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**Visualising early life on Earth: Building a 4-Dimensional virtual field trip (VFT) of the 3.5 Ga Dresser Formation, North Pole Dome, Pilbara Craton, Western Australia.**

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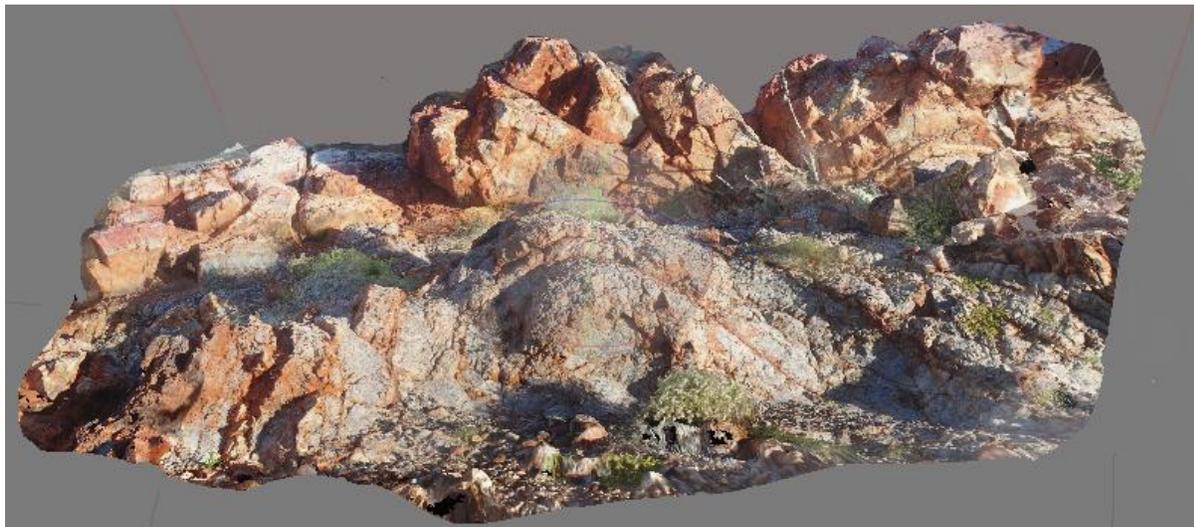
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The study of ancient rocks from Western Australia provides a unique insight into the origins and evolution of early life on Earth. But, how do we best communicate this research? The technological age is advancing both scientific data analyses (e.g. sophisticated analytical instruments), and the platforms in which education may be taught (e.g. online, blended learning and face-to-face teaching modes). We propose to combine the best of both worlds by conveying ground-breaking scientific (geological) research through immersive and interactive Virtual Field Trip (VFT) media.

This research focuses on constructing a 4-dimensional (spatial and temporal) VFT of the c. 3.5 Ga Dresser Formation, North Pole Dome, Western Australia, host to Earth's earliest convincing evidence of life. Extensive and detailed mapping, petrological and geochemical data from the Dresser Formation suggest that the environment was associated with volcanic hot springs on an exposed land surface [1,2]. The VFT will incorporate this palaeoenvironmental model showing how the depositional environment evolved spatially and through time, but also include immersive geological outcrop audio-visuals and photogrammetric imaging (3D models), and integrate detailed scientific observations from the macro- to the micro-scale, i.e. outcrop to thin section, respectively. Results aim to: 1. Enhance the depositional model for the Dresser Formation, developing a better understanding of the relationship between Earth's earliest evidence of life and hydrothermal fluids and; 2. Produce an interactive and immersive learning/educational tool - by way of a VFT - that can be used in online, face-to-face teaching, and as a research tool in the field.



*Figure 1. Still-frame of photogrammetric model of a hydrothermal barite mound from the 3.5 Ga Dresser Formation.*

*References:*

- [1] Djokic T (2015) Assessing the link between Earth's oldest stromatolites and hydrothermal fluids: The c. 3.5 Ga Dresser Formation, North Pole Dome, Pilbara Craton, Western Australia: University of New South Wales
- [2] Van Kranendonk M.J (2006) *Earth Science Reviews* 74(3):197-240

