

The following application was submitted to the MARGINS Office:

Name:

Alan Palmer

Category: Other: University lecturer

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Soil and Earth Sciences
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Statement of interest:

Note: because of annual leave and overseas university duties I have been unable to fill in the application form until now.

I have three main interests in the Margins and the Waipaoa Catchment.

1. Tephrochronology
2. Ages and evolution of Quaternary landscapes, and climatic cycles
3. The use of surficial and buried soils in landscape evolution

I have been working in the Waipaoa Catchment for the last seven years, principally with Noel Trustrum (and his team, most notably Dr Mike Marden), Basil Gomez and Lionel Carter. My main work to date has been to identify tephras on terraces and other landscape positions, using stratigraphy and field appearance, electron microprobe analysis of glass and mineralogy. I also identified the tephras in the offshore cores MD 2121 and 2122. I believe that I have the largest database of tephras for the East Coast Region (more than twelve different tephras ranging in age from 0.7 ka to 65ka, and more than 100 sample points). To date one paper has been published, and three others are nearing publication.

I have also supervised a Masters student (funded by Basil Gomez) who studied the clay mineralogy of sediments and bedrock in the Waipaoa Catchment. I am also

assisting Dr Kathy Marsaglia and students in a study of the sandstone petrology of Waipaoa River sediments.

At the workshop I would like to present papers on the tephrochronology of landscapes within the Waipaoa Catchment, and another on the clay mineralogy of Waipaoa Catchment bedrock and sediments.

Short resume:

Full Name: DR ALAN SANDFORD PALMER
(Title, given name, surname)

Date of Birth: 2 October 1954

Years as a practising Researcher: 22

Academic Qualifications (degree, university, discipline)
BSc (Geology), BSc (Hons) First Class (Geology), PhD (Soils and Geology)
Victoria University of Wellington.

Honours/distinctions/membership of societies, institutions, committees:

Professional affiliations

New Zealand representative INQUA (International Quaternary Association) commission on loess; New Zealand representative INQUA commission on paleopedology; New Zealand committee for Quaternary Research (Royal Society); Council Member, New Zealand Society of Soil Science 1992-.

President New Zealand Society of Soil Science, 2001-2002

Present Position: Senior Lecturer

Professional Positions Held (years, position, institution, activity):

1982-1984 Soil Scientist DSIR Soil Bureau; 1984- Lecturer, Department of Soil Science, Massey University.

Present research/professional speciality:

Organic farming in New Zealand; landscape evolution in western Hawkes Bay; recent history of the active Waewaepa, Mohaka and Ruahine faults; soil mapping and land resources of Horowhenua; soil and geological mapping of Limestone Downs, Waikato; Quaternary stratigraphy in southern North Island; Mid to late Pleistocene emergence of Wanganui-Manawatu regions; the Quaternary geology of the Mt Ruapehu and Mt Tongariro ring plans; the loess and tephras of NE Oregon; Paleoclimate information derived from loess/paleosol sequences; tephrochronology and erosion history of the Waipaoa Catchment, Gisborne.

Number of Refereed Publications: 38

Number of Patents: Nil

Number of Significant Publications not included in the above: 15

Major Achievements, including important publications, during the past ten years:
Loess and tephra research

Berger, G., Pillans, B. & Palmer, A.S. (1992). Dating loess up to 810 ka by thermoluminescence. *Geology* 20: 403-406.

Berger, G., Pillans, B. & Palmer, A.S. (1994). Test of thermoluminescence dating of loess from New Zealand and Alaska. *Quaternary Science Reviews* 13: 309-333.

Cronin, S.J., Neall, V.E. & Palmer, A.S. (1996). Investigation of an aggrading paleosol developed into andesitic ring plain deposits. *Geoderma* 69: 119-135.

Cronin, S.J., Neall, V.E. & Palmer, A.S. (1996). The geological history of the north-eastern ring plain of Ruapehu volcano, New Zealand. *Quaternary International* 34-36: 21-28.

Cronin, S.J., Neall, V.E., Stewart, R.B. & Palmer, A.S. (1996). A multiple parameter approach to andesitic tephra correlation, Ruapehu volcano, New Zealand. *Journal of Volcanology and Geothermal Research* 72: 199-215.

Cronin, S.J., Neall, V.E., Lecointre, J.A. & Palmer, A.S. (1996). Unusual 'snow slurry' lahars from Ruapehu volcano, New Zealand, September 1995. *Geology* 24: 1107-1110..

Cronin, S.J., Neall, V.E., Lecointre, J.A. & Palmer, A.S. (1996). Changes in Whangaehu River lahar characteristics during the 1995 eruption sequence, Ruapehu volcano, New Zealand. *Journal of Volcanology and Geothermal Research* 76: 47-61.

Cronin, S.J., Neall, V.E., Palmer, A.S. & Stewart, R.B. (1997). Methods of identifying late Quaternary rhyolitic tephtras on the ring plains of Ruapehu and Tongariro volcanoes, New Zealand. *New Zealand Journal of Geology and Geophysics* 40:175-184.

Cronin, S.J., Neall, V.E. & Palmer, A.S. (1997). Lahar history and lahar hazard of the Tongariro River, northeastern Tongariro Volcanic Centre, New Zealand. *New Zealand Journal of Geology and Geophysics* 40: 383-393.

Cronin, S.J., Hodgson, K.A., Neall, V.E., Palmer, A.S. & Lecointre, J.A. (1997). The 1995 Ruapehu lahars in the context of the historic and late Holocene lahar record of the Whangaehu River, New Zealand. *Destination: New Zealand Journal of Geology and Geophysics* 40:507-520.

Cronin, S.J., Neall, V.E., Lecointre, J.A. & Palmer, A.S. (1999). Dynamic interactions between lahars and stream flow: A case study for Ruapehu Volcano, New Zealand. *GSA Bulletin*, January 1999 VII: 28-38.

Cronin, S.J., Lecointre, J.A., Palmer, A.S. & Neall, V.E. (2000). Transformation, internal stratification and depositional processes within a channelised multi peaked lahar flow. *New Zealand Journal of Geology and Geophysics* 43:117-128.

Cronin, S.J., Palmer, A.S. Lecointre, J.A. & Neall, V.E. (in press). Reply to discussion of "Dynamic interactions between lahars and stream flow: a case study from Ruapehu volcano, New Zealand" (Cronin et al., 1999). *Geological Society of America Bulletin*.

Donoghue, S.L. Stewart, R.B. & Palmer, A.S. (1990). Morphology and chemistry of olivine phenocrysts of Mangamate Tephra, Tongariro Volcanic Centre, New Zealand. *Journal of the Royal Society of New Zealand* 21: 225-236.

Donoghue, S.L., Hodgson, K.A., Neall, V.E. & Palmer, A.S. (1991). Volcanic hazards at Ruapehu Volcano pp.56-88. In *Field Trip Guides for Joint Annual Conference of Geological Society of New Zealand and New Zealand Society of Soil Science* 25 November-1 December 1991. Geological Society of New Zealand Miscellaneous Publication 59B.

Donoghue, S.L., Neall, V.E. & Palmer, A.S. (1995). Late Quaternary Andesitic Tephrostratigraphy and chronology. Tongariro Volcanic Centre, New Zealand. *Journal of the Royal Society of New Zealand* 25: 115-206.

Donoghue, S.L., Gamble, J., Palmer, A.S. & Stewart, R.B. (1995). Magma mixing in andesites of the Porauhu Member (Bullot formation), Ruapehu Volcano, Tongariro National Park, New Zealand. *Bulletin of Volcanology and Geothermal Research* 68: 177-191.

Donoghue, S.L., Palmer, A.S., McClelland, E. Hobson, K., Stewart, R.B., Neall, V.E., Lecointre, J.A. & Price, R. (1999). The Taurewa Eruptive Episode: evidence for climactic eruptions at Ruapehu volcano, New Zealand. *Bulletin of Volcanology* 61(4): 223-240.

Eden, D.N., Palmer, A.S., Cronin, S.J., Marden, M., Berryman, K.R. (2001). Dating the culmination of river aggradation at the end of the last glaciation using distal tephra compositions, eastern North Island, New Zealand. *Geomorphology* 38: 133-151.

Lecointre, J.A., Neall, V.E. & Palmer, A.S. (1998). Quaternary lahar stratigraphy of the Western Ruapehu ring plain, New Zealand. *New Zealand Journal of Geology and Geophysics* 41: 225-245.

Lees, C.M., Neall, V.E. & Palmer, A.S. (1998). Forest persistence at coastal Waikato, 24,000 years B.P. to present. *Journal of The Royal Society of New Zealand* 28: 55-81.

Palmer, A.S., Donoghue, S.L. & Cronin, S.J. (1994). Post Conference Tour Day 2: Rangipo Desert. In Lowe, D.J. (ed). *Conference Tour Guides. International Inter-INQUA Field Conference and Workshop on Tephrochronology, Loess, and Paleopedology, University of Waikato, Hamilton, New Zealand*: 111-138.

Palmer, A.S. & Pillans, B.J. (1996). Record of climatic fluctuations from a ca 500 ka loess deposits and paleosols, near Wanganui, New Zealand. *Quaternary International* 34-36. pp.155-162.

Pillans, B., McGlone, M., Palmer, A.S., Mildenhall, D., Alloway, B.V. & Berger, G. (1993). The last Glacial maximum in central and southern North Island, New Zealand: a paleoenvironmental reconstruction using the Kawakawa Tephra Formation as a chronostratigraphic marker. *Palaeogeography, Palaeoclimatology, Palaeoecology* 101: 283-304.

Pillans, B.J. & Palmer, A.S. (1994). Post Conference Tour Day 3: Tokaanu-Wanganui. 139-156. In Lowe, D.J. (ed). *Conference Tour Guides. International Inter-INQUA Field Conference and Workshop on Tephrochronology, Loess, and Paleopedology, University of Waikato, Hamilton, New Zealand*: 139-156.

Pillans, B.J. & Palmer, A.S. (1994). Post Conference Tour Day 4: Wanganui-Palmerston North. *Ibid.*, 157-71.

Pillans, B.J., Palmer, A.S. & Berger, G.W. (1995). New Zealand loess. In Gerard and Fairbridge (Eds.): *Encyclopedia of Quaternary Sciences*.

Van Dissen, R., Begg, J. Palmer, A.S., Nicol, A., Danby, D. & Reyners, M. (1998). Newly Discovered Active Faults in the Wellington Region, New Zealand. In: NZSEE Conference, Wairakei 7 p.

Soil Mapping and Landuse

Levick, M., Horne, D.J., Palmer, A.S. & Macgregor, A.N. (1994). The influence of orchard floor management on soil fertility, pp.426-434. In *The efficient use of fertilizers in a changing environment: reconciling productivity and sustainability*. (Eds. L.D. Currie and P. Loganathan). Occasional Report No.7, Fertilizer and Lime Research Centre, Massey University, Palmerston North.

Palmer, A.S. (1995). Soils and soil formation, chapter 15, pp.243-266. In R.R. Brooks, C.E. Dunn and G.E. Hall (Eds.). *Biological Systems in mineral exploration and processing*. Ellis Horwood Publishers, London. 538 p.

Reganold, J.P., Palmer, A.S., Lockhart, J.C. & Macgregor, A.N. (1993). Soil Quality and financial performance of biodynamic and conventional farms in New Zealand.

Reganold, J.P. & Palmer, A.S. (1995). Significance of gravimetric versus volumetric measurements of soil quality under biodynamic conventional and continuous grass management. *Journal of Soil Water Conservation* 50: 298-305.
Wallis, M.G., Horne, D.J. & Palmer, A.S. (1993). Water repellency in a New Zealand development sequence of yellow-brown sands. *Australian Journal of Soil Research* 31: 641-54.

Zanders, J.M., Hedley, M.J., Palmer, A.S., Tillman, R.W. and Lee, J. (1999). The sources and distribution of cadmium in soils on a regularly fertilised hill country farm. *Australian Journal of Soil Research* 37: 668-678.

Major Research Grants

Francis, D.A., Neall, V.E. & Palmer, A.S. A study of the active Waewaepa Fault. FRA: 101, 1990/91, \$44,000.

Neall, V.E., Palmer, A.S. & Lecointre, J. Quaternary Andesitic Volcaniclastics at Ruapehu. MAU308, 1992/93/94

Earthquake and War Damages

Palmer, A.S. and Van Dissen, R. (1997-99). An investigation of the newly discovered northern Oharia Fault. \$26,000

Agmardt

McKay, A., Wilde, R.H., Palmer, A. S. & Rhodes, A. (1998-99). Dannevirke Farmers Group Land Management Unit Farm Mapping. \$30,000.

Sustainable farming fund

McKay, A., Palmer, A. S. Rhodes, A., Cooper, G., Grant, L. 2001. Soils underpinning business success. \$250,000.

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ABSTRACT

Title:

Authors:

Abstract:

Wish to include graphics:

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Remote host: its-www2.massey.ac.nz

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