

UNZEN VOLCANO-SCIENTIFIC DRILLING PROJECT

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To understand eruption mechanisms, growing-and-failure histories and magma processes for volcanoes, the most effective way is through scientific drilling into an active well-studied volcano where the influences of eruption are still present, such as thermal effects and material transport. The first challenge that reaches these goals started in 1999 at Unzen Volcano, Japan, as the six-year comprehensive research (USDP). Unzen Volcano was nominated as one of the Decade Volcanoes of the United Nation, since it represents an important type of dangerous volcano. The 1990-95 eruption at Unzen (dacite dome-growth and frequent generation of collapse-type pyroclastic flows) was monitored and investigated in detail, yielding several models on the eruption mechanisms and magmatic processes. The focus of scientific drilling is to further clarify the regional crustal structure and magma evolution processes that control the manner of growth and failure of the volcano, testing these models. In addition, investigations of the processes of conduit formation, magma degassing, and magma's interaction with groundwater will add to our understanding of these types of volcanoes, and help to mitigate volcanic hazards. Two drill holes down to 700 to 1000 m in the eastern flank of the volcano are scheduled in the first phase (3 yrs), and the drilling into the hot conduit of the dacite dome is jointly with ICDP in the second phase (next 3 yrs). The drilling holes are also used for monitoring of future eruptions.