

A NEW TEKTITE DISCOVERY IN THE GUANGDONG PROVINCE, CHINA, AND THE SEARCH FOR THE SOURCE CRATER OF THE AUSTRALASIAN TEKTITE STREWN FIELD.

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Introduction: The Australasian tektite strewnfield provides evidence for a major impact cratering event in southeast Asia ~800000 years ago [1]. Although the strewnfield is the youngest and largest and covers almost 25-30% of the Earth's surface, the source crater is not yet identified. The impact crater is believed to range in size between 40-100 km. Based on the occurrence and concentration of Muong Nong-type impact glasses and splash-form tektites source regions in Thailand, Cambodia (Tonle Sap), Vietnam, Laos, the Gulf of Tonkin and Hainan were proposed.

Results Part 1: A new tektite location: Dozens of splash-form tektites of up to 8 cm in size were found near the village of Longtouzhen, Guangdong Province, Southern China (21°22'19'' N/110°32'18''E). They are embedded in a poorly sorted diamictite of about 60 cm thickness. The shapes of the tektites range from teardrops over sharp-edged glass shards to sickle-shapes with centimeter-sized spherical voids. The diamictite layer consists of angular to subrounded gravel components that reach sizes of ~1 cm. This tektite layer seems to be widely preserved east of Zhanjiang in the southern Guangdong province [2].

Results Part 2: Zao tang - a possible source crater?

A systematic crater search survey was conducted in South China in the provinces of Guangdong and Guangxi where we expect the source crater of the Australasian tektite strewnfield. The remote sensing search was carried out utilizing Landsat, SRTM, and Google Earth imagery. One structure of 25-30 km diameter was analyzed and sampled in greater detail in the field. This structure was named Zao tang by us after a mountain that forms the center of the structure (23°56'16''N/111°36'30''E). The structure consists of peculiar topographic ring of mountains forming a weakly elliptical collar of 7.5-9.4 km diameter and 300-700 m elevation that encircles a central hummocky depression. The collar is surrounded by a 2-8 km wide annular moat. South of the collar the moat is suppressed. The annular moat in turn is surrounded by mountainous region. The central depression is formed by strongly weathered granite that is crosscut by sub-volcanic dikes. The collar is built up by a sequence of moderately to steeply dipping competent clay, silt, and sandstones. The annular moat consists of weakly dipping beds of soft clay- and siltstone. The standard geologic interpretation is that of a granitic intrusion into paleozoic strata which occurred widespread in that region. However, the Paleozoic rocks of the collar display multiple striated surfaces and shatter cone morphologies are occasionally developed. We found one large occurrence of monomict breccias at the inner slope of the collar. Decorated planar microstructures have been discovered in one sample.

More work is needed to further investigate the Zao tang structure and its possible relationship to the Australasian tektite strewnfield.

References: [1] Haines, P. et al. (2004) EPSL 225, 19–28.
[2] Yin, Y. and Sun, J. (2006) Earth Sci. Frontiers 13, 267-273 (in Chinese)