Unzen Scientific Drilling Project: Output of Phase I and the scope of Phase II

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Unzen Scientific Drilling Project, a six-year term project, started in April 1999, and is and is divided into two phases. Phase I consists of drilling two boreholes into the flanks of Unzen Volcano and conducting associated researches mainly to reveal the three-dimensional structure and the growth history of the volcano. Phase II is drilling into the conduit of the 1990-95 magmas to clarify the ascending and degassing mechanism of magmas and to evaluate eruption models made during the 1990-95 eruptions. We are planning to submit a proposal to ICDP that Phase II should be a joint venture between STA project and ICDP. International joint researches in the limited scale have already started even in the Phase I, but will be expanded in the Phase II by the collaboration and support of ICDP.

The first drilling at the northeastern flank of the volcano is going to be finished at the depth of 750 m below the surface in the end of March 2000. The hole is considered to have reached to the pre-Unzen volcanic rocks, but we need to confirm it by the detail examinations of cores. Average core recovery rate exceeded 90% even if most of the obtained cores were non- to loosely consolidated volcaniclastic materials. Against our expectation to collect mostly thick andesite-dacite lava flows of Older Unzen Volcano (0.2-0.5 Ma), more than 90 % of obtained cores are volcaniclastic materials, either block and ash flow (pyroclastic flow with dense essential blocks) deposits or secondary debris flow deposits. Such deposits have been rarely recognized among Older Unzen Volcano on surface. Another significant result is that pyroclastic flow deposits with abundant vesicular pumices were recovered in the bottom of Unzen Volcano. Unzen Volcano has been considered to have repeated non violently explosive eruptions whole of its life particularly due to the lack of pumice deposits. The recovery of vesiculated pumices is clear evidence that Unzen made explosive eruptions in its early stage of activity. We will soon start geological, petrological, geochemical and geochronological studies on the obtained core samples in detail. We are expecting to significantly expand our knowledge on Unzen Volcano particularly to reconstruct its entire eruptive history in the past half million years. The second drilling down to about 1200 m is currently planed to start in summer of 2000 at the eastern foot of the volcano. In Younger Unzen Volcano stage during the past 100,000 years, dome-collapse type block and ash flows are estimated to have been supplied from the summit area toward east. We are expecting to reconstruct the detailed eruption history in the past 100,000 years.