

# GLOBE *Claritas*

seismic processing software

## Module List

### Category : Input/Output

|             |  |
|-------------|--|
| DISCGATH    | Reads any-sort SEG-Y file and outputs traces in CDP-sort                                 |
| DISCGATHM   | Reads multiple any-sort SEG-Y files and outputs traces in CDP-sort                       |
| DISCREAD    | Reads SEG-Y or Claritas disc files   |
| DISCSORT    | Reads SEG-Y file and outputs sorted traces (no scratch file)                             |
| DISCWRITE   | Writes seismic traces to Claritas SEG-Y disc file  |
| DSORT_OFF   | Version of DISCSORT configured for offset panels for DMO_FK                              |
| DSORT_SPS   | Version of DISCSORT configured for SPSTAT  |
| READGRID    | Reads GMT,NetCDF,MatLab (etc) binary grid files  |
| READSAC     | Reads lists of SAC-formatted (usually earthquake) input                                  |
| READSEGB    | Reads SEG-B formatted data from tape   |
| READSEGD    | Reads SEG-D formatted data from disc or tape   |
| READSEGY    | Reads SEG-Y formatted data from disc or tape   |
| READTSDB    | Reads a Claritas time-slice database (.tsdb) file  |
| REREAD      | Reads Claritas DISCWRITE files in the middle of jobs                                     |
| SCINTREX    | Reads SEG-1 formatted seismic data   |
| SEISREAD    | reads GLOBE Claritas format HDF5 files from disc   |
| SEISWRITE   | writes out a GLOBE Claritas format HDF5 file   |
| STITCH      | N-dimensional parallel pre-stack interpolation based on map file from STITCH_PREP module |
| STITCH_PREP | creates a map file that defines the traces to be used to populate any given offset bin   |
| VIBCORR     | Vibrois correlation  |
| WRITEGRID   | Output seismic data as Matlab or NetCDF file   |
| WRITESEGY   | SEG-Y output to disc or tape   |
| WRITETSDB   | Sort into timeslices and create TS database  |

### Category : Job control

|            |  |
|------------|--|
| DO         | First part of iterative DO-ENDDO construct             |
| ENDDO      | Second part of iterative DO-ENDDO construct            |
| ELSE       | Part of IF-ELSEIF-ELSE-ENDIF construct                 |
| ELSEIF     | Part of IF-ELSEIF-ELSE-ENDIF construct                 |
| ENDIF      | Part of IF-ELSEIF-ELSE-ENDIF construct                 |
| END_64BIT  | Copies 64-bit pseudotrace back to 32-bit seismic trace |
| HOLDIF     | First part of HOLDIF-RECALL construct                  |
| IF         | Part of IF-ELSEIF-ELSE-ENDIF construct                 |
| IFINFILE   | Conditional branch using trace list file               |
| IFNOT      | Part of IF-ELSEIF-ELSE-ENDIF construct                 |
| JCS_UPDATE | Module for updating job control system files           |
| MPIEND     | End of parallel cluster block                          |
| MPISTART   | Start of parallel cluster block                        |
| RECALL     | End part of HOLDIF-RECALL construct                    |
| REPEAT     | Repeats ensembles to produce test panels etc.          |
| SEISJOB    | Defines project name, line ID, JCS parameters etc.     |

### Category : Trace scaling & math

|           |  |
|-----------|--|
| AGC       | Automatic Gain Control                 |
| UNAGC     | Removes saved AGC gain functions       |
| BALANCE   | Trace balance                          |
| UNBALANCE | Removes the effect of a previous trace |

|           |   |
|-----------|---|
| CLIP      | Clips trace values between two limits                         |
| CONVCORR  | Convolve or correlates with a user-supplied filter            |
| DECAY     | Calculates trace amplitude decay functions                    |
| DIFF1     | DIFF1 and DIFF2 are used to calculate the difference          |
| DIFF2     | between the seismic data at different parts of the job        |
| DYFF1     | DYFF1 and DYFF2 provide another                               |
| DYFF2     | DIFF1/DIFF2 pair should 2 sets be needed                      |
| EBALANCE  | Ensemble-consistent trace balance                             |
| FFT1D     | Forward 1-D Fourier transform (FFT)                           |
| FFT2D     | Forward or inverse 2-D Fourier transform (FFT)                |
| IFFT1D    | Inverse 1-D Fourier transform (FFT)                           |
| INTEGRATE | Integrates trace data samples                                 |
| OFFWT     | Multiplies trace by offset-dependent scalar                   |
| POWER     | Raises data samples to specified power                        |
| RANDOM    | Adds random noise to input traces                             |
| RMSPOWER  | Calculates surface-consistent RMS power for SCBALANCE         |
| SCALE     | Two-key time-variant trace scaling                            |
| SCBALANCE | Surface-consistent trace balance application                  |
| SPHDIV    | Spherical divergence operator                                 |
| TAPER     | Tapers ends of seismic traces                                 |
| TDERIV    | Differentiates the seismic trace                              |
| UNAGC     | Removes saved AGC gain functions                              |
| AMPSELECT | Selects the N largest amplitude ensembles from the datastream |
| UNBALANCE | Removes the effect of a previous trace BALANCE or EBALANCE    |

### Category : 1-D filtering

|            |  |
|------------|--|
| BUTTERFILT | Zero- or Minimum-phase Butterworth filter          |
| DEBIAS     | Removes DC bias from trace                         |
| DFILT      | Frequency-domain time and spatially varying filter |
| NOTCH      | Monofrequency noise removal                        |
| PHASESHF   | Applies a phase shift                              |
| RESAMPLE   | Resamples with optional anti-alias filter          |
| RHO        | Frequency-domain rho filter for Tau-P applications |
| TVFILT     | Time-domain time-varying filter                    |

### Category : Deconvolution & demultiple

|            |   |
|------------|---|
| DECONW     | Wiener deconvolution (gapped or spike, time-varying)                |
| DECONW_AC  | Wiener deconvolution using previously saved operators               |
| INVERSEQ   | Post-stack inverse-Q deconvolution                                  |
| INVERSEQ2  | stabilized inverse Q filter (phase and amplitude)                   |
| MEDEC      | Minimum entropy deconvolution                                       |
| MONKSUBT   | Adaptive subtraction by constrained cross-equalisation              |
| MULMOD     | Multiple modeling by constant velocity multiple moveout calculation |
| OCTAVE     | Receiver Deghosting for Constant Cable Acquisition.                 |
| OCTAVE_N   | Receiver Deghosting for Constant or Slant Cable Acquisition.        |
| PRT_DEMULT | Parabolic Radon Demultiple  |
| PSDECON    | Post-stack Wiener deconvolution (gapped or spike) with mix          |
| SCDECON    | Surface-consistent Wiener deconvolution (gapped or spike)           |
| SCSPEQ     | Surface-consistent, zero-phase spectral equalisation                |
| SOURCESIG  | Extraction of wavelet using primaries and multiples                 |
| SPEQ       | Zero-phase frequency-domain spectral equalisation                   |
| SPEW       | Zero-phase frequency-domain spectral weighting                      |
| SRME       | Surface consistent multiple computation phase                       |
| SRME2D     | Surface Related Multiple Elimination,                               |

|          |   |
|----------|---|
| SRME3D   | modeling phase Surface Related Multiple Elimination, modeling phase |
| TVSPEQ   | Time-varying Zero-phase spectral equalisation                       |
| WANGSUBT | Addaptive subtraction with a multichannel matching filter           |
| WAVELET  | Wavelet operations  |

### Category : Statics

|           |  |
|-----------|--|
| ADDPICK   | Adds pick times from *.pic file into trace headers                   |
| AUTOPICK  | Automatic first-break picking  |
| BULKSHIFT | Application of bulk static shift                                     |
| CDPSHIFT  | Applies non-surface-consistent shifts from RESSTAT                   |
| DATUM_FIX | Elevation static correction to fixed datum                           |
| DATUM_FLT | Elevation static correction to floating datum                        |
| DATUM_SRD | Elevation static correction from floating datum to SRD               |
| FLATTEN   | Flatten and unflatten from a .dig file or trace headers              |
| MAKESHF   | Extracts static shifts from trace header and writes *.shf file       |
| READSHF   | Reads a Claritas static shift file and puts times into trace headers |
| RESSTAT   | CDP-domain statics (SC,Non-SC,Time-variant etc)                      |
| SCSTAT    | Converts DIPSTAT and CDPSTAT output to surface-consistent shifts     |
| SPSTAT    | Robust stack-power surface-consistent residual statics               |
| SRDFILT   | Filters static output from SRDSTAT                                   |
| SRDSTAT   | Source-receiver differential surface-consistent statics              |
| STATIC    | Application of elevation, residual, bulk statics etc.                |
| UPHOLE    | Extracts uphole times from raw traces                                |
| WRITEPICK | Extracts picks from SEG-Y headers for *.pic output                   |

### Category : Trace editing and kill

|            |  |
|------------|--|
| AIRWAVE    | Linear noise mute defined by velocity and offset       |
| AMPEDIT    | Trace edit based on average amplitudes in window       |
| AUTOMUTE   | Automatic trace muting                                 |
| COMBINE    | Re-combines parts of a shot/CDP split by SPLIT         |
| DESPIKEH   | Automatic long, horizontally non-coherent spike muting |
| DESPIKEV   | Automatic spike muting (vertical)                      |
| FILLHOLES  | Fill holes in data (designed for sharkattacks)         |
| HDRMUTE    | Inner and outer trace muting from trace headers        |
| MERGE      | STORE1/STORE2/MERGE split and combine data streams     |
| MUTE       | Generalised muting of seismic data                     |
| POLYMUTE   | Polygonal trace mute (*.pol file)                      |
| POLYSELECT | Removes/edits traces with {x,y} outside of a polygon   |
| SMUTE      | Surgical or end mute with interpolation                |
| SPLIT      | Splits a gather so part can be filtered (see COMBINE)  |
| STORE1     | STORE1/STORE2/MERGE split and combine data streams     |
| STORE2     | STORE1/STORE2/MERGE split and combine data streams     |
| TREDIT     | Whole trace edit (*.tre file)                          |
| TREMOVE    | Totally removes the trace from the processing flow     |
| TRFLAG     | Flags traces (eg noisy traces) listed in *.if file     |
| TRFLIP     | Trace polarity reversal                                |
| TRMUTE     | Whole or polygonal trace mute (*.trm file)             |
| ZAP        | Spike muting using sqc output files (*.dsp)            |
| ZEROMUTE   | Stores first non-zero sample; mutes to that position   |

## Category : 2-D filtering

|           |   |
|-----------|---|
| DUSWELL   | Swell noise attenuation   |
| FKMUTE    | Generalised muting of FK spectra                                |
| FK_ALIAS  | Used to determine effect of non-aliasing FK filter              |
| FK_FILTER | Frequency-domain FK filter by polygon or dip                    |
| FK_TIME   | Time-domain FK filter by polygon                                |
| KFILTER   | K-filter for 2D seismic MEDIAN_H Horizontal (1-D) median filter |
| NORMCDP   | Repeated-offset trace averaging within CDP's                    |
| PRTF      | Forward Parabolic Radon Transform                               |
| PRTI      | Inverse Parabolic Radon Transform                               |
| QFK       | Fast frequency-domain FK filter by dip                          |
| RADIAL    | Radial trace transform (forward & inverse)                      |
| SUHARLAN  | Harlan transform (SU)   |
| SURADON   | Generalised Radon transform (SU)                                |
| TAUP      | Forward Tau-P process by slant-stack                            |
| TAUPFK    | FK-domain Tau-P process   |
| TAUPINV   | Inverse Tau-P process   |
| TRINTERP  | Trace interpolation/extrapolation                               |

## Category : Analysis processors

|           |  |
|-----------|--|
| AREAL     | Outputs text file with areal data attributes                           |
| ATTRIBUTE | Outputs Hilbert transform, instantaneous attributes etc.               |
| AUTOCOR   | Calculates autocorrelation function                                    |
| HVA       | Horizon velocity spectrum analysis                                     |
| NMOPICK   | Automatic semblance picker - takes VELSPEC traces & outputs *.nmo file |
| SPECTRAN  | Hardcopy plot of spectral analysis (power, phase etc)                  |
| VELSPEC   | Velocity spectrum analysis for sqc picking, or hardcopy plot           |
| VELSPEC4  | 4th order velocity spectrum analysis                                   |

## Category : NMO and stack

|            |  |
|------------|--|
| ANGLE      | Produces angle gathers from offset gathers for AVO           |
| ANGLETIMES | Adds angle mute times into trace headers                     |
| AUTOSTACK  | Automatic adaptive stack                                     |
| AVOSTACK   | Outputs AVO attribute traces                                 |
| LMO        | Linear Move-out operator                                     |
| NMO        | Forward and inverse NMO with optional stretch mute           |
| NMO4       | Forward and inverse 4th order NMO with optional stretch mute |
| NMOTRACE   | Replaces data traces with NMO traces                         |
| PSTACK     | Partial stack processor                                      |
| RMO        | Residual Moveout Application with optional Stretch mute      |
| STACK      | Stack of CDP (or shot) gathers                               |
| STACKSHOTS | Vertical stack (eg of repeated shots) etc.                   |
| TRSUM      | N:1 trace sum by trace or ensemble                           |

## Category : Geometry, sorting & fill

|           |   |
|-----------|---|
| ADDGEOM   | Adds geometry database information into trace headers               |
| ADDDLLD   | Adds marine latitude/longitude, water-depth, etc into trace headers |
| ADDNAV    | Adds marine navigation into headers from UKOOA P1 input             |
| ADDP190   | Adds marine geometry information into trace headers from P190       |
| BIN3D     | Sets 3D CDP binning geometry into trace headers                     |
| BINSORT1  | Forwards binned sort (any trace header key)                         |
| BINSORT2  | Inverse (un)sort to follow BINSORT1                                 |
| CDPSORT   | CDP gather using *.geom database                                    |
| CDP_XYZ   | Adds CDP coords & elevations into stacked trace headers             |
| CHECKGEOM | Checks geometry in headers for possible problems                    |
| CUBE      | Forms a 3-D data cube from ragged-edged CDP list                    |
| DEOFFREG  | Undo regularisation of the offset distribution                      |
| GENSORT   | Generalised trace sort on any trace header key                      |
| MAKEGEOM  | Writes a *.geom file using trace-header information                 |
| MGEOM     | Add marine geometry to headers                                      |
| MISSING   | Flags or fills in missing traces/gathers                            |
| MRECYX    | Adds receiver/CMP X,Y given *.nav file of shotid,x,y and offsets    |
| OFFREG    | Regularise the offset distribution                                  |

|           |  |
|-----------|--|
| PAD       | Pads end of sections with zero or repeated traces              |
| REORDER   | Re-orders the traces within an ensemble by any header key      |
| SHIPTRACK | Uses time,x,y file to add source coordinates into trace header |
| SHOTINT   | Interpolate new shots between existing shot records            |
| SHOTPOINT | Adds shotpoint information into stacked trace headers          |
| SUPERGATH | Form super-gathers from input ensembles                        |
| TRSWAP    | Swaps the trace data samples for a pair of receivers           |

## Category : Migration

|            |   |
|------------|---|
| DMO3D      | 3D DMO in T-X domain (Integral method)                    |
| DMO_FK     | FK-domain depth-variable DMO                              |
| DMO_TX     | Kirchhoff common-offset DMO                               |
| EOM        | Equivalent offset migration                               |
| FDMIG      | Finite-difference post-stack migration                    |
| FDMIG25    | 2.5D Finite-difference post-stack migration               |
| GAZDAG     | Jeno Gazdag's phase-shift migration                       |
| IMAGE_3DKP | 3D Kirchhoff pre-stack time migration                     |
| IMAGE_K2T  | Kirchhoff 2D pre-stack time migration                     |
| IMAGE_K3T  | Kirchhoff 3D pre-stack time migration                     |
| KIRCHHOFFT | Post-stack Kirchhoff time migration                       |
| KIRCHHOFFV | Poststack Kirchhoff Time migration with variable velocity |
| KPRET2D    | Prestack Kirchhoff Time migration (Single-CPU)            |
| KPRET3D    | 3D Prestack Kirchhoff Time migration - non-parallel       |
| POSTDM2D   | 2D Kirchhoff post-stack depth migration                   |
| POSTDM3D   | 3D Kirchhoff post-stack depth migration                   |
| PRESDM     | Prestack Kirchhoff Depth migration (Single-CPU)           |
| PSMIG      | Phase-shift migration with turning rays                   |
| PSMIG25    | 2.5D phase-shift migration with turning rays              |
| STOLT      | FK-domain Stolt migration                                 |
| STOLT25    | 2.5D FK-domain Stolt migration                            |
| TDCONV1    | Time to depth conversion                                  |
| TKMIG      | Time-wavenumber migration                                 |

## Category : Coherency filtering

|            |   |
|------------|---|
| FXDECON    | FX-domain complex Wiener deconvolution        |
| FXRUNMIX   | FX-domain weighted running mix                |
| QFKPS      | Post-stack version of QFK                     |
| RUNMIX     | Time-domain running mix (pre- and post-stack) |
| SEEP       | Signal Enhancement using Envelope Processing  |
| SEMBSMOOTH | Semblance-smoothing coherency filter          |
| S LSD      | Spatial Linear Signal Detector (Tau-P)        |
| SVDIFILT   | Zero-lag Karhunen-Loeve transform             |

## Category : Plotting

|            |   |
|------------|---|
| BACKGROUND | Display data attributes in background of plot                               |
| BITPLOT    | Quick, small, trace plot - a line of bits is set on or off                  |
| DATUMPLOT  | Puts tick on trace to indicate position of floating datum or elevation      |
| HDRPLOT    | Plots trace header values on RASTER output file                             |
| HDRTICK    | Plots trace header values by adding a tick to trace                         |
| HORIZONS   | Adds digitised horizons to RASTER output file                               |
| IVSPLOT    | Plot module for Input Vertical Seismic Object utility                       |
| PANELTEXT  | User-specified strings for parameter labelling in XVIEW/PLOTLABEL           |
| PLOTLABEL  | Produces full plot labelling to attach to RASTER output                     |
| RASTER     | Produces raster plot file for HP DesignJet or Versatec                      |
| SIDELABEL  | Side label for adding to RASTER hardcopy output                             |
| TIMESLICE  | Convert to timeslices, or graphical timeslice display                       |
| TOPLABEL   | Top plot (elevation, statics, comments, v elocities etc.) for RASTER output |
| TRACEPLOT  | Produces hardcopy plot at irregular trace spacing                           |
| UNSLICE    | Convert back from timeslice to conventional seismic                         |
| XVIEW      | Interactive seismic data display  |

## Category : Synthetic modeling

|          |  |
|----------|--|
| SYN2WAVE | 2D synthetic waveform generator                      |
| SYNHORIZ | Synthetic horizon generator from .dig file           |
| SYNRAY   | 2D synthetic raytracing generator                    |
| SYNSHOT  | Modelling of synthetic shots for horizontal layering |
| SYNVERT  | Vertical synthetic using reflectivity method         |
| SYNWAVE  | 1-D synthetic waveform generator                     |

## Category : VSP processing

|          |  |
|----------|--|
| CDEM0D   | Calculates complex demodulate                    |
| ROTATE   | 3-Component trace rotation                       |
| ROTATE4C | 4-Component trace rotation for VSP analysis      |
| ROTATE6C | 6-Component source equalisation for VSP analysis |
| SEPPS    | Frequency-domain P and S wave separation for VSP |
| VSPSTACK | Stack VSP data with some migration               |

## Category : Trace headers & data

|            |  |
|------------|--|
| ADDDIG     | Adds digitised horizon times into trace header location                  |
| ADDHDR     | Adds tabulated values into the trace headers                             |
| CHECKGEOM  | Checks geometry in headers for possible problems                         |
| CHECKHDR   | Checks for possible problems in trace headers                            |
| CHECKTR    | Checks for possible floating-point problems in trace data                |
| DELHDR     | Deletes an extended trace header entry                                   |
| HDRMATH    | Header math manipulation   |
| JULIANSEC  | Add a timestamp to the trace headers                                     |
| NAVHDR     | Defines new trace header names for 3D marine navigation                  |
| NEWHDR     | Define a new trace header name   |
| OFFBIN     | Migrate trace header offsets to binned values                            |
| PSEUDOMATH | Mathematical operations on the contents of a trace and/or a pseudotraces |
| RANGE      | Prints the maximum/minimum range of header values                        |
| RENUMBER   | Renumbers the output primary and/or secondary key values                 |
| RHEADER    | Inserts ASCII text into 3200-byte SEG-Y reel header                      |
| RHEADER2   | Inserts ASCII text into 3200-byte SEG-Y reel header                      |
| RUNPYTHON  | Applies a custom Python code to the trace headers and data               |
| SETCHANNEL | Sets values in the reel or trace header                                  |
| SETHEADER  | Sets values in the reel or trace header                                  |
| SETKEY     | Resets the primary and/or secondary key index for a dataset              |
| SETLASTTR  | Sets last trace flag for the last trace in an ensemble                   |
| SETSCALES  | Sets or modifies the COORD_SCALE or HT_SCALE header                      |
| TRFUDGE    | Allows user-written code to be applied to seismic data                   |
| TRPRINT    | Lists trace data samples and header variables                            |
| TXTHDR     | Add any-text-file columns into trace headers                             |

## Category : Miscellaneous

|          |  |
|----------|--|
| COMMAND  | Runs a command before or after a flow                                |
| COMMENT  | Puts a comment in the job display                                    |
| EXAMPLE  | Example processor for \$GNS_HOME/local/modules                       |
| HISTORY  | Displays/clears processing history                                   |
| MULTI    | Template for multi-channel processors in Fortran                     |
| MULTI2   | Template for multi-channel processors in Fortran (ntr_in != ntr_out) |
| MULTI_C  | Template for multi-channel processors in C                           |
| PS3D     | Template for 3-D post-stack processing                               |
| ROLLING  | Template for rolling-buffer multi-channel module                     |
| SINGLE   | Template for single-channel processors                               |
| SINGLE_C | Template for trace-by-trace processor in C                           |
| SNOOP    | Prints message every n'th trace or ensemble                          |
| SU       | Pipes data to and from an SU processor module                        |

