

**21st Century COE of Flow Dynamics
F2007 International Internship Program
Achievement Report**

Date: 03/08/2007

Name: Cahuzac Adrien

Academic year: 2007

Department: Department of aerospace engineering

Institutions: Institute of Fluids dynamics

Research topic in International Internship Program:

Asymmetry impact on the characteristics of the Busemann biplane

Accepting supervisor in Tohoku University: Pr. Obayashi

Period of Internship: 05 / 06 / 2007 ~ 31 / 08 / 2007
 Day Month Year Day Month Year

Date	Itinerary during your stay in Japan (places of visit, etc.)
17/06/2006	Visit of Matsushima, islands and temples.
06/07/2007	Visit of Yamadera.
14-16/07/2007	Visit of Tokyo : Asakusa, Shinjuku, Shibuya, Roppongi, Tokyo Tower, park of Ueno, Harajuku and Yoyogi-koen, an act in the Kabuki-za and Akihabara. In Yokohama a walk around Minato Mirai and the island of Shinko.
28-29/07/2007	Visit of Nikko, the temples, the Shin-kyo bridge a walk in the stone park. Visit of Kinugawa and a bath at an onsen. A great experience of train travel with trains being late due to the heavy rain.
11-18/08/2007	Visit of Tokyo again with some friends from my university during Hanabi. Then visit of Kyoto during Daimon-ji Yaki and Todai-ji in Nara.

Outline the scientific activities you conducted while in Tohoku University (e.g. experiments, discussions, research trips)

In a first time I had to learn about both the project of Busemann biplane and CFD (computational fluids dynamics): Reading papers, discussing with K. Yamashita, reading some books and in parallel getting used to the super-calculator interface.

In a second time I adapted the grid-generator to be able to change the geometry of the wing easily. At this point, I was able to handle the computations and began to discuss in details what the present problems of the Busemann biplane were and which one should I study.

I started than to study the “staggered configuration of the Busemann biplane” trying to find the pros and cons using numerical analysis. Finally I am presently writing a report of my work for the laboratory and one for my school in parallel of some calculations to confirm my results.

Give your impressions of the present state of science in Tohoku University in your field

What really impressed me in Tohoku University is the means I had the chance to have at my disposal : the super-calculator. But I was quite astonished too by the equipment for experiments. I saw the little concerned by the Busemann biplane’s project, but it impressed me.

Since I did not really talked about science with the other students in the lab (except with Mr. Yamashita of course) it is hard to judge their scientific level. But with the means they have and the time they spend in the laboratory I can guess they are doing a good research job.

Give your future plan of submitting a paper

Give 21st Century COE of Flow Dynamics your comments or suggestions particularly with regard to the internship program

First of all, I was really impressed by the quality of my accommodation and the fact it was so close of both the university and the city center.

Something that bothered me was that the first two weeks, I felt quite lost about what I was expected to do. In fact my subject of research was not decided yet since I had to choose one discussing with Mr. Yamashita. It was hard for me because I did not know a lot about the project and most of the papers about it were in Japanese. It was good to be able to chose the topic, but it would have been better if they had suggested me something first.

General impression you had of Sendai and Japan during your stay

I did not really appreciate Sendai first : a big city so different from French ones and not famous for tourism. But I rapidly changed my mind, in fact it is close to many beautiful places such as Matsushima and Yamadera, and after visiting Tokyo, I felt really happy to come back to a smaller town that I knew.

I really appreciated my stay here despite some cultural or weather differences were strange to apprehend (work hours, rainy season, high humidity ratio and sun rising really early). People are always really nice with foreigners (what is not always the case in France) and seemed always happy to talk with us. But one of the cultural differences that made me feel uncomfortable, is that we never know if we are bothering Japanese people.

Finally, I give a good mark to Japanese restaurants in general : I really like Japanese food and they are so cheaper than Europeans ones. In France, I go to the restaurant only for special occasions such as birthdays !