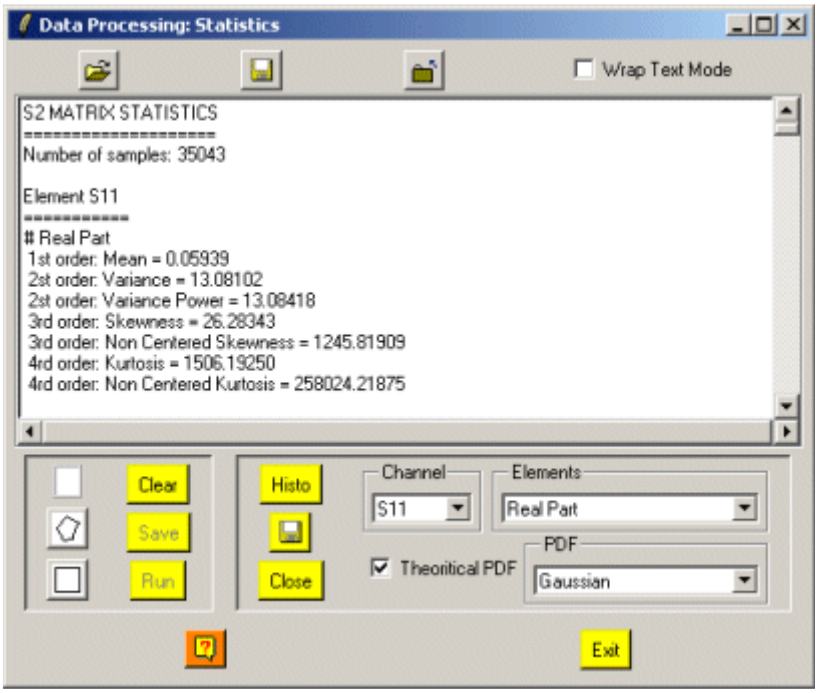
Statistics



Description:

This Application is used to evaluate the statistics of polarimetric SAR data by comparing empirical data distribution (sampled from real SAR data) to theoretical ones in order to test the validity of common statistical assumptions and eventually correct them.

A specific GUI based application is proposed to sample SAR data by defining regions of interest. Empirical data distributions are displayed using histogram plots and users have the possibility to test the data distribution against a bank of predefined functions (Gaussian, Gamma, K, …). The goodness of fit is estimated using classical testing procedures (K.S., Chi 2,…).

The selection of areas of interest and the results display is achieved by the way of an interactive Graphical User Interface.

Comments:

Parameters written in Red can be modified directly by the user from the keyboard.

Graphic Editor:

Selected area may be defined by the way of a simple Graphic Interface which permits to delimitate areas by defining regions of interest on a visual representation of the data to be analysed.


Toggle selected area contour color (black / white).


Polygonal selection of Area of Interest (AoI).
Note: The contour is automatically closed by clicking on the Mouse Right Button.


Rectangular selection of Area of Interest (AoI).

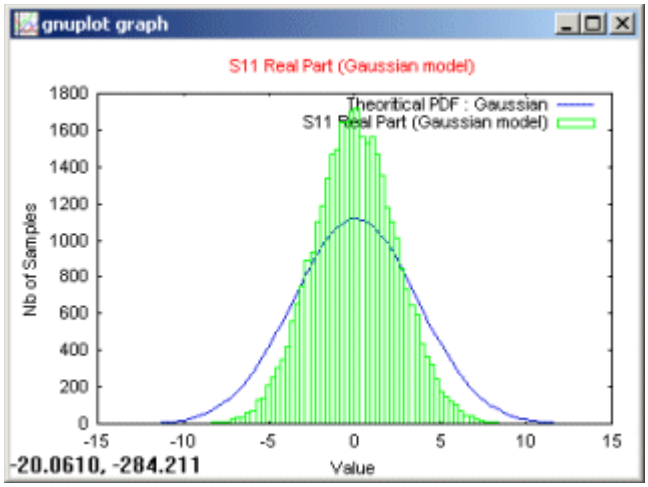
Clear Clear the different contours on the chosen image.

Save Save the selected area characteristics.

Run Execute the statistical analysis of the selected data.

Functionalities:

Histo Open the Display Window and plot the data distribution histograms




Save the active Display Window image

Close Close the Display Window

Representation:

Channel	Corresponds to the polarimetric channel to be displayed. The different possibilities are : s11, s12, s21 and s22
Elements	Corresponds to the element of the polarimetric channel to be displayed. The different possibilities are : real part, imaginary part, amplitude and phase
Theoritical PDF	If selected, offers to the user the possibility to plot on the same graph a theoretical PDF.
PDF	Corresponds to the theoretical PDF to be displayed. The different possibilities are : gaussian, rayleigh, exponential, uniform and all.

Statistics Procedure Steps:

- **1** : Click on the Rectangular or Polygonal Selection of Area of Interest (AoI) button
- **2** : Select using the Mouse, the area to be analysed
- **3** : Click on Save button to save the selected area characteristics.
- **4** : Click on Run button to execute the statistical analysis procedure
- **5** : Visualize the statistical results on the Text Window
- **6** : Select the Channel to be displayed.
- **7** : Select the Element to be displayed.
- **8** : If Theoritical PDF selected, choose the corresponding theoretical PDF to be displayed.
- **9** : Click on Histo button to open or update the Histogram Display Window
- **10** : To proceed with another area, click on the Clear button, then go to step 1.
