Maritime Geography of the Eastern Seas

Oil—the source and the sea routes over which it travels—dominates most trade in the seas south of Asia. From the Persian Gulf and Arabian Sea, the routes go westward to the Red Sea and Suez, and eastward through the Strait of Malacca and the seas around China to Japan. Trade moves from eastern Africa, India, Indonesia, and western Australia to Suez. It moves from China, Japan, Indonesia, and the islands of the Pacific to the West Coast of the United States and South America. Suez to Singapore, the most important British lifeline of past years, is still a major route of trade and travel between Asia and the West.

Because of the strategic importance of the Middle East—its warm-water ports; its oil; and its hundreds of millions of people, many trying to survive under weak governments and in poor environments—U.S. naval forces operate routinely to the Indian Ocean. The U.S. Fifth Fleet flagship has its home port in Manama, Bahrain. The United States tries to maintain friendships in the region despite political and economic unrest. Third-world nations are trying to improve the lives of their people and must look to the sea.

In recognition of the growing importance of Africa to world trade and international security, in 2008 the United States formed the U.S. Africa Command. Headquartered in Stuttgart, Germany, it is one of nine unified combatant commands of the U.S. armed forces. It is responsible for all U.S. military operations in Africa, with the exception of Egypt, which is within the area of responsibility of the U.S. Central Command, which in turn is responsible for operations in the Middle East, Central Asia, and North Africa. The main naval force of the Africa Command is a combined joint task force headquartered at Djibouti on the Gulf of Aden.

The Suez Canal, Red Sea, and Gulf of Aden

The Suez Canal is a vital waterway for Western Europe as well as the Middle Eastern nations. On this narrow water path through the Egyptian desert, linking the eastern Mediterranean Sea with the Red Sea, most surface cargo between Europe and Asia passes. As was proved in the Arab-Israeli wars in 1967 and 1973, the canal can be blocked quickly with mines or a few sunken ships.

The Red Sea is warm, very salty sea stretching some 1,300 miles southeast from the Egyptian port of Suez to the Strait of Bab el Mandeb. It is only ninety to two hundred miles wide, with an area of 169,000 square miles. The Axial Trough, in the very middle of the narrow sea, is the deepest, at 8,500 feet near the Saudi Arabian port of Jidda (Jedda).

Minerals. The Red Sea has no known oil deposits. It is a possible future source of valuable metals, however. Peaks of boiling hot brine are found in the Axial Trough. These waters are rich in dissolved metals, including zinc and copper, in the seabed muds. Someday it may be possible to mine these minerals.

Fishing. There is not much fishing in the Red Sea. Many kinds of fish are caught, but except for sardines near the Gulf of Suez, there is no major fishery. Lights are used to attract fish to the nets, since coral reefs make bottom trawling risky and expensive.

Ports and Naval Bases. The port of Suez on the southern end of the canal is important because it is the southern anchorage for ships waiting to go through the canal northward to the Mediterranean Sea. Port Said (Sī-īd) on the northern end of the canal is important for the same reason. Massawa (Me-sā-wa) is a port and naval base in Eritrea, which gained independence from Ethiopia in 1991. Further south is the major port city of Assab, Jeddah, a seaport in Saudi Arabia, serves as a port of entry for the Muslim holy city of Mecca, about forty miles inland.

Djibouti (Dī-būtē), the capital city and port in the nation of the same name, is the major African port on the Horn of Africa, on the Gulf of Aden. It not only serves its own country but also is the main port for shipment of Ethiopian imports and exports. It is also the site of a Navy antisympathy base, called Camp Lemonnier, the home of the Combined Joint Task Force for the Horn of Africa (a multinational multipurpose naval force) within the U.S. Africa Command. The major port of the area is Aden, capital of Yemen (Yemēn-ān).

Strategic Geography. The Red Sea is a strategic waterway. Along with the Suez Canal and Gulf of Suez to its north, and the Gulf of Aden to the south, the Red Sea is the main waterway between Europe and Asia. The northern access is the Suez Canal. The choke point in the south is the Strait of Bab el Mandeb. (The Arabic word bab means "gate" or "strait"). Less than twenty miles wide, the strait separates Yemen on the Arabian Peninsula from Ethiopia and the Republic of Djibouti in Africa.

The Persian Gulf and Gulf of Oman

The Persian Gulf area is the leading oil-producing area in the world. The gulf is bounded by Iran on the north, Kuwait and Iraq at the northwest end, Saudi Arabia on the west, and the Arab sheikdoms of Bahrain (Bārânīn) Island, Qatar (Kīfīr-ān), the United Arab Emirates (UAE), and Oman on the south and southeast. All of these countries are major oil producers. The gulf itself has been divided for oil drilling by these nations, since much of the oil is obtained by offshore rigs. The Persian Gulf has been the scene of major conflicts between Iran, Iraq, and the United States and Western European nations for the last thirty years.

Minerals. Though oil was known to be present in the region in ancient days, the drilling of oil wells there is a comparatively recent development. The first wells in Iran were not drilled until...
The Persian Gulf and Gulf of Oman. The Strait of Hormuz is a key choke point for all ships entering or leaving the Persian Gulf. It has been the scene of much confrontation between Iran and the navies of the United States and the European Union in recent years.

1913, and those in Kuwait did not start up until 1946. World War II caused a major increase in drilling in both Iran and Saudi Arabia. In the past twenty years, the wells and offshore rigs there have become very important. Today, about a third of the total oil production of the world comes from the Persian Gulf. The United States, Western Europe, and Japan have come to depend on Arab oil in large part. The United States imports about 40 percent of its annual oil needs from the area, Western Europe about 70 percent, and Japan more than 90 percent.

Ports and Naval Bases. The leading oil exporting ports are Ras Tanura (Ta'izzeh), Saudi Arabia; Abadan and Kharg (Karg) Island, Iran; Sirat, Bahrain; Das Island, UAE; and Mina Abduilla, Mina Shauiba, and Mina Al-Ahmadi, Kuwait. There is a U.S. Navy base at Bahrain, home to the U.S. Fifth Fleet. Bahrain is the primary support base in the region for Navy and Marine activities in support of Operation Enduring Freedom in Afghanistan, and it served the same role for Operation Iraqi Freedom.

Fishing. The entire Persian Gulf is shallow. Half of it is less than 120 feet deep, and a few spots less than two hundred feet. Because it is so shallow, sunlight can reach the bottom in most places, causing lots of plankton to thrive there. Plankton are tiny animals and plants that provide food for small fish. Since there is much plankton, a large variety of fish live in the gulf. Sardines, anchovies, mackerel, and barracuda are the main kinds caught by local fishermen. In the waters controlled by Qatar and the UAE are valuable pearl fisheries.

Strategic Geography. While oil is the big strategic resource, the political and strategic geography of the gulf is also of great importance. Acquiring a warm-water port on the Persian Gulf has been a major goal of Russia and the former Soviet Union for the past hundred years. A major political goal of Western nations over the same period, especially during the Cold War years, has been to prevent this from occurring.

The Persian Gulf area has been the scene of almost continual conflict since the 1980s, starting with an eight-year war between Iran and Iraq that lasted until 1988. In 1990 Iraq's leader, Saddam Hussein, staged a brutal invasion of Kuwait, from which he was driven out after a year by a multinational coalition headed by the United States in Operation Desert Storm. Between 2001 and 2011 the United States and allied countries engaged Hussein and his forces during Operation Iraqi Freedom in Iraq, eventually deposing him and sponsoring the formation of a new democratic form of government for the country. Unfortunately, this did not end extremist violence against the government and the citizenry, and suicide bombings and other attacks have continued to wreak havoc in the country to the present day.

Indian Ocean

The Indian Ocean is the third-largest in the world. It has an area of about 26 million square miles and an average depth of 2,160 feet. Maximum depth is 24,442 feet in the Java Trench, southwest of the Indonesian islands of Sumatra and Java, on the eastern edge of the ocean.

The main feature of the Indian Ocean floor is a great mid-ocean ridge system, shaped like an upside-down Y. The South-west Indian Ridge goes around southern Africa and joins the Mid-Atlantic Ridge. The Mid-Indian Ridge continues south of Australia to join with the Mid-Pacific Ridge. Many volcanoes lie along the submarine ridges of the Indian Ocean. Many of the islands in the region were formed by active and inactive volcanoes.

Two of the world's greatest river systems, the Indian River of Pakistan and Ganges-Brab传染病 (Ganges) River, are large enough to flow into the Indian Ocean. These rivers have built huge submarine "fans" into the Arabian Sea and Bay of Bengal. These fans are made up of sediments carried from the Himalaya (Him-a-lay-a) Mountains in these two countries.

In the spring of 2014 the southeastern Indian Ocean about a thousand miles west of Australia was the scene of an extensive month-long search effort for the remains of Malaysian Airlines Flight 370, which mysteriously disappeared while on a flight from Kuala Lumpur to Beijing with 239 passengers and crew in March 2014. It was thought to have ended up on the ocean bottom there under about 15,000 feet of water after having been diverted about halfway through its flight by person or persons unknown.

Minerals. Tin ore is mined on the shores of Thailand, Malaysia, and Sumatra in the Strait of Malacca. Deposits of sandrich in rare heavy minerals, such as monazite, zircon, and magneeqte, are mined off Sri Lanka (Sri Lanka), the Indian state of Kerala (Ker-a), the east coast of South Africa, and near Perth in western Australia. A major oil field also lies off western Australia. Rich beds of manganese chunks, as well as nickel, copper, tin, and lead, have been found on the Indian Ocean floor.

Fishing. The fishing industry in the Indian Ocean produces about two million tons annually, about 7 percent of the world total, and is mainly carried on at a subsistence level by bordering countries. Tuna and shrimp are the main commercial catches, off the coast of India, Russian, Japanese, Korean, and Taiwanese vessels fish the ocean for these species. Most of the shrimp are canned and sold on the U.S. market. Lobsters are caught off South Africa and western Australia for the U.S. market too. The Indian Ocean catch will continue to grow in value as fishing and canning techniques improve and the demand for fish protein increases.

Ports and Naval Bases. The United States has built a communications station and naval support facility on Diego Garcia, in the mid-Indian Ocean, to support naval communications, space tracking, and deployed Indian Ocean air and surface forces of the U.S. Navy, Marines, and Air Force. Ships of the Military Sealift Command regularly call there, and several are permanently redeployed there, loaded with stocks of combat equipment, supplies, and munitions for use in any future hostilities in the region.

The island of Diego Garcia in the Indian Ocean. J. Okeld Rogers

Strategic Geography. We have already discussed two of the main sea routes in the Indian Ocean. They are the oil routes from the Persian Gulf through the Red Sea to Suez, along the east coast of Africa, and around the Cape of Good Hope. The other major sea lane is part of the Malacca Peninsular, through the Strait of Malacca, and across the Indian Ocean to Suez. The Strait of Malacca is a main route between Asia and Europe, and it is the route Japanese oil tankers follow from the Persian Gulf to Japan. This strait is one of the world's key choke points for petroleum.

In the spring of 1988, much apprehension over nuclear-weapons proliferation in the region arose when India and Pakistan each exploded nuclear test devices. There followed a period of escalating tension between the two nations that might have led to a regional nuclear war but for American intervention, in conjunction with the United Nations. The issue of nuclear nonproliferation continues to be a major concern in the area.

In the late 1990s, the issue of support of terrorist activities in this region became of great concern, particularly in regard to Afghanistan. Bordered by Pakistan to the south and east, Iran to the west, and in the north and northeast by Russia and China, this poverty-stricken and rugged country became the adopted home of one of the foremost terrorist organizations of modern times—al-Qaeda, led by Osama bin Laden. In the fall of 2001 the country became the scene of Operation Enduring Freedom, in which U.S. and allied military forces joined with Afghan rebels to rid the country of bin Laden's terrorist organization and the repressive Taliban government that supported him. Support forces from the United States and other countries have provided security and stability to the country since. Most U.S. forces are scheduled for withdrawal at the end of 2014.

Principal navies of nations around the Indian Ocean are those of South Africa, India, Indonesia, and Pakistan. Pakistan has a small but efficient navy. The French also have a naval force in the ocean, based at Reunion, to protect their Indian Ocean interests.

Pacific Ocean

The Pacific Ocean is by far the largest of the world's oceans. It covers an area of about 59 million square miles, about 35 percent of the Earth's surface. Its average depth is 12,900 feet. Like the Atlantic Ocean, the part of the Pacific Ocean north of the equator is called the North Pacific, and the part to the south is the South Pacific. The deepest spot in the Pacific Ocean is the Marianas Trench, which, at 36,161 feet at its maximum depth, is also the deepest place on Earth.

The western half of the Pacific ocean floor is complex, with thousands of volcanic peaks, trenches, ridges, and submarine plateaus. Many of the volcanoes are no longer active and are in various stages of erosion from sea and weather action. The
The Hawaiian Islands.

tops of these volcanic peaks are the beautiful Pacific islands one dreams about. There are myriad coral reefs, teeming with colorful marine life. The most famous and largest reef is the Great Barrier Reef, which runs more than 1,250 miles along the coast of northeastern Australia.

The Hawaiian Islands and the Society Islands, which include Tahiti and Bora Bora, are beautiful places. They are the classic South Sea islands of waving palms and white beaches. Many other South Sea islands, however, especially in the South-west Pacific, are deadly jungles with disease, stifling heat, incessant rains, and few natural resources.

Minerals. Not much mining is done in the Pacific, but many large mineral deposits have been located in coastal areas and on the ocean floor. Some tin is mined off the Indonesian island of Sumatra; iron ore has been mined for years off Japan; and mineral sands (titanium, zircon, and monazite) are mined off the coast of Queensland, Australia. There are small working oil fields between Australia and Tasmania and off New Zealand's North Island. Other oil drilling is taking place off the coast of southern California and in the Cook Inlet of Alaska. Phosphates are mined along the coasts of Chile, Peru, and Baja California in Mexico.

There are vast fields of manganese chunks in much of the Pacific. An especially heavy belt extends from Baja California to Hawaii and from there to the islands of Palau and northward to Japan. It is said that in oil belts, comprising a total area of nearly 1.35 million square miles, the ocean bottom is literally covered with manganese! A number of companies are engaged in mining this vast underwater resource.

Fishing. The annual catch of fish and shellfish from the Pacific to greatly exceeds that taken in any other ocean. More than 85 million tons of seafood are taken annually, some 70 percent of the world's total. Most fishery locations are located within 150 miles of the coast. The exception to this is tuna fishing, which is carried on throughout the high seas. There are large fisheries for cod, pollock, flounder, rockfish, sea bass, and red snapper off the Asiatic continental shelf, in the eastern Bering, Yellow, and South China Seas and the seas of Okhotsk (O-kot-sok) and Japan. Fisheries for sardines and anchovies lie off Peru, California, central California, northern Japan, and Korea. Pollock and salmon are fished in the Gulf of Alaska and off the coasts of the states of Washington and Oregon.

There are very important fisheries for shrimp, crabs, lobsters, and shellfish in the waters across the northern Pacific. Giant shrimp, called prawns, are caught in the Yellow and South China Seas, off southern Australia, and in the Gulf of Alaska. The largest of all crabs, the Alaskan king crab, is taken in the Gulf of Alaska along the Aleutian (A-le-u-teen) Island chain and in the Sea of Okhotsk. These huge crabs sometimes grow to more than three feet from claw to tail. Huge lobsters are caught around most of the islands of the Pacific.

Ports and Naval Bases. The major West Coast ports on the U.S. mainland are San Diego, Los Angeles, Long Beach, and Oakland in California; Portland, Oregon; Tacoma and Seattle, Washington; and Anchorage, Alaska. Honolulu, Hawaii, is the major U.S. port in the mid-Pacific. Major foreign ports in the Pacific region include Calcutta, the port of Lima, Peru; Santiago, Valparaiso, Chile; Wellington and Auckland, New Zealand; Sydney, Brisbane, and Melbourne, Australia; Jakarta, Indonesia; Singapore (Sin-gee-poh), on the Malay Peninsula; Bangkok, Thailand; Hong Kong, Canton and Shanghai, China; Manila, in the Philippines; Yokohama (Y-o-ko-ha-ma), Kobe, and Osaka, Japan; Taipei (Tai-pi), Taiwan; Haji-bong (Hi-ji-bong), Vietnam; and Vladivostok (Vlad-ee-vost-o-ck), Russia.

The major U.S. naval base on the West Coast is at San Diego, California, the headquarters of the U.S. Third Fleet. Smaller operating bases are located at Seattle. Large naval air stations are located at Point Mugu, near San Diego, and at Whidbey Island, Washington. There is a large naval shipyard at Bremerton, Washington. Civilian shipyards with major naval ship contracts are in Seattle, San Francisco, Los Angeles, and San Diego. There is a Marine base at Camp Pendleton and a Marine air station at Miramar, both near San Diego.

U.S. naval bases in the Pacific are located at Pearl Harbor, Hawaii, Guam, and Yokosuka (Y-o-ko-soo-ka) Japan. Yokosuka is the home port of the U.S. Seventh Fleet. A large naval air facility at Atsugi, near Tokyo, is the primary base for support of U.S. naval aviation in the western Pacific. Although most ships in the Seventh Fleet deploy from home ports on the U.S. West Coast, a carrier battle group has maintained its home port in Yokosuka, Japan, for over forty years.

The Russian Pacific Fleet has its headquarters at Vladivostok, with an important base at Petropavlovsk (Pe-tray-pa-v-lovsk) on the Kamchatka Peninsula and a major submarine base at Vilyuchinsk (Vi-litch-un-sk).

The Chinese navy is rapidly growing in strength and capability. It has bases in a number of Chinese ports, including Amoy, Shanghai (Shang-hi), Tsin-tao (Ching-dar), and Dairen (De-ren). The Indonesians have a naval base at Surabaja (Su-rab-a-jah) on the Island of Java (Jah-wah). In the South China Sea, the South Koreans at Pusan; and the Thais at Sattalit (Sa-tah-alit).
The Japanese Maritime Self-Defense Force (JMSDF) consists of some 115 ships and submarines and almost two hundred maritime patrol aircraft and helicopters, capable of a broad range of operations in the central and southern Pacific. The ships are based at several ports, including Yokosuka, Kobe, and Sasebo, and the aircraft operate from several inland airfields.

Strategic Geography: The most impressive thing about the geography of the Pacific is its size. Some examples: the distance from the Panama Canal to Yokohama, Japan, is 7,680 miles, and to Singapore, 10,529 miles; from San Francisco to Manila, Phil-ippines, 6,299 miles, to Melbourne, Australia, 6,970, to Hong Kong, 6,044, to Singapore, 7,380, and to Honolulu, Hawaii, 2,090 miles from Yokohama to Singapore through the Taiwan (Tai-wan) Strait is 2,880 miles. Distance, then, is certainly an important factor to consider when discussing Pacific strategy.

The U.S. Navy has two main tasks in view of a war in the Pacific: (1) protect the long supply lines to our forces and (2) keep the seas open to our allies. Especially Japan, South Korea, the Philippines, Thailand, Australia, New Zealand, and in recent years the Nany also has played a key role in ABM defense of the U.S. West Coast against the potential threat posed by the strategic ballistic missile development program of North Korea.

Japan is a key part of U.S. foreign policy in Asia and the Far East, as evidenced by the fact that the Nany's Seventh Fleet is homeported at Yokosuka. Japan's industries and hardworking people make it the most prosperous country in the area. At the same time, Japan is very sensitive to what is happening in Pacific Japan from having armed forces with an offensive capability. Ever since World War II, the United States has been obligated by treaty to defend Japan from foreign attack.

The allies also commit U.S. forces to help our other Pacific allies in the event of another attack. (Greece, Turkey, and Portugal) defense with Australia and New Zealand. The United States keeps a U.S. Army force permanently deployed in South Korea and participates regularly in military exercises with the armed forces of that country. U.S. services were supposed to have been withdrawn in the early 1960s, but this withdrawal was never carried out, because of the increasingly belligerent behavior of North Korea over the last several decades.

After the Vietnam War, U.S. relations with China steadily improved. Establishment of full diplomatic relations, including exchange of ambassadors, occurred in 1979. A reversal occurred in mid-1989, however, when Chinese army tanks and troops brutally attacked students demonstrating for demo-

Southern Ocean

The Southern Ocean around Antarctica is circumpolar—that is, it surrounds the south polar continent of Antarctica. Its boundary is arbitrarily set at 60 degrees south latitude. In area it totals about seven million square miles. Its average depth is about 13,100 feet. A good portion of it freezes over each winter, and 1.5 million square miles are ice-covered year round. The continental shelf of Antarctica is very narrow; ocean depths of 1,500 to 16,500 feet lie beyond the steep continental slope. The northern edge of this basin is the midocean ridge system that separates the Antarctic region from the Atlantic, Indian, and Pacific Ocean basins. It includes several subregions of Antarctica, including the Amundsen Sea, Ross Sea, and Weddell Sea.

Minerals. Modern drilling and infrared photography have found many minerals in Antarctica and its surrounding seas, but these deposits are currently too difficult and expensive to mine.

Fishing. Whaling was a thriving business in the Antarctic region for a hundred years until the early 1930s. Modern floating factory ships and fast whalers with harpoons guns neatly chopped out the whole whale population. Only about one-tenth of the original whale population still exists and a number of species are nearly extinct. Iceland and Japan still engage in some whaling, under some degree of control by the International Whaling Commission.

The whales are almost completely meat and bone, but the oil that comes from the blubber of the whale is used in various industries. The oil is also used in the production of soaps, margarines, and so forth.

Ports and Naval Bases. Some thirty nations presently have either permanent or seasonal research stations in Antarctica. The United States has three research stations there, run by the National Science Foundation; the U.S. Navy helps to maintain and supply the stations. The largest, at McMurdo Sound on the Ross Sea, has been manned since the International Geophysical Year explorations in the 1960s. Other smaller ones are located at the South Pole and on Palmer Peninsula. All together about 1,200 researchers spend the Antarctic spring and
The continent of Antarctica. The continent is completely surrounded by the waters of the Southern Ocean, which includes the Amundsen, Ross, and Weddell Seas, and extends about six degrees above the Antarctic Circle to the South Atlantic, South Pacific, and Indian Oceans. The dashed red lines show the mean (average) extent of sea ice covering the region in a typical recent year.

summer at the stations each year beginning in October. A few of these winter over each year to maintain the facilities and conduct longer-term research projects.

**Strategic Geography.** No military operations in Antarctica are permitted under international treaty. Antarctica is out of the world’s main air and sea-lanes. There is little interest in it at the present time, either for resources or for strategic reasons. Basic research is being conducted in various aspects of the physical sciences, marine life, and the weather. Studies indicate that south polar weather and currents have a great effect on many areas of both the Southern and Northern Hemispheres.

**Critical Thinking**

1. Research the state of fishing in the world’s oceans, including where most of it takes place and what current issues exist as to regulation and conduct of commercial fishing in them.

2. Activist conservation organizations, such as Greenpeace, are often in the news for their activities in regard to safeguarding the remaining numbers of whales and other species of marine life that inhabit the world’s oceans. Research the major concerns and goals of these organizations and the methods they use to advance them. Comment on whether or not they are justified in some of the more extreme actions they sometimes take in furtherance of their goals.

3. Research the locations and sponsors of the major research stations and bases in the Antarctic. Are they strategically important? Would you like to spend time at one of them? Justify your reasoning.

**Study Guide Questions**

1. Why is the Suez Canal important to both Western Europe and the Middle Eastern nations?

2. A. What is the narrow strategic sea located at the southern end of the Persian Gulf?
   B. What is the key strait at the southern end of this sea?

3. Why is the Persian Gulf important to the United States and its allies?

4. What is the key strait at the southern entrance to the Persian Gulf?

5. A. Where is the headquarters of the U.S. Africa Command?
   B. Where is the home port of the U.S. Fifth Fleet?

6. A. List the three main sea routes in the Indian Ocean.
   B. Which one is the main route between Asia and Europe?

7. Which country in the Indian Ocean region received worldwide attention in 2001 because of the 11 September terrorist attack on the United States?

8. Where has the United States built an important base in the Indian Ocean area?

9. A. Which ocean is the largest in the world?
   B. Where is the deepest spot in this ocean, and what is its depth there?

10. A. What formations are found on much of the western half of the Pacific sea floor?
    B. What often forms around the rims of volcanic islands in the Pacific?

11. A. Where is the major naval base on the West Coast of the United States?
    B. Where is there a large Navy shipyard on the West Coast?

12. Where are the major U.S. naval bases in the middle and western Pacific?

13. Where does the Russian Pacific fleet have its headquarters?

14. What are the two main tasks of the U.S. Navy in the event of war in the Pacific?

15. Which country is considered the key to U.S. foreign policy in the Pacific? Why?

16. A. Where is the home port for the U.S. Third Fleet?
   B. Where is the Seventh Fleet home port?

17. What is meant by the term “circumpolar ocean” when referring to the Southern Ocean basin?

18. A. What valuable Antarctic resource has now been nearly wiped out?
    B. Which two countries still engage in this industry?

19. Where does the United States have research stations in Antarctica?

**New Vocabulary**

- plankton
- manganese
- prawns
- titanium
- circumpolar
- research station