CORDILLERAN SECTION
GEOLOGICAL ASSOCIATION OF CANADA

Newsletter of the Cordilleran Section of the Geological Association of Canada

www.gac-cs.ca

FROM THE PRESIDENT

Welcome back from the bush! I am sure most of you are well ensconced in your offices catching up reporting on the summer's activities to management - bless them! The past season has shaped up to be one of the busiest in a long time. A shortage of qualified geologists has been noted by a number of people I've talked to recently, particularly for mineral exploration projects. It does not look like there will be any let up in the work load in the short term as many of the junior exploration companies are reasonably well financed and are developing significant projects which will carry on for at least another exploration season. Speaking of qualified geologists: the Cordilleran Section will be supporting the Association of Professional Engineers and Geoscientists of B.C.'s move toward implementing a mandatory program for their membership of continuing professional development (CPD). The issue of advancing geoscience knowledge - an essential goal of the Cordilleran Section is clearly linked to continuing professional development. The Section looks forward to being able to provide CPD resources to members and is constantly looking for ways to enhance membership privileges with CPD opportunities. Let us know if there are particular areas of professional development that you feel the Section should focus on.

The Section is looking to another active season, however there will be some changes in talk venues as the 15th floor GSC boardroom is being converted for a new use, and it will be a couple of months before a new boardroom on the 8th floor will be ready to host our noon hour or brown bag talks. In the short term, presentations may be given in another, smaller boardroom in 605 Robson. Or if you know of alternate, free meeting space that is available at noon hour in the downtown core, please let us know.

Section councillors are working on a couple of workshop topics that will no doubt be of interest to a broad range of the membership – keep an eye out for news on these, either on the Section website or through Section email notices. As well the Section plans to again co-sponsor Student-Industry night at Mineral Exploration Round Up early in the new year – watch for news on this event. Public lectures are again in the planning stages – look for messages regarding these.

Dr Kirstie Simpson, volcanologist with the Geological Survey of Canada based in Vancouver has joined the Section as a councilor. Kirstie works in both modern and ancient volcanic environments. Her interests include volcanic hazard research and monitoring, subglacial volcanism in BC and volcanic facies mapping in mineralized volcanic successions.

Carl Verley

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Cordilleran Section GAC
P.O Box 398
STN A Bentall Centre,
Vancouver
B.C. V6C 2N2
www.gac-cs.ca

NEWS FROM SFU
SFU Earth Science Field School 3: 2005
Geology of the Colorado Plateau & Adjacent Areas

Starting out form Vancouver on April 23 we embarked on a journey that took us into the realm of geologic grandeur and natural beauty, from the opulent spendor of the Leman Caves to the majestic beauty of Delicate Arch. Our 7000km expedition took us on a giant loop of nine of the western states focusing around the Four Corners region of Colorado-Utah-New Mexico-Arizona.

Group photo atop Angel's Landing,
Zion National Park, Utah

Highlights

During our 22 day journey around the Colorado Plateau and surrounding areas, we observed geological and archeological vistas too numerous to mention all. From Smith Rock in Oregon, where we hiked to the summit to get a 360° view of the surrounding countryside including a picturesque view of the modern High Cascade volcanoes, to Chaco Canyon in New Mexico, where we followed in the footsteps of the ancient Puebloen people through important religious centres like Pueblo Bonito and Chetro Ketl, along the petroglyph trail and over the mesa top via an ancient sacred road that stretched far into the desert. We focused on the geology of the Colorado Plateau and the surrounding areas, and looked at the spatial changes in stratigraphy across the area we were traveling.

Lehman Caves, Volcanics and Meteors

While we focused on the Colorado Plateau, there were several sites on our trip that had other focuses. The goal of the trip was for us to understand the geology of a large area, and to combine information from different locations to understand the greater geologic picture. The trip was very diverse in that it also allowed the students to present on and visit sites that were closely tied to their own interests. Lehman Caves in Nevada was a spectacular tour of the extensive underground network of caves. These caves had all of the main features that develop from limestone dissolution, including pillars, shields, and parachutes. The history of the site also gave us insight into the early geologic discovery and exploration in the US.

The Smith Rock and Craters of the Moon stops examined two very different volcanic epi-

Leman Caves, Nevada

sodes. Smith Rock demonstrated the changing nature of Cenozoic volcanism. Touring Craters of the Moon and walking through the underground caverns gave us an insight into volcanic process at a site of recent volcanism.

While traveling through the Colorado Plateau, we visited Beringer Meteor Crater and Upheaval Dome. The history of Meteor Crater helped us understand the evidence used to support the determination of meteor impact. We were able to apply these ideas to the more controversial Upheaval Dome in Canyonlands National

Park. Both of these sites showed how variable meteor activity can be and the extent of devastation that can occur.

Archaeological and Paleontological Visits

We traveled to spectacular archaeological sites of the Puebloan people. In Chaco Canyon we were able to walk through the ruins and hiked on the old roads between the enclaves. At Mesa Verde, we saw the outstanding restoration of the archeological sites and hiked the interpretative trails to the petroglyph wall. We saw how these ancient peoples used the natural processes of seepage and erosion to develop complex communities. The two sites illustrated the development of the societies through their shifts in the architecture and building needs as well as their changing resource uses as the climate changed.

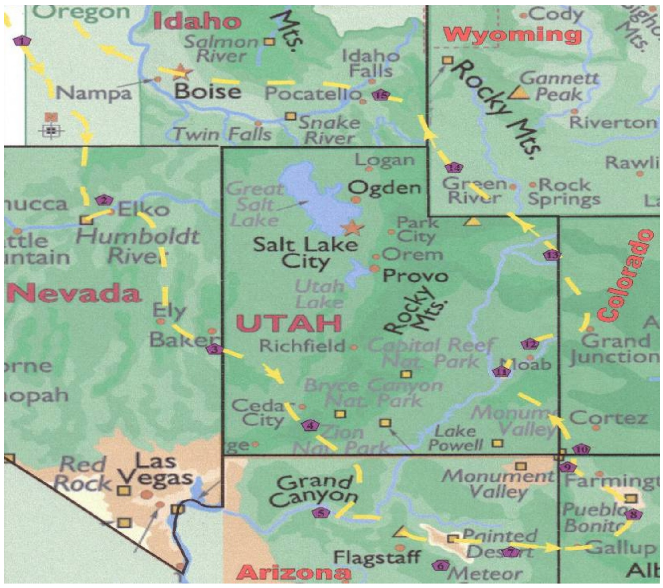
There were two paleontological stops during the trip; Dinosaur National Monument in Utah and Fossil Butte in Wyoming. Dinosaur National Monument was an exceptional display of paleontology in action, with the facility built around the out-

Cliff Palace, Mesa Verde National Park

crop. Fossil Butte was a display of a very different type of fossil preservation of delicate creatures and soft body parts. These included soft-bodied preservation of sting rays, and completely intact fish and plant fossils. The fast falling snow in Wyoming during a spring storm was another memorable part of this stop!

Final Thoughts

Through this unique experience that allowed us to step back in time to see the evolution of the Colorado Plateau and trace out the day to day lives of ancient peoples, we began to get a sense of how things are invariably connected. Before the time of written records the geology of the plateau played a



The Grand Tour

crucial roll in the development of the distinctive cultures of this region. Shiprock, in New Mexico, among other magnificent geologic features, were prominent icons in many of the creation stories of the ancestral peoples that resided on the plateau.

This trip not only opened our eyes to new ideas but also gave us a deeper sense of respect for the phenomenal powers nature that sculpt and mold our surroundings. The Grand Canyon is a prime example. Though time the mighty waters of the Colorado River incised the plateau, beautifully exposing the stratigraphy. Hiking down the canyon allowed us to get up close and trace the environmental evolution through time from the Kaibab limestone through the Coconino sandstone, down through the Supai Group, finally ending at the Great Unconformity.

Delicate Arch,
Arches National Park, Utah

Along the way this trip had its ups and downs, as with any long trip. Be it from camping in freezing weather in Oregon to

trekking up Walter's wiggles in Zion to standing in the sun under Delicate Arch at Arches National Park. The memories created among us will last a life time.

On behalf of all of the Simon Fraser University Earth Sciences 406 class we would like to express our sincere gratitude for the generous support of the GAC Cordilleran Section. Without the support of organizations like your own, this trip may have not been possible for many of us.

Mary Ann Berg . Kevin Brewer . Raegan Brown . Steve Cannon . Elizabeth Hall . Steve Hasagawa . Melissa Holt . Ellie Knight . Magdalena Lesiczka . Tanner Liskop . Jeremy Major . Colleen Muntener . George Patton . Devin Wade . Peter Mustard . Gareth Smith . Scott Close

NEWS FROM UBC - Stuart Sutherland

Awards And Honours

Sasha Wilson was awarded the Bruker AXS 2005 Excellence in X-ray Diffraction Scholarship for Unique Applications in the Category of Geology/Chemistry. Sasha received this award for work done as part of her M.Sc. thesis on carbon sequestration in mine tailings which she is finishing under the jointsupervision of Mati Raudsepp and Greg Dipple.

New Earth Scientists At UBC

The department is pleased to welcome Dr. Catherine Johnson to EOS. Catherine's research interests include Planetary geophysics: thermal and tectonic evolution of the planets Geomagnetism and paleomagnetism.

Selected recent Publications

DOMINIQUE WEIS: Ionov D., Prikhodko V.S., Bodinier J.-L., Sobolev A.V., Weis D. Lithospheric mantle beneath the southeastern Siberian craton: petrology of peridotite xenoliths in basalts from the Tokinsky Stanovik. Contr. Min. Petrol., 149, 647:665, 2005.

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KEN HICKEY: On the development of gneiss domes, TH Bell , AP Ham , N Hayward , KA Hickey Australian Journal of Earth Sciences, Volume 52, Number 2 / April 2005, 183-204

ERIC BAZIW: E. Baziw, "Real time seismic signal enhancement utilizing a hybrid Rao Blackwellised particle filter and hidden Markov model filter", IEEE Geosci. Remote Sensing Letters, vol. 2, no. 4, pp. 1-5, October 2005

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MAYA KOPYLOVA Nathalie Lefebvre, Maya Kopylova and Kevin Kivi, 2005. Archean calc-alkaline lamprophyres of Wawa, Ontario, Canada: Unconventional diamondiferous volcaniclastic rocks. Precambrian Research, 138, 57-87

Patrick C. Hayman, Maya G. Kopylova, and Felix V. Kaminsky, 2005. Lower mantle diamonds from Rio Soriso (Juina area, Mato Grosso, Brazil), Contributions to Mineralogy and Petrology, 149, 4, 430-445

DOMINIQUE WEIS Xu, Guangping; Frey, Frederick A.; Clague, David A.; Weis, Dominique; Beeson, Melvin H. East Molokai and other Kea-trend volcanoes: Magmatic processes and sources as they migrate away from the Hawaiian hot spot Geochem. Geophys. Geosyst., Vol. 6, Q05008, doi:10.1029/2004GC000830, 28 May 2005

ANDREW GREENE: Clift PD, Draut AE, Kelemen PB, Blusztajn J and Greene A (2005) Stratigraphic and geochemical evolution of an oceanic arc upper crustal section: the Jurassic Talkeetna Volcanic Formation, south-central Alaska. Geological Society of America Bulletin, v. 117, p. 902-925.

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ALASTAIR MCCLYMONT AND RON CLOWES: McClymont, Alastair and Ron M. Clowes 2005. Anomalous lithospheric structure of northern Juan de Fuca plate -- a consequence of oceanic rift propagation? Tectonophysics, 406: 213-231.

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Available locally from the GSC Publications Sales Office in downtown Vancouver, and UBC Bookstore will be getting copies in for January 2006 classes. Instructors may order complimentary copies from http://www.mcgrawhill.ca/highereducation/php/bookinfo.php?isbn=0070931097 .

OLDRICH HUNGR: Jakob, M. and Hungr, O., Editors, 2005. Debris Flow Hazards and Related Phenomena. Praxis, Springer Verlag, Berlin, Heidelberg (27 chapters, 739 pages).

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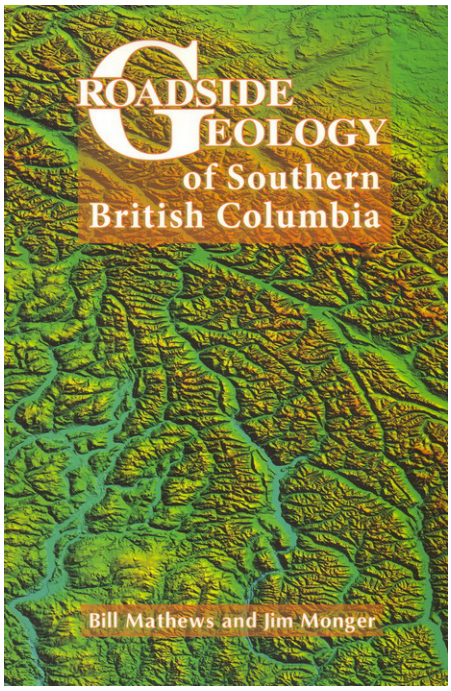
NEWS FROM THE GSC - Jim Ryan

Roadside Geology Series

Another great book is finally out in the Roadside Geology Series: "Roadside Geology of Southern British Columbia" by Bill Mathews and Jim Monger, published by Mountain Press Publishing Company. The book is an excellent overview, with plenty of details of the province's complex geology. Bill Mathews began working on this book after he retired in 1984, but illness slowed his progress and he died in 2003. Jim Monger took over responsibility in 1996 for completing the book. Jim is an Emeritus Scientist at the GSC, and teaches part-time at Simon Fraser University.

"Southern British Columbia, from the northern tip of Vancouver Island to the Alberta border east of Golden, spans the Canadian Cordillera, a mountainous region with a tumultuous geologic history that continues to evolve with every volcanic eruption, landslide, and earthquake. Thirty-one road guides describe the rocks and landforms that are visible from the province's highways and ferry routes. The book includes many photos and maps."



You are not going to want to be driving anywhere in southern BC without it! Fabulous content - rich in roadside detail along with Jim Monger's big picture context.
Congratulations to Jim for a great contribution to public knowledge of BC's geology and landscapes.

Cost $25.00 - Available at the GSC's Vancouver Bookstore
101-605 Robson Street
Vancouver, B.C., V6B 5J3, Tel: (606)666-0529
www.nrcan.gc.ca/gsc/pacific/vancouver

Field Projects

2 major field projects were run out of the GSC-Vancouver Subdivision in 2005

Bowser and Sustut Basins project (British Columbia), Project leader: Carol Evenchick

The Bowser and Sustut Basins project had a busy summer, mapping and sampling across substantial portions the southern basins from early July to late August. For most of the season the project had a core crew of 9 people, with representation from GSC Vancouver, GSC Calgary, Simon Fraser University, University of BC, University of Alberta, and the Hazelton Gitxsan First Nations community. Shorter visits by researchers and graduate students brought the crew up to 11 people at times. The first half of the season involved mapping by truck and bicycle from three tent camps on logging road networks, followed by a couple of weeks of helicopter work out of Smithers.

This was the last full field season of fieldwork for the Bowser and Sustut Basins project of the Northern Resource Development Program, and a main goal was completion of regional-scale bedrock mapping across the basins. Specialized sampling was also carried out to complete research projects in thermal maturation, apatite fission track thermochronology, detrital zircon geochronology, palynology, and paleomagnetics.

Late in the season, some of the crew took part in a project funded by a BC Ministry of Energy and Mines grant to Peter Mustard of S.F.U. to follow up on the 2004 dinosaur and reptile discoveries in the Bowser Basin. Staff from the Royal Tyrrell Museum in Drumheller, Alberta also

Spectacular mountain backdrop in the Bowser project area

took part in this dinosaur hunt.

Boothia Project (Nunavut)
Project leader: Jim Ryan

The multi-year Boothia Peninsula Integrated Geoscience Project was launched in 2005, focusing this year on parts of NTS map sheets 57A, 57B and 57C on Boothia Mainland, in the Kitikmeot region of Nunavut, between the communities of Gjoa Haven, Taloyoak, and Kugaaruk. The project is a joint Geological Survey of Canada (GSC) and Canada-Nunavut Geoscience Office (CNGO) initiative, and drew on mapping expertise from GSC offices in Vancouver, Ottawa and Quebec, as well as the C-NGO, NWT Geoscience Office, and a number of universities. Field work included 1:250 000-scale bedrock mapping in addition to local, detailed surficial mapping and ice-flow studies. The mapping follows acquisition of a new aeromagnetic survey completed in March 2005 (released April 2005); the first publicly available aeromagnetic for this area. In advance of the field work, a comprehensive remote predictive map for the region was produced, which assisted in developing a more strategic approach to bedrock mapping. The project

Core field crew for Boothia project in 2005

implemented a new, and highly sophisticated Pocket PC-Arcpad digital data entry platform. The project has spawned a Bachelors thesis project at the University of Alberta, and two undergraduate placement projects at Oxford University. First data releases for the project will take place at the Yellowknife Geoscience Forum in November, and the Mineral Exploration Roundup 2006.

Community Outreach

GSC Vancouver kicked it into high gear for its community outreach program during Science and Technology week, October 14-23. Three events were presented to engage and interest young minds in geoscience. The first event was a talk series at Science World, October 15 and 23 in cooperation with the Canadian Forest Service (CFS), with features such as “If it is not Mined it is Grown” and “Do trees fart?”. The second event, held in the offices of GSC Vancouver, was aimed at enhancing the curricula of grades 5-7 through demos and displays of many geocience topics such as the rock

Presentation made to young students during S&T Week, on how GIS is used to make geological maps

cycle using chocolate and caramel and the time scale on toilette paper. The final event co-hosted by the BC Mineral Resources Education Division, was postponed until March, will be a field trip for teachers, along the Sea-to-Sky highway lead by Jim Monger and ending with lunch a tour at the Britannia Mining Museum. Watch the BC Mineral Resource Education Division website for further details on the field trip (http://www.bcminerals.ca/).

In Memoriam: Howard Tipper

Dr. Howard Tipper, born 1923, passed away on April 21, 2005. Howard Tipper, “Tip”, as he was known to most, worked with the GSC for sixty years, starting in 1944 as a field assistant with C.S. Lord. Tip was a renowned Jurassic ammonite paleontologist and a excellent regional mapper who mapped large areas of the Cordillera. His fondest field areas were the Queen Charlotte Islands and the Chilcotins. He made significant contributions to Jurassic paleobiogeography and taxonomy in collaboration with Dr. Paul Smith of UBC. Tip’s regional mapping within BC withstood the test of time and for many areas became the regions, basemaps for further future studies. The scope of Tip’s understanding of Cordilleran geology and Jurassic paleontology was not easily matched. Tip and his knowledge will be sorely missed by all Cordilleran geoscientists. The Vancouver office of the GSC held a gathering to honour Tip’s life on June 2, 2005. A nice tribute to Tip by Paul Smith can be found on Page 20 of the Fall 2005 edition of

Geolog (http://www.gac.ca/PUBLICAT/geolog.html).

Tip at a Christmas lunch at the Canada Place restaurant, circa 1987.

Renovations at 605 Robson Street

Visitors and customers of the GSC Vancouver Office will notice that our building is undergoing some renovations. The renovations will continue through December. Despite the renovations our Sales office, library, and staff offices are open and welcome your visits.

EXPLORATION OVERVIEW

By T.G. (Tom) Schroeter, British Columbia Ministry of Energy and Mines, Vancouver, British Columbia with a contribution on Yukon activity by Mike Burke, Yukon Geology Program, Whitehorse. Reprinted, with permission, from the Society of Economic Geologists, Inc. July News Letter (www.segweb.org)

BRITISH COLUMBIA

2005 is shaping up to be a very busy year. As many as five new mines are expected to start up, 14 projects are in the development stage and exploration expenditures are anticipated to be between C$150 and $200M.

In the northwest, Adanac Moly announced measured and indicated resources for its Adanac (Ruby Creek) Mo deposit; preliminary feasibility studies are in progress. Canarc Resource is conducting a large infill drilling program on its New Polaris Au project.

Cusac Gold received a positive prefeasibility study for its Table Mountain Au mine. BCMetals is seeking equity partners for the development and mining of its Red Chris Cu-Au property, with annual copper-gold concentrate production estimated at 180,000 tonnes (t). Firesteel Resources recommenced drilling of its Copper Creek Cu-Au porphyry system. Canadian Gold Hunter released an inferred resource for the Donnelly zone on its large Kinaskan (GJ) Cu-Au property. NovaGold Resources released an updated measured and indicated resource of 516.7 Mt grading 0.59% Cu, 0.36 g/t Au and 4.54 g/t Ag, at a 0.35%CuEq cut-off grade for its Galore Creek property. An additional 578.3 Mt of inferred resources have been outlined. A prefeasibility study has been initiated examining the rationale for a 60,000-tpd milling operation. For 2005, eight core drills will be on site and a minimum of 50,000 m is budgeted. Copper Fox Metals has recalculated measured and indicated resources for its Schaft Creek Cu-Mo-Ag-Au deposit. Copper Fox plans a large drilling and metallurgical testing program in 2005.

East of Dease Lake, Western Keltic Mines released measured and indicated resources on its Kutcho deposit, as well as an inferred resource for its Esso West zone on its Kutcho Creek Cu-Zn-Ag-Au project. In 2005 the company plans further drilling, initiation of a feasibility study, and commencement of mine permitting. Hard Creek Nickel plans to test several airborne geophysical anomalies for low-grade, near-surface nickel mineralization in an ultramafic intrusion on its Turnagain property. Roca Mines plans a large drilling program and airborne geophysical survey on its Foremore Cu-Zn-Au VMS property. NorandaFalconbridge plans to drill test four priority targets on its large Kerr-Sulphurets Cu-Au property. Tenajon Resources plans a large underground drilling program testing four veins systems on its former producing Summit (Scottie Gold) Au property, north of Stewart. Bell Resources completed an airborne geophysical survey early in 2005 over its Granduc high-grade Cu property. In the Alice Arm molybdenum district, Tenajon Resources plans a preliminary drill program on its Ajax Mo deposit. Fortune Minerals released an update on

a feasibility study currently in progress on its Mount Klappan metallurgical coal property.

In the Toodoggone region, Northgate Minerals plans drilling on several targets near the Kemess South Cu-Au mine, including the Kemess North deposit which is being examined by the federal government for permitting. North of the Kemess area, Cascadero Copper, Stealth Minerals, and Finlay Minerals plan large drilling programs on their respective porphyry Cu-Au (Pine, Pil and others) and epithermal Au-Ag vein (Sickle Creek) targets. Eastfield Resources is planning a large program on its Lorraine porphyry Cu-Au property. Placer Dome is re-evaluating its Mt. Milligan Cu-Au deposit; it expects to make on a decision soon whether to proceed to the feasibility stage or seek a joint venture partner. Pacific Booker continues its feasibility study on its Morrison Cu-Au deposit in the Babine region. Near Smithers, Blue Pearl Mining is conducting a scoping study on its recently acquired Davidson (ex-Yorke-Hardy) Mo-W property. Underground rehabilitation and drilling as well as environmental studies will follow. Huckleberry Mines plans a major follow-up drilling program on its recently discovered Northwest Target at its Huckleberry Cu-Mo mine, south of Houston. Alpha Gold is planning another large drilling program on its Lustdust auriferous skarn-porphyry property.

In the Northeast, Western Canadian Coal's Wolverine coal deposit is being developed. The Brule deposit of Western Canadian Coal and Northern Energy and Mining's Trend deposit are proposed new coal mines that are currently being reviewed by government. Large drilling programs are planned at a number of properties (e.g., Belcourt Saxon Coal's Belcourt and Saxon, Cline Mining's Lossan, Hillsborough's Five Cabin, Bickford and Wapiti and First Coal's Goodrich). A major expansion of the Ridley Island Terminal at Prince Rupert is planned to accommodate the major new developments in the northeast.

In the Cariboo region, Imperial Metals brought the Mount Polley Cu-Au mine back into production this spring. Recent discoveries in the Green, 92 and Southeast zones will undoubtedly increase the resource base significantly. Cross Lake Minerals hopes to bring its QR Au mine back into production later this fall. Near Likely, Skygold and Wildrose have commenced a large RC drilling program on their Spanish Mountain sediment-hosted Au target. Fjordland and Wildrose will be conducting a large RC and diamond drilling program on the Woodjam Cu-Au property. Near Wells, International Wayside Mines is planning to extract a 70,000-t bulk sample from the Bonanza Ledge zone on its Cariboo Gold Quartz Au property.

In the Revelstoke region, Orphan Boy Resources received a permit to facilitate the operation of its Gold-stream mill as a custom mineral processing plant at up to 1,360 tpd. It plans a significant program on its nearby Rain property to follow up significant new polymetallic discoveries. Selkirk Metals is planning a major diamond drilling program on its Ruddock Creek sedex Zn property. Orphan Boy has received a mine development and operating plan report for its Willa Au-Cu property; a feasibility study is planned. Roca Mines commenced an underground in-fill diamond drilling program on its Max property, designed to bring sampling in the measured resource of 260,000 t grading 1.17% Mo, at a 0.6% Mo cutoff, to 20-m spacing. Underground rehabilitation and metallurgical testing are ongoing.

In the southeast, Hillsborough Resources announced measured and indicated resources of metallurgical coal for its Bingay Creek property, north of Elkford, and Cline Mining completed a winter drilling program on its Lodgepole property, southeast of Fernie, and is proceeding with a feasibility study. In 2004 Elk Valley Coal Corporation produced over 25 Mt of metallurgical coal from its five operations at Fording River, Elkview, Greenhills, Line Creek and Coal Mountain, about 20% of the world's supply of high-quality seaborne metallurgical coal. Exploration programs will continue at these operations in 2005.

In the Greenwood-Boundary camp, Merit Mining (formerly Gold City) announced new measured and indicated resources for the Grenoble deposit on its Lexington Au-Cu property. Bulk sampling and drilling is planned at Lexington as it moves toward production. In the Okanagan region, Almaden Minerals continues to aggressively explore its past producing high-grade Elk (Siwash North) Au property. A scoping study to restart the mine is expected this year.

In the Kamloops region, New Gold Inc. (formerly DRC Resources) is in the midst of a major, 1.2-km ramp (decline) and 550-m-long crosscut into the main zone ore and a 20,000-m underground drilling program on its Afton Cu-Au project. Work over the next 18 months will provide the necessary data for a feasibility study, expected in June 2006. Surrounding the Afton mine, Abacus Mining announced new resources for its DM-Audra-Crescent and Rainbow Cu-Au zones. It also recently made an agreement with Teck Cominco concerning its remaining assets at the Afton site.

On Vancouver Island, Hillsborough Resources is conducting a large drilling program at its Quinsam thermal coal mine to significantly increase resources to meet increased demand. Compliance Energy is drilling the Bear (Hamilton Lake) metallurgical coal property.

YUKON

Mineral exploration expenditures in the Yukon are expected to increase in 2005 to the C$40 to $50M range. Yukon exploration activity in 2005 has enjoyed a robust start with winter drilling programs and several acquisitions of mineral properties. Anticipated mine development projects have also continued to advance early in the year.

The Wolverine project of Yukon Zinc Corporation (formerly Expatriate Resources) began its $14M test mining and fea-

sibility study of the high grade Zn-Ag-Cu-Pb-Au volcanogenic massive sulfide deposit. Current resources in all categories at Wolverine stand at 6.23 Mt grading 12.66% Zn, 371 g/t Ag, 1.33% Cu, 1.55% Pb, and 1.76 g/t Au. Sherwood Mining Corporation reports that its recently acquired Minto project hosts a 1994 pre-National Instrument 43-101 resource estimated to contain
8.8 Mt grading 1.73% Cu, 0.48 g/t Au,and 7.5 g/t Ag. The partially constructed Minto mine has been on care and maintenance since 1998. Cash Minerals Ltd. announced a positive scoping study on the Division Mountain coal project located 90 km from the capital of Whitehorse. The deposit contains a resource of 51.6 Mt of high volatile bituminous B coal. The company intends to complete a bankable feasibility study on the project in 2005.
On the exploration front, Pacifica Resources Ltd. has entered into a letter of intent with Placer Dome (CLA) Ltd. and Cygnus Mines Ltd., for the purchase of a 100% interest in the mineral properties of the Howards Pass joint venture. Howards Pass contains a historic indicated reserve of 115 Mt in the XY and Anniv zones with a grade of 5.4% Zn and 2.1% Pb. Pacifica has conducted additional staking and has budgeted $5M for exploration in 2005. StrataGold Corp. began its $3.1M exploration program on the Dublin Gulch, Aurex, and Lynx Au properties. The majority of work will be on the Dublin Gulch property where the Eagle zone contains 55.2 Mt of indicated resources at a grade of 0.934 g/t Au and 17.3 Mt of inferred resources grading0.734 g/t Au. Freegold Ventures Ltd. completed winter drilling programs on the Eocene-aged Grew Creek epithermal Au-Ag deposit, and is currently updating resources to NI 43-101 standards. Tagish Lake Gold Corp. completed a winter drilling program underground at its Skukum Creek Au-Ag deposit, intersecting values up to 17.95 g/t Au and 140.5 g/t Ag over 2.65 m in the Rainbow Two zone. The recent drilling has indicated that the Rainbow Two zone lies along the same mineralized structure that hosts the Rainbow zone (measured and indicated resource of 800,000 t grading 6.78 g/t Au and 240 g/t Ag).

EVENTS

November 15 to 19, 2005: Yellowknife Geoscience Forum

November 20 to 23, 2005: Whitehorse Geoscience Forum
For details check: http://www.ycmines.ca/forum.html

December 5 to 9, 2005: Northwest Mining Association Conference, Spokane Washington
For details check: http://www.nwma.org/conventions.asp

January 23 to 26, 2006: Mineral Exploration Round-up
For details check: http://www.bc-mining-house.com/

May 14 - 17 2006: GAC-MAC Annual Meeting, Montréal.
For details check: http://www.er.uqam.ca/nobel/gacmac/welcome.html

PACIFIC MUSEUM OF THE EARTH
Stuart Sutherland

It has been another exciting year for the Pacific Museum of the Earth (PME). This year has seen the consolidation of the museum with the department of Earth and Ocean Sciences (EOS), the wider university and other groups in the lower mainland.

A helping hand for teachers

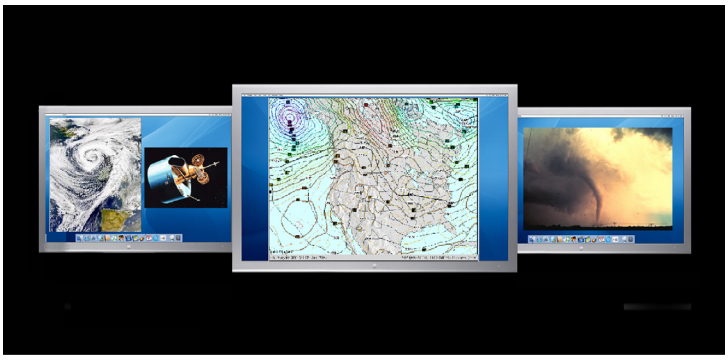
Growing numbers of school parties, interest groups and the general public have been visiting the museum. 'The word is out' to schools in the lower mainland that their Earth Science curriculum has an ally at UBC. In part this increased attention has been aided by a feature on the museum in the eXpress on Shaw T.V.

Support for schools will soon be further aided as the museum has successfully secured a grant that will support a $9000 renovation of a room attached to the main floor into the Teachers Resource Centre (TRC). The TRC will be available for teachers to book and hold class before engaging in activities in the museum proper. It will contain curriculum specific displays, A.V. material, lesson plans and material such as text books, DVDs and samples that teachers can borrow for extended periods.

New displays and features – A few highlights

Further money has been channeled into a real time weather forecasting display. This will highlight the work of Roland Stull's group within EOS and, incidentally, provide forecasts of the weather that will be far more accurate than anything currently available on TV or the radio. Thanks go to Roland's Stull's research group who are providing the program for this display at no charge to the museum.

Another atmospheric sciences based display that is already operational and which has proved very popular with visiting school groups is the Tornado Machine. This device



Mock up of the real time weather display as it may appear in its final form.

simulates the development of a funnel cone with out any of the associated capitol damage or rotating cows.

On the Solid Earth side of things, Phil Hammer (Geophysics group, EOS) has produced an informative and accessible series of posters based around our seismic centre and a fascinating TransCanada Crustal Section that builds on the work of Lithoprobe within EOS.

The Tornado machine whirls into action

Beautiful mineral specimens still form the core of the museum and we are pleased to report that we are well on our way to restoring the vault (one of the main features of the old Pacific Mineral Museum) in the PME. The vault will house the valuable gem and precious metal samples that we currently have to keep under wraps due to security issues. Those of you who remember the old display downtown will understand why we are excited to be getting close to our goal of opening the vault within the PME. Following a sucessful grant application to the Geological Foundation of Canada and support from the department of Earth and Ocean Sciences and Ross Beaty, the museum now has sufficient funds to reinstall this key display.

New vision, new plans.

Now that the first phase of the museum development is complete and all of the original material from the Pacific Mineral Museum (including the shop) has been installed, it is time to adjust the outlook of the PME.

It is intended that the museum will develop along Earth System Science concepts, focusing on the interconnectedness of Earth systems, from deep Earth processes through plate tectonics and the interaction of the lithosphere, hydrosphere and biosphere. Several sub-themes will be developed under this umbrella theme;

1. Earth's Environmental Evolution

Unraveling the history of the Earth's environmental evolution as revealed by rocks and fossils. This theme will develop close ties with the Beaty Biodiversity Centre and explore the concepts of the geological history of life, its interconnectedness with the evolution of the Earth as a whole and the periodicity of mass extinctions (developed further in the following two themes).

2. Natural Disasters

An exploration of the science, prediction and mitigation of natural disasters. Particular focus will be given to the seismisity of BC (including tsunami threats), the Cascadia volcanic system, landslides, atmospheric hazards (pollution / extreme weather) and impacts from space.

3. Resources and the Environment

Highlighting the exploitation of natural resources with a particular focus on British Columbia. This theme will showcase the beauty of rocks and minerals but also examine how sensitive resource exploitation (minerals and petroleum) can be employed to protect the environment and the consequences that result from poor practice.

This approach will not only more effectively highlight the current diversity of expertise within the host department but also produce a more cohesive thematic direction for the museum. Confirmation that the Beaty diversity Centre and the associated museum is to be built facing EOS means that we can develop this area of campus as a great outreach tool to the community. Members of EOS and the PME are already in consultation with the Beaty Centre design and production team to ensure the PME and the new museum will develop in conjunction. Each museum will contain displays that relate to the other and hopefully be linked by an outdoor 'Geological Walk through Time,' which will physically link the two bodies.

The Friends of the Museum

The museum relies heavily on the support and good will of the Earth Science community and the general public. If you would like to become a friend of the museum please

contact Kirsten Parker: kparker@eos.ubc.ca. The friends of the museum receive a quarterly newsletter which includes information about new displays and initiatives at the museum, a 10% discount in the shop and invitations to attend members functions, generally held in the evening. For example, this year the PME hosted and catered an informative talks by Kirk Makepeace about B.C. Jade and Greg Dipple on the role the minerals industry may be able to play in atmospheric Carbon dioxide sequestration.

Pacific Museum of the Earth,
UBC, Earth and Ocean Sciences (EOS) -- MAIN,
6339 Stores Road
Vancouver,
British Columbia,
V6T 1Z4,
Canada
http://www.eos.ubc.ca/public/museum/index.html
General Inquiries E-mail: pme@eos.ubc.ca
Curator: Kirsten Parker
E-mail: kparker@eos.ubc.ca
Phone: 604-822-6992

CORDILLERAN SECTION

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GEOLOGICAL ASSOCIATION OF CANADA