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## GPR coherence attribute applied to the structure interpretation of limestone epikarst in Guizhou karst plateau

Qiangshan Gao<sup>1,2</sup>, Tao Peng<sup>1,3</sup>, Shijie Wang<sup>1,3</sup>, and Tianchun Yang<sup>4</sup>

<sup>1</sup>Institute of Geochemistry, Chinese Academy of Sciences, Guiyang, China (gaoqiangshan@mail.gyig.ac.cn)

<sup>2</sup>University of Chinese Academy of Sciences, Beijing, China (gaoqiangshan@mail.gyig.ac.cn)

<sup>3</sup>Puding Karst Ecosystem Research Station, Chinese Academy of Sciences, Puding, China (pengtao@vip.gyig.ac.cn)

<sup>4</sup>School of Resource & Environment and Safety Engineering, Hunan University of Science and Technology, Xiangtan, China (ytc6803@163.com)

The epikarst ecosystem of karst environments plays a key role in biogeochemical cycling and material storage and transport. Many geochemistry and geophysical methods have been used to research the epikarst. Coherence attributes have already showed advantages in many aspects. Although ground penetrating radar (GPR) has been introduced to characterize karst structure long before, GPR coherence attributes are paid less attention in the interpretation of epikarst structure. Coherence attribute can describe the waveform similarity of traces by the classical mutual correlation algorithm and reflect the discontinuities of media. Two typical limestone epikarst profiles which develop shallow and deep fissure soil in Guizhou karst plateau were chosen. We used MALA GPR equipment to acquire data. After the data processed by conventional methods, we then extracted the coherence attribute data from the GPR data by the procedure coded in C Programming Language. The results show that: (i) coherence attribute displays the valid and invalid signals area of the GPR profiles; (ii) the epikarst is corresponding to the valid area and the bedrock below epikarst is corresponding to the invalid area; (iii) the boundary of valid and invalid areas reflects generally the lower boundary of epikarst. Coherence attribute provides additional evidence that the epikarst developed lots of fractures but the bedrock below is complete. The validity of GPR signals is useful to analyze the structure research of epikarst.