

DUG Wave FWI FAQs

What is DUG Wave FWI?

DUG Wave Full Waveform Inversion (FWI) is a revolutionary approach to seismic processing and imaging. It bypasses the conventional processing and imaging workflow by inverting for a range of parameters including source signatures, velocity, anisotropy, absorption and reflectivity directly from field data.

Reflectivity?

Isn't FWI just for model building?

No! FWI is a complete model-building and imaging solution. Our unique augmented acoustic wave-equation formulation delivers simultaneous FWI model building and full wavefield (reflected primaries, multiples and ghosts) least-squares imaging using field data as input. This approach is able to replace the conventional processing and imaging workflow to deliver superior results, faster.

How fast?

Blazingly fast! The turnaround time is limited only by the amount of compute available—and we have a lot of compute! We have successfully run high-frequency FWI jobs on over 6,000 machines in our Houston HPC centre.

What pre-processing does the data require?

Very little—we typically use field data as input. FWI is able to use primaries, multiples (free surface and internal) and ghosts to produce a final image.

And the output doesn't contain any multiples or ghosts?!

No multiples, no ghosts! FWI is able to handle designature, deghosting, free-surface and interbed demultiple and regularisation, as well as model-building and least-squares imaging. It's the entire conventional workflow in a single process!

What about absorption and anisotropy?

DUG Wave FWI can use a Q model as input. It can also invert for Q as well as epsilon as part of a multi-parameter inversion.

What about cycle skipping protection?

Fear not, DUG Wave FWI is equipped with algorithmic solutions to tackle cycle skipping. There are also cycle-skipping QCs automatically generated at each stage of the FWI workflow.

What other features are there?

Many, many more. DUG Wave FWI can also handle land/OBN and marine data, even in combination using multiple surveys as input. There are a range of tools to turbocharge convergence, including some borrowed from the world of machine learning, and a range of options to condition the outputs, such as footprint attenuation and structural smoothing.

Does DUG Wave FWI run on GPUs?

Yes! DUG wave FWI supports CPUs as well as GPUs.

Do I need a PhD in computer science to run DUG Wave FWI?

Our software is designed for geoscience, not computer science—freeing you from all the IT complexities. With simple and intuitive user interfaces, extensive best-practice documentation, and round-the-clock support, we strive to ensure that you're 100% focussed on your science.

How can I use DUG Wave FWI?

DUG Wave FWI is part of DUG Insight which is available on the DUG McCloud platform or as a standalone software package. Visit dug.com/dug-insight for more information.

How can I find out more?

Check out our [FWI brochure](#) and our [technical article](#) for more information!

For further enquiries
please drop a line to
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