



Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area, concluded under the auspices of the Convention on the Conservation of Migratory Species of Wild Animals (CMS)

Accord sur la Conservation des Cétacés de la Mer Noire, de la Méditerranée et de la zone Atlantique adjacente, conclu sous l'égide de la Convention sur la Conservation des Espèces Migratrices appartenant à la Faune Sauvage (CMS)



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REPORT OF THE 5 DAYS TRAINING SESSION ON PHOTO-ID AND DATABASES FOR EXPERTS OF THE ACCOBAMS AREA

*Delegates are kindly invited to bring their own documents to the Meeting.
This document will be available only in electronic format during the Meeting.*

REPORT OF THE 5 DAYS TRAINING SESSION FOR EXPERTS OF THE ACCOBAMS AREA

ACCOBAMS TRAINING COURSES ON PHOTO ID AND DATABASES FOR EXPERTS

In collaboration with SPA/RAC, IUCN Med, MedPAN and Lebanese CNRS



Byblos, Lebanon, 1st -5th October 2018



I- BACKGROUND

The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS), concluded under the auspices of the Convention of Migratory Species of Wild Animals (UNEP-CMS), has entered into force in 2001 and is now binding on 24 States (Albania, Algeria, Bulgaria, Croatia, Cyprus, Egypt, France, Georgia, Greece, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Portugal, Romania, Slovenia, Spain, Syria, Tunisia, Turkey, Ukraine). The general purpose of ACCOBAMS is to achieve and maintain a favorable conservation status for cetaceans, by improving current knowledge of these animal. To this end, Parties shall co-operate in order to **develop common tools for the collection and dissemination of information** about cetaceans and to organize training courses and education programmes.

The 2017-2019 ACCOBAMS Work Programme (Resolution 6.5 adopted by Parties during MOP6 in November 2016), included the organization by the ACCOBAMS Permanent Secretariat of **training** on the use of photo-id and the promotion of the use of catalogues or web-based databases of photo-IDs.

II- OBJECTIVE

The 5 days training session for experts of the ACCOBAMS area, in particular from ACCOBAMS Partners, has been organized, thanks to a voluntary contribution from Italy. It was organized in collaboration with SPA/RAC, IUCN Med, MedPAN and Lebanese CNRS, from **1st to 5th October 2018 in Lebanon**. It was aimed at reinforcing capacity on (i) the use of photo-id, (ii) the use of databases for experts relevant to ACCOBAMS which may seem complex for non-trained experts, and (iii) the creation of catalogues with relevant data for cetacean conservation.

The main objective was to go towards **standardization** of the methods / tools used **to share and valorize the data collected** (*i.e.* through scientific publications) on cetaceans in order to optimize the efforts undertaken by all stakeholders involved in cetacean conservation and to improve the status of cetacean.

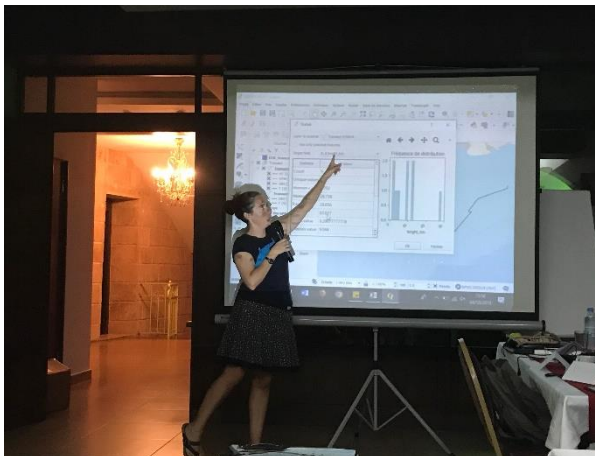
Around 40 participants from Mediterranean and Black Sea participated to the training. Final list of participants appears in [Annex 1](#) of the report.

The final Agenda appears in [Annex 2](#) of the report.

Trainers explained the participants how to use GPS and Qgis softwares, though exercises ([Annex 3](#)) and with a support guide ([Annex 4](#)) in order to be more comfortable with:

- GPS data extraction
- GPS data processing
- Building of a database
- The use of Qgis, more particularly:
 - Switch from Excel to Qgis
 - Import the data under Qgis

- Transform Points to lines (Transects creations and Calculating the length of the transects)
- General tools of Qgis
- Create a layer (CCH)
- Create an attribute table
- Create polygons
- Create a map



III- CONCLUSION

An evaluation form was filled by each trainee at the end of the training. All feedbacks are positive. It seems that the proposed format was very adapted to the needs from experts.

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ANNEX 2 - PROGRAMME

Monday 1 October 2018	
Official welcome statements and introduction to the training	CNRS ACCOBAMS
1/ NETCCOBAMS – Strengthen collaboration between all ACCOBAMS experts	Maylis SALIVAS Léa DAVID
2/ Reporting quality assured data related to the EcAp common indicators on marine mammals: The SPA/RAC Mediterranean Platform on Biodiversity	SPA/RAC representative
3/ National and regional databases on strandings	Maylis SALIVAS
4/ CCH and IMMAs: for a better consideration of cetaceans in MPAs - examples of practices implemented and needs -	Simone PANIGADA, Alexandra GIGOU Fabrizio ATZORI Pep AMENGUAL

Tuesday 2 October 2018	
5/ Photo-Id – from raw data to a photo-ID catalog	
5.1 Introduction to photo identification techniques	Léa DAVID
5.2 Example of data catalogue and matrix on Bottlenose Dolphin	Marine ROUL
5.3 Example of data catalogue and matrix on Risso's dolphin	Aurélie MOULINS
5.4 Example of data catalogue and matrix on fin whale	Simone PANIGADA
5.5 Practical exercise from raw data (data provided by participants or provided by trainers)	Marine ROUL Pauline GAUFFIER Aurélie MOULINS

Wednesday 3 October 2018	
6/ A tool needed for data recovery: GIS – from raw GPS data to maps of effort and observations (sea trip and data processing)	
Group 1 : Sea trip (morning) Introduction to GIS techniques (afternoon)	Pauline GAUFFIER Léa DAVID
Group 2 : Introduction to GIS techniques (morning) Practical exercise with data provided by trainers (afternoon)	Aurélie MOULINS Marine ROUL

Thursday 4 October 2018	
6/ A tool needed for data recovery: GIS – from raw GPS data to maps of effort and observations (sea trip and data processing)	
Group 1 : Practical exercise with data provided by trainers (morning) Practical exercise with data from the sea trip (afternoon)	Pauline GAUFFIER Léa DAVID
Group 2 : Sea trip (morning) Practical exercise with data from the sea trip (afternoon)	Aurélie MOULINS Marine ROUL

Friday 5 October 2018	
7/ Valorization of available data in the ACCOBAMS area - transfer of expertise and of know-how from experts to other experts	Aurélie MOULINS Marine ROUL Pauline GAUFFIER Léa DAVID
8/ Closure of the training	Milad FAKHRI Gaby KHALAF Maylis SALIVAS

ANNEX 3 – QGIS Exercise



QGIS EXERCISE

ACCOBAMS training on photo-identification and databases



Marine Roul
EcoOcéan Institut

Element of the exercise

Data

- Files (.txt) with GPS tracks
- Road sheets (.pdf) with the indications of the exits
- Shapefile (.shp) and raster (.tif) file for mapping (we are not responsible for the boundaries and territorial boundaries of the files)

Software

- Notepad to open .txt files
- Calculation software: Excel, free office, Open Office ... to create the database
- Qgis for SIG

Instructions

GPS data processing

Create a database from the GPS file, see the corresponding part in the guide.

To complete the database

In this exercise are considered out of effort periods where :

- There is no effort of observation
- There is interruption of the transect because of cetaceans
- Weather conditions are poor: Wind and Sea above Beaufort 4, Visibility = fog (brouillard in french).
- Transect conditions are not respected: speed below 7 km / h

THT column code:

- In effort: T
- In cetacean sighting: OBS
- No effort: HT
- Bad weather conditions: HTM
- Bad speed: HTV

ID transect, the transect identifier will be composed of the name of the mission, the year and the transect number: GEDGeM_2014_001, GEDGeM_2014_002....

It is possible to automate the numbering of transects if the columns "date" and "THT" are well filled as well as the column "ID" (See the formulas in the Excel file).

Starting Qgis

After having installed QGis beforehand, it is necessary to **install additional modules** that will allow certain operations to be carried out. (See the guide).

Open the shapefile and raster layers under Qgis (See the guide).

Using Qgis

Import the database under Qgis and transform it into a shapefile.

Create transects from GPS points and calculate their length.

Creation of a shapefile for CCH (creation of a shape layer, creation of an attribute table, creation of polygon corresponding to the CCH) for your geographical area).

ANNEX 4 – Guide for data analysis

17/05/2018

Data analysis

From extraction to SIG

Marine Roul
ECOCEAN INSTITUT

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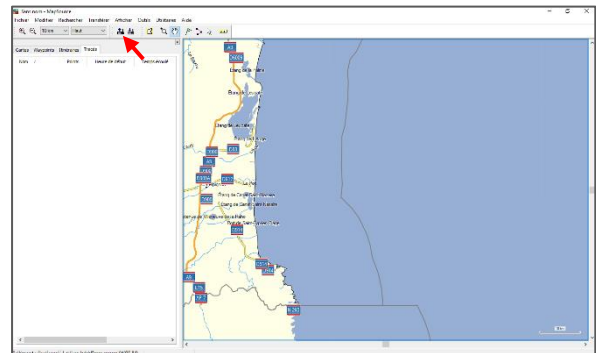
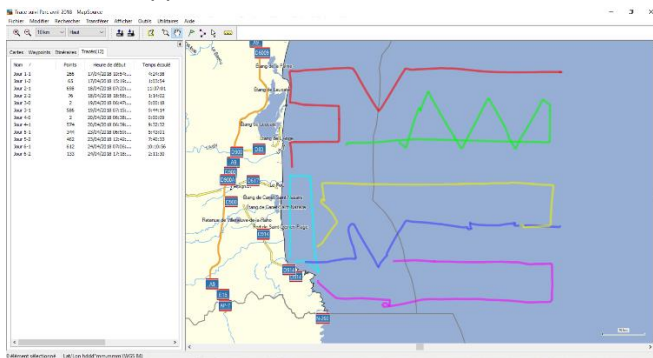
GPS data extraction

Software : MapSource

Manual :

- Start MapSource
- Connect the GPS to the computer via the USB cable.
- Start GPS
- In order to transfer the GPS data to the computer, the GPS must pick up a signal otherwise the computer does not detect it
- Click on the "Receive device" icon: if the GPS is detected, the software finds it automatically..
- Selected Waypoints and Tracks for downloaded GPS tracks then click on "Receive"

The tracks appear



To record tracks :

- « Fichier »
- « Enregistrer sous »
- Format of the record is ".gdb" which is the format of MapSource (to open later traces in the software) or ".txt" for data processing.

GPS data processing

Software : Notepad and Excel

Open the file containing the GPS track (.txt)

Header	Name	Start Time	Elapsed Time	Length	Average Speed	Link
Track	Jour 1-1	17/04/2018 10:54:46		4:24:38	43.1 km	10 kph

Header	Position	Time	Altitude	Depth	Temperature	Leg Length	Leg Time	Leg Speed	Leg Course
Trackpoint	N42 33.068 E	03.615	17/04/2018 10:54:46	-7 m					
Trackpoint	N42 33.126 E	03.644	17/04/2018 10:55:46	-1 m		116 m	0:01:00	7 kph	20° true
Trackpoint	N42 33.189 E	03.661	17/04/2018 10:56:46	0 m		119 m	0:01:00	7 kph	11° true
Trackpoint	N42 33.251 E	03.678	17/04/2018 10:57:46	0 m		117 m	0:01:00	7 kph	12° true
Trackpoint	N42 33.314 E	03.695	17/04/2018 10:58:46	-0 m		118 m	0:01:00	7 kph	11° true
Trackpoint	N42 33.377 E	03.713	17/04/2018 10:59:46	-1 m		120 m	0:01:00	7 kph	12° true
Trackpoint	N42 33.441 E	03.730	17/04/2018 11:00:46	-0 m		121 m	0:01:00	7 kph	11° true
Trackpoint	N42 33.493 E	03.744	17/04/2018 11:01:46	0 m		98 m	0:01:00	6 kph	11° true
Trackpoint	N42 33.534 E	03.756	17/04/2018 11:02:46	1 m		79 m	0:01:00	5 kph	11° true
Trackpoint	N42 33.570 E	03.766	17/04/2018 11:03:46	-0 m		69 m	0:01:00	4 kph	12° true
Trackpoint	N42 33.606 E	03.777	17/04/2018 11:04:46	-0 m		67 m	0:01:00	4 kph	13° true
Trackpoint	N42 33.640 E	03.787	17/04/2018 11:05:46	-1 m		66 m	0:01:00	4 kph	12° true
Trackpoint	N42 33.675 E	03.797	17/04/2018 11:06:46	-1 m		66 m	0:01:00	4 kph	12° true
Trackpoint	N42 33.710 E	03.808	17/04/2018 11:07:46	-1 m		67 m	0:01:00	4 kph	13° true
Trackpoint	N42 33.744 E	03.817	17/04/2018 11:08:46	-0 m		64 m	0:01:00	4 kph	11° true
Trackpoint	N42 33.788 E	03.812	17/04/2018 11:09:46	0 m		81 m	0:01:00	5 kph	355° true
Trackpoint	N42 33.867 E	03.814	17/04/2018 11:10:46	-0 m		147 m	0:01:00	9 kph	1° true
Trackpoint	N42 33.954 E	03.816	17/04/2018 11:11:46	0 m		161 m	0:01:00	10 kph	1° true
Trackpoint	N42 34.042 E	03.817	17/04/2018 11:12:46	0 m		163 m	0:01:00	10 kph	1° true
Trackpoint	N42 34.131 E	03.818	17/04/2018 11:13:46	0 m		165 m	0:01:00	10 kph	0° true
Trackpoint	N42 34.220 E	03.819	17/04/2018 11:14:46	0 m		165 m	0:01:00	10 kph	0° true
Trackpoint	N42 34.309 E	03.820	17/04/2018 11:15:46	1 m		166 m	0:01:00	10 kph	0° true
Trackpoint	N42 34.397 E	03.821	17/04/2018 11:16:46	1 m		162 m	0:01:00	10 kph	1° true
Trackpoint	N42 34.481 E	03.822	17/04/2018 11:17:46	-1 m		157 m	0:01:00	9 kph	0° true
Trackpoint	N42 34.566 E	03.823	17/04/2018 11:18:46	-1 m		157 m	0:01:00	9 kph	1° true
Trackpoint	N42 34.650 E	03.824	17/04/2018 11:19:46	-1 m		157 m	0:01:00	9 kph	1° true
Trackpoint	N42 34.736 E	03.823	17/04/2018 11:20:46	-1 m		159 m	0:01:00	10 kph	359° true
Trackpoint	N42 34.821 E	03.822	17/04/2018 11:21:46	-2 m		159 m	0:01:00	10 kph	359° true
Trackpoint	N42 34.907 E	03.822	17/04/2018 11:22:46	-2 m		158 m	0:01:00	9 kph	0° true
Trackpoint	N42 34.992 E	03.820	17/04/2018 11:23:46	-1 m		158 m	0:01:00	9 kph	359° true
Trackpoint	N42 35.077 E	03.819	17/04/2018 11:24:46	-1 m		158 m	0:01:00	9 kph	0° true
Trackpoint	N42 35.163 E	03.818	17/04/2018 11:25:46	-1 m		159 m	0:01:00	10 kph	359° true
Trackpoint	N42 35.249 E	03.816	17/04/2018 11:26:46	-1 m		161 m	0:01:00	10 kph	359° true
Trackpoint	N42 35.336 E	03.814	17/04/2018 11:27:46	-1 m		162 m	0:01:00	10 kph	359° true
Trackpoint	N42 35.423 E	03.812	17/04/2018 11:28:46	-1 m		161 m	0:01:00	10 kph	359° true

Select all (ctrl+A) and to copy (ctrl+C)

Open Excel and then paste (ctrl+V)

Header	Name	Start Time	Elapsed Time	Length	Average Speed	Link
Track	Jour 1-1	17/04/2018 10:54	04:24:38	43.1 km	10 kph	

Header	Position	Time	Altitude	Depth	Temperature	Leg Length	Leg Time	Leg Speed	Leg Course
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Trackpoint	N42 33.126 E	17/04/2018 10:55	-1 m			116 m	00:01:00	7 kph	20° true
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Trackpoint	N42 33.441 E	17/04/2018 11:00	-0 m			121 m	00:01:00	7 kph	11° true
Trackpoint	N42 33.493 E	17/04/2018 11:01	0 m			98 m	00:01:00	6 kph	11° true
Trackpoint	N42 33.534 E	17/04/2018 11:02	1 m			79 m	00:01:00	5 kph	11° true
Trackpoint	N42 33.570 E	17/04/2018 11:03	-0 m			69 m	00:01:00	4 kph	12° true
Trackpoint	N42 33.606 E	17/04/2018 11:04	-0 m			67 m	00:01:00	4 kph	13° true
Trackpoint	N42 33.640 E	17/04/2018 11:05	-1 m			66 m	00:01:00	4 kph	12° true
Trackpoint	N42 33.675 E	17/04/2018 11:06	-1 m			66 m	00:01:00	4 kph	12° true
Trackpoint	N42 33.710 E	17/04/2018 11:07	-1 m			67 m	00:01:00	4 kph	13° true
Trackpoint	N42 33.744 E	17/04/2018 11:08	-0 m			64 m	00:01:00	4 kph	11° true
Trackpoint	N42 33.788 E	17/04/2018 11:09	0 m			81 m	00:01:00	5 kph	355° true
Trackpoint	N42 33.867 E	17/04/2018 11:10	-0 m			147 m	00:01:00	9 kph	1° true
Trackpoint	N42 33.954 E	17/04/2018 11:11	0 m			161 m	00:01:00	10 kph	1° true
Trackpoint	N42 34.042 E	17/04/2018 11:12	0 m			163 m	00:01:00	10 kph	1° true
Trackpoint	N42 34.131 E	17/04/2018 11:13	0 m			165 m	00:01:00	10 kph	0° true
Trackpoint	N42 34.220 E	17/04/2018 11:14	0 m			165 m	00:01:00	10 kph	0° true

Delete empty lines and unnecessary lines: only the line containing the column headers and the lines of the GPS points. **Warning unnecessary lines are automatically created at the beginning of tracks.**

The file must be like this:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Header	Position	Time	Altitude	Depth	Temperature	Leg Length	Leg Time	Leg Speed	Leg Course							
2	Trackpoint	N42 33.068 E	17/04/2018 10:54	-7 m													
3	Trackpoint	N42 33.126 E	17/04/2018 10:55	-1 m			116 m	00:01:00	7 kph	30° true							
4	Trackpoint	N42 33.189 E	17/04/2018 10:56	0 m			119 m	00:01:00	7 kph	11° true							
5	Trackpoint	N42 33.251 E	17/04/2018 10:57	0 m			117 m	00:01:00	7 kph	12° true							
6	Trackpoint	N42 33.314 E	17/04/2018 10:58	-0 m			118 m	00:01:00	7 kph	11° true							
7	Trackpoint	N42 33.377 E	17/04/2018 10:59	-1 m			120 m	00:01:00	7 kph	12° true							
8	Trackpoint	N42 33.441 E	17/04/2018 11:00	-0 m			121 m	00:01:00	7 kph	11° true							
9	Trackpoint	N42 33.493 E	17/04/2018 11:01	0 m			98 m	00:01:00	6 kph	11° true							
10	Trackpoint	N42 33.534 E	17/04/2018 11:02	1 m			79 m	00:01:00	5 kph	11° true							
11	Trackpoint	N42 33.570 E	17/04/2018 11:03	-0 m			69 m	00:01:00	4 kph	12° true							
12	Trackpoint	N42 33.606 E	17/04/2018 11:04	-0 m			67 m	00:01:00	4 kph	13° true							
13	Trackpoint	N42 33.640 E	17/04/2018 11:05	-1 m			66 m	00:01:00	4 kph	12° true							
14	Trackpoint	N42 33.675 E	17/04/2018 11:06	-1 m			66 m	00:01:00	4 kph	12° true							
15	Trackpoint	N42 33.710 E	17/04/2018 11:07	-1 m			67 m	00:01:00	4 kph	13° true							
16	Trackpoint	N42 33.744 E	17/04/2018 11:08	-0 m			64 m	00:01:00	4 kph	11° true							
17	Trackpoint	N42 33.788 E	17/04/2018 11:09	0 m			81 m	00:01:00	5 kph	35° true							
18	Trackpoint	N42 33.887 E	17/04/2018 11:10	-0 m			147 m	00:01:00	9 kph	1° true							
19	Trackpoint	N42 33.954 E	17/04/2018 11:11	0 m			161 m	00:01:00	10 kph	1° true							
20	Trackpoint	N42 34.042 E	17/04/2018 11:12	0 m			163 m	00:01:00	10 kph	1° true							
21	Trackpoint	N42 34.131 E	17/04/2018 11:13	0 m			165 m	00:01:00	10 kph	0° true							
22	Trackpoint	N42 34.220 E	17/04/2018 11:14	0 m			165 m	00:01:00	10 kph	0° true							
23	Trackpoint	N42 34.309 E	17/04/2018 11:15	1 m			166 m	00:01:00	10 kph	0° true							
24	Trackpoint	N42 34.397 E	17/04/2018 11:16	1 m			162 m	00:01:00	10 kph	1° true							
25	Trackpoint	N42 34.481 E	17/04/2018 11:17	-1 m			157 m	00:01:00	9 kph	0° true							
26	Trackpoint	N42 34.566 E	17/04/2018 11:18	-1 m			157 m	00:01:00	9 kph	1° true							
27	Trackpoint	N42 34.650 E	17/04/2018 11:19	-1 m			157 m	00:01:00	9 kph	1° true							
28	Trackpoint	N42 34.736 E	17/04/2018 11:20	-1 m			159 m	00:01:00	10 kph	359° true							
29	Trackpoint	N42 34.821 E	17/04/2018 11:21	-2 m			159 m	00:01:00	10 kph	359° true							
30	Trackpoint	N42 34.907 E	17/04/2018 11:23	-3 m			158 m	00:01:00	9 kph	35° true							

Column headings :

- Header: corresponds to the GPS recording mode
- Position: GPS coordinates
- Time: date and time
- Altitude: theoretical not always very reliable ...
- Depth and Temperature: always empty unless a probe is connected
- Leg Length: length between the GPS point and the previous GPS point in meter
- Leg Time: time between 2 points
- Leg Speed: the speed between 2 points in kilometers per hour (kph)
- Leg Course: the cap between 2 points

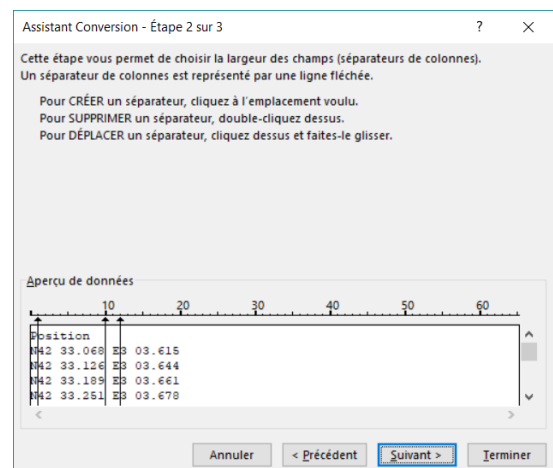
In this state the data cannot be used in a database, it is necessary to:

- **Format the position and convert it to decimal degrees to be recognized by QGIS,**
- **Separate the date and time**
- **Remove the text from the "Leg" columns**

Geographical position

Separation of latitude and longitude:

- Insert 4 new columns after column "B"
- Select column "B"
- In the "Data" tab, click on the "Convert" icon
- Select the "Fixed width" option then click on next
- We must now position the separators so as to have 4 columns:
 - In the 1st, there will be the N
 - In the 2nd, the latitude
 - In the 3rd, the E
 - And in the 4th the longitude
- Then click on Finish

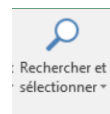


The result is the following:

Header	Position	Time	Altitude	Depth	Temperature	Leg Length	Leg Time	Leg Speed	Leg Course
Trackpoint	42 33.068 E 303.615	17/04/2018 10:54 -7 m				116 m	00:01:00 7 kph	20° true	
Trackpoint	42 33.126 E 303.644	17/04/2018 10:55 -1 m				119 m	00:01:00 7 kph	11° true	
Trackpoint	42 33.189 E 303.661	17/04/2018 10:56 0 m				117 m	00:01:00 7 kph	12° true	
Trackpoint	42 33.251 E 303.678	17/04/2018 10:57 0 m				118 m	00:01:00 7 kph	11° true	
Trackpoint	42 33.314 E 303.695	17/04/2018 10:58 -0 m				120 m	00:01:00 7 kph	12° true	
Trackpoint	42 33.377 E 303.713	17/04/2018 10:59 -1 m				121 m	00:01:00 7 kph	11° true	
Trackpoint	42 33.441 E 303.730	17/04/2018 11:00 -0 m				98 m	00:01:00 6 kph	11° true	
Trackpoint	42 33.493 E 303.744	17/04/2018 11:01 0 m				79 m	00:01:00 5 kph	11° true	
Trackpoint	42 33.534 E 303.756	17/04/2018 11:02 1 m				69 m	00:01:00 4 kph	12° true	
Trackpoint	42 33.570 E 303.766	17/04/2018 11:03 -0 m				67 m	00:01:00 4 kph	13° true	
Trackpoint	42 33.606 E 303.777	17/04/2018 11:04 -0 m				66 m	00:01:00 4 kph	12° true	
Trackpoint	42 33.640 E 303.787	17/04/2018 11:05 -1 m				66 m	00:01:00 4 kph	12° true	
Trackpoint	42 33.675 E 303.797	17/04/2018 11:06 -1 m				67 m	00:01:00 4 kph	13° true	
Trackpoint	42 33.710 E 303.808	17/04/2018 11:07 -1 m				64 m	00:01:00 4 kph	11° true	
Trackpoint	42 33.744 E 303.817	17/04/2018 11:08 -0 m				81 m	00:01:00 5 kph	355° true	
Trackpoint	42 33.788 E 303.812	17/04/2018 11:09 0 m				147 m	00:01:00 9 kph	1° true	
Trackpoint	42 33.867 E 303.814	17/04/2018 11:10 -0 m				161 m	00:01:00 10 kph	1° true	
Trackpoint	42 33.954 E 303.816	17/04/2018 11:11 0 m				163 m	00:01:00 10 kph	1° true	
Trackpoint	42 34.042 E 303.817	17/04/2018 11:12 0 m				165 m	00:01:00 10 kph	0° true	
Trackpoint	42 34.131 E 303.818	17/04/2018 11:13 0 m				165 m	00:01:00 10 kph	0° true	
Trackpoint	42 34.220 E 303.815	17/04/2018 11:14 0 m				166 m	00:01:00 10 kph	0° true	
Trackpoint	42 34.309 E 303.820	17/04/2018 11:15 1 m				162 m	00:01:00 10 kph	1° true	
Trackpoint	42 34.397 E 303.821	17/04/2018 11:16 1 m				157 m	00:01:00 9 kph	0° true	
Trackpoint	42 34.481 E 303.822	17/04/2018 11:17 -1 m				157 m	00:01:00 9 kph	1° true	
Trackpoint	42 34.566 E 303.823	17/04/2018 11:18 -1 m				157 m	00:01:00 9 kph	1° true	
Trackpoint	42 34.650 E 303.824	17/04/2018 11:19 -1 m				159 m	00:01:00 10 kph	359° true	
Trackpoint	42 34.736 E 303.823	17/04/2018 11:20 -1 m							

We must now delete the "spaces" present in the coordinates:

- Select columns "C" and "D"
- In the "Home" tab, click on the "Search and select" icon
- Click on "Replace": in "Search" put in "space" and don't put anything in "Replace by"
- Click on "Replace all", result obtained:



Header	Position	Time	Altitude	Depth	Temperature	Leg Length	Leg Time	Leg Speed	Leg Course
Trackpoint	4233.068 E 303.615	17/04/2018 10:54 -7 m				116 m	00:01:00 7 kph	20° true	
Trackpoint	4233.126 E 303.644	17/04/2018 10:55 -1 m				119 m	00:01:00 7 kph	11° true	
Trackpoint	4233.189 E 303.661	17/04/2018 10:56 0 m				117 m	00:01:00 7 kph	12° true	
Trackpoint	4233.251 E 303.678	17/04/2018 10:57 0 m				118 m	00:01:00 7 kph	11° true	
Trackpoint	4233.314 E 303.695	17/04/2018 10:58 -0 m				120 m	00:01:00 7 kph	12° true	
Trackpoint	4233.377 E 303.713	17/04/2018 10:59 -1 m				121 m	00:01:00 7 kph	11° true	
Trackpoint	4233.441 E 303.730	17/04/2018 11:00 -0 m				98 m	00:01:00 6 kph	11° true	
Trackpoint	4233.493 E 303.744	17/04/2018 11:01 0 m				79 m	00:01:00 5 kph	11° true	
Trackpoint	4233.534 E 303.756	17/04/2018 11:02 1 m				69 m	00:01:00 4 kph	12° true	
Trackpoint	4233.57 E 303.766	17/04/2018 11:03 -0 m				67 m	00:01:00 4 kph	13° true	
Trackpoint	4233.606 E 303.777	17/04/2018 11:04 -0 m				66 m	00:01:00 4 kph	12° true	
Trackpoint	4233.64 E 303.787	17/04/2018 11:05 -1 m				66 m	00:01:00 4 kph	12° true	
Trackpoint	4233.675 E 303.797	17/04/2018 11:06 -1 m				67 m	00:01:00 4 kph	13° true	
Trackpoint	4233.71 E 303.808	17/04/2018 11:07 -1 m				64 m	00:01:00 4 kph	11° true	
Trackpoint	4233.744 E 303.817	17/04/2018 11:08 -0 m				81 m	00:01:00 5 kph	355° true	
Trackpoint	4233.788 E 303.812	17/04/2018 11:09 0 m				147 m	00:01:00 9 kph	1° true	
Trackpoint	4233.867 E 303.814	17/04/2018 11:10 -0 m				161 m	00:01:00 10 kph	1° true	
Trackpoint	4233.954 E 303.816	17/04/2018 11:11 0 m				163 m	00:01:00 10 kph	1° true	
Trackpoint	4234.042 E 303.817	17/04/2018 11:12 0 m				165 m	00:01:00 10 kph	0° true	
Trackpoint	4234.131 E 303.818	17/04/2018 11:13 0 m				165 m	00:01:00 10 kph	0° true	

Conversion to decimal degrees:

- Insert two columns one after C and the other after E
- Open latitude and longitude conversion Excel file
- Copy / Paste latitudes in the conversion file and stretch the formula to calculate all the points.
- Select the values in the decimal degrees column and copy
- Paste into the working file, 2 things:
 - Be careful not to shift positions
 - Make a special "Value" collage otherwise Excel will paste the formula.
- Do the same for the longitude

Result:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
	Header	Position						Time	Altitude	Depth	Temperature	Leg Length	Leg Time	Leg Speed	Leg Course		
2	Trackpoint	N	4233.068	42.55113333	E	303.615	3.0602500	17/04/2018 10:54 -7 m									
3	Trackpoint	N	4233.126	42.55210000	E	303.644	3.0607333	17/04/2018 10:55 -1 m				116 m	00:01:00 7 kph	20° true			
4	Trackpoint	N	4233.189	42.55315000	E	303.661	3.0610167	17/04/2018 10:56 0 m				119 m	00:01:00 7 kph	11° true			
5	Trackpoint	N	4233.251	42.55418333	E	303.678	3.0613000	17/04/2018 10:57 0 m				117 m	00:01:00 7 kph	12° true			
6	Trackpoint	N	4233.314	42.55523333	E	303.695	3.0615833	17/04/2018 10:58 -0 m				118 m	00:01:00 7 kph	11° true			
7	Trackpoint	N	4233.377	42.55628333	E	303.713	3.0618833	17/04/2018 10:59 -1 m				120 m	00:01:00 7 kph	12° true			
8	Trackpoint	N	4233.441	42.55735000	E	303.73	3.0621667	17/04/2018 11:00 -0 m				121 m	00:01:00 7 kph	11° true			
9	Trackpoint	N	4233.493	42.55821667	E	303.744	3.0624000	17/04/2018 11:01 0 m				98 m	00:01:00 6 kph	11° true			
10	Trackpoint	N	4233.534	42.55890000	E	303.756	3.0626000	17/04/2018 11:02 1 m				79 m	00:01:00 5 kph	11° true			
11	Trackpoint	N	4233.57	42.55950000	E	303.766	3.0627667	17/04/2018 11:03 -0 m				69 m	00:01:00 4 kph	12° true			
12	Trackpoint	N	4233.606	42.56010000	E	303.777	3.0629500	17/04/2018 11:04 -0 m				67 m	00:01:00 4 kph	13° true			
13	Trackpoint	N	4233.64	42.56066667	E	303.787	3.0631167	17/04/2018 11:05 -1 m				66 m	00:01:00 4 kph	12° true			
14	Trackpoint	N	4233.675	42.56125000	E	303.797	3.0632833	17/04/2018 11:06 -1 m				66 m	00:01:00 4 kph	12° true			
15	Trackpoint	N	4233.71	42.56183333	E	303.808	3.0634667	17/04/2018 11:07 -1 m				67 m	00:01:00 4 kph	13° true			
16	Trackpoint	N	4233.744	42.56240000	E	303.817	3.0636167	17/04/2018 11:08 -0 m				64 m	00:01:00 4 kph	11° true			
17	Trackpoint	N	4233.788	42.56313333	E	303.812	3.0635333	17/04/2018 11:09 0 m				81 m	00:01:00 5 kph	355° true			
18	Trackpoint	N	4233.867	42.56445000	E	303.814	3.0635667	17/04/2018 11:10 -0 m				147 m	00:01:00 9 kph	1° true			
19	Trackpoint	N	4233.954	42.56590000	F	303.816	3.0636000	17/04/2018 11:11 0 m				161 m	00:01:00 10 kph	1° true			

Date and Time

Separation of date and time:

- Insert one column after H
- Select column "H"
- In the "Data" tab, click on the "Convert" icon
- Select the "Delimiter" option then click on next
- For separator, tick space and then click on finish

Leg Speed and Leg Course

Delete text characters to keep only the numbers:

- Select the columns
- In the "Home" tab, click on Search and replace, then replace
- For speed put "kph" in search and nothing in replace and click on replace all
- For cap put "true" in search and nothing in replace and click on replace all

The information is now transferable into the database.

Database

The organization depends on its use, some element remains nevertheless obligatory and certain more practical to be found.

Metadata:

- Mission: name of the mission
- Organization: Forwarder / Executor of the Mission
- Author: Referents on the mission
- Name of the boat

GPS data:

- Speed
- Cap
- Latitude
- Longitude
- Date
- Time

Transect data:

- Transect ID: final transect code for GIS
- Transect number: transect number
- THT: To indicate if on the point we are in transect effort
- Comment: to specify elements

Meteorological data :

- Wind force
- Wind direction
- Force of the sea
- Sky
- Visibility

Other columns can be added according to the information collected during the mission.

Note: Qgis doesn't read characters with accents, so do a search and replace them with the same letter without accents and **don't put semicolon in the base.**

- Save the database in .csv format (separator: semicolon).
- Start Qgis, open a new project
- To treat the file under Qgis, open the .csv file, with the command "Add a delimited text layer".



Starting Qgis

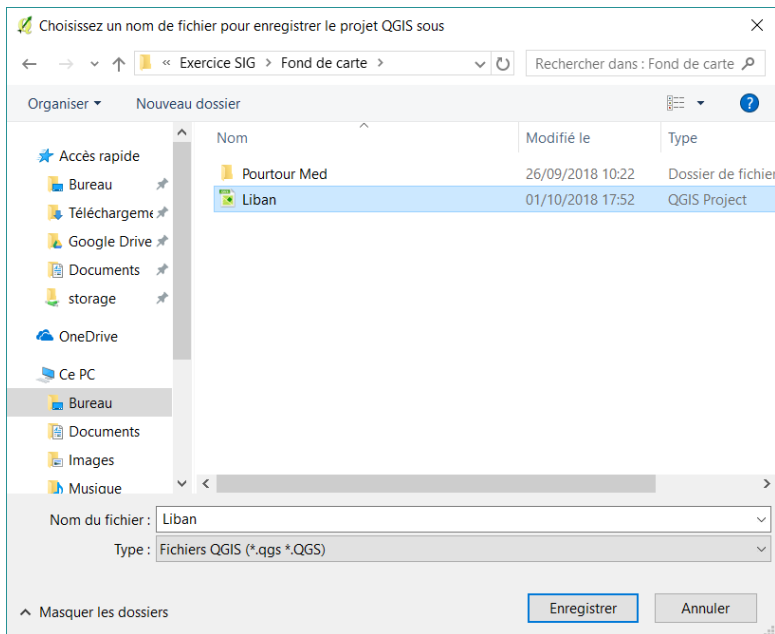
Creating a project

Start Qgis

Start a new project by clicking on the icon « New »



To save the project (which will contain all the layers of the exercise) click on the "File" menu, "save as", give it a name and click on save.



Installing modules / expansion

To do this click on the "Extension" menu and install / Manage extensions

Then you have to type the name (if you know it) or a keyword to find the extension and click on install.

Here is a non exhaustive list of extension and their function:

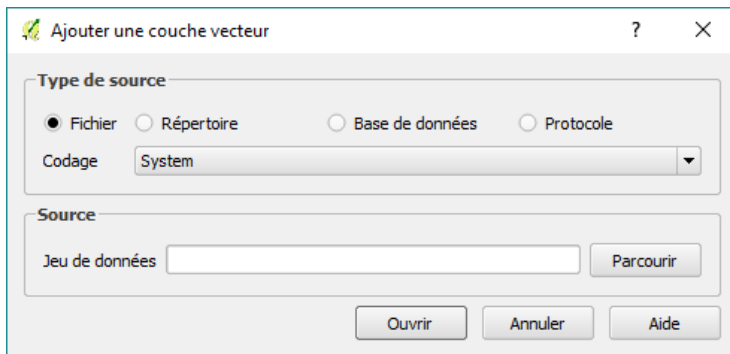
- **Point2One** : Transform points online or polygon (**NECESSARY FOR EXERCISE**)
- **Statist** : Calculate and display statistics for a field
- **GroupStat** : Statistics and analysis for vector layer data
- **Vérificateur de topologie** : Lets you find the topology errors present in a vector layer
- **Outils GPS** : Tools to load and import GPS data (only works with certain GPS)
- **OpenLayers Plugin** : Allows you to display Googlemap, Bing Maps, OpenStreetMap background maps ...
- **Layers Combinaisons** : Allows you to save an image of the layers, it is especially used if several cards must be layout at the same time.
- **Digitizing Tools** : different tools useful during digitizing sessions

Open a shapefile

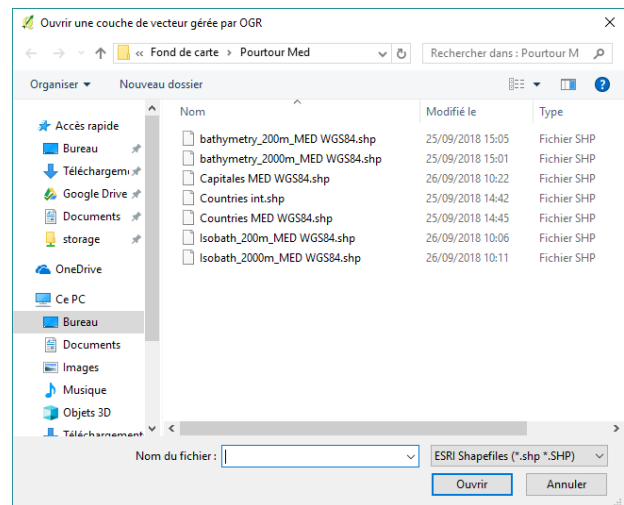
To open a shapefile (.shp, .tab) click on the button



This window opens, leave default check file and system encoding. Click on Browse



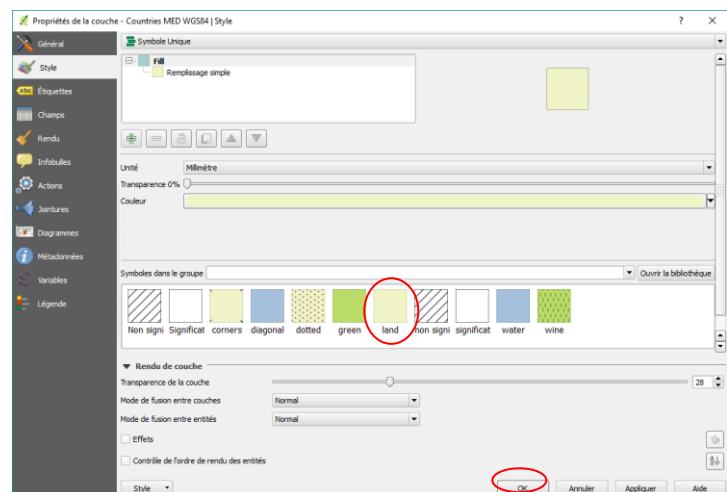
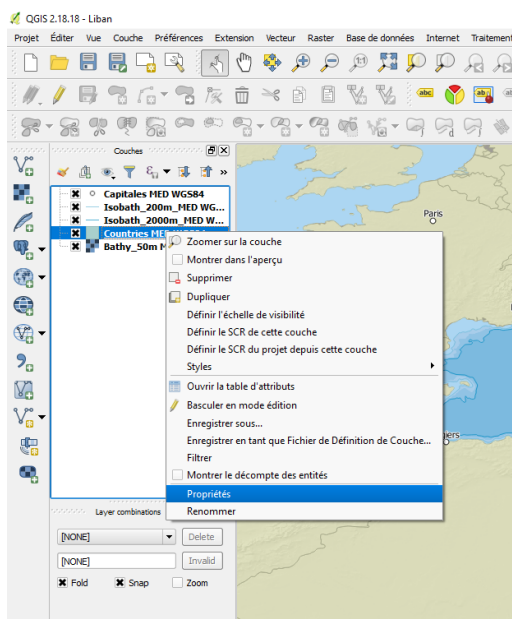
By default Qgis recognizes files in .shp, selected the layer (s) you want to open and click on open (2x).



Change the style / rendering of the layer :

Once the layers are loaded, they appear in the "layers" insert to modify the rendering of a layer right click on the layer and then on property then in the style tab.

Styles are already pre-download in qgis for the countries layer select the style "land" and click on "OK"



Open a raster file

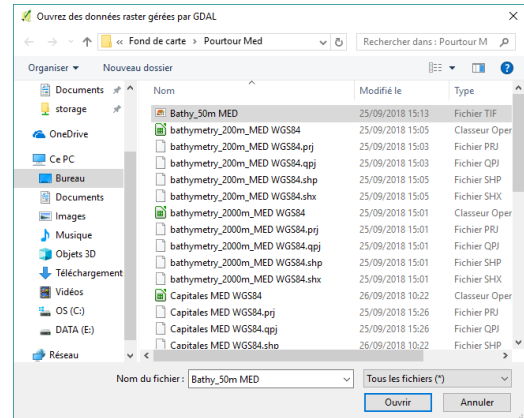
To open a raster file (.tif) click on the button



This window opens, select the file in .tif then click on open.

In message appears which precises that by default the SCR of the layer was defined by the WGS84. This means that Qgis did not find geo-referencing related to the tif file.

You have to check that the image is in the right place.



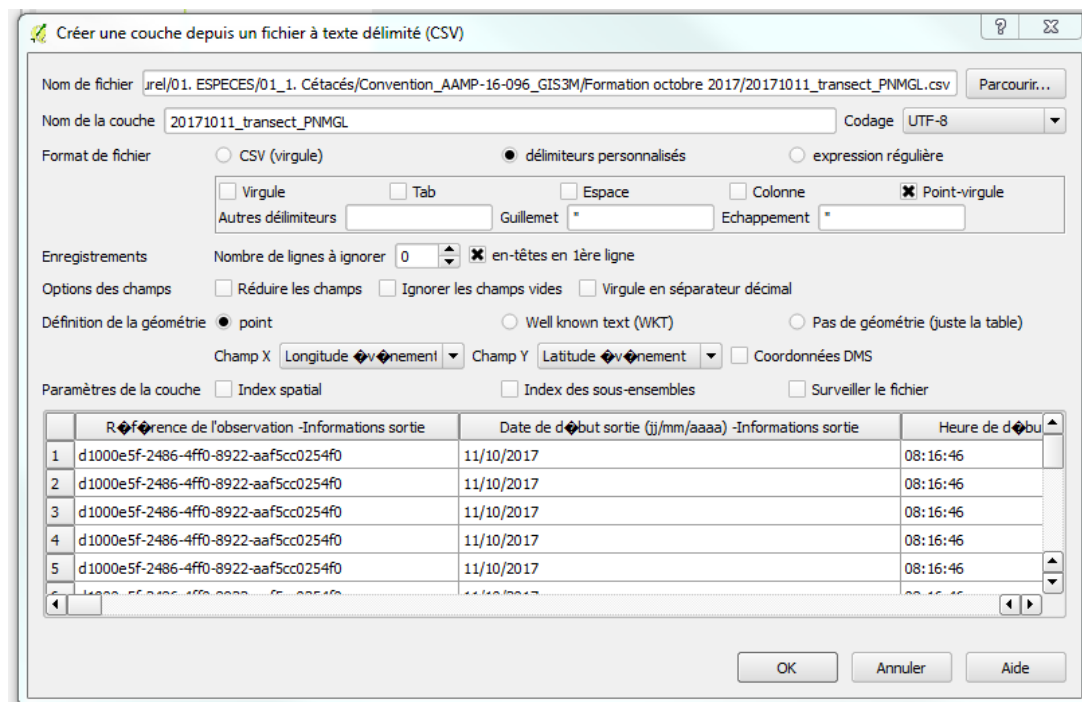
Switch from Excel to Qgis

Import the data under Qgis

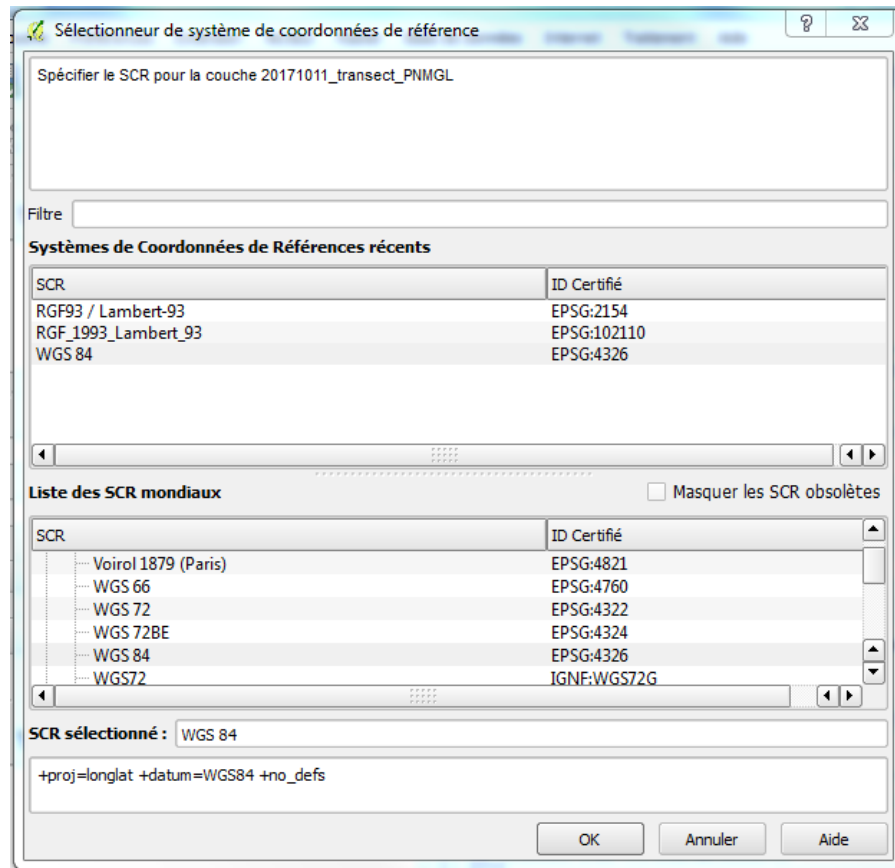
➤ For open file .csv, click on the button



- **File format:** choose "custom delimiters" and "semicolon".
- **Records:** Nbrs of lines to ignore 0 and check headers in 1st line.
- **Field options:** everything must be unchecked
- **Definition of geometry:** tick point, field X put the longitude and Y fields the latitude
- **Click OK**

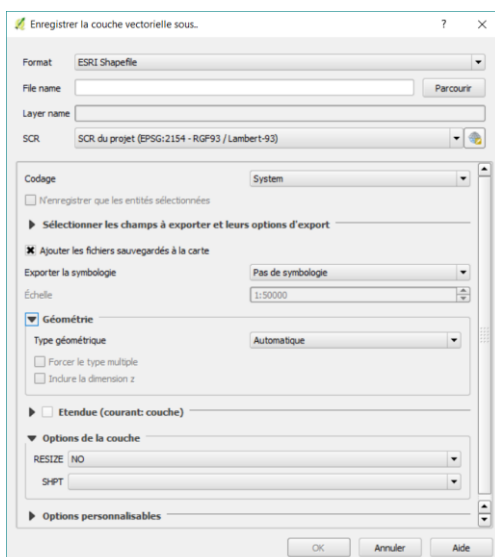
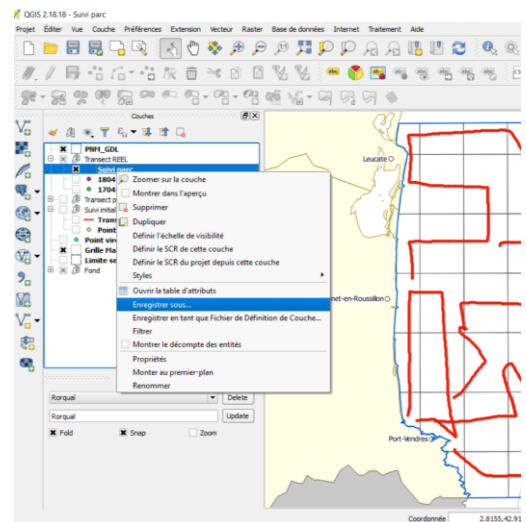


➤ Select the reference coordinate system: WGS84 / EPSG: 4326 and click OK




➤ Save the layer in shp format (this allows you to make changes to the layer directly from Qgis):

- Right click on the layer and save as
- Give it a new name
- For the SCR choose a reference in metric for example:
 - In France (RGF93, EPSG: 2154)
 - In Europ (ETRS89 / EPSG :3035)
 - In Lebanon (UTM36 / EPSG :32636)
- Check the box: Add files to map and click OK

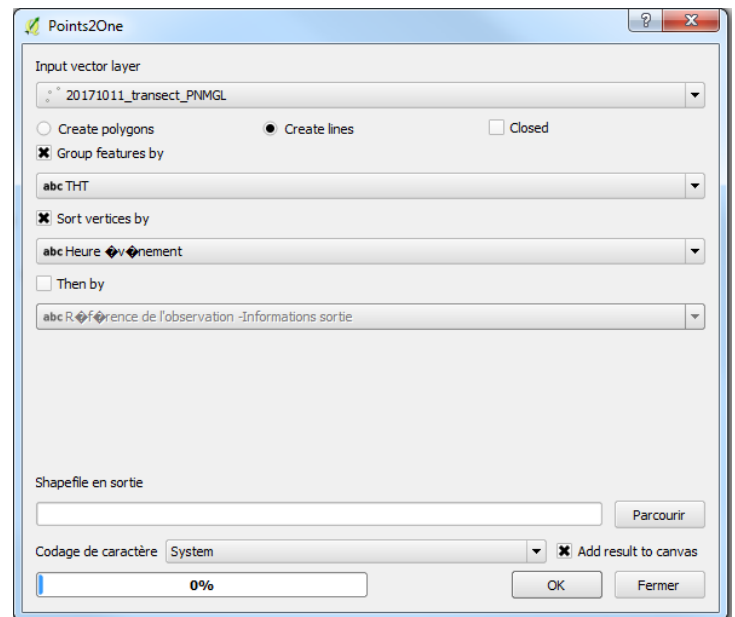


Points to lines

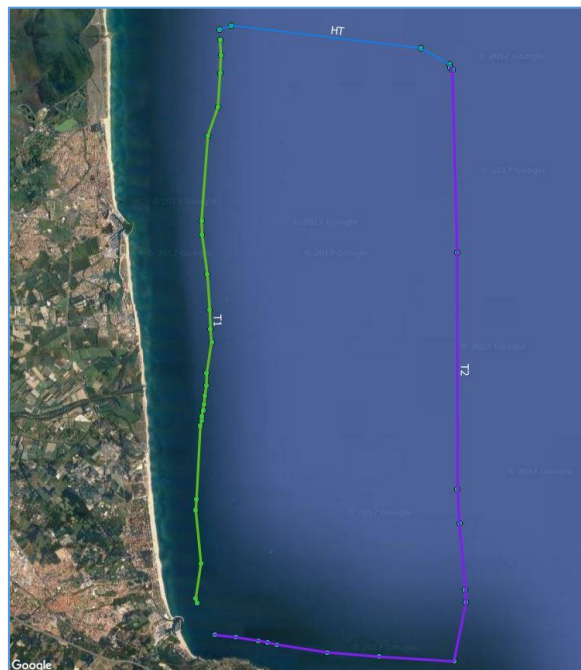
Transects creations

To connect the points and visualize the transects, use the extension « Points2One ». 

- Click on the icon « P² »
- Select shp layer with GPS point
- Choose "create lines"
- Group features by "THT" / "ID-transect"
- Choose a name and location for the output .shp, for example
20171011_transect_ligne_PNMGL
- Check "Add results to canvas »



Once formatted, the resulting layer appears as follows:

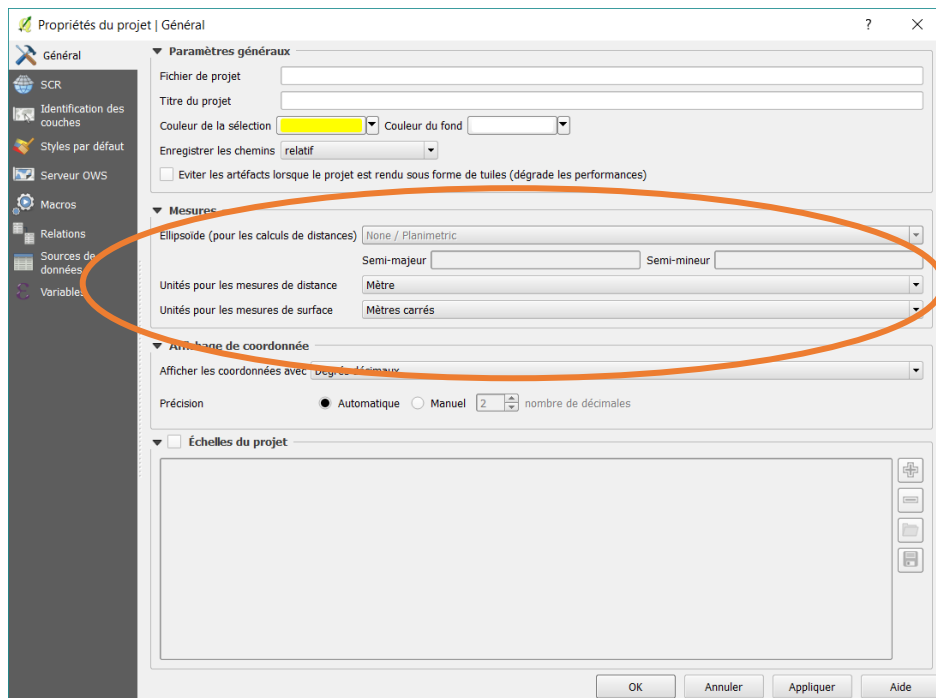


Calculating the length of the transects

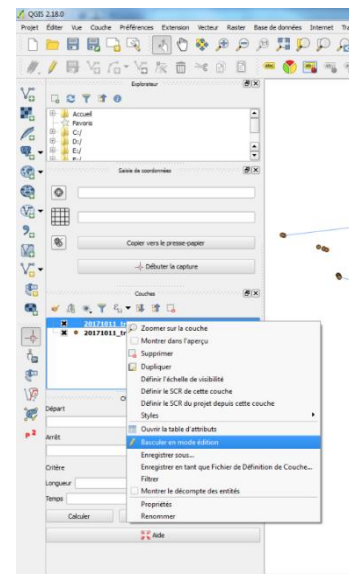
To calculate the length of transects, you must either:

- The layer has a projected SCR (that is to say that the units are not degrees but meters / miles / feet..., example: for the meters in Lambert 93)
- The project is configured in units projected (**But it will give approximate results to use when last resorts**) for that go into the "Project" menu then click on the property of the project. In the general tab, section "measurements" check that the units of measurement are not degrees. Then click on « ok »

For the exercise choose the meters



- Select the transects layer
- Switch to edit mode by clicking on the pencil icon
- Then right-click on the layer, to open the attribute table.



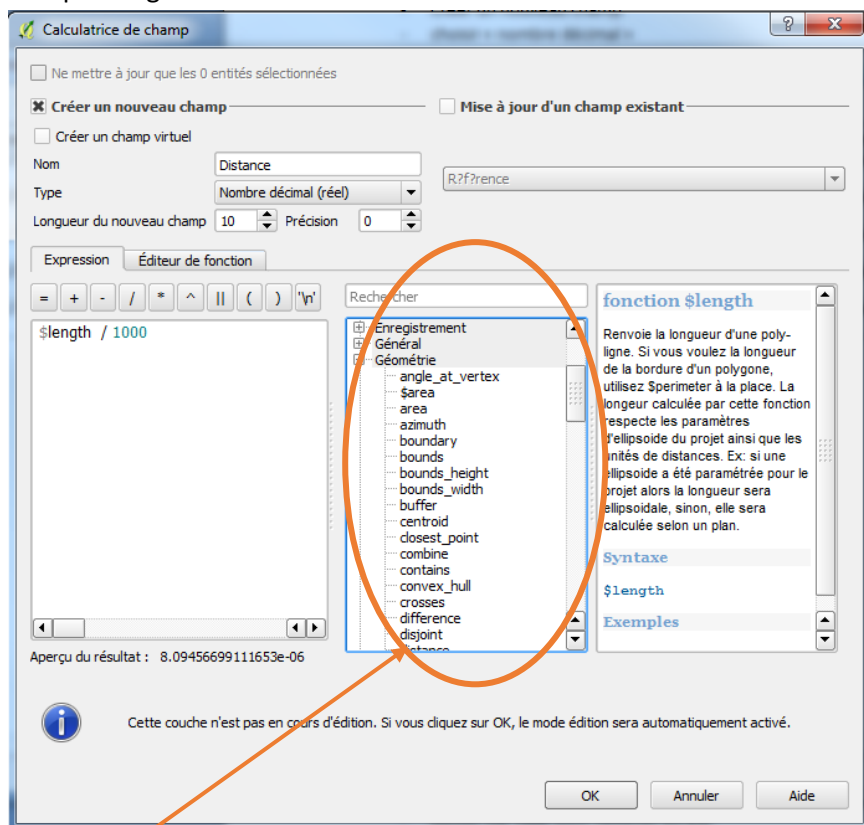
20171011_transect_ligne_PNMGL : Total entités: 5, filtrées: 5, sélectionnées: 0

	R?f?rence	Date de d?	Heure de d	Date de fi	Heure de f	Cr??e par	Cr??e pa_1	Cr??e pa_2	Chef de mi	Chef de _1	Ch
1	d1000e5f-2486-...	11/10/2017	08:16:46	11/10/2017	16:52:33	alexandra.gigou...	golfe du Lion	Parc naturel marin	alexandra.gigou...	golfe du Lion	Parc na
2	d1000e5f-2486-...	11/10/2017	08:16:46	11/10/2017	16:52:33	alexandra.gigou...	golfe du Lion	Parc naturel marin	alexandra.gigou...	golfe du Lion	Parc na
3	d1000e5f-2486-...	11/10/2017	08:16:46	11/10/2017	16:52:33	alexandra.gigou...	golfe du Lion	Parc naturel marin	alexandra.gigou...	golfe du Lion	Parc na
4	d1000e5f-2486-...	11/10/2017	08:16:46	11/10/2017	16:52:33	alexandra.gigou...	golfe du Lion	Parc naturel marin	alexandra.gigou...	golfe du Lion	Parc na
5	d1000e5f-2486-...	11/10/2017	08:16:46	11/10/2017	16:52:33	alexandra.gigou...	golfe du Lion	Parc naturel marin	alexandra.gigou...	golfe du Lion	Parc na

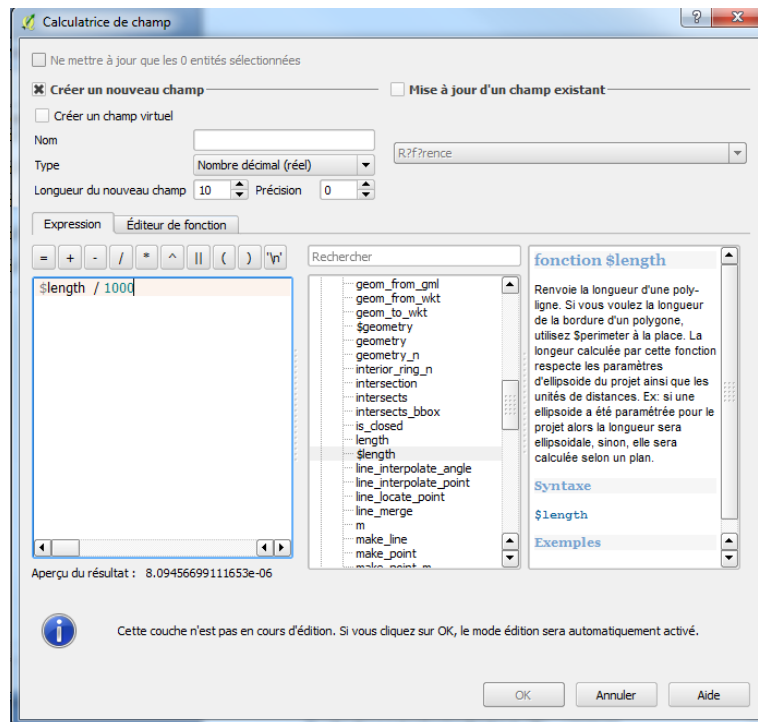
- Open the field calculator (calculatrice de champ).



- In the field calculator :
- "Create a new field" and name it, for example "Distance_km";
 - Choose "decimal number"; to have digits after the decimal place 1, 2 or 3 in the corresponding boxe



- In "geometry", choose "\$length" by double-clicking → the formula appears in the window on the left.
- Divide by 1000 to get kilometers.



➤ The "Distance" column with values per transect appears in the attribute table.

20171011_transect_ligne_PNMGL : Total entités: 4, filtrées: 4, sélectionnées: 0

abc R?france


	Vitesse de	Structur_1	Pour les s	Route de v	Etiez-vous	Nombre de	ise de	pho	t de	ima	Jui	Aut	nal	est	ntifi	bre	bre	ick	Distance
1	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	0.901083075643...
2	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	8.132437851628...
3	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	2.708697375240...
4	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	92.16494938536...


Ne montrer que les entités sélectionnées

General tools of Qgis

Select and deselect entities

The QGIS toolbar provides several feature selection tools. Select the layer in which you want to select an element.

To select one or more entities, click  and choose your tool.

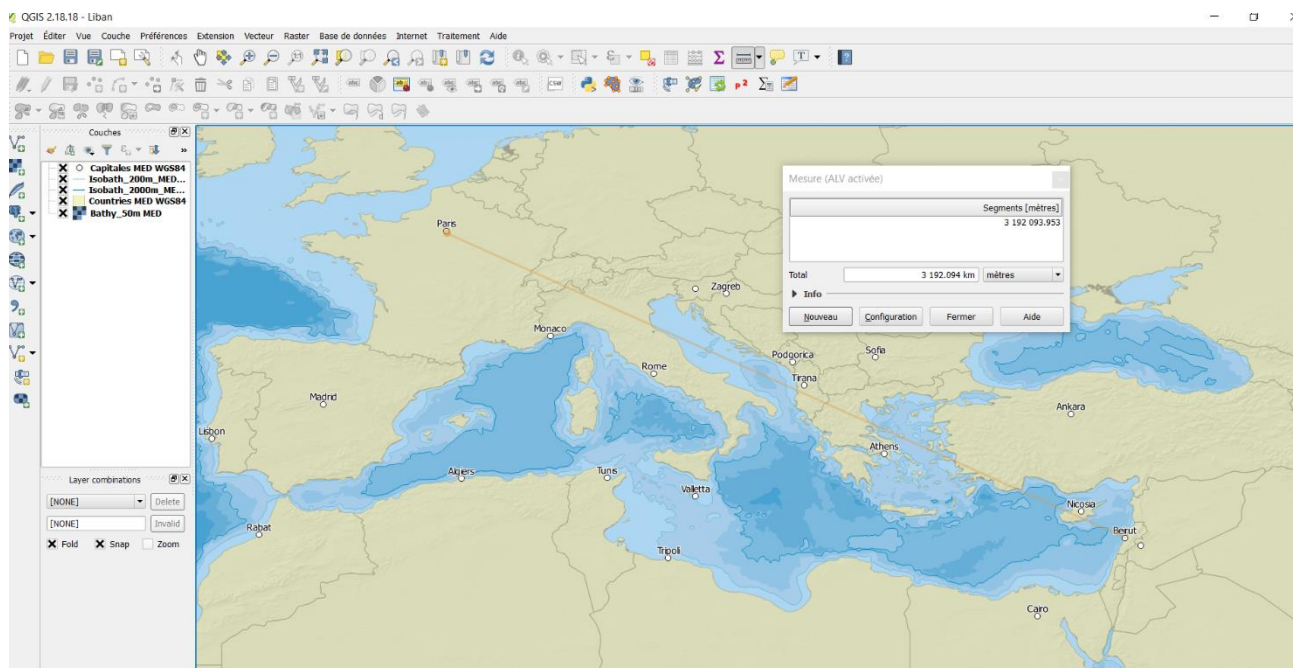
To deselect all entities, click .

Measure with the rule tool

Click on the icon  and select the tool you want to use.

The tool allows you to place points on the map. The length of each segment is displayed in the measurement window as well as the total cumulative length.

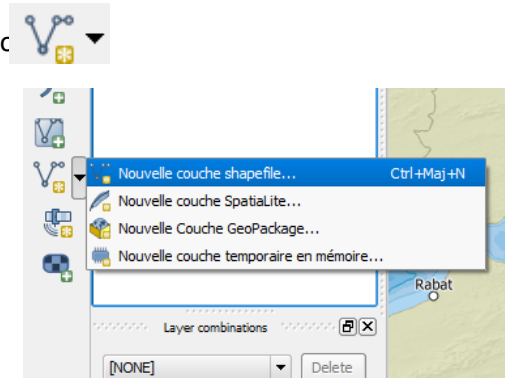
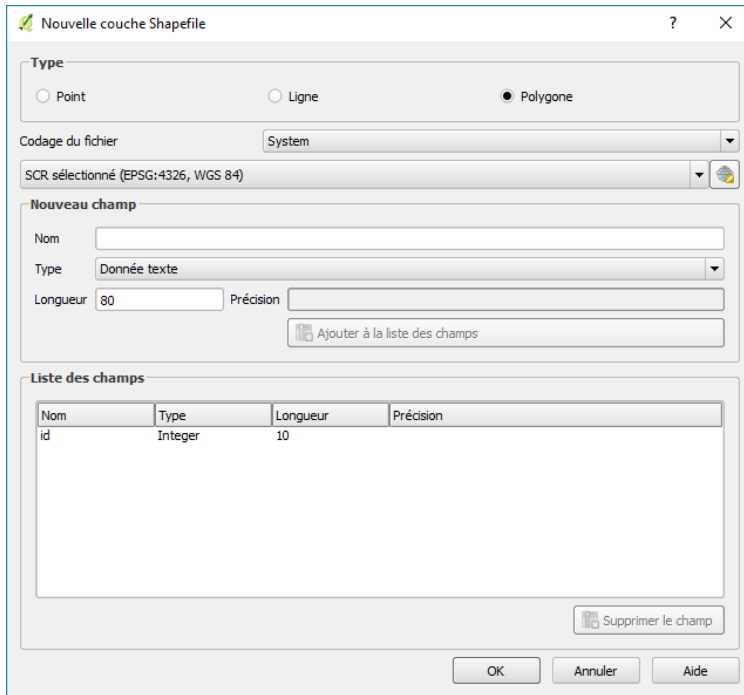
To stop the measurements, right click. Note that you can interactively change the units of measures in the Measures dialog box. They replace the Preferred Action Units of the options.



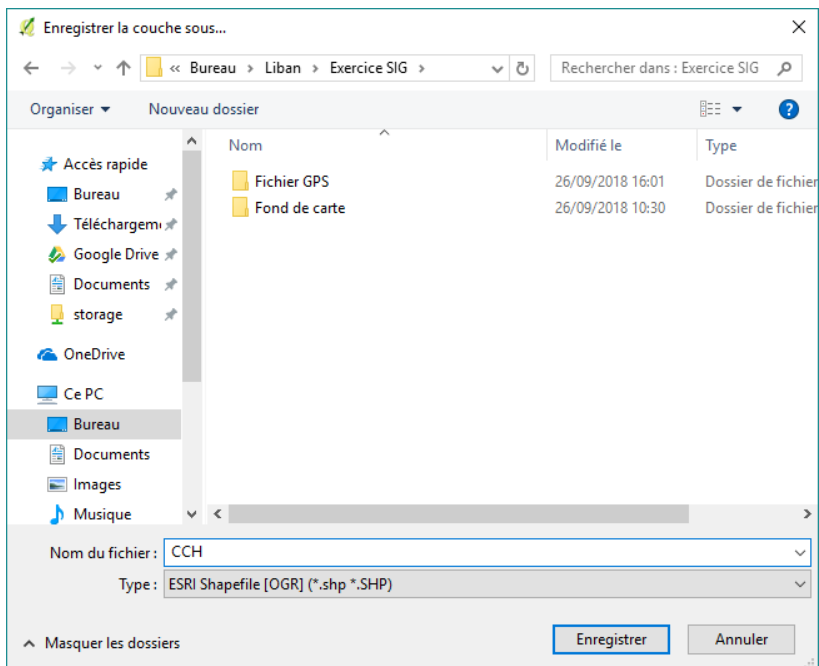
Create a layer (CCH)

in order to create a new layer, please click on the following button

- Select « New Shapefile Layer »
- For type, select: Polygon
- Keep all the other settings / and « Ok ».



Then, give a name to the layer (CHH_nameofcountry), BE CAREFUL: note where you register it!!!!!!



Create an attribute table

In order to modify the attribute table, you shall be in « toggle editing » (click on the following button)



Open the attribute table of the CCH layer

To create a new field, click on the button « New Field »



The name of the first field of the attribute table is « Threat »,

The type is text

The length is 80 characters

You will create 8 fields with the following characteristics:

Name	Type	Length	Description
Threat	Text	80	Direct threat: By-catch, Ship strike, Harassment, Impulsive noise, Depredation, etc.
Species	Text	80	Initial of the relevant species (Tt, Sc, Bp, Pm,...)
Area	Text	80	Name of the relevant area
Intensity	Text	80	Intensity of the threat: Important, medium, low, potential
Season	Text	80	Period of the year
Ref	Text	80	Relevant expert for the CCH
Country	Text	80	Country
Comments	Text	200	Details on the threat, for example for bycatch you can precise the relevant fishing gears

Create polygones

1.1 Define the option of snapping

Before being able to edit the node/vertex it is important to select the snapping option (tolerance and searching distance) at values that will ensure editing polygon in an optimal way.

Snapping distance tolerance : is the distance used by QGIS to look for node/vertex that are the nearest of the location of the node/vertex you just create or you are moving, so they can be connected.

IT IS HELPFUL TO OVERLAPP NODE/VERTEX AT EXACTLY THE SAME LOCATION

To do that : menu « Settings » → « snapping option »

In “layer selection » select « Advanced »


- In the first column, select the layer CCH and Countries
- Concerning the Mode, keep the default option « to vertex and segment »
- For column Tolerance, put 10
- For unit, put « pixels » for both layers
- To avoid intersections, tick the box of the layer Countries (so your node will not be linked to the land and you will avoid creating a CCH on land)

	Couche	Mode	Tolérance	Unités	Éviter les inter
<input type="checkbox"/>	Bycatch final	sur un sommet ou un segment	0.00000	unités de carte	<input type="checkbox"/>
<input checked="" type="checkbox"/>	CCH_France	sur un sommet ou un segment	10.00000	pixels	<input type="checkbox"/>
<input type="checkbox"/>	Capitales MED WGS84	sur un sommet ou un segment	0.00000	unités de carte	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Countries MED WGS84	sur un sommet ou un segment	10.00000	unités de carte	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Depredation	sur un sommet ou un segment	0.00000	unités de carte	<input type="checkbox"/>
<input type="checkbox"/>	Harassment	sur un sommet ou un segment	0.00000	unités de carte	<input type="checkbox"/>
<input type="checkbox"/>	Isobath_2000m_MED WGS84	sur un sommet ou un segment	0.00000	unités de carte	<input type="checkbox"/>
<input type="checkbox"/>	Isobath_200m_MED WGS84	sur un sommet ou un segment	0.00000	unités de carte	<input type="checkbox"/>
<input type="checkbox"/>	Ship Strikes	sur un sommet ou un segment	0.00000	unités de carte	<input type="checkbox"/>

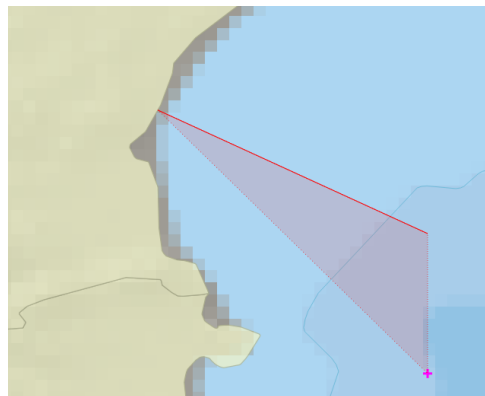
☐ Activer l'édition topologique
 ☒ Activer l'accrochage sur les intersections
 OK Annuler Appliquer

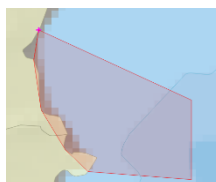
Add entities

Remember : to create a polygon within the layer CCH, this layer should be in editing mode.

Clic on the icon « add a polygon » 

You will see a cross on the map, it is your « mouse ». Clic left to begin to place the first node/vertex of your polygon, and continue to draw the entire polygon.

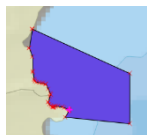




If your CCH is near the coast, you may not draw this side precisely as with the option « avoid intersection » the polygon will be cut by the layer of Countries and you will get a clean frontier.

To finalise the polygon, click right (wherever you want).

This window appears : fill the columns with the informations needed for each CCH and click on OK.



CCH_France - Attributs d'entités

id	01
Threat	Harassment
Species	Tt
Area	Gulf of Lion
Intensity	medium
Season	summer
Ref	Léa David
Country	France
Comment	NULL

OK Annuler

One polygon means one species and one threat

If you have got several species or threats over the same area (polygon), you can duplicate this shape, as :

- Select the polygon
- Open the attribute table
- Click on the icons copy/paste



After that you just need to modify the information in the table so that in your “pasted” polygon you get the new information on the species, threats, etc.

CCH_France :: Total entités: 2, filtrées: 2, sélectionnées: 1

123 id = Tout mettre à jour Mettre à jour la sélection

	id	Threat	Species	Area	Intensity	Season	Ref	Country	Comment
1	2	Harassment	Sc	Gulf of Lion	medium	summer	Léa David	France	
2	1	Harassment	Tt	Gulf of Lion	medium	summer	Léa David	France	

Montrer toutes les entités

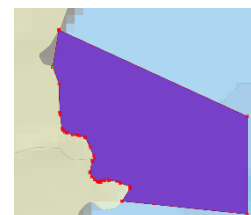
In order to save the modifications of the CCH layer, click on the “save” icon.

Modify a node/vertex : node tool

If you want to change the polygon shape, you can modify it (your layer should be in editing mode) using the node tool.



Click on the « node tool » icon, and select your entity (polygon) you want to modify. Small red box will appear at each node/vertex, indicating that it is well selected.






















- **Selecting vertices:** You can select vertices by clicking on them one at a time, by clicking on an edge to select the vertices at both ends, or by clicking and dragging a rectangle around some vertices. When a vertex is selected, its color changes to blue. To add more vertices to the current selection, hold down the Ctrl key while clicking. Hold down Ctrl when clicking to toggle the selection state of vertices (vertices that are currently unselected will be selected as usual, but also vertices that are already selected will become unselected).
- **Adding vertices:** To add a vertex, simply double click near an edge and a new vertex will appear on the edge near to the cursor. Note that the vertex will appear on the edge, not at the cursor position; therefore, it should be moved if necessary.
- **Deleting vertices:** Select the vertices and click the Delete key. Deleting all the vertices of a feature generates, if compatible with the datasource, a geometryless feature. Note that this doesn't delete the complete feature, just the geometry part; To delete a complete feature use the Delete Selected tool.
- **Moving vertices:** Select all the vertices you want to move, click on a selected vertex or edge and drag in the direction you wish to move. All the selected vertices will move together. If snapping is enabled, the whole selection can jump to the nearest vertex or line.

List of the tools of the editing mode

The main tools are :

Icon	Purpose	Icon	Purpose
	Current edits		Toggle editing
	Add Feature: Capture Point		Add Feature: Capture Line
	Add Feature: Capture Polygon		Move Feature
	Add Circular String		Add Circular String By Radius
	Node Tool		Delete Selected
	Cut Features		Copy Features
	Paste Features		Save layer edits

The tools for advanced numerisation are the following :

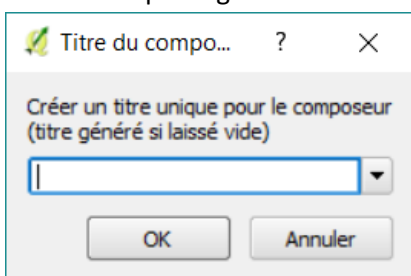
Icon	Purpose	Icon	Purpose
	Enable Advanced Digitizing Tools		Enable Tracing
	Undo		Redo
	Rotate Feature(s)		Simplify Feature
	Add Ring		Add Part
	Fill Ring		
	Delete Ring		Delete Part
	Offset Curve		Reshape Features
	Split Parts		Split Features
	Merge Attributes of Selected Features		Merge Selected Features
	Rotate Point Symbols		Offset Point Symbols

Create a map

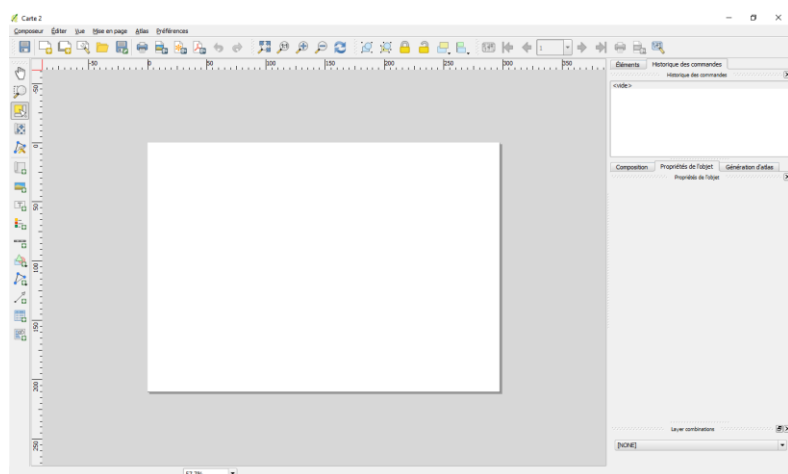
To create a map with Qgis, please open « New Print Composer » : you can click on the following button, or click on the menu « Project »





































A window opens: give the name of your map and click on “OK”



















→ this window will appear:



Explications of all functionalities:

Icon	Purpose	Icon	Purpose
	Save Project		New Composer
	Duplicate Composer		Composer Manager
	Load from template		Save as template
	Print or export as PostScript		Export to an image format
	Export print composition to SVG		Export as PDF
	Revert last change		Restore last change
	Zoom to full extent		Zoom to 100%
	Zoom in		Zoom out
	Refresh View		
	Pan		Zoom to specific region
	Select/Move item in print composition		Move content within an item
	Add new map from QGIS map canvas		Add image to print composition
	Add label to print composition		Add new legend to print composition
	Add scale bar to print composition		Add basic shape to print composition
	Add arrow to print composition		Add attribute table to print composition
	Add an HTML frame		Add nodes shape to print composition
	Edit a nodes shape		
	Group items of print composition		Ungroup items of print composition

	Lock Selected Items		Unlock All items
	Raise selected items		Lower selected items
	Move selected items to top		Move selected items to bottom
	Align selected items left		Align selected items right
	Align selected items center		Align selected items center vertical
	Align selected items top		Align selected items bottom
	Preview Atlas		First Feature
	Previous Feature		Next Feature

Elements of a map:

- The map is created with the button “add new map”
- A title is created with the button “add new label”
- A north arrow is created with the button “add image”
- A legend is created with the button “add new legend”

- A scale is created with the button “add new scalebar”

