AE monitoring of a true triaxial test- Imperial College London example - Waveforms

ITASCA
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Microseismic Geomechanics: Increased understanding; reduced risk

InSite Lite

ITASCA Consulting Ltd

- InSite™ Lite is the free version of Itasca Consulting Ltd.'s InSite Seismic Processing software suite, provided with limited functionality and features.
- The examples shown here are taken from ICL and its partners projects.
- InSite's proprietary project (*.pcf) files contain all the configuration, event information and links to waveforms necessary to run a project in InSite. Double-clicking on the .pcf project file launches the InSite software application.
- The InSite project waveform data (*.esf) files include the results from the data processing. These files are imported for the project (.pcf file) through the data import management tool in InSite. Please note that not all of the available example projects are provided with example waveform data.
- For information on the operation of the InSite software, please refer to the product help files.
- For information on purchasing the full version of the InSite software, please contact us at support@itasca.co.uk

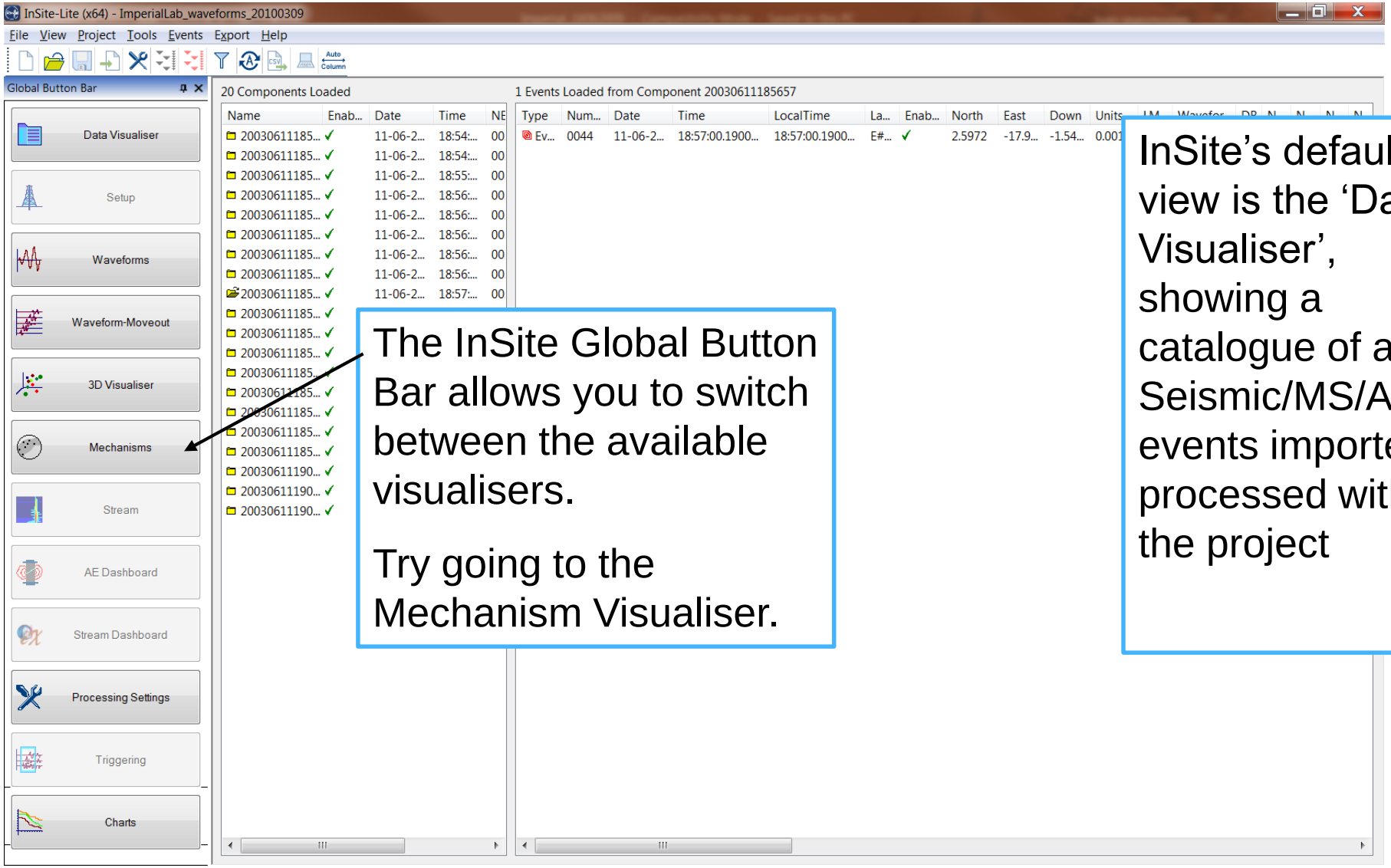
Example Features

- This example uses AE data with waveforms for a sample of 26 events from a true-triaxial test on a cubic sandstone sample. Source mechanisms have been determined for these events.
- The data is from a laboratory experiment at Imperial College London for the EC-funded SAFETI project.
- The AE imaged the creation of fractures that grew as uniaxial stress was increased. The events were compared with model data.
- The following slides give you some options to try in the software.

It's a good idea to …

… run through the "ImperialLab" demo presentation first as this gives a more thorough overview of the Location Visualiser and Mechanism Visualiser.

Navigation: Data Visualiser

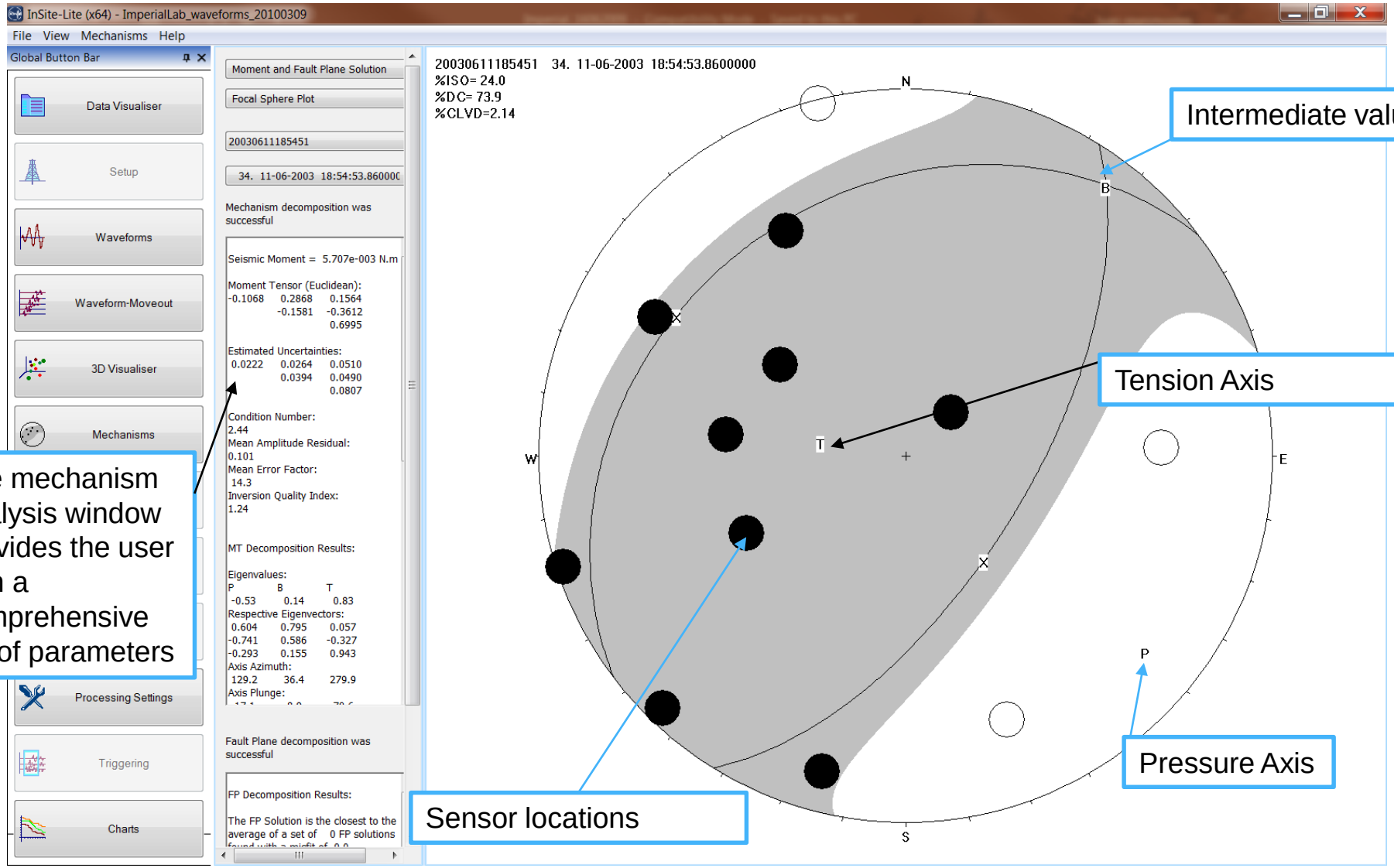


The InSite Global Button Bar allows you to switch between the available visualisers.

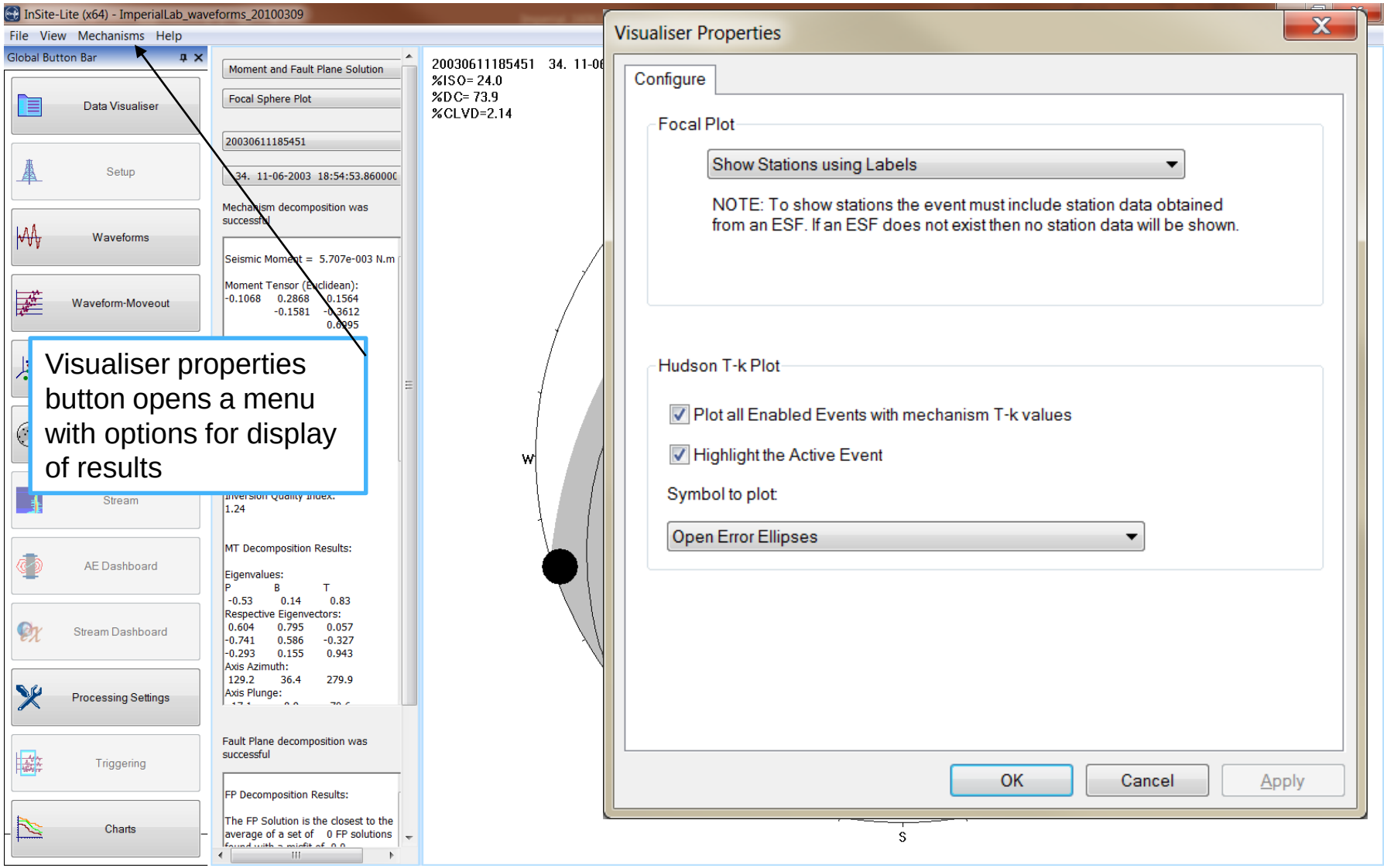
Try going to the Mechanism Visualiser.

InSite's default view is the 'Data Visualiser', showing a catalogue of all Seismic/MS/AE events imported or processed within the project

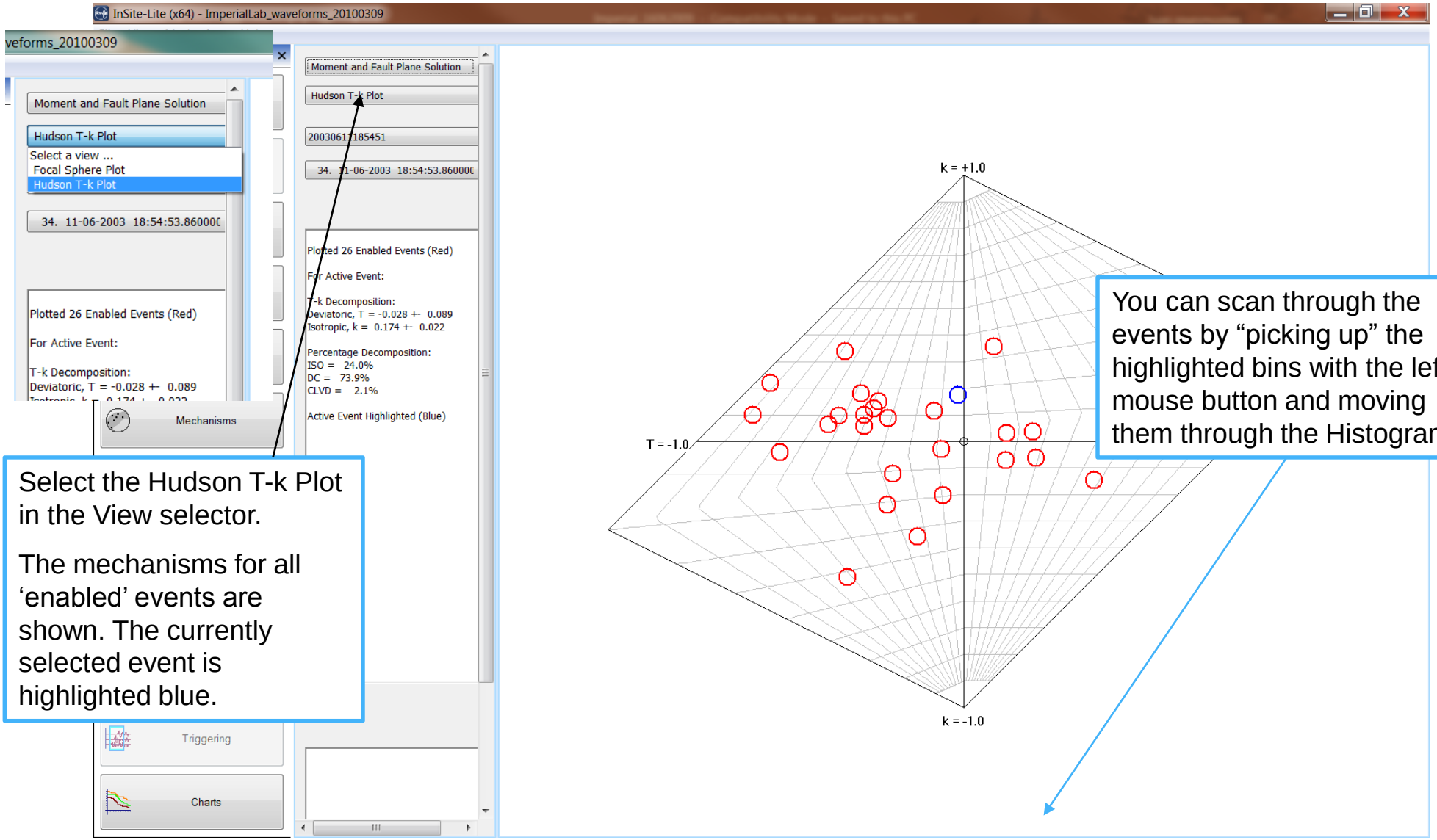
Mechanism Visualiser I



Mechanism Visualiser II



Mechanism Visualiser III

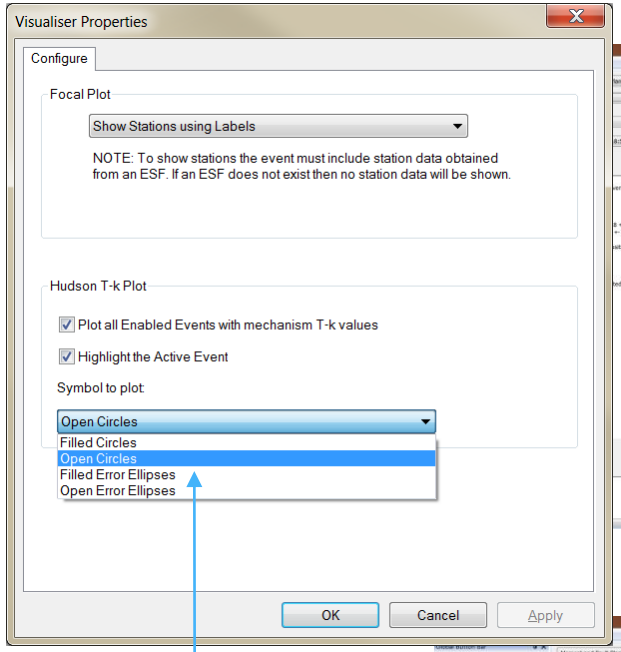


Select the Hudson T-k Plot in the View selector.

The mechanisms for all 'enabled' events are shown. The currently selected event is highlighted blue.

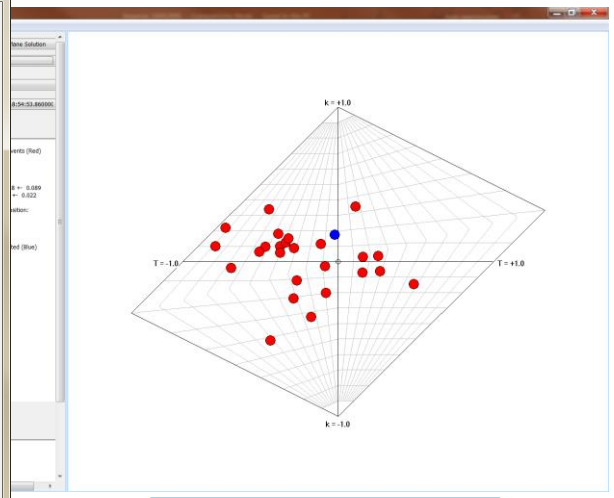
You can scan through the events by "picking up" the highlighted bins with the left mouse button and moving them through the Histogram.

Mechanism Visualiser IV

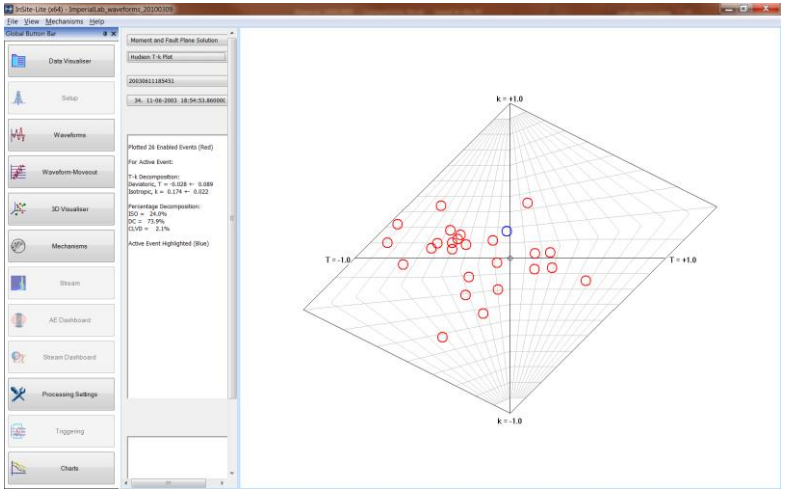


Various symbols can be plotted by changing the Hudson T-k plot option.

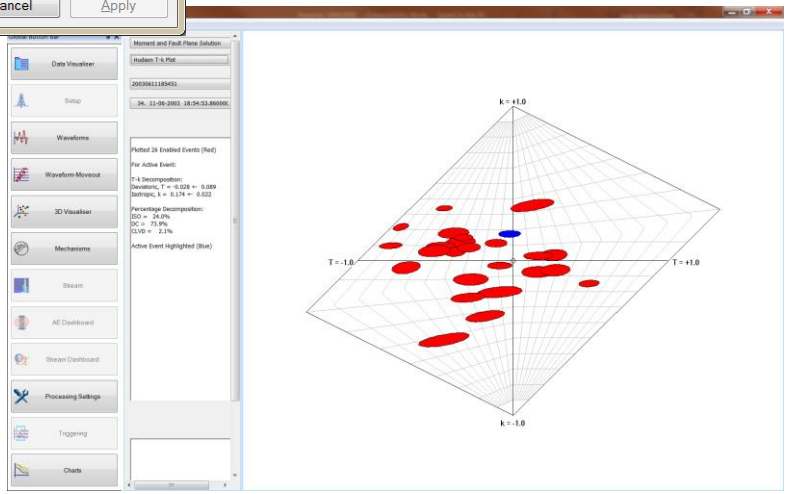
Change the view in the Visualiser Properties sub-menu.



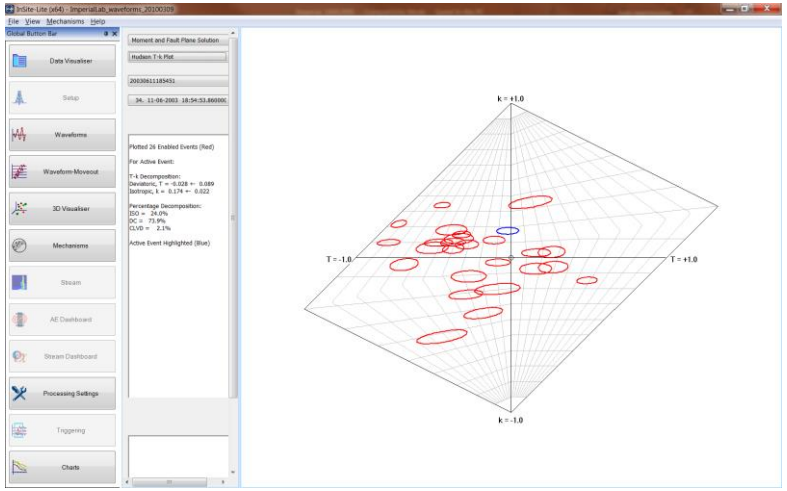
Filled circles.



Open circles.

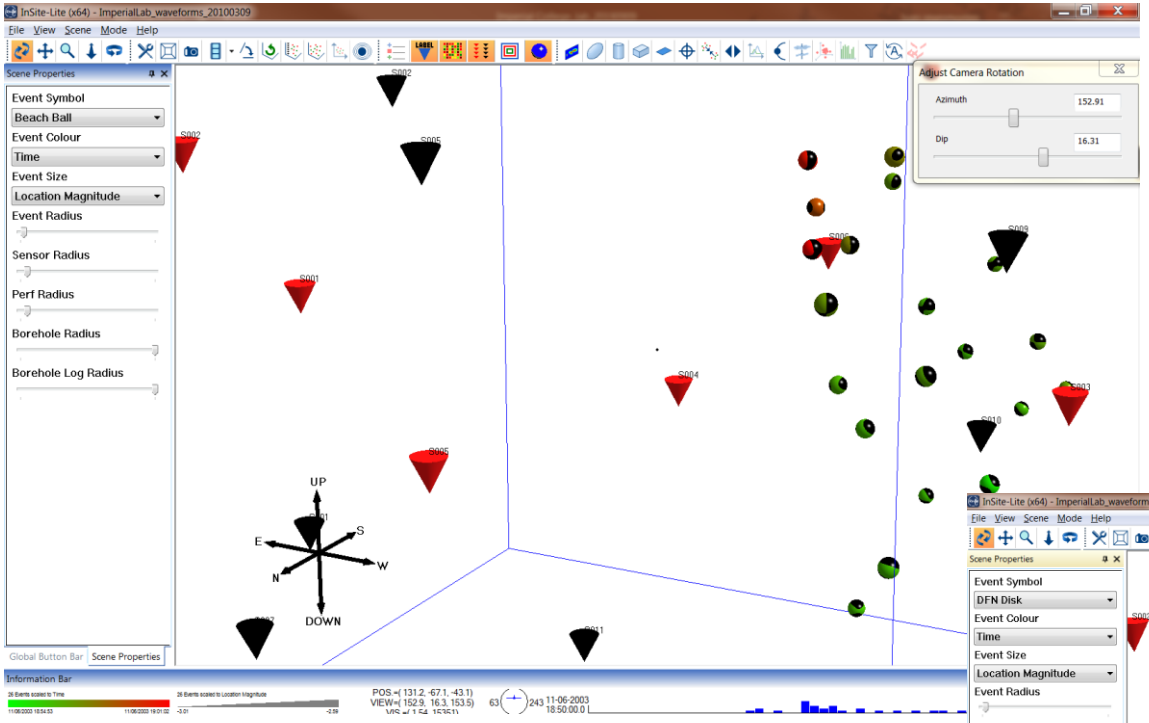


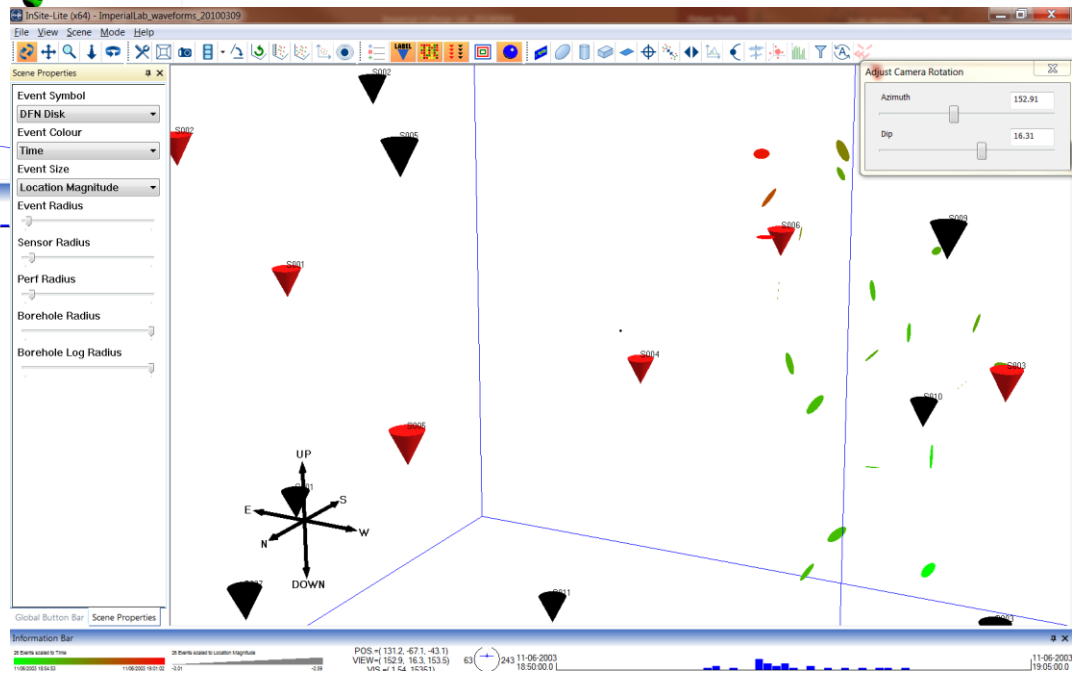
Filled error ellipsoids



Open error ellipsoids

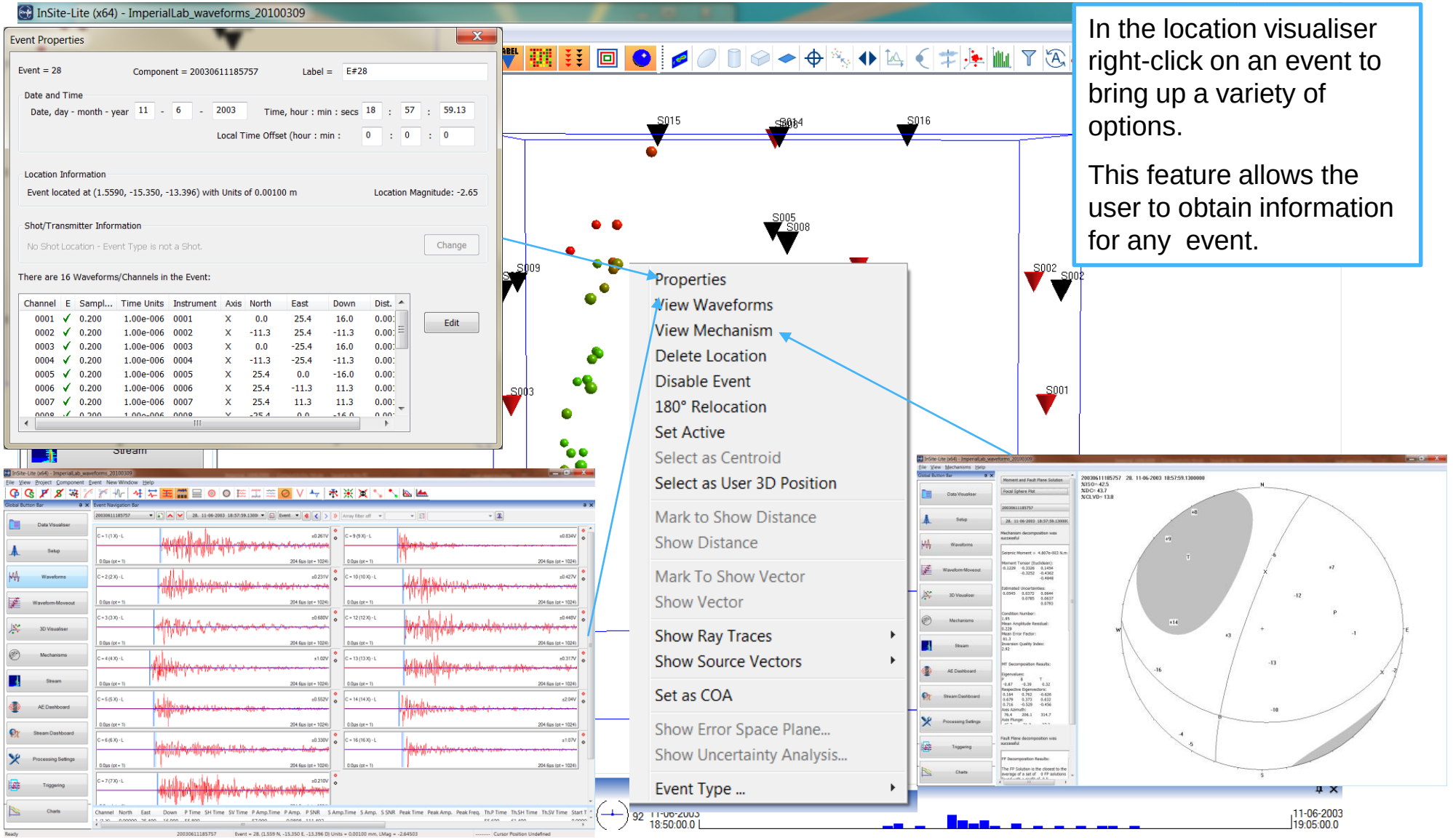
Mechanisms in 3D Visualiser





Event display can be edited in Scene Properties to display the focal mechanism (beach ball) or fracture plane for all events in the 3D visualiser

Navigation from 3D Visualiser



In the location visualiser right-click on an event to bring up a variety of options.

This feature allows the user to obtain information for any event.