

5. WORKING WITH FIXED AND FLOATING DATUM CORRECTIONS IN GLOBE *CLARITAS* V5.5+

5.1 OVERVIEW

You can process land data in GLOBE *Claritas* relative to a fixed or a floating datum, as discussed in Section 10.3.11 of the manual.

In the fixed datum case, the correction applied is usually termed the “elevation correction” and is computed from the source/receiver elevations, the user specified datum level, and a “replacement velocity”.

In the floating datum case, you still need to determine a final seismic reference datum (SRD) that you will correct the data to for final display. In GLOBE *Claritas*, the corrections to the floating datum are stored as static shifts relative to this final SRD. This means that essentially the data is first corrected to a fixed datum, and then corrected to the floating datum.

In older versions of GLOBE *Claritas*, all of these corrections were applied using the STATIC module. For simplicity, V5.5 of GLOBE *Claritas* and above have split this functionality into separate modules.

5.2 SELECTION OF THE FIXED DATUM

The standard approach used in processing within GLOBE *Claritas* is to use a fixed datum that is slightly higher than the highest elevation on the seismic line, or survey.

GLOBE *Claritas* currently does not support “negative time”; if a datum elevation is selected that lies below the survey topography, then seismic information at the top of the trace will be lost.

Most interpretation software allows for additional shifts (for example, stored in the DELAY trace header) to be automatically applied for any additional corrections (for example so that time zero is at Mean Sea Level) – this final “interpretation display” datum should not be confused with the seismic reference datum needed in processing.

Similarly, large corrections to the final reference datum are to be avoided, as by applying a static correction we are assuming that the ray-paths are near vertical. For larger corrections, this would not be the case, and the hyperbolic moveout of reflectors would be adversely affected.

5.3 PROCESSING USING A FIXED DATUM ONLY

To process using a fixed datum, use the new module DATUM_FIX to correct the data. This module should be used in place of the old STATIC module elevation correction parameters, which have now been moved to the “Advanced Parameters” tab. You need to specify the SRD elevation, a replacement velocity, and, optionally uphole times if you have them.

5.4 PROCESSING USING A FLOATING DATUM

To process using a floating datum (created by the geometry application, see Section 10.3.11 of the manual), you should correct the data using the DATUM_FLT module. The floating datum file also contains information on the final fixed datum that will be used, as well as the replacement velocity. Note that the time shifts stored in this file are from the final fixed SRD to the floating datum, NOT from the original elevation to the floating datum.

You would normally correct to the floating datum prior to velocity analysis, residual stacks and pre/post stack migration, only reverting to the final reference datum for output or display.

The correction to the final seismic reference datum (SRD) is applied using the new DATUM_SRD module.

These two modules DATUM_FLT and DATUM_SRD should be used in place of the old approach, which employed two separate calls to the STATIC module.

5.5 REFRACTION STATIC APPLICATION

Refraction statics calculations generated by refstat (or refstat3D) are “pure refraction statics” and do NOT include any correction to elevation or floating datum. These should still be applied via the STATIC module.