

報告<SSH米国海外研修>2学年参加者

12月9日(月)~14日(土)に今回で4年目となる上記の研修が実施されました。世界遺産に登録されている米国のヨセミテ国立公園で、現地のネイチャーガイドの指導のもとフィールドワークを体験しました。サンフランシスコ市ではスタンフォード大学の特別連携講義を受けたりNASA、Intel等の研究施設で見学・研修を受けました。また、世界最大級の国際学会AGU(米国地球物理学会)に参加登録して科学者と交流するなど、貴重な体験をしました。参加生徒による記録より英語で報告します。

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The First Day

We gathered at Yashiro Kokomae station. We went to Ueda station by train and went to Ueno station by Asama Shinkansen. At 13:00, we got to Narita Airport by Keisei Skyliner. We thought that we would spend a lot of time for having a check of baggage and departure procedures, but actually it took only a little time and we got on the airplane smoothly. At 17:00, we left Narita Airport for America!

The flight attendants spoke in many kinds of languages, so we felt that we were getting on an international flight. We could see only a few Japanese around us. The in-flight meal was so good! The time difference between the two countries prevented me from sleeping well.

After nine hours flight, we arrived in America at 9:00(local time). We finished entry procedures. Now, Let's go to Yosemite!

While traveling, we could see huge farmlands, Mediterranean farm products (almonds, grapes etc...), big tracks and four-lane roads. We felt the vastness of America! We came into the mountain, everything outside the window was blanketed with snow, as far as the eye could see. Because of the fatigue of the long journey and the function of the parasympathetic nerve caused by our full stomach with the buffet, some of us were sleeping. But some of us, though we are from Nagano, were moved by the snow scene.

After the entrance procedure of Yosemite National Park, we through the Arch Rock (the tunnel made of rock) first. It was narrow and had an impact. We went to the Tunnel View and saw the whole Yosemite Valley. After that, we looked around the sights of Yosemite, for example, the El Capitan(monolith), the Half Dome and Yosemite Fall. In addition, we heard that if we would be able to gaze at the Bridalveil Fall for one minute without any blink, we would get married next year.



At 18:00, we arrived at the Hotel (Yosemite View Lodge). Before the dinner, we encountered a bear. When it noticed us, it ran away at once. At 19:00, we ate dinner at the restaurant in the lodge. We went to bed early in order to prepare for tomorrow training in Yosemite.

The Second day



We got up at 6:00. After breakfast, we took water from the river on the back of the restaurant. The water was so cold!

At 8:30, we left the hotel. After a break, we went to the Visitor Center. We learned the origin of Yosemite. Many replicas of the animals and plants living in Yosemite were displayed attractively.

people who were engaged in building Yosemite National Park gave us an instructive explanation.

After that, we met a ranger and the training began. We learned about the origin of high rocks around us while walking around in the Yosemite Valley. These rocks are made of igneous rocks (mainly granite) of the Sierra Nevada mountains. And the proportions of their ingredients vary according to the place or area. So, although they were made of the same rock, they looked like different rocks.



(The ranger had a lot of rock samples). It looked like cookies.

In addition, Half Dome was sharpened and formed during the glacial epoch. The traces of topography formed by glaciers would disappear during the next glacial epoch. So, though it is unknown how many times the glacial epochs have come, but the traces have proved they came at least three times. Probably it came three or more times. We also learned the sharpening process through the demonstration.

After having parted from the ranger, we saw the Yosemite Fall and the Bridalveil Fall while taking water to be used for the experiment. But, in some places, we couldn't take water because of the freezing of the river. While traveling, we encountered wild deer and migratory crows.

We went back to the hotel. When I was watching TV, I found that two different times were shown on TV. There is a time difference between the West and the East in America, so the two times were shown on TV.

After dinner, we went to shop, cooked and wrote a diary.

The Third Day

We got up at 6:30 and left Yosemite for Silicon Valley. It took four hours to get there. We saw cows grazing in the huge pasture and wind turbines through the bus windows. We reached NASA's Ames Aeronautical Laboratory. There was a spherical screen which showed the ocean currents in real time. This screen also

shows the atmospheric conditions and how the waves of an earthquake travel. We watched the scene of the back-and-forth movement of the ground in the aftermath of the Tohoku Earthquake in 2011. We also learned there were swirling ocean currents. In the model of the space shuttle, we learned about the experiments on the growth of a frog in the space and the project of exploration to the Mars. NASA has applied the results of these experiments to medical care. The staff gladly answered lots of our questions such as “if I stay in the space, can I stay young like *Urashimataro*?” We visited the Intel Museum

After visiting NASA. We learned the history of computers and mechanism of semiconductors. We felt how deep computer science is by getting know about Moore’s Law, which says computer processors double in complexity every 24 months. We watched the most advanced techniques in this museum.



The Fourth day



We got up at 7:00 and went to the venue of the AGU (American Geology Union), where we walked around to know what the conference was like. A lot of researchers from all over the world gathered there and discussed their research. We got an explanation about the AGU by Mr. Nakamura, who studies at Atmosphere and Ocean Research Institute, University of Tokyo. We planned to focus on Hydrology connecting to the research conducted by ourselves. There were so many posters that we couldn’t see all of them. We got an explanation about some research and asked questions. It was difficult to talk about scientific topics with researchers, but we could make a good remark. We realized the importance of English because all of the people from various countries spoke English as an international language.

We left the AGU for Stanford University. We visited the Yamamoto laboratory to take a lecture about quantum mechanics by Mr. Zhe Wang, who does research there. The contents of the lecture were about solving

nonlinear problems by using light.

After the lecture, we visited the laboratory. A lot of lens and liquid helium were used for the research. We felt how abundant the facility is and became interested in quantum mechanics.

Finally, we visited the Academy of science, a museum which is one of the most considerate toward the environment. There were various exhibitions which we couldn't see in Japan. At first we were guided to the "Green roof". To our surprise, it is alive; Plants on the roof make an ecosystem without any man-made factors. During this tour we were able to visit special rooms which is prohibited from entering except authorized people. For example, we went into a security room displaying a lot of precious minerals, and into a biological specimen room. We also visited a laboratory where dissection was conducted. After the guidance, we visited the tropical botanical garden and aquarium. We watched various reptiles like rare colorful frogs. We enjoyed watching beautiful butterflies and birds flying from tree to tree. Two doors were installed at the entrance of the garden so that they could prevent animals from escaping from the garden.

We experienced so many things we couldn't have in daily lives. Thank you!!

- 自分にとって初めての海外であり、現地の人に自分の言うことが伝わるか、会話できるか不安でしたが、意外と通じるものだと実感した。会話がきちんと成立した例は少なかったかもしれないが、短いやり取りができて嬉しかったのと同時に、相手の言っていることが聞き取れない悔しさも大きかった。
- AGUは一番刺激を受けた研修だった。研究者や一般の人など、様々な国の人が英語で討論し合っている姿は、英語の必要性を感じた。ポスターを見ているときに「あなたはこの発表どう思う？」と尋ねられたときは驚いたが、このような機会はとてもおもしろいと思った。
- スタンフォード大学での講義や、アカデミーオブサイエンスでのバックヤードツアーなど、普段経験できないことを体験でき、研修で学んだものや気づいたことをこれからに生かしたいと思う。
- ネイティブ英語に触れ、このグローバル化が進む社会において英語の重要さが身にしみた。現地の人に英語で説明してもらい、それを理解するのにとても苦労した。
- ヨセミテ国立公園では広大な自然を感じることができ、地理の授業で学んだ景色や動物を見ることができた。
- AGUでは様々な国の人が集まる中で、共通言語である英語は、グローバル化が進むこれからの社会で働く最低条件であると思った。
- NASAの施設では、スペースシャトル内の様子を体験し、宇宙で行っている実験や、人間が宇宙に行くとなんかどうなるかなど説明してもらい、また英語で質問ができてよかった。
- ヨセミテ国立公園では、地形のでき方などとてもわかりやすい英語で説明していただき理解できたし、英語で質問することもでき、理解を深めることができた。
- AGUは最も印象に残っているが、世界中から多くの研究が集まり、ポスターセッションしているに圧倒されたし、自分も質問してみることで国際学会の様子が分かった。
- 普段、英語の勉強をしているが、現地での英語は「模試やテストのため」ではなく「相手とコミュニケーションをとるための手段」であり、すらすら言葉が出てこないことが不便だった。積極性などは、私たち日本人が見習わなければならないと思った。