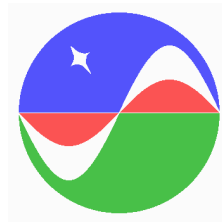


Oamaru, 23rd – 27th November 2009



**GEOLOGICAL SOCIETY OF NEW ZEALAND
NEW ZEALAND GEOPHYSICAL SOCIETY**

Joint Annual Conference

Oamaru Opera House, 94 Thames Street, Oamaru 23rd – 27th November 2009

FIRST AND ONLY CIRCULAR

In November this year, the New Zealand Geophysical Society and the Geological Society of New Zealand, will be holding a joint conference in Oamaru showcasing the latest in New Zealand geoscience research and practice.

The meeting will be held at the recently refurbished Oamaru Opera House. The conference begins with an icebreaker on the evening of Monday 23rd November and concludes on the afternoon of Friday 27th November 2009. Participants are encouraged to attend mid-conference fieldtrips on Wednesday 25th November, and pre- and post-conference fieldtrips will also be offered.

Conference registration and an icebreaker function will commence at 5:00pm on Monday 23rd November in the main foyer of the Opera House. Registration reopens at 7:45am on the morning of Tuesday 24th November in the Opera House foyer, with a formal welcome and opening ceremony beginning at 8:30am in the Main Auditorium. An Information desk will be staffed during coffee and lunch breaks throughout the conference.

For further information on the conference please visit the conference website:

www.gns.cri.nz/geosciences09

GOLD SPONSORS OF GEOSCIENCES'09



PLEASE NOTE THE FOLLOWING

- **Online Registration.** There is no hard copy registration form this year. All registrants are encouraged to register online. If you cannot do so please contact the conference organiser or convenor.
- **Abstract submission** – will be by email.
- **Optional printed abstracts volume.** Abstracts will be available for download prior to the conference, or you can request a printed copy, although a small additional charge will apply. All conference registrants will receive a CD with the abstracts and all fieldtrip guides in pdf format. Printed conference programmes will be provided to all delegates. Hard-copy field guides specific to each fieldtrip will be distributed to all participants on that trip.
- **Dedicated poster sessions.** We encourage poster presentations and note that there will be an entire session dedicated to posters, with refreshments.

We can provide printed material for those without access to the website or printers. If you need help, please contact the conference organiser.

THE VENUE: OAMARU, THE WAITAKI REGION AND THE OAMARU OPERA HOUSE

The Oamaru Opera House, a Category II Historic Building constructed in 1907, is newly refurbished - we are one of the first conferences to be held here since its re-opening in March 2009. The Opera House is a classic example of the grand Victorian architecture that characterises the historic centre of Oamaru. Poster sessions and refreshment breaks will be held across the road from the Opera House, at the Kingsgate Hotel Brydone, another historic stone building. The venue is within easy walking distance of accommodation, restaurants and cafes.

Social events associated with the meeting will be held in other historic buildings throughout Oamaru and the surrounding area. We intend to celebrate the distinct colonial history of the area during the course of the meeting, and the social events are themed around this.

Oamaru and the surrounding Waitaki region are geologically diverse – features include a basement composed of variably deformed and metamorphosed Mesozoic Torlesse Terrane; a late Cretaceous-Cenozoic sedimentary cover sequence that hosts renowned fossil biota from complex paleoenvironments, intraplate volcanic rocks and a diverse range of Quaternary climatic deposits and landforms. We believe there is something to interest devotees of any branch of geoscience. Our scientific symposia, which reflect this diversity, are linked to a series of mid-conference field trips. We strongly encourage participants to take advantage of the opportunity of guided tours of some classic localities of geological interest.

SCIENTIFIC PROGRAMME

The scientific programme includes eight symposia covering a range of geoscience topics. Further symposia or sub-themes *may* be added depending on subjects covered in approved abstracts.

Oral presentation slots will be 20 minutes including questions, provided the programme can accommodate these. Plenary and Keynote presentations will be

longer. As at previous meetings, poster presentations will be given a high profile, with an afternoon session devoted entirely to posters, with refreshments available. We encourage delegates to consider presenting posters rather than talks, wherever possible. Please indicate your preference of oral or poster presentation when submitting your abstract, however due to space and time constraints we cannot guarantee that all requests will be met.

For further information on the scientific programme please contact the Chair of the Symposia Organising Committee (James White) or the convenors of the symposium of interest.

Symposia

1. Geological and geophysical signatures of earth deformation and fluid flow

Convenors - Virginia Toy [virginia.toy@otago.ac.nz], Ake Fagereng [ake@geology.co.nz], Julie Rowland [j.rowland@auckland.ac.nz]

This symposium honours the scientific contributions of Emeritus Professor Richard Sibson during his career at Imperial College – London, University of California – Santa Barbara, and most recently at the University of Otago (1990-2009). Rick Sibson is renowned for integrating structural geology, seismogenesis, and hydrothermal mineralisation. We invite presentations related to Rick Sibson's fields of research expertise - broadly structural geology, seismotectonics, metamorphism and fluid flow, but with a particular focus on fault-related mineralisation and coseismic fault processes.

2. Paleo-environments and basin evolution

Convenors – Gary Wilson [gary.wilson@otago.ac.nz], Miko Fohrmann [m.fohrmann@gns.cri.nz], John Lindqvist [linjo429@student.otago.ac.nz]

This symposium will provide a forum to highlight significant current progress and renewed activity in the interpretation of stratigraphic signatures in New Zealand's sedimentary basins. Such records have the potential to contribute significantly to understanding the environmental, sea-level, and climatic history of the greater New Zealand and SW Pacific region as well as assessment of environmental and tectonic controls on basin evolution and stratigraphic architecture. We encourage presentations of on-shore and off-shore studies including stratigraphic analysis of exposed sections, marine cores and seismic reflection data sets and studies which combine several of these elements. High-resolution studies as well as studies that employ non-traditional stratigraphic tools are also encouraged.

3. Magmatism and volcanic hazards

Convenors – James White [james.white@otago.ac.nz], Alan Cooper [alan.cooper@otago.ac.nz], Karoly Nemeth [k.nemeth@massey.ac.nz]

All contributions regarding generation, transport, storage and eruption of magmas are invited for this symposium, with those addressing South Island intraplate topics to be grouped and highlighted. An additional focus is volcanic hazard, including both eruptive and eruption-related processes.

4. Fiordland revealed

Convenors - Donna Eberhart-Phillips [eberhart@geology.ucdavis.edu], Mike Palin [michael.palin@otago.ac.nz], Mo Turnbull [i.turnbull@gnz.cri.nz]

Fiordland has a rich geological history ranging from an early Paleozoic continental margin to a modern active plate boundary; it has granites and graptolites, dormant volcanoes, eclogites, and glaciers; and until recently large parts of it were unexplored. Over the last decade, Fiordland has been the subject of numerous marine and land-based geologic investigations by New Zealand and overseas researchers. Offshore work has focussed on the Alpine Fault and related tectonics and sedimentation; onshore, magma genesis and transport in the deep crust, high pressure metamorphism, deep and shallow tectonics, and Cenozoic sediment provenance have been investigated. The QMAP Fiordland 1:250 000 geological map has also been completed, allowing these studies to be seen in a modern regional context. This symposium hopes to attract contributions and presentations from those who have been working in and around Fiordland; and to give the wider geological community some glimpses of the fascinating and diverse geology to be found in this challenging region.

5. Seismotectonics of Southern New Zealand: from the Alpine Fault to the Otago Shelf

Convenors – Phaedra Upton [p.upton@gns.cri.nz], Richard Norris [richard.norris@otago.ac.nz], Paul Denys [pdenys@surveying.otago.ac.nz]

We welcome geophysical or geological presentations on tectonics and lithospheric structure with a particular focus on Southern New Zealand. This symposium will include, but is not limited to, topics relating to the Alpine Fault – Deep Fault Drilling Project, deformation rates and processes based on geodetic, seismic or geologic data, active faulting, paleoseismology, and modelling. Studies that integrate geophysical and geological data sets to resolve a tectonic process, or that illustrate a tectonic change in space and time are particularly encouraged.

6. New frontiers and general earth science

Convenor – Nick Mortimer [n.mortimer@gns.cri.nz]

Involved in research that doesn't fit into any other symposia? Perhaps you are doing something new or multi-disciplinary? Don't be put off. There's room for a lot more interesting geology & geophysics at Geosciences '09 that isn't covered in the specialist sessions. Come and cross-fertilise the audience and tell them something outside their comfort zone. Because of the wide ranging content, speakers are asked to emphasise the "why" of their work as much as the "what".

7. Applied Geoscience

Convenors – Dave Craw [dave.craw@otago.ac.nz], Candace Martin [candace.martin@otago.ac.nz], Phil Glassey [p.glassey@gns.cri.nz]

The Applied Geoscience session will showcase applications of geology to engineering, resource and environmental issues. It will include specific hazard assessment applications, engineering geology related to infrastructure, including mine design, and unique applications, which resolved or highlighted environmental problems through advanced geological science such as geotechnics, geochemistry or geophysics.

8. Origin of the New Zealand Biota

Convenors – Ewan Fordyce [ewan.fordyce@otago.ac.nz], Daphne Lee [daphne.lee@otago.ac.nz]

This theme mixes palaeontology and evolution to mark the 200th Anniversary (24 November 2009) of the birth of Charles Darwin, and the 150th anniversary of the publication of "The Origin of Species." The theme will consider any contribution that deals with origins and evolution of NZ biota. It will include 2 days (Thursday, Friday) of sessions on "New Zealand Vegetation History - from the Late Cretaceous to Holocene." The theme will have a foundation in palaeontology (marine or nonmarine animals, plants, microbiota), but we will welcome other approaches that bear on origins and evolution if there is some link with deep time: for example, fossil-calibrated molecular studies, or phylogenies of extant New Zealand groups that can be explained by the events of deep time, such as climatic or tectonic change.

Presenter Information

Poster presentations must fit onto a board 1.1m wide and 1.5m high. Velcro and/or pin attachments can be used to secure the poster to the board (please bring your own fasteners).

Oral presentations will be allocated 20 minute slots (15 minutes presentation plus 5 minutes for discussion). All talks must be presented using PowerPoint or pdf files. Slide projectors, overhead projectors and white boards will not be available. Please check the website closer to the conference date for which versions of Powerpoint are acceptable. Facilities will be available for speakers to check and upload their presentations the day before their talk. Speakers are responsible for ensuring that their presentations display correctly, including any movies or embedded files.

ABSTRACT SUBMISSION

Abstracts should be emailed to gs09-abstracts@gns.cri.nz on or before Friday 11th September 2009. Abstracts should be formatted using the template available from the abstract page on the website and emailed at the same time as registering. All abstracts are limited to 450 words to ensure that they fit one printed page of the abstract volume. Please specify which, if any, symposium you would like to submit to and whether it is a student presentation (which will qualify the presenter for student awards). You must register to submit an abstract. We request that presenters limit their submissions to one first-author presentation each. Please clearly mark your preference for presentation format: Oral or poster.

REGISTRATION

Registration is only available online. To register please visit the registration page of the Geosciences09 website and follow the instructions to fill out the online form.

Fees

Registration fees have slightly increased from 2008, but it should be noted that this year they include lunches for Tuesday, Thursday and Friday.

Paid on or before September 11		Paid after September 11	
Member's Early bird	\$320	Member's Standard	\$370
Non Member Early bird	\$420	Non Member Standard	\$470
Retired Member Early	\$220	Retired Member	\$270
Student Member Early Bird	\$120	Student Member Standard	\$170
Student Non Member Early Bird	\$170	Student Non Member Standard	\$220

Note: To qualify for the discounted registration fee, **you must register and submit an abstract no later than Friday 11th September**. Note that REGISTRATIONS AFTER 11th SEPTEMBER ARE **\$50** MORE EXPENSIVE. This represents a realistic costing of the additional work required for late registration. Member fees apply to members of the Geological Society of New Zealand, America or Australia, or NZ Geophysical Society.

All those registering will receive an acknowledgement of receipt of registration within two weeks and a full confirmation of registration after the 11th September discount registration deadline. A receipt will be forwarded with your confirmation after both **registration** AND **payment** have been processed. Our policy on refunds and cancellations is:

<i>Cancelled before:</i>	<i>Refund of:</i>
23 rd October	80%
9 th November	50%

No refund is given for cancellations received after 16th November, including "no shows" at the conference, unless there are exceptional circumstances (judged at the discretion of the organising committee).

INFORMATION FOR STUDENTS

Student Awards

All first-authors of presentations that register as students, and are student members of the one of the four societies, are eligible for student awards, as long as they are predominantly responsible for content and presentation. Each award will consist of a cash prize.

Student Travel Grants

Travel grants, provided by NZGS and GSNZ, are available to assist students to attend the conference. To be eligible, students must be registered by 11th September, be presenting a poster or oral paper, have been enrolled as a student during 2009, and be a member of NZGS or GSNZ. Successful applicants will be informed by 31st October, and may collect their cheques at the conference registration desk. The amount of the award will depend on the total number of applicants and the distance travelled by the recipient.

INTRA-CONFERENCE MEETINGS

A number of subcommittee and special interest group meetings will be held during lunchtime breaks, including DrillINZ, the Historical Studies and Paleontology Special Interest Groups, the Fossil Record File Subcommittee, and the NZ chapter of AUS-

INTIMATE (the Australasian group for integration of ice-core, marine and terrestrial records). There will also be a 'research-in-progress' meeting for the Alpine Fault – Deep Fault Drilling Project. We anticipate other meetings will be confirmed closer to the time of the meeting. Please check the conference website for further details or contact the committee chair.

Annual General Meeting

Geological Society of New Zealand Inc

The 54th Annual General meeting of the Geological Society of New Zealand will be held at 5pm, **Tuesday 24th November**. The official notices and agenda will be published in the October issue of the GSNZ Newsletter.

SOCIAL EVENTS

A number of social events are available during the conference to cater for all tastes. All these events draw on and highlight the Victorian heritage of Oamaru. The 'gala' event is undoubtedly the Conference dinner, which will be held in the barrel room of the New Zealand Malt Whisky Company. In addition to the usual types of functions offered at Geosciences meetings, we offer a special night of optional activities for Tuesday 24th November.

Icebreaker

An informal "Icebreaker" function will be held in conjunction with Registration in the foyer of the Oamaru Opera House, 94 Thames Street, Oamaru, from 5:00-6.30 pm Monday 23rd November. The cost is included in the registration fee and all are welcome to attend. Please indicate attendance on the registration form to help us cater for the event.

Optional activities for Tuesday November 24th

Victorian Oamaru – A Dramatized Heritage Experience

Tour Oamaru's historic buildings with costumed guides, meet some of the pioneer characters and hear their stories. Step back in time to learn about the dreams and disappointments of life in this young colonial town. The tour will run from 6pm-7pm and will finish at the New Zealand Malt Whisky Company premises. Note this is a shortened version of the alternative excursion available on Wednesday Nov 25th. \$15 per person.

Whisky tasting at the New Zealand Malt Whisky Company

Taste New Zealand's finest malt whiskies. 7pm. \$15 per person.

OR

Wine tasting at the New Zealand Malt Whisky Company

Taste some of the local wines from the Waitaki Valley. 7pm. \$15 per person.

Package deal!!!

Victorian Oamaru followed by whisky or wine tasting. \$25 per person.

Meal to follow

For those doing the above activities, we offer a pub-style meal to follow (e.g. Soup of the Day & Traditional Breads, Hot Havoc (Free Range Organic) Bacon BLT, Warm Salmon & Potato Salad, Tea & Coffee). \$15 per person.

Barbeque

To be held on Wednesday 25th November (after the field excursions) in the grounds of **Burnside Homestead**, a restored Victorian mansion 15 minutes from central Oamaru. Guided tours of the homestead will be available to participants. The menu includes spit-roasted lamb (and vegetarian options) and complementary beverages. 6pm – 10.30 pm. Ticket prices, including drinks, are \$45 per person and students \$35.

Note: most field excursions will finish at the BBQ venue. For those not going on the field excursions, return transport to the BBQ from Oamaru will be available. Similarly, transport back to Oamaru for those on field excursions but not wishing to attend the BBQ will also be provided.

Conference Dinner

The annual Conference Dinner will be held on Thursday 26th November at the New Zealand Malt Whisky Company, 14-16 Harbour Street, Oamaru. The theme will be "Colonial Capers". Pre-dinner drinks will be available from 7pm and dinner will be served at 7:30pm. The cost of the Conference Dinner is not included in the standard registration price and tickets need to be ordered and paid for along with registration. The ticket cost (\$75 per person; students \$60) includes a three course dinner and some complimentary beverages, followed by a cash bar. The annual awards for the Geological and Geophysical Societies will be presented after dinner. There will also be prizes for the best/most imaginatively dressed participant in the theme of the dinner.

Refreshments and Lunches

Morning teas and lunches will be provided on Tuesday 24th, Thursday 26th and Friday 27th November. A packed lunch will be provided to participants on the field trips on Wednesday 25th. Refreshments will also be available at the poster sessions on Tuesday 24th and Thursday 26th for one hour (drinks and finger food) with a cash bar to follow.

Internet

Wireless internet access is available within the Opera House. Access is free for light use, although large downloads will incur charges. There is also an internet cafe (the Empire Cybercafe) across the road from the Opera House.

TRANSPORT TO OAMARU

If you decide to fly to Oamaru for the conference, please be advised there are very few flights into and out of Oamaru. Consequently, we will provide transport for the c. 90 minute trip from Dunedin airport to Oamaru on Monday 23rd November and from Oamaru to Dunedin airport after the close of the conference on Friday 27th November, at a cost of \$10 one-way. We recommend you make your travel arrangements early. There will be a place on the registration form for you to indicate whether or not you require transport between Dunedin Airport and the conference venue.

Pre- and post-conference fieldtrips start or finish respectively in Dunedin and/or go via Dunedin airport. Please check details of the individual fieldtrips to make your travel plans.

See the website for more transport information.

ACCOMMODATION

Oamaru and the Waitaki District offer a comprehensive selection of accommodation options from rural farm stays to self contained tourist cabins and everything in between. This includes backpackers, holiday parks, lodges, resorts, bed and breakfasts, hotels and motor inns. For a truly unique experience several historic lodges and homesteads around the district have been lovingly restored or preserved to offer boutique accommodation and a chance to sample the charms of a less-hurried time.

Motels

Motels listed below have been selected by your conference organiser because they are all within easy walking distance to the Opera House. They are available for the price of \$65 per person per night share room unless otherwise stated. All motels also offer excellent private rooms and prices vary from \$105 - \$165 for 2 people depending on the room type. **To book these motels please contact the Oamaru i-SITE (contact details below).**

AAA Thames Court Motel – 15 minute walk

Eden Garden Motels - on the hill with views from some rooms / a 10 minute walk to town (reasonable fitness required)

Midway Motels – 10 minute walk

Bella Vista – 10 minute walk

Alpine Motel - \$45 per person per night twin-share basis. - 10 minute walk

There are many other excellent motels available a little further a field – perhaps more suitable for driving to and from your conference venue.

Backpackers

Old Bones Backpackers is \$30 per person – most rooms are twins (**note this backpackers is a 10 minute drive from Oamaru on the coast road**)

Empire Hotel Backpackers offer the following: 3 bed share \$28.00 / 6 bed share \$26.00. Twin/Double: \$63 for two. 5 minute walk

YHA Red Kettle offer the following: Mixed dorm: \$26.00 / female only dorm \$27.00. Twin or Double room \$62.00 for two. (YHA membership discounts available on application). 10 minute walk to Opera House across the park.

Holiday Park

Oamaru Top 10 Holiday Park offers a selection of accommodation from standard cabins to full motel units. Prices vary from \$27.50 - \$135 per person depending on room requirements. They also offer power sites and tent sites. The Opera House is a pleasant 20 minute walk through the Oamaru Gardens.

Bed and Breakfast and Self-Contained Houses

If your preference is for friendly “home away from home” accommodation and starting your day with a delicious breakfast, there is Bed and Breakfast accommodation within a very easy walk to the Opera House.

Prefer to be more self-sufficient? Also on offer are excellent self-contained facilities with a variety of amenities for example – free wireless broadband, sky tv, cosy lounges with views over the harbour, decks for relaxing in the evenings or to enjoy the morning sunshine. Prices vary greatly depending on your requirements.

For expert and experienced advice – contact the friendly staff at the Oamaru i-SITE – Tania, James, Mark and Ingrid have been selected as coordinators for your conference accommodation and attraction booking needs.

Oamaru i-SITE Visitor Centre

1 Thames Street, Oamaru 9400

Phone: 03 434 1656

Fax: 03 434 1657

Email: i-SITE@visitoamaru.co.nz

Kingsgate Hotel Brydone

This hotel is located opposite the Opera House but due to an earlier tour booking there are only limited rooms available. Please book DIRECT with the hotel (NOT the i-Site) if you wish to stay here:

The following rooms are available:

7 x superior rooms (either a king or queen bed configuration) @ \$139.00 bed and breakfast including GST

3 x suites (king configuration) @ \$165.00 bed and breakfast including GST

Please contact the hotel DIRECT for these:

Phone 03 434 0011 or email oamaru.admin@millenniumhotels.co.nz

MID-CONFERENCE FIELDTRIPS: Wednesday 25th November

NOTE: For all mid-conference fieldtrips except #8

Cost: \$30 (students \$20) – includes return transport and lunch

Trip 1: Gold in Central Otago

Leader: Dave Crow (UoO)

Contact e-mail: dave.crow@stonebow.otago.ac.nz

This trip will give an overview of the Macraes mine site, including geological setting, historic mining, modern mine pits, mine waste, and environmental issues. It will not be possible to go into the pit or underground, but there should be an opportunity to collect ore material. The trip will then go inland to St Bathans, to visit the site of a major historical alluvial gold mine (Miocene fluvial sediments) and ghost town. On the way, we will get an overview of active deformation and topographic evolution in Central Otago. Return will be via the Naseby-Kyeburn alluvial goldfield (Pliocene-Quaternary sediments).

Special Requirements: Sturdy footwear and all-weather clothing.

Departs: Wednesday 25 November 08:00 from Oamaru Opera House

Returns: Wednesday 25 November 18:00 to Oamaru via the BBQ venue

Participants: Maximum 30, minimum 10.

Trip 2: Faults, fractures and fluid flow in basement assemblages

Leaders: Virginia Toy (UoO), Rick Sibson, Nick Mortimer (GNS Science)

Contact e-mail: virginia.toy@otago.ac.nz

Join us to investigate primary sedimentary and ductile structures, and evidence of faulting and fluid flow in variably metamorphosed Torlesse terrane. At Benmore Dam we will examine folded greywackes with excellent primary sedimentary structures, brittle faults, fault-fracture meshes, and fractures with zeolite and quartz - prehnite - epidote - pumpellyite vein assemblages. We will then visit spectacular exposures of polyphase deformed and quartz veined Haast Schist developed from a sand-mud-conglomerate assemblage in the Maraewhenua River.

Special Requirements: Sturdy footwear and all-weather clothing.

Departs: Wednesday 25 November 08:00 from Oamaru Opera House

Returns: Wednesday 25 November 18:00 to Oamaru via the BBQ venue

Participants: Maximum 50, minimum 10.

Trip 3: Coastal Otago – Oamaru to Kakanui

Leaders: Daphne Lee (UoO) and Jeffrey Robinson

Contact e-mail: daphne.lee@stonebow.otago.ac.nz

This trip will visit a number of classic fossil localities around Oamaru and Kakanui, and will provide a window into the complex paleoenvironments created by interaction between Late Eocene-Early Oligocene basaltic volcanism and shallow marine sedimentation. We will examine the Oamaru Diatomite, visit several limestone quarries in Ototara Limestone including the working quarry at Parkside, the brachiopod coquina at Everetts Quarry and the diverse bryozoan faunas at McDonalds Quarry. We will then visit coastal sites including the fossiliferous Surtseyan volcanoclastics at Bridge Point, the complex Early Oligocene to Early Miocene hardground sites at All Day Bay and Gee's Point, Awamoa Beach, and Old Rifle Butts where fossiliferous Mount Harris Beds, Gee Greensand, and rhodolith-bearing Ototara Limestone are exposed.

Special Requirements: Sturdy footwear and all-weather clothing.

Departs: Wednesday 25 November 09:00 from Oamaru Opera House

Returns: Wednesday 25 November 17:30 to Oamaru

Participants: Maximum 40, minimum 10.

Trip 4: The Waihemo Fault System, North Otago

Leader: Claudine Curran (UoO)

Contact e-mail: claudine_curran@yahoo.co.uk

The Waihemo Fault system is a major structural feature in the southern South Island. It separates the high grade schists of Otago from the low-grade schists and greywackes of the Waitaki district and was a major normal fault in the mid-late Cretaceous, probably involved in unroofing of the Otago schist. During the late Cenozoic, it has been reactivated as a reverse fault uplifting the Kakanui ranges. The

route will pass through Trotters Gorge and up the Pigroot to Kyeburn and then return via Danseys Pass, examining uplifted Cretaceous fanglomerates in the hangingwall, fault strands and offset Tertiary sediments, evidence for late Quaternary displacements and structures in the basement schists.

Special Requirements: Sturdy footwear and all-weather clothing.

Departs: Wednesday 25 November 08:00 from Oamaru Opera House
Returns: Wednesday 25 November 18:00 to Oamaru via the BBQ venue
Participants: Maximum 30, minimum 10.

Trip 5: Waiareka-Deborah Volcanics: volcanoes of the Paleogene shelf

Leader: James White (UoO)
Contact e-mail: james.white@stonebow.otago.ac.nz

The sites to be visited preserve remnants of small volcanoes that erupted on the ~early Oligocene continental shelf, and we will focus on evidence of the environments into which eruptions took place, and on the nature of the eruptions as indicated by their deposits. The trip will begin at 10:30 (low tide is at ~3:30), with the first stop at the Kakanui Mineral Breccia. Time and tide permitting we will then visit the Bridge Point area, with a final stop devoted to pillow lavas and associated deposits of the Oamaru volcanics. The Oamaru stop will involve a traverse along the coast at low tide.

Special Requirements: Usual rain gear, sunscreen, camera, etc., footwear suitable for slippery coastal outcrops, possibility of tangling with a bit of surf. Should be suitable for most fitness levels, but ability to travel over boulders and slippery rocks is needed. Seal encounters possible.

Departs: Wednesday 25 November 10:30 from Oamaru Opera House
Returns: Wednesday 25 November 16:00 to Oamaru
Participants: Maximum 50, minimum 10.

Trip 6: Aviemore – a dam of two halves

Leaders: David Barrell, Stuart Read, Russ Van Dissen (GNS Science)
Contact e-mail: d.barrell@gns.cri.nz

This excursion will gain an overview of geology and tectonics of the mid-Waitaki valley, and its hydroelectric dams. The trip will highlight Aviemore dam, constructed in the 1960s across a major fault, the subsequent 1990s discovery and quantification of late Quaternary displacement on this fault and the engineering mitigation of potential dam foundation fault displacement. On the return to Oamaru, we will examine the nature and expression of faults in the Waitaki landscape, including results of late Quaternary paleoseismologic investigations on key faults to assist in hazard assessment for the hydroelectric structures. We will also outline and discuss the ages of the Waitaki alluvial terrace sequences.

Special Requirements: Sturdy footwear and all-weather clothing.

Departs: Wednesday 25 November 08:00 from Oamaru Opera House

Returns: Wednesday 25 November 18:00 to Oamaru via the BBQ venue
Participants: Maximum 50, minimum 10.

Trip 7: Vanished World

Leader: Ewan Fordyce (UoO)
Contact e-mail: ewan.fordyce@stonebow.otago.ac.nz

The trip has themes of: geological education/ geological sites; regional stratigraphy/ paleontology; and history of geology. It is based around localities from Papakaio to Duntroon-Maerewhenua, North Otago. We will visit a geological visitor centre - Vanished World Centre, Duntroon (www.vanishedworld.co.nz), and significant sites for the Paleogene of southern Canterbury Basin: Cameron's Pit (plant fossils, Cretaceous), Maerewhenua (shallow marine strata, sill, Eocene), and Awamoko-Duntroon (distal marine and unconformities, Oligocene). We will visit 1-2 of the sites specially developed for the public as part of the Vanished World Trail.

Special Requirements:

Departs: Wednesday 25 November 08:00 from Oamaru Opera House
Returns: Wednesday 25 November 18:00 to Oamaru via the BBQ venue
Participants: Maximum 22, minimum 11.

Trip 8: Victorian Oamaru – a dramatized exploration

Leader: Scott Eliffe
Contact e-mail: richard.norris@stonebow.otago.ac.nz

Alternative excursion for any not wishing to go on a geological field trip.

1870s Oamaru saw a booming international port with a population rivalling that of (then) Los Angeles! Today her world-renowned Victorian streets, now frozen in time, 'come alive' as costumed guides and historic characters reveal the stories, secrets and treasures of this 'fair maiden by the sea'. Join us in a walking tour with a difference as you 'step back in time' to learn of the dreams and disappointments of life in this young colonial town. Your tour includes a Devonshire afternoon tea in the lounge of the Criterion Hotel, served by Victorian maids of course. (Note: Restricted mobility access to some buildings).

Special Requirements: Restricted mobility access to some buildings

Departs: Wednesday 25 November 2pm
Returns: Wednesday 25 November 5pm
Cost: \$25
Participants: No limit

PRE CONFERENCE FIELDTRIPS:

Trip 9: Miocene phreatomagmatic monogenetic volcanism of the Waipiata Volcanic Field, Otago, New Zealand

Leaders: Karoly Nemeth (MU), James White (UoO)

Contact e-mail: k.nemeth@massey.ac.nz

This one day pre-conference field trip will offer a detailed summary of the eruption style, mechanism and landform evolution of the phreatomagmatic monogenetic volcanoes of the Waipiata Volcanic Field in Otago. The trip will concentrate on demonstrating the basic types of preserved phreatomagmatic volcanoes (from eroded tuff rings, to maars and exposed diatremes). The participants will be able to see, discuss and contribute to cutting-edge scientific problems associated with phreatomagmatic monogenetic volcanism in intraplate terrestrial settings, such as the eruption mechanism of phreatomagmatic volcanoes, controlling factors of country rock hydrogeology in phreatomagmatism, preservation potential of phreatomagmatic tephra, signs of complexity of small-volume volcanoes (monogenetic – polygenetic nature of volcanism) and the potential use of erosion remnants of phreatomagmatic monogenetic volcanoes in landscape evolution models of broad regions. The trip will focus on the Pigroot Hill area, but a round trip with look-out points to erosion remnants of monogenetic volcanoes will also be on the program.

Special Requirements: This field trip will involve moderate level hiking in grass-covered farmlands in Otago. Strong hiking shoes, water- and wind-proof gear, as well as sunblock lotion are essential.

Departs: Dunedin Railway Station, 8.45 AM (Dunedin Airport 9:30 AM)
23rd November, 2009
Returns: Oamaru, 6.30 PM 23rd November, 2009
Cost: \$85 includes, transport, lunch, snack, drink
Participants: Maximum 20, minimum 5.

Trip 10: West Coast Student Trip

Leader: Dushan Jugum (UoO)

Contact e-mail: jugdu698@student.otago.ac.nz

The trip is designed for students who rarely get an opportunity to see the more interesting parts of South Island geology. We will start in Christchurch and travel across Arthur's Pass to the gneiss and granite of the Western Province south of Westport (and the Pancake Rocks). We will then go south to cliff-scale cross-sectional exposures of the Alpine Fault at Gaunt and Hare Mare Creeks and then the Alpine Schist at Fox and Franz Josef Glaciers. The trip back to Oamaru will be through Haast Pass, Lake Wanaka and the Lindis Pass with brief stops to examine neo-tectonics and the Otago Schist. If time allows there will be a side trip to Jackson's Bay to see the Dun Mountain Ophiolite Belt.

Special Requirements: Students preferred, up to 1-2 hours walking on good but muddy tracks each day, a few simple river crossings, lots of driving and we will stay at backpackers. Please email with any questions.

Departs: Christchurch Friday 20th November as early as possible
Returns: Oamaru Monday 23rd November hopefully before icebreaker
Cost: \$120 (including transport and accommodation) + food

Participants: Limited to about 8 participants

Trip 11: Waitaki/Canterbury Basin

Leader: Ewan Fordyce (UoO)

Contact e-mail: ewan.fordyce@stonebow.otago.ac.nz

Day 1: short stop at Vanished World Centre [see also mid-conference trips]; Wharekuri Creek (Oligocene near-basin margin = a shoreline nearby in "drowned" NZ); Corbies Creek (basement - Kaihikuan fossiliferous Triassic marine); Hakataramea Valley (Paleogene nonmarine to marine, including richly fossiliferous Oligocene, and Quaternary block faulting); Waihao Valley (Eocene large forams and other warm-water fossils, Oligocene unconformities). Night in Waimate. Day 2: Otaio Gorge (Paleogene-early Miocene nonmarine-marine sequence); Squires Farm (Oligocene unconformity); Makikihi (Plio-Pleistocene shallow marine to nonmarine fossiliferous strata); Elephant Hill Stream (Early Miocene initial basin infill).

Special Requirements: Sturdy footwear and all-weather clothing, ability to walk, climb fences, and cross streams.

Departs: Sunday 22nd November 08:00 from Dunedin

Returns: Oamaru 23rd November Monday hopefully before icebreaker

Cost: \$150 per person

Participants: Maximum 16, minimum 8.

POST CONFERENCE FIELDTRIPS:

Trip 12: Paleobotany, Palynology and Sedimentology

Leaders: Daphne Lee, Jon Lindqvist, Jennifer Bannister, Uwe Kaulfuss (UoO), Dallas Mildenhall (GNS Science)

Contact e-mail: daphne.lee@stonebow.otago.ac.nz

Day 1 will include Ngapara (Late Eocene coal measures), Horse Range (Mid Cretaceous carbonaceous beds), Shag Point (Late Cretaceous coal measures), Shag Valley (Waihemo Fault, Oligocene limestone etc). Stay at Ranfurly. Day 2 will begin near St Bathans (Early Miocene lake sediments and associated fauna and flora including stromatolites), travel south to Roxburgh (Early Miocene coal measures), investigate the Gore Coal Measures (Waimumu/Mataura) Late Oligocene/Early Miocene, and a newly-discovered fossil rocky shore locality in the Chatton Formation (Late Oligocene). Stay at Gore. Day 3 will examine the Pomahaka Estuarine Beds (Mid Oligocene), the Landslip Hill silcrete (Early Miocene), make a brief stop at Gabriels Gully (Blue Spur Conglomerate - Late Cretaceous), and Foulden Hills (Early Miocene diatomite deposit). Participants will arrive at Dunedin airport in time for flights north.

Special Requirements: Sturdy footwear and all-weather clothing.

Departs: Friday 27th November 15:00 from Oamaru Opera House

Returns: Sunday 29th November 17:00 Dunedin Airport

- Cost:** \$300 (students \$150 staying in backpacker accommodation) (includes two nights accommodation, Ranfurly and Gore, continental breakfasts and packed lunches; participants to arrange their own evening meals).
- Participants:** Maximum 30, minimum 10.

Trip 13: Deepest Fiordland

Leaders: Mo Turnbull (GNS Science) and other participants
Contact e-mail: i.turnbull@gns.cri.nz

This trip will take participants to some of the most remote and spectacular parts of western Fiordland to see the geology in relative comfort. After a night in Manapouri, we will board the yacht "Breaksea Girl" in Doubtful Sound, and head to the outer coast and then south to Breaksea, Wet Jacket and Dusky sounds for several days. We will stay on board at night, with landings on shore outcrops in sheltered waters. We will look at a wide variety of Fiordland rocks, including Western Fiordland Orthogneiss diorite plutons and contacts, Paleozoic paragneisses and orthogneisses, the Doubtful Sound, Resolution Island and Straight River shear zones, granulite to eclogite facies Cretaceous orthogneisses, Buller terrane sandstones, mudstones and quartzites, Paleozoic and Cretaceous granites, Pliocene fossiliferous sediments, and raised marine terraces. Participants will be strongly encouraged to discuss the implications of outcrop observations. We should return to civilisation on 3rd December. There will also be an opportunity to walk home, via the Dusky Track.

Please Email Mo with any enquiries.

Special Requirements: Participants should be immune to rain, sandflies and seasickness. Considerable agility will be necessary for landings on slippery boulders through surf from small boats, but only limited walking will be involved. Be prepared for extremely wet, cold and windy conditions; you **will** get wet feet in salt water. Good boots. A waterproof camera.

Departs: from Oamaru after the conference on Friday 27th.
Returns: to Dunedin on 4th December - dependant on weather and swell conditions.
Cost: plan on \$1800; final cost will depend on numbers, and the weather.
Participants: Minimum 10, maximum 12: otherwise 24 (and a second boat)

Trip 14: Climatic & tectonic geology of the Waitaki catchment

Leaders: David Barrell, Stuart Read, Russ Van Dissen (GNS Science)
Contact e-mail: d.barrell@gns.cri.nz

The headwaters of the Waitaki River catchment contain spectacular sequences of moraines from past glaciations, as well as the Holocene record of interglacial moraines close to modern glaciers. We will examine moraines and outwash plains spanning from the present day (at Aoraki/Mt Cook), through lateglacial (Antarctic Cold Reversal), and the Last Glaciation, including moraines of Marine Oxygen Isotope Stage (MIS) 4 and earlier. We will discuss emerging age constraints from Surface Exposure (¹⁰Be) dating. These cyclic climatic landforms provide relict geomorphic surfaces that have recorded subsequent tectonic deformation on active faults or

folds. In particular we will examine the progressive deformation of climatic landforms by the active Ostler Fault, and as the trip proceeds down the Waitaki valley, we will examine the evidence for rates of tectonic deformation on other major faults in relation to the Waitaki alluvial fan and terrace sequences. The trip will also encompass the features observed on the mid-conference Aviemore trip.

Special Requirements: Sturdy footwear and all-weather clothing.

Departs: Friday 27th November 15:00 from Oamaru Opera House
Returns: Sunday 29th November via Oamaru, and ends at Otago University, diverting to Dunedin airport if needed.
Cost: \$230 (includes two nights accommodation in Twizel, continental breakfasts and packed lunches; participants to arrange their own evening meals from the variety of restaurants, etc, in Twizel).
Participants: Maximum 30, minimum 15.

Disclaimer

The Geological Society of New Zealand, New Zealand Geophysical Society and Conference Organising Committee accept no responsibility for injury, accident, illness or death to, or financial loss by, any person attending the conference or fieldtrips, whatever the reason. All insurance is the responsibility of individual registrants.

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