

JSPS Summer Programme 2018

What to Expect from your Summer in Japan

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Research Programme

- PhD student studying the effects of radiation on aquatic wildlife
- Comparing effects of radiation in the lab with the impacts of nuclear accidents
- Attended JSPS Summer Programme in 2017

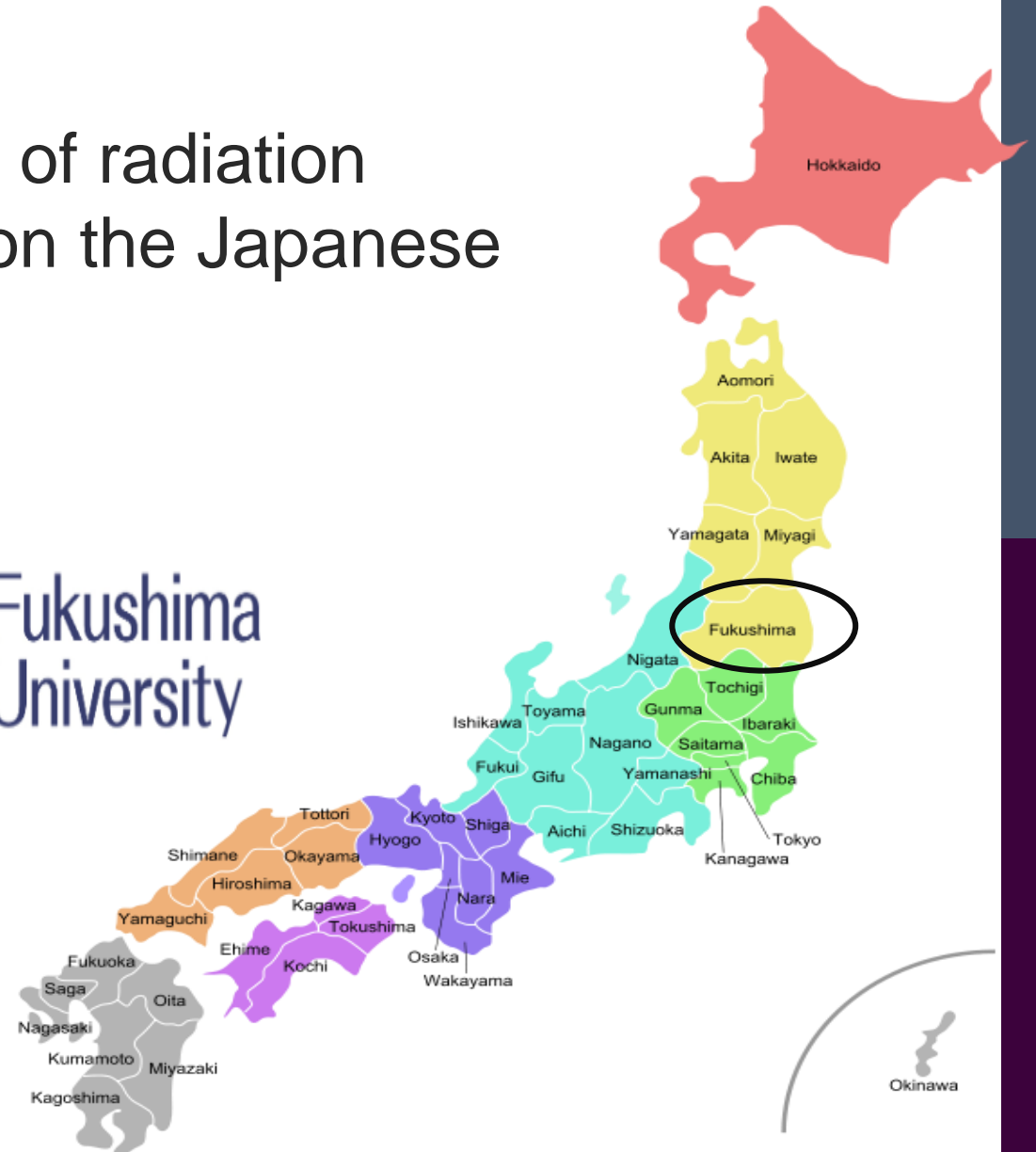


Research in Japan

- Research project studying the impacts of radiation from the Fukushima nuclear accident on the Japanese Mitten Crab



Japanese Mitten Crab,
Eriocheir japonica



Your Research Experience

- Every institute is different!
- Long working hours/weekend work
- Participate in seminars/events at your institution





Preparations before Arrival

- Bring 2 Bags - one for orientation week and one to send to host institute
- Prepare for hot (and very humid!) weather. Rainy season is during June/July
- Bring money for first couple of weeks – around ¥50,000 preferred
- Gifts for host researcher/homestay family a nice idea
- Business Cards/Poster for Orientation



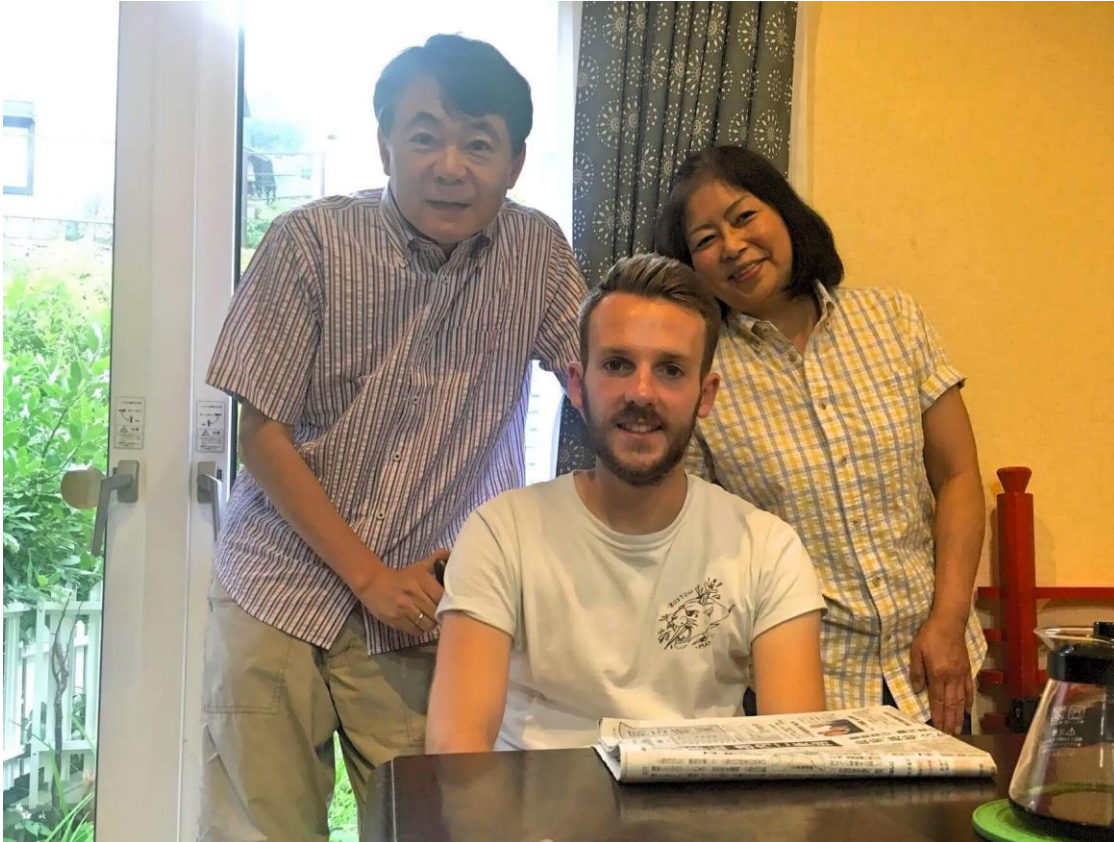
Orientation at SOKENDAI

- Language Classes/Cultural Experiences
- Networking Opportunities
- Visit to Kamakura!
- Have your poster prepared - fabric is a good idea



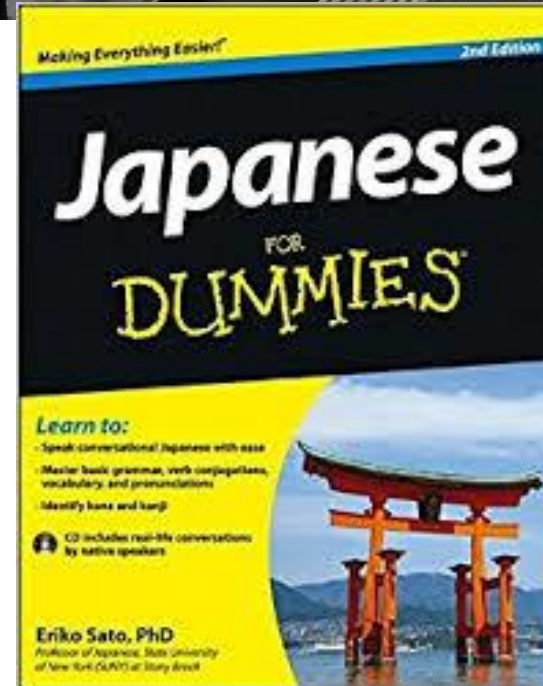
Homestay

- Good idea to email your host in advance
- A small gift is a nice idea



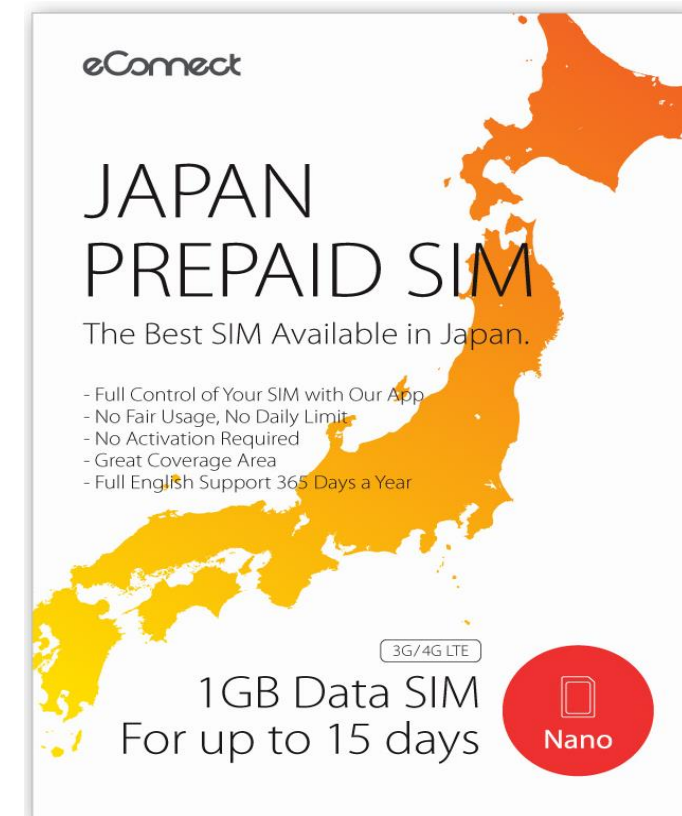
Language & Culture

- Try and learn some basic phrases in advance; a few phrases go a long way!
- Opportunities to continue Japanese study at host institute
- English may not be widely spoken in your area
- Useful apps: Google Translate, Kanji Connect, Memory Hint & DuoLingo



WiFi & Internet Access

- WiFi Access may be limited – Pocket WiFi can be costly
- WiFi/LAN access at accommodation and research institutes
- Can pre-order SIM card and pocket wifi for airport collection



Travel

- Many Universities may close for Obon in Mid August; opportunity to travel or take research trips, conferences – be sure to explore local area!



Goshiki-numa & Mount Bandai, Fukushima

Food




- Amazing food – but vegetarianism may be difficult!

Festivals



Maintaining Research Links

- Stay connected with the JSPS Alumni Association
- Be aware of opportunities for follow on funding
- Stay in Contact with your Host Researcher!
- <http://www.jsps.org/funding/>



Radiocaesium Uptake and Effects in the Japanese Mitten Crab, *Eriocheir japonica*, at Fukushima

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Introduction

The Japanese Mitten Crab, *Eriocheir japonica* (See Fig. 1) is a commercially and ecologically important species distributed in rivers and shallow coastal areas across areas of Japan, Taiwan and Korea. Crabs are one of the International Commission on Radiological Protection's (ICRP) reference animals and plants, meaning these organisms are important models in radioecology. However, at present no data exists regarding radiation contamination and potential effects on *E. japonica* at Fukushima.

This study aimed to:

- Assess the uptake of radiocaesium (¹³⁴Cs + ¹³⁷Cs) in *E. japonica* from areas of varying contamination at Fukushima
- Evaluate developmental effects of radiation exposure in *E. japonica*

Methods

- Mitten crabs collected from four sites located 4 – 44km in distance from the FDNPP (Fig. 2)
- Radiocaesium analysed in sediment and crabs using a high purity germanium detector
- Levels of radiocaesium assessed in range of biological tissues in *E. japonica*: muscle, gill, gonad, hepatopancreas and carapace
- Developmental effects of radiation exposure assessed using fluctuating asymmetry (FA) technique on five morphological characteristics
- Dose rates to *E. japonica* calculated based on activity concentrations of ¹³⁴Cs and ¹³⁷Cs in sediment, water and crabs.

Results

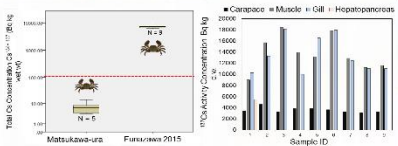


Figure 3 – Radiocaesium contamination in whole *E. japonica* individuals (left) and individual tissues in *E. japonica* from Fukushima (¹³⁴Cs only). Japanese regulatory limit is indicated by

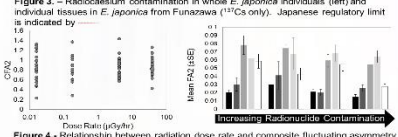


Figure 4 – Relationship between radiation dose rate and composite fluctuating asymmetry (left) and size-corrected asymmetry in individual traits along a gradient of radiation contamination (right)

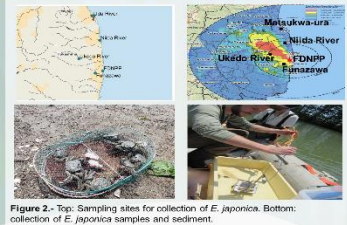




Figure 2 – Top: Sampling sites for collection of *E. japonica*. Bottom: collection of *E. japonica* samples and sediment.


- Preliminary data (¹³⁴Cs + ¹³⁷Cs Bq kg wet weight) for whole *E. japonica* individuals ranged from **6.92 ± 3.61 at Matsukawa-ura to 7346.39 ± 1759.62 at Funazawa** (See Fig. 3).
- Highest radiocaesium accumulation (¹³⁷Cs Bq kg dry weight) found in **muscle tissue of *E. japonica*** (See Fig. 3).
- Preliminary data suggests mitten crabs at Fukushima are ~ **60 times above Japanese regulatory limit for consumption**
- Maximum dose rates to crabs calculated to be 38.1 µGy/hr**
- No significant relationship between radiation dose rate and composite fluctuating asymmetry** (developmental stability) of mitten crabs at Fukushima (See Fig. 4).
- Significant difference in levels of fluctuating asymmetry between morphological characteristics** (See Fig. 4).


Summary & Importance of Findings for the Public

- Japanese mitten crabs are an important species for inland fisheries and are used as models in environmental radiation protection
- This study is the first to consider radiation contamination of Japanese mitten crabs at Fukushima; these findings will enhance food safety and contribute towards long-term understanding of contamination in freshwater systems in Fukushima prefecture
- Despite chronic radiation exposure, no biological effects were found in mitten crabs at Fukushima. This study is the first to assess potential biological effects of chronic radiation exposure on aquatic wildlife at Fukushima









Useful Resources & Tips

- Japan Guide (<https://www.japan-guide.com/>)
- Opportunity to stay on and travel after programme ends (90 Day Visa)
- Read all documents from JSPS beforehand
- www.hyperdia.com for travel information



Enjoy!