

The Role of Ocean Environments in the History of the East Asian Seas

Hiroshi Yoshio*

Graduate School of Kuroshio Science, Kochi University, (Asakura, Kochi, Japan)

Abstract

The way of life of those who crossed ocean currents using seasonal winds reflected the basic characteristics of the historic environment of the East Asian seas. However, even those people must have hesitated to enter the main stream of the Kuroshio flowing in the southeast. Because they well knew that crossing over from the East China Sea to the North Pacific across the Kuroshio's main stream would result in their helplessly drifting about in the sea in almost all cases. This differs from the situation in the Mediterranean sea which is mostly surrounded by land. Approaching the truth of "those crossing ocean currents taking advantage of seasonal winds" and "boundaries of a current" from an environmental viewpoint is a useful method for investigating the unique characteristics of the history of the East Asian seas.

Key words: current, East Asian Seas, historic environment, interchange, seasonal wind

Introduction

In his book *The Mediterranean* (I. Role of the environment), Fernand Braudel wrote about "the sky of glory" (three summer months when people actively move about in the Mediterranean) and "the terrible season" (three winter months when seasonal winds from the north blow violently and the Mediterranean countries close their ports). In the history of the East Asian seas then, how has the impact of the ocean environment on people's activities been recognized? I think answering this

question will reveal the actual state of the environment, an environment which has formed the foundation for the history of various interchange activities in the East Asian seas (Figure 1).

From this perspective, this report will detail the characteristics of the seasonal winds, ocean currents, sea routes and the seasons for voyages described in preceding studies in Japan and also describe the main materials used as the basis of these studies.

This paper will mainly cover the East China Sea and also include the Yellow Sea and part of the South China

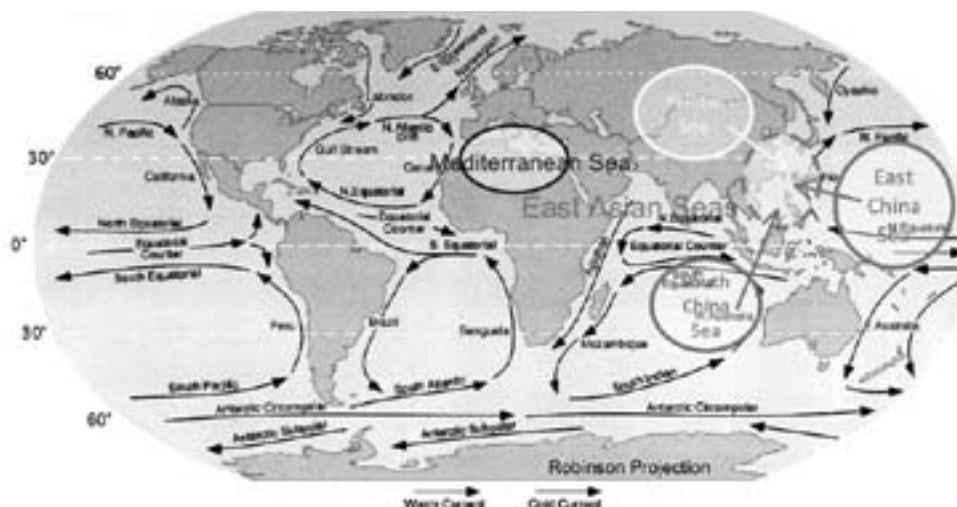


Fig. 1 Major world oceans and currents

*Corresponding author: e-mail hyoshio@kochi-u.ac.jp

Sea off Guangdong, China.

1. Seasonal winds and ocean currents

Information from currents marine meteorology and the results of studies that have used this information and have analyzed the causes of boats drifting and being cast ashore can provide us with valuable data (Arakawa, 1962).

As can be seen from these study results, wind directions and velocities change throughout the year in the East Asian seas where the prevailing winds are northwest winds in winter and southeast winds in summer. (1) In the center of the East China Sea, northwest and north winds are relatively strong from December to March, weak northeast and east winds blow in April and May, weak south and southeast winds blow from June to August and northwest winds increase their velocity from September to November. (2) In the Yellow Sea, seasonal winds similar to those in the center of the East China Sea blow from December to March, the seasonal winds are themselves weak from April to June, and relatively weak south winds blow in July and August. In September, winds from the north begin to become strong, gradually changing their direction from northeast to northwest. (3) In the seas from Fujian to Guangdong, China, northeast winds mainly blow from September to May(they are especially strong from September to March) and conversely, south winds blow from June to August.

The rise of these seasonal winds is mostly due to high and low atmospheric pressures in winter and summer and is also affected by the rotation of the earth. In short, in winter, winds flow out of the high pressure area in Siberia and into the low pressure region over the Aleutian Islands, forming northwest and north winds in

Japan and the East China Sea. In summer, they arise in the high pressure zone in the North Pacific and head for Siberia, forming south and southeast winds; the south winds are weak because the pressure gradient is gentle. East Asia is located on the border between the world's largest continent (the Eurasia continent) and the world's largest ocean (the Pacific), and the phenomena of seasonal winds occur more regularly and on a larger scale in this region than on any other part of the earth.

East Asia has warm currents, including the Kuroshio, the Tsushima Current and currents off the Korean coasts, as well as cold currents, such as currents flowing off Chinese coasts (Figure 2). The Kuroshio is the current that has the strongest and most widespread influence on the region. It forms the "great circulation in the ocean" in the Northern Hemisphere together with the North Pacific Current, the California Current and the North Equatorial Current and runs at up to 2-3.5 knots off the east coast of Taiwan and at 1-2 knots in the eastern part of the East China Sea. The Tsushima Current flows at 0.4-0.8 knots and is sometimes affected by the Kuroshio. In recent years, oceanographic studies that investigated the process of the public recognition of the Kuroshio using a wide range of Chinese, Japanese and European literature have been published and this achievement has opened the way for discovering the relationship between the Kuroshio and people's voyages in an age when the current did not yet have the name "Kuroshio" (Kawai, 1997; Yoshio 2005 and 2006).

Recently the results of studies that have discussed the ocean environment based on the relationship between seasonal winds and ocean currents have been published in various fields relating to the history of interchanges in East Asia (Kanazawa, 2002). In addition, some researchers have proposed the idea of focusing on the

Table 1. Major interchanges in the history of the East Asian seas

Kentoshi	Japanese missions to Tang-dynasty China	659-838
Trade between Japan and Sung-dynasty China		The second half of the 10th century
Genkou	the Mongolian expeditions against Japan	the second half of the 13th century
Wo kou	the attacks of Japanese pirates	1369-1614
Kenminshi / Trade between Japan and Ming-dynasty China	Japanese missions to Ming-dynasty China	1401-1549
the Shuinsen trade	trading by Japanese ships with the approval of the shogun	1601-1635
Trade at Nagasaki, Japan		From the 17th to the 19th century
Sapposhi	Chinese missions to the Ryukyu Kingdom to bestow titles on the Ryukyu king	1534, 1561, 1579, 1602, 1633, 1663, 1683, 1719-20, 1756-57 and 1800

effects of countercurrents and tides (Hashimoto, 2007).

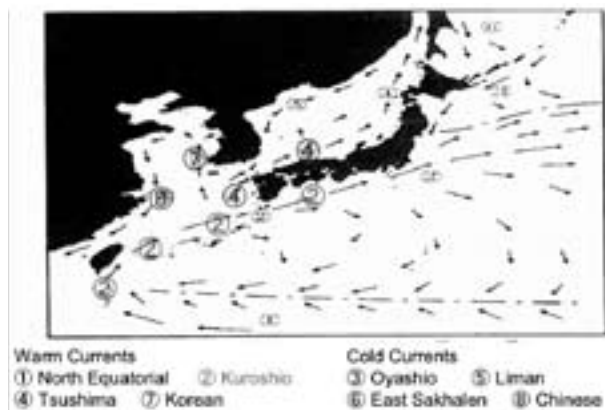


Fig. 2 Straits in the East Asian Seas

2. Sea routes and the seasons for voyages

What were the actual conditions for voyages in the past? Here I will summarize, using outcomes from preceding studies, the cases of well-known voyaging activities and related events whose dates have been identified (Table 1). If not otherwise specified, the lunar calendar is used but the general conditions of wind directions and wind velocities will be described using the solar calendar in a roughly equivalent manner.

This report does not discuss the navigation capacity of dhows and other similar vessels but takes account of preceding studies which state that the ships for the *Kentoshi* (Japanese missions to Tang-dynasty China) and the *higaki-bune* (cargo ships in the Edo period (1603-1867) that plied between Edo (present Tokyo) and Ozaka (present Osaka)) were sail on winds at angles of about 45° to 70° (i.e., winds including side winds but excluding head wind) (Sugiura, 1966).

1) Ships for the *Kentoshi* (659-838)

It is said that the ships for the *Kentoshi* had three sea routes: the northern course (Hakata → Iki → Tsushima → southern coasts of the Korean Peninsula → Bo Hai → Dengzhou and Laizhou, China) used mainly during the seventh century; the southern islands course (Hakata → Satsuma → Oshima → Okinawa → Yaeyama Islands → narrow seas in the East China Sea → Chinese continent) used mainly during the eighth century; and the southern course (Hakata → Goto Islands → Yangzhou, China) used mainly from the eighth to ninth centuries. But there is less data for proving the existence of the southern islands course than that for the other two routes, and it has thus been argued that it might have been after the Ryukyu Kingdom was established in 1429 that this course began to be used widely. Taking

the southern course as an example, it is supposed that voyages from Japan to China were made mainly in July and August when northern or weak southern winds prevailed (Ueda, 2007).

2) Voyages of *nitto-guho-so*

According to the records of the voyages of the *nitto-guho-so* (Japanese priests who visited Tang-dynasty China to study Buddhism), En-nin (794-864) took the southern course when he went to China (starting from Ojikajima Island, one of the Goto Islands, on June 23, 838 and arriving at Kugang, Rudong, Jiangsu, China on July 2, 838) he took the northern course when he came back to Japan (leaving China on July 21, 847 and reaching Hakata on September 19, 847) (Shioiri, 2007). Also there is an interesting document regarding the voyage to China of Enchin (814-891), who used the northern course when he returned to Japan just as En-nin did. The document says that the ship which he went aboard to visit China took the southern course from the Goto Islands taking advantage of winds from the east (on July 16, 853) but that this ship was soon carried away by northern winds to the northwestern end of Taiwan (written as “Liuqiu”) and finally arrived at Fuzhou, Fujian, China on August 15, 853 (Ono, 1983).

3) Ships for trading between Japan and Sung-dynasty China and the Mongolian expeditions against Japan (twice in 1274 and in 1281)

Between the second half of the tenth century and the 13th century, Japanese ships sailed from Hakata via the Goto Islands to Mingzhou, to Taizhou and other places in Jiangsu and Zhejiang Provinces, China (Mori, 1948). The main seasons for these voyages were from January to March or April and from September to November when the prevailing winds blew northwest and northeast. On the other hand, it is considered that voyages from Jaingsu and Zhejiang to Japan were made mostly from May to August when south winds mainly blew. There were many ships that sailed to Koryo (918-1392; a country in Northern Korea) from Hakata and other ports of Japan via Iki and Tsushima, too; it is supposed that the main navigation seasons for these ships were from February to July and in September and November so long as no strong seasonal winds blew from the northwest. It can be concluded from existing data that ships from Koryo to Japan navigated mostly from July to September when seasonal northwest winds grew stronger. The voyages between Koryo and Sung-dynasty China (960-1279) were also active (as discussed in the conclusion below), and “The Chinese Envoy’s Record of Koryo,” by Xu

Jing, a writer from the Northern Sung, describing the sea routes in the Yellow Sea, was published in 1123.

A similar situation can be seen in the relationship between Yuan-dynasty China (1271-1368) and Japan, too (Tanaka, 1999). What is well known among the Japanese about the navigation across the Korean Strait by the so-called Mongolian expeditions against Japan, is as follows: on October 5, 1274, the allied forces of Yuan and Koryo assembled off Sasu-ura on the western coast of Tsushima. Before dawn on October 21, 1274, adverse winds (southwest winds) began to blow suddenly and destroyed many Mongolian battleships. In the second expedition, on July (intercalary seventh month) 2, 1281, a majority of the battleships of the forces of Toro (Korea) and Jingnan (China) were capsized and sunk by “autumn winds” (typhoons) off the coast of Takashima, north-western Kyushu.

Later in 1592, Chancellor Toyotomi Hideyoshi (1536-1598) dispatched his navy to the Korean Peninsula, and their landings on the southern coasts of the peninsula were mainly from April to June when seasonal winds were themselves weak. Just how dangerous out of season voyages such as those of Hideyoshi’s battleships truly were can be seen from the case of the crossings by the Korean missions to Japan (Kitajima, 1990). One of the missions left Funakoshi, Tsushima, on March 1, 1420 heading the “ocean” for the Iki Islands but the ships pitched heavily due to angry waves throughout the night and finally reached Iki at dawn only after great effort. The ships for another Korean mission that left Fuchu, Tsushima, on November 13, 1763 and arrived at Kazashimo-ura, Iki are said to have had a very rough voyage through violent waves raised by strong westerly winds (Saeki, 2006).

4) Ships for the Kenminshi (Japanese missions to Ming-dynasty China)

Japan sent missions to Ming-dynasty China (Kenminshi) from 1401 to 1549. Most of them followed a course starting from Hakata, entering the ocean via the Goto Islands and then heading straight for the Bay of Hangzhou or the mouth of the Yangtze, and sailed on the same route back when returning to Japan. The trips from the Goto Islands to Ningbo, China, which was part of the course of these missions, were made mainly in February and March and from July to September. What is especially noteworthy is the fact that Japanese historical records show that the ships for the Kenminshi attempted to take advantage of “strong spring winds” for sailing to China and “strong autumn winds” for coming back to Japan (both of which are strong seasonal winds from

the northeast). There was another course from Sakai (south of present Osaka) to Ningbo via the southern sea route off Tosa (present Kochi Prefecture, Shikoku), and it is said that these Japanese missions waited for “strong winds,” too. It can be confirmed that when they returned to Japan, the missions travelled mainly from May to July when the prevailing winds were southerly (Kobata, 1942).

5) Japanese pirates

Studies in Japan have revealed to a considerable extent the seasons and regions of the attacks of the Japanese pirates who were active roughly from 1369 to 1614 (Ishihara, 1964). The seasons when the pirates raided Jiangsu and Zhejiang, China, were mainly March, April and May when weak southeastern and eastern winds blew in the sea areas lying between the Goto Islands and the two provinces of China. Their incursions into Fujian and Guangong tended to be made from November to February when northeasterly winds blew in these regions. But in the period when historical records show the most intensive activities of Japanese pirates (e.g., Japanese pirates’ great incursions in the Jiajing era in 1554 and 1556), it is supposed that their activities were so furious that it is difficult to recognize such seasonal characteristics. While the main courses of Japanese pirates are supposed to be similar to those of the Kenminshi and the Shuinsen described below, the seasons and sea routes they used for coming back to Japan have not yet been discovered.

6) Shuinsen trading and trading at Nagasaki

Trading by the Shuinsen (trading ships licensed by the shogunate) was continued from 1601 to 1635, and the sailing charts of the Shuinsen drawn in the Genna age (1615-1623) are still regarded as valuable historical records. For trading at Nagasaki, which was started in earnest after the Tokugawa shogunate adopted a national isolation policy, the sailing records in 1655 and 1698 show the situation in detail. From the records it can be seen that there was a trading route which started from Nagasaki, entered the ocean via the Goto Islands, went south to near the Bay of Hangzhou, reached Macao (Tianchuan) through the Taiwan Strait and went further to Annam (present-day Vietnam) via the southern coasts of Hainan Island. It is said that ships for trading at Nagasaki returned to Japan using the same course after they passed east of the Taiwan Strait. According to a representative preceding study, it is considered that the time for navigation from Japan to the South China Sea via the East China Sea and the Taiwan Strait was mainly

from December to March when seasonal northwestern winds prevailed, while the season for the return voyages to Japan via the Taiwan Strait was mostly around August when weak southerly winds blew (Iwao, 1985).

In about the 16th century, the role of the Taiwan Strait in linking the East China Sea to the South China Sea suddenly become more important, and as a result, as stated in the conclusion, these seas started to gain greater public attention (Cao, 1979).

7) Ships of the Sapposhi: from China to Ryukyu

The navigation records of the Sapposhi (Chinese missionaries to Ryukyu) describe the voyages in detail. According to the records, in 1534, 1561, 1579, 1602, 1633, 1683, 1719-1720, 1756-1757 and 1800, their ships sailed from Fuzhou bound for Naha from May to July and left Naha from September to February (Fuma, 1999). The Kuroshio, which ran in the sea route, was called “groove” and “black water groove” in the literature of Qing-dynasty China and was also drawn in pictures. The Sapposhi crossed the Kuroshio, carried on the south winds when heading for Ryukyu, and traversed the current using strong north and northeast winds as tailwinds when going back to China (Okinawa, 1989).

In the 17th century and after, it can be confirmed that other than the one referred to above Ryukyu had two additional courses: a route from Ryukyu to Satsuma (present-day Kagoshima) and Edo (present-day Tokyo) and one from Ryukyu via Fuzhou and the Taiwan Strait to southern destinations, such as Luzon and Annam. It is said that the months for starting voyages from southern ports to Ryukyu were from April to May and those from Ryukyu to Edo, from June to July, taking advantage of ocean currents and seasonal winds in summer, while the voyages to more southern countries were started mainly from September to December using seasonal winds in winter. But it has been pointed out that the navigation from Satsuma to Ryukyu was made from May to June, too, when south summer winds blew (Ishijima, 1993).

Conclusion

The discussion can be summarized as follows: (1) When we observe the activities of people roughly from about the 7th to the 18th centuries (Figure 3), we find that there were four main sea areas for their activities: ① The sea areas mainly in the Yellow Sea which also covered the Korean Strait, where sea routes mainly linked Hakata, the Iki Islands and Tsushima, Japan, with the western coasts of Korea and Dengzhou, Laizhou and Ningbo, China; ② the central part of the East China Sea

where the main sea route lay between Ningbo and Hakata and there was also the Fuzhou (China)-Naha (Ryukyu) route in the extreme south and the routes between the Goto Islands, Japan, and Zhoushan and Fuzhou, China; ③ the eastern area of the East China Sea wherein lay the Ryukyu-Satsuma route and the Kuroshio runs; and ④ The Taiwan Strait where sea routes existed between the Jiangsu-Zhejiang regions, China, and Nagasaki and the Goto Islands, and other ports in Japan, and also between Taiwan and the countries in the South China Sea region (Figure 4).

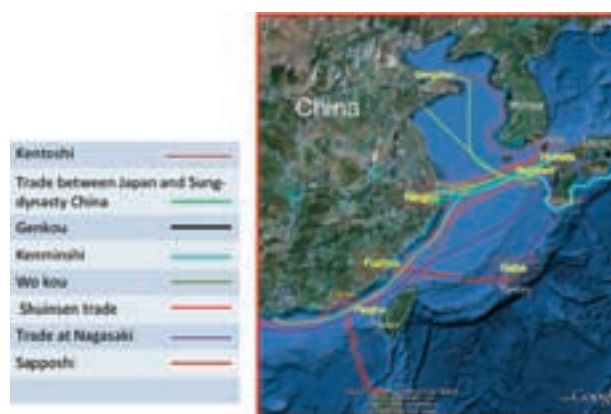


Fig. 3 Sea routes in the history of the East Asia Seas



Fig. 4 East Asian Seas

(2) How did people in these sea areas read the seasonal winds and in what season did they mainly voyage? In area ①, they sailed from Japan to Korea almost year-round unless northwest winds blew from mainland Japan to Iki, Tsushima and Korea (This may also have been the

case with voyages between Korea and China). On the other hand, the voyages from Korea to Japan were made in the months when people were able to take advantage of north and northwest winds (July to October). People in area ② sailed from Hakata to Ningbo in the months of northeast, north or southeast winds (February to April and September to November), while they made return trips mainly in the period when south winds blew (May to August). Voyages from Fuzhou to Naha were made in the months from May to July when there were south winds, and return trips, from September to February when northeast winds blew. In area ③, north and northeast winds (September to December) affected voyages going south and south winds (April to July), those heading for the north. Finally in the case of ④, northeast winds (December to March) supported voyages from Ningbo, Hangzhou, Nagasaki, etc. to Luzon, Annam, etc. as did south winds (September to December), for return trips.

It is supposed that in general, people in the East Asian seas were conscious of northeast and north winds

when making voyages westward or southward, and south and southeast winds when sailing eastward or northward.

Figure 5 (Figs. 5-1, 2, 3, 4, 5 and 6) maps the courses of voyages utilizing the seasonal winds described above and the movements of ocean currents in combination with changes in the sea routes every two months. From the figure we can identify two types of navigators: The first are those who sailed with the current or crossed it using favorable or side winds. These people include: those on board the ships for the Kentoshi (and ships of Japanese priests visiting Tang-dynasty China to study Buddhism), for the trade between Japan and Sung-dynasty China, for the Kemmeishi, etc. (they used the Tsushima Current and coastal currents off Korea and China from February to April and September to November); those on board the ships of Japanese pirates who attacked Guangdong, China, the ships for the Shuinsen trade, sailing from Nagasaki to southern ports (the coastal current off China from December to March); and those on board the ships of the Sapposhi that sailed from Fuzhou to Naha and crossed the Kuroshio on the

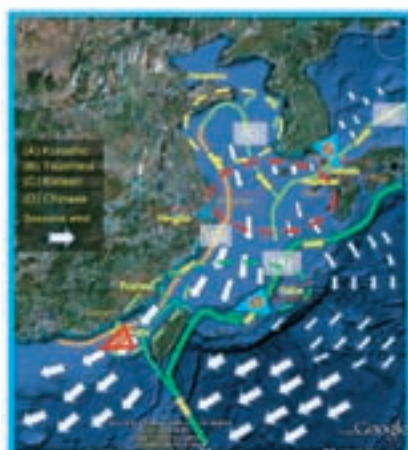


Fig. 5-1 February



Fig. 5-2 April



Fig. 5-3 June



Fig. 5-4 August



Fig. 5-5 October



Fig. 5-6 December

Fig. 5 Various courses of voyages utilizing the seasonal changes of winds

way (Kuroshio; May to July). The others are those who sailed against the current using strong favorable winds. This group are the members of the Mongolian expeditions against Japan who appeared off Hakata, those of the Korean missions to Japan, etc. (they took advantage of the Tsushima Current in October, November and March) and the members of the Sapposhi who left Naha for China crossing the Kuroshio (Kuroshio in September to February).

I have focused the historical relationship between the environment (seasonal winds and ocean currents) and the people of the East Asian seas. As the activities of “those who crossed ocean currents taking advantage of seasonal winds” increased, public awareness of the ocean currents in the regions grew greater. I think this fact can be seen from how people referred to these seas historically.

In ancient days, people in the East Asian region regarded the seas facing them with a feeling of awe. In the third century, the Tsushima Strait was called “Kankai” (large sea) (Record of Japan in the History of Wei), and thereafter, the end of the east seas was described as “Biro” (ultimate drain ditch) (12th century) and “Rakusai” (flows falling into the end of the sea) (14th century). But navigators in later years gradually began to refer to seas by their changing colors. The Chinese Envoy’s Record of Koryo has descriptions of “white ocean” (muddy seas along the coast of China), “yellow ocean” (sandy waters off the mouths of the Yangtze) and “black ocean” (coastal current off China) that were observed by the people who sailed between the southwestern end of Korea and the Zhoushan Islands and Mingshan (Ningbo), etc (Morihiro, 2008). In particular, the expression “black ocean” later spread to southern regions, as if flowing southwards together with the coastal current off China, as shown by the name of the sea around the Penghu Islands and the Taiwan Strait in the records of the Ming Dynasty (e.g. Record of the Zheng-tong-di (an emperor in the Ming Dynasty); the mid-15th century), the collections of works (e.g. Min-hai zeng-yan; the end of the 16th century) and local topographies in the Qing Dynasty (e.g. Topography of Taiwan by Quan Long-di; in the second half of the 17th century). In addition, the eyes of navigators from the second half of the 17th century to the end of the 18th century began to be aware of the characteristic routes of currents in the Taiwan Strait (the “black water groove” and the “red water groove”).

Around that period, the “black sea” image was linked to the Kuroshio, the greatest ocean current in the East Asian region. The Kuroshio, which crosses the sea route between Fuzhou and Naha roughly from south to

north, started to be described both as a “groove” and a “black water groove” in the second half of the 17th century and after in the navigation records of the members of the Sapposhi. On the other hand, as the development of Taiwan by the Qing Dynasty progressed, records of travels (e.g. Yu Yong-he, Record of a Journey to a Small Sea and Dong Tian-gong, Record of My Experiences in Taiwan), as well as (Wu Xiao-ming, Topography of the Kavalan and Xia Xian-lun, Atlas of Yilan-xian), etc. mentioned the Kuroshio, which runs off the northeastern end, southern end and eastern coasts of Taiwan, as “Wan-shui Zhao-dong” (the eastern sea where the water of all of the seas and rivers gets together in its current) (Figure 6).

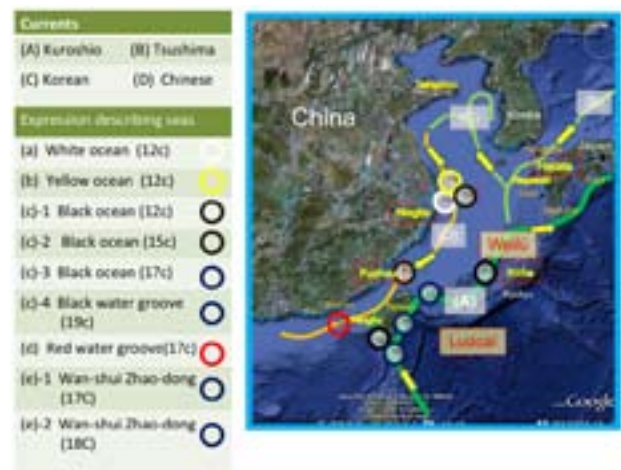


Fig. 6 Expressions describing seas by currents

I think that the way of life of those who crossed ocean currents using seasonal winds reflects the basic characteristics of the historic environment of the East Asian seas. However, even those people must have hesitated to enter the main stream of the Kuroshio flowing in the southeast. This was because they well knew that crossing over from the East China Sea to the North Pacific across the Kuroshio’s main stream would result in their helplessly drifting about in the sea in almost all cases. This greatly differs from the situation in the Mediterranean sea which is mostly surrounded by land. We may regard the region of the East Asian seas as a world having, so to speak, the “boundaries of an ocean current (Kuroshio)” to the east (Figure 4). To sum up, I think that approaching the truth of “those crossing ocean currents taking advantage of seasonal winds” and “boundaries of a current (Kuroshio)” from an environmental viewpoint would be a useful method for investigating the unique characteristics of the history of the East Asian seas.

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