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Paper No. 20-1

Presentation Time: 8:05 AM

**WHEN DINOSAURS WALKED THROUGH DIAMONDS: CONSTRAINING THE AGE OF EARLY CRETACEOUS FOOTPRINTS IN VOLCANIC CRATER SEDIMENTS**

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The volcanic rocks of the Catoca Diamond Mine, located in northeastern Angola, were formed in a volcanic eruption ~118 million years ago (Ma). Early Cretaceous mammalian, crocodilian, and sauropod dinosaur footprints were discovered in crater lake sediments above ~118 Ma tuffitic kimberlites (Pervov et al., 2011). These footprints are among the relatively few vertebrate fossils from the Cretaceous Period (145-66 Ma) found in Sub-Saharan Africa. The ~118 Ma age, which is the maximum age of the footprints, is provided by the uranium and lead isotope ratios in the zircon crystals found in the tuffitic kimberlites below the lake bed. Minimum age is limited to 66 Ma by the presence of dinosaur footprints. Detrital zircons from crater lake sediments were collected for uranium-lead dating because it is possible that these lake sediments contain not only the 118 Ma zircons but also zircons from younger eruptions, which could more precisely constrain the maximum age of these sediments. Forty zircons have been analyzed from a sediment sample from the footprint locality, yielding an age range of 2.9 billion years ago (Ga) to 150 Ma. None of these zircons were ~118 Ma. Work is currently underway to find more zircons and to determine why no ~118 zircons have been found in the Catoca lake bed sample.

Pervov et al., 2011, *Geol. Ore Dep.* Vol. 53, No. 4, pp. 295-308.

Session No. 20

[T16. The Role of Geochronology in Constraining the Development of Earth's Lithosphere: Focus on the U.S. South-Central Region, Mexico, and Beyond](#)

Tuesday, 10 March 2020: 8:00 AM-12:00 PM

Meeting Room 202CD (Fort Worth Convention Center)

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