Prognosis for 2002

Ocean climate

It was relatively warm in the Barents Sea the first half of 2001 and we expect the observed decrease in temperature during autumn to continue in 2002. The temperature will decrease the most in the eastern part of the Barents Sea and will stay around or just below the mean in 2002. In the central and eastern areas we expect a temperature minimum during 2003.

In the Norwegian Sea no major changes in the main circulation or transport of heat are expected in 2002 and 2003. The inflow of Atlantic water to the eastern part is expected to be lower than in the preceding years. In the central and northern Norwegian Sea the influence of Atlantic water will increase. The western part will continue to be dominated by Arctic water.

After many years of above average temperatures in the North Sea and along the Norwegian coast, the temperature is expected to stabilize around the mean in 2002.

Ocean production

The biomass of zooplankton in the Barents Sea, including overwintering *Calanus finmarchicus*, during autumn 2001 was lower than the year before and the lowest since 1992. This may indicate less favourable conditions for production of capelin, herring and juvenile fish in 2002.

One of the most important climate indexes in the North Atlantic is the average north-south difference in air pressure between Iceland and the Azores, known as the "North Atlantic Oscillation" (NAO). The distribution of water masses in the Norwegian Sea is related to the mean NAO index for the winter months. It is shown that the biomass of zooplankton in the Norwegian Sea is directly correlated to the NAO index the same winter and the preceding year (see *Havets miljø 2001*). Since the index was negative during the winter 2000/2001, we expect a low biomass of zooplankton in the central and southern part of the Norwegian Sea in 2002, unless the NAO for 2001/2002 turns positive which at present, seems unlikely.

The condition of the herring feeding on zooplankton in the Norwegian Sea has also shown a direct correlation with the NAO index for the present and preceding year. If the NAO index for 2001/2002 also turns negative, we therefore expect a low condition for the Norwegian spring spawning herring after the feeding season 2002.

Capelin and herring produced large amounts of eggs and larvae in 2001. This pattern is also expected for 2002. However, the mortality was high during summer and the 2001 year-class of capelin is now below average and the herring is considered as weak. The 2001 year-class of herring is so weak that it will not have any significant contribution to the herring stock.

Fish distribution

The Norwegian spring spawning herring spawn along the Norwegian coast, mainly between Møre and Halten. Changes in the preferred spawning grounds of the herring are not expected in the near future.

Even with indications that the NAO index will be lower, we still expect a high degree of arctic influence in the western Norwegian Sea the next two years. The past years the herring has migrated to feed in the northern areas of the Norwegian Sea. As the influence of Atlantic water in the northern areas is expected to continue, it predicts a relatively high production of *Calanus*. These conditions make it less likely that the herring will take advantage of the increasingly favourable conditions for production on the coastal banks north of Iceland by migrating to these areas. We therefore expect the herring to show the same feeding migration to the northern Norwegian Sea in 2002 as in 2001.

Mackerel. After the collapse of the North Sea mackerel in the 70s the southern and western mackerel have migrated northwards from the spawning grounds and into the North Sea and the Norwegian Sea. This migration pattern seems to have been very successful, as good year-classes have been produced for years. We expect this migration pattern to continue.

Blue whiting. In 2002 we expect a considerable part of the stock to distribute in the eastern and northern parts of the Norwegian Sea. Due to the cooling of the Barents Sea it is possible that the distribution in this sea area will be reduced. This is, however, also dependent upon the strength of the year-classes to come.