

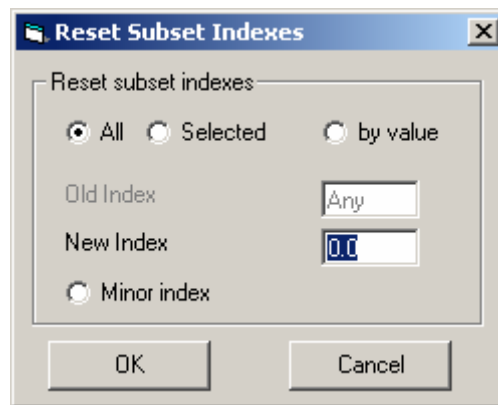
Step-by step procedure for fault separation of fault-slip data from BORCALIZ\_tot file provided by Allan Lopez

## 1. Preparing the Processing Sheet

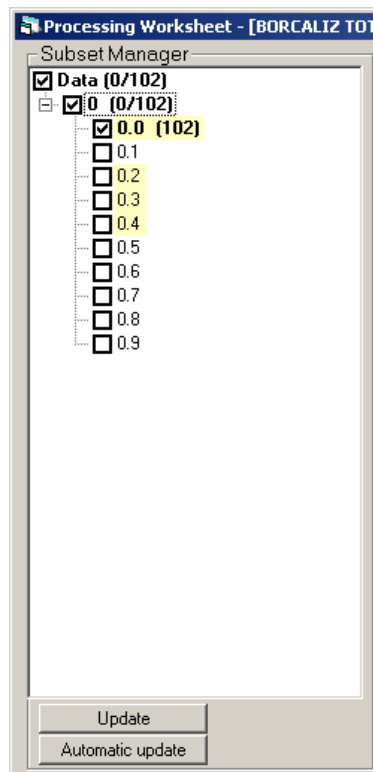
After introducing the data, go to the Processing tab.

Reset the Working Index of all fault-slip data to 0.0

Using the Reset Subset Indexes dialog (Menu/Data/Reset Subset Indexes), select All and type 0.0 in the New Index text box then validate.

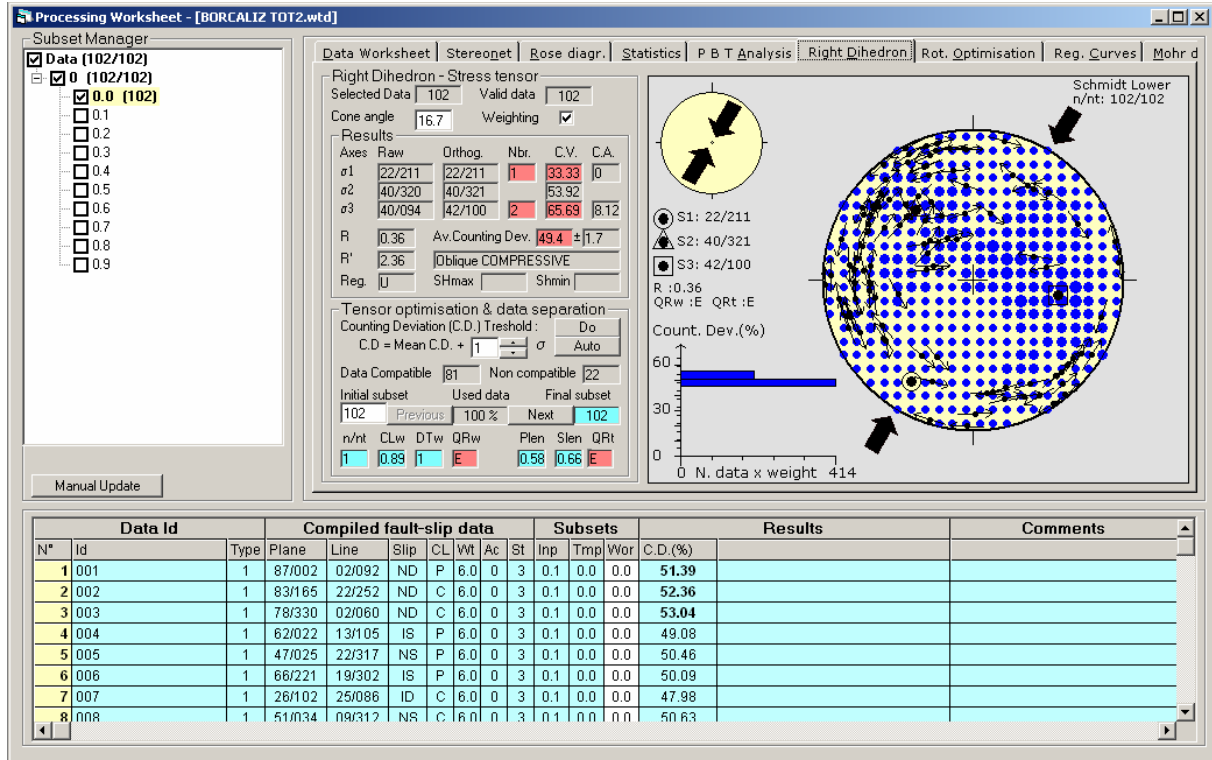


Rem: as the datafile contains more than 100 data, the automatic updating of the processing sheet is deactivated in order to avoid the unnecessary time consuming refreshing of the graphic display. It is therefore necessary to click on button Update in the Subset Manager to refresh the Processing Sheet. To avoid this in the future, click on Automatic Update button.



## 2. Initial separation using the Right Dihedron method

After activating the update, click on the Right Dieder Tab and the Processing Sheet should look like the following:

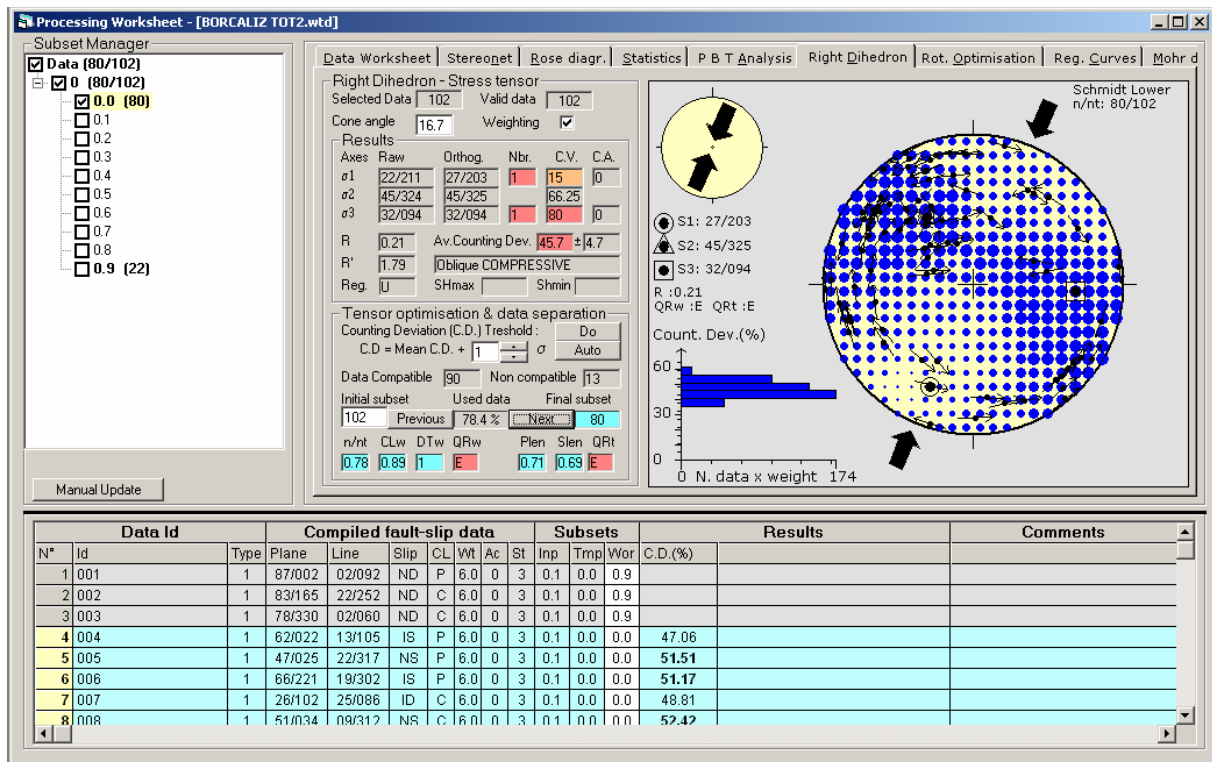


A first tensor has been computed and the parameters displayed. The red backgrounds that appear in some fields show that those parameters are not acceptable and have to be improved.

The Processing Sheet is now ready for the first major step in the data separation. The principle is to compute the stress tensor on the total data set and to remove progressively the data which are not compatible with the result obtained in an interactive way. As a result, the solution will converge towards the definition of a first data subset, which is the best represented in the data set. Considering that several data subsets can be present in the total data set, this first subset will be the one containing the largest number of data. As this set will have a largest weight comparatively to the others, the solution will naturally converge with the largest data set.

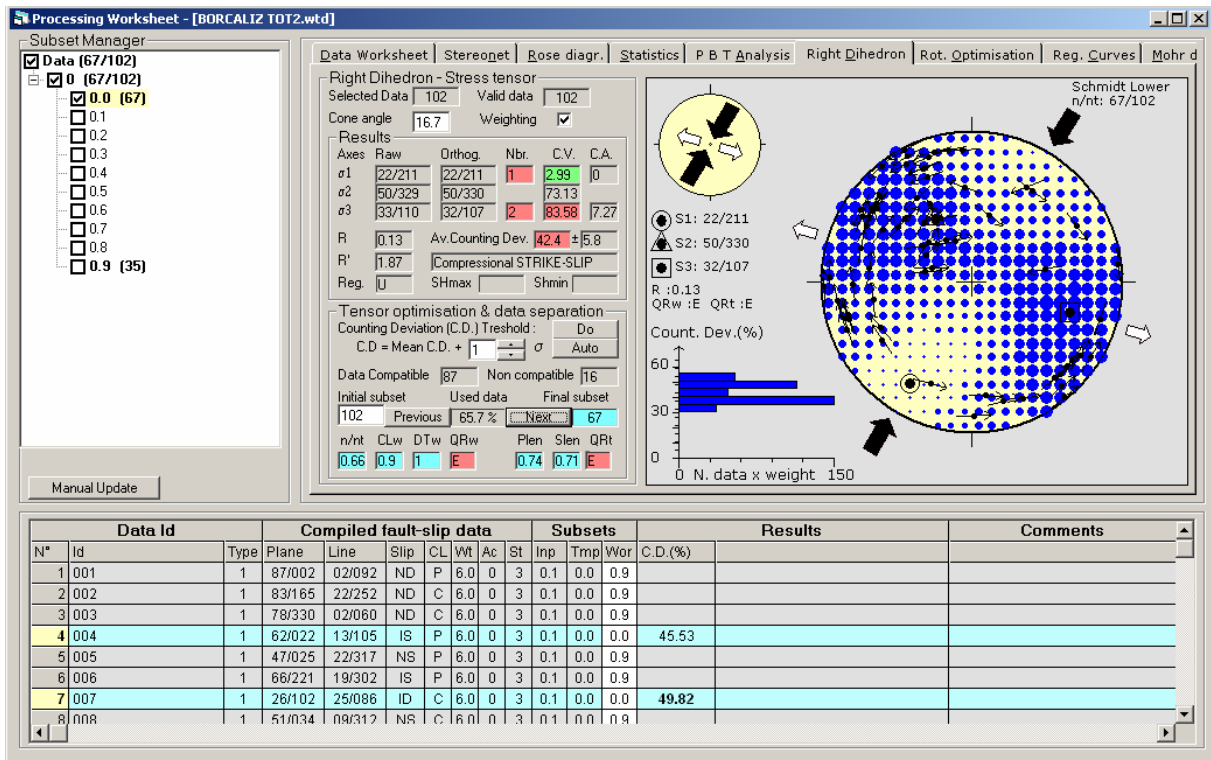
This can be done first using the Right Dihedron method. On the Right Dihedron panel, within frame *Tensor optimisation & data separation*, click on button *Next*. This will eliminate from the current dataset those fault-slip data that are considered as invalid. They will be eliminated by modifying the decimal part of their working index into 9 (the working index 0.0 is transformed into 0.9). As subset 0.9 is not checked in the Subset Manager, those data will no more be considered in the calculations and will disappear from the stereogram. In the Subset Manager, in regard to the node marked 0.9 (the one corresponding to subset 0.9) the number of data rejected is marked between commas: (22). The number of remaining data in subset 0.0 is reduced to 80, as marked for the corresponding node. The data are considered as invalid on the basis of their Counting Deviation values. If they have higher than a threshold value, they are eliminated (more will be said about that later).

After the elimination of the 22 data from the original subset, a new stress tensor solution has been computed and the background of the value C.V. (Counting Values) for sigma axes becomes orange. This is a bit better, but still not good.

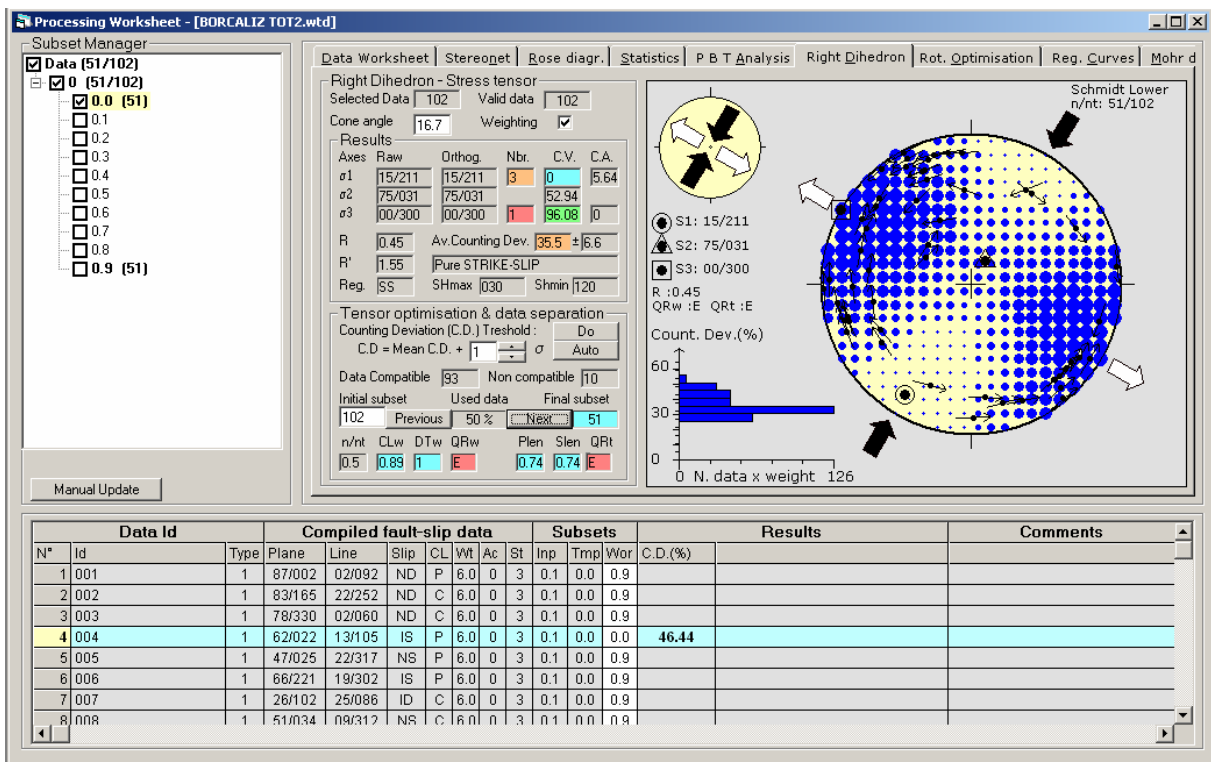


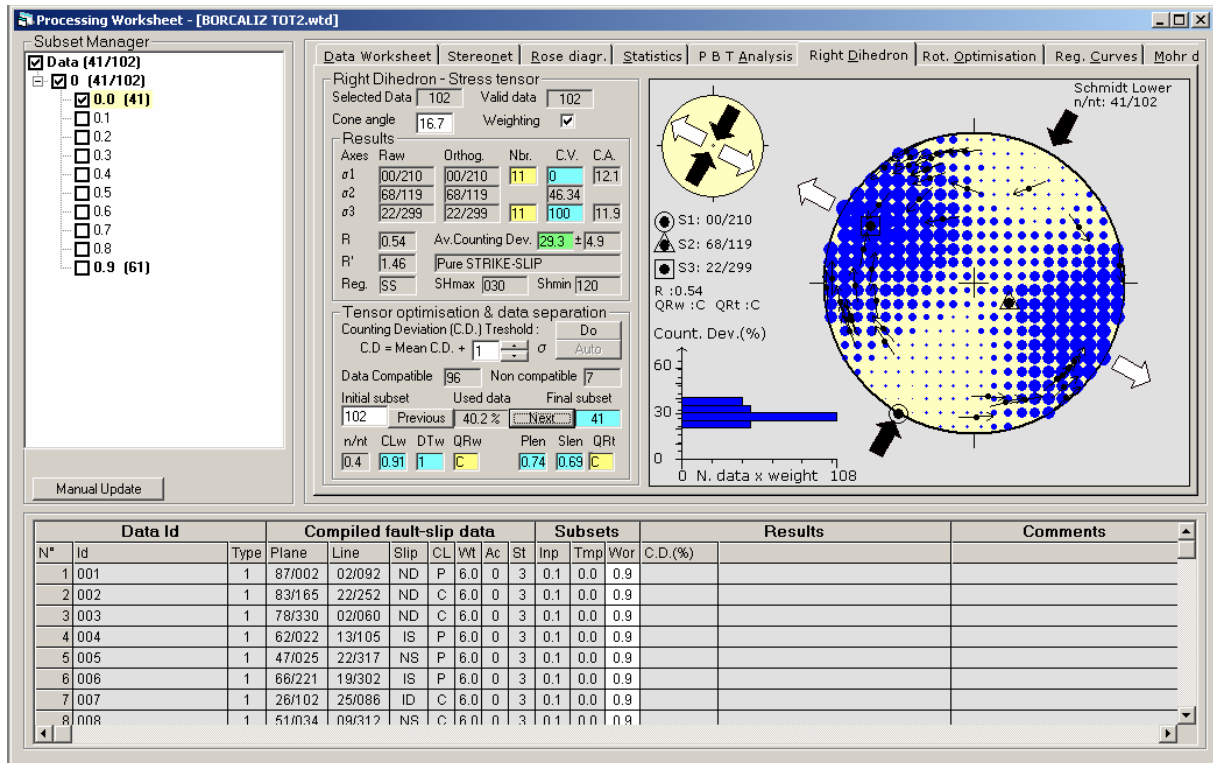
Within the frame *Tensor optimisation & data separation*, it should be noted that while the initial number of data is still 102 (Initial subset), the current number of data (Final Subset) is reduced to 80. This makes the Used data as 78.4% from the initial data set.

As there are still a lot of red backgrounds, it is necessary to perform the separation further by clicking on the Next button.



Now the background of C.V value for Sigma 1 appears green, because the value approaches the value of 0. A total of 35 data have been rejected and 67 are still in use. Clicking once more on Next gives now a C.V. value for Sigma 1 equal to 0. This is what we need for signal1, but for sigma 2, the C.V. value has to be 100. In consequence, it is necessary to continue the same procedure.





This time, the background of the C.V. values for both Sigma 1 and Sigma 3 is light blue. Effectively, for a good fault separation, the minimum Counting Value in the counting grid should be equal to 0 and the maximum Counting Value should be 100. The orientation of Sigma 1 is defined as the average orientation of all points from the counting grid that have the minimum value (11 points with C.V.= 0 in this case). In a similar way, the orientation of Sigma 3 is defined as the average orientation of all points from the counting grid that have the minimum value (11 points with C.V.= 100 in this case). At this point, a current subset of 41 fault-slip data has been extracted from the initial data set and the use of the Dieder Method can be considered as terminated. The fault separation and stress tensor calculation will be refined using the tensor Rotational Optimisation method.