EMpower
Cross Power Editor

GEOPHYSICS

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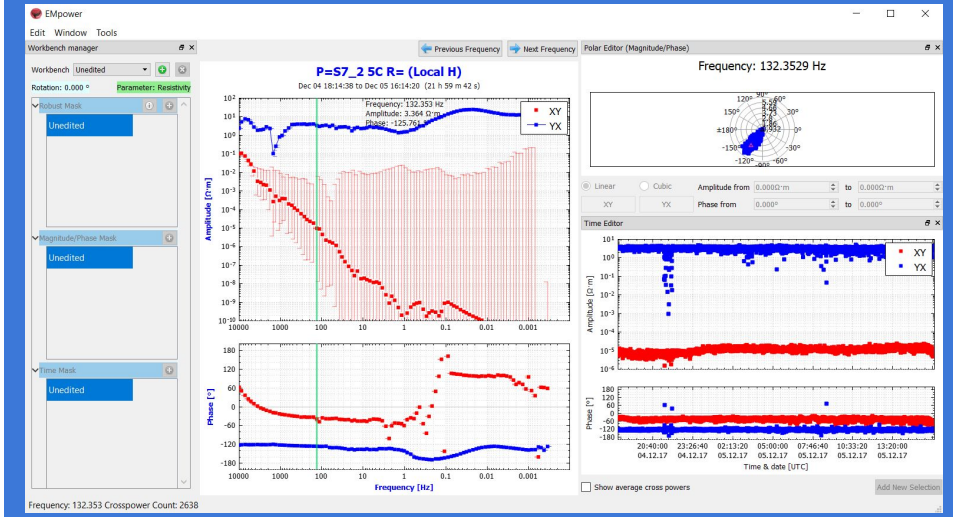
Cross Power Editor

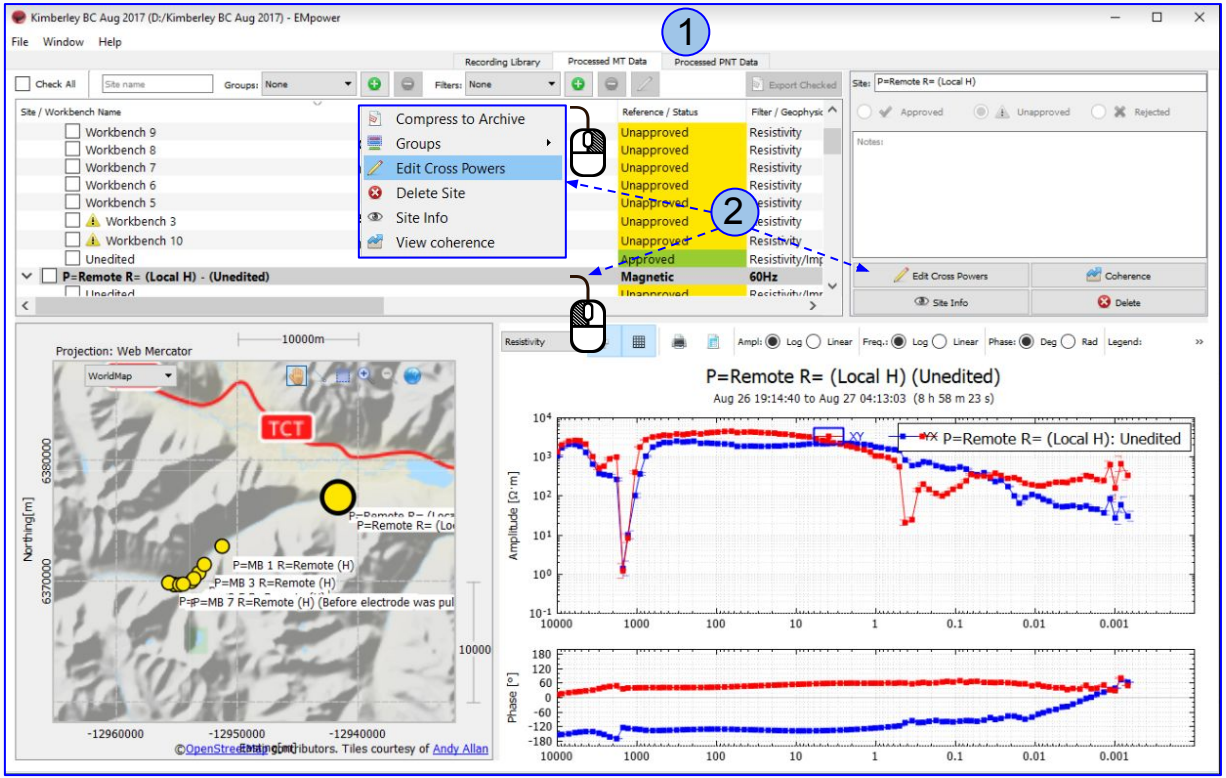
The Cross Power Editor is designed to improve the quality of processed data



Processed Sites

Processing might yield a noisy resistivity curve. In such cases, editing the site with the Cross Power Editor can improve the quality of the processed data.

1. The Cross Power Editor is available in the Processed MT Data tab
2. From the processed data list
   - Double click on a processed site
   - Right-click on a processed site and click **Edit Cross Powers**
   - Use the Edit Cross Powers button

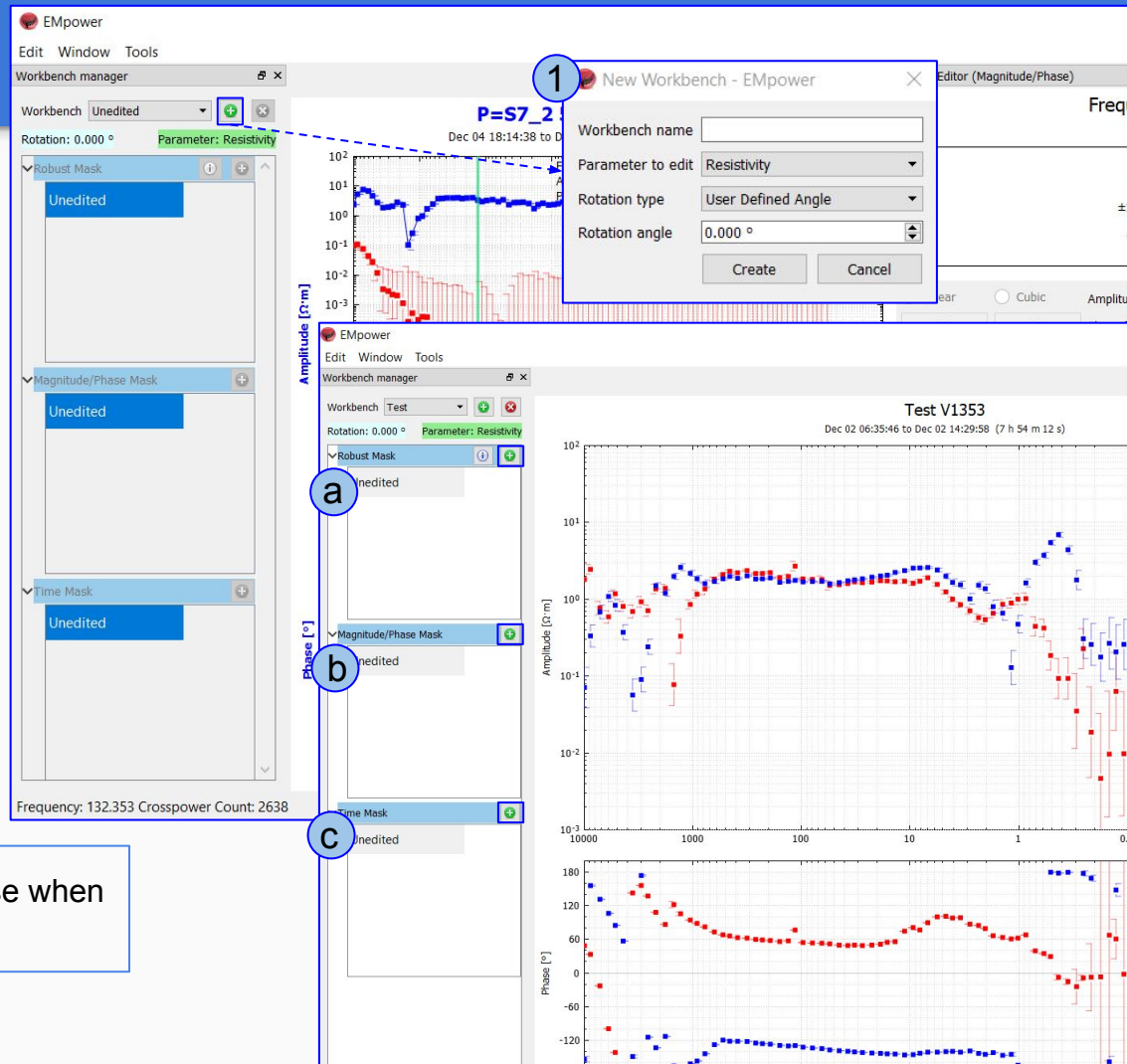


New Workbench

Each Workbench can contain multiple masks. All edits are done on a specific mask, and the plot will update as cross powers are added or removed from the selected masks.

1. Click the ⊕ button to create a new Workbench. Up to three different types of mask can be added to a Workbench
   - **a.** Robust Mask
   - **b.** Magnitude / Phase Mask
   - **c.** Time Mask

   **More details in the following pages*

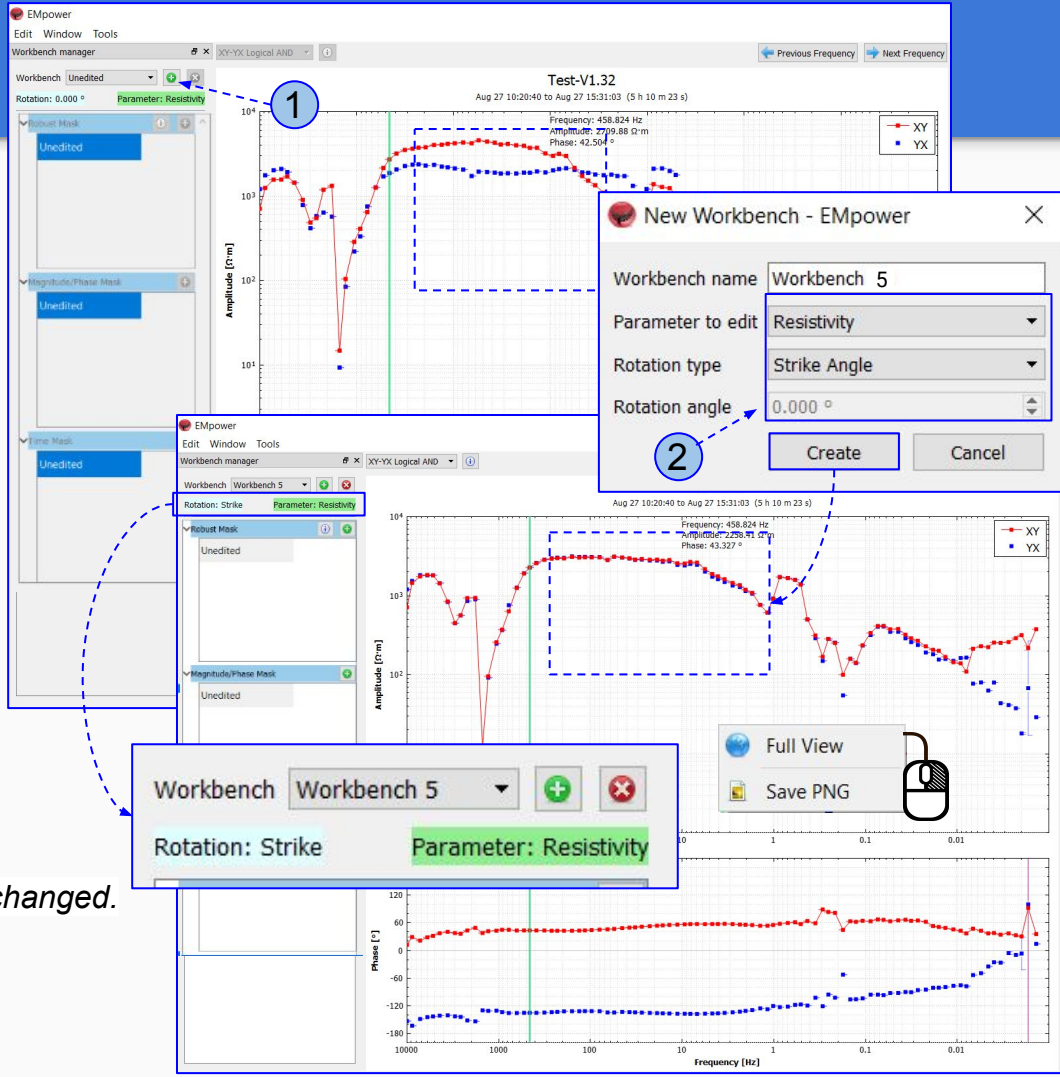


To help in understanding which parameters to use when creating a Robust Mask click on the ⓘ icon

Rotating a Workbench

Workbenches can be rotated to a manually specified angle or automatically rotated to the calculated Strike Angle in the New Workbench dialog.

1. Create a Workbench by clicking the button
2. Select the Rotation type and angle in the New Workbench dialog



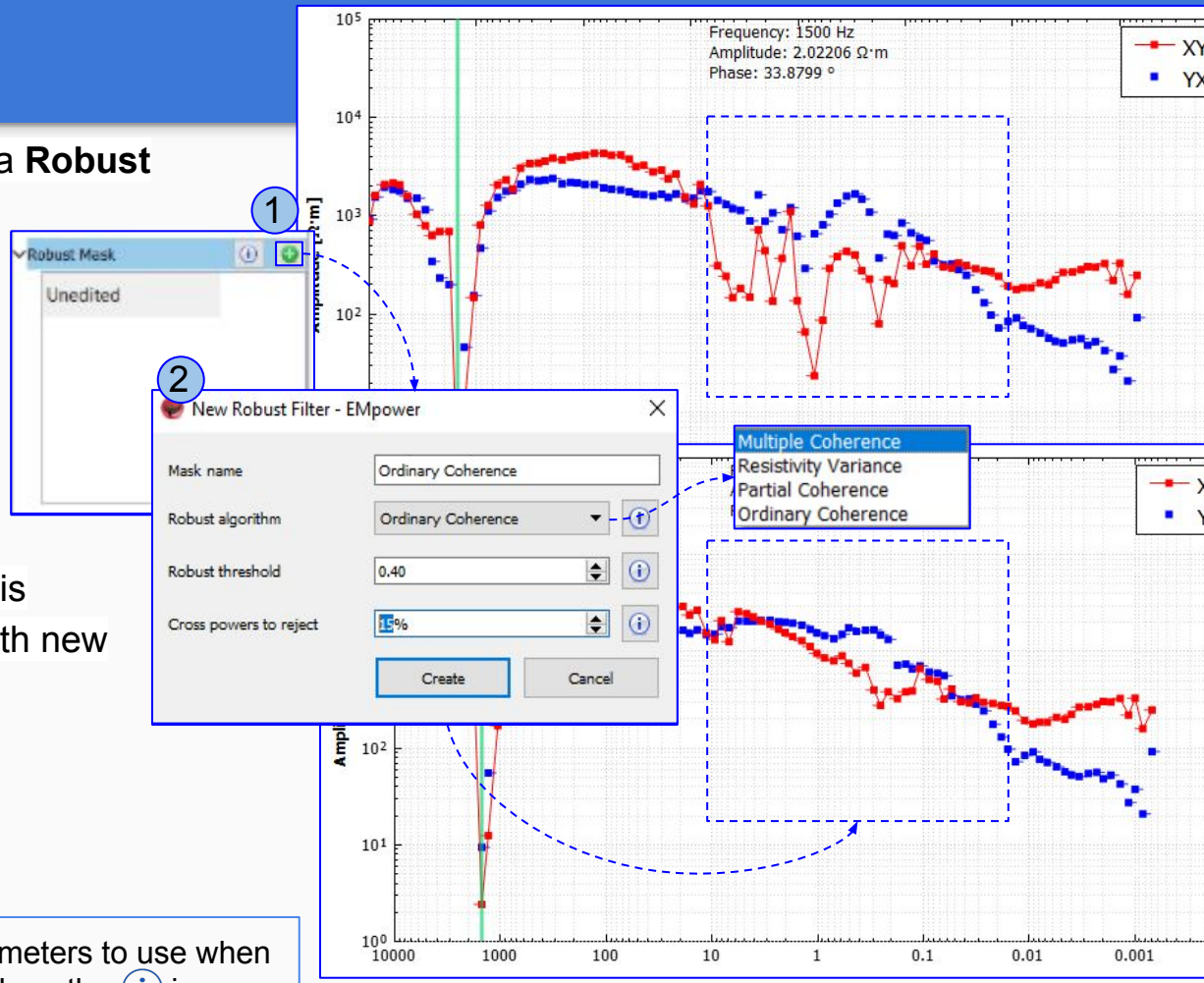
The **Strike Angle uses fixed parameters, and cannot be changed.*

Robust Mask

When the processed site contains noise a **Robust Mask** can be created to reduce
The noise.

1. Create a **Robust Mask**
2. Define the parameters needed
   - Robust algorithm
   - Robust threshold
   - Cross powers to reject

If the result of applying the Robust Mask is unsatisfactory, try a new Robust Mask with new parameters.

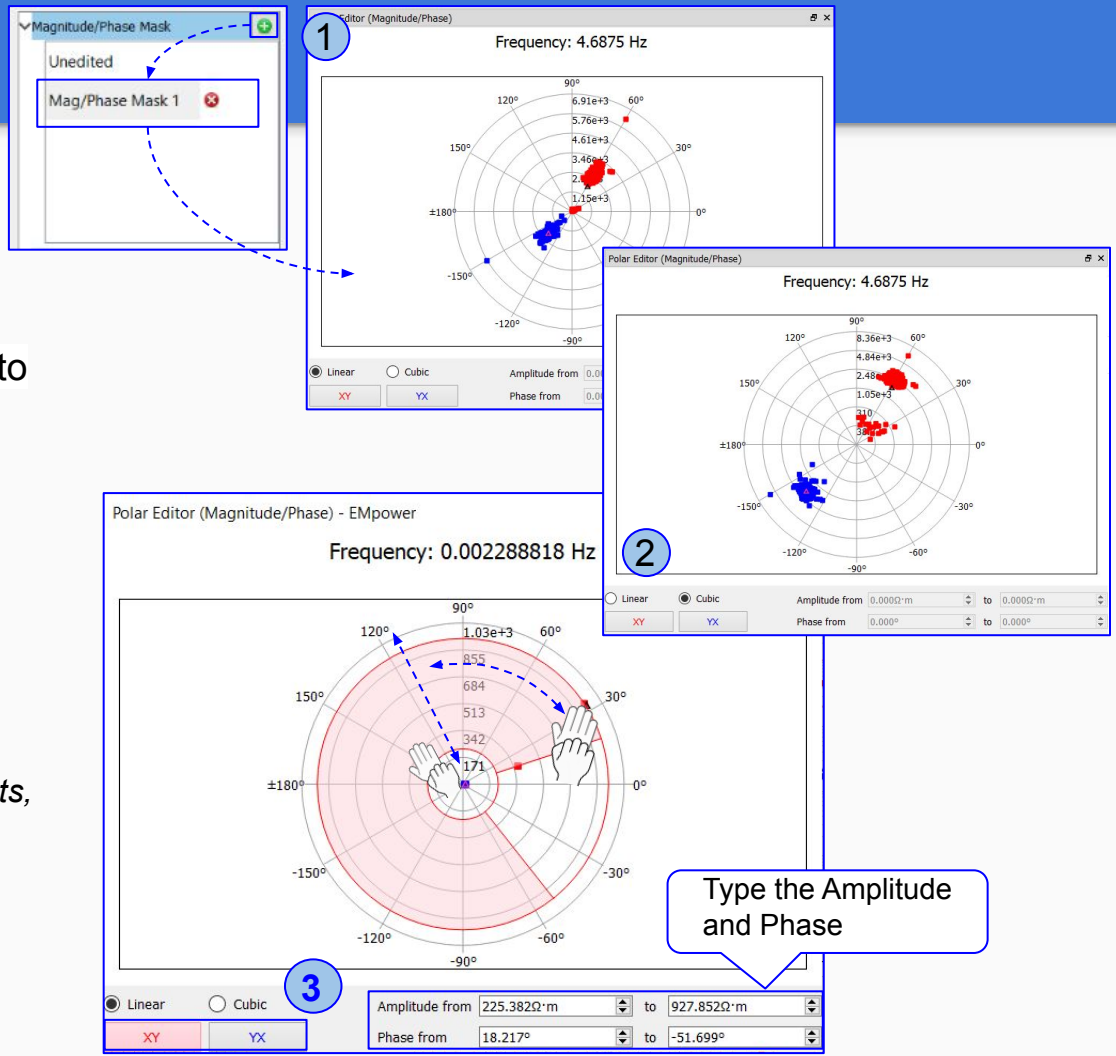


To understand which parameters to use when creating a workbench, click on the (i) icon

Magnitude / Polar Editor

1. Create a **Magnitud Mask**
   - The Polar Editor can view information in two ways: Linear or Cubic
2. The Cubic view changes the scale logarithmically, which can make it easier to see data trends
3. To select ranges
   - Click XY or YX button to switch between ranges.
   - Edit the ranges by either dragging the handles with your mouse or manually entering values into the spin boxes.

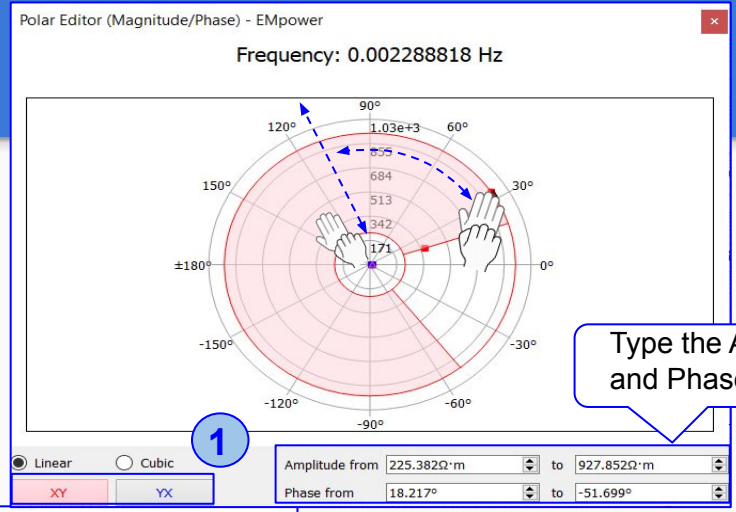
**This tool offers minimal improvement to some data sets, but it should be used sparingly.*



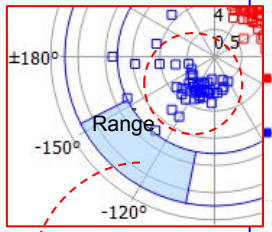
Copying Ranges (Magnitude / Polar)

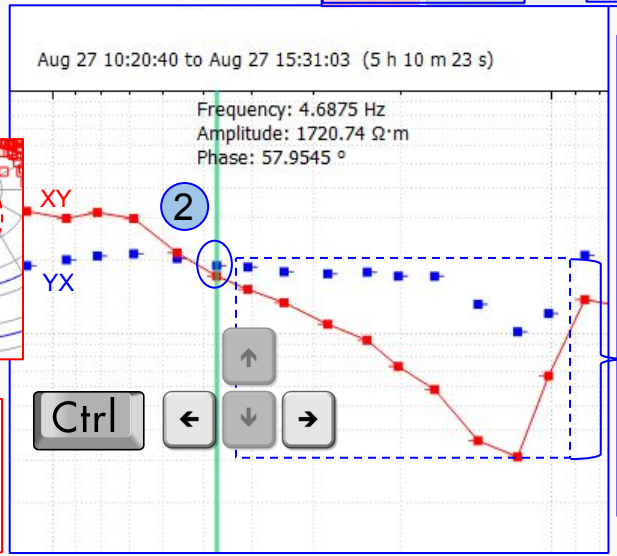
1. Select the range
2. Hold down the **Ctrl button** and use **Right or Left Arrow** keys.
   - The **XY** and **YX** ranges will be copied to the next frequency.

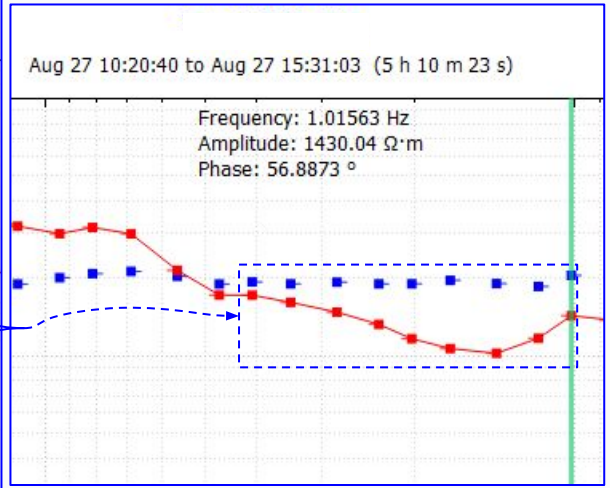
**This tool offers minimal improvement to some data sets, but it should be used sparingly*.



Use this tool only after the Robust mask is applied.







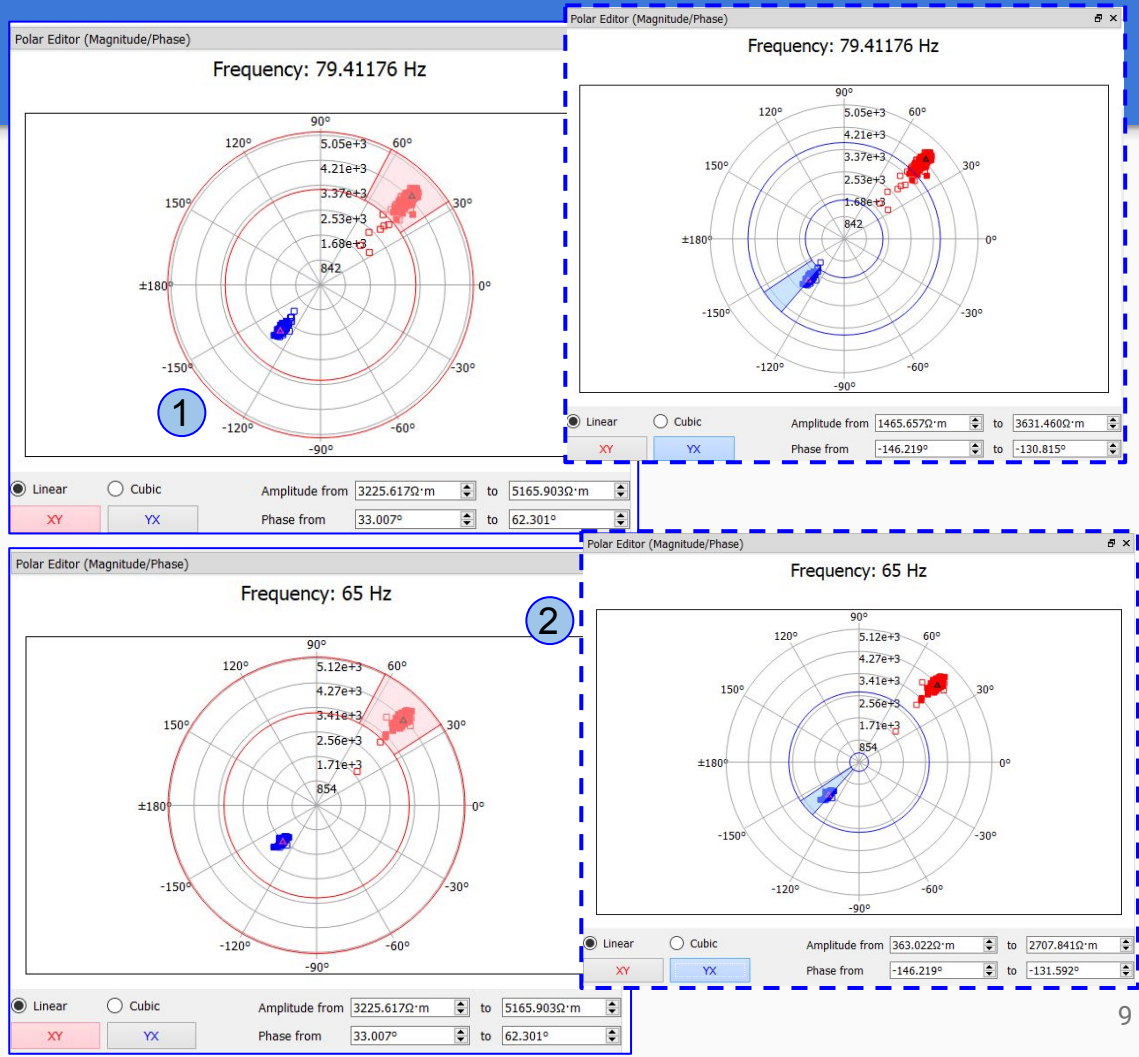
When the range copied is higher or lower than the frequency, the frequency points will disappear on the plot.

Exclusive Range Copying (Magnitude/Phase)

The Exclusive Range option on the Tools menu allows for editing one curve at a time.

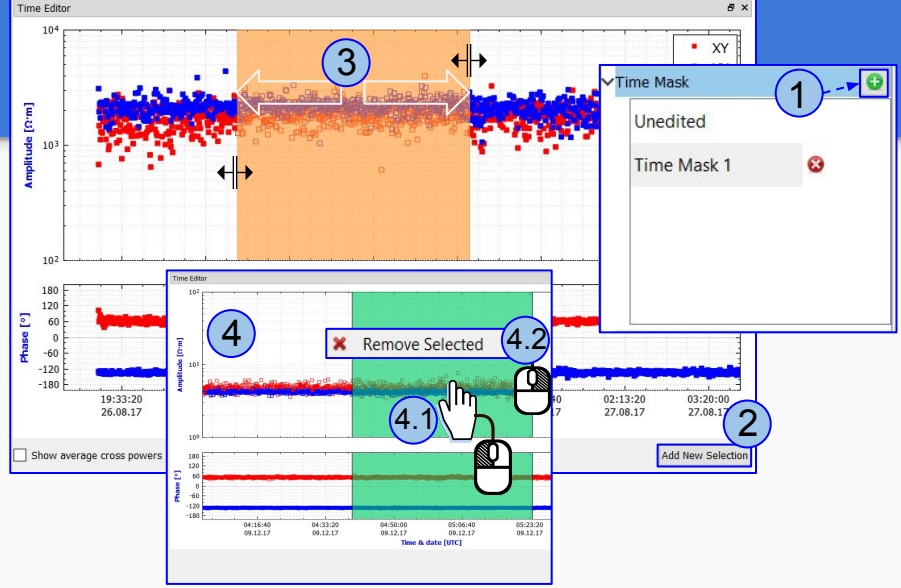
1. Select **Polar Editor** option to enable Exclusive Range copying
   - Select the XY (or YX) button on a selected Magnitude/Polar Mask *(see slide 3)*
   - Copy the selected frequency *(see page 6)*
2. Observe that the range of XY (or YX) has been copied, but the range of YX has not been.

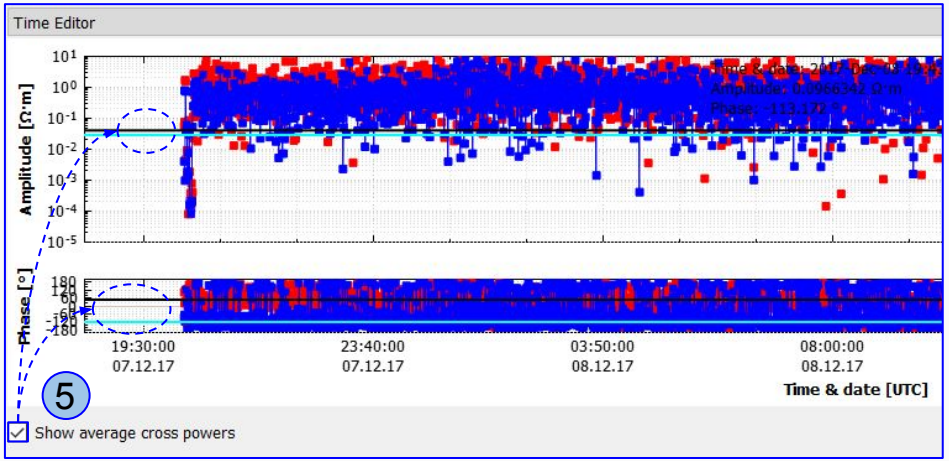
**This applies to both XY and YX*



Time Editor

1. Create the **Time Mask**
2. Click the **Add New Selection** button
3. To Add a New rejection area
   - Select the area by dragging the handles with your mouse to the right or left.
   - All cross powers in that selected area will be excluded from the calculation
4. To delete the selection
   - **4.1** Left-click on the area to be deleted
   - **4.2** Then right-click the option **Remove Selected** that appears on the screen
5. The **Show average cross powers** checkbox will show or hide the average **XY** and **YX** amplitude and phase values



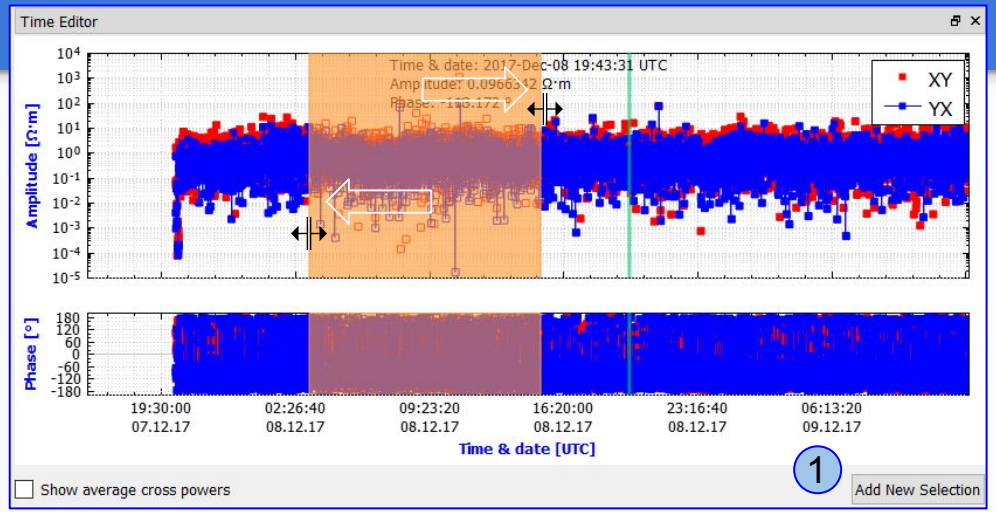


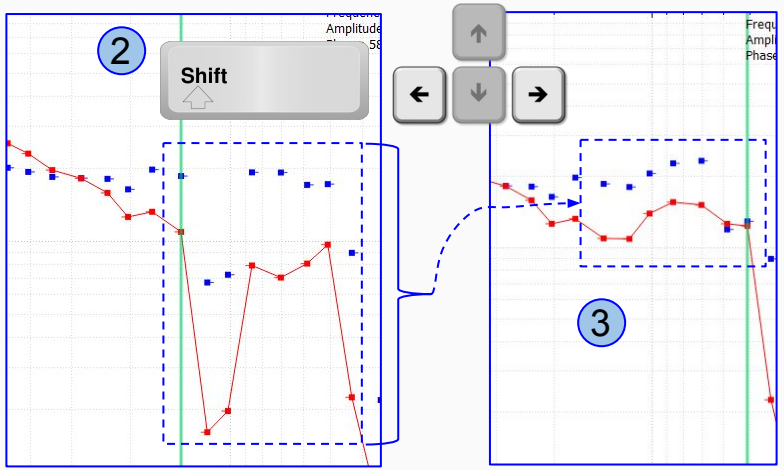
Copying Ranges (Time Editor)

1. Create a **Time Mask**
   - **Add New Selection**
   - Select the time interval on the plot Right to Left or Left to Right
2. Hold **Shift** and use the **Right or Left Arrow** keys to move
3. The time interval selected will be copied to the next frequency

   *Sometimes the point on the plot may disappear. This happens when all cross powers have been removed for that frequency (Review the time interval)

**This tool offers minimal improvement to some data sets, but it should be used sparingly*.





Workflow <Best Editing Practices>

Processed Sites

Processing the Site could fix some problems, but not always remove all ambient noise from the recording, and the data may need to be adjusted.

(See the Data Management Manual for more information)

Cross Power Editor

The Cross Power Editor helps to improve the data, by using different tools for filtering out the noise. Always create a 'Robust Mask' first. This algorithm fixes the most common problems.

Mask Editor

Besides the Robust mask, EMpower has additional masks available such as the Time Editor or Magnitude/ Phase Mask.

Although those tools have many options for fine-tuning, it is recommended to use them modestly because they may also introduce invalid results.

Shortcuts

Shortcuts	Description
CTRL+C	Copy frequency masks
CTRL+V	Paste frequency masks
CTRL+Right arrow button	Copy the current ranges in Polar plot to next frequency
Shift+Right arrow button	Copy the current ranges in Times plot to next frequency
CTRL+Shift+Right arrow button	Copy the current ranges in Polar and Times plot to next frequency