SEMINAR ON E-NAVIGATION ON OUR OCEAN

The contribution of SIMA-JICA Project

Honiara, Solomon Islands

13 May 2025

Importance of Hydrography and Nautical Charts -Relationship to management of sea-

Presented by Arata SENGOKU, Ph.D., Chief Advisor, Executive Technical Advisor, Aero Asahi Corporation

Why quality hydrographic survey and nautical chart are important?

-Two anecdotes which imply the importance of hydrography and nautical charts-

These are real stories which I experienced in the last two decades. Some of you may experience similar problems.

(1st anecdote)

One day in a major port in central Japan,

A vessel was trying to approach to a newly built private wharf of a timber company. On the wharf, a ceremony was going on to celebrate the first vessel to come in. The CEO of the company and high-level guests from port authority and relevant organizations were waiting for the vessel to come to the shore, but ….

The vessel could not come, because it was already aground in front of the audience!

CEO lost his face, many participants got upset about the grounding.

Why was it aground?

The passage was not properly surveyed. The depth of the wharf is not deep enough for the vessel because the dredging was not sufficient.

(2nd anecdote)

One day in a Japan Coast Guard Office in northern Japan,

Director of the office, *myself,* was quite surprised to find out that there were a number of dangers in front of the newly built wharf on which a brand-new patrol vessel was planned to berth.

It was a real nightmare *for me* if the brand-new patrol vessel was aground and broke at the very first berthing to the mother port *in front of me*.

Who found the dangers?

Hydrographers of Japan Coast Guard kindly found them. They found that the checking survey by the dredging company was poor and spontaneously carried out hydrographic survey by themselves.

What were the dangers?

The remnant of piles of the old pier.

Lessons to be learned:
Poor hydrographic survey and nautical charts may cause serious accidents.

The importance of Hydrography
-Efficient and safe maritime transport-

- More than 80% of international trade in the world is carried by sea. Maritime commerce is a basic enabler for the economies of most nations.
- In Solomon Islands, most of international trade is carried by sea.
- However, many areas and ports in the world, including Solomon Islands, do not have accurate nor adequate nautical chart coverage.
- Modern nautical charts are required for safe navigation through the waters of a country and to enter its ports.
- A lack of adequate nautical charts inhibits or prevents the development of maritime trade.

The importance of Hydrography

-Efficient and safe maritime transport-

- The shipping industry seeks efficiency and safety.
- It is a trade-off between efficiency and safety.
- Generally the industry wants to maximize efficiency with allowable safety.
- Good charts provide the most direct routes between ports, reduce the number of pilots required, decrease the number of groundings (and reduce insurance rates), and allow deeper draft vessels (i.e. larger cargo) to be used.
- The saving of time and money resulting from the use of shorter and deeper routes and the possibility to use larger ships or to load ships more generates important economies for national industry and commerce.
- The National Oceanographic and Atmospheric Administration (NOAA) of USA reported that one additional foot of draft may account for between $36,000 and $288,000 of increased profit per transit into Tampa, FL. (NOAA, 2000)

The importance of Hydrography
-Tourism-

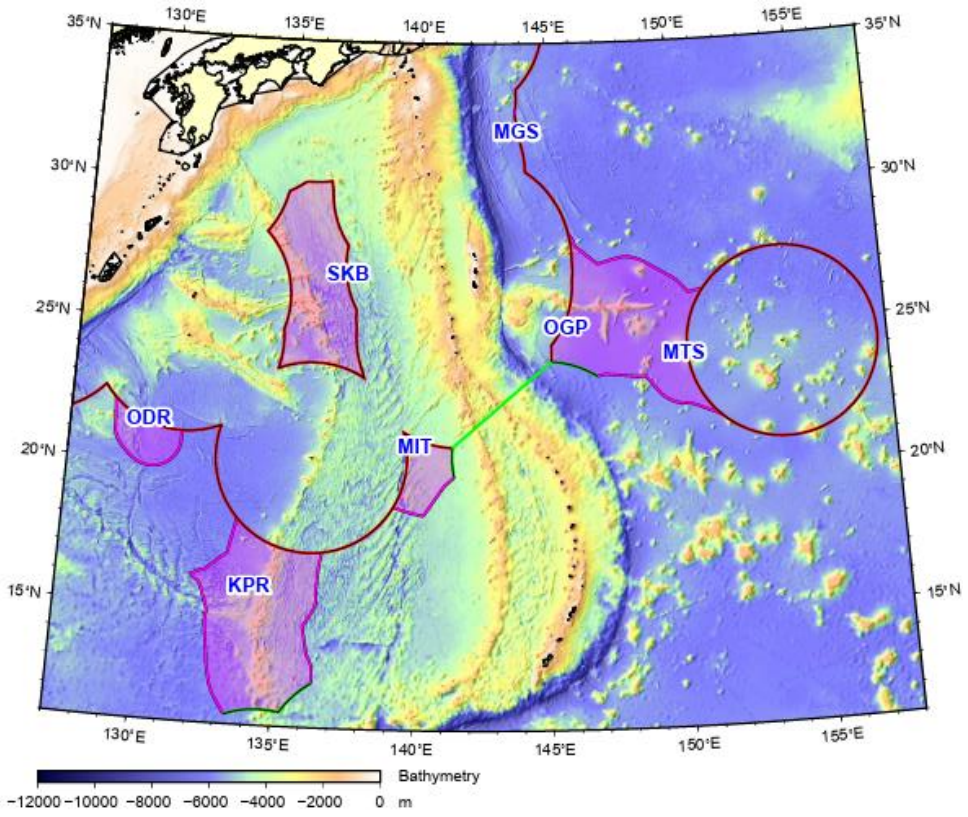
- Good charts are particularly important for the development of the economically important tourist industry, especially involving cruise ships.
- The potential of the cruise ship industry is especially important to developing nations.
- This important source of revenue cannot be properly developed if safe navigation to remote tourist destinations is prevented, or limited, by lack of adequate charts.
- Tourism is one of the major growth industries of this century.

The importance of Hydrography
-Small Boat-

- The small boating community represents a very large percentage of users of the sea.
- It is generally not mandatory for boaters to carry nautical charts.
- However, the advent of digital chart information, accessible through low-cost hand-held devices and computers now makes it possible for boaters to use chart information together with many types of value-added information such as marina locations.
- This development is making small boating a bigger part of the market for hydrographic data as increasing numbers of people become small boat owners.

The importance of Hydrography
-Contribution to Continental Shelf-

- Hydrography will contribute to extension of Continental Shelf.
- Japan Coast Guard made extensive bathymetric survey in Japanese waters by using multi-beam echo sounders for a quarter century.
- Government of Japan submitted a document claiming extension of Continental Shelf beyond 200NM from coastlines in 2008.
- More than 80% of the data submitted was obtained by hydrographic surveys.
- In 2012, the UN commission of the Limits of the Continental Shelf recommended the extension of four out of the seven areas.

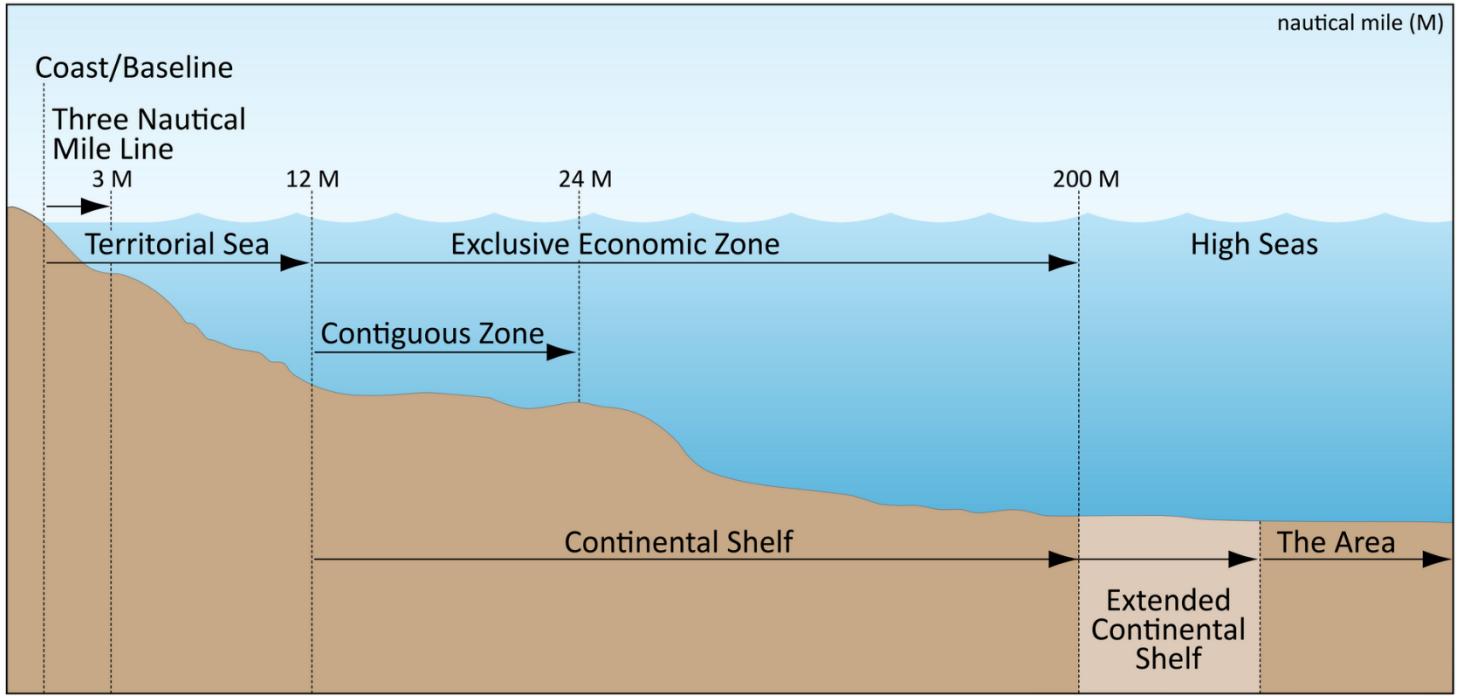


Japanese claim on extension of Continental Shelf.

The importance of Hydrography
-Contribution to Maritime Boundary-

- According to UN Convention on Law Of the Sea (UNCLOS), territorial sea and EEZ are 12NM and 200NM from low water line shown in nautical charts including ENCs.
- Low water line, waterfront line when tide is the lowest, in nautical charts are based on the results of hydrographic survey, specifically coastline survey.
- Therefore, maritime boundary is based on the hydrographic survey results.

Outer limits of territorial sea and Exclusive Economic Zone (EEZ) are measured from the baseline at the coast.



TAGIO TUMAS

The Project for Development Support of Electronic Navigational Charts for Honiara and Noro Ports in Solomon Islands