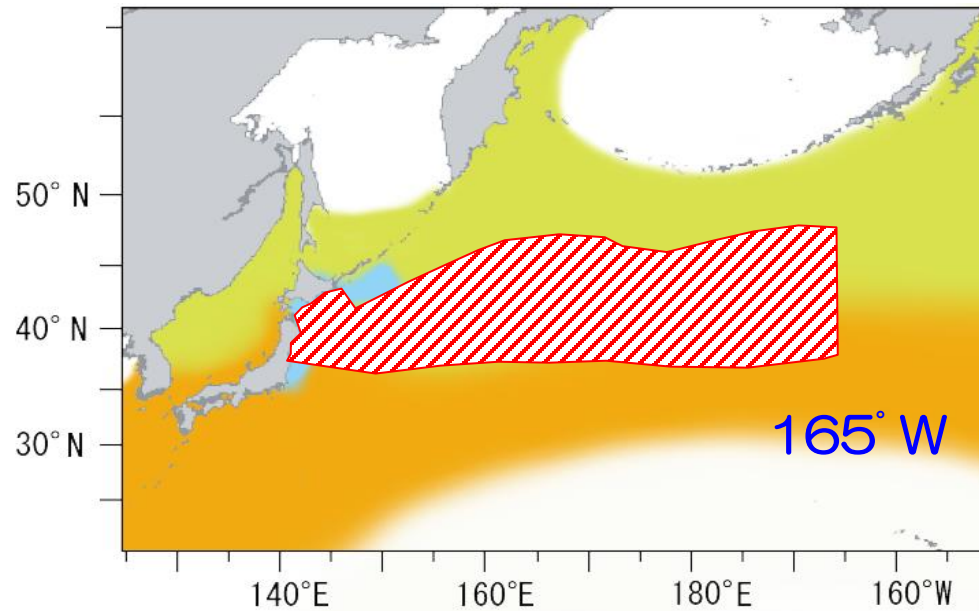


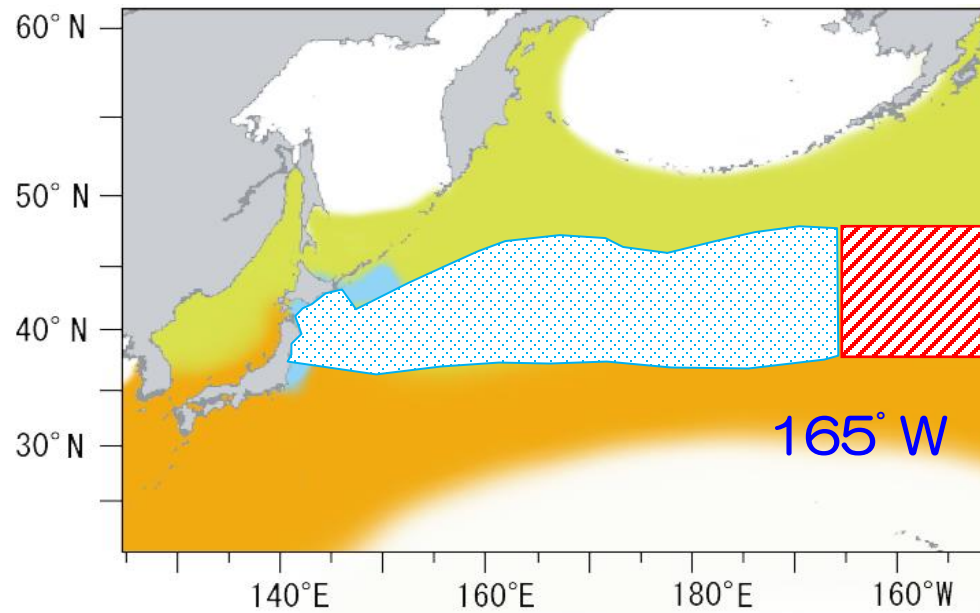
Plans for biomass survey by Japan in 2022 and future

The plan of survey in 2022



- The biomass survey with usual area coverage is planned for 2022.
- Although the influence of COVID-19 will remain in 2022, Japan will make the best effort to cover the same survey area as before.

Future biomass survey



- We recognized the eastward shift of the center of age-0 distribution in the survey area in recent years (Hashimoto et al. 2021).
- Additional surveys to confirm the distribution in the east of 165° W would be fruitful.

Future biomass survey

- There are several restrictions for the expansion of the survey area by Japan.

1. Fuel limitation of research vessels

Most research vessels in Japan can move continuously only ca. 20-30 days at a maximum because of fuel limitations.

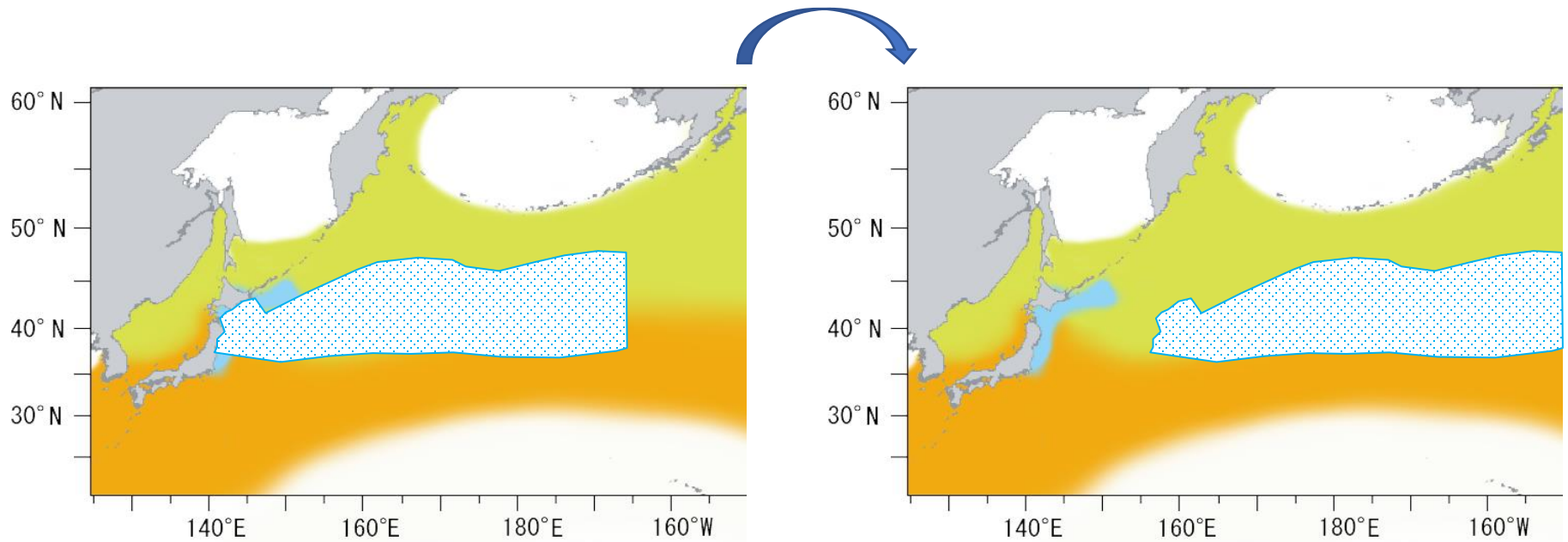
2. Available periods to use each vessel

Each vessel has its own annual voyage plan, of which only about one month is available for Pacific saury.

3. Number of vessels and researchers available for the trawl survey simultaneously

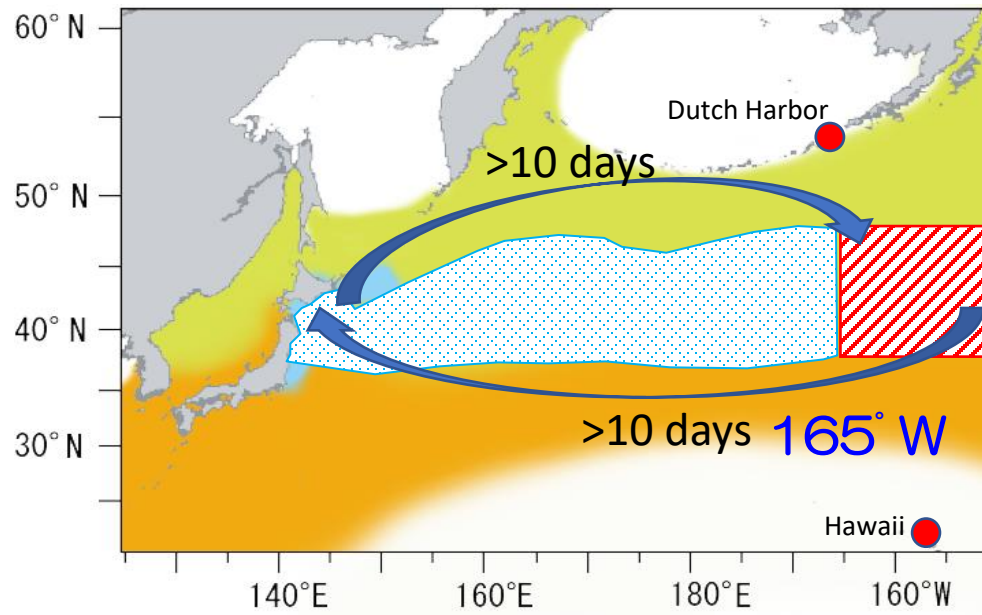
Three vessels and researchers are necessary to cover the present survey area within ca. one month survey period under the effect of COVID-19. Japan is making the best effort to cover the present survey area.

How about shifting the survey area eastward?



- Keeping a consistent survey area is important from the viewpoint of monitoring.
- If we moved the survey area eastward, we miss the unexpected occurrence of Pacific saury in the future in the west side of the present survey area which would be more important for the fishery.

How about adding new vessel for eastern area?



- It would take about 20 days just to travel between Japan and the additional research area, which would make it difficult to survey this area.
- A port call in Hawaii or Dutch Harbor might solve the fuel problem, but the total voyage from Japan would exceed two months, and there are no ships of our institute that can be scheduled that way.
- The participation of other members in the survey for the eastern area would be fruitful.

Conclusions

- The biomass survey by Japan with usual area coverage is planned for 2022.
- The mobility of research vessels restricts the survey area and it is difficult for Japanese research vessels to survey the area east of 165° W.
- The participation of other members in the survey for the eastern area would be fruitful.