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KS 700 / 750

Anleitung Messverfahren

Chris Wichert
CSW -WE MAKE IT EASY
WWW.CSWIT.DE
WWW.KS-GROUNDRADAR.COM

Table of Contents

KS 700/750 MANUAL INTRODUCTION

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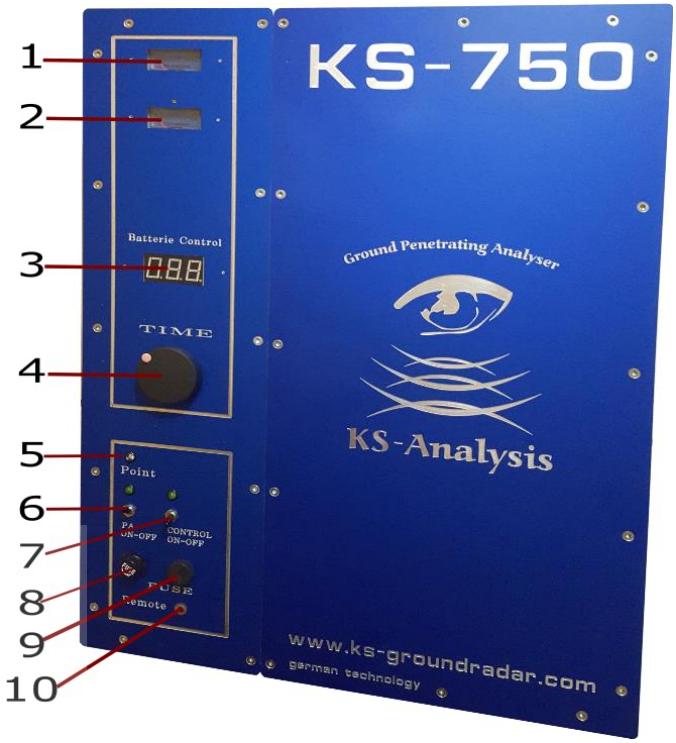
OVERVIEW KS 700/750

1. Overview display and switch

Important: The KS-Analysis must never be used on a Metallic object in operation, further, the system is not Wasserdicht.z.B Gullideckel, metal plate ect.

1. **Indicator pointer**
   moves slightly or trembles When the amplifier is ready to sendsignals
2. **The indicator pointer of signal record time**
   must be at the right side during the record time of the sent signal
3. **Battery display**
4. **Time setting for power amplifier**
   time setting button for signal recording, (with this button you can set the time Necessary for recording during Which the indicator pointer of "Indicator 3" stays at the right side)
5. **Amplifier on**
   (During the transmission of signals, the red light is on)
6. **Amplifier on / off**
   (The green light above it lights up When the unit is in operation)
7. **Electronic control system on / off**
   (The green light above it lights up the switch on)



8. **Power amplifier fuse**
   (15 Amp main fuse)
9. **Fuse for Electronic control**
10. **Socket - Switch 1**
    (Connection to remote)
11. **Power amplifier**
    (Signal-Transmitting button), you must push on this button to send signal to the ground
12. **Socket for battery connection**
13. **USB connection for laptop**

2. commissioning

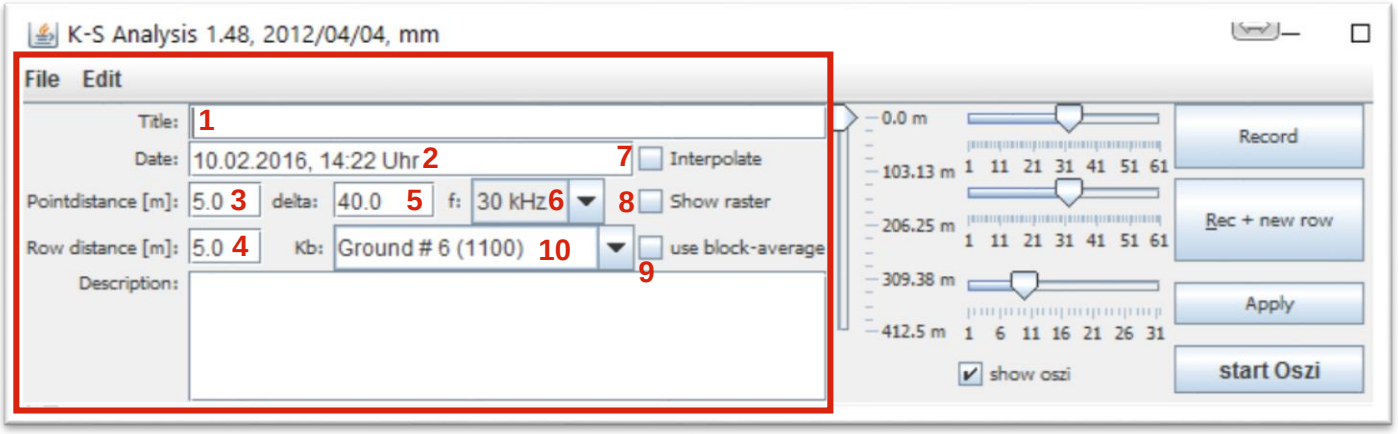
> Important: not directly start the machine on a metal plate; the intermediate layer (earth, stones, wood, etc.) should be at least 30-40 cm. Do not put the device into the water, since it is not waterproof. For measurements on snow, the device can be placed in a cardboard box.

The system following operate:

- Remove the instrument from the carrying case and firmly mounted carrying handle with the supplied connecting screws using the two supplied screws
- Insert - Cable of "amplifier to 1" (transmit switch signal)
- Insert battery cable
- Plug USB cable
- Switch (6) and switches (7)

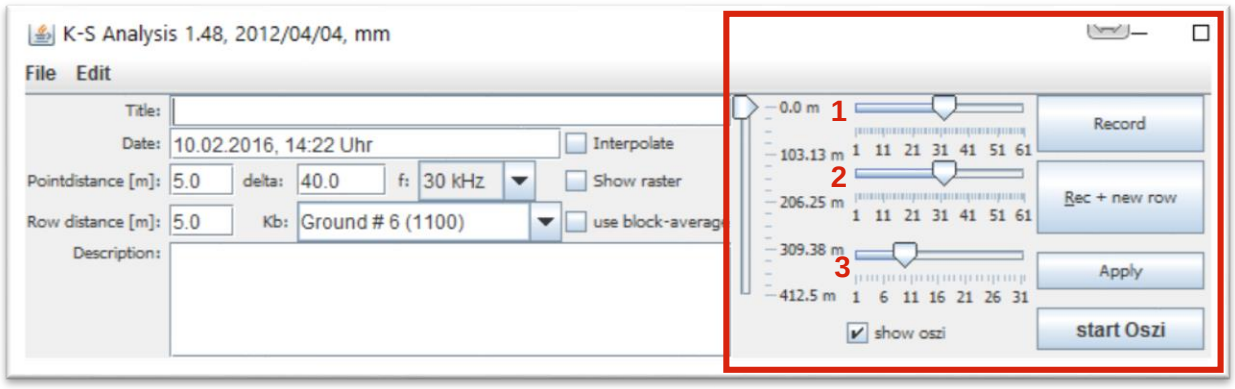
OVERVIEW STONEAGE 2D VISUALIZATION

3. settings



- **[1] Title** - Name of measurement e.g. field 1 5x5m Winterberg
- **[2] Date** - Current date of measurement (is entered automatically by the system time)
- **[3] Point Distance [m]** - Distance of the measurement points in meters (e.g. 2.0 at 2 meters distance) Ex figure 1.
  For small objects in low depth, a small value is recommended, e.g. 2.0 m
  For larger objects in higher depth a great value is recommended, e.g. 5.0 m
- **[4] Row distance [m]** - Distance of the measuring range in meters (e.g. 2.0 at 3 meters) Ex figure 1.
  For small objects in low depth, a small value is recommended, e.g. 2.0 m
  For larger objects in higher depth a great value is recommended, e.g. 5.0 m
- **[5] Delta -400**
- **[6] F: - 300 kHz**
- **[7] Interpolate - ON**
- **[8th] Show grid - OFF**
- **[9] Use Block-average - OFF**
- **[10] Kb: ground** - Adjust depending on soil type (limestone, sand, granite (see bottom list)

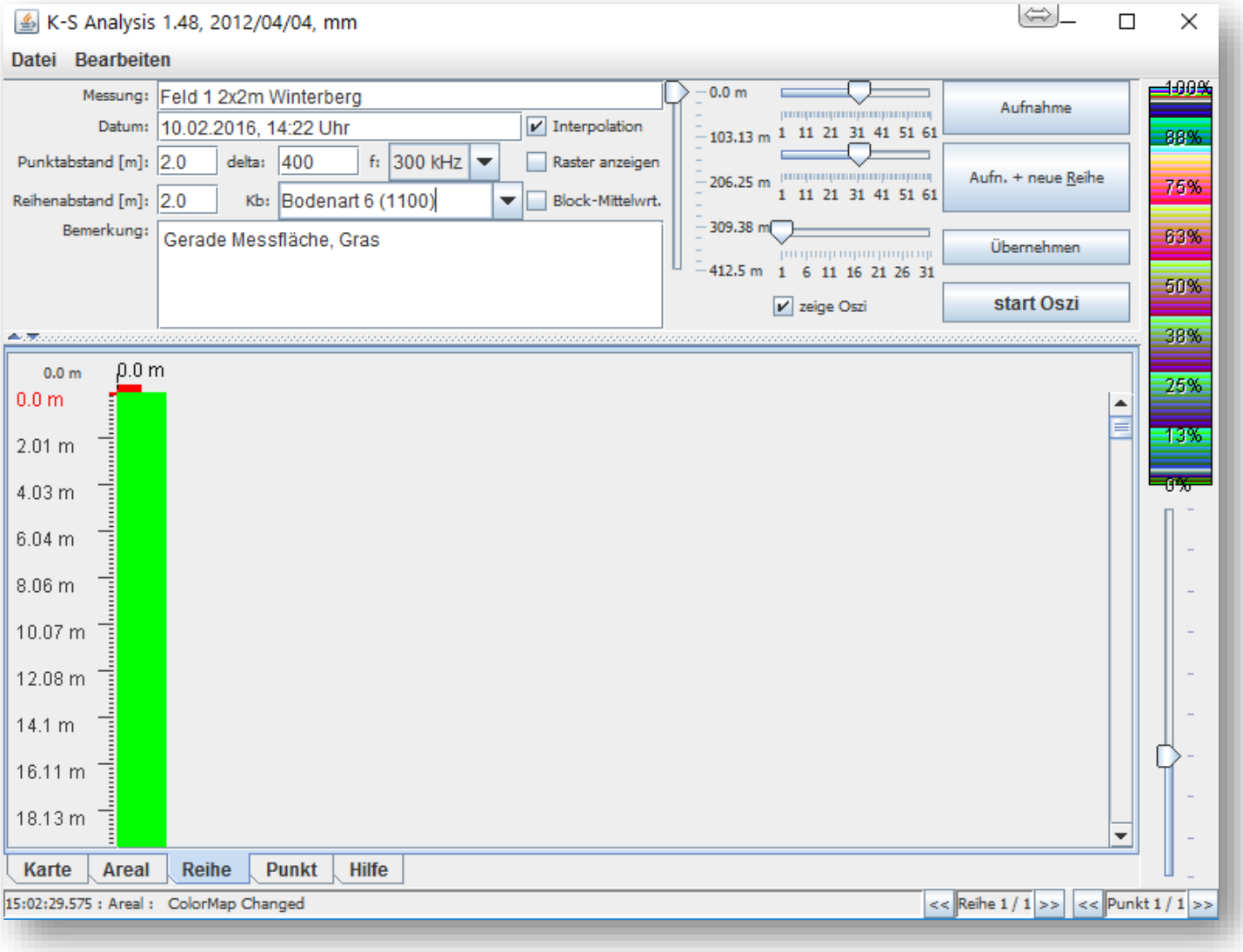
> Note: the settings Point Distance [m], Row distance [m] and kb may be variable depending on the measurement field, soil and gesuchtem object.



- **[1] Zoom X - 32**
- **[2] Zoom Z - 32**
- **[3] Block Size - 1**

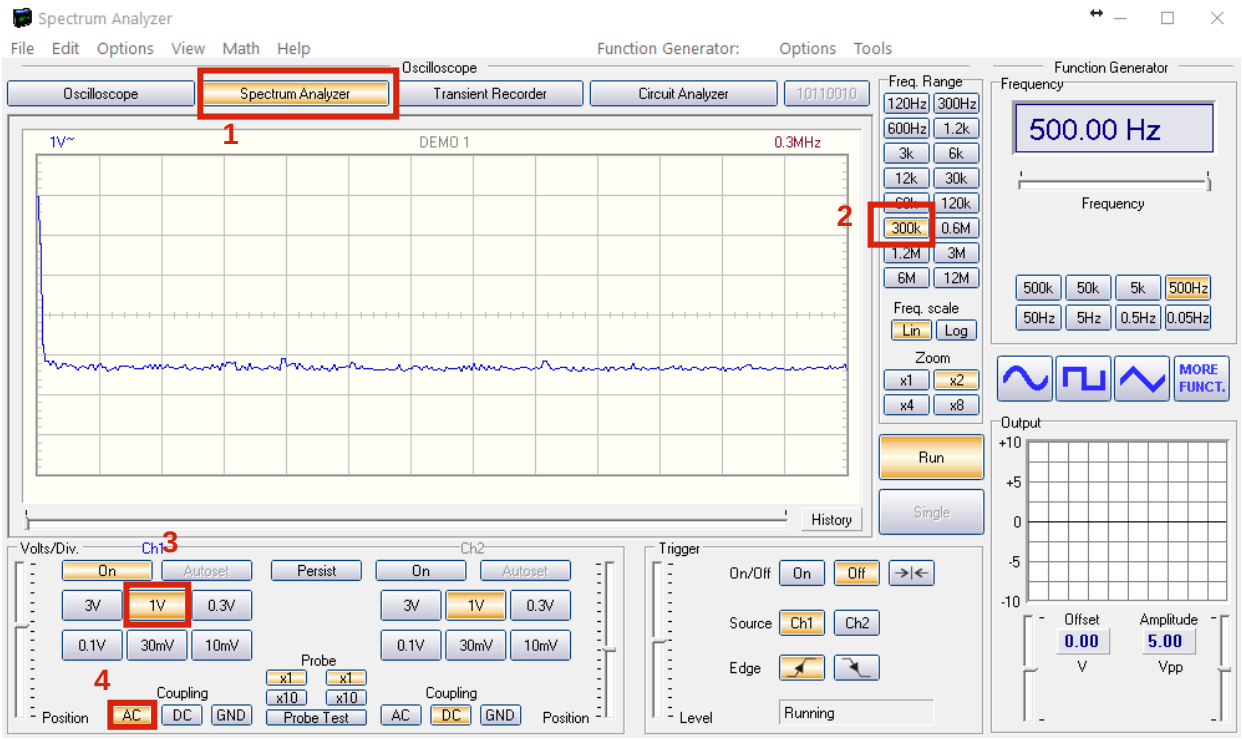
4. For complete settings

Note: the following settings are an example and show a configuration under the following conditions. 1. Measuring field is a meadow / grass surface 2. The suspected object is located about 2-3 m deep and is a sewer or drain. the weather is temperate dry and the ground.



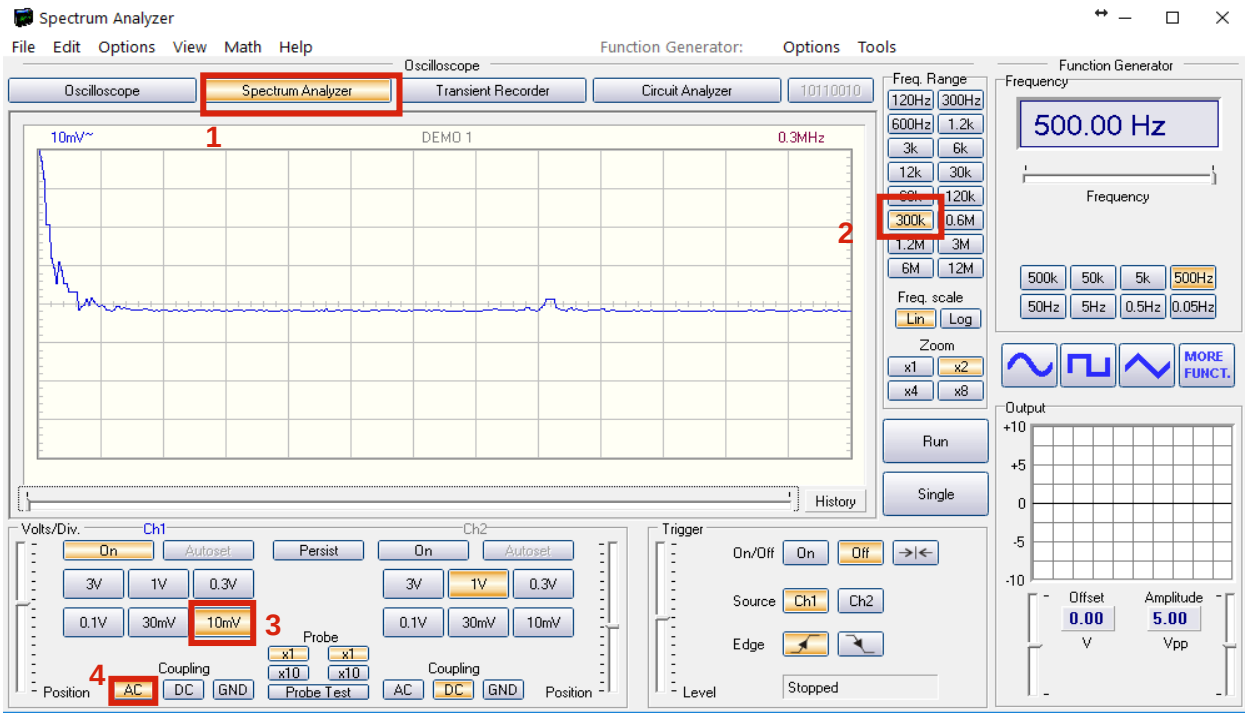
OVERVIEW OSCILLOSCOPE SETTINGS

5. Settings OSCILLOSCOPE KS 700



- [1] Spectrum Analyzer
- [2] Freqenz - 300K
- [3] Chan 1 - On = 1V - Chan 2 - OFF
- [4] Coupling - AC

6. Settings OSCILLOSCOPE KS 750



- [1] Spectrum Analyzer
- [2] Freqenz - 300K
- [3] Chan 1 - On = 10mV - Chan 2 - OFF
- [4] Coupling - AC

MANUAL MEASUREMENT METHODS

7. determine the measurement field and settings.

When determining the measuring field and configure the software StoneAge
The following information is important:

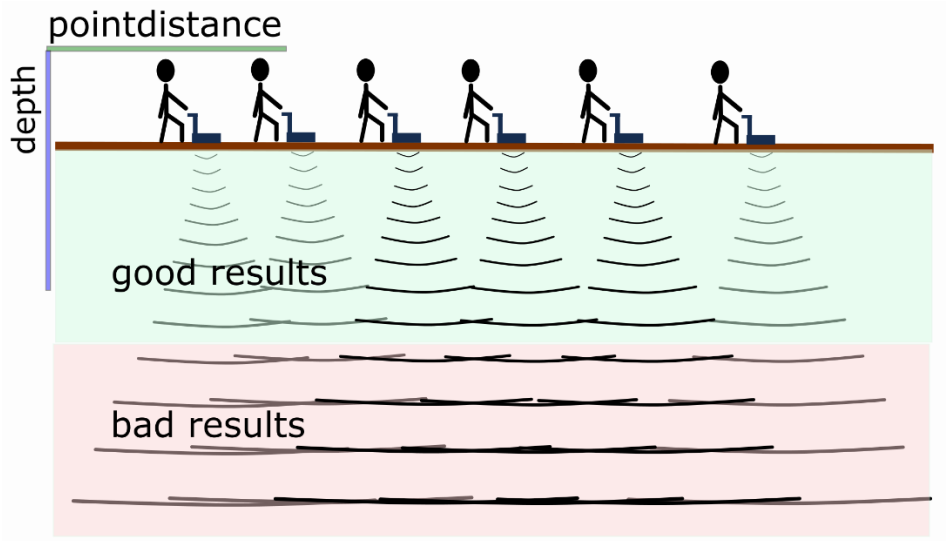
1. On what type of soil is measured? - • [10] Kb: ground
   If the soil Nas | Dry and which structure is present? e.g. rock or arable field

2. What is wanted in the ground? - [**3**] **Point Distance [m] | [4] Row distance [m]**
   with larger objects, a high measurement point spacing and row spacing should be chosen

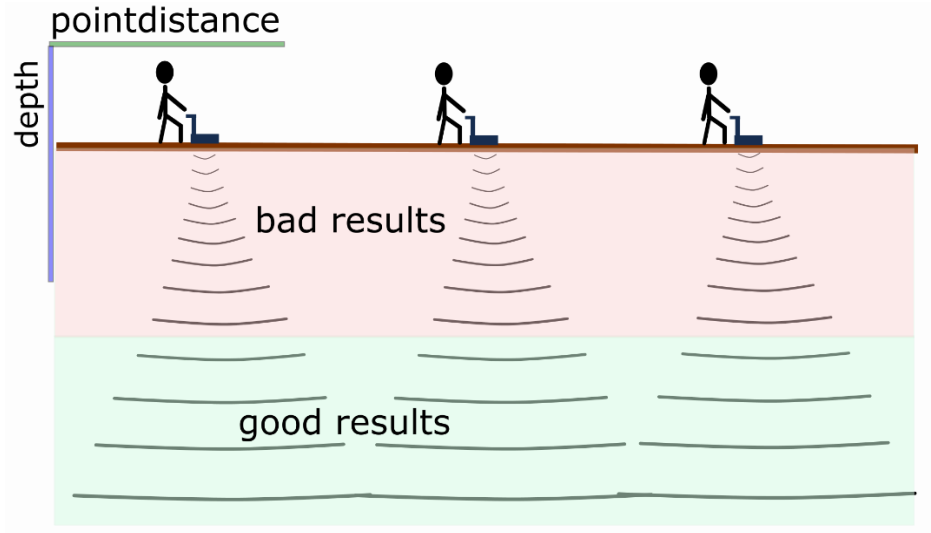
3. How deep the object is suspected? - [**3**] **Point Distance [m] | [4] Row distance [m]**
   is the object, although large but not deep the row spacing can also vary the dot pitch
   be e.g. 2.0 Point 5.0 Row

4. How big should the object be about? - [**3**] **Point Distance [m] | [4] Row distance [m]**
   the object is large and deep the row spacing and dot pitch e.g. can be set to 5.0 and 5.0.

Example: Measurement of shallow depth



Example: measurement for high deep



8. specify measuring distances

Important: In order to determine the result of measurement and the positions in the evaluation properly must match the measurement always started and always left a number to the end to be measured.

If errors in measurement occur so strongly recommended the measurement from the front to start the results are not distorted.

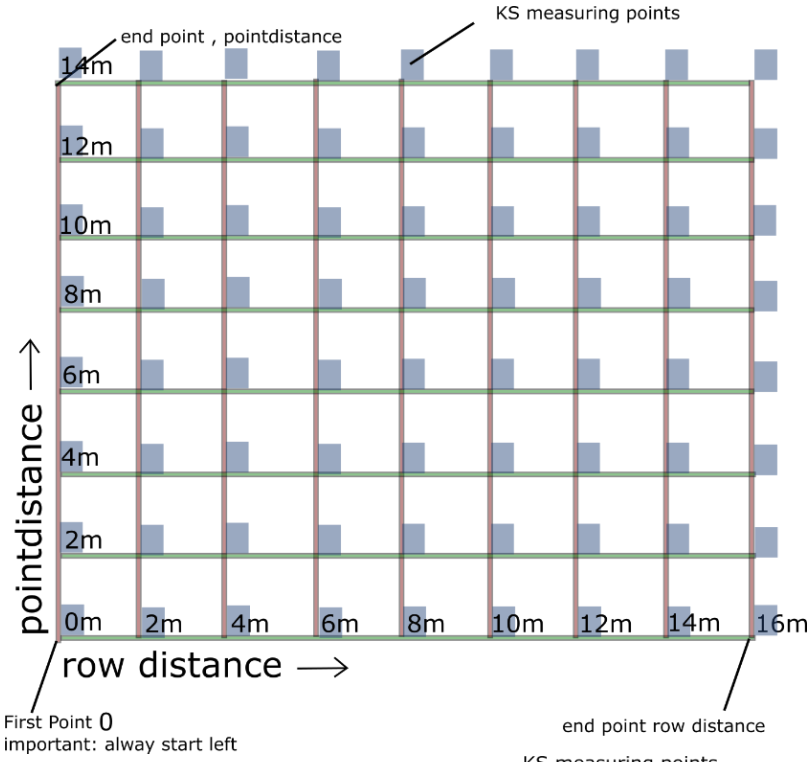
Measuring variant 1

2 meters Point Distance
2 meters row distance

Use: if you do not know what to look for is to get a first impression of possible objects and cavities measuring the ideal location.

Furthermore, the measurement variant can be used to locate objects near the surface.

Maximum depth is recommended to 10m.

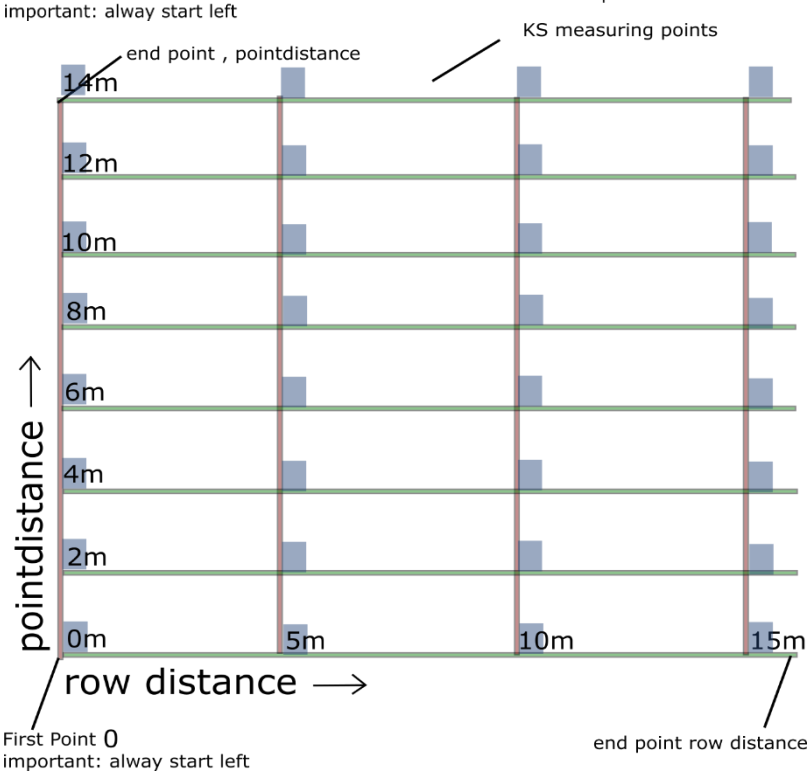


Measuring variant 2

2 meters Point Distance
5 meters row distance

Use: Ideal to e.g. to locate the course of a canal, tunnel or tube with the north, while it is important to note the deep and the size of the object.

When the tunnel ect. e.g. at least 2m wide 2m high and 10 - would be 20m deep, this is the appropriate measuring variant.



Measuring variant 3

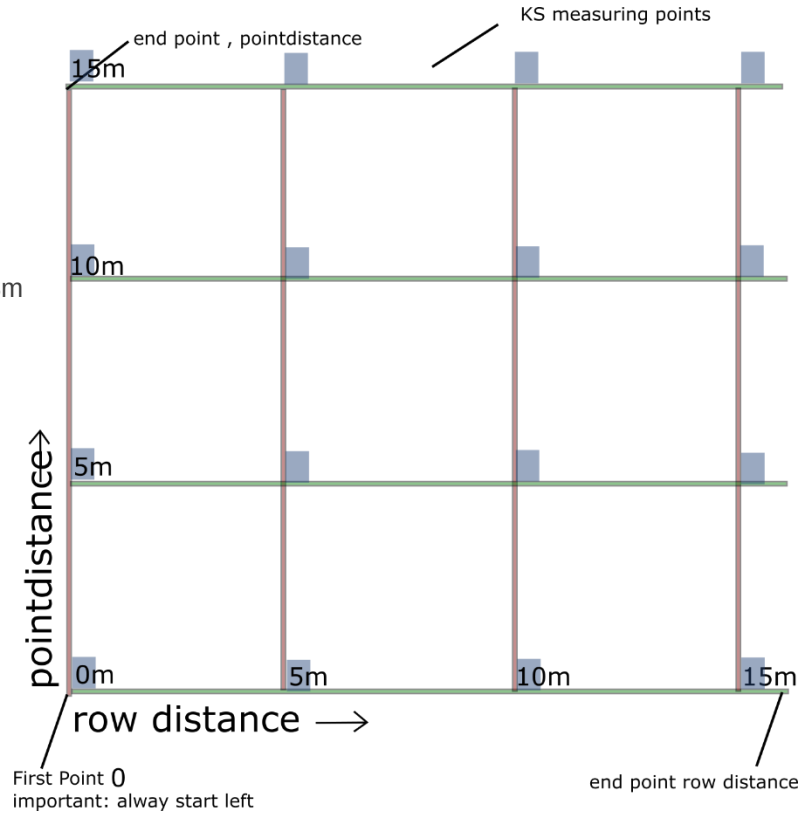
5 meters Point Distance

5 meters row distance

Use: This variant is well suited to large objects to locate in large deep.

As an example, a grave chamber with 3-8m length and width at a depth of 10m. "

The depth may of course also be lower, which should be considered but in the assessment of an analysis by.



Important: in all variants can always different results occur in advance of a measurement is important as much information about the desired object as possible to be able to obtain the appropriate measurement method Select. We continue to recommend steht's same measurement at least 3 times to repeat comparative data in the analysis to have at hand.

9. Minimum / Maximum measurement data

Important: In order to achieve a result in the 3D analysis have to be taken at least 3 rows of both the Point Distance and Row distance.

For larger measuring fields over 30m in length and width, it is recommended to divide these into several fields and to avoid measuring separately to error.

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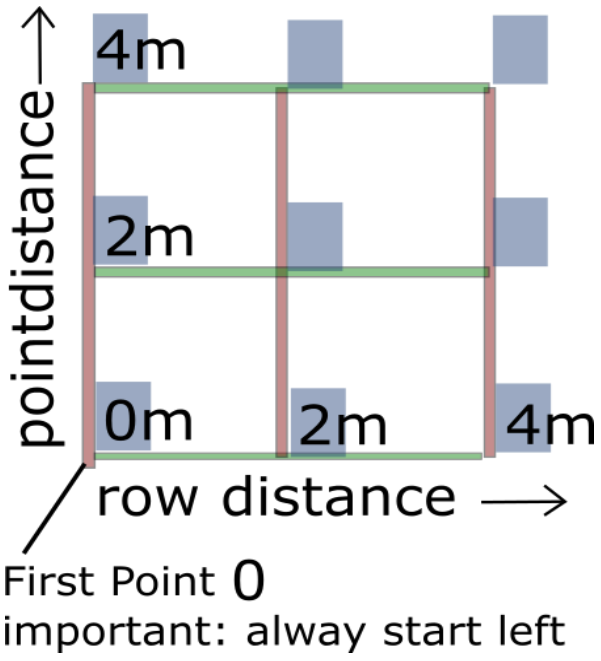


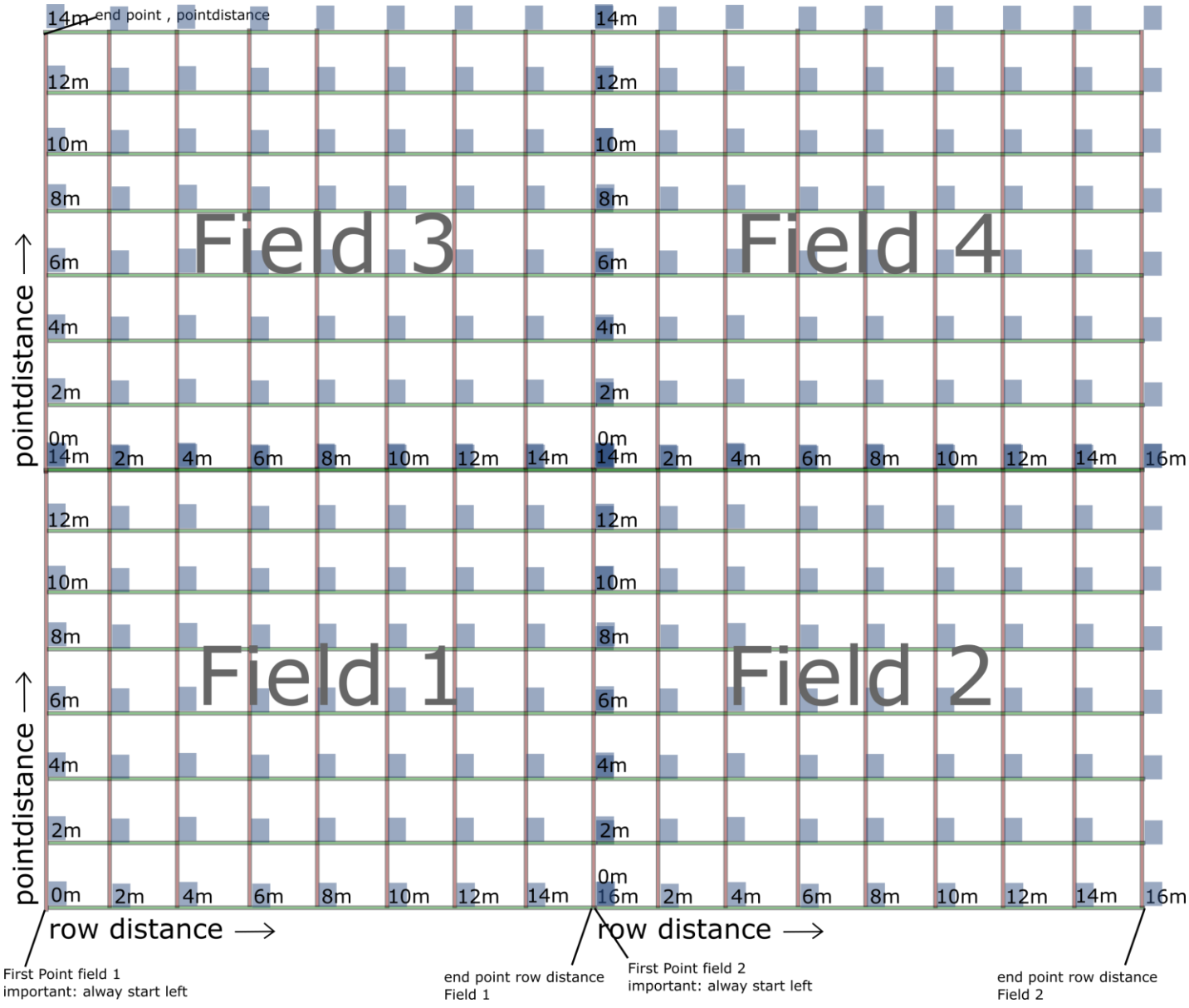
Minimum measurement data

need to achieve a minimum result in the 3D analysis at least 3 rows are measured, it is irrelevant whether or 1m x 1m
or 5m x 5m is measured.

Maximum data

Maximum measurement data does not exist, however, experience shows that too great a measuring field, measuring error with entrapment can, furthermore, it can happen during a measurement, the result is a measurement error due to eg wrong Press during recording and thus too great a field must be remeasured , We advise on larger fields from 30m to divide them into different measuring ranges.

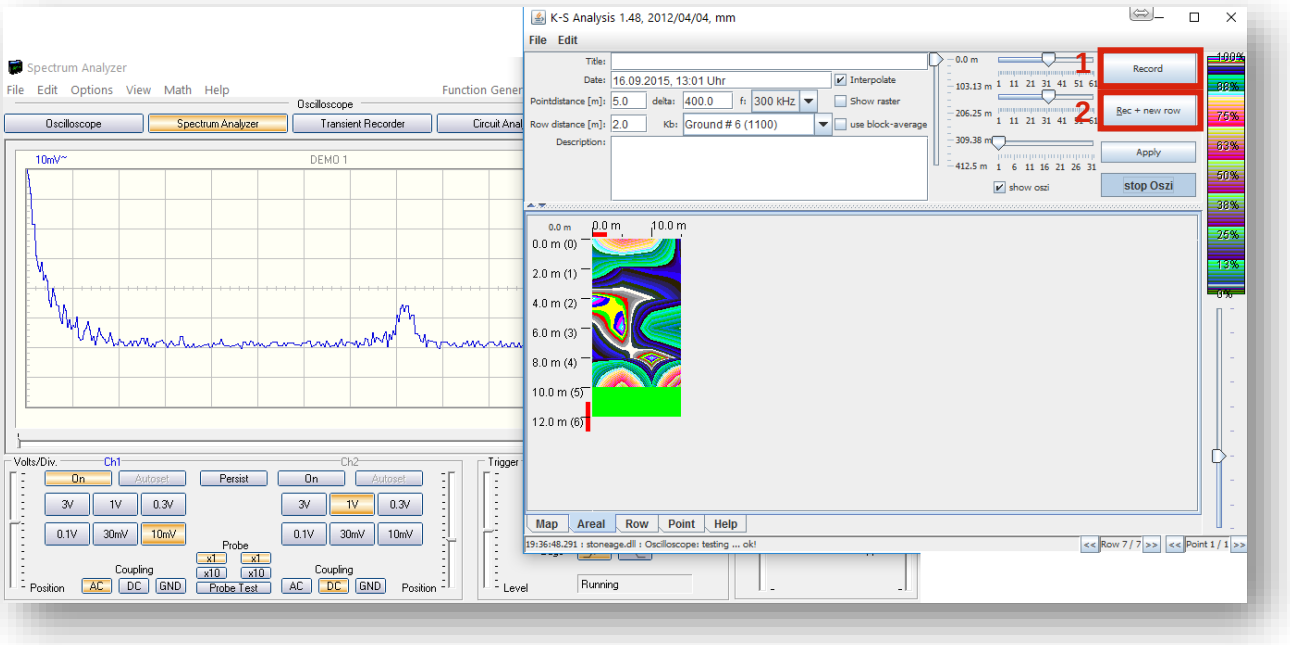
See example:



Tips: It should be checked whether the surface Metal objects are advance on the surface advisable for unknown terrain, this can distort the measurement data. Therefore you should use if possible a metal detector.

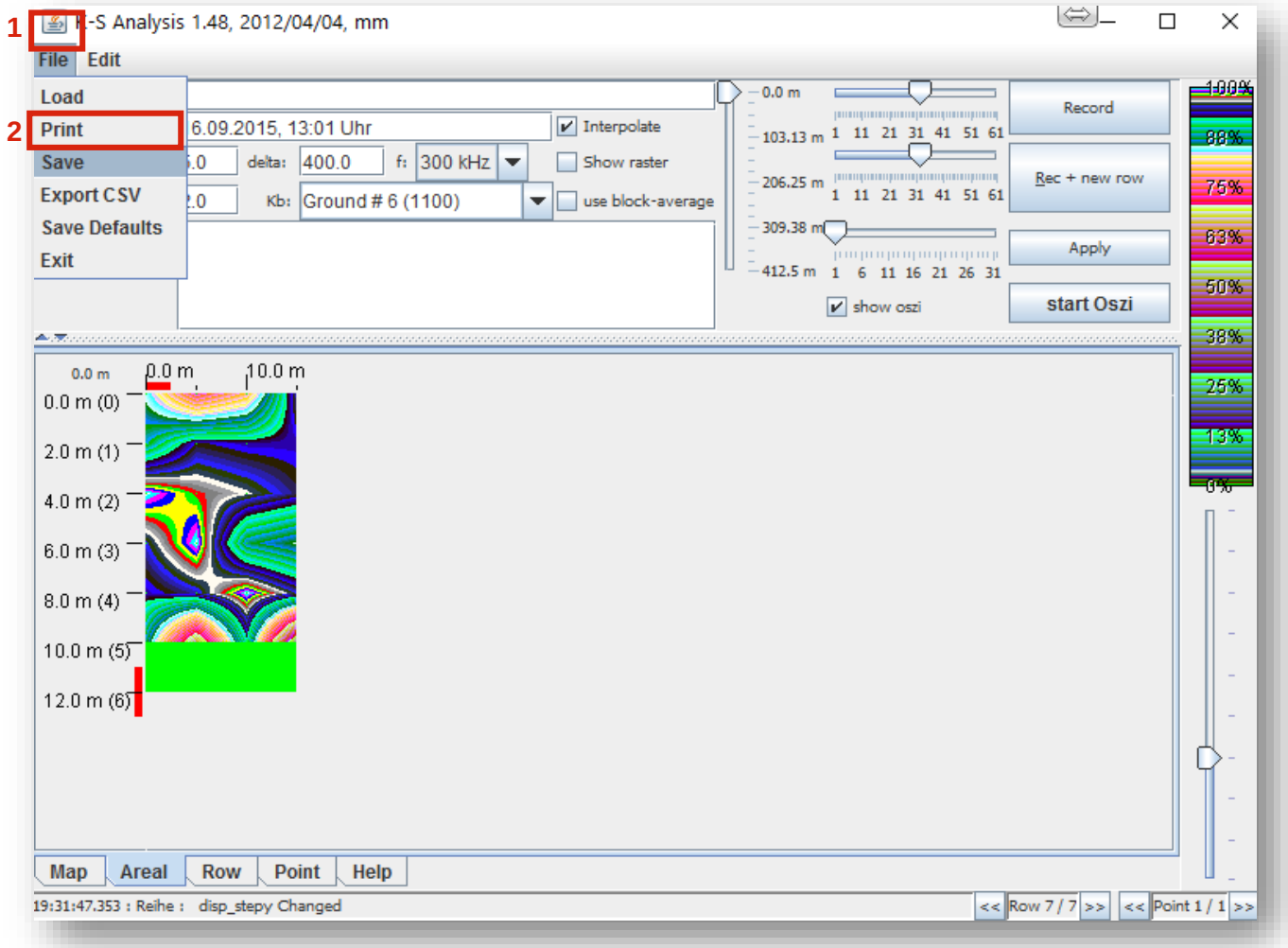
10. Measurement point record

to carry out a targeted object they press first thing in the KS 700 **[11] Power then amplifierund simultaneously on your notebook in StoneAge [1] Record (pictured below), they must have pressed record before the Red light on KS [5] Amplifier on expires.**
The latest shots in a row is with **[2] Rec + new row completed.**



11. Save measurement

After the last measurement point they should first their recording Save As **[1] File - [2] Save**



WEATHER CONDITIONS

12. Measurement in sunshine

The Ks 700/750 can be used without hesitation

13. Measuring in rain

The KS 700/750 is not waterproof, they should at rain want to make measurements so they must protect the unit e.g. by a tarp. This should be on all sides Waterproof to avoid damaging the device by splashing.

14. Measurement in the snow

The KS 700/750 should be suitable for both a plastic sheet and a suitable dry cardboard necessarily also protected from the bottom with snow at the moment.

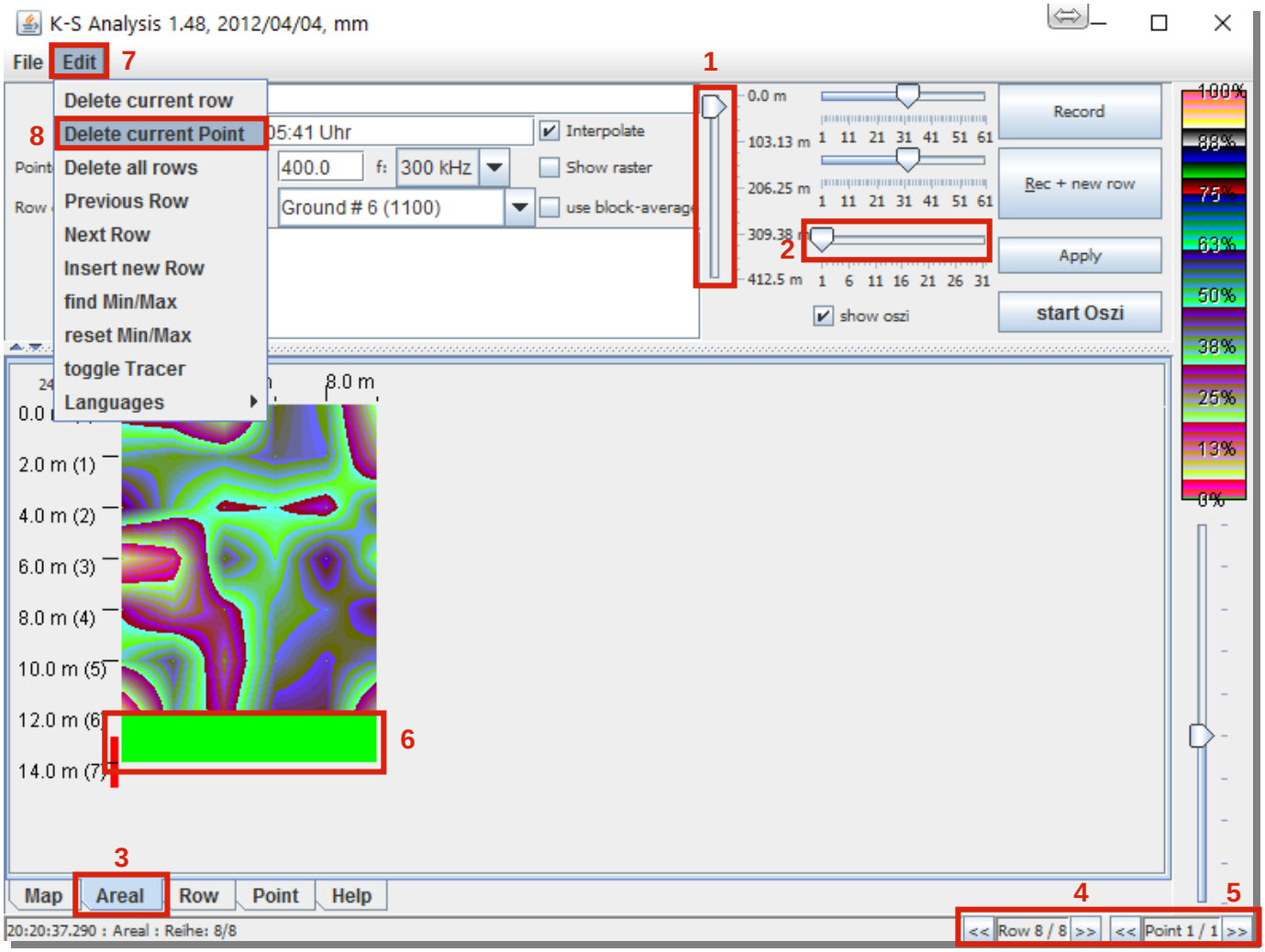
START CHECKLIST

- ✓ Measuring field in (Start - endpoints)
- ✓ examined surface of the measuring field by Metallic Objects
- ✓ charged battery and notebook KS
- ✓ Weather conditions tested
- ✓ made StoneAge settings
- ✓ made oscilloscope settings
- ✓ Connection between notebook and checked KS
- ✓ Time setting on KS set - transmitting length

VOXLER 3D VISUALIZATION

15. Export CSV file from StoneAge

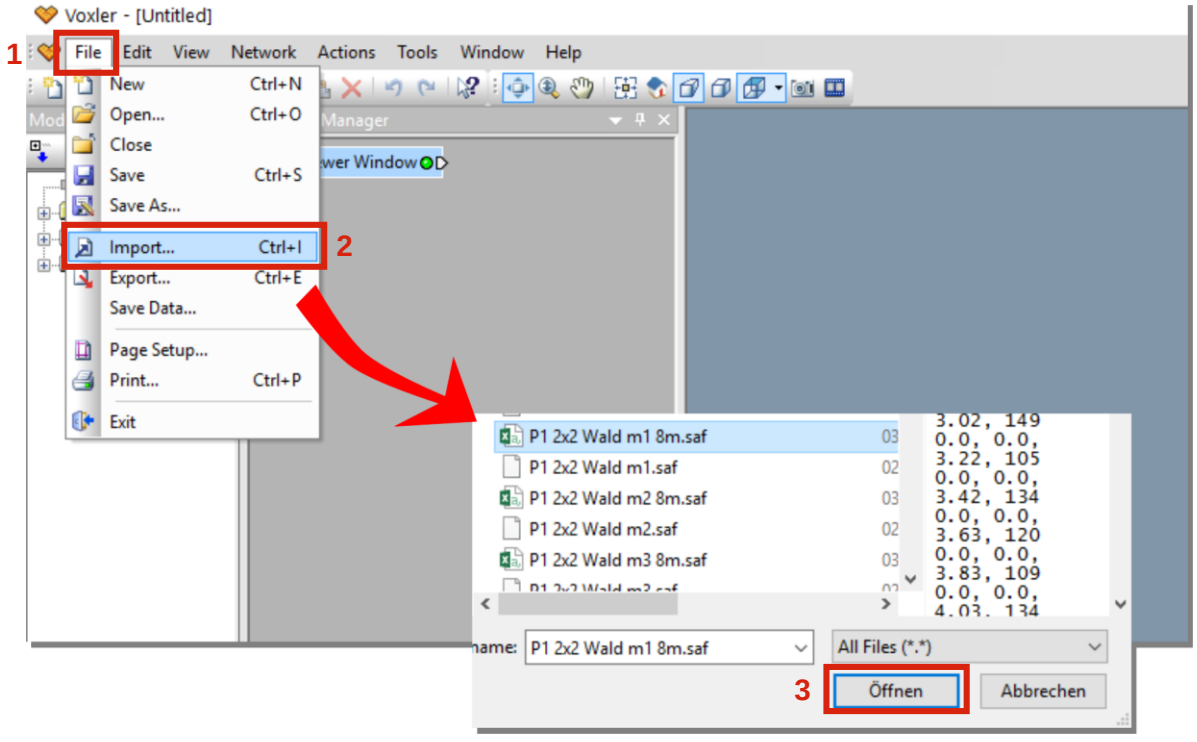
1. Open StoneAge and upload the previously stored measurement data via File - Load in the program, they lay now in [**1**] **Depth of Horizontal cut** the maximum depth determined that they want to export e.g. 25m
2. Translated to [**2**] **Block Size** 1
3. Now go down to the tab [**3**] **Areal**
4. Press at [**4**] **Row** and [**5**] **Point** to the far right so that the red mark on the [**6**] **Green area** the measurement shows (blank measurement)
5. This [**6**] **Green area** must be now removed under [**7**] **Edit - [8th] Delete current row**
6. Now they export the file as a CSV under File - Export CSV



16. Import CSV in Voxler 3D visualization

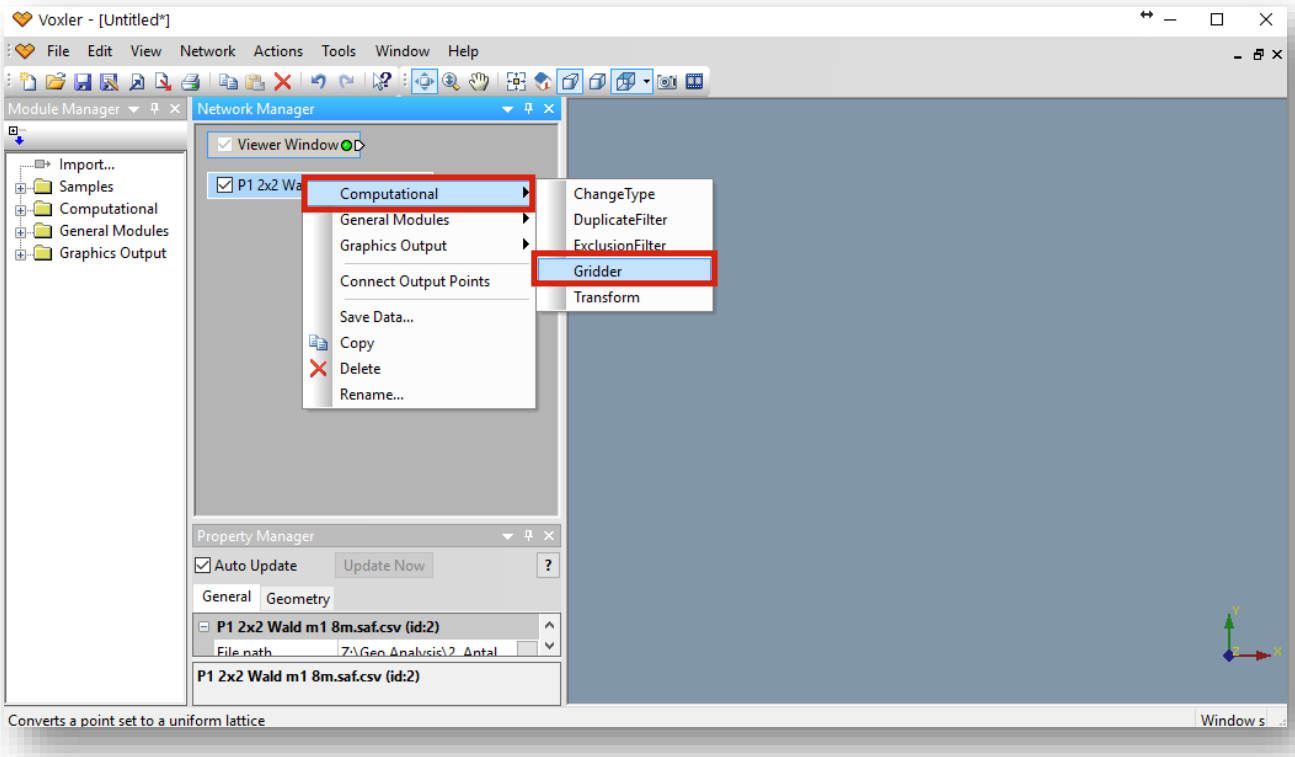
The previously made StoneAge exported CSV file must now be imported in Voxler.

1. **Start** you Voxler
2. Click on [1] **File - [2] import**
3. Choose from the previously exported CSV file and click on [3] Open (open)

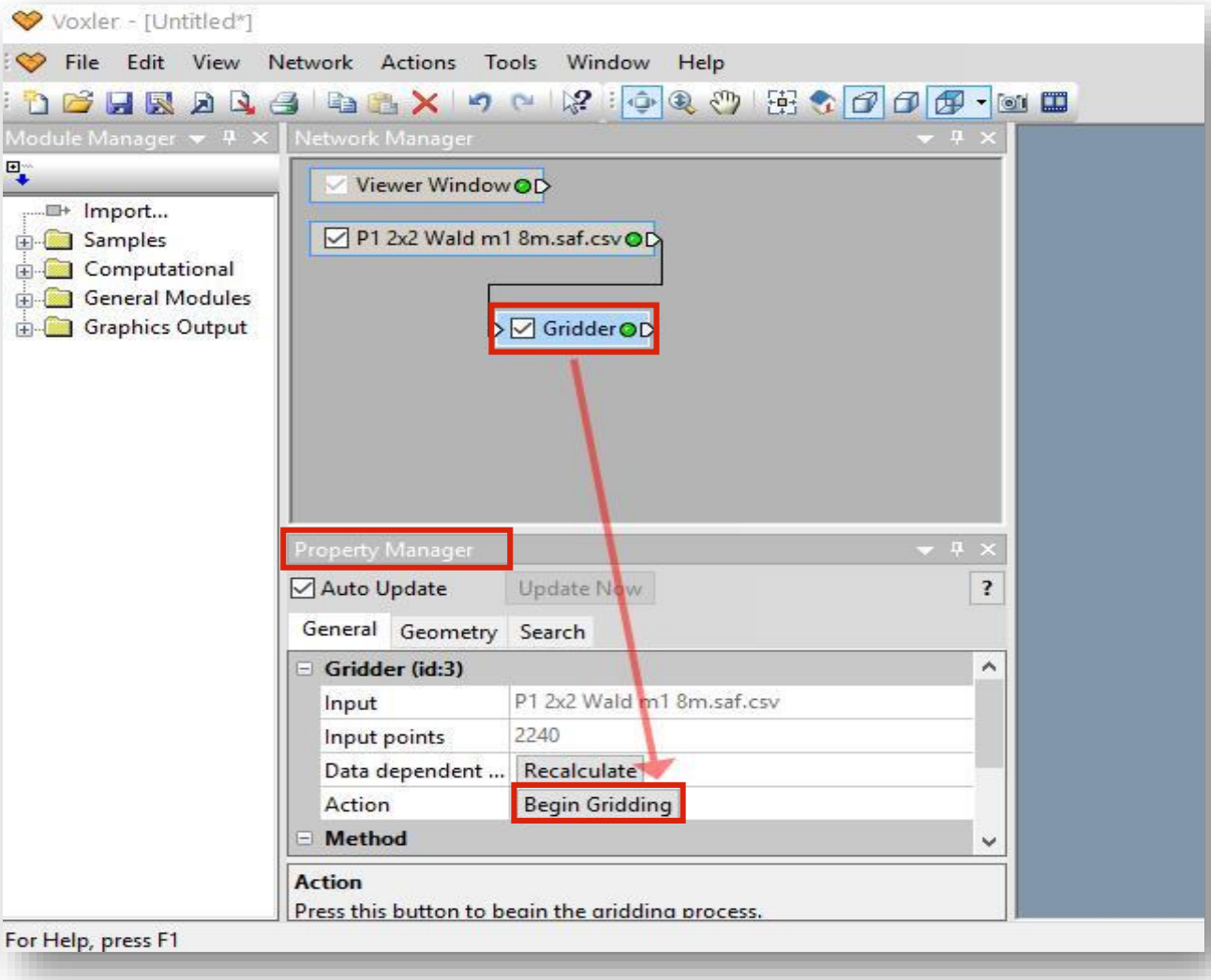


17. Analysis and evaluation

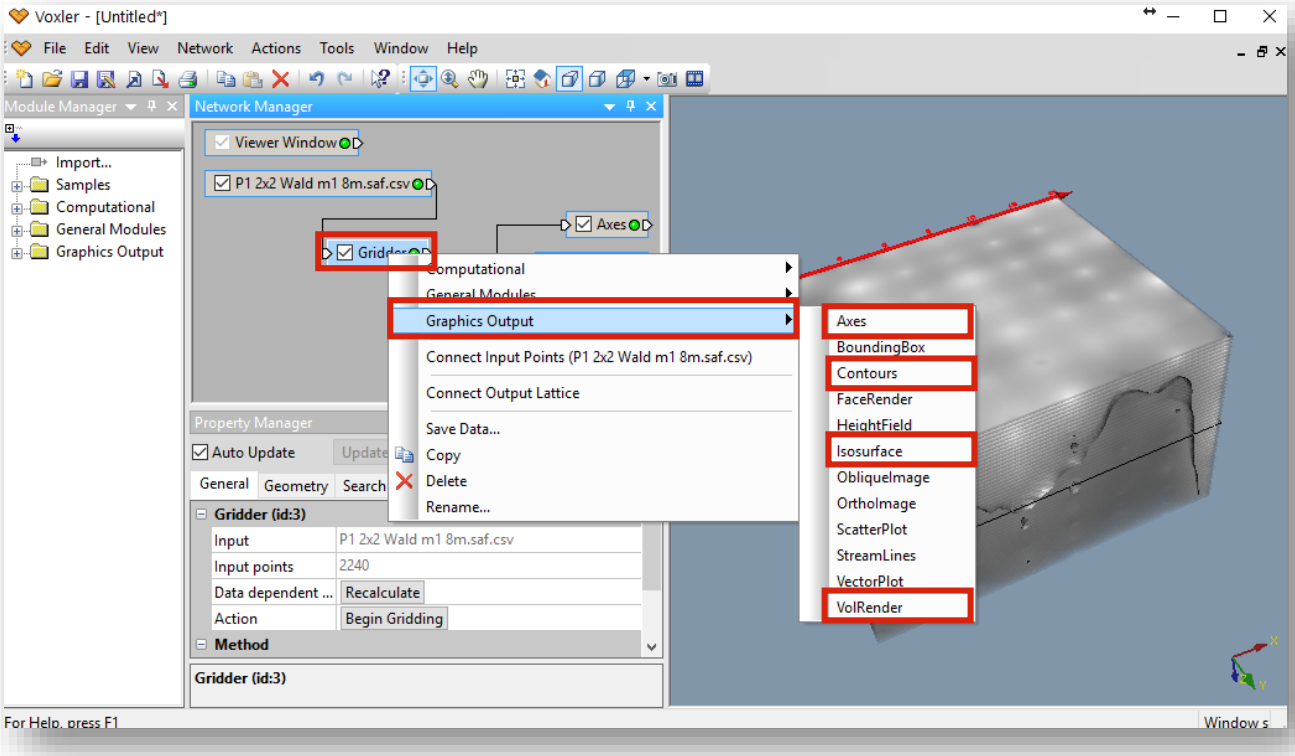
1. Select the Import the file and click the right mouse button
2. In context menu you go on Computational - and then on Gridder



3. Highlight it and click Gridder with Property Manager on Begin gridding

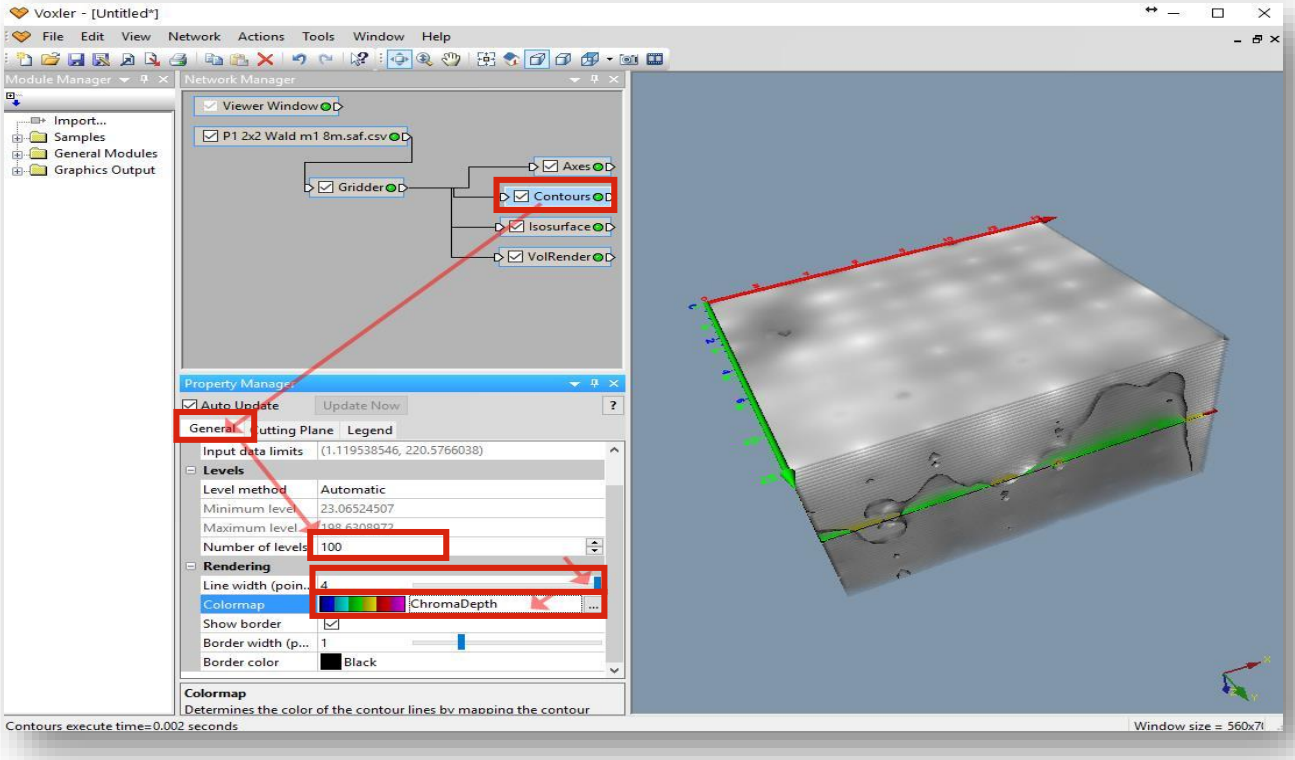


4. Click with the right mouse button on Gridder - and Graphics output and add it Axes
5. Repeat the process with: Contours, isosurface and Volrender

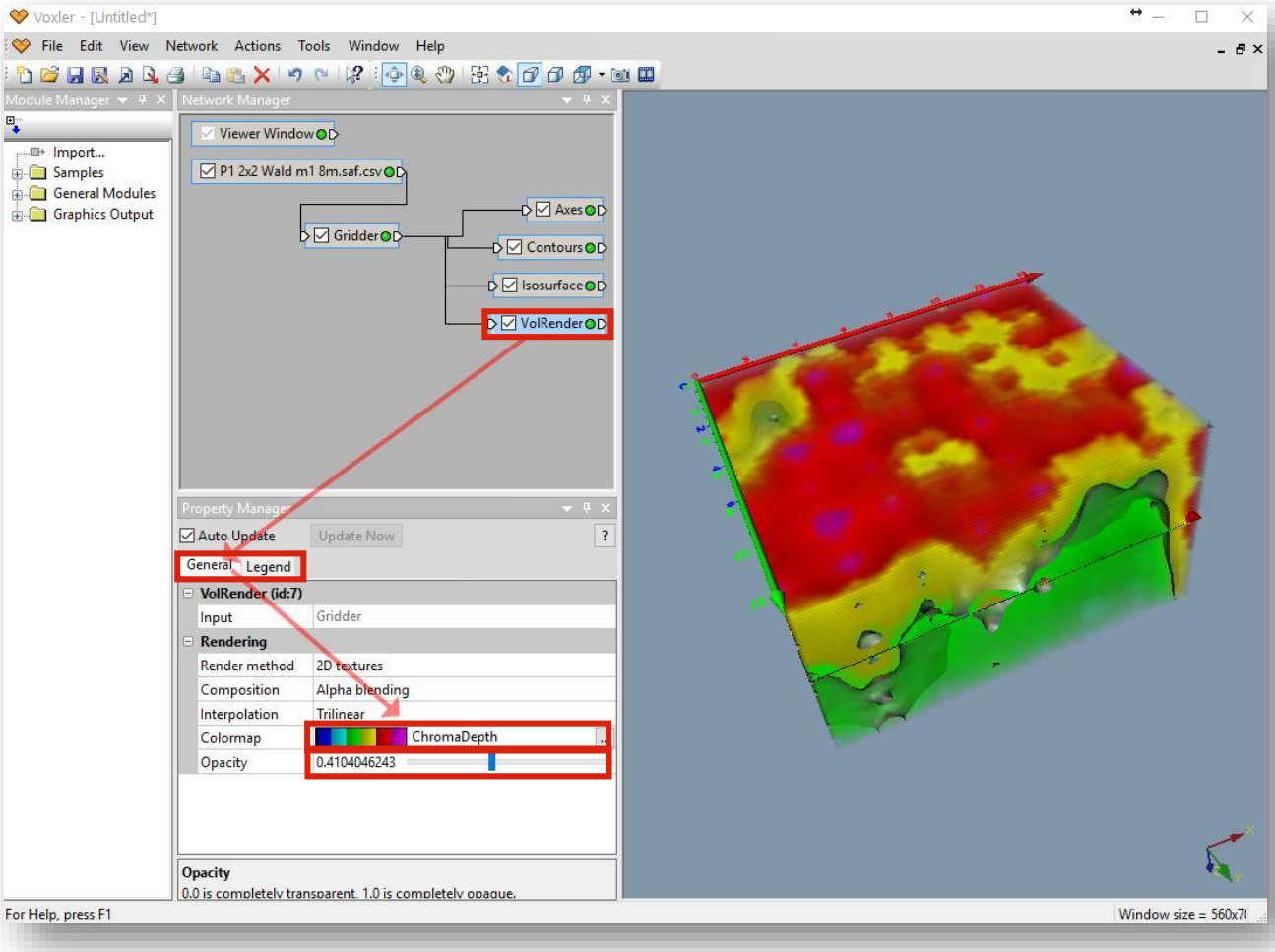


6. Highlight Contours and they go under Property Manager on the General tab
7. Go to the line Number of Level and wearing there **100** on
8. Put it the slider in line width to the right on **4**
9. Select at Colormap a color palette from e.g. ChromaDepth

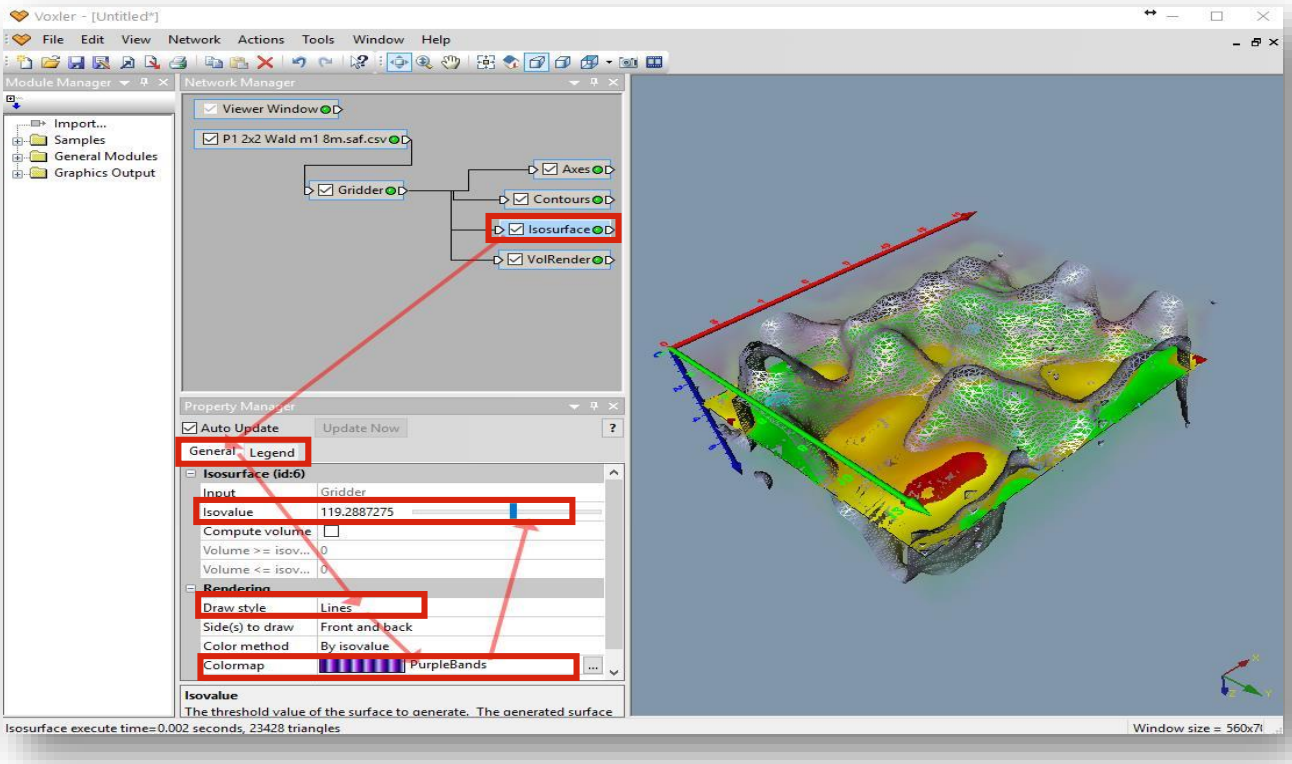
Tips: The colormap in Contours is an important tool in the analysis, it can according to experience at any time own colormaps are created, this should be worked out independently, depending on experience degree with measurement data from test measurements. Among the riders Cutting Plane - Offset from center Contours can be added



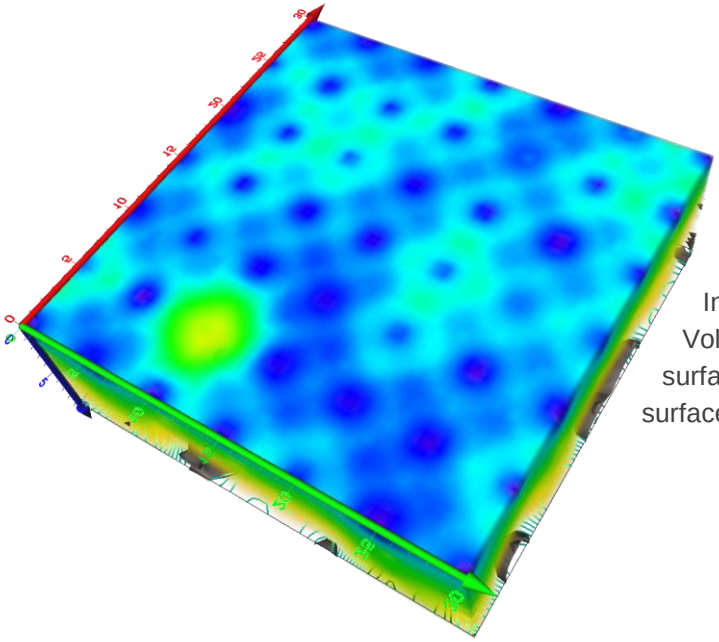
10. Highlight VolRender and choose among the PropertyManager Colormap ChromaDepth from.
11. When they sat Opacity slider piece by piece to the left until the color map is dursichtiger.



12. Highlight Isosurface and click on the General tab under Property Manager
13. In Draw Style select Lines from.
14. In Colormap elect e.g. Purple bands (this may vary depending on which color is in contrast to the color map at Contours)
15. Under Isovalue they can adjust the height and depth by means of the slider.



18. Examples Indexes



Example object on the surface

In this example one can see a clear contrast in VolRender on the surface, this indicates to the or near the surface of a structure other than on the entire measurement surface. An example would be something metallic here.

Example cavity with Altered Structure

In this example, we see a clear contrast in VolRender at about 10m deep to is this contrast to be clearly seen in Isosurface a cavity.

This points to a cavity with Metallic object or a fountain with water.