



Tsunami Exercise NEAMWave17

**A Tsunami Warning and Communication Exercise for the
North-eastern Atlantic, the Mediterranean, and Connected
Seas Region**

31 October – 3 November 2017

**CO-CHAIRS OF TASK TEAM ON TSUNAMI EXERCISE:
CEREN ÖZER SOZDINLER¹, ELEONORA PANUNZI²**

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Information Workshop on North-eastern Atlantic, the Mediterranean and connected seas Tsunami Warning System (NEAMTWS) and NEAMWave17 Tsunami Exercise , Madrid • 25-26 September 2017

What is NEAMWave?

Regular tsunami exercise in **NEAM** (North-eastern Atlantic, the Mediterranean and Connected Seas) **region** between:

Message Providers (Candidate/Tsunami Service Providers) and

Message Receivers (Tsunami Warning Focal Points (TWFPs), Tsunami National Contacts (TNC), Civil Protection Agencies (CPAs) and Emergency Response Coordination Center (ERCC))

.....within the coordination of UNESCO/IOC Intergovernmental Coordination Group (ICG) in three phases as: **Phase A**, **Phase B** and **Phase C**.

CENALT (France), NOA (Greece), IPMA (Portugal) and KOERI (Turkey)
had disseminated exercise messages as the Message Providers in NEAMWave12 and NEAMWave14.



4 different earthquake and tsunami scenarios

PHASE A

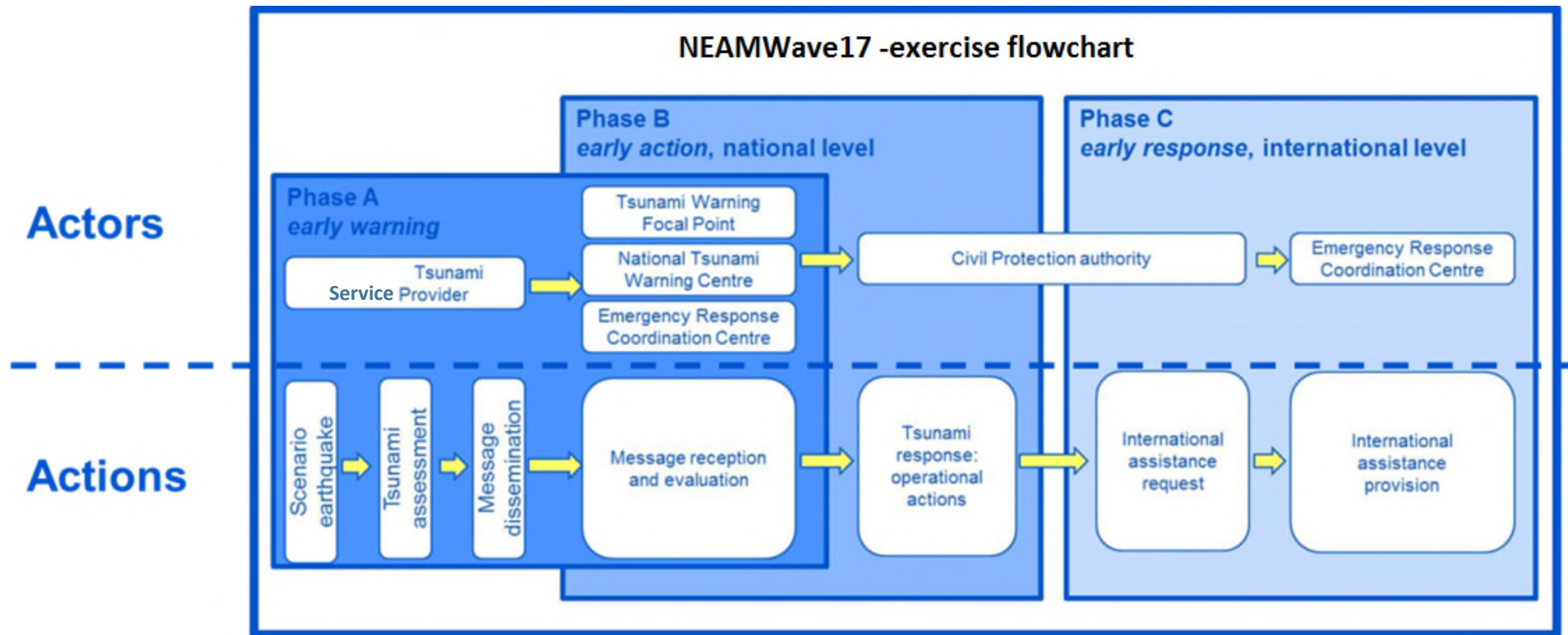
C/TSPs To maintain a high state of operational readiness and to test their communicational channels among message recipients in NEAM region

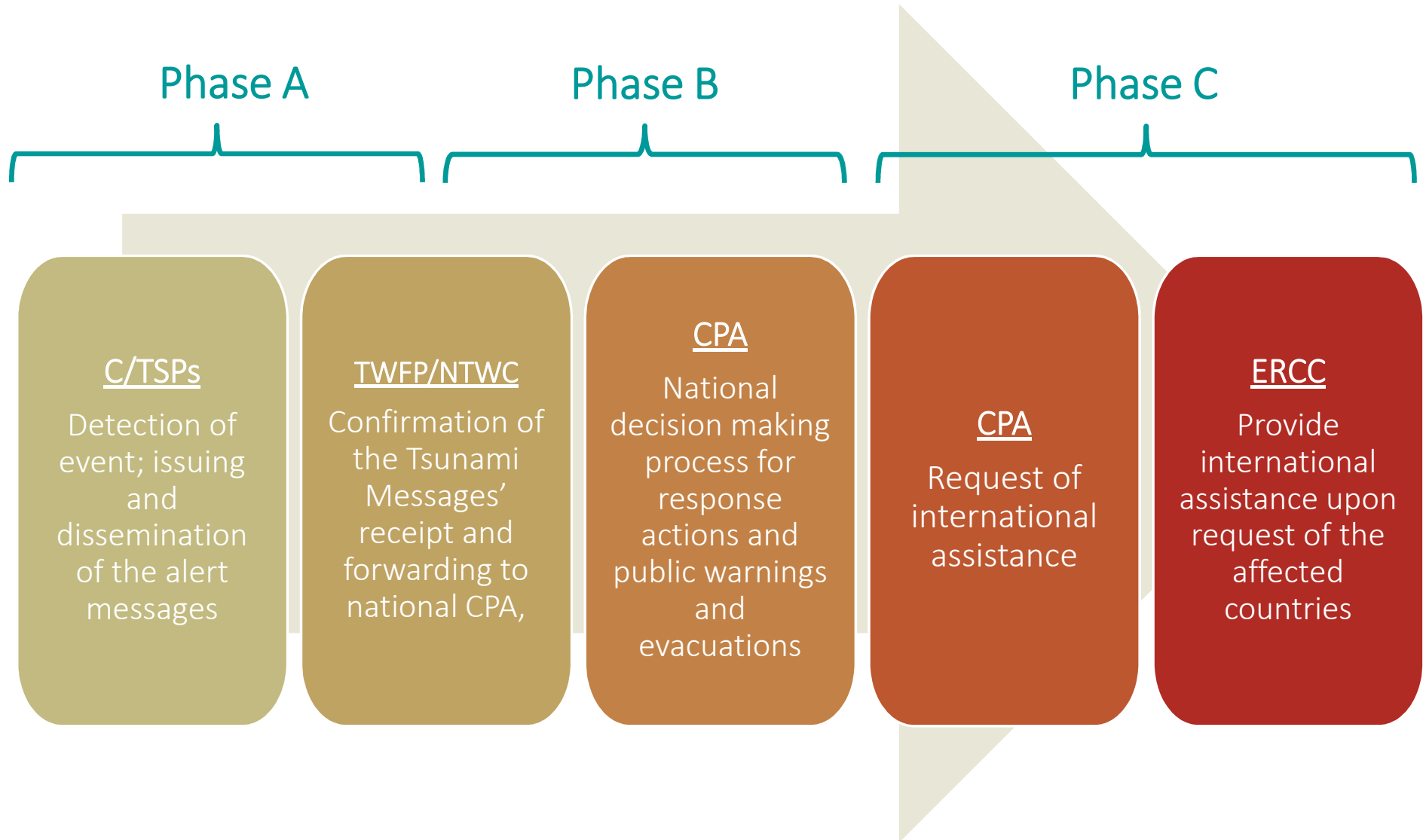
PHASE B

National Tsunami Warning Centres (NTWCs) and Civil Protection Agencies (CPAs)to practice their emergency response procedures in order to ensure that (i) vital communication links work seamlessly, and that (ii) agencies and response personnel know the roles that they will need to play during a real event.

PHASE C

Emergency Response Coordination Center (ERCC) to practice their emergency response procedures in order to provide international assistance upon request.



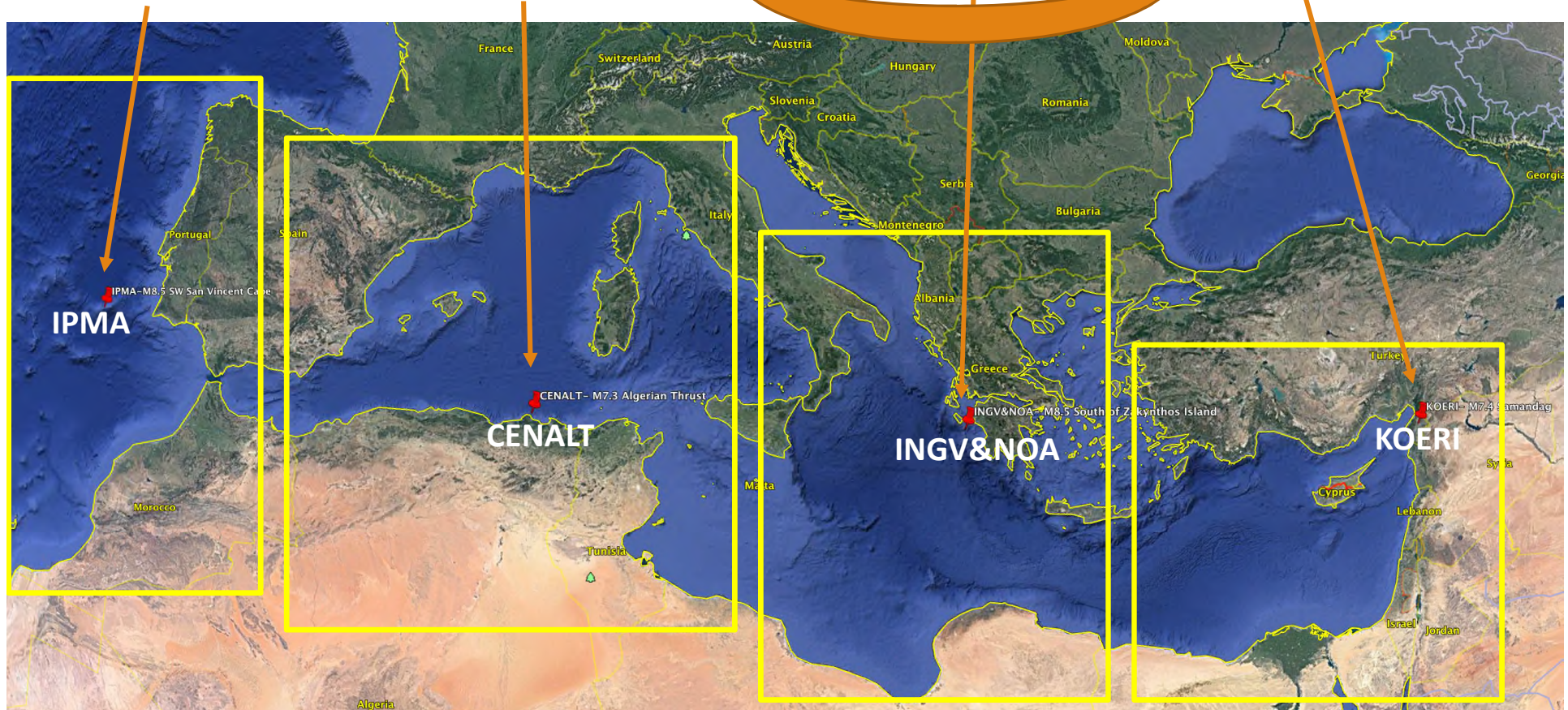


NE Atlantic

Western Mediterranean

Central Mediterranean

Eastern Mediterranean



4 Earthquake Scenarios ----- 5 Message Providers

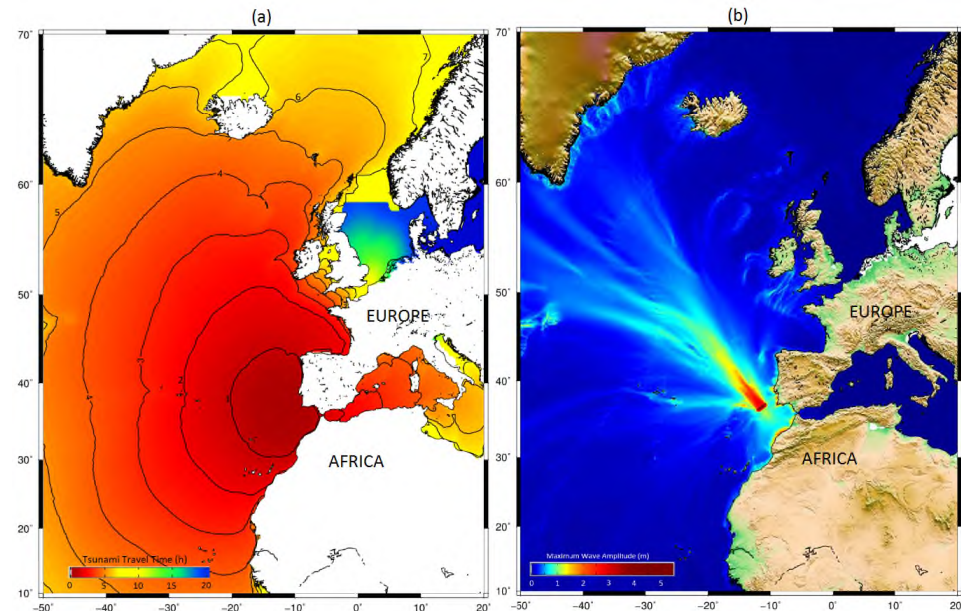
North-eastern Atlantic Scenario

SW of San Vincent Cape



Origin Time of the exercise	09:00:00 UTC, 3-November-2017
Earthquake Scenario parameters	
Location (Epicenter)	Lat 36.66°N, Lon 11.33°W
Magnitude	8.5 Mw
Depth (Hypocenter)	27 km

9 messages from T0 to T0+7hours



IPMA SCENARIO

... TSUNAMI WATCH ...

THIS ALERT APPLIES TO BELGIUM ... CAPE VERDE ... DENMARK ... FRANCE ... GERMANY
... ICELAND ... IRELAND ... MAURITANIA ... MOROCCO ... NETHERLANDS ... NORWAY ...
PORTUGAL ... SPAIN ... SWEDEN ... UNITED KINGDOM

... TSUNAMI INFORMATION ...

THIS INFORMATION APPLIES TO RUSSIAN FEDERATION ... POLAND ... LITHUANIA ... ESTONIA
... FINLAND ... ALGERIA ... ALBANIA ... BULGARIA ... CROATIA ... CYPRUS ... EGYPT
... GEORGIA ... GREECE ... ISRAEL ... ITALY ... LEBANON ... LIBYA ... MALTA ...
MONACO ... ROMANIA ... SLOVENIA ... SWEDEN ... SYRIA ... TUNISIA ... TURKEY ...
UKRAINE

PORTUGAL	- PONTA DELGADA	37.67N	25.65W	1050Z	03 NOV	2017	WATCH
PORTUGAL	- ANGRA	38.62N	27.00W	1059Z	03 NOV	2017	WATCH
PORTUGAL	- FLORES	39.43N	31.05W	1138Z	03 NOV	2017	WATCH
MOROCCO	- RABAT	34.04N	6.84W	1003Z	03 NOV	2017	WATCH
MOROCCO	- TANGER	35.79N	5.80W	1014Z	03 NOV	2017	WATCH
SPAIN	- HUELVA	37.16N	6.97W	1018Z	03 NOV	2017	WATCH
SPAIN	- ALGECIRAS	36.13N	5.40W	1019Z	03 NOV	2017	WATCH
SPAIN	- CADIZ	36.53N	6.29W	1019Z	03 NOV	2017	WATCH
SPAIN	- CEUTA	35.89N	5.32W	1029Z	03 NOV	2017	WATCH
SPAIN	- VIGO	42.24N	8.81W	1036Z	03 NOV	2017	WATCH
SPAIN	- CORUNHA	43.43N	8.40W	1043Z	03 NOV	2017	WATCH
SPAIN	- MALAGA	36.66N	4.40W	1043Z	03 NOV	2017	WATCH
SPAIN	- ALMERIA	36.84N	2.47W	1110Z	03 NOV	2017	WATCH
SPAIN	- LAS PALMAS	28.15N	15.33W	1028Z	03 NOV	2017	WATCH
SPAIN	- SANTA CRUZ	28.47N	16.19W	1031Z	03 NOV	2017	WATCH
UNITED KINGDOM-	GIBRALTAR	36.13N	5.35W	1019Z	03 NOV	2017	WATCH
UNITED KINGDOM-	OFF-SHORE SITE2	47.00N	14.00W	1030Z	03 NOV	2017	WATCH
UNITED KINGDOM-	OFF-SHORE SITE1	47.00N	10.00W	1034Z	03 NOV	2017	WATCH
UNITED KINGDOM-	ST MARY'S	49.92N	6.32W	1257Z	03 NOV	2017	WATCH
UNITED KINGDOM-	OFF-SHORE SITE3	60.00N	12.00W	1300Z	03 NOV	2017	WATCH
UNITED KINGDOM-	NEWLYN	50.10N	5.55W	1336Z	03 NOV	2017	WATCH
UNITED KINGDOM-	OFF-SHORE SITE4	62.00N	4.00W	1404Z	03 NOV	2017	WATCH
UNITED KINGDOM-	LERWICK	60.15N	1.13W	1538Z	03 NOV	2017	WATCH

Message #4

WENT40 LPMG 031100
TSUNAMI EXERCISE MESSAGE NUMBER 004
NEAM IPMA CANDIDATE TSUNAMI WATCH PROVIDER
ISSUED AT 110Z 03 NOV 2017

... TSUNAMI WATCH ONGOING ...
THIS ALERT APPLIES TO BELGIUM ... CAPE VERDE ... DENMARK ... FRANCE ... GERMANY
... ICELAND ... IRELAND ... MAURITANIA ... MOROCCO ... NETHERLANDS ... NORWAY ...
PORTUGAL ... SPAIN ... SWEDEN ... UNITED KINGDOM

THIS MESSAGE IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY
NATIONAL AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE
DECISIONS REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY
ACTIONS TO BE TAKEN IN RESPONSE

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS
ORIGIN TIME - 0900Z 03 NOV 2017
COORDINATES - 36.66 NORTH 11.33 WEST
DEPTH - 27 KM
LOCATION - AZORES-CAPE ST. VINCENT RIDGE
MAGNITUDE - 8.5

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY
GAUGE LOCATION LAT LON TIME AMPL PER

PORTUGAL - CASCAIS 38.69N 9.42W 0930Z 03 NOV 2017 2.25M 14.00MIN
PORTUGAL - SAGRES 37.01N 8.93W 0945Z 03 NOV 2017 2.20M 13.00MIN
PORTUGAL - LAGOS 37.10N 8.67W 0950Z 03 NOV 2017 1.70M 20.00MIN
PORTUGAL - PORTO SANTO 39.51N 8.80W 0950Z 03 NOV 2017 0.38M 6.00MIN
SPAIN - HUELVA 37.13N 6.83W 1010Z 03 NOV 2017 1.05M 14.00MIN
SPAIN - TENERIFE 38.69N 9.42W 1015Z 03 NOV 2017 0.20M 10.00MIN
PORTUGAL - SINES 37.95N 8.89W 1020Z 03 NOV 2017 2.45M 12.00MIN
PORTUGAL - ARRIFANA 38.96N 9.28W 1020Z 03 NOV 2017 2.20M 15.00MIN
UNITED KINGDOM - GIBRALTAR 38.69N 9.42W 1020Z 03 NOV 2017 0.17M 11.00MIN
PORTUGAL - SETUBAL 38.49N 8.93W 1030Z 03 NOV 2017 1.95M 23.00MIN
PORTUGAL - SANTA MARIA 36.95N 25.15W 1045Z 03 NOV 2017 0.46M 7.00MIN
PORTUGAL - ALBUFEIRA 37.08N 8.26W 1048Z 03 NOV 2017 1.45M 19.00MIN
MOROCCO - CASABLANCA 33.62N 7.59W 1055Z 03 NOV 2017 2.35M 14.00MIN

IPMA SCENARIO

Message #7

WENT40 LPMG 031400
 TSUNAMI EXERCISE MESSAGE NUMBER 007
 NEAM IPMA CANDIDATE TSUNAMI WATCH PROVIDER
 ISSUED AT 1400Z 03 NOV 2017

... TSUNAMI WATCH ONGOING ...
 THIS ALERT APPLIES TO BELGIUM ... CAPE VERDE ... DENMARK ... FRANCE ...
 GERMANY ... ICELAND ... IRELAND ... MAURITANIA ... MOROCCO ... NETHERLANDS
 ... NORWAY ... PORTUGAL ... SPAIN ... SWEDEN ... UNITED KINGDOM

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AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS
 ORIGIN TIME - 0900Z 03 NOV 2017
 COORDINATES - 36.66 NORTH 11.33 WEST
 DEPTH - 27 KM
 LOCATION - AZORES-CAPE ST. VINCENT RIDGE
 MAGNITUDE - 8.5

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY
 GAUGE LOCATION LAT LON TIME AMPL PER

LOCATION	LAT	LN	TIME	AMPL	PER
PORTUGAL - CASCAIS	38.69N	9.42W	0930Z 03 NOV 2017	2.25M	14.00MIN
PORTUGAL - SAGRES	37.01N	8.93W	0945Z 03 NOV 2017	2.20M	13.00MIN
PORTUGAL - LAGOS	37.10N	8.67W	0950Z 03 NOV 2017	1.70M	20.00MIN
SPAIN - HUELVA	37.13N	6.83W	1010Z 03 NOV 2017	1.05M	14.00MIN
PORTUGAL - SINES	37.95N	8.89W	1020Z 03 NOV 2017	2.45M	12.00MIN
PORTUGAL - SANTA MARIA	36.95N	25.15W	1045Z 03 NOV 2017	0.46M	7.00MIN
PORTUGAL - ALBUFEIRA	37.08N	8.26W	1048Z 03 NOV 2017	1.45M	19.00MIN
MOROCCO - CASABLANCA	33.62N	7.59W	1055Z 03 NOV 2017	2.35M	14.00MIN
PORTUGAL - ARRIFANA	37.01N	8.93W	1200Z 03 NOV 2017	2.60M	15.00MIN
PORTUGAL - SETUBAL	38.49N	8.93W	1230Z 03 NOV 2017	2.00M	20.00MIN
UNITED KINGDOM - GIBRALTAR	39.51N	8.80W	1305Z 03 NOV 2017	0.19M	12.00MIN
PORTUGAL - PORTO SANTO	39.51N	8.80W	1310Z 03 NOV 2017	0.40M	6.00MIN
CABO VERDE - PALMEIRA	38.69N	9.42W	1340Z 03 NOV 2017	0.34M	11.00MIN
SPAIN - TENERIFE	37.13N	6.83W	1345Z 03 NOV 2017	0.24M	11.00MIN
IRELAND - BALLYGLASS PIER	54.25N	9.89W	1350Z 03 NOV 2017	0.12M	21.00MIN

PHASE C scenario!

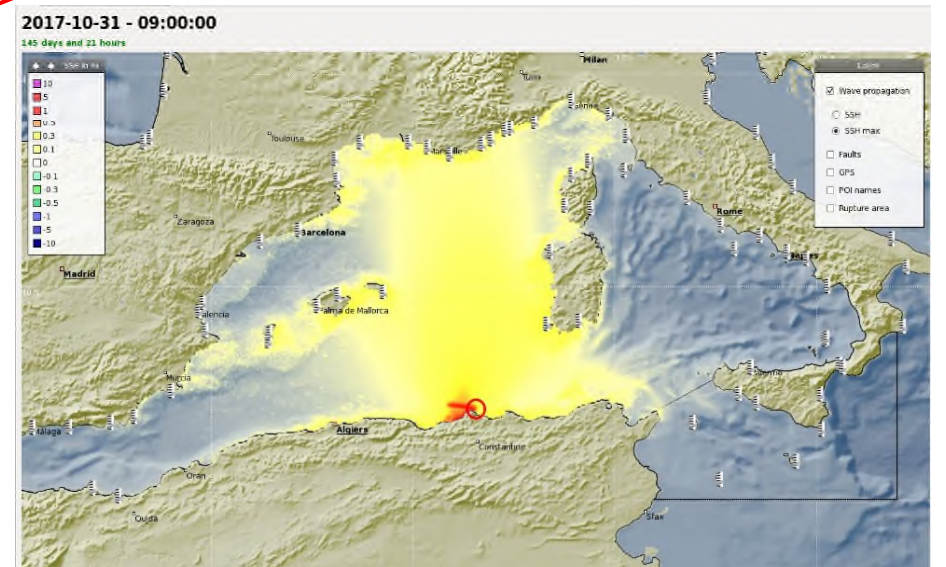
Western Mediterranean Scenario



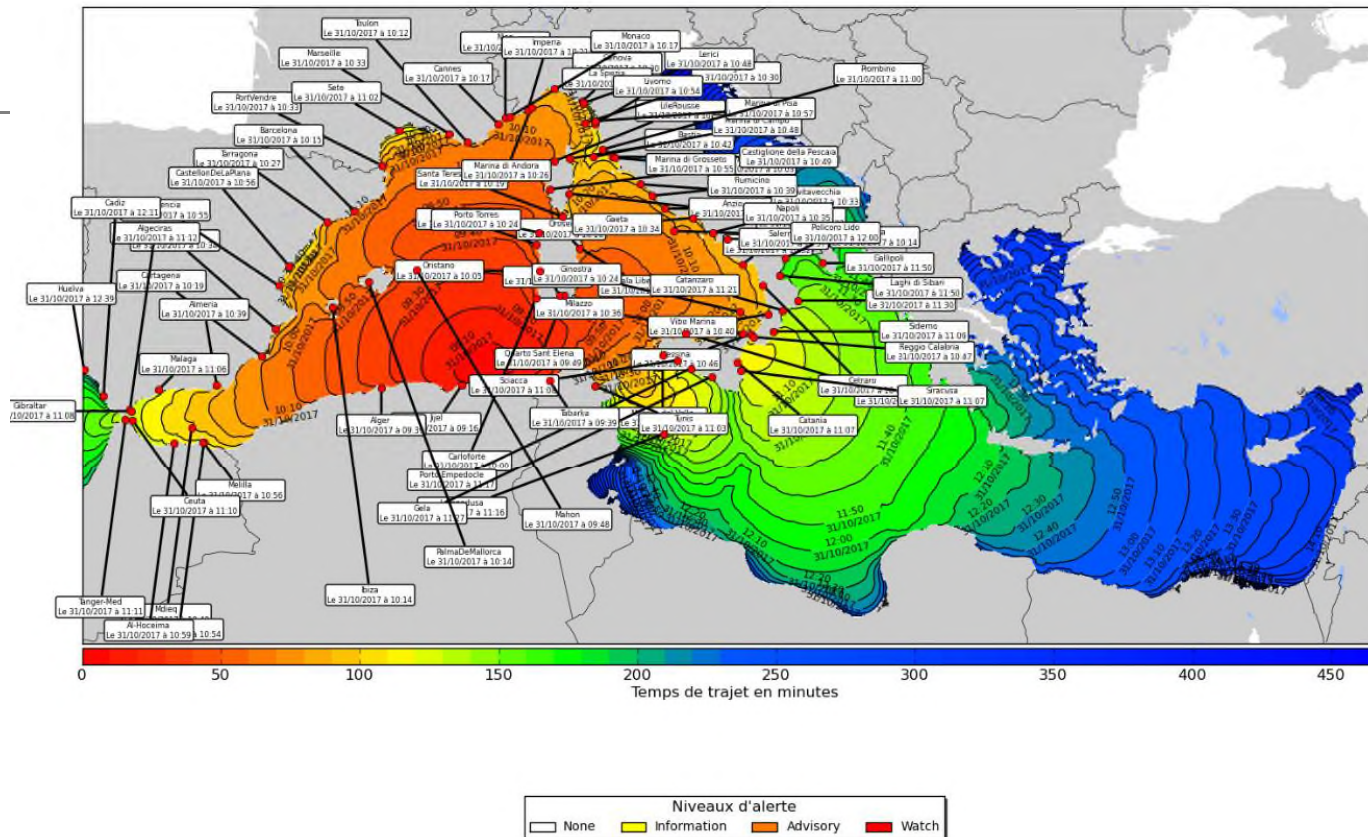
Algerian Thrust

ORIGIN TIME - 0900Z 31 OCT 2017
 COORDINATES - 37.14 NORTH 6.56 EAST
 DEPTH - 15 KM
 LOCATION - WESTERN MEDITERRANEAN SEA
 MAGNITUDE - 7.3

The fault mechanism characteristics
 Strike 280
 Dip 50
 Rake 90
 Fault length 66 km



Tsunami arrival time



- The earthquake scenario is on the fault system of the North Algerian margin mainly composed of inverse faults.
- Historically, in August 1856, an earthquake with an estimated magnitude of 7.0 occurred and generated a local tsunami.

4. Alert Messages - *Message Provider involved briefly specifies the method adopted to assess the alert level (e.g., decision matrix, scenario based, etc.); how many alert messages will be issued and a related timetable specifying the tsunami evolution (e.g., sea level readings, eyewitness observations, etc.); map showing the alert level at forecast points*

The alert level is triggered by the decision matrix established by the ICG.

3 messages could be sent:

- Initial alert message sent 10 minutes after the origin time of the event
- A complementary message that would be sent about 55 minutes after the origin time of the event (depending on the availability of sea level data; it could be 10 minutes earlier or later)
- An end of message sent 80 minutes after the origin time of the event

Master Schedule of Events List

TIME	CENALT ACTIONS	EVENT RELATED
0900 Z		Origin of the event
0910 Z	Sending of initial alert message	
0955 Z	Sending of complementary alert message	Measurements done on sea level signals
1020 Z	Sending of end of message	No new information on the event or sea level measurements is to be expected

REMARK: the sea level measurements will be the real measurements and not simulated ones.

Alert Levels of Affected Countries

TSUNAMI MESSAGE NUMBER 001
NEAM CENALT TSUNAMI SERVICE PROVIDER
ISSUED AT 0912Z 31 OCT 2017

... TSUNAMI WATCH ...

THIS ALERT APPLIES TO ALGERIA ... FRANCE ... ITALY ... MONACO ... MOROCCO ... SPAIN ...
TUNISIA ... UNITED KINGDOM

|

... TSUNAMI INFORMATION ...

THIS ALERT APPLIES TO ALBANIA ... BELGIUM ... BULGARIA ... CAPE VERDE ... CROATIA ...
CYPRUS ... DENMARK ... EGYPT ... ESTONIA ... FINLAND ... GEORGIA ... GERMANY ... GREECE ...
ICELAND ... IRELAND ... ISRAEL ... LEBANON ... LIBYA ... MALTA ... MAURITANIA ...
NETHERLANDS ... NORWAY ... POLAND ... PORTUGAL ... ROMANIA ... RUSSIAN FEDERATION ...
SLOVENIA ... SWEDEN ... SYRIA ... TURKEY ... UKRAINE

CENALT SCENARIO

LOCATION FORECAST POINT COORDINATES ARRIVAL TIME LEVEL (ADVISORY, WATCH)

ALGERIA - JIJEL 36.82N 5.79E 0916Z 31 OCT WATCH
ALGERIA - ALGER 36.77N 3.08E 0939Z 31 OCT WATCH
TUNISIA - TABARKA 36.96N 8.75E 0939Z 31 OCT WATCH

TUNISIA - TUNIS 36.81N 10.31E 1103Z 31 OCT WATCH
SPAIN - MAHON 39.89N 4.26E 0948Z 31 OCT WATCH
SPAIN - IBIZA 38.91N 1.43E 1014Z 31 OCT WATCH
SPAIN - PALMADELLORCA 39.57N 2.65E 1014Z 31 OCT WATCH
SPAIN - BARCELONA 41.39N 2.17E 1015Z 31 OCT WATCH
SPAIN - CARTAGENA 37.61N 0.94W 1019Z 31 OCT WATCH
SPAIN - TARRAGONA 41.12N 1.24E 1027Z 31 OCT WATCH
SPAIN - ALICANTE 38.35N 0.48W 1034Z 31 OCT WATCH
SPAIN - ALMERIA 36.84N 2.47W 1039Z 31 OCT WATCH
SPAIN - VALENCIA 39.47N 0.38W 1055Z 31 OCT WATCH
SPAIN - MELILLA 35.29N 2.94W 1056Z 31 OCT WATCH
SPAIN - CASTELLONDELAPLANA 39.98N 0.03W 1056Z 31 OCT WATCH
SPAIN - MALAGA 36.72N 4.42W 1106Z 31 OCT WATCH
SPAIN - CEUTA 35.89N 5.32W 1110Z 31 OCT WATCH
SPAIN - ALGECIRAS 36.18N 5.40W 1112Z 31 OCT WATCH
SPAIN - CADIZ 36.53N 6.29W 1211Z 31 OCT WATCH
SPAIN - HUELVA 37.26N 6.95W 1239Z 31 OCT WATCH
ITALY - QUARTO SANT ELENA 39.21N 9.27E 0949Z 31 OCT WATCH
ITALY - ALGHERO 40.54N 8.31E 0958Z 31 OCT WATCH
ITALY - CARLOFORTE 39.15N 8.31E 1000Z 31 OCT WATCH
ITALY - ORISTANO 39.86N 8.44E 1005Z 31 OCT WATCH
ITALY - CAGLIARI 39.21N 9.11E 1006Z 31 OCT WATCH
ITALY - PONZA 40.88N 12.95E 1014Z 31 OCT WATCH
ITALY - OROSEI 40.44N 9.78E 1016Z 31 OCT WATCH
ITALY - CALA LIBEROTTO 40.44N 9.79E 1016Z 31 OCT WATCH
ITALY - SANTA TERESA DI GALLURA 41.25N 9.19E 1019Z 31 OCT WATCH
ITALY - PALERMO 38.22N 13.34E 1020Z 31 OCT WATCH

A joint scenario for the first time!!

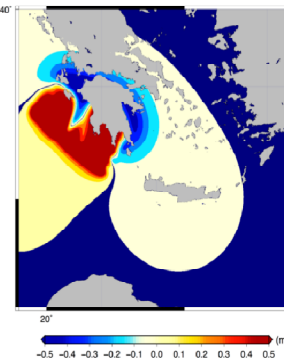
Central Mediterranean Scenario



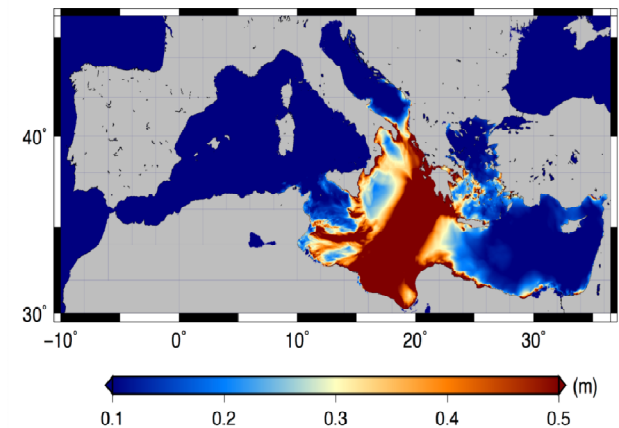
South of Zakynthos Island

Earthquake parameters	
Mw	8.5
Longitude	21.0 °E
Latitude	37.5 °N
Depth (km)	12.0
Rupture Area (km ²)	~40000
Slip (m)	6.5 (uniform)
Rigidity (GPa)	~26
Rake	90°

a)



b)

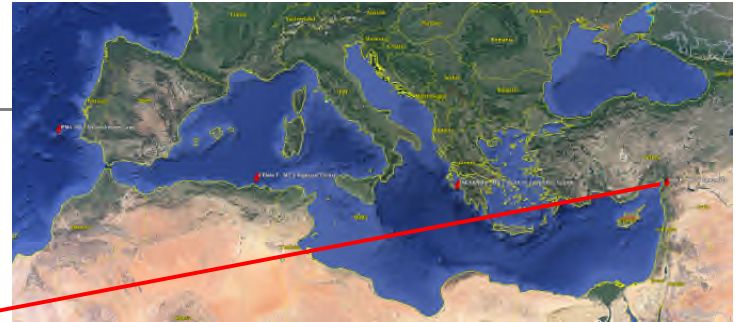


... TSUNAMI WATCH ...

THIS ALERT APPLIES TO ALBANIA ... ALGERIA ... BOSNIA ... CROATIA ... CYPRUS ...
EGYPT ... FRANCE ... GREECE ... ISRAEL ... ITALY ... LEBANON ...
LIBYA ... MALTA ... MONACO ... MONTENEGRO ... MOROCCO ... SLOVENIA ... SPAIN ...
SYRIA ...
TUNISIA ... TURKEY ... UK

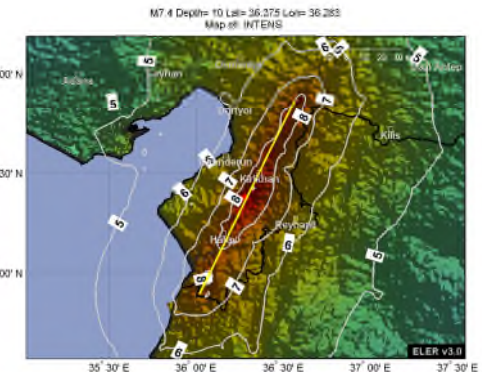
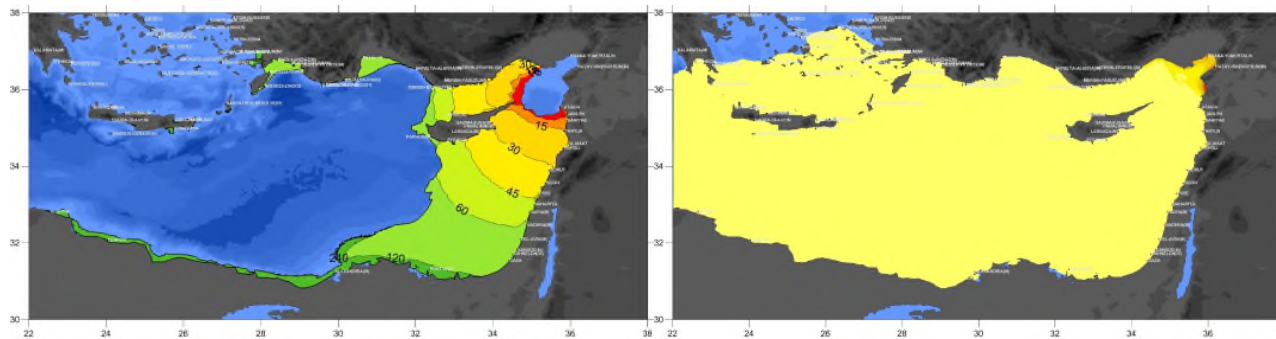
SPAIN - MAHON 39.89N 4.27E 1144Z 2 NOV WATCH
SPAIN - ALCUDIA 39.87N 3.12E 1207Z 2 NOV WATCH
SPAIN - BARCELONA 41.39N 2.18E 1211Z 2 NOV WATCH
SPAIN - FORMENTERA 38.73N 1.42E 1215Z 2 NOV WATCH
SPAIN - IBIZA 38.91N 1.44E 1219Z 2 NOV WATCH
SPAIN - PALMA_DE_MALLORCA 39.57N 2.65E 1220Z 2 NOV WATCH
SPAIN - TARRAGONA 41.12N 1.26E 1222Z 2 NOV WATCH
SPAIN - CARTAGENA 37.61N 0.98W 1229Z 2 NOV WATCH
SPAIN - CARBONERAS 36.97N 1.90W 1236Z 2 NOV WATCH
SPAIN - ALICANTE 38.35N 0.48W 1241Z 2 NOV WATCH
SPAIN - GANDIA 39.00N 0.15W 1249Z 2 NOV WATCH
SPAIN - SAGUNTO 39.63N 0.21W 1250Z 2 NOV WATCH
SPAIN - ALMERIA 36.84N 2.47W 1253Z 2 NOV WATCH
SPAIN - VALENCIA 39.48N 0.38W 1253Z 2 NOV WATCH
SPAIN - CASTELLON_DE_LA_PLANA 39.99N 0.04W 1300Z 2 NOV WATCH
SPAIN - MOTRIL 36.72N 3.52W 1300Z 2 NOV WATCH
SPAIN - MELILLA 35.30N 2.94W 1307Z 2 NOV WATCH
SPAIN - TARIFA 36.01N 5.60W 1319Z 2 NOV WATCH
SPAIN - CEUTA 35.89N 5.32W 1321Z 2 NOV WATCH
SPAIN - MALAGA 36.72N 4.42W 1321Z 2 NOV WATCH
SPAIN - ALGECIRAS 36.13N 5.45W 1325Z 2 NOV WATCH
BOSNIA - HERZEGOVINA 42.91N 17.59E 11.48Z 2 NOV WATCH
MONACO - MONTE_CARLO 43.73N 7.43E 1153Z 2 NOV WATCH
MOROCCO - EL_HOCEIMA 35.24N 3.90W 1312Z 2 NOV WATCH
MOROCCO - FNIDEQ 35.84N 5.33W 1323Z 2 NOV WATCH
MOROCCO - TANGIER 35.80N 5.79W 1327Z 2 NOV WATCH
UK - GIBRALTAR 36.13N 5.37W 1322Z 2 NOV WATCH
SLOVENIA - KOPER 45.56N 13.71E 15.12Z 2 NOV WATCH

Eastern Mediterranean Scenario



Samandag, Hatay

Mw	Lat	Lon	Depth	Fault Length	Fault Width	Average Slip	Strike	Dip	Rake
7.4	36.375° N	36.283° E	10 km	77 km	20 km	3.2 m	30°	80°	320°



KOERI - ELER Software
Supported by NERIES Project



Instrumental Intensity	I	II	III	IV	V	VI	VII	VIII	IX	X
Potential Shaking	Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme	
Potential Damage	None	None	None	Very Light	Light	Moderate	Major	Heavy	Very Heavy	

Tsunami Exercise Message Number #1

TSUNAMI EXERCISE MESSAGE NUMBER 001
NEAM KOERI TSUNAMI SERVICE PROVIDER
ISSUED AT 0908Z 01 NOV 2017

THIS ALERT IS ADDRESSED TO ALL COUNTRIES AND INSTITUTIONS SUBSCRIBED TO
THE SERVICES OF KOERI TSP IN ITS MONITORING AREA.

... TSUNAMI WATCH ...
THIS ALERT APPLIES TO TURKEY

... TSUNAMI ADVISORY ...
THIS ALERT APPLIES TO CYPRUS...ISRAEL...LEBANON...SYRIA

... TSUNAMI INFORMATION ...
THIS ALERT APPLIES TOALBANIA...CROATIA...EGYPT...GREECE...ITALY...LIBYA.
..MALTA...MONTENEGRO...PALESTINIAN AUTHORITY...TUNISIA

THIS MESSAGE IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND
LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING
THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN
RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS
ORIGIN TIME - 0900 UTC WED NOV 1 2017
COORDINATES - 36.35 NORTH 36.27 EAST
DEPTH - 10.0 KM
LOCATION - ANTAKYA
MAGNITUDE - 6.9

Tsunami Exercise Message Number #2 with Magnitude Revision!!

TSUNAMI EXERCISE MESSAGE NUMBER 002
NEAM KOERI TSUNAMI SERVICE PROVIDER
ISSUED AT 0915Z 01 NOV 2017

THIS ALERT IS ADDRESSED TO ALL COUNTRIES AND INSTITUTIONS SUBSCRIBED TO
THE SERVICES OF KOERI TSP IN ITS MONITORING AREA.

... TSUNAMI WATCH ...

THIS ALERT APPLIES TO CYPRUS...ISRAEL...LEBANON...SYRIA...TURKEY

... TSUNAMI ADVISORY ...

THIS ALERT APPLIES TO ALBANIA...CROATIA...EGYPT...GREECE...ITALY...LIBYA
...MALTA...MONTENEGRO...PALESTINIAN AUTHORITY...TUNISIA

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LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS REGARDING
THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS TO BE TAKEN IN
RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS
ORIGIN TIME - 0900 UTC WED NOV 1 2017
COORDINATES - 36.37 NORTH 36.28 EAST
DEPTH - 10.0 KM
LOCATION - ANTAKYA
MAGNITUDE - 7.4

Timetable of the exercise

	31/10/2017 9:00 – 10:20UTC	01/11/2017 9:00 – 12:00UTC	02/11/2017 9:00 – 12:30UTC	03/11/2017 9:00 – 16:00UTC
Western Mediterranean scenario (CENALT)	Phase A, B and C			
Eastern Mediterranean scenario (KOERI)		Phase A and B		
Central Mediterranean scenario (INGV-NOA)			Phase A and B	
North East Atlantic scenario (IPMA)				Phase A and B

**Phase C will be
implemented afternoon!**

Phase A: Tsunami Alert Message Dissemination

TSUNAMI MESSAGE NUMBER 001
NEAM CENALT TSUNAMI SERVICE PROVIDER
ISSUED AT 0912Z 31 OCT 2017

... TSUNAMI WATCH ...
THIS ALERT APPLIES TO ALGERIA ... FRANCE ... ITALY ... MONACO ...
MOROCCO ... SPAIN ... TUNISIA ... UNITED KINGDOM

... TSUNAMI INFORMATION ...
THIS ALERT APPLIES TO ALBANIA ... BELGIUM ... BULGARIA ... CAPE VERDE
... CROATIA ... CYPRUS ... DENMARK ... EGYPT ... ESTONIA ... FINLAND
... GEORGIA ... GERMANY ... GREECE ... ICELAND ... IRELAND ... ISRAEL
... LEBANON ... LIBYA ... MALTA ... MAURITANIA ... NETHERLANDS ...
NORWAY ... POLAND ... PORTUGAL ... ROMANIA ... RUSSIAN FEDERATION ...
SLOVENIA ... SWEDEN ... SYRIA ... TURKEY ... UKRAINE

THIS MESSAGE IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL
AND LOCAL GOVERNMENT AGENCIES HAVE THE AUTHORITY TO MAKE DECISIONS
REGARDING THE OFFICIAL STATE OF ALERT IN THEIR AREA AND ANY ACTIONS
TO BE TAKEN IN RESPONSE.

AN EARTHQUAKE HAS OCCURRED WITH THESE PRELIMINARY PARAMETERS
ORIGIN TIME - 0900Z 31 OCT 2017
COORDINATES - 37.14 NORTH 6.56 EAST
DEPTH - 15 KM
LOCATION - WESTERN MEDITERRANEAN SEA
MAGNITUDE - 7.3

EVALUATION OF TSUNAMI WATCH
IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED.
THIS WARNING IS BASED ONLY ON THE EARTHQUAKE EVALUATION.
AN EARTHQUAKE OF THIS SIZE HAS THE POTENTIAL TO GENERATE A TSUNAMI
THAT CAN STRIKE COASTLINES WITH A WAVE HEIGHT GREATER THAN 0.5M
AND/OR CAUSE A TSUNAMI RUN-UP GREATER THAN 1M.
AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS
POSSIBILITY. THIS CENTER WILL MONITOR SEA LEVEL DATA FROM GAUGES NEAR
THE EARTHQUAKE TO DETERMINE IF A TSUNAMI WAS GENERATED AND ESTIMATE
THE SEVERITY OF THE THREAT.
A TSUNAMI IS A SERIES OF WAVES AND THE FIRST WAVE MAY NOT BE THE
LARGEST. TSUNAMI WAVE HEIGHTS CANNOT BE PREDICTED AND CAN VARY
SIGNIFICANTLY ALONG A COAST DUE TO LOCAL EFFECTS. THE TIME FROM ONE
TSUNAMI WAVE TO THE NEXT CAN BE FIVE MINUTES TO AN HOUR, AND THE
THREAT CAN CONTINUE FOR MANY HOURS AS MULTIPLE WAVES ARRIVE.

EVALUATION OF TSUNAMI INFORMATION
BASED ON HISTORICAL EARTHQUAKE AND TSUNAMI MODELLING THERE IS NO
THREAT THAT A TSUNAMI CAN CAUSE DAMAGE OR
MAJOR EFFECT IN THIS INFORMATION ONLY.

ESTIMATED INITIAL ...
THE WATCH AREA ...
THE INITIAL WAVE ...
WAVES ...
AND THE TIME BETWEEN ...

LOCATION FORECAST POINT COORDINATES ARRIVAL TIME LEVEL (ADVISORY,
WATCH)

ALGERIA - JIJEL 36.82N 5.79E 0916Z 31 OCT WATCH
ALGERIA - ALGER 36.77N 3.08E 0939Z 31 OCT WATCH
TUNISIA - TABARKA 36.96N 8.75E 0939Z 31 OCT WATCH
TUNISIA - TUNIS 36.81N 10.31E 1103Z 31 OCT WATCH
SPAIN - MAHON 39.89N 4.26E 0948Z 31 OCT WATCH
SPAIN - IBIZA 38.91N 1.43E 1014Z 31 OCT WATCH
SPAIN - PALMADEMALLORCA 39.57N 2.65E 1014Z 31 OCT WATCH
SPAIN - BARCELONA 41.39N 2.17E 1015Z 31 OCT WATCH
SPAIN - CARTAGENA 37.61N 0.94W 1019Z 31 OCT WATCH
SPAIN - TARRAGONA 41.12N 1.24E 1027Z 31 OCT WATCH
SPAIN - ALICANTE 38.35N 0.48W 1034Z 31 OCT WATCH
SPAIN - ALMERIA 36.84N 2.47W 1039Z 31 OCT WATCH
SPAIN - VALENCIA 39.47N 0.38W 1055Z 31 OCT WATCH
SPAIN - MELILLA 35.29N 2.94W 1056Z 31 OCT WATCH
SPAIN - CASTELLONDELAPLANA 39.98N 0.03W 1056Z 31 OCT WATCH
SPAIN - MALAGA 36.72N 4.42W 1106Z 31 OCT WATCH
SPAIN - CEUTA 35.89N 5.32W 1110Z 31 OCT WATCH
SPAIN - ALGECIRAS 36.18N 5.40W 1112Z 31 OCT WATCH
SPAIN - CADIZ 36.53N 6.29W 1211Z 31 OCT WATCH
SPAIN - HUELVA 37.26N 6.95W 1239Z 31 OCT WATCH
ITALY - QUARTO SANT ELENA 39.21N 9.27E 0949Z 31 OCT WATCH
ITALY - ALGHERO 40.54N 8.31E 0958Z 31 OCT WATCH
ITALY - CARLOFORTE 39.15N 8.31E 1000Z 31 OCT WATCH
ITALY - ORISTANO 39.86N 8.44E 1005Z 31 OCT WATCH
ITALY - CAGLIARI 39.21N 9.11E 1006Z 31 OCT WATCH
ITALY - PONZA 40.88N 12.95E 1014Z 31 OCT WATCH
ITALY - OROSEI 40.44N 9.78E 1016Z 31 OCT WATCH
ITALY - CALA LIBEROTTO 40.44N 9.79E 1016Z 31 OCT WATCH
ITALY - SANTA TERESA DI GALLURA 41.25N 9.19E 1019Z 31 OCT WATCH
ITALY - PALERMO 38.22N 13.34E 1020Z 31 OCT WATCH
ITALY - IMPERIA 43.88N 8.02E 1021Z 31 OCT WATCH
ITALY - GINOSTRA 38.78N 15.19E 1024Z 31 OCT WATCH
ITALY - PORTO TORRES 40.84N 8.40E 1024Z 31 OCT WATCH
ITALY - MARINA DI ANDORA 43.95N 8.15E 1026Z 31 OCT WATCH
ITALY - GENOVA 44.41N 8.93E 1030Z 31 OCT WATCH
ITALY - GORGONA 43.57N 9.96E 1030Z 31 OCT WATCH
ITALY - ANZIO 41.45N 12.63E 1031Z 31 OCT WATCH
ITALY - PALINURO 40.03N 15.28E 1032Z 31 OCT WATCH
ITALY - CIVITAVECCHIA 42.06N 11.81E 1033Z 31 OCT WATCH
ITALY - GAETA 41.21N 13.59E 1034Z 31 OCT WATCH
ITALY - NAPOLI 40.84N 14.27E 1035Z 31 OCT WATCH
ITALY - MILAZZO 38.21N 15.27E 1036Z 31 OCT WATCH
ITALY - CETRARO 39.49N 15.94E 1036Z 31 OCT WATCH
ITALY - SALERNO 40.68N 14.75E 1037Z 31 OCT WATCH
ITALY - FIUMICINO 41.75N 12.50E 1038Z 31 OCT WATCH
ITALY - VIBO MARINA 38.00N 15.50E 1038Z 31 OCT WATCH
ITALY - MAZARA DEL VALLE 37.00N 13.00E 1038Z 31 OCT WATCH
ITALY - MESSINA 38.26N 15.30E 1038Z 31 OCT WATCH
ITALY - LA SPEZIA 44.06N 10.13E 1038Z 31 OCT WATCH
ITALY - LERICI 44.06N 10.13E 1038Z 31 OCT WATCH
ITALY - CASTIGLIONE DI STABIA 44.06N 10.13E 1038Z 31 OCT WATCH

C/TSP

E-MAIL

FAX

GTS

SMS

**TWFP,
C/TSP, CPAs**

Phase B

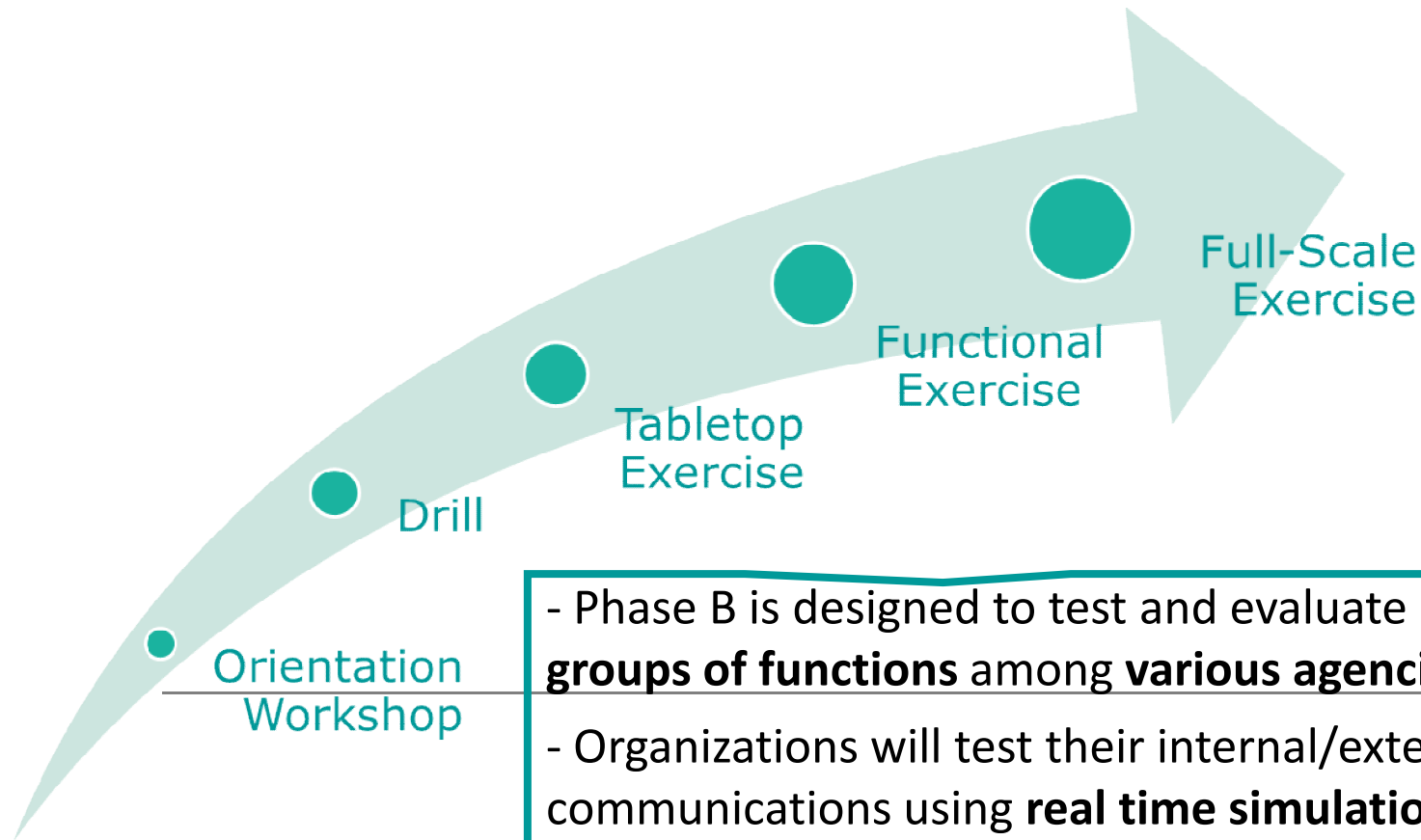
Emergency
management
activities
performed at
national level

Phase C

International
assistance
request and
provision

Why it is important to implement Phase B?

- To move from an early warning approach towards an early action and response one
- To develop an end-to-end management system of tsunami events (regional, national, local level)
- To raise awareness of launching and contributing to the development of a national policy to tackle the tsunami risk.



- Phase B is designed to test and evaluate interdependent **groups of functions** among **various agencies**;
- Organizations will test their internal/external communications using **real time simulation** tsunami bulletins;
- Phase B exercises **command and control activities** at locations such as emergency command centers, command posts,...

Orientation Workshop:

- Can be conducted through a workshop.
- Used to familiarise the players with the activity.
- There is no time-frame element; the orientation exercise could be performed after the exercise, making use of the NEAMWave17 material (i.e. Exercise manual, exercise scenarios) to conduct the workshop planned at national level.
- An example of an orientation exercise would be setting up a welfare centre to take in tsunami evacuees, and briefing to the staff about how the centre is organized.
- This kind of exercise would provide an opportunity to raise awareness among the **National Emergency Operations Centre(s)** and response officials regarding the NEAMTWS programme

Drill:

- Staff physically handle specific equipment or perform a specific procedure or single operation.
- A drill usually focuses on a single organization, facility or agency such as a national emergency operation centre, hotel, school or village.
- The exercise usually has a time-frame element and is used to test procedures.
- A drill is a subset of a full-scale exercise.
- An example of a drill exercise would be activating an **Emergency Operations Centre (EOC)**, testing the relative procedures and all the communications technologies foreseen for the activation of those procedures (i.e. Email, telephone, radios) in a tsunami exercise.
- In NEAMWave17, Phase A will be conducted as a drill exercise; the ability to send multiple consecutive tsunami messages by the C/TSPs will be tested.

Tabletop Exercise:

- May also be referred to as a “discussion exercise”, or “DISCEX”.
- Participants face with a situation or problem that they are required to discuss and they formulate the appropriate response or solution.
- An exercise controller or moderator introduces a simulated scenario (prewritten exercise) to participants and, as the exercise advances (in time), exercise problems and activities are further introduced.
- This type of exercise is used to practice problem-solving and coordination of services with or without time pressures.
- There is no deployment or actual use of equipment or resources.
- An example of a table top exercise may cover the participants discussing their response to a tsunami threat to a particular area, where the only input are tsunami messages from the C/TSPs.

Functional Exercise:

- May also be referred to as an “operational” or a “tactical” exercise.

- It takes place in an operational environment and requires participants to actually perform the functions of their roles.
- Participants interact within a simulated environment through an exercise control group which provides prewritten actions and respond to questions and tasks developing out of the exercise.
- Functional exercises normally involve multi-agency participation (real or simulated) and can focus on one or more geographical areas.
- Commonly, they involve the testing of standard operating procedures (SOP) and internal/external communications between organizations.
- It lacks only the people "on the ground" to create a full-scale exercise
- An example would be a multi-agency response to a potentially devastating tsunami, where evacuation of a coastal community is required. Messages and actions are provided by exercise control group and are handled by the participants in the way described in appropriate plans and procedures.

Full-scale Exercise:

- May also be referred to as a “practical” or “field” exercise.
- It includes the movement or deployment of people and resources to provide a physical response “on the ground” to a simulated situation.
- It can be “ground” focused only or may include the higher-level response structures. It can be simple (single agency) or complex (multi agency, multi-levels of government from national to local).
- Typically used to test all aspects of a country's warning and emergency management systems and processes; they are practical, using actual centres and communications methods.
- Full-scale exercises are the largest, most costly, most time-consuming and most complex to plan, conduct and evaluate.
- An example: a post-impact tsunami response with volunteers representing 'victims' and the emergency services using real rescue equipment at the scene. Multi-agency response to the event is played. Actual field mobilization and deployment of response personnel are also involved.

Why it is important to implement Phase C?

- To test procedures for international assistance between the European Commission and participating Member States

Phase C of the NEAMWave17 exercise will be performed only for the Western Mediterranean scenario (launched by CENALT).

The ERCC will receive one or more requests for international assistance from one or more affected countries according to the scenario. The request for assistance will activate the Union Civil Protection Mechanism (UCPM).

- The Union Civil Protection Mechanism (UCPM) is a reinforced cooperation among 34 national civil protection authorities across Europe.
- The operational hub of the Mechanism is the [Emergency Response Coordination Centre \(ERCC\)](#) which [monitors](#) emergencies around the globe on a 24/7 basis, and coordinates the response of the Participating States in case of a crisis.
- The response includes the preparation of EU response plans, the deployment of the European Civil Protection Team (EUCPT), the deployment of the European Emergency Response Capacity (EERC) and the management of co-financing of transport operations.

-
- The ERCC is the coordination platform within DG ECHO between civil protection and humanitarian aid.
 - Any country in the world can call on the EU Civil Protection Mechanism for help. Therefore, any country can participate in Phase C by sending a request for international assistance to the ERCC that will then be able to "activate" the Union Civil Protection Mechanism.
 - A country not participating to the Union Civil Protection Mechanism, may also decide to inform via email the ERCC of the international assistance.

ERCC receives a request for assistance

rapidly analyses the request and identifies possible needs.

informs the Participating States through the Common Emergency Communication and Information System (CECIS)

Participating States specify what they can offer to match the identified needs.

ERCC duty officers are then in a position to contact the affected country to inform of the offers and to seek a formal acceptance

IOC Circular Letter No 2685

Also available in French

IOC/TA/DCS/ei

24 July 2017

To : ICG/NEAMTWS Tsunami Warning Focal Points (TWFP)
ICG/NEAMTWS Tsunami National Contacts (TNCs)
ICG/NEAMTWS Steering Committee
ICG/NEAMTWS Chair and Vice-Chairs

cc : Official National Coordinating Bodies for liaison with IOC in Member States
Permanent Delegation/Observer Mission to UNESCO and National Commission for UNESCO in
IOC Member States of the ICG/NEAMTWS

**Subject: Tsunami Early Warning and Mitigation System in the North-Eastern
Atlantic, the Mediterranean and Connected Seas – NEAMTWS Tsunami Exercise –
'NEAMWave17', 31 October – 3 November 2017**

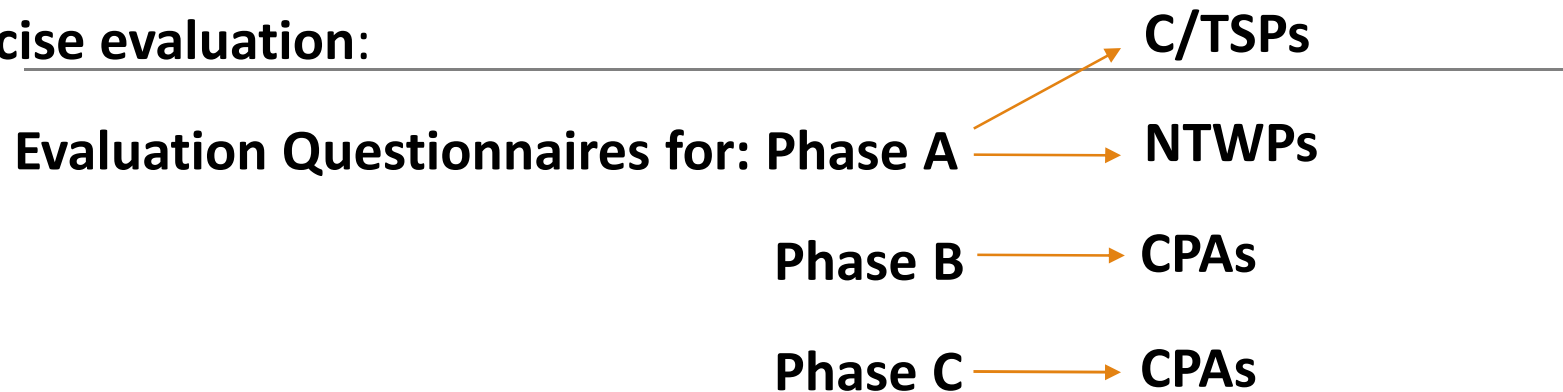
At its 13th session, the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and connected seas (ICG/NEAMTWS, Bucharest, Romania, 26-28 September 2016) decided to establish a Task Team on **NEAMWave17** to organize and conduct a tsunami exercise named '**NEAMWave17**' in the fourth quarter of 2017 in order to test the readiness of the System and participating Member States bordering the North-eastern Atlantic, the Mediterranean and connected seas.

Conduct of the Exercise

The exercise will mobilize the designated Tsunami warning focal point (TWFP), the National Tsunami Warning Centres (NTWC) and the Disaster Management Organizations (DMO) or Civil Protection Agencies (CPA) in your country who will be required to implement the procedures laid out in the [NEAMTWS Interim Operational Users Guide](#) (2012). 'Member States are encouraged to extend exercises to community level and include critical infrastructure in exercises (e.g. hospitals, fire stations, police stations, electric power plants, airports, ports and harbours). **NEAMWave17**' will also simulate the "Request of international assistance" through the Union Civil Protection Mechanism and the Emergency Response and Coordination Centre (ERCC) of the European Commission.

- **Second Circular Letter will be sent by UNESCO-IOC together with the exercise manual including exercise scenario documents soon!**
- **Application form submission date was: 30/09/2017 (will be extended)**
- **Preparatory actions to participate: NEAMWave17 Exercise Manual**
- **During NEAMWave17 exercise: helpdesk available (email; landline)**

- **Exercise evaluation:**



Application Form

COUNTRY:	CONTACT ADDRESS
National Tsunami Warning Centre <i>(update only if there are changes to contact address)</i>	Institution: Address: Email addresses to receive the exercise messages: Mobile to receive the exercise messages (sms): Fax numbers to receive the exercise messages: GTS contact details to receive the exercise messages: Landline:
Tsunami Warning Focal Point <i>(update only if there are changes to contact address)</i>	Name: Surname: Email address to receive the exercise messages: Landline: Mobile to receive the exercise messages (sms): Fax:
National Contact for Exercise* <i>(The National Contact for Exercise (NCE) is the Tsunami National Contact (TNC) by default)</i>	Name: Surname: Email address to receive the exercise messages: Landline: Mobile to receive the exercise messages (sms): Fax:
Civil Protection Agency (CPA) <i>(Institution Contact)</i>	Institution: Address: Institutional email addresses to receive the exercise messages: Mobile to receive the exercise messages (sms): Fax numbers to receive the exercise messages: GTS contact details to receive the exercise messages: Landline:
Civil Protection Agency <i>(Person Contact)</i>	Name: Surname: Email address to receive the exercise messages: Landline: Mobile to receive the exercise messages (sms): Fax:
Observers ³ :	Institution: Name: Surname: Email address to receive the exercise messages: Landline: Mobile to receive the exercise messages (sms): Fax:

Exercise scenarios ⁴ <i>(please select exercise scenarios in which the Member State will take part, for each one ticking the exercise phases which will be implemented)</i>	
Western Mediterranean scenario by CENALT (France)	31/10/2017, morning Participation to this scenario (yes/no): Phase A: the participation to this phase is by default, once the Country chooses to participate in NEAMWave17 Phase B (yes/no; type of exercise to be implemented at national scale¹⁰): 31/10/2017, afternoon Phase C (please select the option): <input type="checkbox"/> Participation as affected Country which requires international assistance <input type="checkbox"/> Participation as Country offering international assistance <input type="checkbox"/> No participation
Eastern Mediterranean scenario by KOERI (Turkey)	01/11/2017, morning Participation to this scenario (yes/no): Phase A: the participation to this phase is by default, once the Country chooses to participate in NEAMWave17 Phase B (yes/no; type of exercise to be implemented at national scale⁵):
Central Mediterranean scenario by INGV ⁶ (Italy)	02/11/2017, morning Participation to this scenario (yes/no): Phase A: the participation to this phase is by default, once the Country chooses to participate in NEAMWave17 Phase B (yes/no; type of exercise to be implemented at national scale¹⁰):
Central Mediterranean scenario by NOA ¹¹ (Greece)	02/11/2017, morning Participation to this scenario (yes/no): Phase A: the participation to this phase is by default, once the Country chooses to participate in NEAMWave17 Phase B (yes/no; type of exercise to be implemented at national scale¹⁰):
North East Atlantic scenario by IPMA (Portugal)	03/11/2017, morning Participation to this scenario (yes/no): Phase A: the participation to this phase is by default, once the Country chooses to participate in NEAMWave17 Phase B (yes/no; type of exercise to be implemented at national scale¹⁰):
List of the Tsunami Forecast Points for which expected arrival times and wave heights are requested to be included	Latitude, Longitude

Intergovernmental Oceanographic Commission

Technical Series

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Tsunami Exercise NEAMWave17

**A Tsunami Warning and
Communication Exercise for the North-
eastern Atlantic, the Mediterranean,
and Connected Seas Region**

31 October – 3 November 2017

Volume 1 Exercise Instructions

UNESCO

Prepared by Task Team on Tsunami Exercise

NEAMWave17: Ceren Özer Sözdinler; Eleonora Panunzi, Olimpia Imperiali; Öcal Necmioğlu; Marzia Santini; Marinos Charalampakis, Ahmet Cevdet Yalçiner.

Based on NEAMWave14 Manual with contribution of Jörn Behrens; Fernando Carrilho; Emilie Crochet; Mauricio Gonzalez; Trevor Guymer; Olimpia Imperiali; Luis Manuel Matias; Nikolaos Melis; Öcal Necmioğlu; Marzia Santini; Ahmet Cevdet Yalçiner and with contribution of DG ECHO Emergency Response Coordination Centre of the European Commission.



United Nations
Educational, Scientific and
Cultural Organization



Intergovernmental
Oceanographic
Commission



Thanks for your kind attention!





The city of Antalya in the Mediterranean coast of Turkey was selected for the purposes of the table-top exercise to also benefit from another exercise “HOPEFOR” organized at the same date.



During the drafting of the exercise scenario at the national level, a chemical accident (fire) event was also included in the scenario with the involvement of the Provincial Search and Rescue Team.



- Tsunami exercise in Bartın and Amasra by following tsunami exercise messages sent by KOERI
- Use of IKAS and CANKUŞ high-tech alert Systems for the first time

BARTIN AFAD
İL AFET VE ACIL DURUM MÜDÜRLÜĞÜ

ANASAYFA KURUMSAL HABERLER AFAD İLK 72 SAAT BİLGİ

Bartın'dan Manzaralar "Amasra"

FAYDALI BİLGİLER / Tsunamiden Korunma

Deniz kıyısına yakın bir yerleşim yeri seçilirken tsunami riski de diğer afetler gibi dikkate alınmalıdır. Çoğunlukla tsunaminin yaklaştığının ilk işareti büyük bir su duvarı değil, denizin ani olarak geri çekilmesidir. Bu nedenle, denizde ve deniz kıyısında bir deprem hissedildiğinde ve/veya deniz çekilmesi gözlemlendiğinde tsunami tehlikesini hatırlamalıyız.

International Tsunami Information Center
Uluslararası Tsunami Bilgi Merkezi

Tsunamiden korunmak için şunları yapın:

Tehlikeyi hissettiğinizde hemen ve hızla yüksek yerlere doğru gidip deniz kıyısından uzaklaşın. Depremden sonra olası bir tsunami uyarısı için radyo dinleyin ve uyarı yapıldığında deniz kıyısından yüksek yerlere doğru uzaklaşın. Tsunami sırasında denizde ve kıyıya dönemeyecek durumsanız kıyıdan uzaklaşarak derinliği 50 m ve üzerinde olan yerlere gidin.