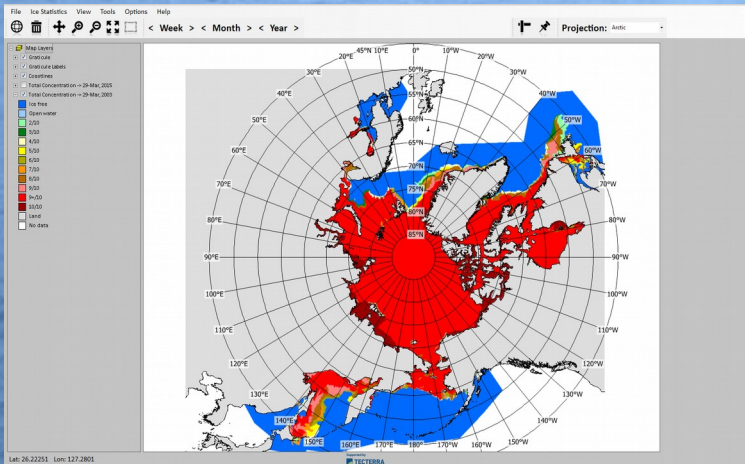
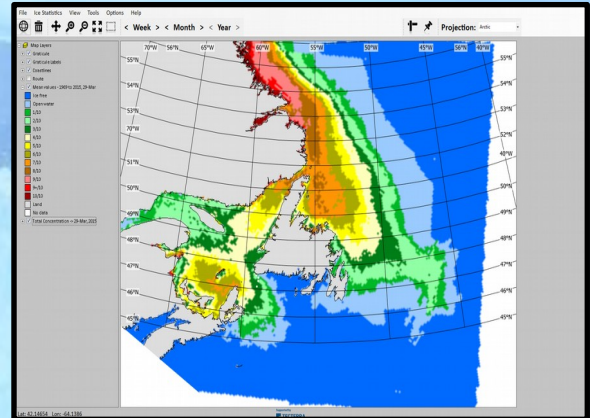


Accessing over 40 years of worldwide ice chart data, Canatec's ICE Program is a powerful tool that allows the user to generate statistical output of sea-ice conditions at specified points and over user-defined regions.



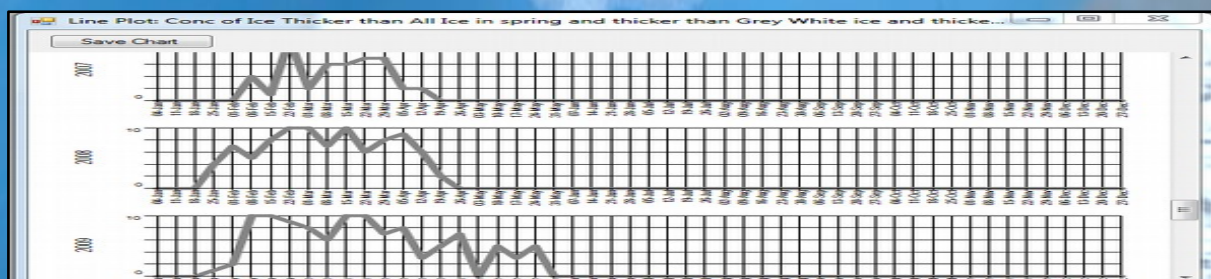
On-screen layout of Canatec's ICE Program



Median ice concentrations on 29 March, based on all data from 1991 through 2015.

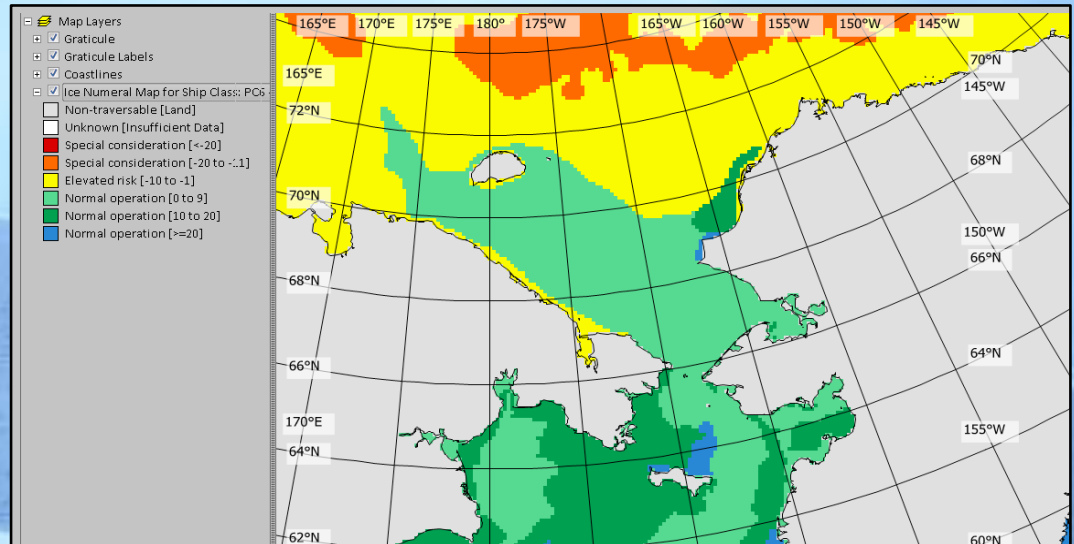
Output

- Within minutes, generate analyses of ice conditions in any northern hemisphere ice location— computations that would otherwise take days of manual compilation.
- Allows for exploratory planning to be carried out in-house, with complete confidentiality.
- Expert judgments in minutes without specialist training; quickly runs "What-if" analyses.
- Define requirements for more detailed analyses or new field measurements for final mission development.
- Complements other environmental databases and planning tools (sea states, meteorology, sea depth)
- Statistical graphs of ice conditions at *any* marine poleward of 35°N latitude
- Actual and statistical weekly maps for user-defined areas. Statistical plots of ice conditions for a single point.
- Statistical tables, plots, and maps showing operating season based on user-defined sea-ice limit criteria .
- Calculations of ice season duration probabilities from user-defined criteria for season start and end.
- Ice conditions, distances, and lowest ice class vessel along user-defined routes.
- Data output can be exported for analysis by other types of programs.



Season-by-Season line plot of ice concentration through the year at a user-selected location.

Generate maps of ship access (“go/no go”) zones for Polar Class vessels, 1A Super, 1A, 1B, 1C, Canadian Arctic Class (CAC), and five Canadian ice type vessels



Ice Numerals

Save to csv Ice Numerals for Ship Class: NO ICE CLASS
Lat.54° 45'N Lon.144° 15' E Ship Type: NO ICE CLASS

Vessel Ice Multipliers: MY: -8, SY: -7, TFY: -6, MFY: -5, FY: -3, FY: -2, GW: -1, G: 0, NI: 1, OW: 3

Decay: Rough:

| Number of Years | Dates | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|-----------------|--------|------|------|------|------|------|---------|------|------|------|------|------|
| Week 1 | 04-Jan | 30 | 30 | -11 | 16 | -29 | 30 | -2 | 0 | 10 | 30 | -9 |
| Week 2 | 11-Jan | 10 | -16 | 2 | -20 | -21 | 30 | -19 | 30 | 30 | 8 | 6 |
| Week 3 | 18-Jan | 30 | 10 | -21 | -4 | -33 | 30 | -21 | -7 | -17 | 4 | -23 |
| Week 4 | 25-Jan | 30 | -16 | -21 | -10 | -35 | 20 | -10 | -2 | -19 | -11 | -27 |
| Week 5 | 01-Feb | 30 | -19 | -15 | -25 | -18 | -2 | -8 | -7 | -22 | -15 | -28 |
| Week 6 | 08-Feb | 30 | -19 | -18 | -33 | -18 | 30 | -19 | -12 | -16 | -19 | -33 |
| Week 7 | 15-Feb | 22 | -24 | -35 | -33 | -30 | -20 | -23 | -19 | -28 | -29 | -35 |
| Week 8 | 22-Feb | 10 | -24 | -17 | -17 | -31 | -20 | -29 | -21 | -33 | -33 | -35 |
| Week 9 | 01-Mar | 10 | -30 | -42 | -17 | -29 | -27 | -31 | -28 | -27 | -32 | -37 |
| Week 10 | 08-Mar | -50 | -25 | -42 | -2 | -33 | -35 | -28 | -28 | -32 | -35 | -42 |
| Week 11 | 15-Mar | -50 | -25 | -25 | 30 | -33 | -37 | -30 | -22 | -35 | -35 | -42 |
| Week 12 | 22-Mar | -50 | -27 | -25 | 30 | -33 | -39 | -39 | -28 | -35 | -35 | -42 |
| Week 13 | 29-Mar | -50 | -42 | -26 | 10 | -34 | -39 | -22 | -8 | -37 | -37 | -42 |
| Week 14 | 05-Apr | -50 | -31 | -26 | 8 | -37 | -39 | -34 | -24 | -37 | -37 | -42 |
| Week 15 | 12-Apr | -34 | -26 | -26 | 30 | -34 | -30 | -24 | -34 | -37 | -37 | -42 |
| Week 16 | 19-Apr | 30 | -10 | -31 | 30 | -34 | -30 | 30 | -20 | -37 | -37 | -42 |
| Week 17 | 26-Apr | 30 | 30 | -31 | 30 | -34 | -30 | 30 | -20 | -28 | -14 | -42 |
| Week 18 | 03-May | 30 | 30 | 30 | 30 | -31 | 30 | 30 | 30 | -30 | -22 | -42 |
| Week 19 | 10-May | -34 | 30 | 30 | 30 | 30 | no data | 30 | 30 | 30 | 30 | -42 |

Above, interactive Ice Numeral output table for user-defined point. User can vary the vessel type and ice roughness/decay assumptions to generate historical sets of Ice Numerals as used by Polaris and Transport Canada ice regime analyses for ship access.

Acquiring Canatec's ICE Program

Single-user licence purchase—USD 5,900; includes US National Ice Center data 1972-present, Canadian Ice Service data 1968-present.

Supplementary user licences—USD 1,000 per additional licence.

Annual Maintenance Package—USD 1,200 per Basic licence, USD 350 per supplementary licence; includes program patches, upgrades, and full year addition of NIC and Canadian data sets..

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