国際共同研究 中間報告（ 課題番号：28W-01）

課題名： Geophysical Observations of Unsteadiness Timescales in Volcanic Explosions: toward an Integral Dynamic Model of Mass Flow Variations in Volcanic Plumes
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平成２８年度 実施状況

Observations indicate that mass flux of gas-particle outputs during explosive volcanic eruptions can dramatically change showing high unsteadiness even during short-lived explosions. How the timescale of these fluctuations imprint on the development of the resulting volcanic plume is far from being well understood. Key question in this project is: Which mass flux fluctuations are decaying at what time scale in the eruption column?

Methods to be used in this project are Doppler radar as well as high speed video observations of eruption columns at Sakurajima volcano. Following the approval of the grant during the summer in 2016 we stared working on how to acquire the necessary licenses to operate up to three micro radar systems at Sakurajima volcano. Applications for the licenses were finally applied for early April this year. In the meantime we have acquired the necessary hardware to record the data in Japan and we have adjusted our acquisition software for the radar system to run under Windows 10, which was a major effort as it used to run under windows XP. We visited Japan in March 2017 to install the tripod for the radar system as well as necessary software on the computer system which will be recording the radar data. Access to the network in Japan has been worked out as well as installation sites at Kurokami Branch Observatory. Furthermore we have developed a remote control system for a high speed video camera (this will be tested at Stromboli volcano in Italy this June) to acquire HS video footage of eruptions. The video is triggered by the radar.

平成 ２９年度 実施計画

In order to ensure proper lightning protection of the instruments at Kurokami the communication between the radar systems and the computer has to be modified such that fiber optic cables can be used. Furthermore, the wiring of most of the station has to be redone in order to improve lightning protection. This work will be carried out from June onwards and will be finished in September. According to Nippon NIPPON HAKUYO electronics, Ltd, the company who is carrying out the application for our radar licenses, on site inspection of the instruments should be possible starting late September of this year. We will therefore prepare the installation site late September for the inspection. Following a successful inspection we will operate at least one radar system starting early October 2017 continuously. We hope to receive the permanent licenses three month after the inspection. First results of the observations will then be presented in April 2018 at EGU in Vienna.