

# GeoRadar Division

## *GPR Configuration for Borehole Application*



## RIS Configuration for Borehole Application

### COMPONENTS:

- Data Logger (PC Panasonic CF 19 or other PC)
- Single Channel Control Unit (DAD 1CH)
- Bore Hole Antenna: 150 and 300 MHz
- Survey kit: Tripod and Survey Wheel Kit



Data Logger: PC Panasonic CF 19



Data Logger: PC Hammerhead HF54



Single Channel Control Unit



Bore Hole Antenna with Tripod and Survey Wheel

## BOREHOLE ANTENNA FEATURES



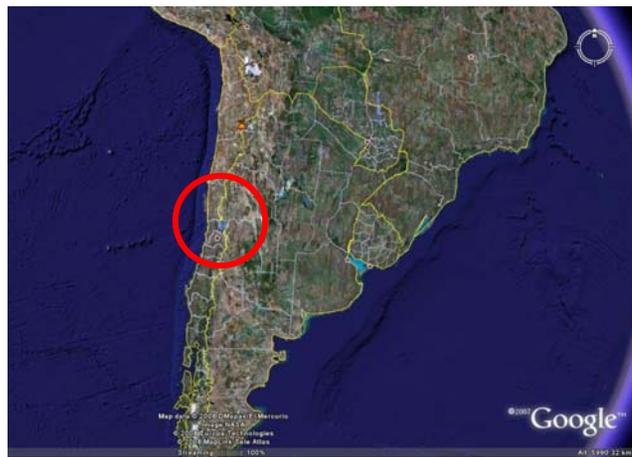
**Bore Hole Antenna with  
Tripod and Survey Wheel**

- Borehole antenna cable (40 m) (BAC 4000)
- Antenna Type: Unshielded Dipole
- Nominal Frequency: 150 or 300 MHz
- Operation Mode: Single hole reflection,  
Cross-hole tomography
- Length: 1.6 or 1.0 meter
- Diameter: 40 mm
- Weight: 1.5 Kg
- Water-proof: up to 5 bar

# GPR Borehole investigation in Mining (1/2)

Geological application in the Andina Copper Mine - Chile:

- Study of the Stratigraphy to discriminate the transitions between the different lithology
- Used Configuration: RIS One with 300 MHz BoreHole Antenna



Andina Copper Mine – Chile



Andina Copper Mine – Chile

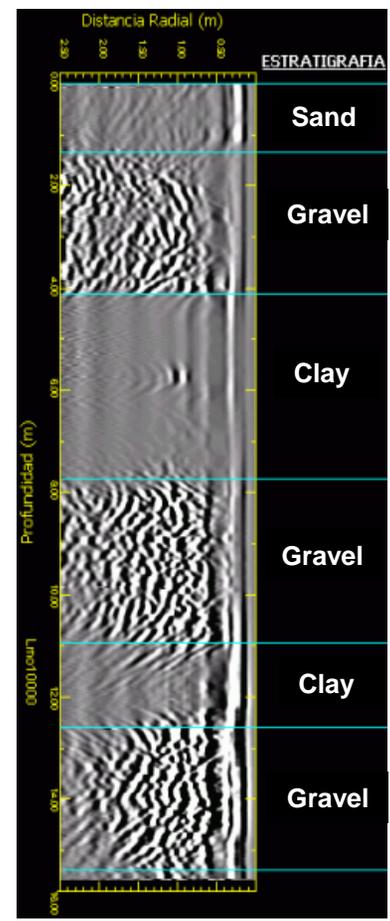


Andina Copper Mine – Chile

# GPR Borehole investigation in Mining (2/2): reconstruction of the lithological transitions between clay and gravel



RIS Configuration with Bore Hole Antenna. Field Acquisition Phase



Bore Hole Results

## GPR Borehole application for DAM investigation (1/2)

Structural Problem on the Badana Dam  
Genova -Italy:

- Presence of fractures into the dam.
- Water infiltration
- Used Configuration: RIS One with 300 MHz BoreHole Antenna

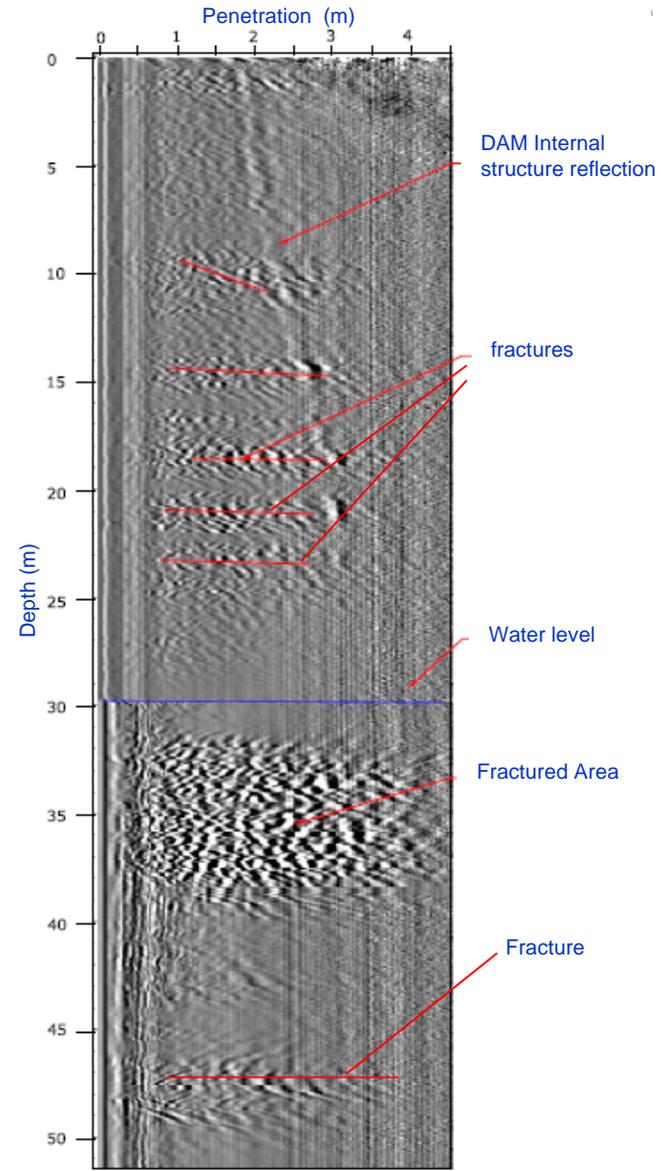
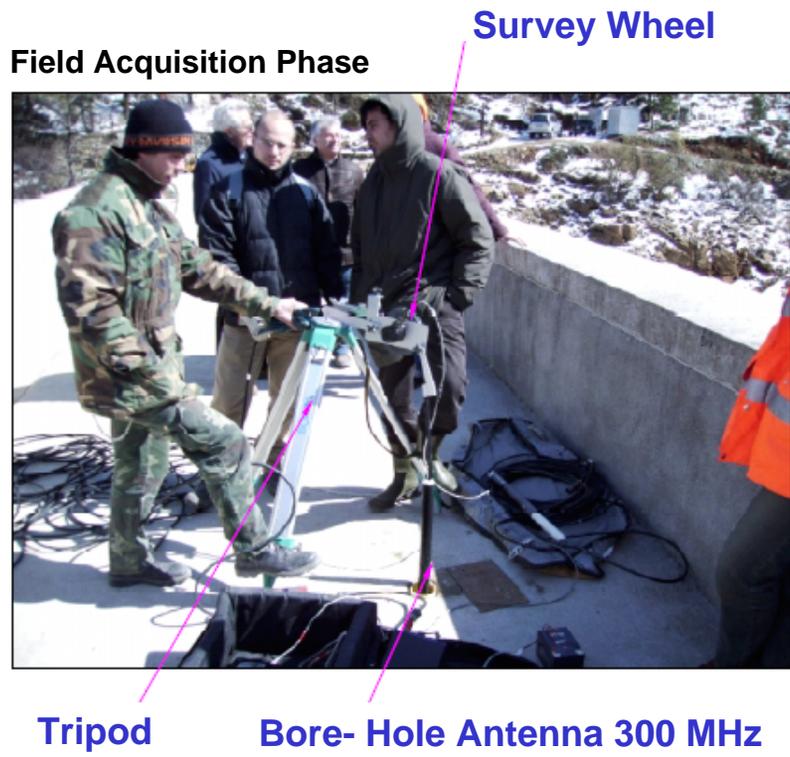


Badana Dam – Genova Italy



Badana Dam – Genova Italy

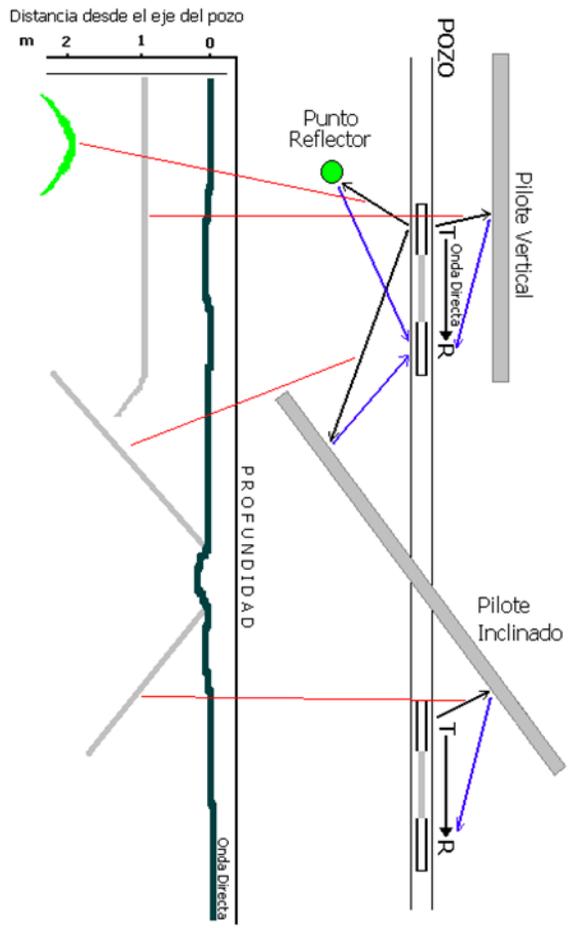
# GPR Borehole application for DAM investigation (2/2)



# Borehole Investigation for Geotechnical Application (1/2)

Borehole Application for Piles investigation in Caracas – Venezuela:

- Pile Depth Evaluation
- Pile Integrity
- Used Configuration: RIS One with 300 MHz BoreHole Antenna



Sketch of GPR Bore Hole Technique



Caracas - Venezuela

# Borehole Investigation for Geotechnical Application (2/2)

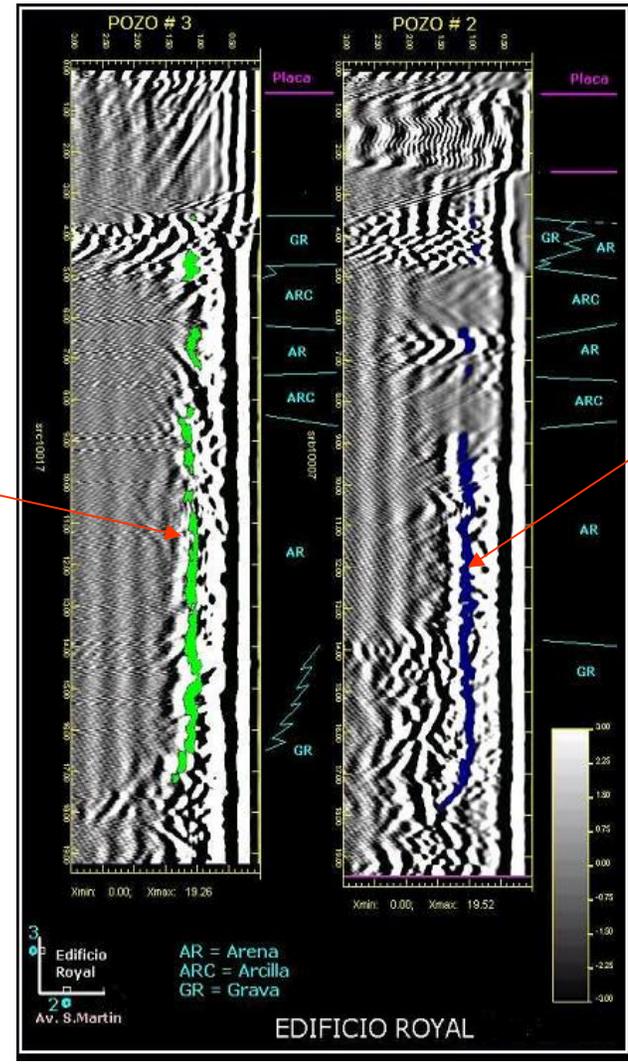


Hole

Hole for GPR investigation  
Edificio Royal

Pile wall

Pile wall

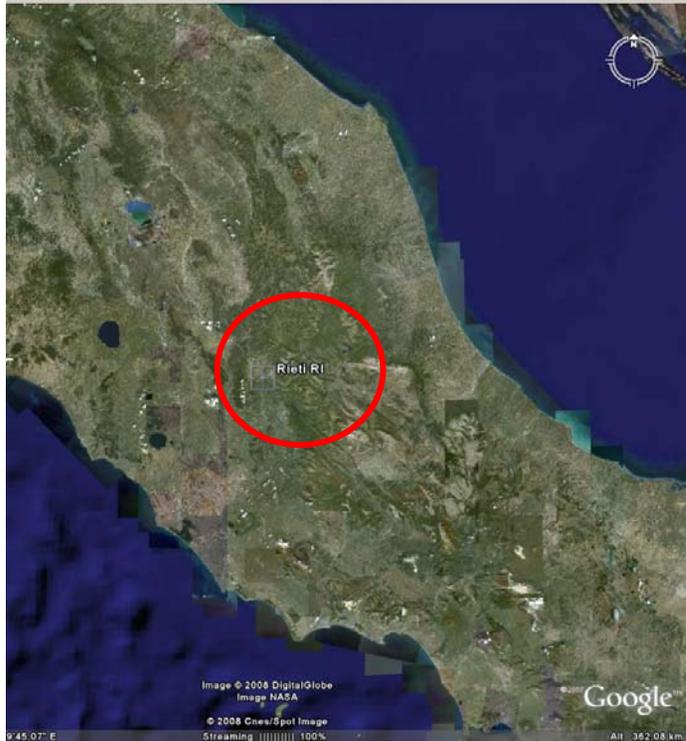


Bore Hole Results

## GPR Borehole application for Tunnel Investigation (1/2)

Structural Problem on a Tunnel along the street between Terni and Rieti - Italy:

- Presence of fractures into the Tunnel structure and into the rock
- Presence of layer into the rock
- Used Configuration: RIS One with 150 MHz BoreHole Antenna – Horizontal Acquisition

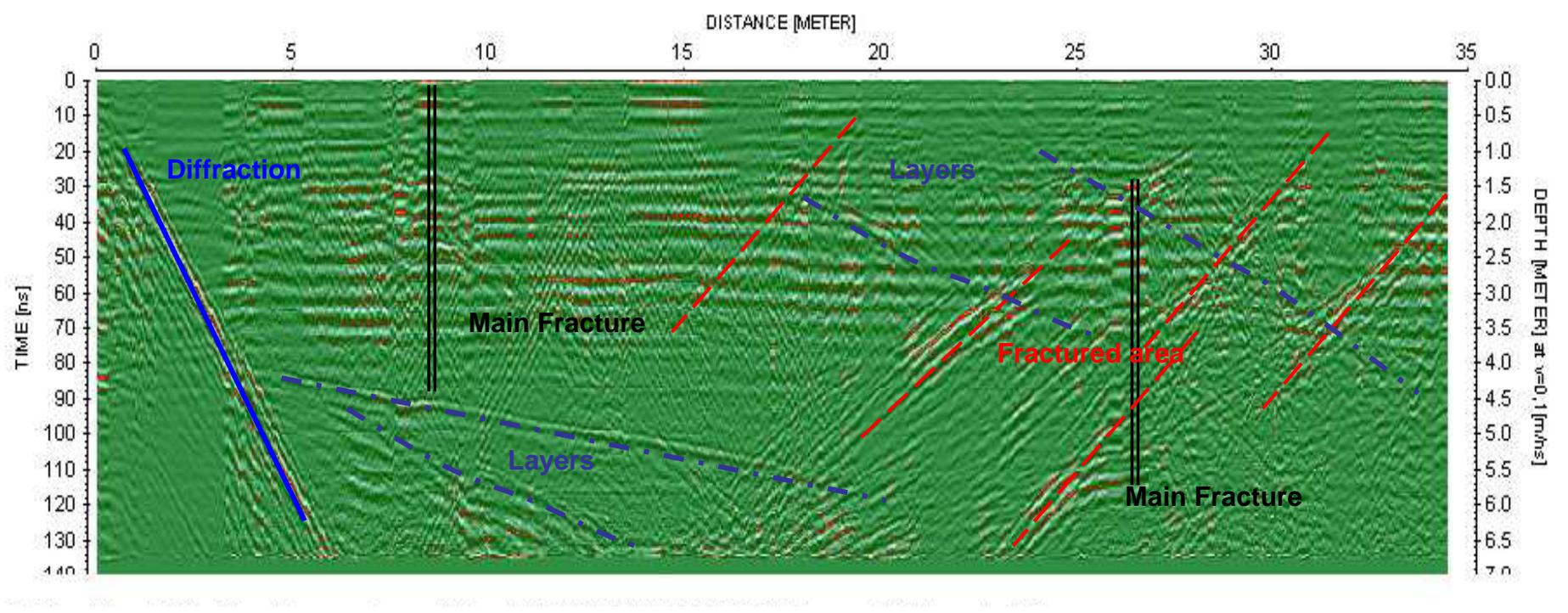


Rieti area-Italy



Bore Hole  
Horizontal Acquisition

# GPR Borehole application for Tunnel Investigation (2/2)



Bore Hole Results