Ground Penetrating Radar in Sedimentary Rocks



Outline:

- Introduction to Ground Penetrating Radar (GPR)
- Field methods
- Use of GPR on Mars
- Similarities in GPR data and outcrop
- 3D GPR data
- Resolution of GPR data



Basic components of the GPR







Field Methods:

- Get permission
- Connect the GPR
- Turn on the DVL (Digital Video Logger)
- Make all the proper selections
- Initiate data collection
- Data taken to a computer for analysis

In the Field:

65.5 foot line

step size: 3 inches

262 traces



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GPR use on Mars:



Ground Penetrating Radar; Stephen Griffin, Timothy Pippett (http://leme.anu.edu.au/Pubs/OFR144/09GroundRadar.pdf)

Similarities:

Erosional Remnant























1212 total traces



1525 total traces

lines shot 1 foot apart:



lines shot 3 inches apart:



Conclusions

- Penetration of GPR is limited when underlying shale is present
- It is feasible to locate water in the near surface of Mars with GPR
- Mapping an area in 3D gives great resolution for channel locating
- Faults can be seen in Permian sandstone with 3D GPR data

