



Importance of the Marine Science and Charting about Environmental Planning, Management and Policies at the Turkish Straits

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Abstract

The Turkey is in a good position which has covered by water and also has the gate that connected the Asian and Europe continents. The Turkish Straits sea area is consist of Strait of the Istanbul (Bosphorus), Strait of the Canakkale (Dardanelle) and also Sea of Marmara. The Straits of Istanbul and Strait of Canakkale are connecting the Black Sea with the Aegean Sea through by Sea of Marmara. The Turkish Straits have a really importance from the history because of the geopolitics, strategic and geographic situations. These importances, especially strategic one is that the only water route between the Mediterranean Sea and the Black Sea, so the Turkish Straits sea area has been the site of significant settlement area and also city of Istanbul for a long time in the past. The Turkish Straits have been governed by the Montreux Convention, since the 1936. From past to recent years this gate is the most important trade way of the world cause of the oil and oil products. These economic, strategic and also trade considerations have high level risk management about maritime transportation at the Turkish Straits. For these circumstances, need to deeply survey at the Turkish Straits about marine science, find all the risk factors at the end need to shown by the charts on the bridge of the ships and coastal facility for use all the mariners. These results could have chance to make environmental planning, management and their policies for maritime transportation, decrease marine pollution and protect all the straits shoreline by the regulations which aimed at the minimising shipping accident, avoiding collisions and protecting marine environment. With this working, try to explain the marine science and their surveys importance for environmental management, planning at the Turkish Straits.

Key words

Chart, Environment, Turkish Straits

1. INTRODUCTION

The Turkey is in a good position which has covered by water and also has the gate that connected the Asian and Europe continents. The Turkish Straits sea area is consist of Strait of the Istanbul (Bosphorus), Strait of the Canakkale (Dardanelle) and also Sea of Marmara. The Straits of Istanbul and Strait of Canakkale are connecting the Black Sea with the Aegean Sea through by Sea of Marmara. The Turkish Straits have a really importance from the history because of the geopolitics, strategic and geographic situations. These importances, especially strategic one is that the only water route between the Mediterranean Sea and the Black Sea, so the Turkish Straits sea area has been the site of significant settlement area and also city of Istanbul for a long time in the past. All

part of the sovereign sea territory of Turkey and subject to the regime of internal waters. The Turkish Straits have been governed by the Montreux Convention, since the 1936. Turkey, due to its treaty obligations under the Montreux Convention, first gave annual reports to the League of Nations Secretary-General, since 1945, has given these to the United Nations Secretary-General. These reports, which also go to the High Contracting Parties, are entitled, 'Rapport Annuel sur le Mouvement des Navires a Travers les Detroits Turcs' (Annual Report Concerning the Movement of Ships through the Turkish Straits). Another important point in favour of using the expression the 'Turkish Straits' comes from a UN document. This is the 'Third United Nations Conference on the Standardizations of Geographical Names', held at Athens, in 1977, and attended by 152 participants representing 59 countries, with observers from 11 non-governmental and international scientific organisations. The basic aim of the conference was to use national names to standardise the names of geographical locations. The Conference resolutions empower Turkey in the use of the name 'Turkish Straits'. [1] This document's title is evidence of the international credence of the expression 'Turkish Straits'. [2]

From past to recent years this gate is the most important trade way of the world, cause of the oil and oil products. Throughout the history, this situation due to the geographical location, has lead to conflicts between Turkey and the countries both coasting and non coasting the Black Sea in terms of political, economic and strategic interests. Straits seperating Turkey's land into two part as Asian side and European side resulted in the facts that Turkey's territorial integrity and independence are directly related to the legal regime which the straits are subject to. [3] In Montreux Conference, representative of Romania, Nicolae Titulescu's expression "Straits are the hearts of Turkey, but also lungs of Romania" affirms the importance of the Straits.[4]

The Turkish Straits sea area has very special ecological conditions in terms of marine environment which includes atmospheric and oceanographic conditions, plant and animal diversity and also terrestrial environment. Besides strategic, economic and geologic situations, this area also has roles as biological corridor and biological barrier between the Mediterranean Sea and the Black Sea and form an acclimatization zone for migrating species. Due to being the only maritime access for the neighboring the Black Sea states and the Central Asian Turki Republics, the Istanbul Strait has been exposed to dense marine traffic for centuries and substantial increase has occurred in size and tonnage of the ships passing through the Straits with hazardous cargo varieties and amounts they carry. Increase in the number of vessels that navigates on the Straits and being on the transportation way of hazardous and dangerous materials pose serious environmental and safety hazards for the İstanbul Strait, Marmara Sea and the surrounding residential areas. Geographic and oceanographic features of the İstanbul Strait makes the navigation on the Strait rather difficult and consequently the Strait has faced many casualties that caused severe environmental problems due to thousands tons of oil spill occurring in recent decades. [5]



Figure 1. Turkish Straits Sea Area Scheme

1.1. İstanbul Strait (Bosphorus)

Istanbul Strait is important narrow waterway of the world. It is also linking the Black Sea with the Aegean Sea by the Marmara Sea and also separates European and Asian continents. The Istanbul Strait is one of the most important routes of oil transportation, as it connects the Black Sea and the Mediterranean Sea. Also it has most busy and dangerous maritime traffic line like the Malaka Strait. It has really different and special geographical, hydrographical, oceanographical and meteorological conditions. It is not only important narrowest straits of the world but also has sharp turns more than 10 times. 17 nautical miles length of the Istanbul Strait's European coastline is nearly 55 kilometers, Anatolian coastline is 35 kilometers. The Istanbul Strait sea bottom topography reveals many banks, holes, shallows and also sinks. In according to the Maritime Ministry Database, there are 26606 vessel with totally 329.121.399 gross tones, passed through to strait, 14082 of them used pilot help, 15198 of them passed strait as transit vessel, 2390 of them bigger than 200 meters, 678 of them bigger than 500 gross tones, 5327 of them tanker vessel at 2014.



Figure 2. İstanbul Strait Overview

1.2. Canakkale Strait (Dardanelle)

The Strait of Canakkale is about 37 nautical miles long and is generally straightforward, with the exception of two significant turns, near the city of Canakkale, where the strait reaches its narrowest width about 1300 metres. Navigation is less dangerous than in the Strait of Istanbul, although strong currents numerous eddies and counter currents are experienced throughout the strait. A limited number of passenger and car ferries run daily between Canakkale on the Asian side and Eceabat and Kilitbahir on the European side. In according to the Maritime Ministry Database, there are 25.551 vessel with totally 428.721.565 gross tones, passed through to strait, 11114 of them used pilot help, 15240 of them passed strait as transit vessel, 3280 of them bigger than 200 meters, 316 of them bigger than 500 gross tones, 5606 of them tanker vessel at 2014.



Figure 3. Canakkale Strait Overview

1.3. The Marmara Sea

It is very clear that, The Marmara Sea joins the Istanbul Strait to the Canakkale Strait and sea area distance is about 110 nautical miles, and does not pose any significant navigational hazards to vessels. It approaches to the two straits tend to be more congested than the open sea approaches. The approach to the Canakkale Strait has limited anchorage space and that space is close to the traffic lanes. The Marmara Sea is an intracontinental basin 275 km long and 80 km wide formed as a result of pull-apart tectonics along the North Anatolia Fault.[6]

2. IMPORTANCE OF MARINE SCIENCE

The Marine Science has internationally importance about the sea and environmental research of the world. Also it has got many sub-divisions like hydrography, oceanography, meteorology, climatology, marine geology and geophysics etc. This is the first question when someone hear something about the marine sciences, "What is working for?". Surely the answer is following, measure and describe bodies of sea by use all sub-divisions. All these sub-divisions measures gains are as following, depth of sea, seabed profile, current, velocity, salinity, ecosystem, environment dynamics, pollutions etc. Apparently, marine sciences are important parts of the maritime and environment. Some marine science disciplines should be known for all mariners and also environmental specialist.

2.1. Hydrography

Hydrography is the science that measures and describes the physical features of bodies of sea and the land areas adjacent to those bodies of sea. In according to International Hydrographic Organization-IHO definition, Hydrography is the branch of applied sciences which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities, including economic development, security and defense, scientific research, and environmental protection.[7]

Hydrographers conducts hydrographic surveys to measure the depth and bottom configuration. All hydrographic datas are used to update nautical charts and develop hydrographic models; increasingly, are used for multiple purposes, through the integrated seas and coast by eligible programs. The main data type common to all hydrographic surveys is the depth. Of additional concern to many surveys is the nature of the seafloor material like sand, mud, rock due to implications for anchoring, dredging, structure construction, pipeline and cable routing, and fisheries habitat, pollutions and also environmental solutions.



Figure 4. Hydrographic Surveying by Research Ship

2.2. Oceanography

Oceanography covers a wide range of topics, including marine life and ecosystems, ocean circulation, plate tectonics and the geology of the sea floor, and the chemical and physical properties of the ocean. Just as there are many specialties within the medical field, there are many disciplines within oceanography. [8]

Biological oceanography and marine biology study plants and animals in the marine environment. Chemical oceanography and marine chemistry study the composition of seawater, it's also processes and cycles, and the chemical interaction of seawater with the atmosphere and sea floor. Geological oceanography and marine geology explore the ocean floor and the processes that form its mountains, canyons, and valleys. Physical oceanography study the physical conditions and physical processes within the ocean such as waves, currents, eddies, gyres and tides; the transport of sand on and off beaches; coastal erosion; and the interactions of the atmosphere and the sea.

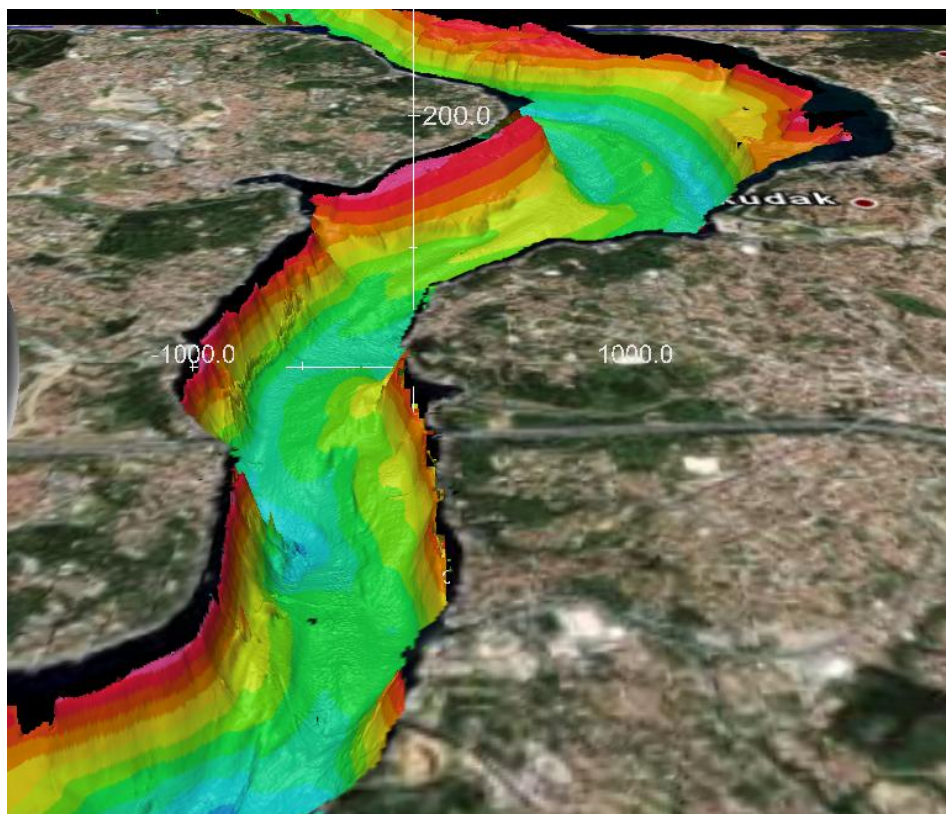


Figure 5. A part of the Istanbul Strait Seabed Profile

2.3. Meteorology

Meteorology, the study of the earth's atmosphere, is a component of earth system science. The temperature, wind, and precipitation that we observe and experience impact, and all are impacted on by, various scales. Weather, which is at one end of the meteorological spectrum, generally refers to short-term fluctuations which includes less than a couple of weeks. While the climate is characterized by longer time scales from months to years. On short time scales - convection, which are more important especially for mariners during to navigation. Also on short time scales - convection, like cloud cover, humidity, soil moisture, can all impact a forecast while climate is impacted by solar variations, volcanic eruptions, and changes in the sea circulation.

2.4. Coastal Management

Coastal Management integrates the biological, physical, and policy sciences to plan and execute sustainable solutions for environmental challenges where land meets water. The well-created coastal management understands both the science of contemporary issues and the political and socioeconomic complexities facing coastal areas. Nearly 2/3 of the global population living within 100 km of coasts, impacts on the water and land in narrowly concentrated corridors are magnified by the potential for sea level rise and other coastal

changes. Coastal Management is particularly applicable to emerging specialties in sustainability, one of the most rapidly growing fields in the 21st century and an inevitable condition for environmental management.

2.5. Environmental Sciences

Environmental science is also defined as the study of the interaction between the biosphere, lithosphere, hydrosphere and atmosphere, and represents a framework for studying problems that fall outside the realm of traditional scientific disciplines. Environmental science is also concerned with the relationship of human activities and the supporting environment. It provides the framework for making rational environmental decisions and solving pollution problems for land and sea.

2.6. Environmental Resource Management

Environmental Resource Management has become an area of national and international significance. Resource managers, typically in the public and private developmental sectors, face increasingly complex technical problems that can cut across several of the more traditional educational disciplines. In addition to the fundamentals of biological and chemical environmental processes, management authorities and also managers must be knowledgeable in local, region, and global cause and effect relationships of human activities in the development and utilization of environmental resources. Resource management authorities and managers must also understand the legal and regulatory aspects of resource and environmental impact assessment. Recognizing these multidisciplinary needs, the master's degree program in Environmental Resource is a option in the Environmental Sciences Program at Florida Tech and includes both university course work and an internship with a regulatory agency or private company involved in environmental resource management. Graduates are well prepared to effectively interact with engineers, scientists, managers, and politicians. [9]

2.7. Other Sciences

Marine biogeochemical research of oceans as transporters and processors of chemical elements that are essential to the functioning of the planet, such as carbon, nitrogen, phosphorus, oxygen, sulfur, silicon and iron. Marine biogeochemical is to determine how these elements, which are mobilized by natural and anthropogenic sources, are distributed and flow among the water masses, the seabed, particulate matter, living organisms, and the food webs of which these organisms form part. Particular attention is paid to the processes that occur across the interfaces between compartments which includes are water-particles, water-organisms, water-sediment, water-atmosphere. The environmental conditions of the past are also studied through the geochemical "footprints" stored in the seabed.

Science for the conservation of natural marine resources aims to provide the basic scientific knowledge necessary for the conservation and sustainable management of the marine environment and its natural resources. Therefore assesses the vulnerability of coastal areas and deep-sea ecosystems to human activities which includes fishing, trawling, pollution and changes in coastal and deep-sea morphology and their modulation by natural factors. It also needs to studies the potential of Marine Protected Areas as essential habitats for breeding and protection of endangered species. The science and research are aimed at improving basic knowledge of the ecology of exploited species and determining the interactions between the components of food webs. In order to assess changes in biodiversity and the exploitation of living resources, research is also aimed at identifying indicators of ecosystem impact and developing and applying models using bio economic and ecosystem approaches. Finally, the development of new biotechnological applications is studied in order to move towards an ecologically sustainable and profitable aquaculture.

Structure and dynamics of marine ecosystems research line is to understand the processes that occur in the marine environment and their variability. This will allow to detect the most significant natural changes and to assess their possible implications in the global change. The research aims to determine the main feedback mechanisms between environmental force which include climate, UV radiation, hydrodynamics, etc. and biological processes (reproduction, life cycles, food chains, benthos-plankton coupling) in order to quantify the productivity, diversity and stability of the ecosystems. [10]

Physics of the ocean and climate aims are to describe and explain the physical behavior of the oceans and its role in the earth's climate, using the principles of fluid mechanics and thermodynamics. Variations in temperature and salinity and in the density patterns in the oceans are observed and analyzed in order to develop models to explain the dynamic interaction between climate forcing and the state of the oceans. Researches of water movement means waves and currents, the transfer of energy and momentum between the ocean and the atmosphere, and the special properties of sea water such as the propagation of electromagnetic energy are used to improve knowledge

of the physical processes of the ocean. This research also includes technical analyses of oceanic data obtained from space, especially data on surface salinity. At the end, it includes the design of oceanographic instrumentation and the development of advanced numerical models for studying various aspects of ocean dynamics.

Marine geosciences generally research geomorphology, sediment dynamics, geochemical flows, stratigraphy and tectonics of coastal regions, continental margins and ocean basins at all spatial and temporal scales. Marine geosciences also research includes the analysis of present-day sedimentary processes in response to natural and anthropogenic phenomena, the study of the morphology and structure of the seabed, and the assessment of geological hazards in coastal zones, continental margins and basins. In order to improve the general management of the seabed, some applications of this research line address issues such as the vulnerability of coasts, marine pollution, coastal and offshore facilities, oil and gas exploration, geological hazards, climate change and associated changes in sea level.

3. IMPORTANCE OF THE MARINE SCIENCE AND CHARTING ABOUT ENVIRONMENTAL PLANING, MANAGEMENT AND POLICIES AT THE TURKISH STRAITS

As mentioned first part of study that, in 2014, there are 26606 vessel with totally 329.121.399 gross tones, passed through to straits, 14082 of them used pilot help, 15198 of them passed strait as transit vessels, 2390 of them bigger than 200 meters, 678 of them bigger than 500 gross tones, 5327 of them tanker vessel at Istanbul and 25.551 vessel with totally 428.721.565 gross tones, passed through to strait, 11114 of them used pilot help, 15240 of them passed strait as transit vessels, 3280 of them bigger than 200 meters, 316 of them bigger than 500 gross tones, 5606 of them tanker vessels at Canakkale. Huge traffic causes many problems. As a result of these problems, some guidelines and national and international regulations have been established for mariners like SOLAS, MARPOL, STCW, SAR etc. International Convention for the Safety of Life at Sea - SOLAS Convention in its successive forms is generally regarded as the most important of all international treaties concerning the safety of merchant ships and also all kind of ships. The first version was adopted in 1914, in response to the Titanic disaster, the second in 1929, the third in 1948, and the fourth in 1960. The 1974 version includes the tacit acceptance procedure - which provides that an amendment shall enter into force on a specified date unless, before that date, objections to the amendment are received from an agreed number of Parties.[11]

The Convention in force today is sometimes referred to as SOLAS, 1974, as amended. International Convention for the Prevention of Pollution from Ships which has acronym MARPOL is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The MARPOL Convention was adopted on 2 November 1973 at IMO. The Protocol of 1978 was adopted in response to a spate of tanker accidents in 1976-1977. As the 1973 MARPOL Convention had not yet entered into force, the 1978 MARPOL Protocol absorbed the parent convention. The combined instrument entered into force on 2 October 1983. In 1997, a Protocol was adopted to amend the Convention and a new Annex VI was added which entered into force on 19 May 2005. MARPOL has been updated by amendments through the years. The Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations - and currently includes six technical Annexes. Special Areas with strict controls on operational discharges are included in most Annexes. MARPOL-Annex I is really important for Turkish Straits cause of its content. Annex I, Regulations for the Prevention of Pollution by Oil which entered into force 2 October 1983, covers prevention of pollution by oil from operational measures as well as from accidental discharges; the 1992 amendments to Annex I made it mandatory for new oil tankers to have double hulls and brought in a phase-in schedule for existing tankers to fit double hulls, which was subsequently revised in 2001 and 2003. [11]

MARPOL -Annex IV Prevention of Pollution by Sewage from Ships which entered into force 27 September 2003, Contains requirements to control pollution of the sea by sewage; the discharge of sewage into the sea is prohibited, except when the ship has in operation an approved sewage treatment plant or when the ship is discharging comminuted and disinfected sewage using an approved system at a distance of more than 3 nautical miles from the nearest land; sewage which is not comminuted or disinfected has to be discharged at a distance of more than 12 nautical miles from the nearest land. MARPOL-Annex VI Prevention of Air Pollution from Ships which entered into force 19 May 2005, sets limits on sulphur oxide and nitrogen oxide emissions from ship

exhausts and prohibits deliberate emissions of ozone depleting substances; designated emission control areas set more stringent standards for SO_x, NO_x and particulate matter. A chapter adopted in 2011 covers mandatory technical and operational energy efficiency measures aimed at reducing greenhouse gas emissions from ships. Also green port projects draws attention to the great importance is given in the last days. Governments and legislators around the world view ports and terminal as critical infrastructure assets. Their ability to 'go green' by reducing their carbon footprint, and by being more sensitive to environmental considerations, is vital to future success. GreenPort provides business information on environmental best practice and corporate responsibility centred around marine ports and terminals, including shipping, transport and logistics. [12]

In according to Ministry of Environmental and Urbanisation's policies of Marine and Coastal Area Management show that, there are some procedure and principles concerning the ship-sourced waste notifications. The waste notifications that are required to be made by ships over Ship Waste Tracking System (SWTS-GATS) shall be made by the owner, operator or authorized agent of the ship to the relevant waste reception obligator and port authority at least 24 hours prior to the arrival of the ship at the port or upon departure from the previous port if the duration of the voyage is less than 24 hours. Any changes that might take place related to the time of arrival at the port or the quantities of waste after the waste notification is made shall again be immediately notified over GATS. The ship master, owner, operator or authorized agent of the ship shall be obliged to submit the Waste Notification Form contained in Annex-1 of the 2013/12 Circular on the Implementation of Ship Waste Tracking Systems to the relevant waste reception obligator and Port Authority through fax in case of force majeure events, where they cannot access GATS. Services to be rendered by the waste reception facilities and waste reception ships are performed in return for a fee. The list of fees to be charged to ships are determined by the Ministry of Environment and Urbanization and published in Official Gazette dated 05 June 2009 No: 27249 (Notification Regarding the Fees and Principles to be Implemented Within the Scope of the Regulation on Taking Waste from the Ships and Waste Control). The coastal facility evaluation of the risk and emergency response plan is prepared by Institutions which are authorized by responsible ministry. These institutions are learned from Environment Impact Assessment which is one of responsible ministry's departments. [13]

Oil and chemical spillages in accidents that occurred, studies is executed and interfered within the scope of Law no: 5312 "Law Pertaining to Principles of Emergency Response and Compensation for Damages in Pollution of Marine Environment by Oil and Other Harmful Substances" and Regulation of application of this Law. [13]

If the legal response with chemical-dispersants to oil pollution which is caused by ship wrecked that related with this legislation, in this case, the Ministry's authorization has to be taken to use dispersants. And the use of dispersants without permission from the Ministry is illegal. And environmental law for operation is done to users. [13] The scope of the law No. 5312, Coastal facilities shall be obliged to take financial liability insurance against the damages under this Law. Coastal facilities that fail to comply with the requirement to take insurance shall not be allowed to operate. Coast Facilities Sea Pollution Compulsory Liability Insurance; This insurance provides coverage for legal liability in accordance with the Law No. 5312 dd. 3.3.2005 on the Principles of Responding in Emergencies to Marine Pollution Caused by Petrol and Other Harmful Substances, and Compensation of Damages and Losses, expenses for purification of sea, transportation and removal of collected garbage, claims as a result of death or bodily damage of third parties and loss or damage of private goods arising from pollution or pollution risk in inland waters, coastal waters, continental shelf, exclusive economic zone of Turkey, caused by the coast facility indicated on the policy in respect of General and Special conditions. In this context, to meet the damages, at the initiative of the Ministry, Coast Facilities Sea Pollution Compulsory Liability insurance and Environmental Liability Insurance's general conditions are prepared by Undersecretariat of Treasury. And ships have to have P&I Club Insurance. [13]

Below mentioned authorities have the authority to supervise adherence to Environment Law No. 2872 in marine areas under the jurisdiction of the Republic of Turkey and the authority for decision making in the enforcement of administrative sanctions in accordance with Article 24 of the same law: Ministry of Transport, Maritime Affairs and Communications, Coast Guard Command, Boat Commands affiliated with Regional Commands, Istanbul Metropolitan Municipality, Kocaeli Metropolitan Municipality, Antalya Metropolitan Municipality, Mersin Metropolitan Municipality. [13]

Date	Vessel Name and Flag	Accident Area	Accident Type and Oil Spill
14.12.1960	World Harmony (Greek) v. Peter Zoranic (Yugoslavia)	Kanlica	Collison and fire: 18.000 tons oil spilled
15.09.1964	Norborn (Norwegian) v. wreck of Peter Zoranic	Kanlica	Contact: fire and oil spilled
01.03.1966	Lutsk (Russia) v. Kransky Oktiabr (Russia)	Kizkulesi	Collison and fire: 1.850 tons oil spilled
15.11.1979	Independientia (Romania) v. Evriali (Greek)	-	Collison and fire: 20.000 tons of oil spilled and 50.000 tons of oil burned
09.11.1980	Nordic Faith (British) v. Stavanda (Greek)	-	Collison and fire
29.10.1988	Bluestar (Malta) v. Gaziantep (Turkish)	Ahirkapi	Contact: 1.000 tons ammonia spill
25.03.1990	Jambur (Iraqi) v. Da Tung Shan (Chinese)	Sariyer	Collison: 2.600 tons oil spilled
13.03.1994	Nassia (Philippines) v. Shipbroker	Bebek	Collison and stranding: 22 tons oil spilled
1982	Unirea		66.400 tons oil spilled
07.12.1999	Semele v. Sipka	Yenikapi	Collison: 10 tons oil spilled
29.12.1999	Volganef 248	Florya	1.500 tons oil spilled
06.10.2002	M.V. Gotia	Emirgan Dock	Stranding: 20 tons oil spilled
10.12.2003	Svyatoy Panteleymon (Georgia)	Anadolu Feneri	Grounding: 230 tons oil spilled

Figure 6. Important Oil Spills in Turkish Straits.

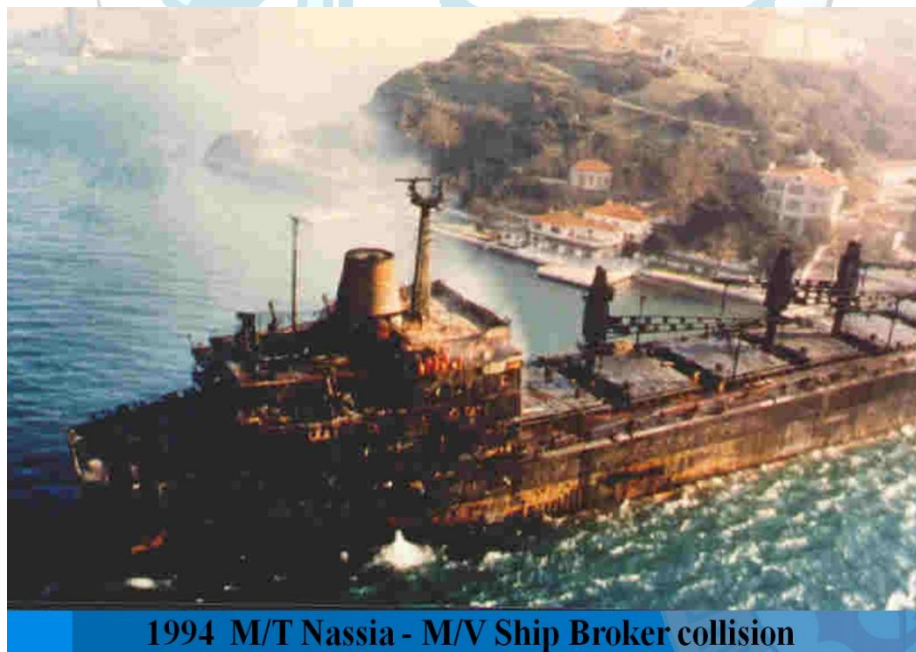


Figure 7. 1994 M/T Nassia and M/V Ship Broker's Collision

4. CONCLUSION

The Turkey is on a good position that surrounded by seas on three sides. Also has the Turkish Straits that connects the Black Sea to the Mediterranean Sea by Turkish Straits sea area which includes Istanbul Strait, Canakkale Strait and the Marmara Sea. Turkish Straits which have an important position in the geographical structure of the natural obstacles to safe navigation and structure is filled with many parameters due to factors because of its strategic importance and geographical political, economic, military, including many areas, The relevant parameters of obstacles to safe navigation and result a negative effect on environmental management undoubtedly the effect of marine Sciences and marine mapping products is very important. The Benefits of marine science to mariners and environment management have enormous impact in ensuring the safety of all marine habitat. Due to the energy source research especially in the Caspian Sea and the Mediterranean sea, therefore the importance of the use of the Turkish Straits waterways have increased.

In the light of the aforementioned remarks that, the Turkey has great importance about national and international maritime transportation. Marine Science can able to measure all the sea whichs are belong to Turkish territorial sea and the Turkish Straits. Marine science and environmental science are using the formation of hydrography, oceanography, cartography and meteorology, such as more emphasis to the data that are important to the safety of navigation and support to environment management further mapping and marine show needs to be taken. Ultimately, the question of, "What is importance of Marine Science?", cannot be fully answered without considering all sub-divisions, the language of all marine and environmental science.

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