giustini, F., Ruggiero, L., Sciarra, A., Beaubien, S.E., Graziani, S., Galli, G., Pizzino, L., Tartarello, M.C., Lucchetti, C., Sirianni, P., Tuccimei, P., Voltaggio, M., Bigi, S., Ciotoli, G., 2022. Radon Hazard in Central Italy: Comparison among Areas with Different Geogenic Radon Potential. International Journal of Environmental Research and Public Health 19 (2), 666. <https://www.mdpi.com/1660-4601/19/2/666>
- Barkwith, A. K. A. P., Beaubien, S. E., Barlow, T., Kirk, K., Lister, T. R., Tartarello, M. C., and Taylor, H., 2020, Using near-surface atmospheric measurements as a proxy for quantifying field-scale soil gas flux: Geoscience Instrumentation, Methods and Data Systems.
- Casalbore, D., Ingrassia, M., Pierdomenico, M., Beaubien, S. E., Martorelli, E., Bigi, S., Ivaldi, R., DeMarte, M., and Chiocci, F. L., 2020, Morpho-acoustic characterization of a shallow-water mud volcano offshore Scoglio d'Africa (Northern Tyrrhenian Sea) responsible for a violent gas outburst in 2017: Marine Geology, v. 428, p. 106277.
- Vachon, D., Langenegger, T., Donis, D., Beaubien, S. E., and McGinnis, D. F., 2020, Methane emission offsets carbon dioxide uptake in a small productive lake: Limnology and Oceanography Letters, v. 5, p. 384-392.
- Ju, Y., Beaubien, S. E., Lee, S.-S., Kaown, D., Hahm, D., Lee, S., Park, I.-W., Park, K., Yun, S.-T., and Lee, K.-K., 2019, Application of natural and artificial tracers to constrain CO₂ leakage and degassing in the K-COSEM site, South Korea: Int. J. Greenhouse Gas Control, v. 86, p. 211-225.
- Ciotoli, G., Voltaggio, M., Tuccimei, P., Soligo, M., Pasculli, A., Beaubien, S.E., and Bigi, S., 2017, Geographically weighted regression and geostatistical techniques to construct the Geogenic Radon Potential map of the Lazio region: a methodological proposal for the European Atlas of Natural Radiation: J. of Environmental Radioactivity, v. 166, p. 355-375, DOI:10.1016/j.jenvrad.2016.05.010.
- Martorelli, E., Italiano, F., Ingrassia, M., Macelloni, L., Bosman, A., Conte, A.M., Beaubien, S.E., Graziani, S., Sposato, A., and Chiocci, F.L.C., 2016, Evidence of a shallow water submarine hydrothermal field off Zannone Island from morphological and geochemical characterization: Implications for Tyrrhenian Sea Quaternary volcanism: J. Geophys. Res.: Solid Earth, v. 121.
- Beaubien, S.E., Ruggiero, L., Annunziatellis, A., Bigi, S., Ciotoli, G., Deiana, P., Graziani, S., Lombardi, S., and Tartarello, M.C., 2015, The importance of baseline surveys of near-surface gas geochemistry for CCS monitoring, as shown from onshore case studies in Northern and Southern Europe: Oil and Gas Science and Technology, v. 70, p. 615-633.
- Jones, D.G., Beaubien, S.E., Blackford, J.C., Foekema, E.M., Lions, J., De Vittor, C., West, J.M., Widdicombe, S., Hauton, C., and Queiros, A.M., 2015, Developments since 2005 in understanding potential environmental impacts of CO₂ leakage from geological storage: International Journal of

Greenhouse Gas Control, v. 40, p. 350-377.

- Graziani, S., Beaubien, S.E., Bigi, S., and Lombardi, S., 2014, Spatial and temporal pCO₂ marine monitoring near Panarea Island (Italy) using multiple low-cost GasPro sensors: Environmental Science and Technology, v. 48, p. 12126-12133.
- Jones, D.G., Barkwith, A.K.A.P., Hannis, S., Lister, T.R., Gal, F., Graziani, S., Beaubien, S.E., and Widory, D., 2014, Monitoring of near surface gas seepage from a shallow injection experiment at the CO₂ Field Lab, Norway: International Journal of Greenhouse Gas Control, v. 28, p. 300-317.
- Beaubien, S.E., Jones, D.G., Gal, F., Barkwith, A.K.A.P., Braibant, G., Baubron, J.C., Ciotoli, G., Graziani, S., Lister, T.R., Lombardi, S., Michel, K., Quattrocchi, F., and Strutt, M.H., 2013, Monitoring of near-surface gas geochemistry at the Weyburn, Canada, CO₂-EOR site, 2001-2011: International Journal of Greenhouse Gas Control, v. 16, pp. S236-S262.
- Smith, K. L., Steven, M. D., Jones, D. G., West, J. M., Coombs, P., Green, K. A., Barlow, T. S., Breward, N., Gwosdz, S., Kruger, M., Beaubien, S. E., Annunziatellis, A., Graziani, S., and Lombardi, S., 2013, Environmental impacts of CO₂ leakage: recent results from the ASGARD facility, UK: Energy Procedia, v. 37, p. 791-799.
- Oppermann, B.I., Michaelis, W., Blumenberg, M., Frerichs, J., Schulz, H.M., Schippers, A., Beaubien, S.E., and Kruger, M., 2010, Soil microbial community changes as a result of long-term exposure to a natural CO₂ vent: Geochimica et Cosmochimica Acta, v. 74, p. 2697-2716.
- Jones, D.G., Barlow, T., Beaubien, S.E., Ciotoli, G., Lister, T.R., Lombardi, S., May, F., Muller, I., Pearce, J.M., and Shaw, R.A., 2009, New and established techniques for surface gas monitoring at onshore CO₂ storage sites, Energy Procedia,
- Annunziatellis, A., Beaubien, S.E., Bigi, S., Ciotoli, G., Coltella, M., and Lombardi, S., 2008, Gas migration along fault systems and through the vadose zone in the Latera caldera (central Italy): Implications for CO₂ geological storage: Int. Journal of Greenhouse Gas Control, v. 2, p. 353-372.
- Bateson, L., Vellico, M., Beaubien, S.E., Pearce, J.M., Annunziatellis, A., Ciotoli, G., Coren, F., Lombardi, S., and Marsh, S., 2008, The application of remote-sensing techniques to monitor CO₂-storage sites for surface leakage: Method development and testing at Latera (Italy) where naturally produced CO₂ is leaking to the atmosphere: Int Journal of Greenhouse Gas Control, v. 2, p. 388-400.
- Beaubien, S.E., Ciotoli, G., Coombs, P., Dictor, M.C., Krueger, M., Lombardi, S., Pearce, J.M., and West, J.M., 2008, The impact of a naturally occurring CO₂ gas vent on the shallow ecosystem and soil chemistry of a Mediterranean pasture (Latera, Italy): International Journal of Greenhouse Gas Control, v. 2, p. 373-387.
- Naudts, L., Greinert, J., Artemov, Y., Beaubien, S.E., Borowski, C., and Batist, M.D., 2008, Anomalous sea-floor backscatter patterns in methane venting areas, Dnepr paleo-delta, NW Black Sea: Marine Geology, v. 251, p. 253-267.
- Pettinelli, E., Beaubien, S.E., Lombardi, S., and Annan, A.P., 2008, GPR, TDR, and geochemistry measurements above an active gas vent to study near-surface gas-migration pathways: Geophysics, v. 73.
- McGinnis, D.F., Greinert, J., Artemov, Y., Beaubien, S.E., and Wuest, A., 2006, Fate of rising methane bubbles in stratified waters: How much methane reaches the atmosphere? Journal of Geophysical Research: Oceans, v. 111.
- Pearce, J., Czernichowski-Lauriol, I., Lombardi, S., Brune, S., Nador, A., Baker, J., Pauwels, H., Hatziyannis, G., Beaubien, S., and Faber, E., 2004, A review of natural CO₂ accumulations in Europe as analogues for geological sequestration, Geological Society Special Publication, v. 233, p. 29-41.
- Beaubien, S.E., Ciotoli, G., and Lombardi, S., 2003, Carbon dioxide and radon gas hazard in the Alban Hills area (central Italy): Journal of Volcanology and Geothermal Research, v. 123, p. 63-80.
- Beaubien, S., Nriagu, J., Blowes, D., and Lawson, G., 1994, Chromium speciation and distribution in the Great Lakes: Environmental Science & Technology, v. 28, p. 730-736.

EC-funded Projects

- Radon real time monitoring System and Proactive Indoor Remediation - LIFE-RESPIRE (LIFE16 ENV / IT / 000553).
- Enabling Onshore CO₂ Storage in Europe – ENOS. (Project number – 653718; 2016-2020).
- Research and Civil Society Dialogue towards a low-carbon society - R&Dialogue. (Contract no. 288980; 2012-2015).
- Sub-seabed CO₂ Storage: Impact on Marine Ecosystems (ECO₂). Call FP7-ENERGY-2010-1. (Project number: 265847; 2011-2015).
- Pan-European coordination action on CO₂ Geological Storage (CGS Europe) Call FP7-ENERGY-2010-1. (Project number: 256725. Start date: 2010-2013).

- Characterisation of European CO₂ storage (SiteChar). (Contract no. 256705; 2011-2013).
- Research into Impact and Safety in CO₂ storage (RISCS) – (Contract N° 240837; 2010-2013).
- CO₂ Re.Mo.Ve – EU Integrated Project on Research into Monitoring and Verification Technology of CO₂ Geological Storage – SES6- (Contract Number 518350 2006-2011).
- Assessment of the feasibility of the CO₂ storage in the Russian permafrost. (Contract no. INTAS 2006-1000025-9220; 2007-2009).
- MOVECBM - Monitoring and verification of CO₂ storage and ECBM in Poland (Contract Number 038967; 2006-2008).
- Intailrisk Assessment of Environmental Risk of Radioactively Contaminated Industrial Tailings (contr. N. INCO-CT-2004-509214; 2004-2007).
- CO₂GeoNet, Network of Excellence for CO₂ Geological Storage (Contract no. 502816; 2004- 2009).
- Contribution of high density gas seeps in the Black Sea to methane emission in the atmosphere. CRIMEA. (Contract no. EVK-2-CT-2002-00162; 2003-2006).
- The Weyburn CO₂ Monitoring Project – “Weyburn” Project n° NNE5-2000-00096 (sub-contractor).
- Assessment and Prognosis of Environmental Changes in Lake Issyk-Kul (Kyrgystan) (APELIK). (Contract n° ICA2-CT-2000-10003; 2000-2004).
- Natural Analogues to the Storage of CO₂ in the Geological Environment (NASCENT). (Contr. No. ENK5-CT-2000-00303; 2000-2003).
- Natural analogue of the thermo-hydrochemical and thermo-hydromechanical response of clay barriers (Contr. n° F14W CT 95014; 1996-1999).
- Project of research into gas generation and migration in radioactive waste repository systems (PROGRESS) (Contr. n° F14W- CT96- 0024; 1996-1999).
- Geochemical method seismic zonation - seismic hazard: a multi-disciplinary approach using fluid-geochemistry (Contr. n° ENV 4-CT96-0291; 1996-1998).
- Analysis of the geo-environmental conditions as morphological evolution factors of the sand-clay series of the Tiber Valley and Dunarobba forest preservation (Contr. n° FI 2W/0121; 1992-1994).

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