

## **Investigating sedimentary environments: The ground penetrating radar revolution – past, present and future**

*Harry M Jol*

*Department of Geography and Anthropology, University of Wisconsin-Eau Claire*

Ground penetrating radar (GPR) is transforming the way we interpret and reconstruct sedimentary environments. Of the near-surface geophysical approaches that image modern and ancient depositional environments, GPR has proven to be an effective method for mapping stratigraphy and sedimentary facies. The central purpose of the paper is to provide a historical context of the GPR revolution that D.G. Smith pioneered and present results from modern and ancient fluvial, coastal, and aeolian settings. GPR is a high resolution, time-dependent electromagnetic (10-1000 MHz) technique that results in 2D and 3D images of the shallow subsurface. The results provide continuous radar reflections which allow for the determination of orientation, thickness, and style of major sedimentary structures and facies. The application of radar stratigraphic analysis on data collected from various locations worldwide provides the framework to investigate both lateral and vertical geometry and stratification. The ability to recognize major reflection patterns will aid in better understanding the complex subsurface architecture of depositional environments and provide insights for reservoir characterization.