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# Progress on the Plio-Pleistocene tephrostratigraphy in the Turkana Basin

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## Résumé

The Turkana Basin (Ethiopia/Kenya, East African Rift System) preserves a rich, over 4-million-year-long record of cultural, faunal, and geological evolution. While many key sites have been extensively studied for their paleoanthropological and paleoenvironmental significance, ongoing stratigraphic and geological investigations have increasingly highlighted the importance of tephra horizons as isochronous markers across the sedimentary record. Widespread Plio-Pleistocene tuffs in the northwestern part of the basin (e.g., Nariokotome, Nachukui) have long been correlated with sites east of Lake Turkana (e.g., Koobi Fora) and with the Shungura Formation in Ethiopia. However, notable chronological gaps remain in the tephrostratigraphic framework-particularly between (i) Pleistocene sediments in Ethiopia (e.g., Kibish, Chew Bahir) and other formations surrounding Lake Turkana, and (ii) > 3 Ma formations in the southeastern basin (e.g., Lothagam, Kanapoi) and other regional sites.

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To address these gaps, we have identified and analyzed tuffs from multiple localities south of the Turkwel River, in the southwestern portion of the basin. Major element analyses of well-preserved volcanic glass enabled robust correlations of three tuffs with the Lokochot and Tulu Bor tuffs. These findings introduce new chronostratigraphic markers for the southwestern basin and extend the known tephrostratigraphy of the broader region.

Furthermore, we correlate a tuff from Member I of the Kibish Formation with a horizon in the Chew Bahir paleolake record, extending the regional tephrostratigraphic framework to  $\sim 440$  ka. This provides a maximum age for the Omo I and II fossils at Kibish and narrows the temporal gap with the youngest tephras at Koobi Fora (e.g., the 740 ka Silbo Tuff). Ongoing work on tuffs sampled during 2024 field campaigns aims to expand this tephrostratigraphic framework further, potentially linking sites from northern localities down to the Kanapoi Formation in the southern basin.

**Mots-Clés:** tephra, tephrochronologie, tephrostratigraphie, géochimie, Turkana, Grand Rift Africain