

## CURRICULUM VITAE

June, 2008

### A. Biographical Information

#### 1. Personal

Name: de Ronde, Cornel Edwin Jan  
 Date/Place of Birth: 10 October 1960/Auckland, New Zealand  
 Citizenship: New Zealander  
 Work Address: GNS Science, 1 Fairway Drive, Avalon, Lower Hutt, New Zealand  
 Office Telephone: +64 (04) 570-4633  
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#### 2. Degrees

Ph.D., 1991 University of Toronto (Geology/Geochemistry): “Structural and geochronological relationships, and fluid-rock interaction in the central part of the ~3.2-3.5 Ga Barberton greenstone belt, South Africa”  
 M.Sc., 1985 University of Auckland (Geology/Geophysics), 1st class Honours: “Studies on a fossil hydrothermal system at Golden Cross, Waihi, NZ”  
 B.Sc., 1983 University of Auckland, (Geology/Geophysics)

#### 3. Employment

2002- present Principal Scientist, GNS Science  
 1997-02 Senior Scientist, Institute of Geological & Nuclear Sciences (GNS)  
 1996 Consulting work (gold ) for Macraes Mining (NZ)  
 1995-7 Foundation for Research, Science & Technology (FRST) Research Fellow at EOS Research, University of Otago  
 1994-95 Agency of Industrial Science & Technology (AIST) Research Fellow, Geological Survey of Japan, Mineral Resources Department, Tsukuba  
 1992-94 Science & Technology Agency (STA) Research Fellow, Geological Survey of Japan, Mineral Resources Department, Tsukuba  
 Consulting (mapping) Union Carbide Tech. Services Ltd. (Zimbabwe)  
 1990-2 Post-doctoral position at Dept. of Geology, University of Cape Town  
 Consulting (mapping) for Anglo American Prospecting Services (S.A.)  
 1985-87 Consulting (gold) for Anglo American Prospecting Services (S.A.)  
 1983-85 Assistant geologist for Amoco Minerals (NZ) Ltd (for 2 summers)

#### 4. Honours

2008 Society of Economic Geologists 2008 Distinguished Lecturer Award  
 2008- Fellow of the Society of Economic Geologists  
 2007-08 President-Elect, International Marine Minerals Society  
 2006- Member, Advisory Editorial Board for *Resource Geology*  
 2006-07 Member, New Zealand Institute of Directors  
 2006 Society of Economic Geologists “Brian J. Skinner Award” for the outstanding paper published in *Economic Geology* in 2005  
 2005- Associate Editor *Applied Earth Science*  
 Advisor, Science Faculty Board of Te Whare Wananga o Awanuiurangi  
 2004- Charter member of Seamount Biogeoscience network  
 2004-06 Associate Editor *Geochemical Journal*  
 2003 New Zealand Association of Scientists “Science Communicator Award”  
 2000- Director, International Marine Minerals Society

1998-00	Associate editor, <i>Geology</i>
1998	<i>Mineralium Deposita</i> “Reviewer of the Year 1997”
1995	Poster Award, annual GAC/MAC conference, Victoria, Canada
1985	Bartrum Memorial Award for the best graduating Honours student (Geology), University of Auckland
1983	New Zealand Geological Society Student Award

### 5. Societies

2000-	International Marine Minerals Society
1998-	Geological Society of America
1996-	American Geophysical Union
1993-	Society of Economic Geologists
1985-	Geological Society of New Zealand

## **B. Academic History**

### 6. Past Research

2002-04	Discovery and characterization of submarine hydrothermal venting along the mid and northern sections of the Kermadec arc and volcanic arcs elsewhere in the world (e.g., Tonga arc), (2) geochemistry of massive sulfide deposits along the southern East Pacific Rise, (3) water and gas composition and rock/mineral chemistry of Curtis Island geothermal system Island and Lake Taupo submarine vents, (4) fluid inclusion research on ancient seawater chemistry, and (5) geochemistry and petrography of sediments and hydrothermally altered rocks from northern Havre Trough/southern Lau Basin
1997-02	Discovery and characterization (both physical and chemical) of submarine hydrothermal venting along the southern Kermadec arc and others arcs in the world (e.g., TTLF, Solomon), (2) massive sulfide mineralization at Brothers and Rumble II West submarine volcanoes, (3) sub-lacustrine hydrothermal venting in Lake Taupo
1995-7	Fluid inclusion, isotopic, and structural study of what is considered a ‘paleo-seismic zone’ preserved in a greywacke sequence in central Otago, N.Z., with the aim of (1) characterising the chemical composition of these crustal fluids and modelling their formation conditions, (2) comparing these data with that obtained from the Macraes Flat shear zone-hosted gold deposit (NZ’s largest gold deposit, also in Otago), and (3) geochemistry of sulfide samples dredged from the Havre Trough (offshore NZ)
1992-5	Research on both ancient volcanogenic massive sulfide deposits in Indonesia, Australia, Sweden, China, and South Africa, and modern ‘black smokers’ of the Okinawa Trough and southern East Pacific Rise; focus on the S isotopic systematics of ore minerals and the chemical signature of hydrothermal sediments associated with modern vents
1990-2	Continued mapping in the Barberton greenstone belt with the aim of unravelling the structural/tectonic history of the north-and west-central parts of the belt; total area mapped ~220 km <sup>2</sup> at a scale of 1:10,000; U-Pb zircon dating of selected intrusions to constrain timing of deformational events; fluid inclusion micro-analytical work (gas and cation/anion chromatography) on Archean submarine hydrothermal deposit samples for early seawater compositions
1985-90	Study of the structure, geochronology, and fluid/rock interaction in the

north-central part of the ~3.1-3.5 Ga Barberton greenstone belt, South Africa; involved characterization of (1) structure, fluid chemistry, and timing (U-Pb dating) of 8 mafic to ultramafic-hosted, shear-zone related gold deposits; (2) fluid chemistry of ~3.2 Ga seafloor hydrothermal vents; and (3)  $^{40}\text{Ar}/^{39}\text{Ar}$  dating of sediments

1983-85 Evaluating the similarities between the Golden Cross Au-Ag epithermal deposit, Waihi, New Zealand, and active geothermal systems within the Taupo Volcanic Zone, New Zealand

### 7. Present Research

2004- (1) Continued discovery and characterization of submarine hydrothermal venting along the Kermadec arc and volcanic arcs elsewhere in the world (e.g., Mariana and Aeolian arcs) utilizing submersibles (manned and ROVs), (2) geochemistry of submarine massive sulfide deposits along the Mariana and Kermadec arcs

### 8. Research Funds/Scholarships Awarded

2007 ISAT grant to travel to Italy (NZ; \$12k)  
MoRST grant to host NZ/Japan workshop on *Shinkai* dives (NZ; \$15k)

2006 ISAT grant to host Dr. Ishibashi from Kyushu University (NZ; \$12k)

2004-10 FRST Mineral wealth of NZ's EEZ Programme; Objective 2—Massive sulfide mineralisation (NZ; \$950k/yr)

2002-04 FRST Sustainable Management of NZ's Mineral Resources Programme; Objective 2—Offshore mineral resources (NZ; \$800k/yr)

2000-02 FRST Geothermal and Minerals Programme; Objective 5 (NZ; \$650k/yr)

1998-00 FRST Geothermal and Minerals Programme; Objective 5 (NZ; \$150k/yr)

1997-00 Foundation for Research, Science & Technology Tender (NZ; \$1,300k)

1996 University of Otago (NZ; \$3k)

1995-7 Foundation for Research, Science & Technology (NZ; \$121k)

1994-5 Agency of Industrial Science & Technology (Japan; ¥6,535,000)

1992-4 Science & Technology Agency (Japan ¥11,310,000)

1990-92 Foundation for Research & Development (S.A.; R44,000)

1990-92 Anglo American Prospecting Services Research Fund (S.A.; R35,000)

1989-90 H.V. Ellsworth Graduate Fellowship (Toronto)

1987-88 International Student Differential Fee Waiver Scholarship (Toronto)

1986-89 University of Toronto Open Doctoral Fellowships (x3)

1985-86 H.V. Ellsworth Graduate Fellowship (Toronto)

## C. Scholarly and Professional Work

### 9. Refereed Publications

#### 9a Papers (58)

2008 Takai, K., Nunoura, T., Suzuki, Y., Stott, M., Massoth, G.J., Christenson, B. W., Butterfield, D.A., Ishibashi, J., Ditchburn, R.G., Lupton, J.E., Evans, L.J., Horikoshi, K. & de Ronde, C.E.J. 2008, Variability in microbial communities in black smoker chimneys at the NW caldera vent field, Brothers volcano, Kermadec arc. *Geomicrobiol. J.* special vol., (submitted).

Embley, R.W., de Ronde, C.E.J., J Ishibashi, J., 2008, Preface to “Active Magmatic, Tectonic and Hydrothermal Processes at Intraoceanic Arc Submarine Volcanoes” *J. Geophys. Res.* special vol. (submitted).

Chadwick, W.W., Jr., Wright, I.C., Schwarz-Schampera, U., Hyvernaud, O., Reymond, D. & de Ronde, C.E.J., 2008, Cyclic eruptions and sector

collapses at Monowai submarine volcano, Kermadec arc: 1998-2007. *Geochem. Geophys. Geosyst.* (submitted).

Jones, B. & de Ronde, C.E.J. & Renaut, R.W., 2008, Silicified filamentous microbes from the Giggenbach seamount: implications for the interpretation of fossil microbes. *J. Geophys. Res.* special vol., (in press).

Baker, E.T., Embley, R.W., Walker, S.L., Resing, J.A., Lupton, J.E., Nakamura, K., de Ronde, C.E.J. & Massoth, G.J., 2008, Hydrothermal activity and volcano distributions along the Mariana Arc. *J. Geophys. Res.* special vol., (in press).

Dziak, R.P., Haxel, J.H., Matsumoto, H., Lau, T.K., Merle, S.M., de Ronde, C.E.J. & Embley, R.W., 2008, Observations of local seismicity and harmonic tremor at Brothers Volcano, south Kermadec Arc, using an ocean-bottom hydrophone array. *J. Geophys. Res.* special vol. (in press).

Chadwick, W.W., Jr., Cashman, K.V., Embley, R.W., Matsumoto, H., Dziak, R.P., de Ronde, C.E.J., Lau, T.-K., Deardorff, N. & Merle, S.M., 2008, Direct Video and Hydrophone Observations of Submarine Explosive Eruptions at NW Rota-1 Volcano, Mariana Arc. *J. Geophys. Res.* **113**, B08S10, doi:10.1029/2007JB005215.

Wright, I.C., Chadwick, W.W. Jr., de Ronde, C.E.J., Reymond, D., Hyvernaud, O., Gennerich, H.-H., Stoffers, P., Mackay, K., Dunkin, M. & Bannister, S.C., 2008, Collapse and reconstruction of Monowai submarine volcano, Kermadec arc, 1998–2004, *J. Geophys. Res.* **113**, B08S03, doi:10.1029/2007JB005138.

Lavelle, J.W., Massoth, G.J., Baker, E.T. & de Ronde, C.E.J., 2008, Ocean current and temperature time series at Brothers volcano. *J. Geophys. Res.* (in press).

Resing, J.A., Lebon, G., Baker, E.T., Lupton, J.E., Embley, R.W., Massoth, G.J., Chadwick, W.W., Jr. & de Ronde, C.E.J., 2008, Venting of acid-sulfate fluids producing a high-sulfidation setting at NW Rota-1 submarine volcano on the Mariana Arc. *Econ. Geol.* **102**, 1,047-1,061.

2007

Embley, R.W., Baker, E.T., Butterfield, D.A., Chadwick, W.W., Jr., Lupton, J.E., Resing, J., de Ronde, C.E.J., Nakamura, K., Tunnicliffe, V., Dower, J., & Merle, S.G., 2007, Exploring the Submarine Ring of Fire: Mariana Arc - Western Pacific. *Oceanography* **20**, 68-79.

Massoth, G., Baker, E., Worthington, T., Lupton, J., de Ronde, C., Arculus, A., Walker, S., Nakamura, K., Ishibashi, J., Stoffers, P., Resing, J., Greene, R. & Lebon, G., 2007, Multiple Hydrothermal Sources along the south Tonga arc and Valu Fa Ridge. *Geochem. Geophys. Geosyst.* **8**, Q11008, doi:10.1029/2007GC001675.

de Ronde, C.E.J., Baker, E.T., Massoth, G.J., Lupton, J.E., Wright, I.C., Sparks, R.J., Bannister, S.C., Reyners, M.E., Walker, S.L., Greene, R.R., Ishibashi, J., Faure, K., Resing, J.A. & Lebon, G.T., 2007, Submarine Hydrothermal Activity Along the mid-Kermadec Arc, New Zealand. Large-Scale Effects on Venting. *Geochem. Geophys. Geosyst.* **8**, Q07007, doi:10.1029/2006GC001495.

Jones, B., de Ronde, C.E.J., Renaut, R.W. & Owen, R.B., 2007, Siliceous sublacustrine spring deposits around hydrothermal vents in Lake Taupo, New Zealand. *J. Geol. Soc. Lond.* **164**, 227-242.

2006

Faure, K., Greinert, J., Pecher, I.A., Graham, I.J., Massoth, G.J., de

- Ronde, C.E.J., Wright, I.C., Baker, E.T. & Olson, E.J., 2006, Methane release at the top of the gas hydrate stability zone of the Hikurangi margin, New Zealand, *N.Z.J. Geol. Geophys.* **49**, 503-516.
- Westall, F., de Ronde, C.E.J., Southam, G., Grassineau, N., Colas, M., Cockell, C. & Lammer, H., 2006, Implications of a 3.472-3.333 Ga-old subaerial microbial mat from the Barberton greenstone belt, South Africa for the UV environmental conditions on the early Earth. *Phil. Trans. Roy. Soc. B.* **361**, 1,857-1,875.
- Lupton, J., Butterfield, D., Lilley, M., Evans, L., Nakamura, K., Chadwick, W., Jr., Resing, J., Embley, R., Olson, E., Proskurowski, G., Baker, E., de Ronde, C., Roe, K., Greene, R., Lebon, G. & Young, C., 2006, Submarine venting of liquid carbon dioxide on a Mariana arc volcano. *Geochem. Geophys. Geosyst.* **7**, doi:10.2929/2005GC001152.
- de Ronde, C.E.J., 2006, Mineralization associated with submarine volcanoes of the southern Kermadec arc, New Zealand. *Aust. Inst. Mining Metall. Mono.* **25**, 333-338.
- Massoth, G.J. & de Ronde, C.E.J., 2006, Exploration for submarine arc-hosted metal deposits, offshore New Zealand. *Aust. Inst. Mining Metall. Mono.* **25**, 327-332.
- Embley, R.W., Chadwick, W.W. Jr., Baker, E.T., Butterfield, D.A., Resing, J.A., de Ronde, C.E.J., Tunnicliffe, V., Lupton, J.E., Juniper, K.S., Rubin, K.H., Stern, R.J., Lebon, G.T., Nakamura, K., Merle, S.G., Hein, J.R., Wiens, D.P. & Tamura, T., 2006, Long-term eruptive activity at a submarine arc volcano. *Nature* **441**, 494-497.
- Villanueva, R.E., Prol-Ledesma, R.M., Torres-Vera, M.A., Canet, C., Armienta, M.A. & de Ronde, C.E.J., 2006, Comparative study of sampling methods and *in situ* and laboratory analysis for shallow-water submarine hydrothermal systems. *J. Geochem. Explor.* **89**, 414-419.
- 2005 de Ronde, C.E.J., Hannington, M.D., Stoffers, P., Wright, I.C., Ditchburn, R.G., Reyes, A.G., Baker, E.T., Massoth, G.J., Lupton, J.E., Walker, S.L., Greene, R.R. Soong, C.W.R., Ishibashi, J., Lebon, G.T., Bray, C.J. & Resing, J.A., 2005, Evolution of a submarine magmatic-hydrothermal system: Brothers volcano, southern Kermadec arc, New Zealand. *Econ. Geol.* **100**, 1097-1133.
- Prol-Ledesma, R.M., Dando, P.R. & de Ronde, C.E.J., 2005, Preface to Special issue on "shallow-water hydrothermal venting". *Chem. Geol.* **224**, 1-4.
- Baker, E.T., Massoth, G.J., Nakamura, K., Embley, R.W., de Ronde, C.E.J., & Arculus, R.J., 2005, Hydrothermal activity on near-arc sections of back-arc ridges: results from the Mariana Trough and Lau Basin. *G<sup>3</sup>* **6**, Q09001, doi:10.1029/2005GC000948.
- Hannington, M.D., de Ronde, C.E.J. & Petersen, S., 2005, Modern sea-floor tectonics and submarine hydrothermal systems. *Econ. Geol. 100<sup>th</sup> Ann. Vol.*, 111-141.
- 2004 Ditchburn, R.G., Graham, I.J., Barry, B.J. & de Ronde, C.E.J., 2004, Uranium series disequilibrium dating of black smoker chimneys. *New Zealand Sci. Reviews* **61**, 54-56.
- de Ronde, C.E.J., de Wit, M.J., Spooner, E.T.C., Channer, D.M. deR., Christenson, B.W., Bray, C.J. & Faure, K., 2004, Ironstone pods in the Archean Barberton greenstone belt, South Africa: Earth's oldest seafloor hydrothermal vents reinterpreted as Quaternary subaerial hot springs: Comment. *Geology*, e68-69.

- 2003 de Ronde, C.E.J., Massoth, G.J., Baker, E.T. & Lupton, J.E., 2003, Submarine hydrothermal venting related to volcanic arcs, *In*, Giggenbach Memorial volume, S.F. Simmons and I.G. Graham (eds.). *Soc. Econ. Geol. and Geochem. Soc. Special Publ.* **10**, 91-109.
- Massoth, G.J., de Ronde, C.E.J., Lupton, J.E., Feely, R.A., Baker, E.T., Lebon, G.T & Maenner, S.M., 2003, Chemically rich and diverse submarine hydrothermal plumes of the southern Kermadec volcanic arc (New Zealand). *In*, Intra-oceanic subduction systems: tectonic and magmatic processes, R. Larter and P. Leat (eds.). *Geol. Soc. Lond. Spec. Publ.* **219**, 119-139.
- Baker, E.T., Feely, R.A., de Ronde, C.E.J., Massoth, G.J. & Wright, I.C., 2003, Submarine hydrothermal venting on the southern Kermadec volcanic arc front (offshore New Zealand): location and extent of particle plume signatures. *In*, Intra-oceanic subduction systems: tectonic and magmatic processes, R. Larter and P. Leat (eds.). *Geol. Soc. Lond. Spec. Publ.* **219**, 141-161.
- de Ronde, C.E.J., Faure, K., Bray, C.J., Chappell, D.A. & Wright, I.C., 2003, Hydrothermal fluids associated with seafloor mineralization at two southern Kermadec arc volcanoes, offshore New Zealand. *Mineralium Deposita* **38**, 217-233.
- 2002 Baker, E.T., Massoth, G.J., de Ronde, C.E.J., Lupton, J.E. & McInnes, B.I.A., 2002, Observations and sampling of an ongoing subsurface eruption of Kavachi volcano, Solomon Islands, May 2000. *Geology* **30**, 975-978.
- de Ronde, C.E.J., Stoffers, P., Garbe-Schönberg, D., Christenson, B.W., Jones, B., Manconi, R., Browne, P.R.L., Hissmann, K. Botz, R., Davy, B.W., Schmitt, M. & Battershill, C.N., 2002, Discovery of active hydrothermal venting in Lake Taupo, New Zealand. *J. Volcanol. Geotherm. Res.* **115**, 255-273.
- Wright, I.C., Stoffers, P., Hannington, M., de Ronde, C.E.J., Herzig, P., Smith, I.E.M. & Browne, P.R.L., 2002, Towed-camera investigations of shallow-intermediate water-depth submarine basaltic, stratovolcanoes of the southern Kermadec arc. *Mar. Geol.* **185**, 207-218.
- 2001 de Ronde, C.E.J., Baker, E.T., Massoth, G.J., Lupton, J.E., Wright, I.C., Feely, R.A. & Greene, R.G., 2001, Intra-oceanic subduction-related hydrothermal venting, Kermadec volcanic arc, New Zealand: *Earth Planet. Sci. Lett.* **193**, 359-369.
- de Ronde, C.E.J., Sibson, R.H., Bray, C.J. & Faure, K., 2001, Fluid chemistry of veining associated with an ancient microearthquake swarm, Benmore Dam, New Zealand: *Bull. Geol. Soc. Am.* **113**, 1010-1024.
- Westall, F., de Wit, M.J., Dann, J., van der Gaast, S., de Ronde, C.E.J., & Gerneke, D., 2001, Early Archean fossil bacteria and biofilms in hydrothermally-influenced sediments from the Barberton greenstone belt, South Africa. *Precamb. Res.* **106**, 93-116.
- 2000 de Ronde, C.E.J., Faure, K., Bray, C.J., & Whitford, D.J., 2000, Round Hill mesothermal gold deposit, Macraes Flat, New Zealand: evidence for a magmatic ore fluid. *Econ. Geol.* **95**, 1025-1048.
- de Ronde, C.E.J., & Kamo, S.L., 2000, An Archean arc-arc collisional event: a short-lived (ca. 3 Myr) episode, Weltevreden area, Barberton greenstone belt, South Africa: *Afr. J. Earth Sci.* **30**, 219-248.
- 1999 Stoffers, P., Wright, I.C., de Ronde, C.E.J., Hannington, M., Villinger, H., Herzig, P., & the Shipboard Scientific Party, 1999, Little-studied arc-

- barckarc system in the spotlight: *EOS, Transactions, Am. Geophys. Union* **80**, 353, 359.
- Stoffers, P., Hannington, M., Herzig, P., Wright, I.C., & de Ronde, C.E.J., and the Shipboard Scientific Party, 1999, Elemental mercury at submarine hydrothermal vents in the Bay of Plenty, Taupo volcanic zone, New Zealand: *Geology* **27**, 931-934.
- 1998 Wright, I.C., de Ronde, C.E.J., Faure, K., & Gamble, J.A., 1998, Discovery of hydrothermal sulfide mineralization from southern Kermadec arc volcanoes: *Earth Planet. Sci. Lett.* **164**, 335-343.
- 1997 de Ronde, C.E.J., Channer, D.M. DeR., Faure, K., Bray, C.J., & Spooner, 1997, E.T.C., Fluid chemistry of Archean seafloor hydrothermal vents; implications for the composition of circa 3.2 Ga seawater: *Geochim. Cosmochim. Acta* **61**, 4025-4042.
- Channer, D.M. DeR., de Ronde, C.E.J., & Spooner, E.T.C., 1997, The Cl/Br/I composition of ~3.23 Ga modified seawater: implications for the geological evolution of ocean halide chemistry: *Earth Planet. Sci. Lett.* **150**, 325-335.
- de Ronde, C.E.J., Channer, D.M. De R., & Spooner, E.T.C., 1997, Archean Fluids, in, de Wit, M.J., & Ashwal, L.D., eds, *Greenstone Belts*, Oxford Mono. Geol. Geophys. Series **35**, 309-335. (invited)
- 1996 de Ronde, C.E.J., & Ebbesen, T., 1996, 3.2 billion years of organic compound formation near seafloor hot springs: *Geology* **24**, 791-794.
- 1995 de Ronde, C.E.J., 1995, Fluid chemistry and isotopic characteristics of seafloor hydrothermal systems and associated VMS deposits: potential for magmatic contributions, in, Thompson, J.F.H., ed., *Magma, Fluids, and Ore Deposits*, Min. Assoc. Canada, Short Course Series **23**, 479-509. (invited)
- Ebbesen, T.W., Hiura, H., Hedenquist, J.W., de Ronde, C.E.J., Andersen, A., Often, M., & Melezhik, 1995, Origins of fullerenes in rocks: *Science* **268**, 1634-1635.
- 1994 de Ronde, C.E.J., & de Wit, M.J., 1994, Tectonic history of the Barberton greenstone belt, South Africa: 490 million years of Archean crustal evolution: *Tectonics* **13**, 983-1005.
- de Ronde, C.E.J., de Wit, M.J., & Spooner, E.T.C., 1994, Early Archean (>3.2 Ga) Fe-oxide-rich, hydrothermal discharge vents in the Barberton greenstone belt, South Africa: *Geol. Soc. Am. Bull.* **106**, 86-104.
- 1992 de Ronde, C.E.J., Spooner, E.T.C., de Wit, M.J., & Bray, C.J., 1992, Shear zone related, Au-quartz vein deposits in the Barberton greenstone belt, South Africa: Field and petrographic characteristics, fluid properties and light stable geochemistry: *Econ. Geol.* **87**, 366-402.
- de Wit, M.J., Roering, C., Armstrong, R.A., Hart, R.J., de Ronde, C.E.J., Tredoux, M., Hart, R.A., Green, R.W.E., & Peredy, E., 1992, Formation of an Archean continent: *Nature* **357**, 553-562. (invited)
- 1991 de Ronde, C.E.J., Hall, C.M., York, D., & Spooner, E.T.C., 1991, Laser step-heating  $^{40}\text{Ar}/^{39}\text{Ar}$  age spectra from early Archean (~3.5 Ga) Barberton greenstone belt sediments: A technique for detecting cryptic tectono-thermal events: *Geochim. Cosmochim. Acta* **55**, 1933-1951.
- de Ronde, C.E.J., Kamo, S., Davis, D.W., de Wit, M.J., & Spooner, E.T.C., 1991, Field, geochemical and U-Pb isotopic constraints from hypabyssal felsic intrusions within the Barberton greenstone belt, South Africa: Implications for tectonics and the timing of gold mineralization: *Precam. Res.* **49**, 261-280.

- 1988 de Ronde, C.E.J., & Blattner, P., 1988, Hydrothermal alteration, stable isotopes and fluid inclusions of the Golden Cross epithermal gold-silver deposit, Waihi, New Zealand: *Econ. Geol.* **83**, 895-917.
- 1987 Locke, C.A., & de Ronde, C.E.J., 1987, Delineation of gold-bearing hydro-thermally altered rocks using gravity data—a New Zealand example: *Geoexploration* **24**, 471-481.
- 1986 de Ronde, C.E.J., 1986, The Golden Cross gold-silver deposit, *in*, Henley, R.W., Hedenquist, J.W., & Roberts, P.J., eds., *Guide to active epithermal (geothermal) systems and precious metal deposits of New Zealand*: Berlin-Stuttgart, Gebrüder Borntraeger, Mon. Ser. Mineral Deposits, **26**, 165-183. (invited)
- 9b. Proceedings (25)**
- 2008 de Ronde, C.E.J., Baker, E.T., Lupton, J.L., Embley, R.W., Massoth, G.J., Faure, K., Leybourne, M.I., Walker, S.L., Greene, R.R., Ishibashi, J., Graham, I.J., Chadwick, W. Jr., Butterfield, D.A., Resing, J.A., Yoerger, D.R., Stoffers, P., Wright, I.C., Hannington, M.D., Merle, S.G., Takai, K., Arculus, R. & *NZAPLUME III, SWEEP Vents & NZASRoF'05* participants, 2008, The Kermadec arc, New Zealand: a 10 year odyssey of discovery along the world's most hydrothermally active intraoceanic arc. *AusIMM PACRIM Congress*, 24-27 November 2008, Gold Coast, Queensland, Australia, p. ?
- Leybourne, M.I., de Ronde, C.E.J. & Baker, E.T., 2008, Exploration for volcanogenic massive sulfide mineralization along the Kermadec arc. *AusIMM PACRIM Congress*, 24-27 November 2008, Gold Coast, Queensland, Australia, p. ?
- 2007 Malahoff A. & de Ronde, C., 2007, Summit construction, caldera formation, cone growth, mass wasting, hydrothermal processes and sulfide deposition of submarine volcanoes of the southern Kermadec arc: *37<sup>th</sup> annual conference of the Underwater Mining Institute*, 15-20 October 2007, Tokyo, Japan, 4 pp.
- Ditchburn, R.G., de Ronde, C.E.J. & Barry, B.J., 2007, Application of radiometric dating methods to modern seafloor volcanic massive sulfide deposits: insights into hydrothermal processes: *37<sup>th</sup> annual conference of the Underwater Mining Institute*, 15-20 October 2007, Tokyo, Japan, 6 pp.
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 “Undersea volcanoes, strange life forms” in *Dive New Zealand* **86** (Feb/Mar '05), p. 26-28. *Shinkai* dives on Brothers.
- 2004 Articles on final wrap of *Shinkai 6500* cruise (Nov. '04); *The New Zealand Herald*, *DomPost*, *West Coast Times*, *Nelson Mail*, *Timaru Herald*, *Marlborough Express*, *Oamaru Mail*, *Greymouth Evening Star*, *Bay of Plenty Times*, *The Daily Post*, *Scoop* web page; *Hong Kong* newspaper  
 Articles on initial results of the *Shinkai 6500* cruise (while at sea; Oct. '04); *Hawke’s Bay Today* (x2), *The Daily Post*, *Horowhenua Kapiti Chronicle*, *Gisborne Herald*, *Oamaru Mail*, *Timaru Herald*, *The New Zealand Herald*, *Manawatu Standard*, *Bay of Plenty Times*, *Otago Daily Times*, *DomPost*, *Northern Advocate*, *The New Zealand Herald*, *Scoop* web page,  
 Articles related to the NZAPLUME III cruise (Sept/Oct '04); *DomPost*, *Whakatane Beacon*, *Wanganui Chronicle*, *Greymouth Evening Star*, *Timaru Herald*, *Bay of Plenty Times* (x2), *Opotiki News*, *The Daily Post* (x2), *Manawatu Standard*, *Scoop* New web page; *The Science Site* web page  
 Feature on *Shinkai* coming to NZ; *Bay of Plenty Times* (Aug. '04)  
 Reference to GNS “Kermadec” web site on “*Education Supersites*” web page  
 Feature on submarine volcanoes in children’s educational magazine *Go Zone*, Issue 6, July 2004  
 Articles on the “2004 Ring of Fire” cruise to the Mariana arc (May '04); *NOAA* press release (Washington D.C.), *CNN* web page; <http://oceanexplorer.noaa.gov/explorations/04fire/welcome.html>; *The New Zealand Herald*, *DomPost*; *Hutt City News*  
 Articles on the *Shinkai 6500* submersible coming to NZ (Feb. '04); *DomPost*, *The Press*, *Hawkes Bay Today*, *Otago Daily Times*, *Greymouth Evening Star*
- 2003 Articles on state of Australian research vessel *Southern Surveyor*; *Sydney Morning Herald* (2) and *The Australian*  
 Article in *NZ Herald* web site, Feb. 19, 2003 “NZ scientists discover seabed volcanoes on Mariana arc”
- 2002 Article in *Archives*—the science site ([www.thesciencesite.info](http://www.thesciencesite.info)) “Finding New Zealand’s undersea mineral wealth”

- Article in *Geotimes* magazine that refers to de Ronde and colleagues and their work on arc-related seafloor hydrothermal venting (*Geotimes*, Dec. 2002, 19-23)
- Article in *TIME* magazine about the Te Papa *Voyagers* exhibition which features, among others, Cornel de Ronde
- Article in Australian children's science magazine *Scientriffic* on de Ronde and his job as a geologist/ oceanographer (v. 21, p. 11)
- Feature article on Curtis Island expedition "... NZ Listener, p. ?-?
- Articles related to the "Curtis Island 2002 Expedition"; *Dominion-Post*, *Bay of Plenty Times*; various German newspapers
- Article on the *Voyagers: Discovering the Pacific* exhibition featured at Te Papa museum that highlights various New Zealanders who have interacted with the oceans, including Cornel de Ronde; *Sunday Star Times*
- Pre-NZAPLUME II cruise articles, including; [www.NewsRoom.co.nz](http://www.NewsRoom.co.nz), *Greymouth Evening Star*, *Hawkes Bay Today*, *NZ Herald*, *The Dominion*, *Evening Standard*, *Bay of Plenty Times*
- Post-NZAPLUME II cruise articles, including; *The Dominion*, *Bay Weekend*, *NZ Herald*, *Horowhenua-Kapiti Chronicle*, *Hawkes Bay Today*, *Greymouth Evening Star*, *Evening Standard*, [www.bbc.co.uk/news](http://www.bbc.co.uk/news)
- Article in the GNS magazine *Globe* "Marine geologist chosen for voyager exhibit
- 2001 Newspaper articles on a massive sulfide chimney recovered during '99/'00 *Alvin* dives on SEPR in *The Dominion*, *The Evening Post*, *Westport News*, *Timaru Herald*, *NZ Herald*
- 2000 "A Fiery Birth", *New Zealand Science Monthly* **11**, p.5
- Full page "Primetime" feature in *Waikato Times* featuring active volcanoes of New Zealand, including submarine volcanoes offshore
- Short article in News section of *Nature* magazine (v. 405, June 2000, p. 499) on Kavachi eruption
- Volcanic Voyage of Discovery" in *Australian Science* **21**, No. 7, 28-30
- Kavachi (Solomon Islands) eruption articles published in *The Dominion*, *Timaru Herald*, *Daily News*, *Gisborne Herald*, *Horowhenua-Kapiti Chronicle*, *Omaru Mail*, *Wairapa Times-Age*, *West Coast Times* & 2/3 page in *NZ Herald*
- Newspaper articles (2) on offshore White Island occurrence of mercury in the *Opotoki News*
- Newspaper/magazine articles related to mining of offshore NZ massive sulfide deposits (*NZ Herald*, *The Dominion*, *Paydirt-NZ Mineral Resources 2000*)
- 1999 Newspaper article in *Sunday Star-Times* and *NZ Herald* that related to Hg offshore White Island
- Newspaper articles related to offshore research that featured in July 1999 issue of *Globe* magazine (e.g., *The Press*, *Otago Daily Times*, *Daily News*, *Bay of Plenty Times*, *Daily Post*)
- Lake Taupo swath mapping (*Taupo Times*)
- Magazine article on "Diving into darkest depths". *New Zealand science monthly*, 10(3), p. 4.
- NZAPLUME newspaper articles ( $n = >40$ ), pre- and post cruise, including; *The Press*, *Daily Telegraph*, *Gisborne Herald*, *Wairarapa Times-Age*, *Wanganui Chronicle*, *The Dominion*, *NZ Herald*, *Taupo*



- Times, Opotiki News, Eastern Bay News, Otago Daily Times, Waikato Times, The Post, Hawkes Bay Herald-Tribune, Bay of Plenty Times, The Nelson Mail, Greymouth Evening Star*
- 1998 JAGO newspaper articles ( $n = >50$ ) including; *Waikato Times, NZ Herald, Evening Standard, Whangarei Report, Hawkes Bay Herald-Tribune, Taupo Times, Taupo Weekender, Ashburton Guardian, Evening Post, The Dominion, Wairapa Times, Marlborough Express, Greymouth Evening Star, Timaru Herald, Daily Telegraph, Gisborne Herald, Northern Advocate, The Chronicle, Daily News, Bay of Plenty Times, Oamaru Mail, The Daily Post, Wanganui Chronicle, Westport News, Hutt News, The Press*, article in *NZ Science* magazine “Diving into Darkest Depths”, April, 1999, p. 4, reported on the *Simthsonian* web pages, article in the *New Zealand Listener*, Jan. 16, 1999, p. 30-31, article in the *University of Auckland News*, Dec. 10, 1999, p.8-9, and  $>116,000$  ‘hits’ over 2 week period on the NZMIA web site featuring the dives
- Magazine article on “Black smokers offer Pacific new riches”, *Pacific Islands Monthly*, April, 1988, 17-18 (mentions planned research on Kermadec Arc vents)
- Newspaper article on mineral finds on Pacific seabed: Feb. 13-17, 1998, *Wairapa Times-Age, Gisborne Herald, Evening Standard, West Coast Times*.
- Scientific communication “Riches spill from Davy Jones’s locker”, Jan. 10, 1998, *New Scientist*, p. 13 (mentions work done on Brother’s sulfide samples)
- 1997 Newspaper article on offshore New Zealand gold-rich massive sulfide deposits: Dec. 22-29, 1997, *N.Z. Herald*—front page, *Dargaville Times, Gisborne Herald, Hawke’s Bay Herald-Tribune, Northern Advocate, The Nelson Mail, The Northland Times, Waikato Times, Whakatane Beacon*; Dec. 27, 1997, *The Toronto Star* (Canada); also reported on radio programmes in N.Z. and Canada
- Article on seafloor hydrothermal deposits “Belching gold” (*New Zealand Educational Review*, Sept. 10, 1997, p. 18-19).
- Article on evidence for evolution of life (*Earth* magazine, June 97, p. 53)

## 12. Other Media (TV/radio/web)

- 2008 “Submarine volcano mineral deposits” Interview on ABC radio (20 June)  
 “Undersea Vents In The Pacific Ring Of Fire” (14 February) -11:18 mins, *Catalyst TV*, ABC, est. viewers ~830,000 (~21% of all Aust. households)  
 The NZASRoF’07, or ROVARK cruise, (RSS News Feed) as of mid Feb ’08, has had 6,266 views/subscribers since being published last year.
- 2007 Newstalk ZB—Aeolian07 pre-cruise and post-cruise interviews; on ‘teletext’ Nov. 17.  
*TV ONE News*—ROVARK ‘07 cruise, Brothers volcano (26 May)  
*New Zealand Exposed* 30 min documentary “Here’s the Catch”, TV 3(10 Feb—est. audience ?)
- 2006 *National Radio*—Jim Mora show, Mariana arc cruise (30 May)-15 mins  
*TV ONE News*—2006 Ring of Fire cruise, Mariana arc (26 May)  
*TV3 News*—2006 Ring of Fire cruise, Mariana arc (26 May)
- 2005 “John Batchelor Show” (x 2), *ABC Radio Network*, New York (audience est. 3-5 million)

- 2004 GNS web page on Kermadec expeditions ~56,000 hits (from Sept. '04)  
*Sunday* documentary programme “The New Frontier” (21 Nov; est. viewers ~550,000)  
 Interviews about the *Shinkai* dives on; *Global News*, *Radio Pacific*, *Radio 95FM*, *Radio NZ* “Eureka”, “Pacific Beat” on ABC, *95 BFM* “Green desk”  
 ARD ‘magazine’ item (German TV 1) on the *Shinkai 6500* submersible dives (24 Nov; est. viewers 2,930,000, with two repeats, est. ~4,000,000)  
*TV ONE Breakfast News—Shinkai 6500* submersible dives (18 Nov; est. viewers ?)  
*TV3 News—Shinkai 6500* submersible dives (17 Nov; est. viewers 215,000)  
*One Network News—Shinkai 6500* submersible dives (17 Nov; est. viewers ~635,000)  
*TV3 News— Shinkai 6500* expedition (21 Oct; est. viewers 215,000?)  
*TV ONE Midday News—Shinkai 6500* expedition (21 Oct; est. viewers ~635,000?)  
*One Network News—“2004 Ring of Fire”* (19 May; est. viewers ~820,000)  
*One Network News—“Submarine eruptions”* (14 May; est. viewers ~810,000)  
*One Network News—Shinkai 6500* submersible coming to NZ (15 Feb; est. viewers ~800,000)  
 Interview on *Morning Report* (National Radio-17 Feb) about *Shinkai* visit
- 2002 *Rema Broadcasting* interview on offshore submarine venting and volcanoes  
*One Network News* (est. viewers ~810,000), *TV3* (est. viewers ~290,000) and German TV channels (unknown # viewers) news items on *Curtis Island 2002 expedition*  
*Radio NZ* interview on NZ’s offshore mineral resources (March); interview on *Radio NZ’s Eureka* program on NZ’s offshore mineral wealth (April); 10-15 minute interview on *Radio NZ* post-NZAPLUME II on results of cruise and significance (May)  
*One Network News* and *TV3* news items on post NZAPLUME II cruise – results and significance (May 17)
- 2001 Interview on *Radio NZ* about NZ’s Oceans Policy and offshore minerals  
 Interview on 2ZB on chimneys recovered from EPR
- 2000 Interviewed on *TV3 News* on Kavachi eruption; related story also *One Network News*; news item went all around the world, including *BBC*, *CNN*, etc.
- 1999 *NZAPLUME* radio interviews (1ZB Auckland; *Morning Report*, Wellington)  
 Interview on offshore White Island mercury deposits broadcast on *IRN radio* and *Morning Report* (National Radio)
- 1998 JAGO “60 Minutes” documentary (~600,000 viewers); radio interviews (including “Eureka” show and about 5 others, including interview with Kim Hill on RNZ)  
 TV interview and news story on New Zealand offshore sulfide deposits, *One Network News*, 9 Jan, 1998. + *TV3* etc

**13. Publications In Preparation** (with preferred journal in parentheses) (8)

de Ronde, C.E.J., Layer, P.W., Scott, J.G., & Angus, P.V.M.,  $^{40}\text{Ar}/^{39}\text{Ar}$  ages for the Macraes Flat gold deposit, Otago, New Zealand: implications for fluid source and regional tectonics. (*Econ. Geol.*)

Hannington, M.D., Herzig, P.M., de Ronde, C.E.J., Robertson, J., Browne, P.R.L., Schwarz-Schampera, U., Stoffers, P & Wright, I.C., Epithermal-style As-Sb-Hg mineralization at submarine hot springs in the Bay of Plenty, Taupo volcanic Zone, New Zealand. (*Econ. Geol.*)

de Ronde, C.E.J., Ditchburn, R.D., & Urabe, T., Geochemical signature of hydrothermal sediments, southern East Pacific Rise: implications for metal flux. (*JGR*)

de Ronde, C.E.J., Etoubleau, J., Reyes, A. & Soong, R., Evidence for hydrothermal activity in the area of the southern Lau Basin propagator (*Marine Geology*)

de Ronde, C.E.J., Bray, C.J., Faure, K., Dann, J., & Spooner, E.T.C., Chemistry of the ancient oceans. (*Geology*)

de Ronde, C.E.J., Kamo, S.L. & Armstrong, R.A., The  $^{87}\text{Sr}/^{86}\text{Sr}$  value of 3.23 Ga seawater: evidence for mantle buffering of Earth's early oceans. (*Geology*)

de Ronde, C.E.J., Detailed geology/structural map of the north-central Barberton greenstone belt, South Africa. (*S. Afr. J. Geol. Geophys.*)

de Ronde, C.E.J., Bray, C.J., & Faure, K., Hydrothermal fluid chemistry of active vents and presently forming mineral deposits of the Okinawa Trough cf to select Kuroko-type massive sulfide deposits. (*Econ. Geol.*)

**14. Invited Lectures (55-not counting any for 2008...)**

- |      |   |
|------|---|
| 2008 | SEG lectures (Sofia, Zurich...), EGU, IGC, IAVACEI, AusIMM, PACRIM...   |
| 2007 | Public lecture "Brothers volcano" (Taupo)<br>Combined Probus Club (Lower Hutt) "Underwater spectacles"<br>Rotary Club (North Wellington branch) "Mariana submarine volcanoes"   |
| 2006 | U3A (Plimerton branch) "Volcanoes of the Mariana arc"<br>GSNZ (Palmerston North branch) "Volcanoes of the Mariana arc"<br>Rotary Club (Courtney Place branch) "Mariana submarine volcanoes"<br>U3A (Ohariu branch, Wellington) "Volcanoes of the Mariana arc"<br>U3A (Hutt Branch, Lower Hutt) "Eruptions on the seafloor"<br>Inaugural Circum-Pacific Council's workshop, Wellington   |
| 2005 | 3 <sup>rd</sup> International Workshop on Water Dynamics, Sendai<br>Gordon conference, New Hampshire<br>University of Auckland "Kermadec and Mariana arcs"<br>Wellesly High School "Submarine volcanoes"<br>Mineral club of Hutt Valley and Wellington "Kermadec volcanoes"<br>U3A (Ohariu branch-Wellington) "Mysteries of the Deep"   |
| 2004 | "Realise the Dream" lectures (run under the auspices of The Royal Society and the NZ Futures Trust) to well performed science students in the Wellington<br>Christchurch branch of Roy. Soc. NZ "NZ submarine hot springs"<br>Te Papa opening of children's <i>NatureSpace</i> sulfide chimney display<br>Palmerston North branch of Roy. Soc. NZ "NZ submarine hot springs"<br>U3A (Ohariu branch-Wellington) "Volcanoes, hot springs and animals" |
| 2003 | Green Bay High School seniors "NZ's submarine volcanoes"<br>Manawatu branch of Geol. Soc. NZ "Submarine volcanoes offshore"<br>Parliamentary science club "NZ offshore mineral wealth" (Wellington)   |

- 2002 CSIRO workshop on seafloor hydrothermal systems (Sydney)  
 Geological Society of NZ annual general meeting (Plenary talk)  
 GSA, Denver, Pardee Symposium "Evolution of the Early Atmosphere, Hydrosphere, and Biosphere: Constraints from Ore Deposits"  
 GSA, Denver, special symposium "The Changing Vision of Marine Minerals"  
 Kelson primary school "Dinosaurs and volcanoes"
- 2001 U3A AGM conference "NZ's offshore mineral resources" (Tauranga)  
 Public lecture "Down in the Ocean Depths: Rifts, Rocks, Roughly and Research". *Victoria University of Wellington Faculty of Science symposium* in honor of D.Sc. awarded to Prof. Malahoff, April '01  
 Samuel Marsden collegiate school "Science and the deep ocean"
- 2000 Te Papa "Ocean Planet" lecture series "Submarine volcanoes, black smokers, gold and the origin of life!", Sept. 28, 2000  
 Whakatane Volunteer Coastguard "NZ submarine hydrothermal systems"
- 1999 Wellington Dive Club: "Seafloor hydrothermal venting"
- 1998 Ninth International Symposium on Water-Rock Interaction, Wairakei: "Chemistry of 3.2 Ga seafloor hydrothermal vents"
- 1997 St. Kilda Rotary club, Dunedin: "Black smokers"
- 1996 NIWA, Wellington, "Fluid chemistry and isotopic characteristics of seafloor hydrothermal systems"; IGNS, Wellington: "Fluid chemistry of Archean seafloor hydrothermal vents; implications for the composition of circa 3.2 Ga seawater"  
 St. Kilda Rotary club, Dunedin, "Diving to 2,500 m beneath the sea"
- 1995 Mineralogical Association of Canada, Short Course Series, "Fluid chemistry and isotopic characteristics of seafloor hydrothermal systems and associated VMS deposits: potential for magmatic contributions"  
 Pacific Marine Environmental Laboratories (NOAA), Seattle, "3.2 billion-year-old seafloor hydrothermal vents: implications for the chemistry of Archean ocean water".  
 University of Hokkaido, "Archean seafloor crust and associated alteration"
- 1993 University of Toronto, "Evidence for the chemistry of modified ~3.23 Ga seawater"  
 University of Tokyo, "The tectonic evolution of the ~3.1-3.5 Ga Barberton greenstone belt of South Africa"  
 Tohoku University (Sendai): "Evidence for hydrothermal activity on the Archean seafloor, Barberton greenstone belt, South Africa"  
 The Society of Resource Geology (Tokyo), "Tectonic controls on gold mineralization in the ~3.1-3.5 Ga Barberton greenstone belt, South Africa"
- 1991 Universidade Federal de Minas Gerais, Belo Horizonte, and Universidade de São Paulo, "Barberton greenstone belt Au-quartz vein deposits: field setting and ore fluid characteristics" and "The Golden Cross epithermal Au-Ag deposit, Waihi, New Zealand"
- 1990 Barberton branch of the Geological Society of South Africa, "Barberton greenstone belt Au-quartz vein deposits: fluid properties and light stable isotope geochemistry"
- 1986 University of Zimbabwe, "Epithermal Au-Ag deposits as analogues of active geothermal systems"  
 Barberton branch of the Geological Society of South Africa,

- “Geothermal systems of the Taupo Volcanic Zone, North Island, NZ”  
Toronto Geological Discussion Group Seminar (Gold in Hydrothermal Systems), “The Golden Cross epithermal Au-Ag deposit, Waihi, New Zealand: Just how analogous are the active geothermal systems of the Taupo Volcanic Zone?”
- 1985 Bernard Price Institute of Geophysical Research, University of the Witwatersrand, “Geological, geochemical and geophysical investigations on a gold-enriched fossil hydrothermal system”  
Barberton branch of the Geological Society of South Africa: “The Golden Cross epithermal Au-Ag deposit”  
Geothermal Institute, University of Auckland, “What geological indicators from an epithermal deposit can be used to infer past hydrothermal activity?”

### **15. Theses Supervised (3)**

- Graaf, J.H., 2006, “The hydrothermal system of Raoul Island: Past and present”. *M.Sc. thesis*, University of Auckland 151 pp. (co-supervisor) Grade B<sup>+</sup>
- Rudsits, E.L., 2004, “Morphology, mineralogy, and geochemistry of sulfide chimneys from the southern East Pacific Rise between 5° and 31.8°S”. *M.Sc. thesis*, University of Auckland, 111 pp. (co-supervisor) Grade A<sup>-</sup>
- Roberston, J., 1999, “The Calypso Field: A Shallow Submarine Geothermal System in the Bay of Plenty, New Zealand”. *M.Sc. thesis*, University of Auckland, 122 pp. (co-supervisor) Grade A

### **16. Theses Assessed (1)**

- Schardt, C., 2004, “Heat and Fluid Flow Simulations in Submarine Terrains”: Ph.D. thesis, University of Tasmania, 305 pp.

### **17. Teaching Positions**

- 1996 Part-time lecturer, 3rd year, “Crustal fluid flow” (Univ. Otago)
- 1990 Part-time lecturer, 4th year, “Hydrothermal ore deposits” (Univ. Toronto)
- 1985-90 Teaching assistant at the University of Toronto; 4th year hydrothermal ore deposits and general 1st year labs
- 1983-85 Teaching assistant at the University of Auckland; final year geophysics, igneous, metamorphic, and hydrothermal ore deposits labs

## **D. Other Relevant Information**

### **18. Mines and Economic Deposits Visited (some mines visited several times, but only listed once)**

- 2008 Sweden?
- 2006 Kacnkanar deposit—titanomagnetite mineralised gabbro-pyroxenite; Valentorka VMS (~20 km north of Karpinsk); Tarnyer VMS (40 km NE of Ivdel) all in the northern Urals region; New Shemur VMS (Ivdel area of Yekaterburg); Kaban VMS (Kushvin area of Sverdlovsk region); Levikha VMS (32 km NNW Kirovograd); Saf’yanovka VMS (9 km NE of Rezh) all of the middle Urals region, Russia
- 2004 Levant Sn mine, Cornwall (and others)
- 2001 Furtei high-sulfidation epithermal gold deposit, Sardinia, Italy
- 2000 Mt. Lyell, Mt. Morgan, Roseberry and Hellyer VHMS (Cu-Zn-Pb ± Au)

- deposits; Henty Au mine; Renison Sn mine, all Tasmania, Australia
- 1997 Golden Cross Au mine, Waihi, New Zealand
- 1996 Globe-Progress Au mine, Reefton, New Zealand
- 1995 Macraes Flat Au mine, central Otago, New Zealand; Hokuroko massive sulfide district; Kosaka kuroko (VMS) deposit; Orsorezan geothermal area; northern Honshu; Japan
- 1994 Fukazawa kuroko (VMS) deposit, Odate area; Oku-Aizu geothermal field, northern Honshu; Hishikari epithermal Au mine; Iwato and Akeshi high-sulfation Au mines; Kirishima geothermal field, Kyushu, Japan
- 1993 Hartebeestfontein Au mine, Witwatersrand; Phalaborwa phosphate/REE open pit mine, Phalaborwa; Winterveld chromite mine, eastern Bushveld; Premier diamond mine, all in the Transvaal, South Africa
- 1992 Peak and Railway Block chromite mines, Shurugwi greenstone belt, Zimbabwe; Ngwenya iron ore deposit, Swaziland; Princeton BIF-hosted, shear zone related Au-quartz lode deposit, Barberton greenstone belt, South Africa
- 1991 Passagem de Mariana Au mine, Caraça; São Bento Au mine, Santa Barbara; Au mineralization in the Cauê and Conceição iron ore mines, Itabira; Morro Velho Au mine, Nova Lima; Cuiabá Au mine, Sabara/Raposos; all in the Quadrilátero Ferrífero, Minas Gerais: Indaia I kimberlite pipe, Minas Gerais, Catalão I Nb-phosphate (carbonatite) mine; Paracatu Au mine, both Goiás State, Brazil: Rustenburg Platinum (Turfontein shaft) mine, Rustenburg, South Africa
- 1988 Ansel massive sulfide (Cu-Zn ± Ag ± Au) deposit, Rouyn; Dumagamié Cu-Zn-Ag-Au deposit, Cadillac, Quebec, Canada: Rotokawa and Waiotapu active geothermal systems (known to be precipitating Au) in the Taupo Volcanic Zone; underground development at Golden Cross epithermal Au-Ag deposit; Martha Mine open-cast epithermal Au-Ag deposit, Coromandel Peninsula, New Zealand
- 1987 Las Torres Ag-Au epithermal deposit, Guanajuato; Taxco Ag-Au epithermal/skarn deposit, Oaxtepec, west-central Mexico: Montrose, Fortuna and Three Sisters mafic-ultramafic-hosted shear-zone related Au-quartz lode deposits; Devonian Mine BIF-hosted Au deposit, Barberton, South Africa
- 1986 Pioneer, Consort and Fairview Au-quartz lode, shear-zone related deposits; Princeton Tunnel; Bien Venue massive sulfide deposit; Barite Syncline barite deposit, Barberton, South Africa: Globe and Phoenix and Arcturus greenstone-hosted Au-quartz lode deposits, Zimbabwe: Kerr Addison mafic-ultramafic-hosted shear-zone related Au deposit, Kirkland Lake; Corbet and Amulet Mine massive sulfide surface exposures, Noranda; Silversides Resources Ag-Co-Ni-As deposit, Cobalt, Ontario, Canada
- 1985 Little Stobie and Strathcona Ni-Cu mines, Sudbury, Ontario, Canada: Bellevue ultramafic-hosted Au-quartz lode deposit, Barberton; Bertha-Berlin quartz-magnetite-Au prospect, Nelspruit, South Africa
- 1984 Actively precipitating Au-Ag-As-Sb geothermal systems of the Taupo Volcanic Zone, e.g., Waimangu, Rotorua, Wairakei; Martha, Karangahake, Golden Cross, Waitekauri and Maratoto epithermal Au-Ag deposits, Coromandel Peninsula; Puhipuhi Hg-Ag-Au epithermal deposit, Northland, New Zealand
- 1983 Huntly sub-bituminous coal deposits, Waikato; magnetite-ilmenite iron-sand deposits, West coast North Island; numerous road aggregate

quarries, North Island, New Zealand

**19. Research Cruises Participation** ( $n = 19 \sim 392$  days at sea)

- 2007 *Aeolian'07* cruise to Mediterranean (Naples-Naples) with R/V *Urania* to swath map and survey for hydrothermal plumes, 11 submarine volcanoes of the Aeolian arc—12 days  
*ROVARK* ROV/AUV cruise (Auckland-Auckland) with R/V *Sonne* to Brothers volcano and the Kermadec backarc; deployed WHOI's ABE to map in detail Brothers caldera and did numerous CTD casts in backarc (incl. Ngatoro Rifts), plus sea trails of *QUEST 6000* ROV—21 days
- 2006 R/V *Melville & DSV Jason II* “2006 Ring of Fire” cruise to the Mariana arc: surveyed 9 volcanoes over 16 dives; erupting lavas, molten S lakes (<http://www.oceanexplorer.noaa.gov/explorations/06fire/>)—26 days
- 2005 NZASRoF 2005 Leg #2 (Tauranga–Tauranga) cruise with submersible *Pisces V* diving on several volcanoes along the southern section of Kermadec arc (6 dives)—16 days  
 NZASRoF 2005 Leg #1 (Pago Pago–Tauranga) cruise with submersible *Pisces V* diving on several volcanoes along the northern and mid-section of Kermadec arc (11 dives)—20 days
- 2004 SWEEP Vents cruise with the Japanese submersible *Shinkai 6500*; 4 dives on Brothers volcano with vent fluid, rock, mineral, animal and microbe sampling([de Ronde, C.E.J.](#), New Zealand chief sci.)—17 days  
 NZAPLUME III cruise to northern section of Kermadec arc, into Tongan territorial waters; swath mapping, plume surveys, rock dredging, plankton studies([de Ronde, C.E.J.](#)—Chief scientist)—24 days  
 R/V *Thomas G. Thompson* “2004 Ring of Fire” cruise to Mariana arc; surveyed 7 volcanoes for their hydrothermal venting over 14 ROV (*ROPOS*) dives, including, animals, minerals, microbes—22 days (<http://www.oceanexplorer.noaa.gov/explorations/04fire/welcome.html>)
- 2003 R/V *Southern Surveyor* cruise (TELVE) to Tonga section of Tonga-Kermadec arc; survey of hydrothermal plumes associated with arc volcanoes and Valu Fa spreading ridge of the Lau Basin—21 days
- 2002 R/V *Tangaroa* cruise (NZAPLUME II) to mid-section of Kermadec arc; survey of 13 major volcanoes and 6 smaller cones along ~500 km of arc; successful discovery of active venting at 3 volcanoes along arc including offshore Macauley Island; numerous CTD/nephelometer and chemistry data recovered to characterise the venting; venting found between 1200 and 120 m water depth ([de Ronde, C.E.J.](#)—Chief scientist)—15 days
- 2000 R/V *Franklin* cruise (FR04/00) to the Tabar-Lihir-Tanga-Feni islands and Solomon island chains; Project SHAARC: investigation of submarine hydrothermally active arc volcanoes using CTDO profiler/dredging—20 days
- 1999 R/V *Tangaroa* cruise (NZAPLUME) to southern Kermadec arc; successful discovery of active venting at 5 volcanoes along arc and offshore White Island; numerous CTD/nephelometer and chemistry data recovered to characterise the venting; venting found between 1800 and 120 m water depth ([de Ronde, C.E.J.](#)—Chief scientist)—16 days
- 1998 R/V *Atlantis* and submersible *Alvin* cruise to the southern EPR; sampling of 14 sites from 5° S to 35° S along ridge axis; discovery of some new vent fields and complete collection of biology, vent fluids and chimney samples for each site; deployed CTD/nephelometer during the night; diving during the day—38 days

- JAGO* submersible dives in Lake Taupo; discovery of active venting and recovery of water, gas, and chimney samples (de Ronde, C.E.J.—Chief scientist)—7 days  
 R/V *Sonne* cruise 135 to the southern Lau Basin/Kermadec arc/Havre Trough; geophysics, dredging, sediment coring, TV grab and towed camera, CTD/ nephelometer deployment, *JAGO* dives on vents offshore White Island; discovery of active venting at Brothers volcano; sulfides recovered from Brothers and offshore White Island; gas and water samples collected from Raoul Island volcano—37 days
- 1997 R/V *Yokosuka* cruise to the northern Havre Trough and southern Lau Basin; successful swath-mapping, geophysics (seismics, gravity, magnetics) and 12 rock dredge hauls; discovery of new hydrothermal site in southern Lau Basin—16 days
- 1994 R/V *Yokosuka* and submersible *Shinkai 6500* submersible cruise to the super-fast spreading ridge of the southern East Pacific Rise; successful dive on ~2,600 m “RM28” site collecting hydrothermal sediment samples—36 days
- 1993 R/V *Natsushima* and submersible *Shinkai 2000* submersible cruise to the Okinawa Trough, Japan; successful dive on ~1,500 m “Theya Ridge” site collecting rock samples ~14 days?
- 1992 R/V *Natsushima* and submersible *Shinkai 2000* submersible cruise to the Okinawa Trough, “Jamstec Dream” submarine hydrothermal site located ~100 km W of Okinawa Island, Okinawa Trough, Japan; dives collected hydrothermal vent fluid samples ~14 days?

**20. Relevant Conferences/Workshops Attended (46-not yet countered any 2008 conferences...)**

- 2008 PACRIM (Gold Coast) - invited  
 UMI (Mississippi)  
 AusIMM (Wellington) - invited  
 IAVACEI ( Reyaviek? Iceland) – keynote speaker and convenor  
 IGC (Oslo) - invited  
 EGU (Vienna) – invited speaker
- 2007 GNS/JAMSTEC workshop on Brothers volcano (Taupo—convener)
- 2006 American Geophysical Union Annual conference (San Francisco)  
 16<sup>th</sup> Annual V.M. Goldschmidt Conference (Melbourne—convener)  
 12<sup>th</sup> Quadrennial IAGOD Symposium (Moscow—invited speaker)  
 Inaugural Circum-Pacific Council’s workshop (Wellington)
- 2005 American Geophysical Union Annual conference (San Francisco)  
 Geothermal conference (Unzen, Japan-invited speaker)  
 3<sup>rd</sup> Water Dynamics Workshop (Sendai, Japan-invited speaker)  
 AusIMM Conference (Auckland-invited speaker)  
 Gordon conference (New Hampshire-invited speaker)  
 Maritime 21—Oceans of Opportunities workshop (Chrischurch)
- 2004 American Geophysical Union Annual conference (San Francisco)  
 34<sup>th</sup> annual conference of the Underwater Mining Institute (London)  
 32<sup>nd</sup> International Geological Congress (Florence)
- 2003 GSA annual general meeting (Seattle—invited speaker at 2 symposia; convener at one of them)  
 Australian Institute of Mining and Metallurgy conference (Greymouth)  
 CSIRO workshop on seafloor hydrothermal systems (Sydney—invited speaker)
- 2002 AGU Ocean Sciences 2002 conference (Honolulu, Hawaii)



- IRTI conference about seafloor hydrothermal systems (Pavia, Italy)  
 GSA annual conference (Denver—invited speaker at 2 symposia)  
 Annual Geol. Soc. N. Z. Conference, Massey University (Whangarei)
- 2001 10<sup>th</sup> Internat. Symposium Water-Rock Interaction (Villasimius, Italy)  
 11<sup>th</sup> Annual V.M. Goldschmidt Conference (Virginia)
- 2000 Volcanic Environments & Massive Sulfide Deposits conference (Hobart)  
 2000 New Zealand Minerals & Mining Conference (Wellington)
- 1999 Annual Geol. Soc. N. Z. Conference, Massey University (Palmerston  
 North)
- 1998 9<sup>th</sup> International Symposium on Water-Rock Interaction (Wairakei)
- 1997 American Geophysical Union Annual conference (San Francisco)  
 Annual Geol. Soc. N. Z. Conference, Otago University (Dunedin)
- 1996 American Geophysical Union Annual conference (San Francisco)
- 1995 GAC-MAC Annual general meeting (Victoria)  
 PACRIM (Auckland)  
 Annual Geol. Soc. N. Z. Conference, Auckland University (Auckland)
- 1994 The Society of Resource Geology (Tokyo)
- 1993 The Society of Resource Geology (Tokyo)  
 Geofluids '93 (Torquay)
- 1992 5<sup>th</sup> Symposium on Deep-crustal Fluids (Tsukuba)
- 1991 Brazil Gold '91 (Belo Horizonte)
- 1990 PACROFI III (Toronto)
- 1989 GAC-MAC Annual general meeting (Montreal)  
 PACROFI II (Blacksburg)
- 1988 Gold '88 (Melbourne)
- 1986 Gold '86 (Toronto)  
 Geocongress '86 (Johannesburg)  
 LPI Workshop on “Tectonic Evolution of Greenstone Belts” (Houston)
- 1985 G.S.A. (Orlando)
- 1984 Geothermal Institute Annual Conference, Auckland University  
 (Auckland)
- 1983 Annual Geol. Soc. of N. Z. Conference, Auckland University (Auckland)

## 21. Other Achievements

- 2008 Launch of revamped “Olivia” chimney exhibit at *Nature Space  
 Discovery Centre* in Te Papa  
 Appear as one of 10 scientists featured in the National Library of New  
 Zealand’s book “Butterflies, Boffins & Black Smokers—Two Centuries  
 of Science in New Zealand”
- 2007 Consultant for Auckland Museum on incorporation of the Mariana arc  
 “black smoker” chimney exhibit  
 Consultant for the Gibson Group in their design of the virtual  
 submersible dive on Brothers volcano for *TimeWarp*  
 Consultant for Te Papa on the re-design of the *Olivia* “black smoker”  
 chimney exhibit in *Nature Space Discovery Centre*
- 2006 Featured in the National Library of New Zealand’s “Butterflies, Boffins  
 & Black Smokers—Two Centuries of Science in New Zealand”  
 exhibition, 5 Sept. - 26 Nov., 2006  
 Gave talks to Wainui High School “Gifted kids” programme and helped  
 promote their science projects at GNS Science
- 2005 Supplied material and edited parts of “Offshore minerals” section within  
 the “Earth, Sea & Sky” theme of Te Ara *Online Encyclopaedia of New*

### *Zealand*

- Interviewed for video and supplied material for *Awesome Forces Online Resources Teachers Section* (Te Papa); 1,560 hits since official launch (17 Nov '05), average 2 per day; average visit duration ~10 mins; international visits 16%, unknown origin 4%, NZ visits 80%; referral sites include: main Te Papa site (47%), direct traffic (most likely bookmarked as favourite; 30%; TKI (massive site for NZ teachers; 12%); four schools have added it to be linked from their schools intranet or general website (2 intermediates, 1 high school 1 primary)
- Consultant and featured in to Auckland Museum's *Volcanoes* exhibition on submarine "black smokers"
- 2004 Invited to open new *NatureSpace* exhibition at Te Papa and make presentation to public about underwater hot springs and present the *Olivia* "black smoker" chimney
- 2003 Invited to give a series of 4 lectures for the Royal Society of New Zealand as part of the *Science and Survival Speakers Programme*, in conjunction with an exhibition profiling pioneering scientists and current conservationists at the New Zealand Portrait Gallery
- 2002 Participation in the Massey University project *Re-visioning science: floating love and passion in the scientific imagination: an archive of contemporary culture photographic and life history project-2002*  
Chosen to be one of only 10 people for the *Voyagers—Discovering the Pacific* exhibition in New Zealand's national museum, Te Papa

## **E. Miscellaneous**

### ***22. Other Qualifications***

Holder of a New Zealand Private Pilots License with 70 hours total flying time (currently lapsed)  
Holder of a New Zealand Scuba Divers Association Basic scuba diving ticket (with 30-40 dives)  
Holder of a current New Zealand motor vehicle drivers license

### ***23. Personal Interests***

Avid proponent of Aikido, currently holder of a black belt (1 kyu)  
Other activities include; travelling, coaching soccer, trying to stay fit!

### ***24. Other Activities***

Co-organized joint GNS/JAMSTEC workshop on results of 2004 *Shinkai 6500* dives (Taupo) for 13 delegates from NZ and Japan  
Organized Underwater Mining Institute (UMI) conference at Te Papa (2003) for ~40 delegates; including field excursion to White Island  
Organized a 17 day field excursion for 18 geologists from Japan to the Kaapvaal Craton area of South Africa (1993), visiting various geological places/mines of interest and which included a one day colloquium held in conjunction with the Geological Survey of South Africa, in Pretoria