Digital Group Forming

DGF may be applied interactively to data in the Phoenix picker window. It is quite fast, usually adding only a second or two to data load times. There are a couple of advantages to applying DGF with Phoenix:

- No need to create a DGF dataset in your processing system for import to Phoenix
- Easily experiment with different patterns, moveout residual terms and elevation correction terms
- The selected DGF options are applied during batch picking

Algorithm

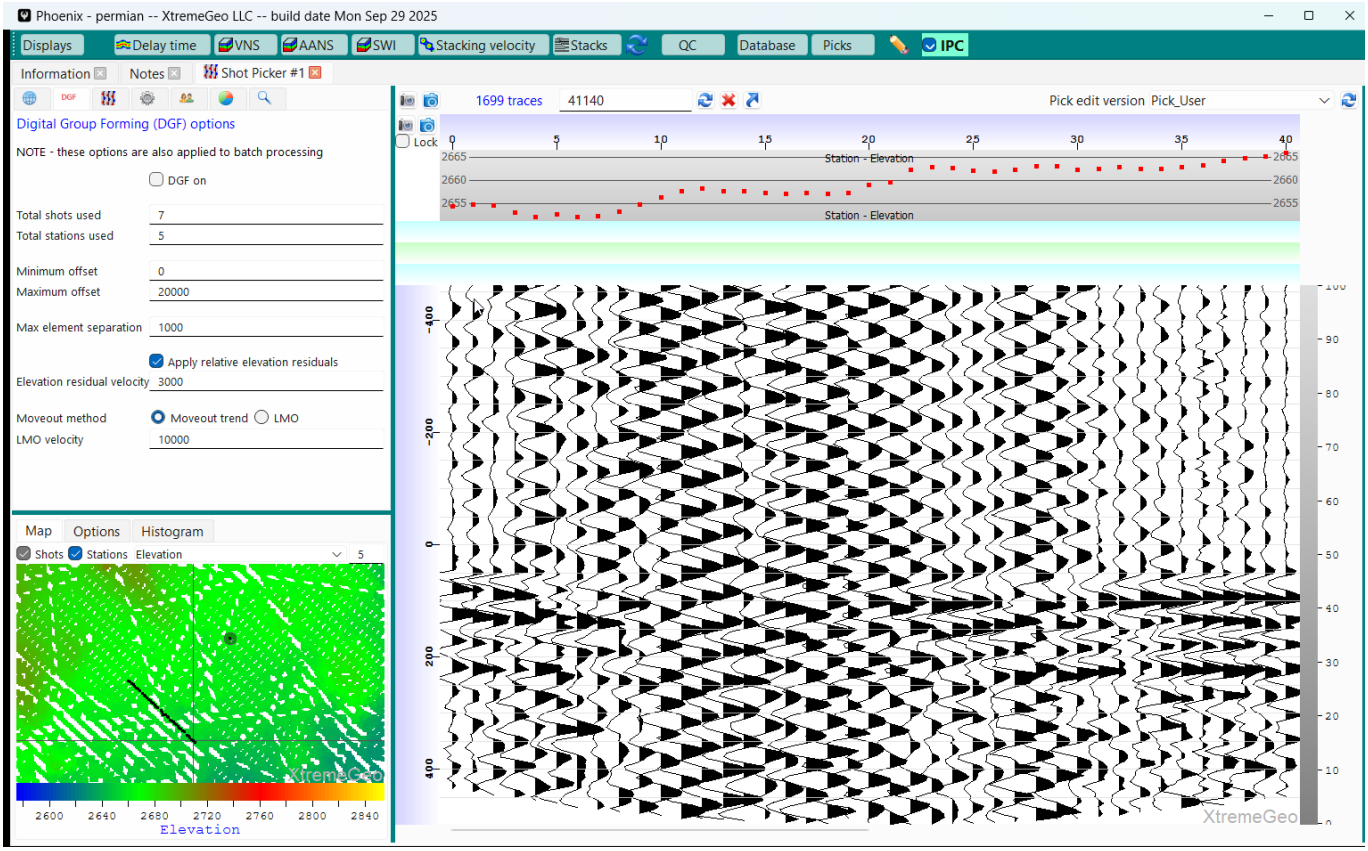
The algorithm is straightforward. Here's how to compute a DGF gather using a pattern of N shots by M receivers.

For a given trace with shot S and receiver R:

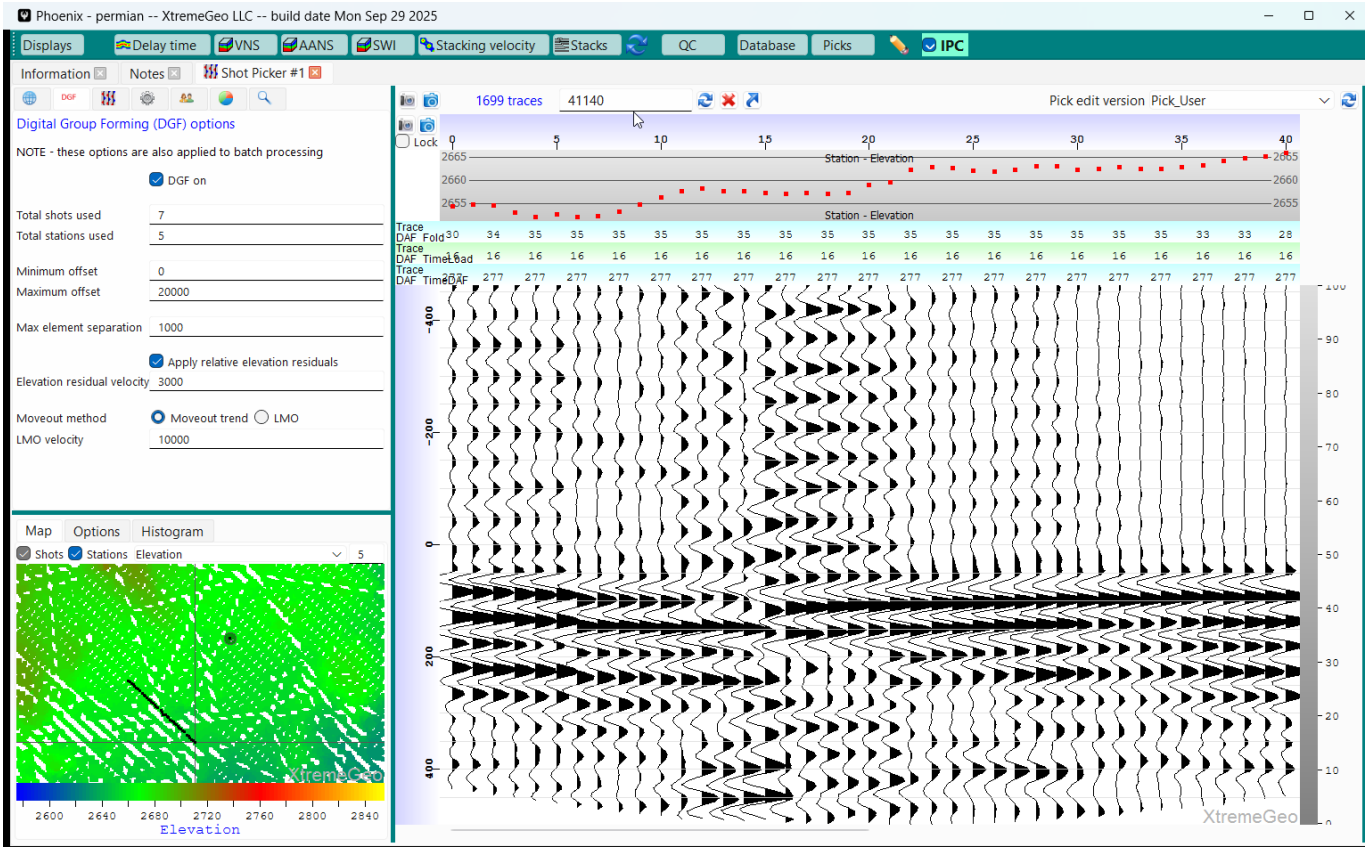
1. Load the N nearest shot gathers to shot S
2. For each loaded shot gather, find the M nearest receivers to receiver R
3. At this point we should have NxM traces. Compute relative shifts using either the user-defined moveout trend or a fixed LMO velocity.
4. Apply the relative shifts to all NxM traces and stack

First example, Permian Basin

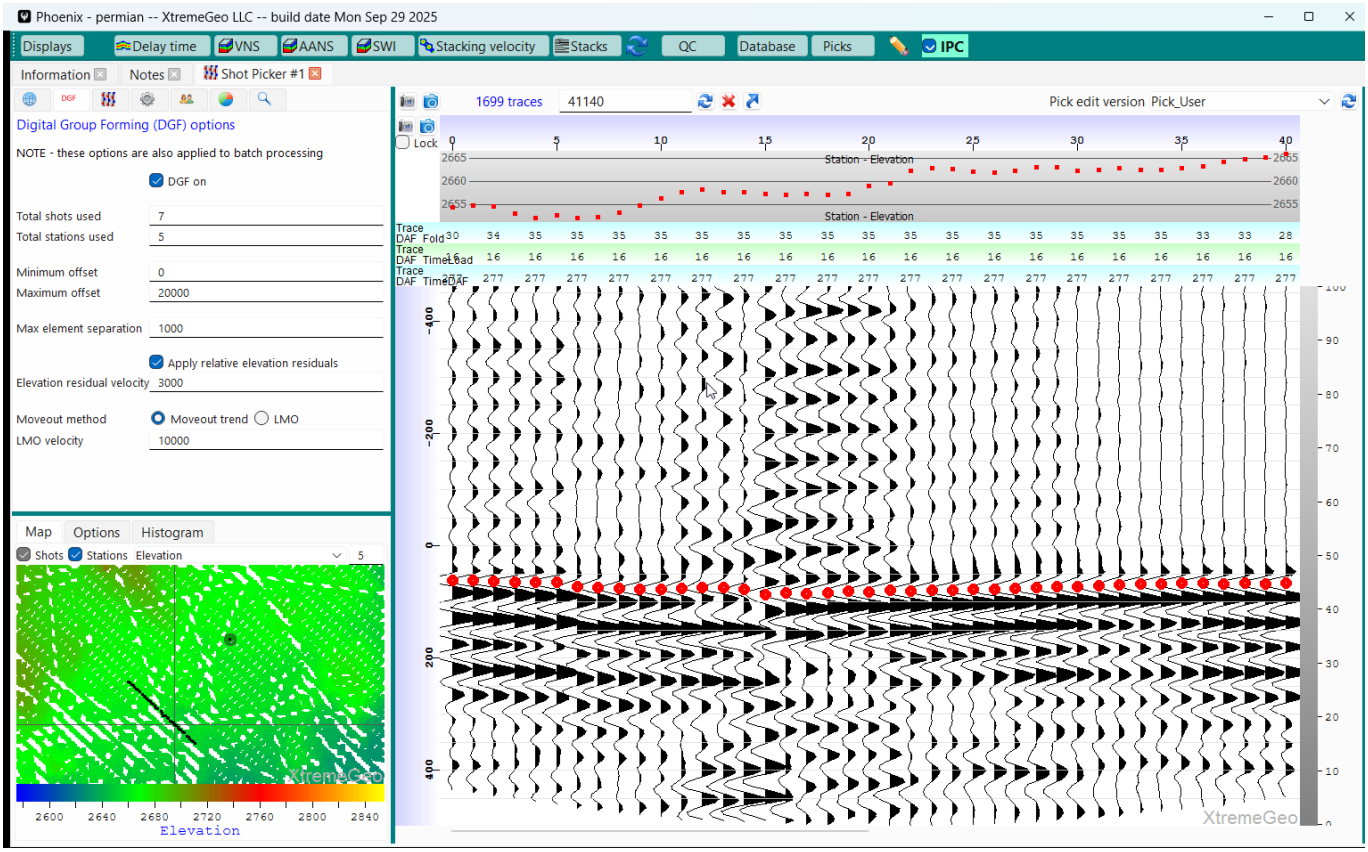
Original seismic, DGF not applied.



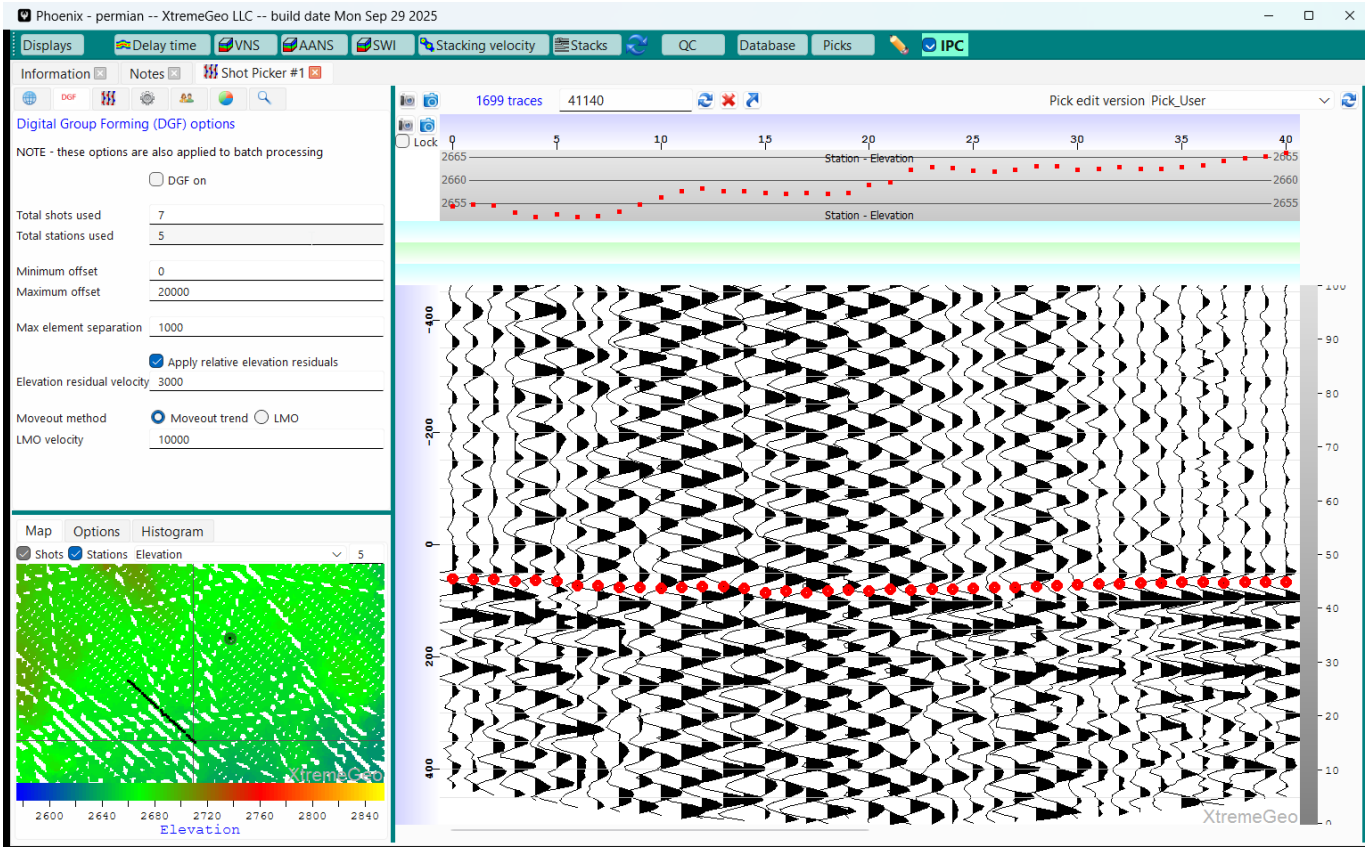
Apply DGF:



Make picks on the DGF gather:

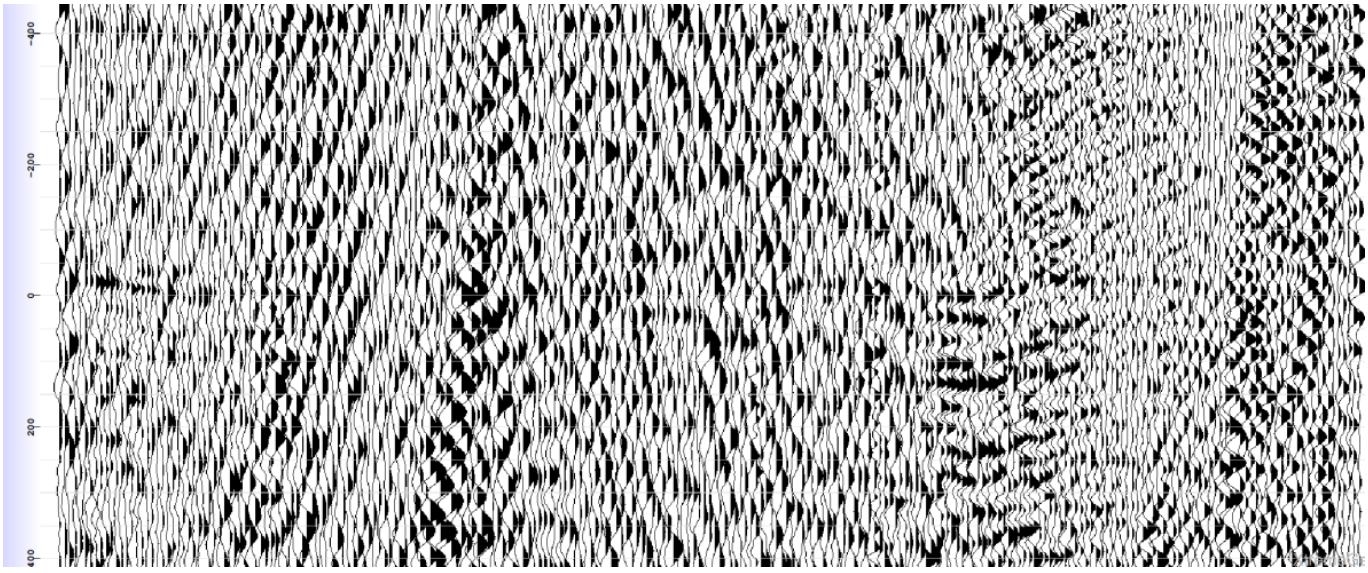


Finally, the picks on the gather without DGF applied:

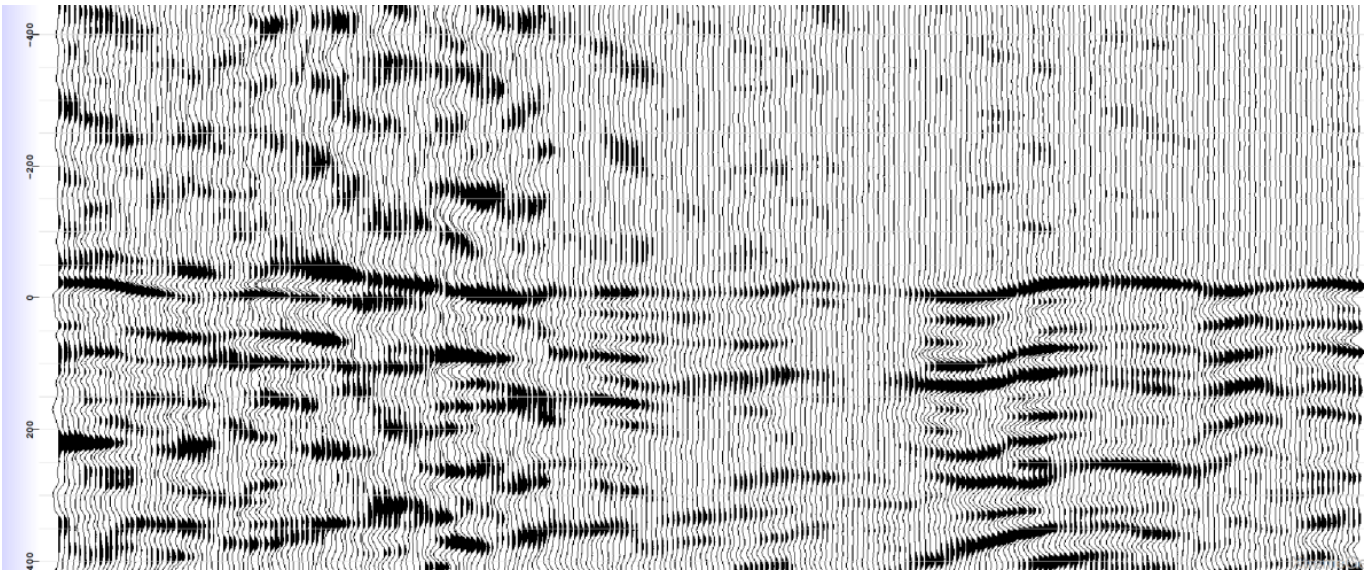


Second example, South America

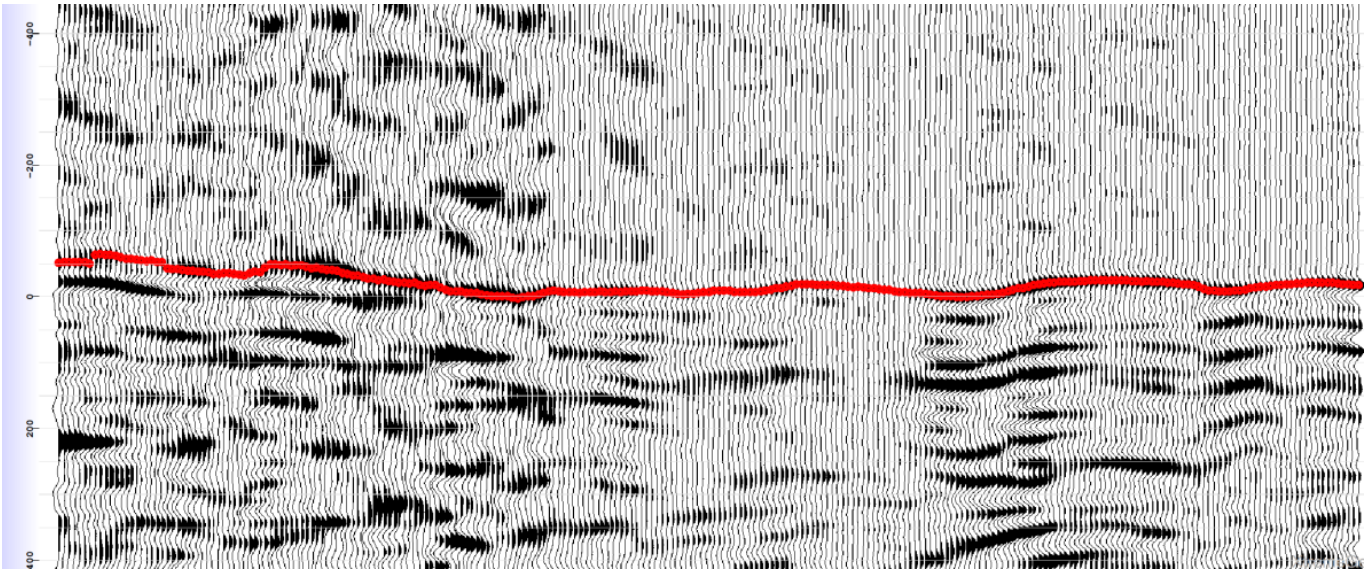
DGF not applied:



DGF applied (7x7 pattern):



Make picks on the DGF seismic:



Finally, the picks on the original seismic: