

Ice Radar



KONGSBERG

Benefits

- Clear noise-free image of surrounding ice cover.
- Coloured relief style reveals smallest variations in radar return.
- Time-lapse replay feature enables operator to assess ice drift speed and direction.

Ice Radar option

The Ice Radar option for K-Bridge Radar provides a specially enhanced radar picture for safe navigation in ice-covered waters. By collecting radar signals over a long period of time the radar processor provides an exceptionally clear and noise-free image of the surrounding ice cover. This clarified image can be rendered in classic radar style or in a coloured relief that reveals even the smallest variations in the radar return. The two styles can be blended (according to operator requirements), and the brightness and contrast are adjustable to suit current conditions.

A unique replay feature helps operators to assess the drift speed and direction of the sea ice.

Finally, operators can switch between the standard radar picture and an ice-enhanced picture on the same operator station.

Classic style

In this style the ice-enhanced radar picture is presented using the same colours as the standard radar picture. The colour scheme is compatible with ARPA and AIS target symbols and with the use of tools such as EBL/VRMs.

Coloured relief style

This style uses a special technique to render the radar picture in shaded relief combined with colour. Instead of using only two colours (black and yellow) to distinguish between weak and strong echoes, this style uses a spectrum of colours from deep blue (for weak echoes) through yellow (for medium-strength echoes) to dark red (for strong echoes). The result is that even subtle differences in echo strength are easily discernible because they are rendered in different colours or different depths of the same colour. And, in addition to this use of colour, the style provides shading to show strong echoes in distinct relief from weak ones (and less strong echoes in less distinct relief).

Replay

Replay enables operators to assess the drift speed and direction of the sea ice. This is a time-lapse replay tool by which the last 60 seconds or the last 15 minutes (the time period is selectable) of radar video are compressed into 2 seconds of footage and continuously repeated on the radar display. By watching it, operators can see immediately how much the ice has moved in the time period selected and in which direction.

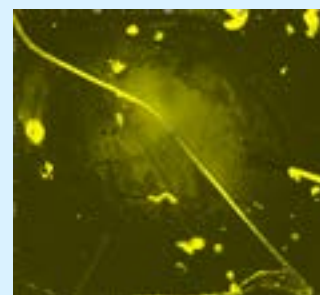


Figure 1 Classic radar style

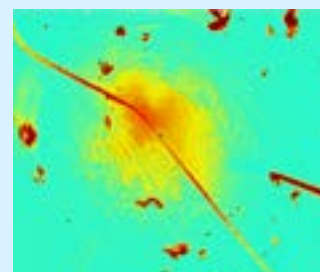


Figure 2 Coloured relief style

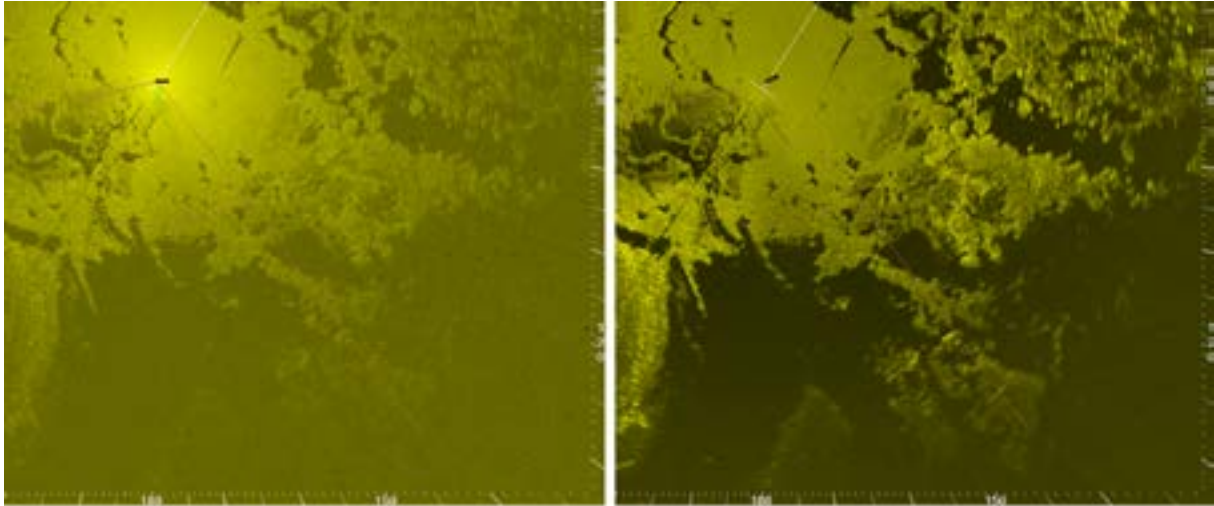


Figure 3 A standard radar picture (left) and a classic style ice-enhanced radar picture (right)

Figure 3 (above) shows a standard radar picture on the left and a classic style ice-enhanced picture on the right. The darker areas are smooth ice and the brighter areas are coarse-surfaced ice and stacked ice. The figure demonstrates how much clearer an ice-enhanced radar picture is by comparison with a standard radar picture.

Figure 4 (right) also demonstrates the clarification that can be achieved using the Ice Radar option. In this example, the radar picture shows a trail of crushed ice made by an icebreaker through a region of smooth ice. Land masses are visible as bright yellow echoes to either side of the image.

Figure 5 (below) illustrates the use of the contrast control in the Ice Radar option. When the contrast is set low (below left), strong echoes are distinguished from weaker echoes only by relief. However, when the contrast is set high (below right), the strongest echoes are clearly distinguished by colour (dark red) as well as by relief.

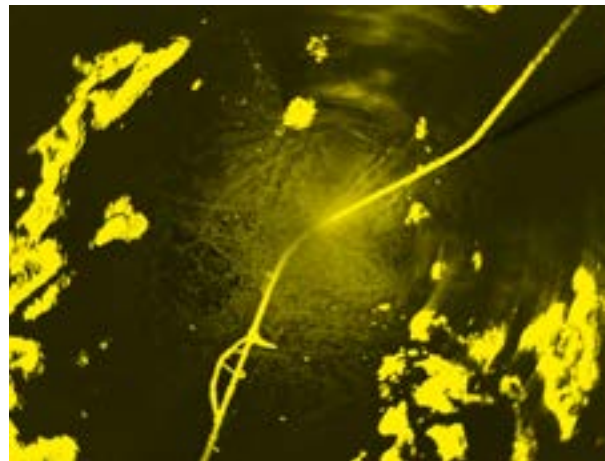


Figure 4 Another classic style ice-enhanced radar picture

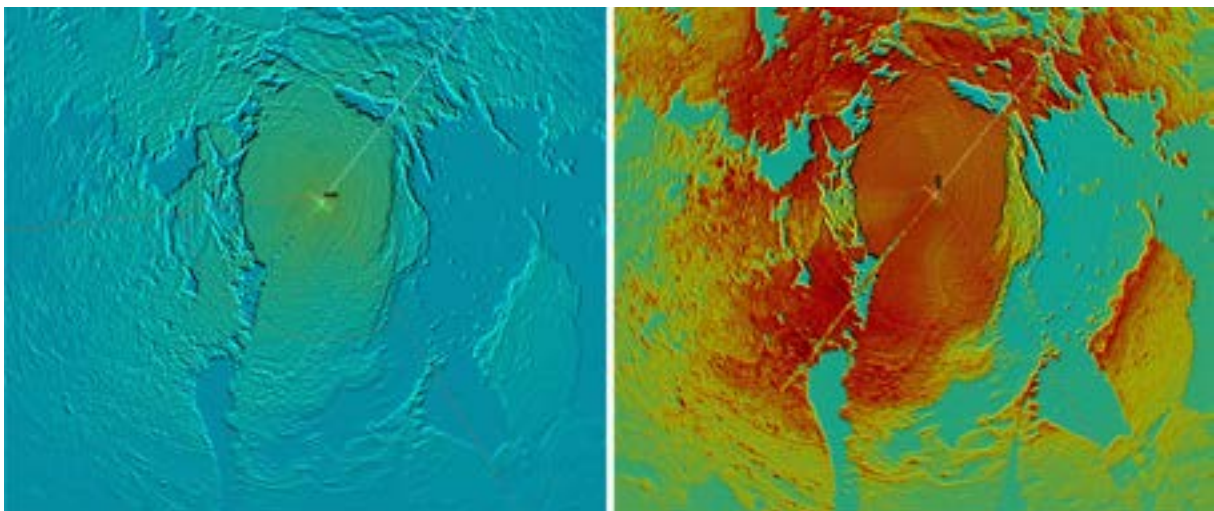


Figure 5 Coloured relief applied with low contrast (left) and high contrast (right)