

A land beyond -

It was to be my first time in Japan, and I was lucky enough to be invited as part of a JSPS Invitation Fellowship to the University of Kyushu, at the request of Professor Koichiro Watanabe. My two week visit was to be split between (i) research talks and discussions, including lecture presentations to postgraduate and undergraduate students in the Department of Resource Engineering; and (ii) an in-depth field trip with Kyushu staff and postgraduate students, around the volcanoes and mineral deposits for which Kyushu, Japan's most southerly major island, is globally renowned.

It was genuinely the trip of a lifetime.

From the moment I landed in Tokyo to the moment I left, I was welcomed with open arms, and treated with such kindness, generosity and thoughtfulness throughout my stay. This was in large measure because of the great consideration and planning that Professor Watanabe and his colleagues, Drs. Kotaro Yonezu and Tom Tindell had put into my visit. It was a privilege to work with my hosts, and their talented students (who had come from across Japan and indeed, the world).

I was so impressed by Japan, and its people, food and culture. The thoughtfulness of my hosts is certainly a reflection of the wider culture, and so I would strongly urge anyone thinking about becoming involved with the JSPS to have no hesitation.

Day 3 of my trip was to experience *Hanami*



with the postgraduate students and staff of the Department of Resource Engineering in Ohori Park in Fukuoka, Kyushu's largest city (*Figure 1; Me and Dr. Tindell enjoying the delicacies*

of Hanami). Hanami is a reflection of a society who values quality of life – it is a celebration that encourages us to take time to enjoy the fleeting life of the cherry blossom before it disappears.

However, the reason for my trip was to develop my research partnership with Kyushu, and to enhance the depth and breadth of my own knowledge. The trip was my first to an active volcano, and I walked on 3 - Aso, Kaimondake and Sakurajima (*Figure 2*).

Figure 2: Dr. Yonezu in the shadow of the mighty Sakurajima – constantly erupting since 1955, with 737 in 2015! Sakurajima is a 3.5km ferry ride from Kagoshima City – with a population about the size of Glasgow; around 5000 people live on the island, which is famed also for its prized, giant radishes – the largest in the world - that the fertile volcanic soil allows them to grow.

The energy of these volcanoes was palpable –



as was the smell! The geology was superb, truly bringing to life the dry geological descriptions I had accumulated over decades of research. The volcanoes I visit in Scotland are long extinct - last erupting nearly 350Myrs ago!

For me, as an Economic Geologist, the absolute highlight was visiting the mineral deposits associated with this volcanic terrain - as well as the mineral baths! – both of which have been fashioned from the fluids associated with these natural phenomena. Not least, the Hishikari Mine – the world's most concentrated gold mine, with an average grade

of gold nearly 10 times that of any other major producing gold mine (Figure 3).



Figure 3: A sample of the gold vein – the gold is hosted in veins of quartz. The typical grade of gold in a major producing deposit is less than 5g per tonne – this sample from Hishikari runs at 7,920g/t! Average grade is 40g/t.

Not only have Kyushu's volcanoes shaped the landscape of the island, they have also shaped the culture. The people live with the volcanoes, respect the volcanoes. The power of these systems is exceptional, the danger they pose is real and always present, but they also bring rewards that have been harvested for many, many centuries by the islanders – for example, electricity from geothermal energy; gold and other mineral resources; extraordinary agricultural richness. It was exciting to see this interaction, and also to actively take part in enhancing our understanding of how these systems form, and evolve through my collaborations with colleagues in Kyushu University.

The JSPS Invitation Fellowship has surely cemented our research partnership, but it has also begun my own relationship with Japan at a depth I never imagined before I boarded the jet to Tokyo. I am thus deeply grateful to the JSPS and Professor Watanabe for this opportunity. I haven't stopped talking about Japan since I returned!