

エクステンジプログラム報告書

1. 招へい者（派遣者）の氏名と滞在期間、滞在先を全員分書いてください

招へい者氏名：Téodolina Lopez

滞在期間：2009年11月30日～12月27日

滞在先：惑星科学研究センター（CPS）

会津大学先端情報科学センター，東京大学地震研究所

2. 受け入れ担当者の氏名と所属

鈴木絢子（CPS）

中村昭子（CPS / 神戸大学大学院理学研究科地球惑星科学専攻）

栗田敬（東京大学地震研究所）

北里宏平（会津大学先端情報科学センター）

3. 招へい（派遣）の目的を2-3行で

フランス・ミディピレネー天文台とのスタッフ・院生の継続的な交流を通じて，観測衛星の可視画像・近赤外スペクトルデータ解析や，粉体の光散乱・熱特性の分野において，手法横断的な議論・共同研究を行うネットワークを形成することが目的である。

共同研究ネットワークの複層化（研究者世代間の拡がり）・多様化（研究分野の拡がり）・多重化（研究者間の共同研究，フランスの研究者による日本の若手研究者の教育，日本の研究者によるフランスの若手研究者の教育）を図るため，ミディピレネー天文台の D. Baratoux 准教授（Lopez 氏の指導教員でもある）も日本学術振興会の短期外国人招へい研究者として同時期に招へいした。

4. 成果報告（用紙が不足の場合は足してください）

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Report on the scientific exchange between CPS Japan and the Observatory of Midi – Pyrénées, TOULOUSE, France.

My scientific visit in the Center of Planetary Science, in Kobe, began the November 30th 2009 until the December 27th.

My PhD subject concerns of a possible atmospheric air circulation on the martian subsurface. This work is based on a previous PhD thesis done also on the Observatory of Midi-Pyrénées, which studied the existence of air convection on a little quiescent volcanic cone on Piton de la Fournaise, Réunion Island. Applying the results obtained from Earth, we try to search for evidences of air circulation on specific regions, on Mars. The conditions required for the existence of this phenomenon is permeability and extensive stresses. On Mars, regions presenting these conditions are volcanic like Cerberus Fossae and Arsia Mons. Cerberus Fossae are fractures presenting abnormally high night temperature which can be explained by air convection within the fractures. In the case of Arsia Mons, we are interested on the thermal behaviour of specific pit craters and collapsed sinuous rilles. Our objective is to demonstrate that these thermal observations are coherent with the presence of an airflow circulation along the flanks of Arsia Mons. Geology, geometry and radiative effects have been documented in details for the pit craters, the collapsed sinuous rilles and also for Cerberus Fossae and they show any influence on the thermal pattern.

My exchange was first lead on by the CPS exchange of my PhD advisor, David Baratoux, and it was for me a great opportunity to meet and have very fruitful exchanges with Japanese scientists. It also permitted me to discuss with some PhD student and to be aware of the different way of PhD students' and scientists' work, in comparison with France. I spent the first two weeks in the Center of Planetary Science, working on my article. Then I spent one week in the University of Aizu. Here, I had interesting exchanges on thermal data and on the different possibility of formations of martian pit craters on comparing with the newly one discovered on the moon by the Kaguya mission. At last, I spent three days in the Earthquake Research Institute, in Tokyo with Kurita-san to have some scientific discussion on possible exchanges subsurface-atmosphere, where air circulation could be an important factor.

During this trip, I had the opportunity to present my work in seminars, in Kobe, Aizu and having an informal discussion with Kurita-san and some of his students. Unfortunately I could not stay for the CPS International School of Planetary Sciences because of lectures in France, during the same period.

To conclude, my exchange with the Center of Planetary Science was very interesting and fruitful and I have learned many things. At last, getting in touch with a culture so fundamentally different during one month was a very good experience. I think it will be a positive point for my further work even if it is not on the research domain.