

# Motion in the ocean

**First name:** MARTINE

**Surname:** KERVRAN

**E-mail address:** [jmkervran@wanadoo.fr](mailto:jmkervran@wanadoo.fr)

**Institution:** IUFM de Bretagne

**Country:** FRANCE

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## Target group

- Mid - Primary

## Subject

- Geography & Physical Sciences

## Aims

Subject contents (geography and physical sciences)

- Learn about the location and names of the oceans
- Identify the main causes for water movement in the ocean.
- Explore the relationships between wind and ocean waves.
- Learn about storms at sea

## Competencies regarding

- languages
  - improve reading competencies in English as a foreign language
  - learn English vocabulary related to the topic of oceans and ocean water movement
  - learn about the etymology of some English words
  - learn about borrowings and exchanges between the languages of the world
- social abilities and autonomy
  - work in collaboration
  - look for information and share it with classmates
  - discuss findings
  - acquire reading strategies
- digital competence/competence digital /competencia digital
  - looking for information on the Internet and being able to sort it out
- learning to learn

- looking for adequate information and being able to consider it critically

### **Language(s)**

- Target language : English
- Other languages in the class
- Language awareness: etymology and borrowings

### **Timing of the overall activities**

- Approximately 6 hours

### **Resources and materials needed**

- photocopies of the worksheets
- dictionaries and encyclopedias
- computers connected to the Internet
- other resources gathered by the teacher and the pupils

# 1. The oceans in the world

**Timing:** 90 minutes

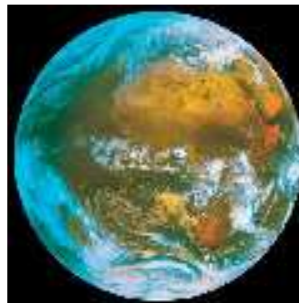
**Material required:** worksheets 1, 2, 3

**Focus on content (geography):** situation of the five oceans

**Focus on language/s:** names of the oceans; name of the continents; geographical terminology; etymology of the word ocean; language families

**Language skill:** Reading comprehension

## Worksheet 1



1- Fill in the chart below after discussing the items with your friends and your teacher (use the language you know best / your teacher will help you if necessary)

What we know about the ocean	What we want to Learn About the ocean
-	-
-	-
-	-
(...)	(...)

2- **Answer the question** after discussing it with your friends and your teacher (use the language you know best/ your teacher will help you if necessary)

Why does the water of the sea move?

.....  
.....

## Worksheet 2

- 1-  Read the definitions and label the map

Oceans cover nearly 71% of the Earth's surface.

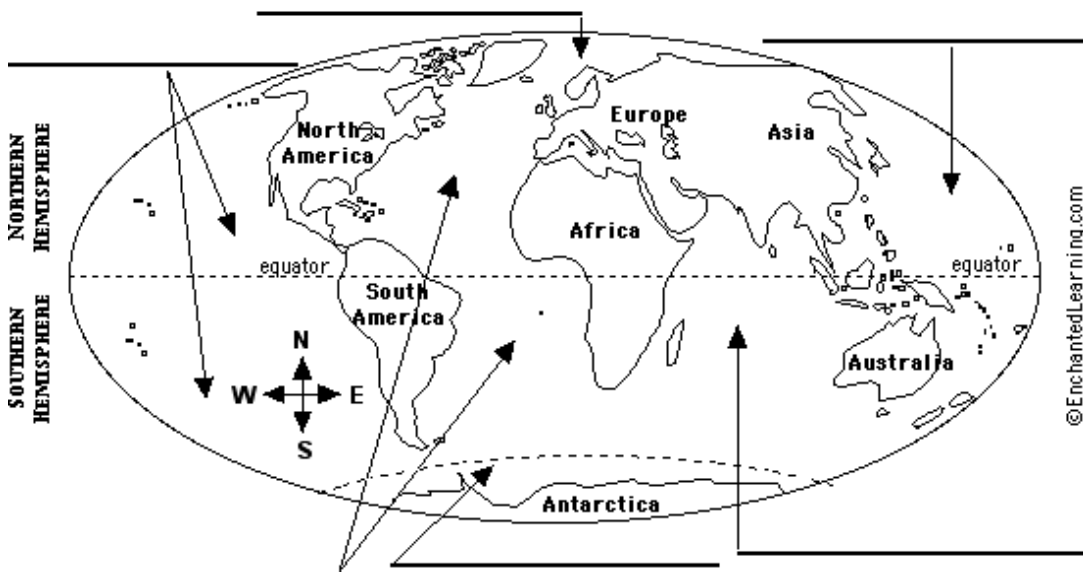
**The Pacific Ocean** is the largest ocean and borders the five continents.

**The Atlantic Ocean's** neighbouring seas include the Mediterranean Sea, the North Sea and the Baltic Sea.

**The Arctic Ocean** is the smallest ocean. It surrounds the North Pole. It is frozen all the time, except at its edges.

**The Southern Ocean** is where you'll find Antarctica and the South Pole.

**The Indian Ocean** borders areas from the southern hemisphere.



- 2-  Check your answers and learn more about the five oceans by following this link:

<http://www.gdrc.org/oceans/world-oceans.html>

### Worksheet 3: multilingual ocean!



Look at the translations of the world ocean in a few different languages and try to answer these questions

Language	The word ocean
German	ozean
French	océan
Italian	oceano
Russian	океан
Danish	ocean
Dutch	ocean
Spanish	océano
Portuguese	oceano
Swedish	ocean
...	...
...	...



**Then discuss them with the whole class** (use the language you know best/ your classmates and teacher will help you if necessary)

What do you notice?

.....

Can you guess why?

.....

Can you write the word ocean in any other language(s)? If so, add it to the list above

## 2 – Waves and wind

**Timing:** 2hours

**Material required:** worksheets1&2; photographs, pictures or paintings of waves

**Focus on content:** formation and measurement of waves

**Focus on language:** vocabulary of wave components (crest; troughs; foam...)

**Language skills:** talking; reading comprehension

Worksheet 1: How can waves be described?



✓ Bring photographs, pictures or paintings about waves to class

✓ Share them with the class and describe them



Match each word to its definition

Duration

bottom of a wave

Trough

length of time


Crest

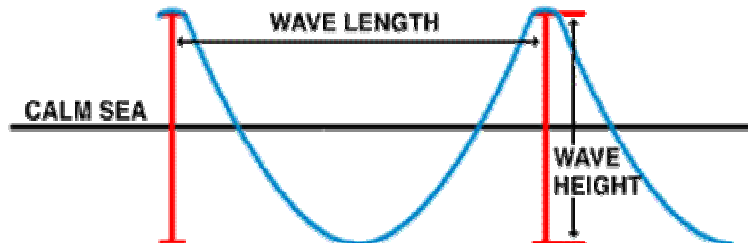
distance over which the wind blows

Fetch

top of a wave

## Worksheet 2: How are waves measured?

- 1-  Look at the diagram and fill in the blanks in the text with words from the list below



Wave model from [www.ndbc.noaa.gov/educate/educate.shtml](http://www.ndbc.noaa.gov/educate/educate.shtml)

The water in the ocean is always ----. Waves are one movement of the ocean----.  
They are caused by the----. The ----of these waves depends on wind----, on the ----  
of the wind and on the----. It is measured from the wave ----to the wave----.  
The wave ----is defined as the horizontal distance between two successive--  
--.

Water; moving; height; waves; length; crest ; troughs; wind ; duration; fetch; speed

- 2  - Create your own ocean wave!

Follow this link and discover the wave machine...

<http://www.pbs.org/wnet/savage seas/multimedia/wavemachine.html>

### 3- When the waves grow bigger and bigger...

**Timing:** 90 minutes

**Material required:** worksheets 1, 2, 3

**Focus on content** (physical sciences): wind as the main cause for storms; the Beaufort wind scale

**Focus on language/s:** storms words and their etymology; borrowings

**Language skill:** reading comprehension

#### Worksheet 1: The Beaufort wind scale

In 1805, British admiral Francis Beaufort devised a descriptive wind scale to standardize wind reports. The Beaufort wind scale is still used today.



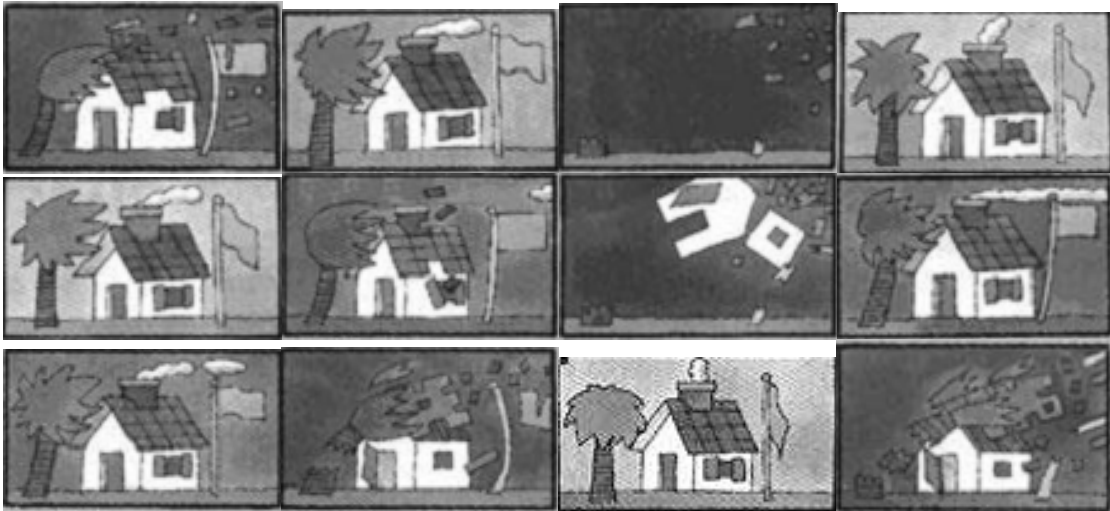
#### 1- Look at the chart below and read it carefully

Beaufort scale number	Descriptive term	Wind speed km/h	Description of the sea	Description of the land
0	Calm	0	Sea like a mirror.	
1-3	Light winds	19 km/h or less	Small wavelets	
4	Moderate winds	20 - 29 km/h	Small waves	
5	Fresh winds	30 - 39 km/h	Moderate waves	
6	Strong winds	40 - 50 km/h	Large waves	
7	Near gale	51 - 62 km/h	Sea heaps up and white foam	
8	Gale	63 - 75 km/h	Moderately high waves of greater length	
9	Strong gale	76 - 87 km/h	High waves; spray may affect visibility.	
10	Storm	88 - 102 km/h	Very high waves ; the surface of the sea takes on a white appearance with visibility affected.	
11	Violent storm	103 -117 km/h	Exceptionally high waves; the sea is completely covered with long white patches of foam.	
12+	Hurricane	118 km/h or more	The air is filled with foam .The sea is completely white; visibility is very	



			seriously affected	
--	--	--	--------------------	--

2-  In pairs, cut out the drawings and stick them in the right place in the above chart to describe the land at each stage.



## Worksheet 2: All kinds of storms at sea

There are various kinds of storms at sea that are given different names. Those names depend on the region of the world where those phenomena generally occur.

1-  **Link each English word to the original word you think it comes from.**

English word	original word
Hurricane	<i>Kyklōma</i>
Typhoon	津波
Tsunami	<i>Huracan</i>
Cyclone	□ □


2-  **Try to find out what is the name of each of those languages**

The word hurricane comes from.....

The word typhoon comes from.....

The word tsunami comes from.....

The word cyclone comes from.....

3-  **Look for a definition of each term in a dictionary and write it down:**

Hurricane: .....

Typhoon: .....

Tsunami: .....

Cyclone: .....

4-  **Look for more information about those phenomena on the Internet**

Read the information on those web pages and write a very short summary of the contents

**Cyclones** [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/cyc/def.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/cyc/def.rxml)

**Hurricanes** : [http://ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/hurr/def.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/hurr/def.rxml)

**Typhoons:**

[http://library.thinkquest.org/03oct/00477/NatDisasterPages/jeb.webpages/Typhoon/typhoon\\_definition.htm](http://library.thinkquest.org/03oct/00477/NatDisasterPages/jeb.webpages/Typhoon/typhoon_definition.htm)

**Tsunamis:** <http://www.pbs.org/wnet/savage seas/neptune-side-tsunamis.html>

Worksheet 3- 

Find out about borrowings in the English language

**1- The words hurricane, typhoon and tsunami were borrowed to other languages. Can you guess why?**

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**2- Those other words from the geographical domain are also loan words. Look for their meaning in a dictionary and try to guess which language they were borrowed from**

avalanche : -----  
canyon : -----  
fjord : -----  
geyser : -----  
golf : -----  
iceberg : -----  
jungle : -----  
tundra : -----


**2- Can you think of any other English words that were borrowed to other language?**

Which language were they borrowed to? Make a list with your teacher and try to classify them according to the language they come from or the domain (food; clothes; animals ...) they belong to





## Assessment

- 1-  Discuss with your friends and your teacher and fill in the chart below

What we have learnt

- 2-  Have a look at what you had written in the chart “what we know / what we want to learn” at the beginning of the module and discuss what you have learnt and what else you would like to know about the oceans

### 3- Make your own ocean multilingual scrapbook

- ✓  Collect information and documents about waves and other information about the motion of the ocean from this module, classbooks, websites, magazines or books.
- ✓  Make sure the documents
  - come from various sources,
  - include various types of information (texts, pictures, drawing, paintings, photographs, stories...),
  - are written in different languages.
- ✓  Choose the most interesting ones, put them together, arrange them into chapters and make them into a nice file or book.
- ✓  Share your ocean scrapbook with your classmates and your teacher.

## Notes for the teacher and answer sheets

### 1-Oceans in the world

#### Worksheet 3 : multilingual ocean

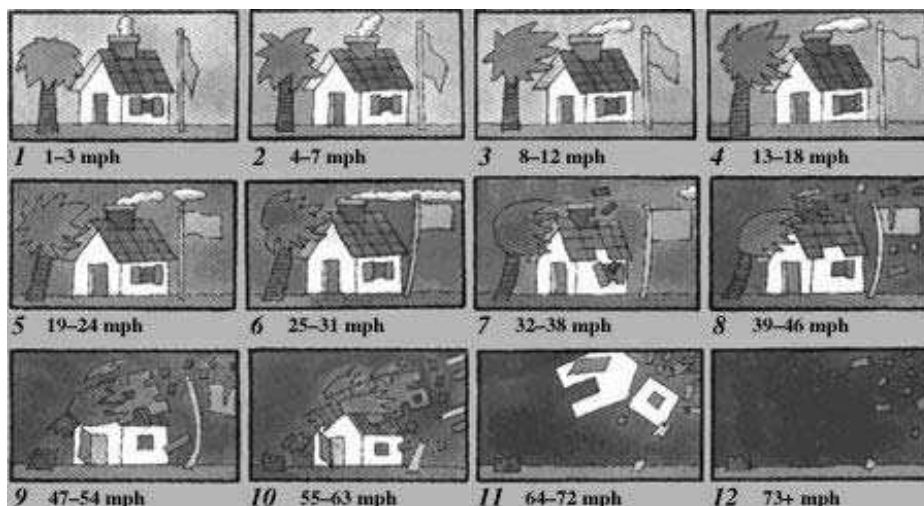
The word ocean looks the same in many languages because it comes from the greek word Ωκεανός, *Okeanos* (Oceanus). **Oceanus** was believed to be the world-ocean in classical antiquity, which the ancient Romans and Greeks considered to be an enormous river encircling the world. This world-ocean was personified as a Titan, a son of Uranus ( the Sky) and Gaia (the Earth).

### 2-Waves

The water in the ocean is always **moving**. Waves are one movement of the ocean **water**. They are caused by the **wind**. The **height** of these waves depends on wind **speed**, on the **duration** of the wind and on the **fetch**. It is measured from the wave **crest** to the wave **trough**. The wave **length** is defined as the horizontal distance between two successive **waves**.

### 3- When the waves become bigger and bigger

#### Worksheet 1: The Beaufort wind scale



#### Worksheet 2: All kinds of storms at sea

The word hurricane comes from Spanish

The word typhoon comes from Chinese

The word tsunami comes from Japanese

The word cyclone comes from Greek

The word **hurricane** came to English from the Spanish word **hurican**. Spanish explorers and conquerers took the word from the **Taino word, meaning storm**. Taino is an extinct language from the Bahamas.

The word **cyclone** comes from modifications of the Greek word **kyklōma** which means wheel and is derived from *kyklos*, meaning circle.

The word **typhoon** comes from the Chinese word 台风 (*tai-fung*) which means “great wind”.

The word **tsunami** comes from the Japanese word 津波, meaning “port” (tsu)

**Cyclone:** An atmospheric circulation system in which the sense of rotation of the wind about the local vertical is the same as that of the Earth's rotation

**Hurricane:** A tropical cyclone with winds that have reached a constant speed of 74 miles per hour or more.

**Typhoon:** A tropical cyclone occurring in the western Pacific or Indian oceans

**Tsunami:** A huge ocean wave that can travel at speeds up to 600 mi/hr (965 km/hr), hundreds of miles over open sea before it hits land.

### **Worksheet 3 Find out about borrowings in the English language**

Avalanche (Switzerland Romansh)

Canyon (Spanish)

Fjord (Norwegian)

Geyser (Icelandic)

Golf (Gaelic)

Iceberg (Dutch)

Jungle (Hindi)

Tundra (Lapland Sámi)

#### **More loan words and their origin:**

<http://www.krysstal.com/borrow.html>

[http://efl.htmlplanet.com/words\\_from\\_otherlingos.htm](http://efl.htmlplanet.com/words_from_otherlingos.htm)

The history of borrowings in the English language

<http://www.ruf.rice.edu/~kemmer/Words04/structure/borrowed.html>

### **Assessment**

The information for the scrapbook should be collected all along the module

#### **A few websites about the ocean:**

**Oceanlink :** <http://oceanlink.island.net/>

Links to a glossary, ocean facts, career information, and more.

**OceanPortal :** <http://oceanportal.org/>

“OceanPortal is a high-level directory of Ocean Data and Information related web sites.”

**Ocean Planet, Smithsonian :** [http://seawifs.gsfc.nasa.gov/ocean\\_planet.html](http://seawifs.gsfc.nasa.gov/ocean_planet.html)

A virtual tour of the Ocean Planet exhibit at the Smithsonian's Museum of Natural History.

**Ocean Voice International :** <http://www.ovi.ca>

Information about their projects, and general information on the ocean.

**Oceanic Information Center :** <http://www.cms.udel.edu/>

Resources on oceanographic experiments, research projects, databases, etc.