Report on International Meeting on Subduction, Volcanism and the Evolution of Oceanic and Continental Crust

9-16 February 2014, Nadi, Fiji

The Earth Science Division of the School of Geography, Earth Science and Environmental (SGESE) of the University of the South Pacific (USP) in Suva Fiji in association with its International Research Office hosted an international meeting on "Subduction, Volcanism and the Evolution of Oceanic and Continental Crust" that was held on 9-16 February 2014 at the Tanoa International Hotel in Nadi, Fiji. The meeting was followed by a 2-day excursion to Eocene-Miocene arc terranes in the north and western parts of the island of Viti Levu including the early-arc Yavuna Group which is intruded by a large tonalite body.

The aim of the meeting was to bring an international group of geoscientists together and to discuss topics such as "Can present-day Pacific-type tectonics be recognized in ancient orogenic domains?" or "Subduction and related volcanism, earthquake mechanisms and the generation of tsunamis waves around the Circum-Pacific Ring of Fire". Papers presented helped to increase the understanding of global plate tectonic processes as well as the regional geology of the western Pacific and Asia including different elements such as the formation of new oceanic and continental crust, accreted terranes, and inputs from the recycling of old oceanic, arc and continental crust. In addition, participants discussed future collaborative research for better understanding of active tectonics, geophysics, geochemistry and the ***P**ressure-**T**emperature-**t**ime* evolution of the SW Pacific. The discussions aimed at better understanding of earthquakes, tsunamis, magmatic underplating and mantle degassing in the SW Pacific

The meeting was attended by about 40 scientists from Australia, Brazil, China, Germany, Romania, Russia, Slovakia and the USA (Fig. 2) and began in the afternoon of 10 February.

The scientific contributions, organized into several thematic sessions, were spread over three days that allowed for significant time for discussions. Alfred Kroner discussedlate Mesoproterozoic to late Palaeozoic evolution of Central Asia and compared them with those in the SW Pacific.

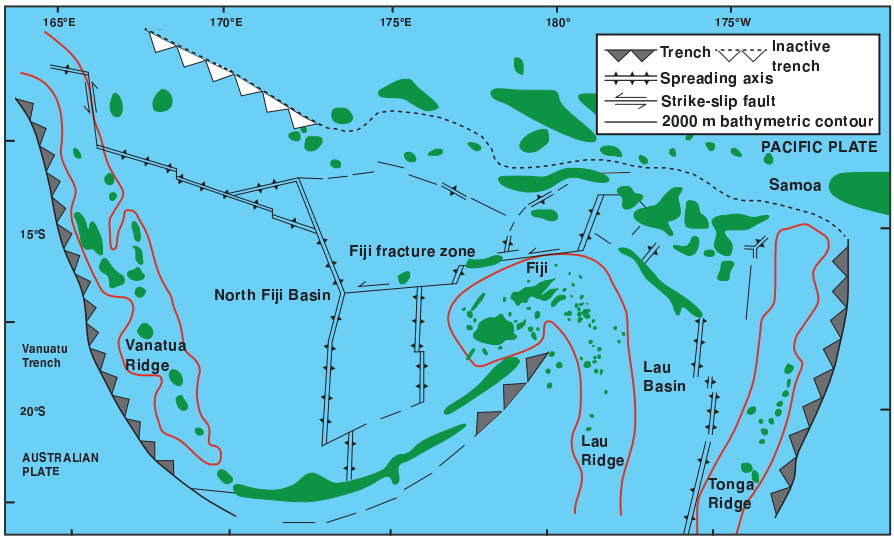

Figure 1. Present plate tectonic setting of Fiji (modified sketch from Rahiman & Pettinga, GSA Bulletin 2008).

Richard Glen's presentation was on the possibility of the Eocene-Pliocene SW Pacific arc terranes being a possible modern analogue to the CAOB and the Tasmanide orogenic belts in eastern Australia. Wen-Liang Xu reported on the Mesozoic subduction history of the Palaeo-Pacific plate beneath the Eurasian continent and pointed out evidence from volcanic rocks in NE China. Jinlong Yao presented important data on zircon U-Pb dating, Hf isotopes and whole rock geochemistry to explain the Neoproterozoic Pacific type trench-arc system in the Jiangnan Orogenic belt, South China whilst G. Zhao advanced his concept that this key orogenic belt was possibly developed from subduction of a divergent boundary (back arc basin). The evolution of the back-arc basins of the Southeast China Block during the Late Mesozoic was discussed by Liangshu SHU. Wei-dong Sun reported about the formation of porphyry ore deposits and oxidation of magmas. Min Sun discussed the basement nature of the Chinese and Mogolian Altai.

Figure 2. Group photograph showing participants of the International Meeting on Subduction, Volcanism and the Evolution of Oceanic and Continental Crust.

Holger Sommer discussed the phase transitions from gabbro to granulite and finally to bimineralic eclogite, but also about the formation of micro diamonds out of equilibria and finally about the super sonic uplift of the kimberlite itself. Li Juan showed a paper dealing with the seismic evidence for ancient subduction of Izanagi Plate. The presentation by Alexey Baranov showed a Moho depth map for continental crust, whilst Ruifang Huang discussed about the role of Al-spinel as Fe carrier during serpentinization. Hong-Fu Zhang reported episodic widespread magma underplating in the Phanerozoic and the implication for craton destruction. Vyacheslav Kotelkin presented problems in geodynamic modeling.

Sessions on the final day of the conference began with a talk about historical data related to changes in sea level around New Zealand by Robert Tenzer. In a related talk Tony SONG from NASA again discussed details on sea level monitoring in the SW Pacific and presented the potential of the use of precision GPS measurements and its use in a tsunami early warning system. He further promoted the idea of installing such stations on all the USP campuses within the South Pacific. Mrs Danling Tang gave a report about the changes of the local weather after the tsunami in 2004 in the Indian Ocean. Followed by a talk given by Peter Vajda, dealing with the capabilities of modern gravimetric methods in respect to dynamic magmatic systems. Maarten De Hoop discussed the advances in finite-frequency inverse scattering and tomography using teleseismic data. Miss Kirti Lal presented new data about direct dating of tsunami boulders from the Suva lagoon, Fiji providing information about historical local tsunamis within the region. Tony SONG continued with different aspects of the rise up of the regional sea level shifts in the Pacific over 1985-2008. And finally, Ladislav Brimich gave a presentation on surface displacements, deformations and gravity changes due to underground heat source.

The meeting has resulted in the possibility of further research into tsunamis, geochemistry, petrology, geodynamics and tectonics of the SW Pacific region and strengthened collaboration between USP and universities internationally. Our thanks go to Ms. Susan Naco, Departmental Secretary for efficiently planning conference logistics.

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