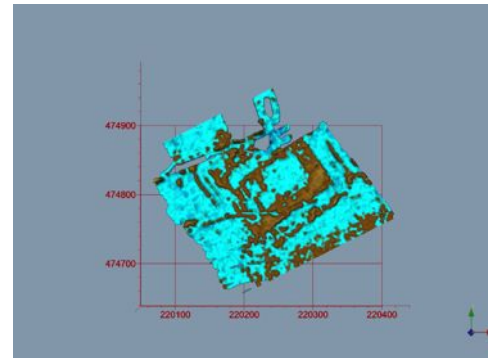


Using GPR for archaeological surveys

How to conduct a state-of-the-art survey
(and avoid the many pitfalls !)



GPR, now and then

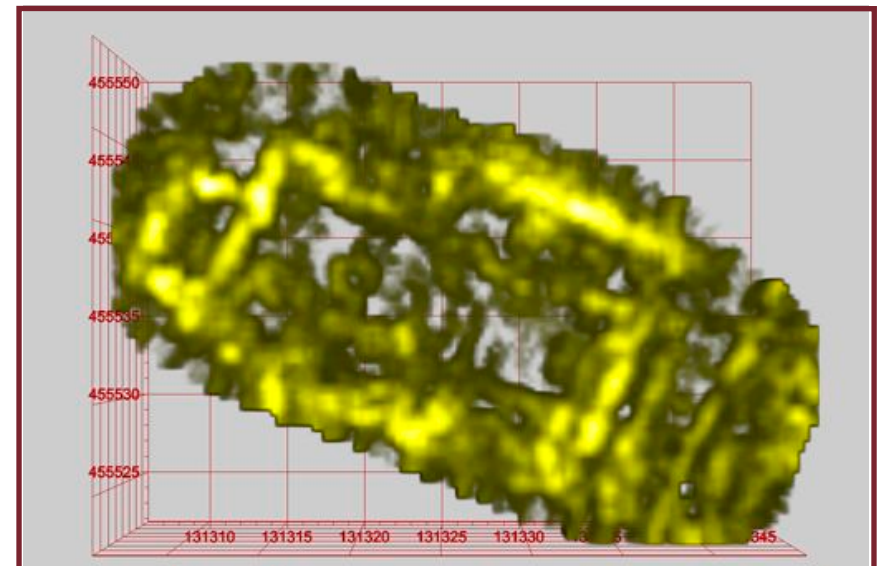
developments:

- hardware
- software: postacquisition processing
- methods positioning
- integration other info-sources
- surveyplatforms (walk, drive, sail & fly)

history
principles
systems
fieldsurvey
methodology
examples

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GEOFYSICAL RESARCH

I see, I see what you can't see

1556 'Re Metallica' Georgius Agricola:
-remote sensing (influence metals on vegetation)
-dowsing, was rejected

1843 Von Wrede: 'early' magnetometry
looking for ores



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NON-DESTRUCTIEF TESTING (NDT)

Non-destructive= no permits needed

Fast and cost effective: lots of data in short amount of time (hectares /day)

Aim: geological layers, landfills, foundations, walls, pits, utilities, UXO's.....

Aim: reconstructing pleistocene landscape

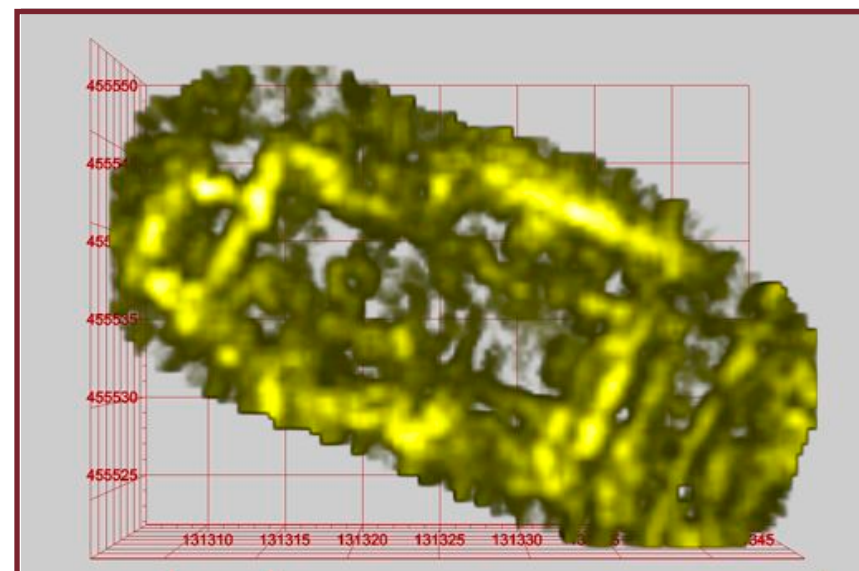
Aim: optimizing coringplans, plans for trial trenches

Aim: risk analyses!

MAIN AIM: SITE RECONNAISSANCE

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GPR

1920 first developments, measuring ice thickness

1950 applications in mining, civil engineering

1970 e.g. Vietcong tunnels

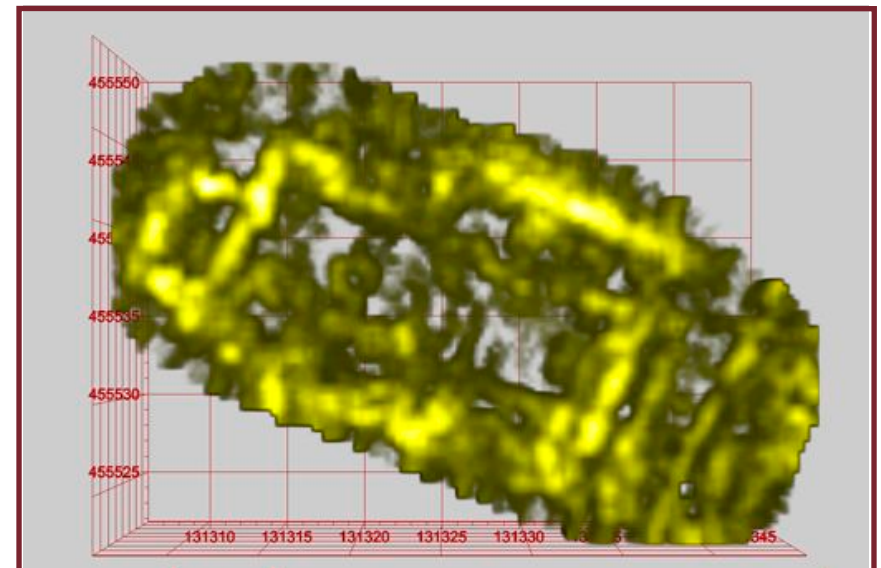
2010 archaeology, geology, forensics, civil engineering, UXO's, utilities....

Ongoing developments:

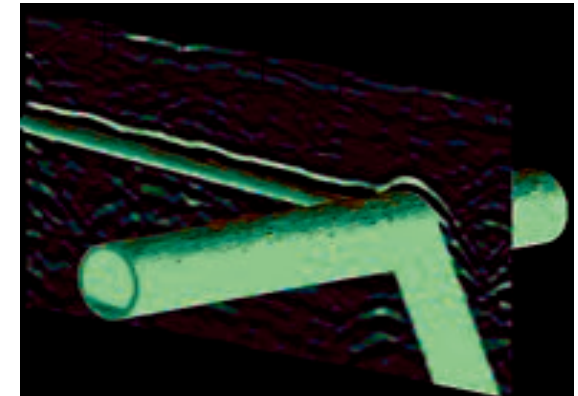
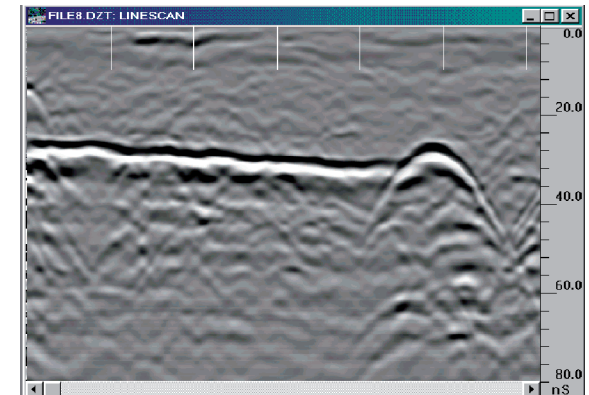
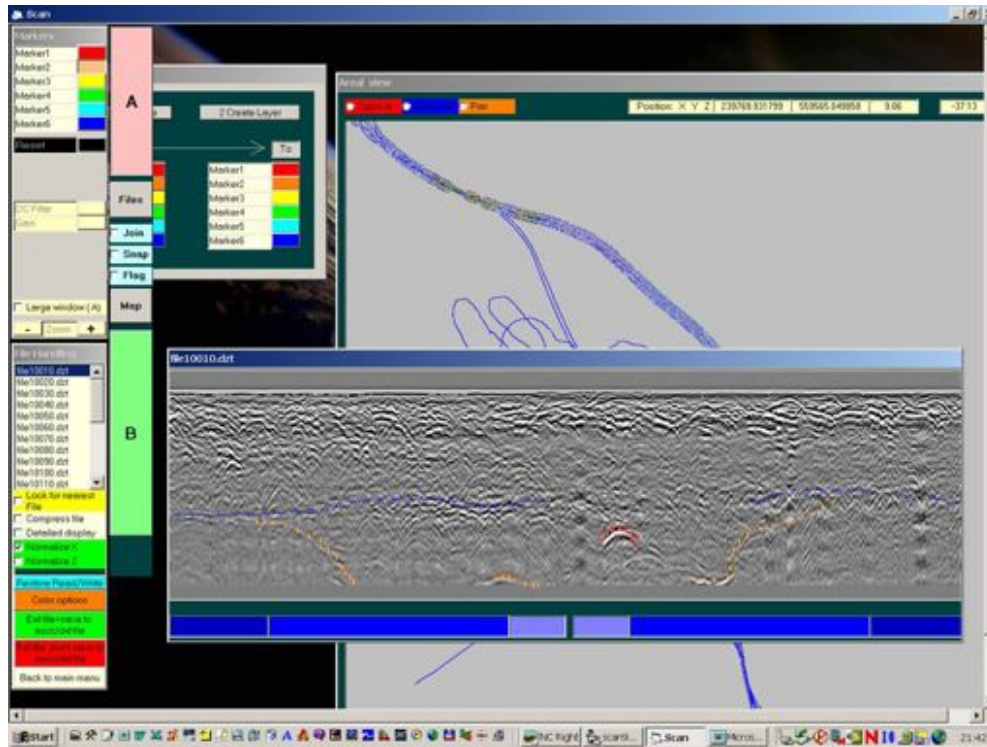
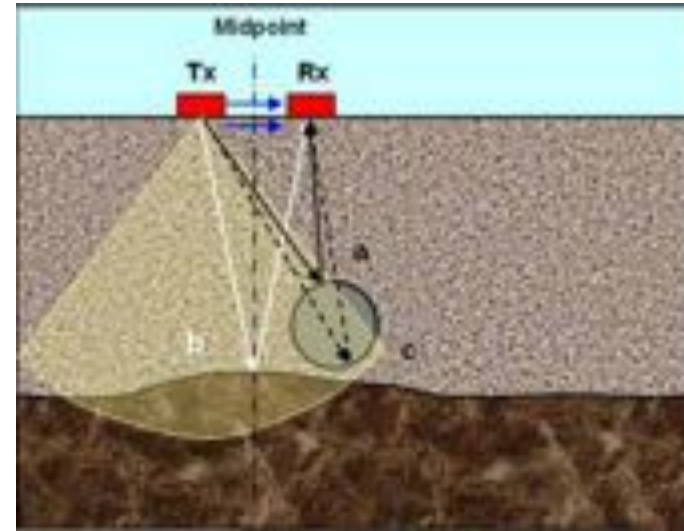
hardware
software
positioning
methodology: !!

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PRINCIPLES OF GPR



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GPR SYSTEMS

walk, pull, push, sail, fly...

coupling effect, groundtruthing !!!



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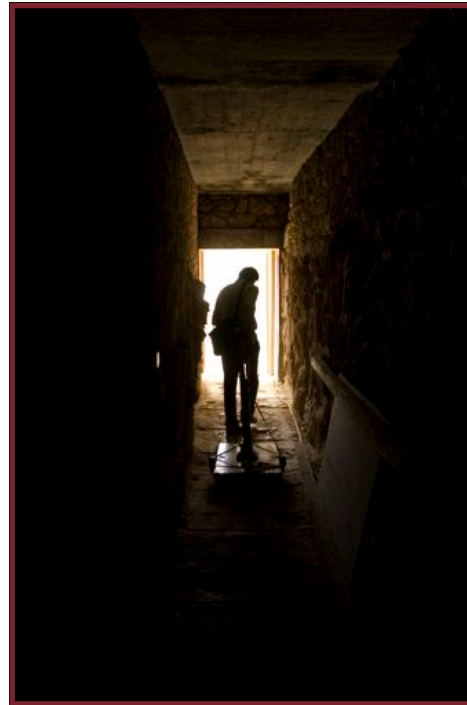


Survey

walking: dependent on location,
a marketplace /day?

Quad: - Archaeology 2 - 4 ha/day
- Geology 10 ha/day

Hovercraft/HOVPOD: much more,
depending on grid

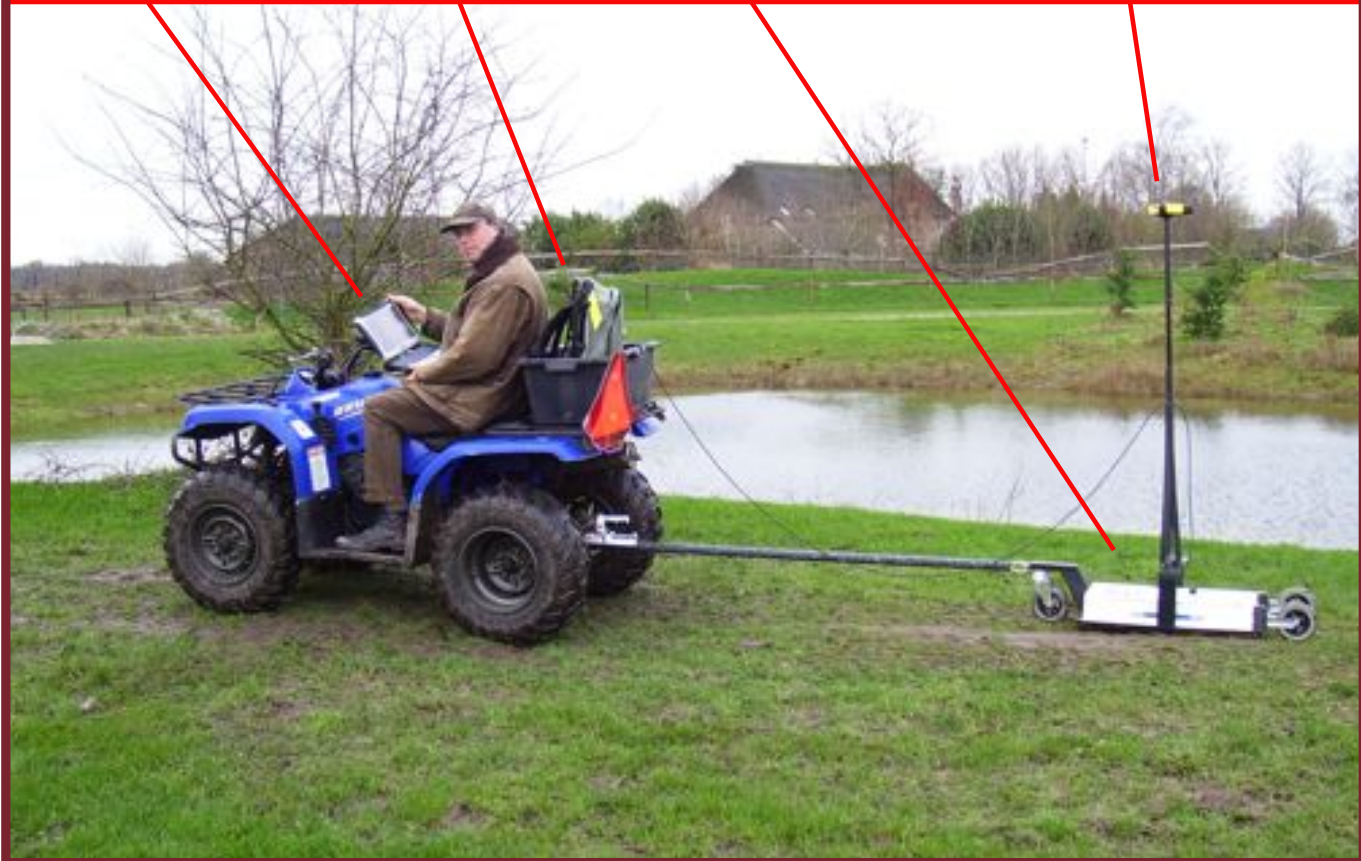


Dataopslag

Radarunit

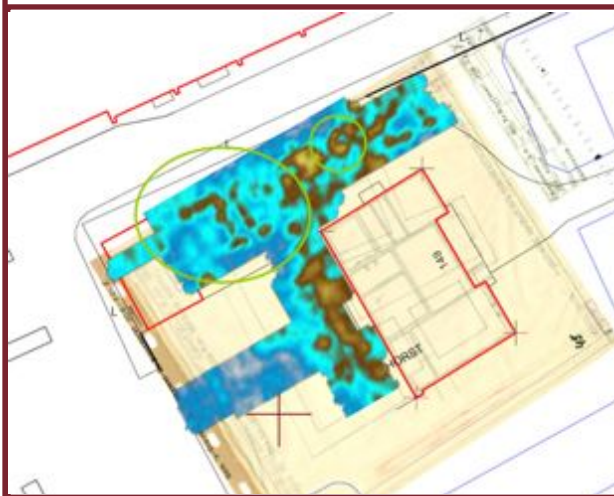
Antenne

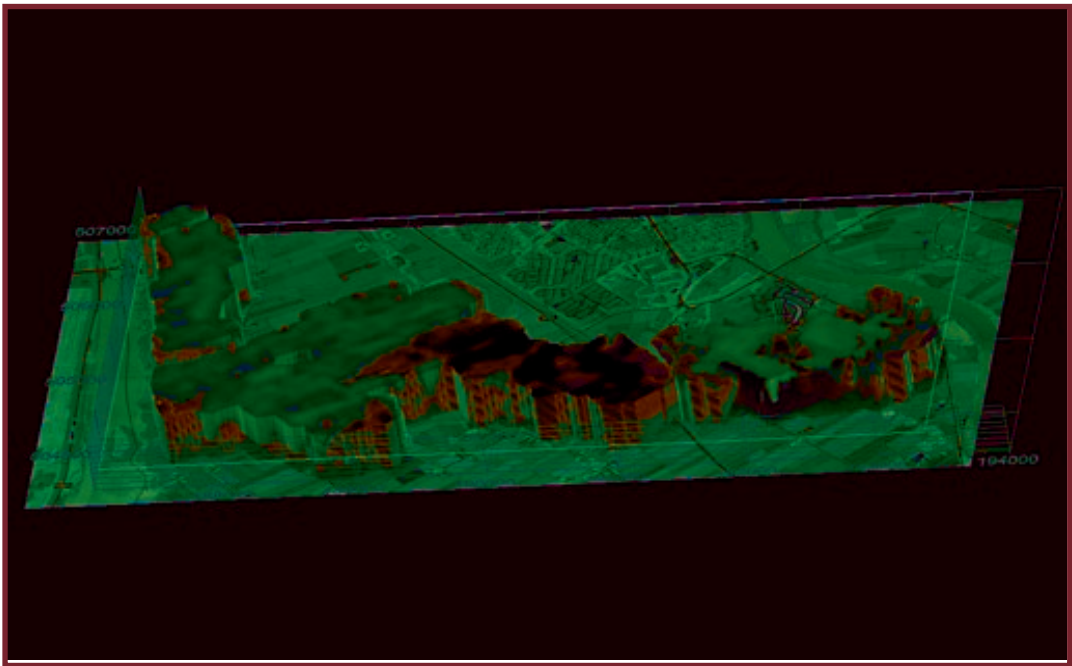
GPS (DR+gyroscoop)



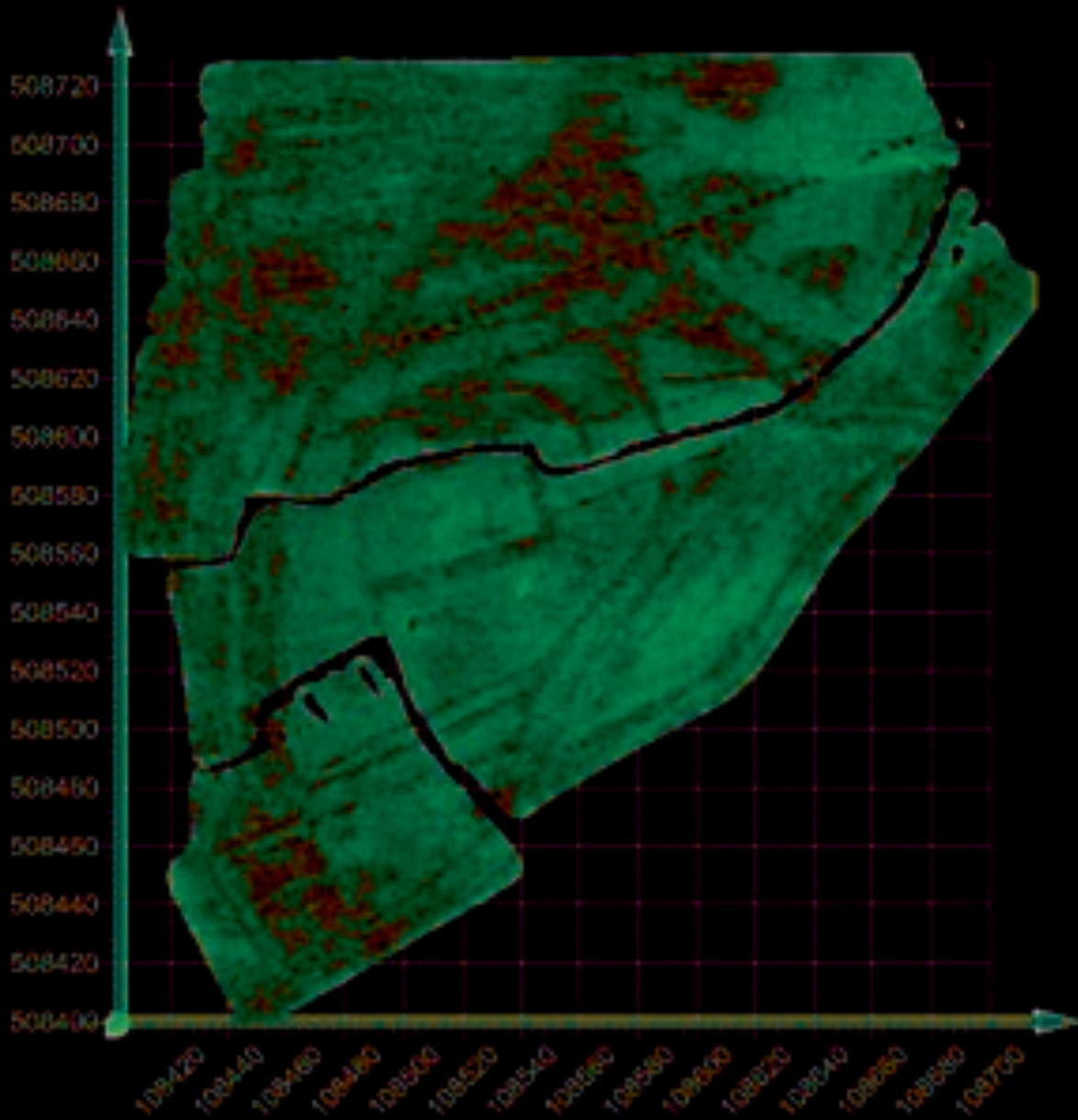
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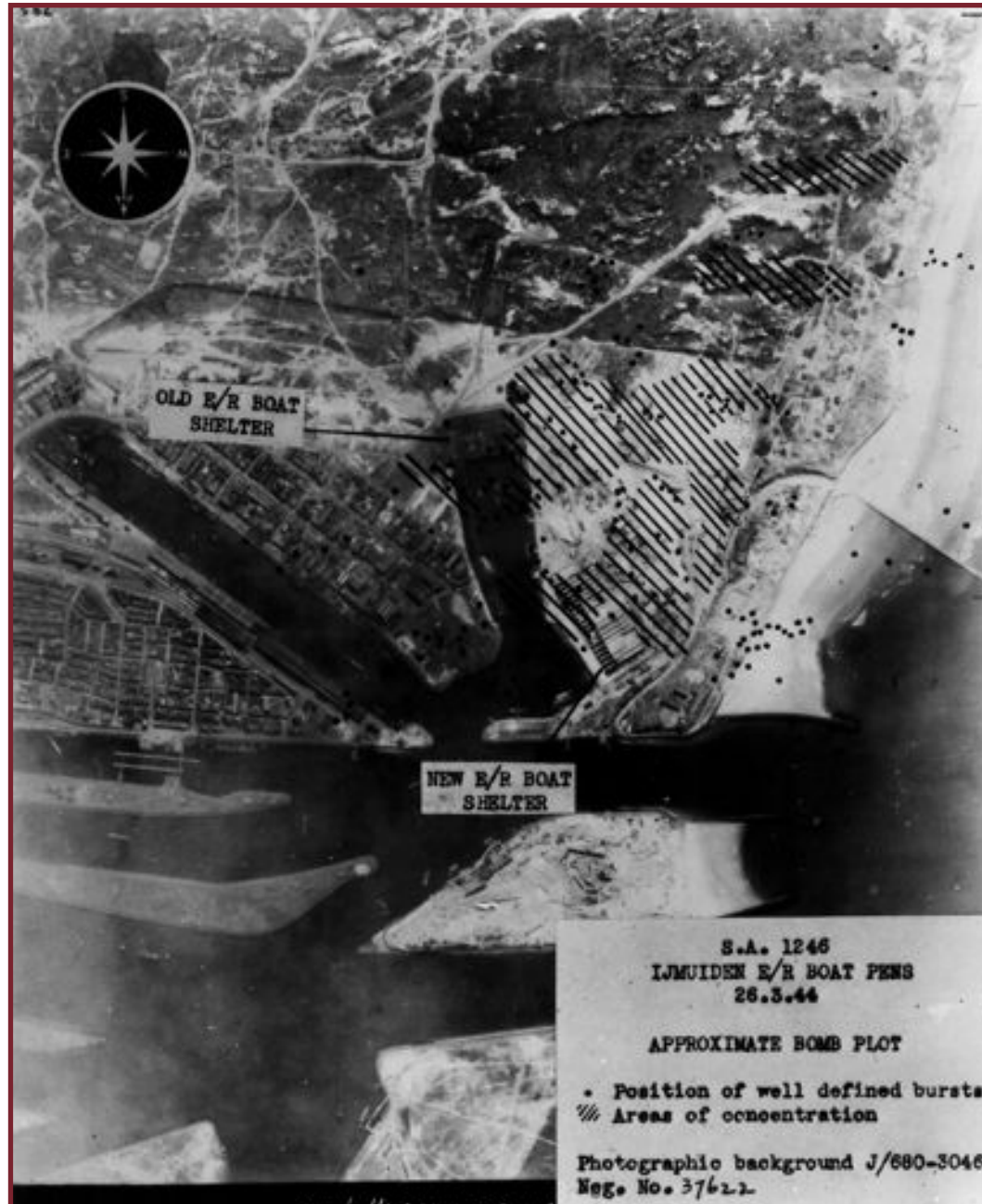
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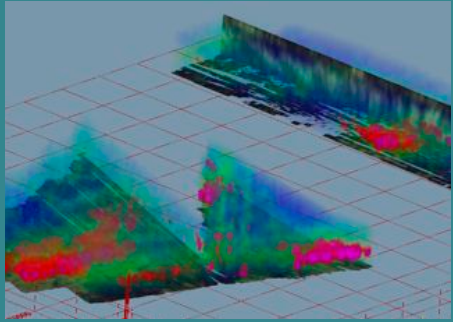




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2009



2009



1920



How to conduct a state of the art GPR-survey?

Step 1:

lots and lost of questions
EXPECTATION OF CLIENT?

Step 2:

Location suitable for aim survey?
Grid suitable for aim survey?
Site inspection, test equipment/signal/positioning....and test again...

Step 3:

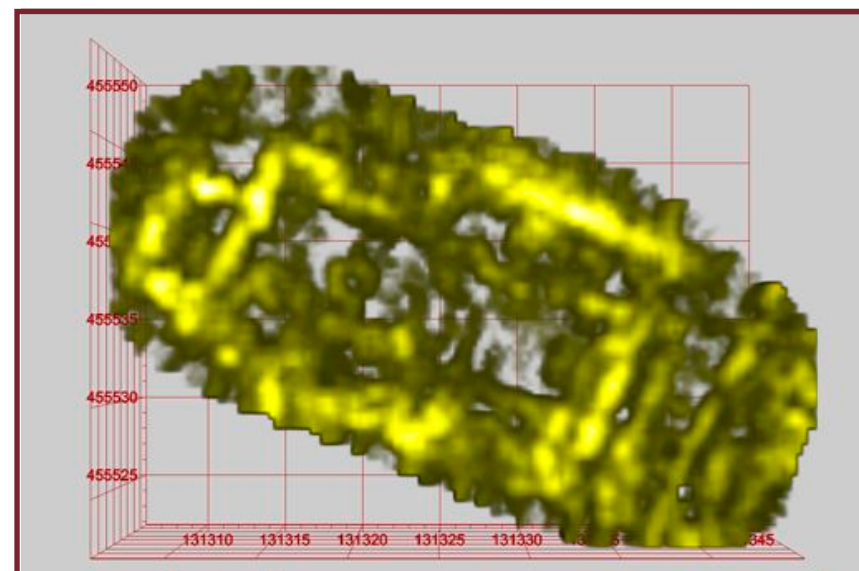
Postacquisition processing
Filtering, verifying, building model
Use backgroundinfo

Step 4:

What do I **(WE !)** see?
'Ground-truthing'
Verifying hypothesis

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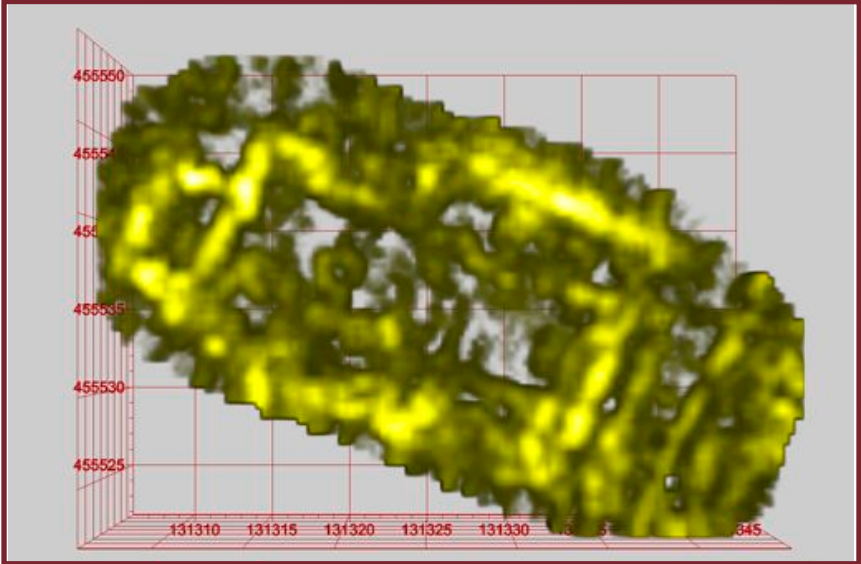
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EXAMPLES

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Want to know more....?

mail me: fvandenoever@saricon.nl

follow LinkedIn-discussions

interesting reading stuff:

GPR for Archaeology

Lawrence B. Conyers (2004)

Geophysical Survey in Archaeological Field Evaluation

English Heritage (2008)

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