

# Japan Geoscience Union Meeting 2011

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SVC007-P02

Room:Convention Hall

Time:May 27 10:30-13:00

## Preliminary $^{40}\text{Ar}/^{39}\text{Ar}$ Ages of the Shatsky Rise, IODP Expedition 324

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The most crucial objective of IODP Expedition 324 to the Shatsky Rise is determining its age and evolution by applying high-precision  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology. The achieved 160 to 180 m of penetration depths in the volcanic basement of the two main volcanic edifices on Shatsky Rise, the TAMU and ORI Massifs, have provided relatively fresh material (compared to dredge sampling) in Holes U1347A and U1350A. This presentation focuses solely on the outcome of a preliminary test run of 12 groundmass samples and 4 plagioclase mineral separates from a selection of stratigraphic units within these two holes, as carried out on our MAP 215-50 mass spectrometer in the  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology laboratory at Oregon State University (USA). This preliminary test is required to establish in detail what the outgassing behaviors are of these very low (<0.1-0.2 wt%) K<sub>2</sub>O samples from Shatsky Rise, to estimate how much radiogenic  $^{40}\text{Ar}^*$  has in fact been generated in these ~140-146 Ma samples, to determine how much the samples have been affected by alteration, and to allow us to high-grade the intricate sample preparation protocols accordingly. Following this preliminary test, the same samples (plus a large suite of additional samples) will be run again on a newly-funded multicollector ARGUS VI noble gas mass spectrometer. Because the sensitivity of the ARGUS VI system is at least 3 times higher when run in an all-Faraday multicollector mode or 20-30 times higher when run in the ion-counting discrete multiplier-mode, it is expected that these very low-K<sub>2</sub>O samples can be run using a smaller sample size while achieving higher precisions. The overall goal is to achieve age dates that are better than 0.5 Ma in 2 sigma precision and hopefully approaching the 0.3 Ma mark. This final project will be carried out in close collaboration with Drs. M. Widdowson and K. Heydolph. Together, we will provide key intercalibration results from two international  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology laboratory using laserprobe incremental heating techniques.

Keywords: Age progression, Large Igneous Province,  $^{40}\text{Ar}/^{39}\text{Ar}$  Geochronology, Jurassic, Pacific Plate, TAMU Massif