Hamadohri Environmental Radiation School

On March 11th, 2011, Japan was struck by the magnitude 9.1 Tōhoku earthquake and the subsequent tsunami, which destroyed 45,000 houses and resulted in approximately 20,000 deaths. The tsunami triggered a third disaster, the nuclear accident at the Fukushima Daiichi power plant, which received extensive coverage in German media. Quickly, fears of a second Chernobyl arose, which were associated with the entire region of Fukushima, Japan's third-largest prefecture.

To educate about both the catastrophe and the following recovery process, Osaka University hosts an annual Hamadohri Environmental Radiation School (Hamadōri refers to the coastal area of Fukushima), which we, three students from UHH's Department of Physics, attended. We learned about the radioactive contamination in the affected area, which was, at least to us, smaller than expected. By collecting and analyzing soil and leaf samples, we observed for ourselves that generally, only the top 30 cm of soil are contaminated with radioactive isotopes. This was our hands-on proof that the soil removal strategy in Fukushima is effective in decontaminating the areas affected by the nuclear disaster.

Leaf and soil sampling in Ōkuma, Fukushima Prefecture. Photo: Masashi Kaneta.

While seeing houses and gardens that used to be families' homes but are now overgrown with plants felt eerie, and the giant piles of black bags filled with removed soil made us realize the enormous scope of the clean-up work, we were also impressed by the thousands of workers which contribute to recovery both at the Fukushima Daiichi power plant itself and in the surrounding area. We met residents and city officials from the still partly evacuated town Ōkuma, who told us about their plans for revitalizing their hometown.
Overall the insights that we gained about the aftermath of the 2011 Fukushima nuclear catastrophe showed us how much effort is put into turning the contaminated areas into vibrant communities again. Even though the majority of people moved away, there seems to be a resilient core of people that will not give up on the region and do their best to revive it. The goals are ambitious; however, the new building and community projects stand out far more than the abandoned houses, evoking a sense of optimism for the region's future.

Following the IEEE/NPSS Climate Change Initiative Workshop, we spent the remaining two days conducting additional radioactivity measurements and attending a series of lectures that expanded on various aspects of climate science and technology, presented by several international experts. These sessions featured in-depth discussions on renewable energy solutions, the role of innovation in mitigating environmental damage, and advanced nuclear technologies, such as safer, more efficient reactor designs that address many of the concerns surrounding traditional nuclear power plants, as well as nuclear fusion. Additionally, we were introduced to other cutting-edge technologies related to nuclear physics, such as proton therapy, which is being used effectively to treat cancer.
A key segment of the workshop was dedicated to the issue of misinformation and fake news, particularly within the scientific context. We learned about the challenges of combating false information and were provided with practical strategies on how to critically evaluate information, identify credible sources, and effectively communicate scientific facts. During the workshop, the three of us, along with seven other students, also presented own ideas on how to combat climate change.

For the additional radioactivity measurements, we also measured the radioactivity levels around the university building by walking and driving through the area. We found them to be uncritical in most places except around some trees in front of the building. Lastly, we used an advanced dosimeter to detect the radioactive materials inside of some objects like plates made with uranium or clocks with luminous radium-paint. It was impressive to see how far technology has come in identifying the radioactive elements contained in these artifacts. Nowadays of course, such products don't contain any radioactive elements.

Prof. Dr. Cinzia Da Và presents on climate change and renewable energy. Photo: Stefan Ritt.

These last days gave each of us time to learn more about nuclear technologie, execute radiation measurements firsthand and evaluate the results, rounding off our educational trip to Fukushima.

Besides the educational focus of the trip, it was also a cultural exchange that we thoroughly enjoyed. We were able to make friends with many people from Japan and other south-east Asian countries such as Malaysia, Indonesia and more. Even though we were all from different cultures and societies, it was easy to find common ground and have a good time together. Even though the days were long and the weather was hot, everyone stayed motivated until the end and most people still got together for a drink in the evening. All in all, this was an incredible experience for us, and we are thankful towards Prof. Nomachi and the University of Hamburg for making it possible.

Photo: Masashi Kaneta

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