

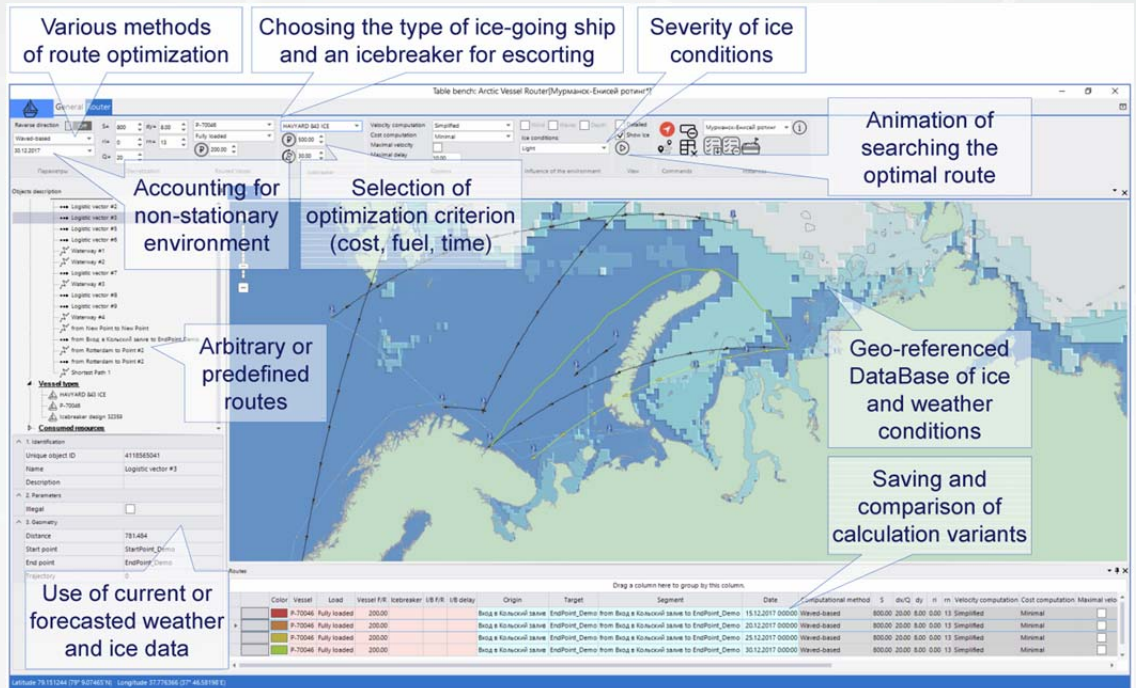
Bureau Hyperborea

Research Software «Boreas»

Purpose: Software for comparative analysis of various methods of ship routing in non-stationary ice conditions

Customer: Initiative project partially supported by Russian Scientific Foundation

Product Format: Desktop application running under Windows OS (beta version)



Principal features:

- Built-in editor of ship information model that allow describing: main particulars, hull form, loading conditions, resistance curves, propellers & power plant, freight rates, double action etc.
- External libraries for calculating ship/icebreaker/caravan performance (achievable speed, fuel consumption) in arbitrary weather and ice conditions
- GIS-based multi-language user interface
- Integration with geo-referenced databases of environmental variables: atmosphere (wind force, wind direction), hydrosphere (depth, current) and sea-surface (wave, ice cover)
- Using either statistical or forecasted environmental conditions (optional access to meteorological web-services)
- Implementation of the alternative graph-oriented or wave-based optimization algorithms to calculate the optimal ship/caravan routes in non-stationary ice conditions
- Optimization of the amount and proper areas of the icebreaker assistance by the cost criterion
- Tactical and operational routing with the consideration of the current position of the vessel and dynamics of weather forecasts
- Alternative optimization criteria (time, fuel, cost)
- Seamless aggregation of the computational grid for open navigation areas with the pre-defined fairways during the route optimization
- Kernel API for possible incorporation into ship on-board automation system
- Visualization of geo-referenced data
- Animation of the process of the best route finding
- Saving and comparison of the obtained results

