Balchit Obsidian (Upper Awash, Ethiopia)
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The small volcanic massif of Balchit is one of the Pliocene silicic centers of the Wechecha Formation (Addis Ababa Rift Embayment). It is located some 25 km SE of Addis Ababa and 7 km NE of Melka Kunture, on the left interfluve of the Awash river (see map). One Balchit obsidian was recently dated at 4.37±0.07 Ma by K-Ar (Chernet et al., 1998).

### Obsidian occurrences

The only recognized source of obsidian is the Balchit flat flow-dome, which offers a few kilometres square outcrop with a wide variety of eruptive facies (vertical and convolute fluidal structures, finely banded perlitic lava, spherulitic facies, massive obsidian, etc.). Remarkable amygdals up to metric lenses of pure and massive obsidian are scattered among the various lava facies. The obsidian colour is dominantly black but locally blue, green, red and beige colours have been observed.

As products of erosion, blocks, cobbles, pebbles and gravels are found in quaternary alluviums and in minor river beds and form secondary sources which were available for prehistoric groups (Kieffer et al., 2004).

![Convolute facies.](image)

![Vertical facies.](image)

![Unweathered massive block of obsidian.](image)

### ICP-MS analysis and comments

The trace element contents of two Balchit samples from the main obsidian-bearing lava flow and of nine obsidian pebbles from alluvial deposits were determined by ICP-MS at LGCA (Grenoble) and at SOFCAC (Southampton), using the same experimental procedure (Barrat et al., 2000).

Six obsidian pebbles were found to present the same (type A) elemental composition as the two Balchit obsidians and it is therefore possible that they were derived from the same mother-rock. The three other obsidian artefacts were systematically analysed and the authors believe that these artefacts might be related to a different obsidian source.

![Close-up view of obsidian artefacts.](image)

![Melka Kunture obsidians.](image)

### Conclusions

Field observations show that the large size of Simbrio Acheulian obsidian artefacts found in the area studied excludes a raw material procurement from the local alluvial deposits. This preliminary work shows that at least four geochemically different sources could have been exploited by ancient humans. These sources were not directly connected to Melka Kunture and a special attention was paid to obsidian artefacts and debris which might have been derived from the Balchit obsidian source.

Thus in order to deepen our understanding of the obsidian procurement strategies of Ancient Man, the next step (in progress) will be to draw a comprehensive map of the potential obsidian sources in the vicinity of the Melka Kunture area and to establish their geochemical fingerprinting.

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