

Image quality in X-ray tomography: the case study of a fossil embedded in rock

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The use of X-ray micro-computed tomography (microCT) in palaeontology, geology, biology and material science and engineering has significantly increased in the last decade. In palaeontology, microCT is now widely used as the best tool to visualise and analyse fossils, which are sometimes still embedded in rock. With the growing use of microCT, the need for high-quality scan data is essential to obtain useful and accurate results, free of image artifacts or noise. However, despite the huge potential and various advances in laboratory microCT hardware, software and skills of users, there remain some issues with regards to image quality. Image quality can vary between different labs or even for different scans at the same lab, due to various reasons. In this paper, we discuss and demonstrate the quantitative effects of the variation of different microCT scanning parameters on the image quality for a fossil embedded in rock, and also demonstrate a simple image quality metric that can be applied to any X-ray tomography scan including synchrotron scans.

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