Computer simulation of Arctic problems by grid-characteristic method

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Oil exploration in the Arctic has its own features. For example, the signals from the source propagate through the sea and the ice and they influence to the measured or calculated seismic response.

We simulate wave propagation in media with linear-elastic and acoustic layers. The complete system of equations describing the state of a linearly elastic body and a system of equations describing the acoustic field are solving. The use of the grid-characteristic method provides correctly describing of wave processes and to obtain all types of seismic waves. Correct the contact and boundary conditions, including the contact condition of between acoustic and linear-elastic layers are used.

We consider several problems, in particular

1. Numerical simulation of seismic prospecting in the Arctic shelf.

2. Study the effect of ice, the interposition of receivers and sources in problems of seismic exploration in the Arctic shelf by a detailed analysis of wave patterns and seismograms.

3. Study the effect of icebergs on the seismograms obtained during seismic prospecting in the Arctic.

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