



Characterization of fractures in a basement aquifer; a case study from the ALIANCE experimental site (Ploemeur, Brittany, France)

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Downhole imaging with acoustic and optical televiewers provides continuous and oriented 360° views of the borehole wall from which the character, orientation, and relation of lithologic and structural planar features can be determined. The combined application of geophysical borehole imaging techniques provides critical information for (1) water-supply development, (2) source-water protection and characterization, as well as (3) remediation of contamination in fractured rock.

This paper describes recent developments in the borehole imaging methods and their application to integrated analysis for ground-water studies. In particular, we present a method to characterize lithology and fractures in terms of typology (open, sealed, cemented), geometry (orientation, width, distribution with depth) and history (relation to deformation and alteration phases) from digital acoustic and optical images.

The images were collected from 7 holes of the Ploemeur experimental site. These holes, situated along the Atlantic coast in basement rocks, were drilled in the framework of the Advanced Logging Investigation in Aquifers in Coastal Environment (ALIANCE) European Community (EC) program aiming to improve the investigation, characterisation and monitoring of coastal aquifers for vulnerability assessment.