Lake Bosumtwi – Recent discoveries and new opportunities for scientific research and education in planetary sciences

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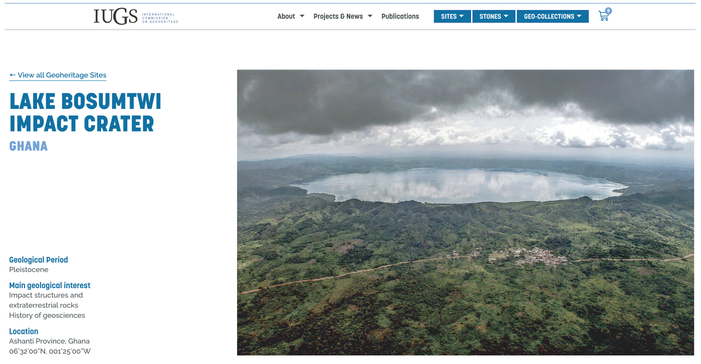
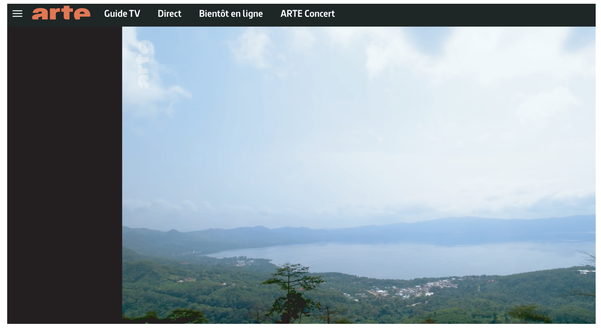
The 1.07 Ma Bosumtwi impact crater in Ghana is one of the best-preserved large impact structures on Earth [1,2]. It is the source crater of tektites, glassy distal ejecta that are found in the region of Daoukro (Côte d'Ivoire) as well as offshore West Africa in deepsea sediments. All these unique features, together with the lake sediments recording the climate of the past million years, led to a comprehensive international drilling project by ICDP in 2004 [3-6]. In addition, an enigmatic ring pattern observed for potassium (K) concentration in airborne radiometric maps was recently elucidated as a post-impact alteration mechanism, controlled by the erosion rate and topography of the crater [7,8]. These results are based on morphological analysis, field observations, and cosmogenic nuclide measurements, and have also been independently confirmed by numerical modeling of post-impact erosion. These authors also demonstrated that the morphology of the ejecta, characterized by an annular moat and a distal ridge, is analogous to that of fluidized ejecta on Mars, used as a proxy to decipher the history of sub-surface water reservoirs of the red planet [7]. These results emphasize that Lake Bosumtwi is an important object to address outstanding questions in geomorphology, impact and planetary sciences. The lake itself is a resource for a growing population, and a recreational area with much potential for geo/astro-education. However, is actually affected by artisanal mining, with potential hazards for the environment, and the quality of surface/subsurface waters.

Bosumtwi was recently selected as an IUGS Geoheritage site and was recognized in 2016 by UNESCO as a biosphere reserve.

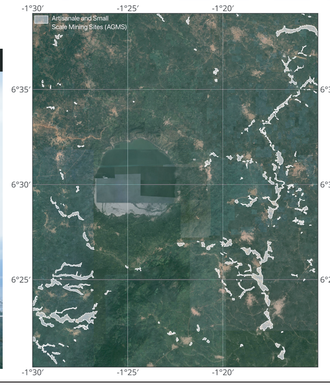


Bosumtwi in the spotlight

TV documentary Bosumtwi as a Martian Analogue (broadcasted in February 2026).



Map of small-scale and artisanal gold mining sites around Lake Bosumtwi.



The 5th edition of the Arab and Africa Impact Cratering and Astrogeology Conference (AICACV) held in Accra in November 2025, followed by a field excursion, was a decisive step strengthening collaboration in planetary science with Ghanaian scientists. It supported initiatives to both preserve and promote this unique natural site for astro/geo-education [9].

5TH ARAB AND AFRICA IMPACT CRATERING AND ASTROGEOLOGY CONFERENCE (AICAC V)

NOVEMBER 9 -15, 2025

Department of Earth Science
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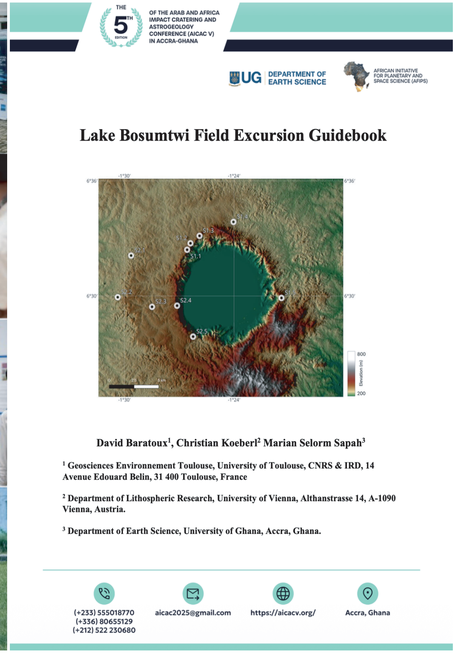

Post-conference field trip (a) Suevite boulder about 1500 m north of the crater rim, (b) Suevite boulder, same location as in (a), (c) road-cut exposure of impact breccia located east of the crater on top of the crater rim, (d) road-cut exposure of metasediments of the Birimian Supergroup, located on the crater rim towards the north-west entrance of the crater, (e) weathered breccia of Birimian metasediments located about 10 km from the crater center at the edge of the ejecta deposits, (f) an overview of the Bosumtwi impact crater from north-west on top of the crater rim looking north-east. Image credits: (a, c, d) Myriam Telus, (b) Cheikh Ahmadou Bamba Niang, (e) Wassim Fitouri, and (f) Marian Selorm Sapah.

Images at the pre-conference workshop and conference showing (a, b) group photographs of participants at the workshop and conference, respectively; (c, d) workshop participants engaging in hands-on activities; (e, f) cross section of participants during an oral session and at the exhibitions, respectively; (g, h) participants at the skygazing event. Image credits: Department of Earth Science, University of Ghana.

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