Microseismic Monitoring of Hydraulic Fracturing - Locations

ITASCA
Consulting Ltd

Microseismic Geomechanics: Increased understanding; reduced risk

InSite Lite

- InSite^{TM} 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
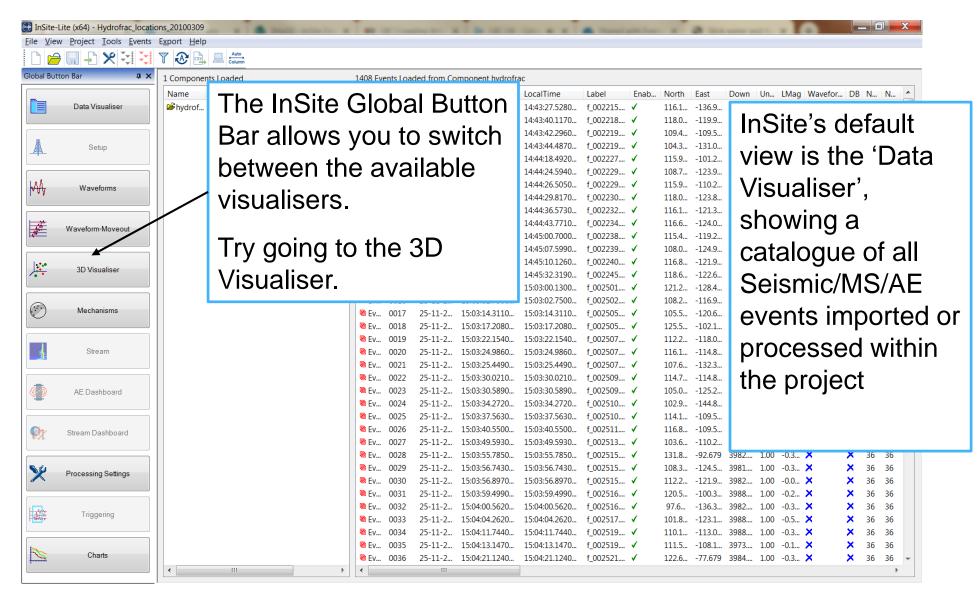
Example Features

- This example uses Microseismic (MS) location data recorded during the Hydraulic Fracturing of a tight-gas sand reservoir in the Bossier formation in the Dowdy Ranch field

- This example is designed to give an overview of the features and functionalities of InSite's 3D Visualiser.

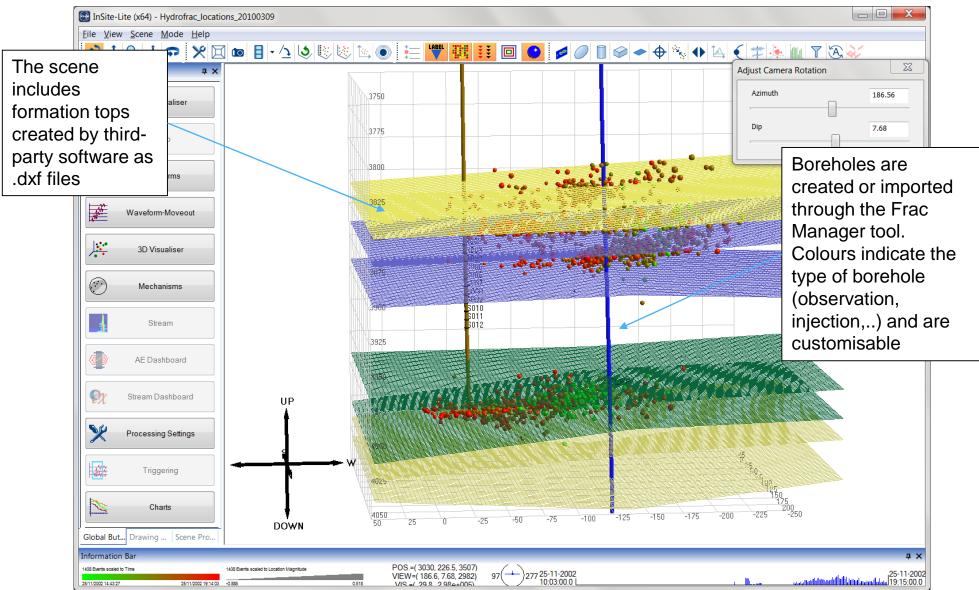- The following slides give you some options to try in the software.

Navigation: Data Visualiser

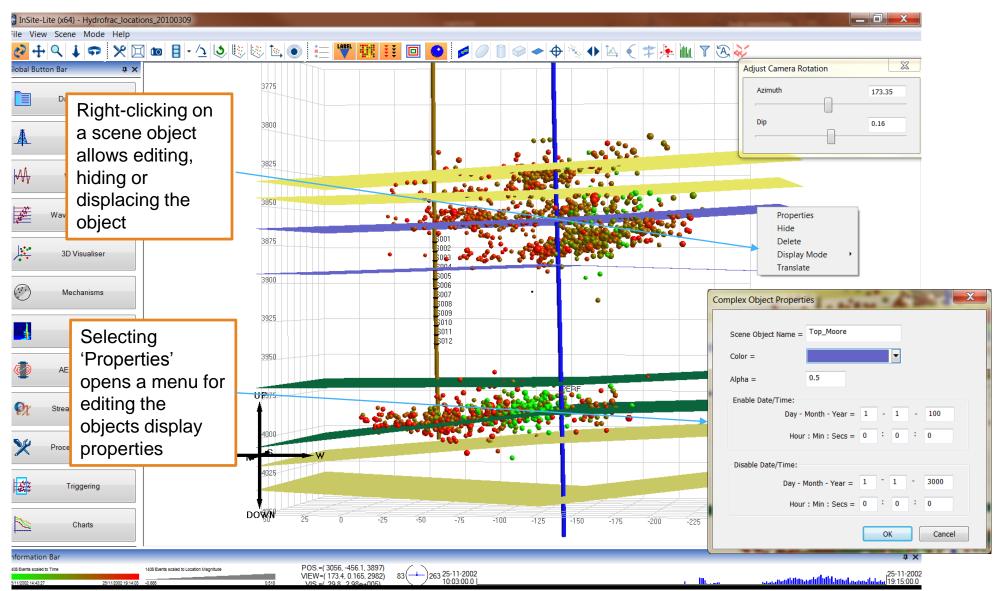The InSite Global Button Bar allows you to switch between the available visualisers.

Try going to the 3D Visualiser.

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

3D Visualiser I

The scene includes formation tops created by third-party software as .dxf files

Boreholes are created or imported through the Frac Manager tool. Colours indicate the type of borehole (observation, injection,..) and are customisable

3D Visualiser II

Right-clicking on a scene object allows editing, hiding or displacing the object

Selecting 'Properties' opens a menu for editing the objects display properties

3D visualiser III

Right-clicking on an event allows viewing the corresponding waveforms (if available), deleting or relocating the event or showing the location error (if it has been calculated)

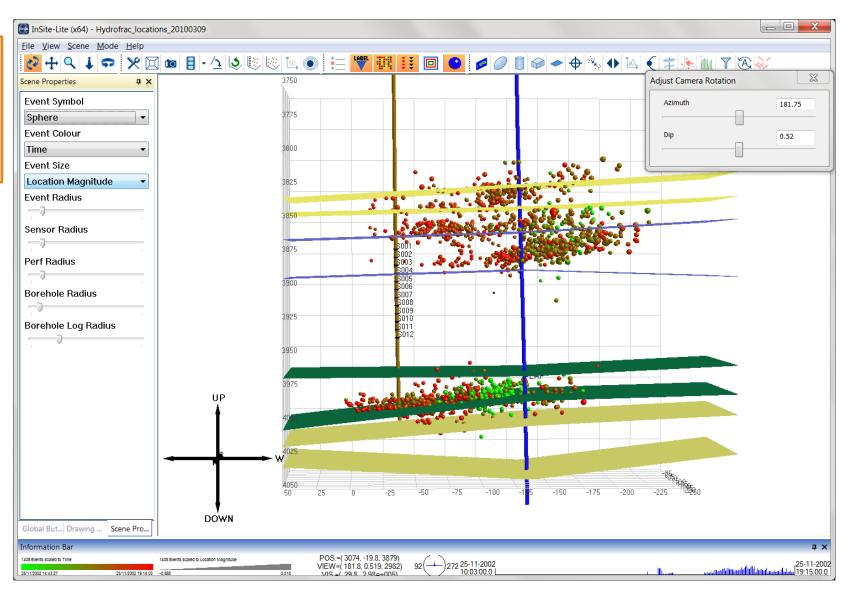# 3D Visualiser IV

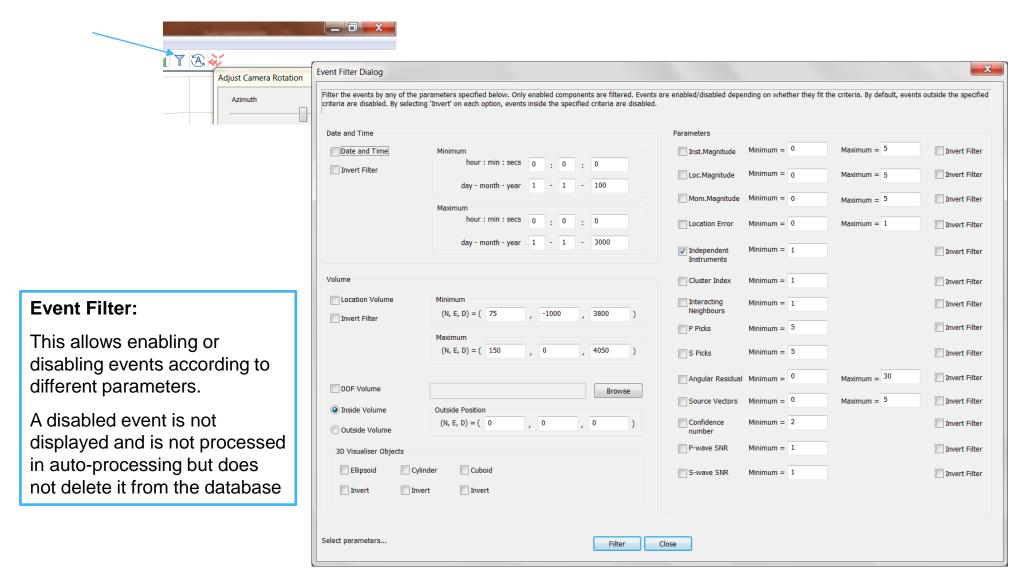Scene Properties tab includes quick-editing shortcuts for scene and scene objects

3D Visualiser V: event filter

Event Filter:

This allows enabling or disabling events according to different parameters.

A disabled event is not displayed and is not processed in auto-processing but does not delete it from the database

3D Visualiser VI: density planes

Density planes:

Up to three orthogonal event or energy density planes can be displayed within the scene, with customisable resolution