

Summary

Fishery is an industry that benefits mainly by farming or seasoning fish and other sea animals (such as shrimp, or seals). People in this industry also produce related agricultural products. Especially for countries located on the coast of the world's four major fishing grounds, fishery is one of their pillar industries. As an area located along the North Atlantic fishing grounds, Scotland is listed.

The stability of fisheries has changed in recent decades with the release of carbon dioxide, the global temperature climbs up, the ocean temperature rises accordingly. The two main fish species caught in Scottish fishing grounds, herring and mackerel, have gradually moved north to seek suitable habitats.

We collect the past 50 years' ocean temperature data, build a prediction model, predict the possible temperature after 50 years or even more. Based on the temptation prediction, we locate the possible zones fish will migrate to. After that, we calculated the best case and worst case for fishery in terms of fish migration.

The prediction result shows that in the next half century, the two species in the North Sea will migrate northwest and northeast. Geographically, it can be marked on the map as the northeast corner of Scotland and the southwest coast of Norway. Based on the location and NPV rule, we give our suggestions for some fishery companies, like relocating or sending additional capable vessels. We also conducted a game theory study on possible territorial sea crossing issues.