# Geomorphological processes, forms and features in the surroundings of the Melka Kunture Paleolithic site, Ethiopia

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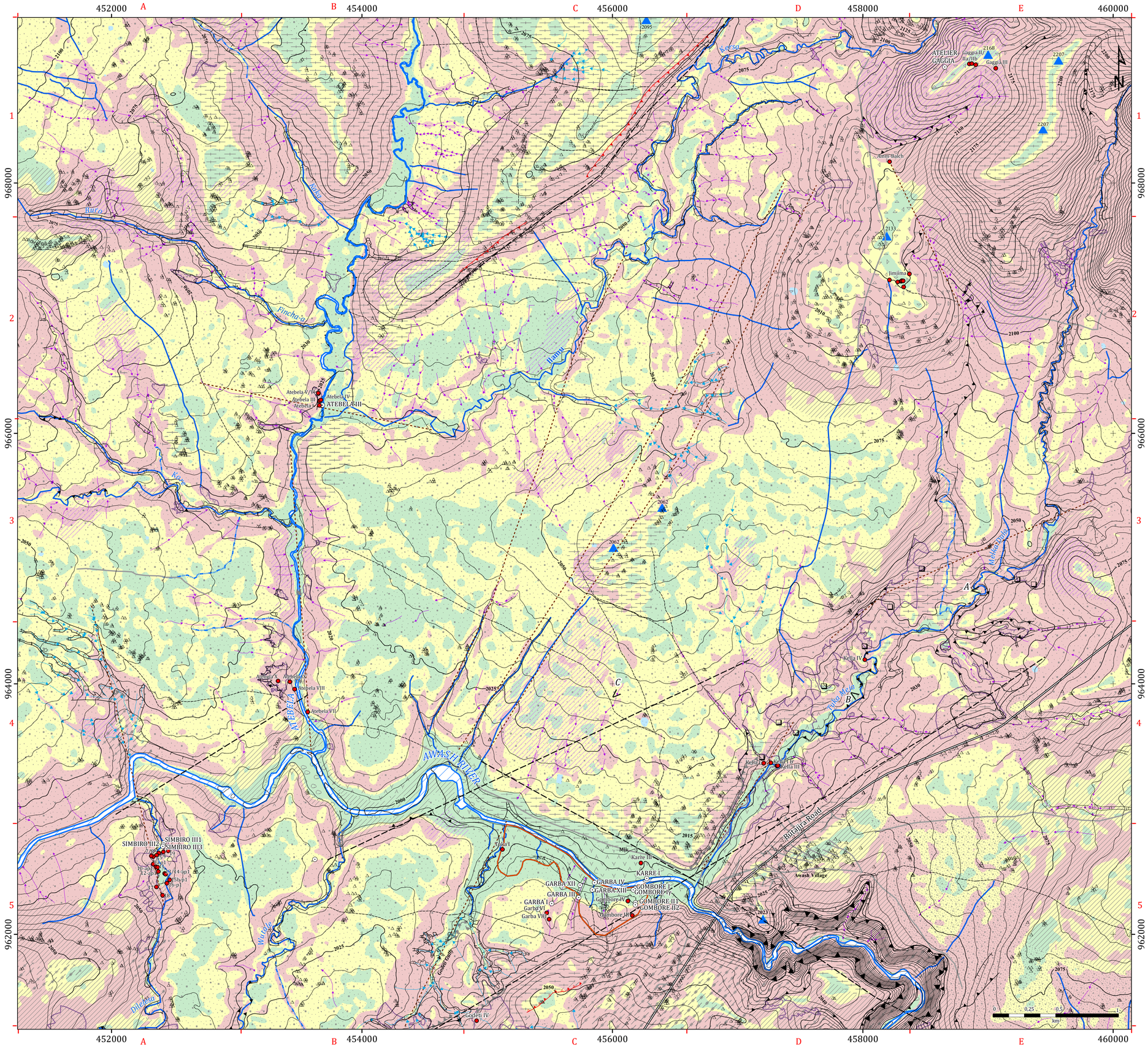


The main excavation area lies close to the convergence of the Upper Awash River with the Atebela tributary. This map shows the geomorphological features and processes that put Melka Kunture at risk of running water and gravitative phenomena. The main erosion landforms are sheet and gully erosion, badlands and gravitative processes such as toppling and small rockfalls.

Inset 1. East Africa

Inset 2. Study area in Oromia Region, Ethiopia

## EROSION LANDFORMS

- Dendritic Gully
- Discontinuous Gully
- Sheet erosion
- Badlands/ heavily eroded surfaces

## MORPHOMETRY DEGREES

- Break of slope 2
- Break of slope 4
- Break of slope 8
- Break of slope 16
- Break of slope 24

## HYDROLOGY

- River bankfull
- Cutoff meander
- Pond
- Ephemeral stream

## GRAVITATIVE LANDFORMS

- Rockfall/Toppling
- Rockslide

## STRUCTURAL ELEMENTS AND LANDFORMS

- Faults
- Hypotetic faults
- Fault scarp

## TOPOGRAPHY

- Contour 25 m
  Contour 5 m
- Main archeological area
- Summit altitude
- Quarries
- Hut-Tukul (round mud hut)
- Archeological excavations
- Archeological sites
- Primary road
- Service road

## POTENTIAL SOIL EROSION

**Based on Transport Capacity Index (TCI)**

- Low risk
- Medium risk
- High risk

## LITHOLOGY

UNCONSOLIDATED DEPOSITS

- Alluvial deposits - Holocene. Deposits consisting of recent alluvial gravels, sands, silts and shales.
- Soils - Holocene.

CONSOLIDATED ROCKS

- TkM- Upper Pleistocene/Holocene. Tuffaceus shale, alternating with level of weathered pumices and alluvial deposits.
- Kll - Middle Pleistocene. Ignimbritic tuff with fine vitroclastic structure and presence of vescicular pumices.
- Mlk - Lower/Middle Pleistocene. Fluvial and Lacustrine sediments interrupted by level of tuffs and pumices.
- Uwl - Lower Pliocene.Tuffs of phreato-magmatic and phreato-plinian origin.
- Wi - Lower Pliocene. Welded ignimbrites consisting of trachytes and rhyolites containing basaltic material.
- BOb - Lower Pliocene. Black banded lava and ignimbrites with obsidian layers.
- AIL - Upper Miocene. Mesocratic and leucocratic lava series, outcrops contain sporadic ryolitic tephra layers.
- Bas - Upper Miocene. Melanocratic to mesocratic lava series.

Lithology after Salvini et al. 2012 JoMs

Bank Erosion Tuka Meja stream

Tuka Meja Formation

Gully erosion- near the Awash village

Grid: UTM Zone 37N
Transverse Mercator Projection
Datum: WGS 1984
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*Web map available at: gdi.geographie.uni-tuebingen.de/melka/geomorphology.html*