

## Senbongi excursion: the Jamaica/Biwa I event recorded in a lava flow in Unzen.

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We conducted the paleomagnetic study of Unzen volcano in 2001, and already reported the characters of paleomagnetic directions. Here we report on an excursion found in a lava flow in Unzen volcano.

In the Unzen paleomagnetic study, all but one site mean directions showed normal polarity, i. e. the VGP latitudes were higher than 50N, as expected by their ages. The exception was a site from an acidic lava flow in Minami Senbongi area (UZ09), which gave a VGP latitude as low as 8.3N. The intermediate direction seems to have recorded an excursion, though we could not find another outcrop from the lava flow. The outcrop is on the edge of a gentle ridge, which seems to be formed by the lava flow itself, so that there is no possibility to be a large block fell off from the higher part. Another evidence supporting the excursion was the magnetic direction of pyroclastic flow (pcf) site UZ22. The pcf was distributed close to the UZ09 lava flow site, and thought to be erupted in the same age. Progressive thermal demagnetization revealed that the most of the samples in UZ22 site had two components. The direction of the components are widely scattered but there is a cluster close to the direction of the UZ09. It is explained supposing that 1) those lava and pcf were erupted in a single event, 2) several blocks in UZ22 were settled at about 350C in temperature, and 3) the eruption occurred at the time of excursion. Here, we call the excursion as the Senbongi excursion.

The K-Ar age of UZ09 was measured as 197 $\pm$ 17ka. Geomagnetic excursion or short event at about 200ka was first reported by Wollin et al. (1971), Ryan and Flood (1972), and Kawai et al. (1972) from marine or lacustrine sediment cores. Champion et al. (1988) reviewed the geomagnetic events in Brunhes chron and called the 200ka event as Jamaica/Biwa I. Herrero-Bervera et al. (1994) carried out the Ar/Ar dating of a tuff layer stratigraphically very close to the known geomagnetic event, which is seen in sediments from many lakes in western USA and correlate well each other, and found 218 $\pm$ 10ka in age. They named it as Pringle Falls polarity episode. Among other reports of the ~200ka geomagnetic episode, Channell et al. (1997) documented precise paleomagnetic direction log and the oxygen isotope dates of the event, using APC cores of sediment drift retrieved off Iceland (ODP Site 983), and named as Iceland Basin event. Channell (1999) argued that the Iceland Basin records and dates of the ~200ka event is so much improved that it should be referred as the Iceland Basin event. They also argued the age of Iceland Basin event (189-186ka) and Pringle Fall episode are distinguishable, although they could not find clear sign of Pringle Fall episode in the cores. As the relation of those events cannot be said to be well established, the name Jamaica/Biwa I may still be valid in the meaning of the event ~200ka as a whole.

Although it is not clear to which episode the Senbongi excursion shall be correlated, the age of Iceland Basin event is closer to the Senbongi excursion than the Pringle Falls. Thus, assuming the existence of two events around 200ka, the Iceland Basin event is better correlated. However, the ages of the Pringle Falls and Senbongi overlap each other in their error intervals, so we cannot rule out the possibility. In either case, it can be said to be well correlated to the Jamaica/Biwa I event.

The VGP of the Senbongi excursion is located at 9.3N 21.1E, at the central Africa. Interestingly, it is almost exactly on the VGP path of Iceland Basin Event. On the other hand, it does not match with the Pringle Falls path. Although the meaning of VGP at the time of intermediate polarity should be cautiously treated, the coincidence may support the correlation.