

# **KOERI**

## **Regional Earthquake-Tsunami Monitoring Center**

# **Overview of TSP / NTWC Operations**

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Department of Geophysics  
KOERI-RETMC Tsunami Working Group Co-Coordinator

with the contributions of Dr. Öcal Necmioğlu  
Tsunami National Contact of Turkey

## Mission of RETMC

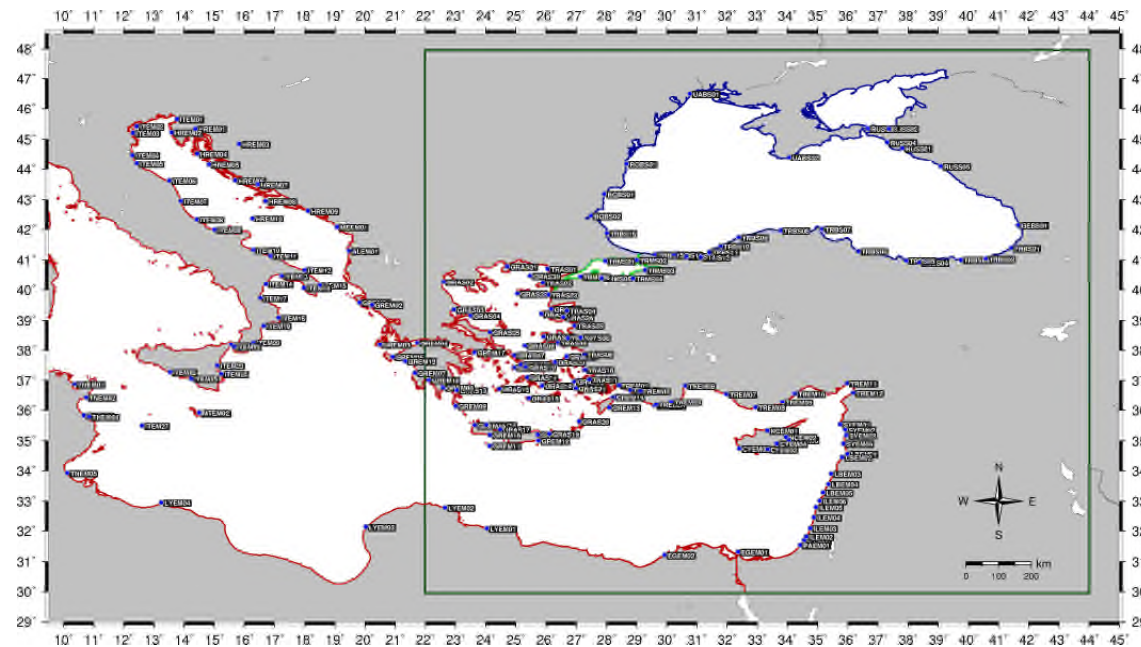


**RETMC**

- Establishment and operation of earthquake stations across Turkey,
- Determination of earthquake parameters immediately after the event and distribution of this information towards related institutions in 7/24,
- Development of seismic network regarding to the latest technological progress,
- Evaluating the earthquakes happened in observation area according to their tsunami potentials and disseminating tsunami alert messages to the subscribers, if necessary.
- Preparation of tsunami scenario database along the coasts of Turkey.

## Present Status

TSP-TR is operational since 1 July 2012 and has been accredited by ICG/NEAMTWS in 2016.



**SUBSCRIBERS:**  
NIOF (EGYPT)  
CENALT (FRANCE)  
NOA (GREECE)  
PMO (ISRAEL)  
INGV (ITALY)  
NCGR (LEBANON)  
IPMA (PORTUGAL)  
NIEP (ROMANIA)  
TYPHOON (RUSSIAN FEDERATION)  
DGPCE (SPAIN)  
CCS (UNITED KINGDOM)  
ERCC (EU)  
IOC Secretariat

*The maps and related information presented here do not necessarily reflect the views and position of the United Nations, UNESCO, IOC or any affiliated Member State.*

## KOERI Daily Operational Set-Up



<b>CTSP-TR Duty Shifts</b>	<b>Working Days</b>	<b>Weekends and Holidays</b>
08:30 - 17:30	Duty Officer Stand-by Officer Back-up Officer	Duty Officer Back-up Officer
17:30 - 01:00	Duty Officer Back-up Officer	Duty Officer Back-up Officer
01:00 - 08:30	Duty Officer Back-up Officer	Duty Officer Back-up Officer

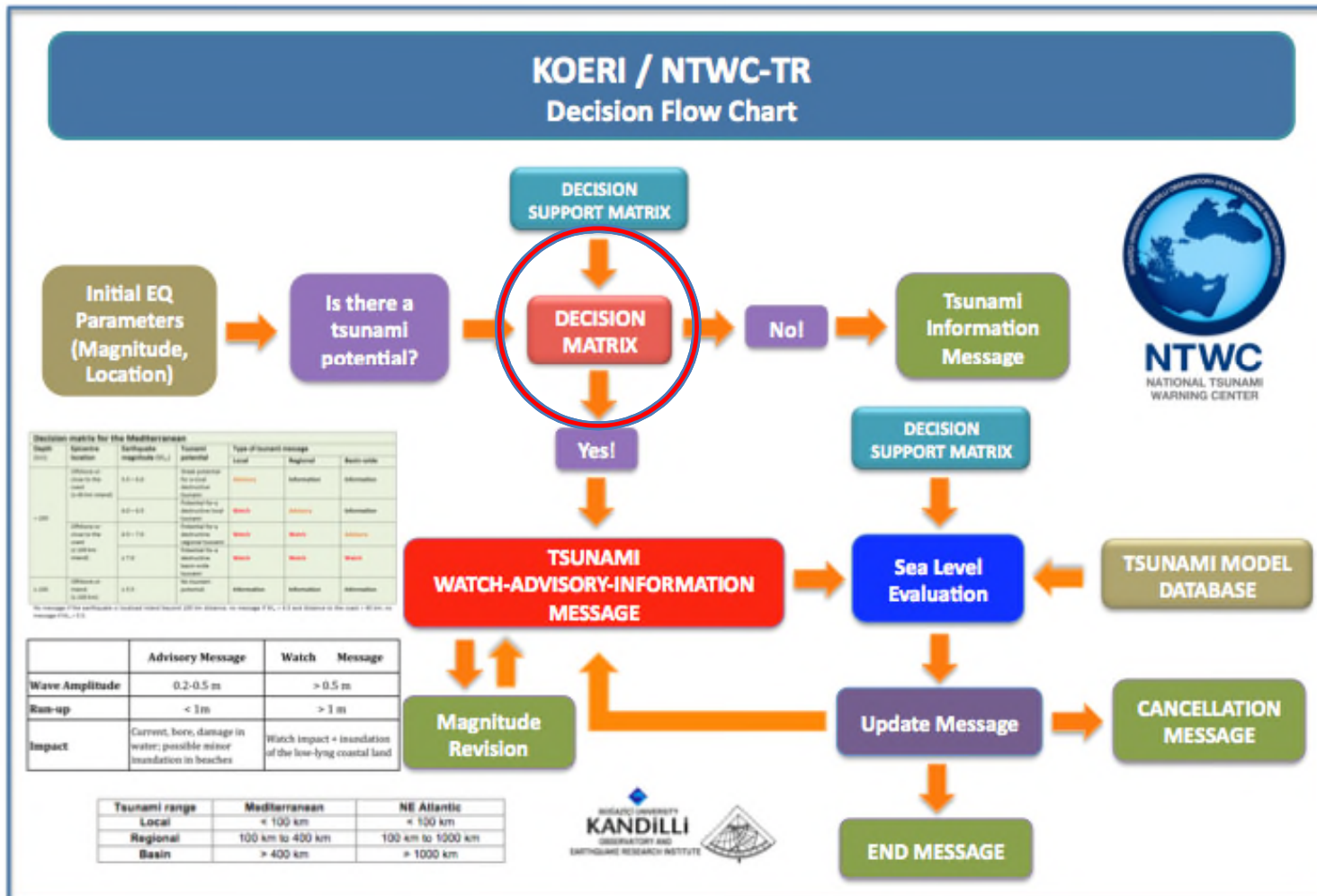
- Day Shift (8:30-17:30) and Two Night Shift (17:30-01:00 and 01:00-08:30)
  - One duty officer per day (8h) and night shifts (16 hours)
  - One stand-by Duty Officer per day shift
  - One back-up duty officer per day and night shift
  - Total number of Duty Officers: 16 – 7 of them is assigned to the Back-up Team in addition.
- In total, 3 Duty Officers per day shift and 2 Duty Officers per night shift available

## New Operations Building of RETMC



*The newly established Operations Building has the Leed (Leadership in Energy and Environmental Design) Certificate and is recognized as a “Green Building” with approximately %39 less energy consumption in comparison to the old operational building. The new Operations Building is also capable of making use of solar energy supplied with 64 100Amh batteries providing Operations Room with 80 kW energy.*

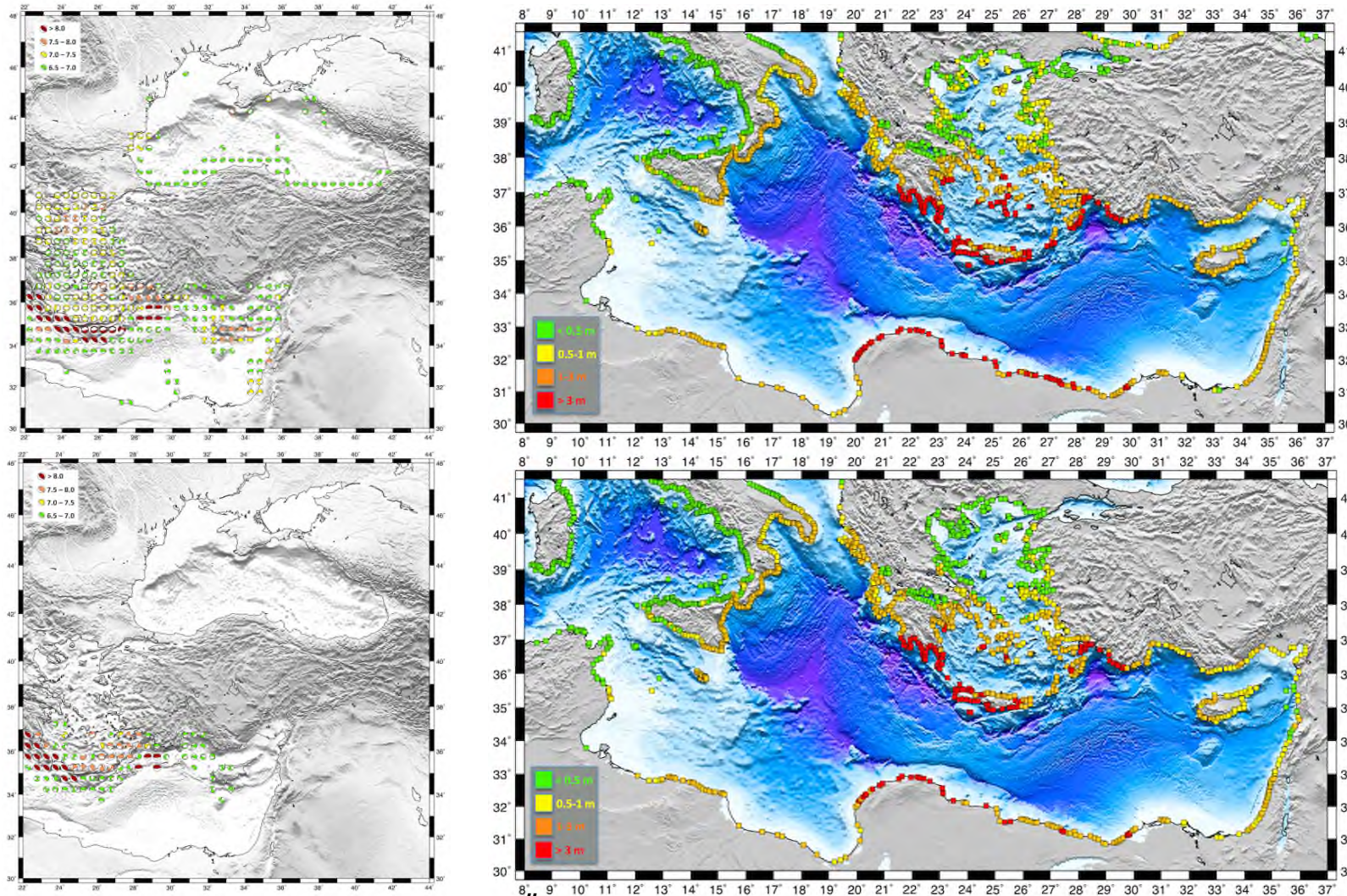
# Concepts of Operations – Decision Support System



## KOERI Decision Matrix

CTSP-TR (KOERI)						
Decision Matrix for the Eastern Mediterranean, Aegean and Black Seas						
Depth (km)	Epicentre Location	Earthquake Magnitude	Tsunami Potential	Type of Tsunami Message		
				Local	Regional	Basin-wide
				< 100 km	≥100 - ≤400	> 400
< 100	Offshore or close to the coast (≤ 40 km inland)	5.5 ≤ Mw < 6.0	Low tsunami potential	Information	Information	Information
		6.0 ≤ Mw < 6.5	Tsunami potential	Advisory	Information	Information
	Offshore or close to the coast (≤ 100 km inland)	6.5 ≤ Mw < 7.0	Potential for a destructive tsunami	Watch	Advisory	Information
		7.0 ≤ Mw < 7.5	Potential for a destructive tsunami	Watch	Watch	Advisory
		Mw ≥ 7.5	Potential for a destructive tsunami	Watch	Watch	Watch
	≥ 100	offshore or inland (≤ 100 km)	Mw ≥ 5.5	Low tsunami potential	Information	Information
NEAMTWS Decision Support Matrix						
Alert Level			Advisory		Watch	
Wave Amplitude			0.2-0.5 m		> 0.5 m	
Run-up			< 1m		> 1 m	
Impact			Current, bore, damage in water; possible minor inundation in beaches		Watch impact + inundation of the low-lying coastal land	
Other messages used in the operational context, such as (Regular) Communication Test and Tsunami Exercise Messages are not shown here.						

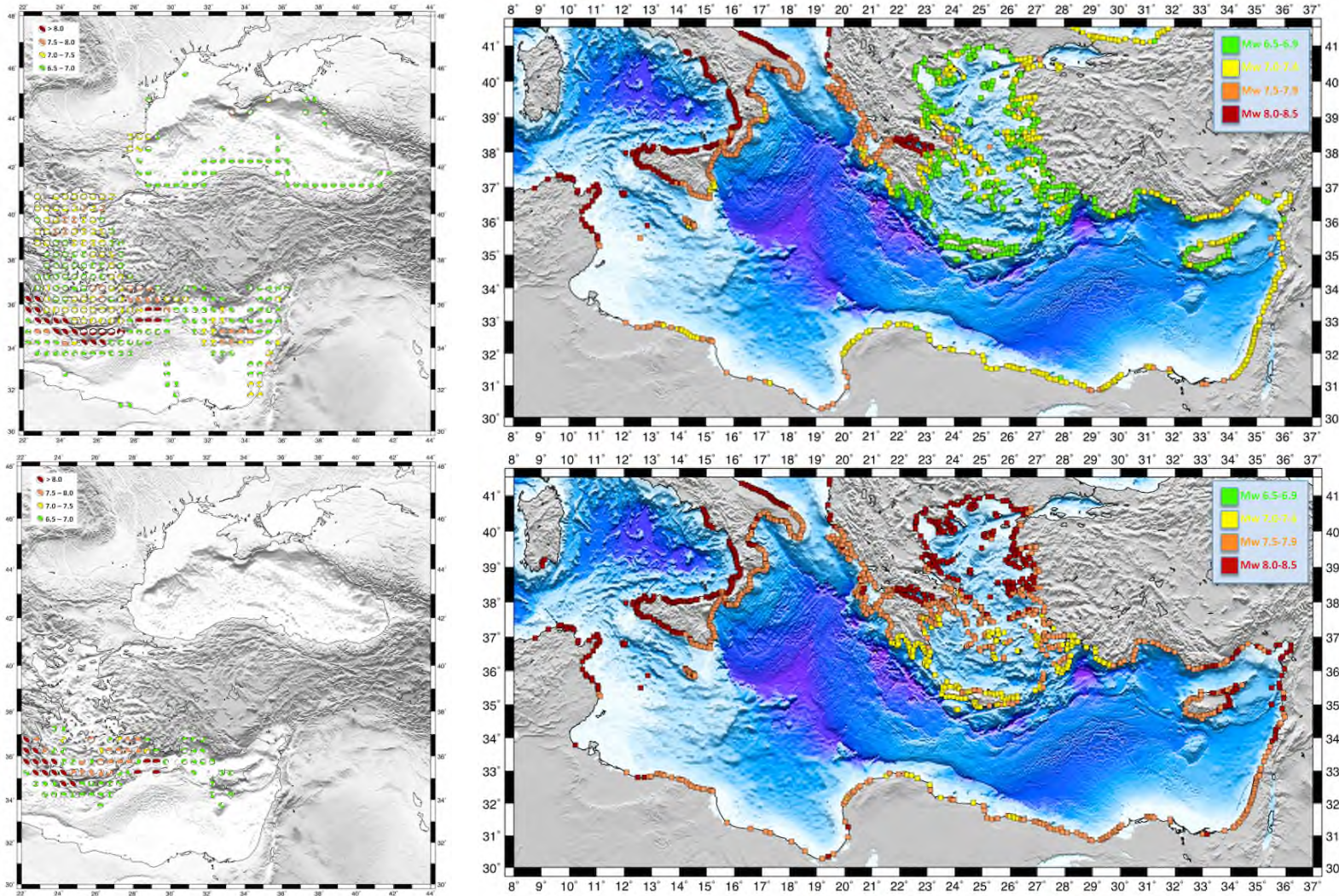
# Tsunami Wave Heights in Eastern Mediterranean



*Necmioğlu and Özel, 2015*

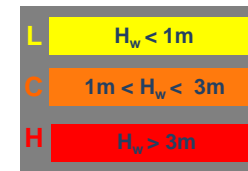
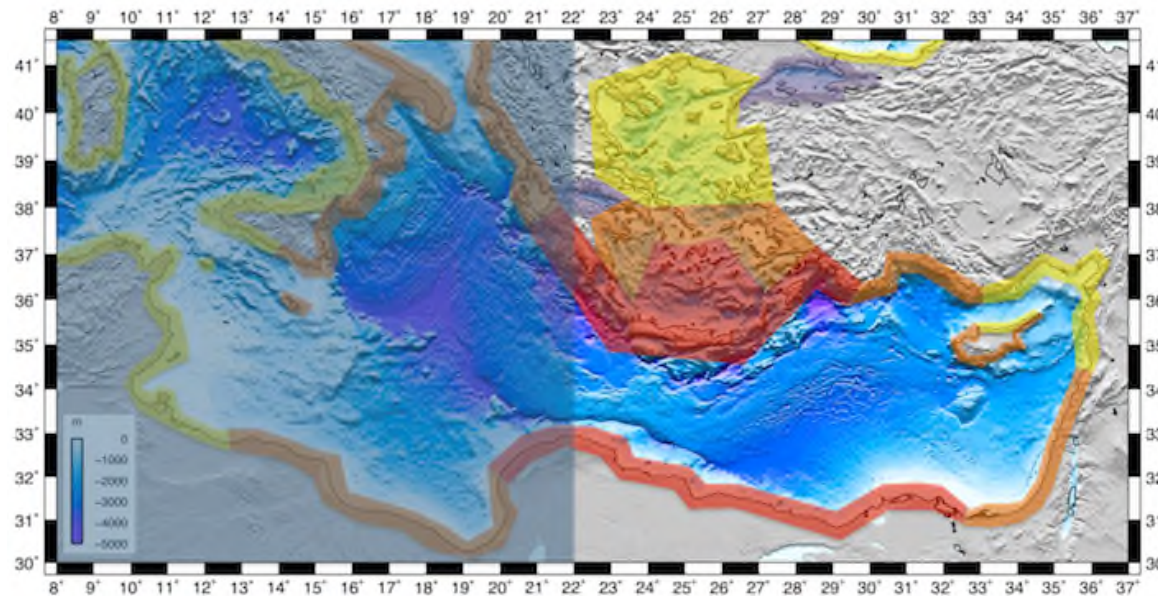
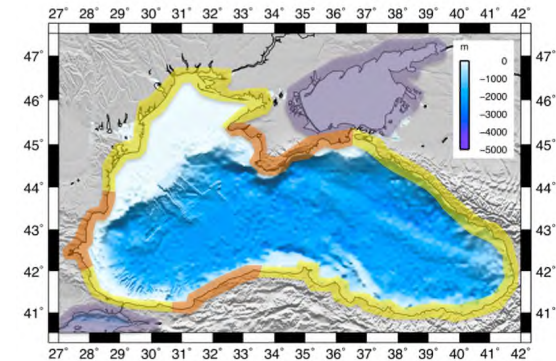
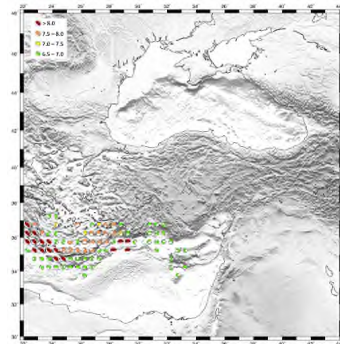
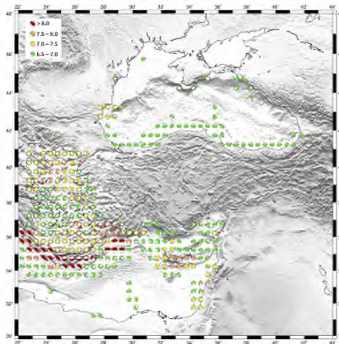


# Minimum Mw for 50 cm coastal wave-height



*Necmioğlu and Özel, 2015*

# Simplified Maximum Wave Height Zonation Maps

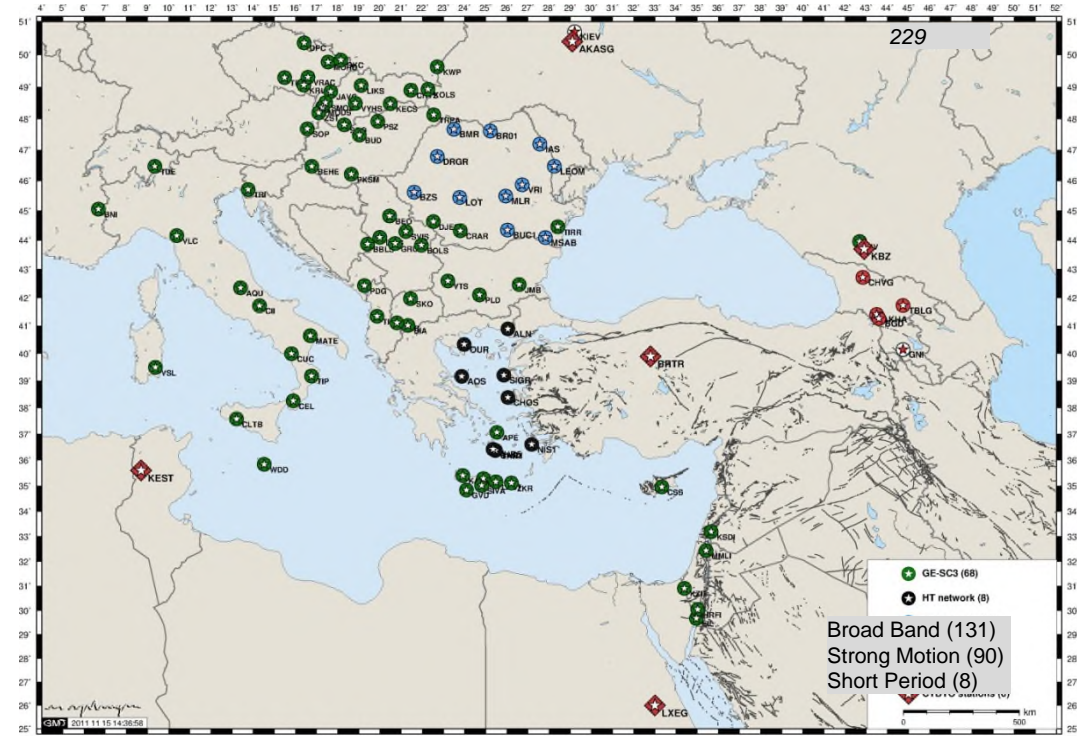
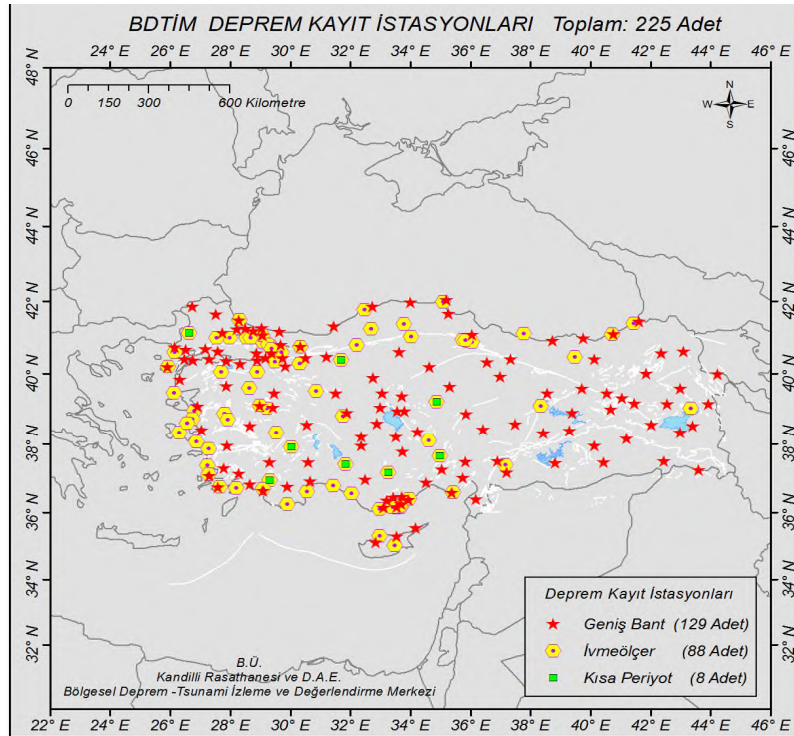


Valid only for the sources defined in this study excluding any submarine landslide

*Necmioğlu and Özel, 2015*

Information Workshop on NEAMTWS and NEAMWave17 Tsunami Exercise , Madrid ▪ 25-26 September 2017

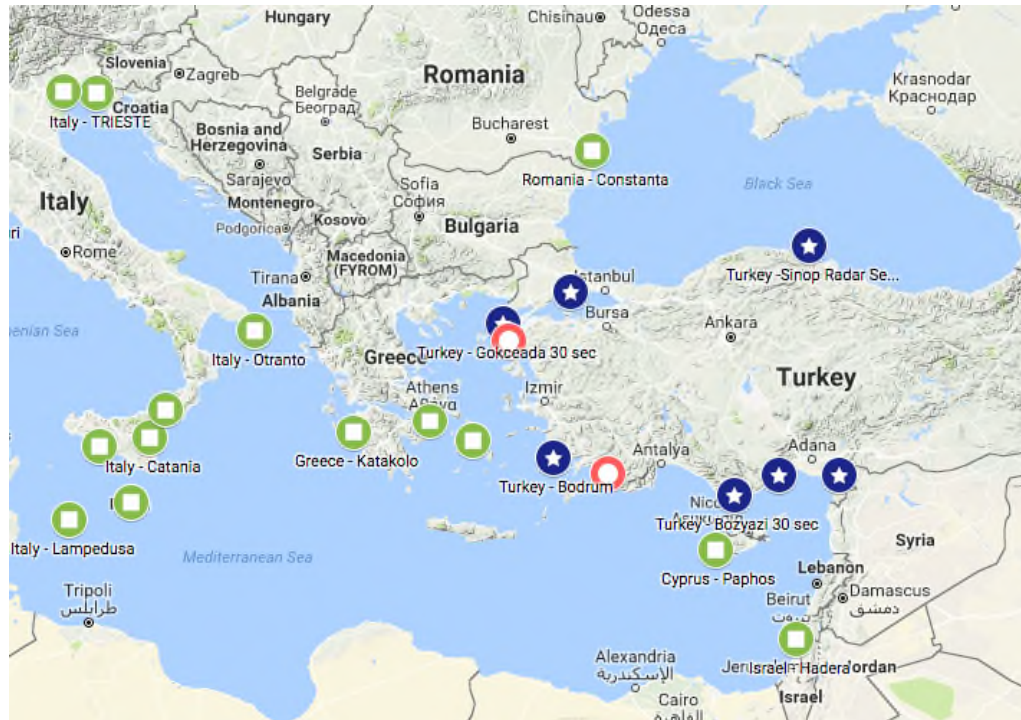
# Seismic Monitoring



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NTWC-TR network comprises 131 BB and 90 strong motion and 8 short period sensors. The global coverage include stations from CTBTO, GFZ and various others through bilateral agreements.

## Sea Level Monitoring

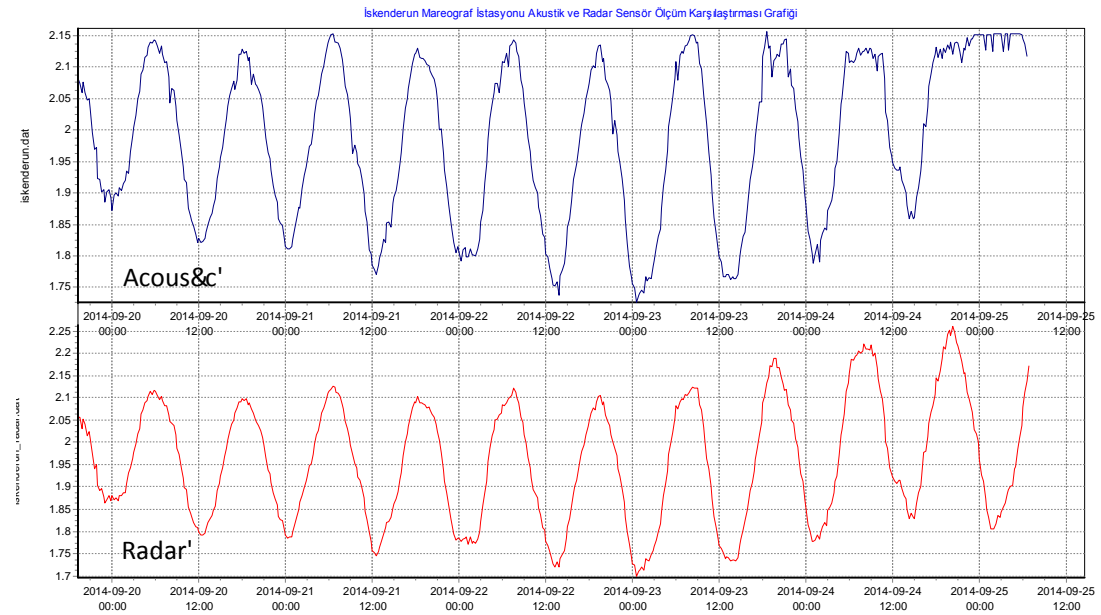
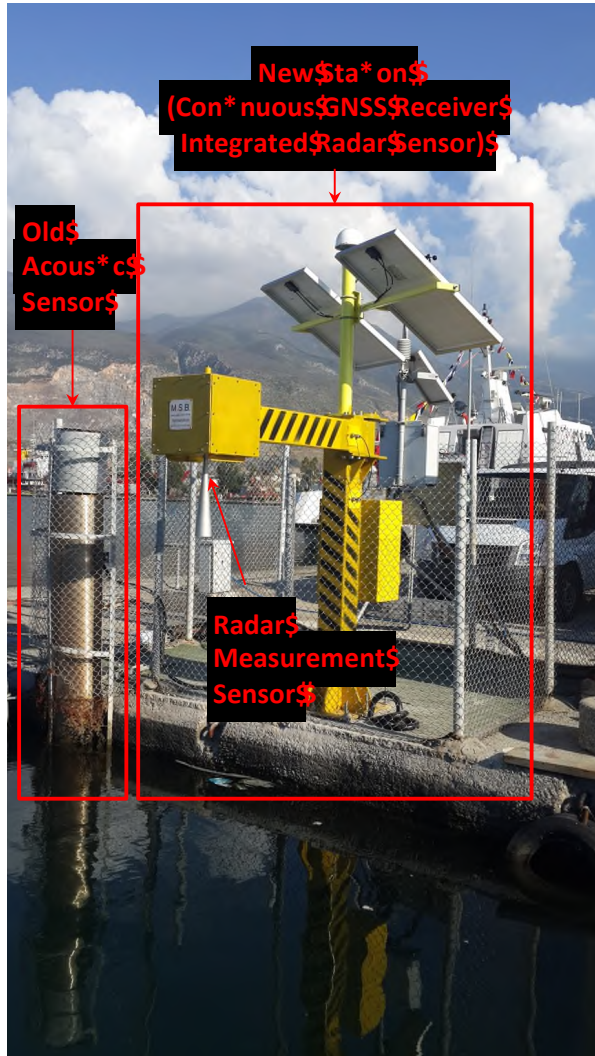


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General Command of Mapping (GCM) is responsible for the operation of the tide-gauge network (19 stations). Currently 7 tide gauge stations are transmitting data via satellite to KOERI. Integration of the whole network to NTWC-TR is on-hold due to procedural issues and GCM's plans to upgrade whole network with radar type tide-gauges. 2 IDSLs donated by JRC have been installed in Fethiye and Bozcaada.



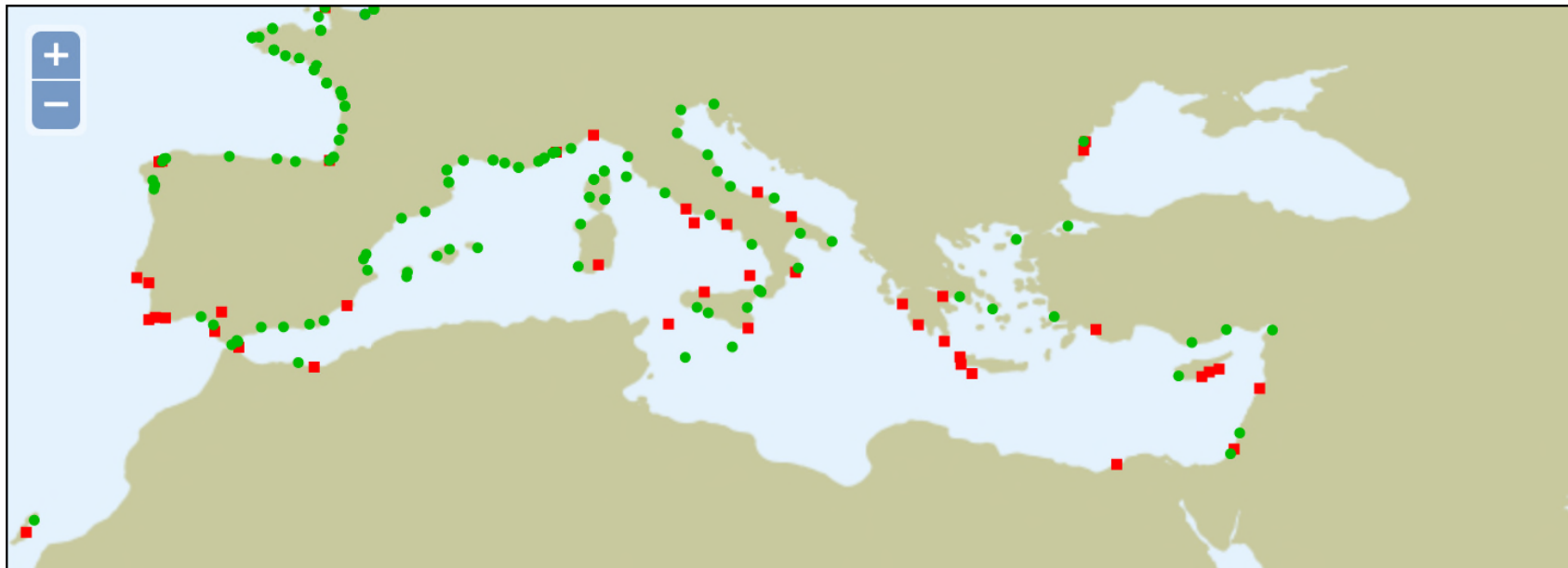
# Deployment of Radar Type TGs by GCM



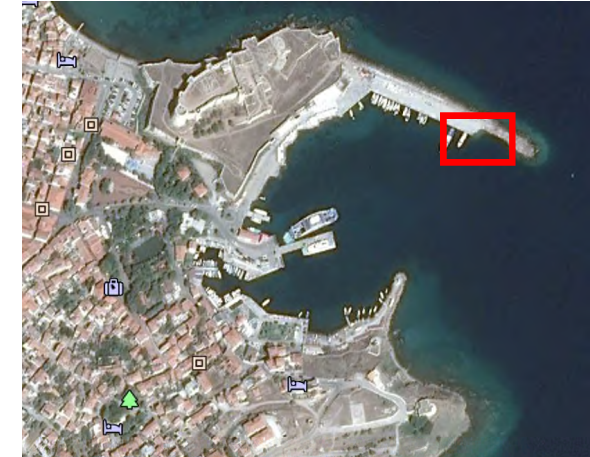


## GCM Sea-Level Data Available to IOC

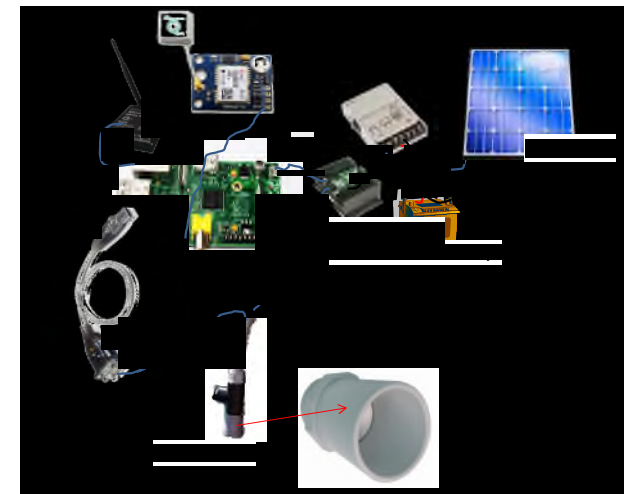
Code	GLOSS ID	Country	Location	Connection	DCP ID	Last observation Level	Time in GMT	Delay	Transmit Interval	View
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<a href="#">bodr</a>		Turkey	Bodrum	ftp		1.15	16:24	12'	2'	<a href="#">[open]</a>
<a href="#">feth</a>		Turkey	Fethiye	bgan	FETH	1.31	16:15	21'	1'	<a href="#">[open]</a>
<a href="#">iske</a>		Turkey	İskenderun	ftp		1.74	16:24	11'	2'	<a href="#">[open]</a>
<a href="#">erdem</a>		Turkey	Erdemli	ftp		1.34	16:24	11'	2'	<a href="#">[open]</a>
<a href="#">bozy</a>		Turkey	Bozyazı	ftp		1.16	16:24	11'	2'	<a href="#">[open]</a>
<a href="#">gokc</a>		Turkey	Gökçeada	ftp		1.11	16:24	11'	2'	<a href="#">[open]</a>
<a href="#">sino</a>		Turkey	Sinop	ftp		1.49	-down-	11'	2'	<a href="#">[open]</a>



## JRC-IDSL



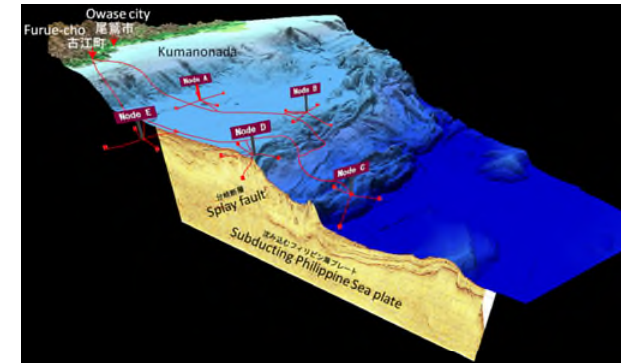
Bozcaada, Canakkale



There is a strong need to improve the NEAMTWS by deploying sea-bottom and/or offshore observation systems.



NOAA DART



Japan DONET Example

**Outline of GPS buoy**

◆ Structure of a GPS buoy in case of Muroto

> Buoy body

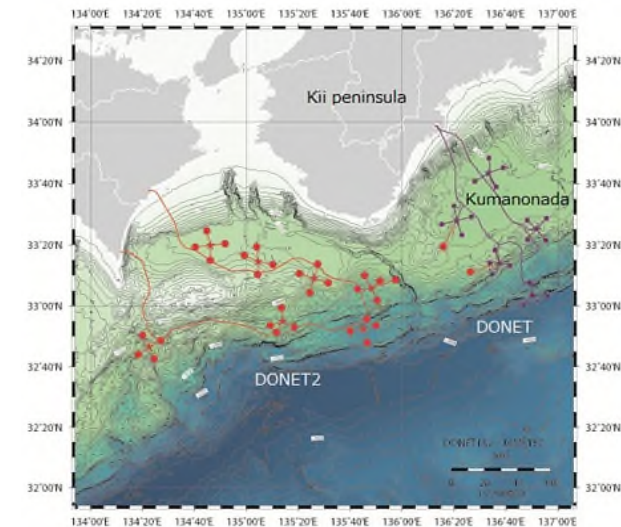
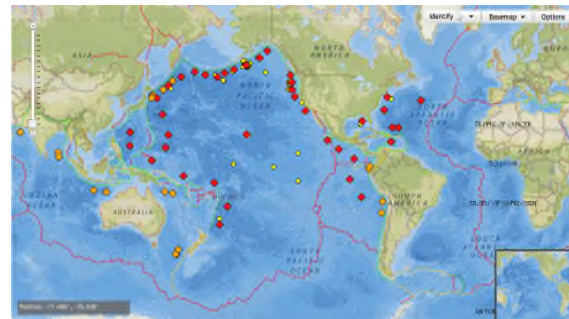
Buoy Diameter	4.5m
Buoy Height	17.2m
Buoy Weight	38ton

> Observational item

Waves
Tidal levels
Tsunami
Wind Speed & Direction
Water Temperature
Current Speed & Direction
Atmosphere Temperature
Atmosphere Pressure

Diagram labels: Radio antenna, GPS antenna, Wind meter, Solar panels, GPS buoy in Muroto, Chain 348m, Danforse Anchor: 27tons, Water Depth: 132m

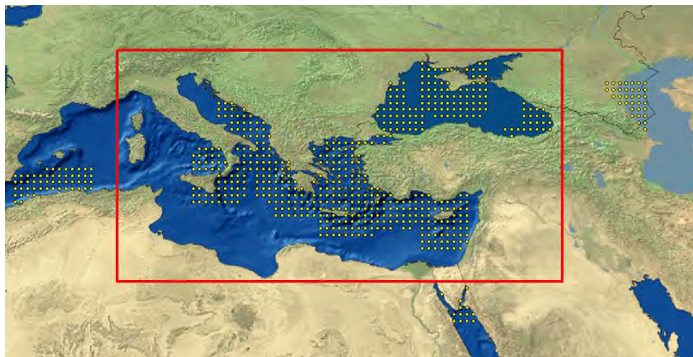
Hitachi Zosen Corporation, All Rights Reserved.



Japan Tsunameter



## EC-JRC Collaboration / TAT and SDBs

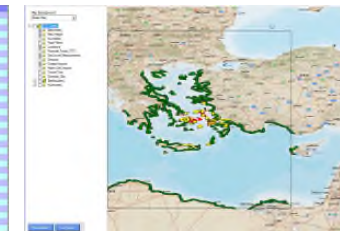
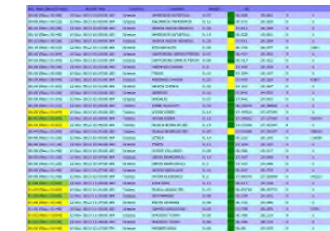
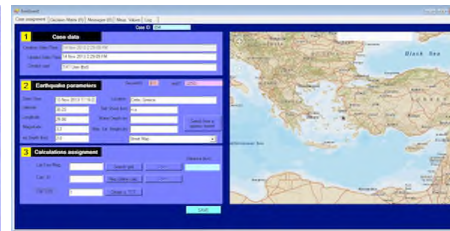
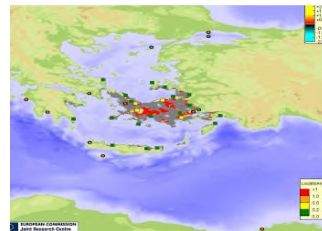
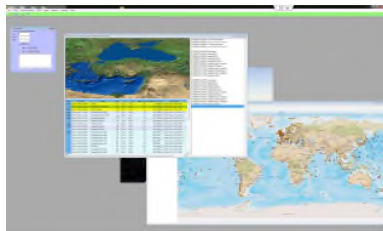
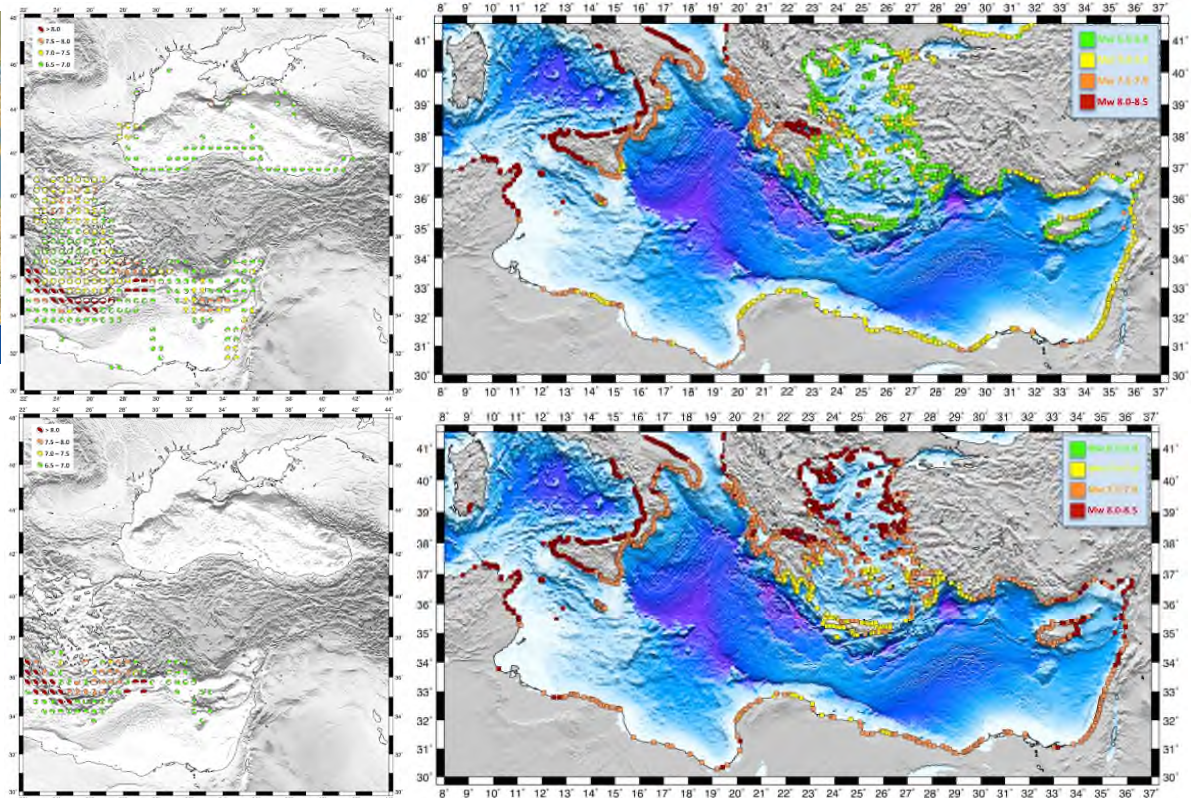


### MOD1&MOD2

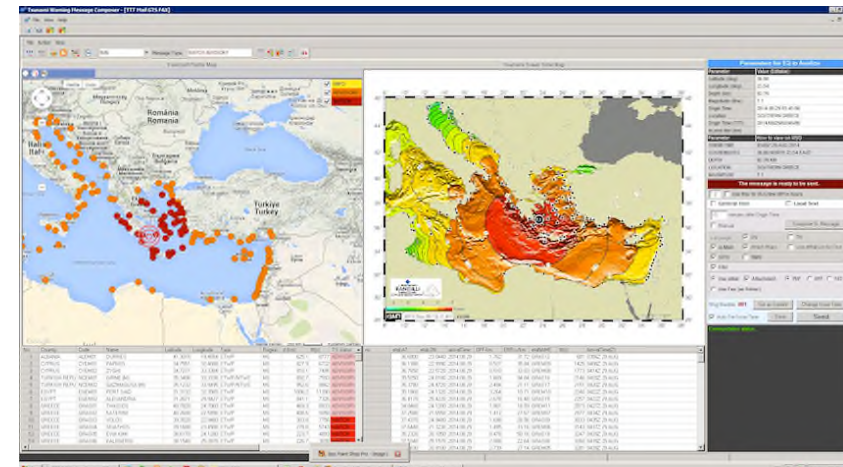
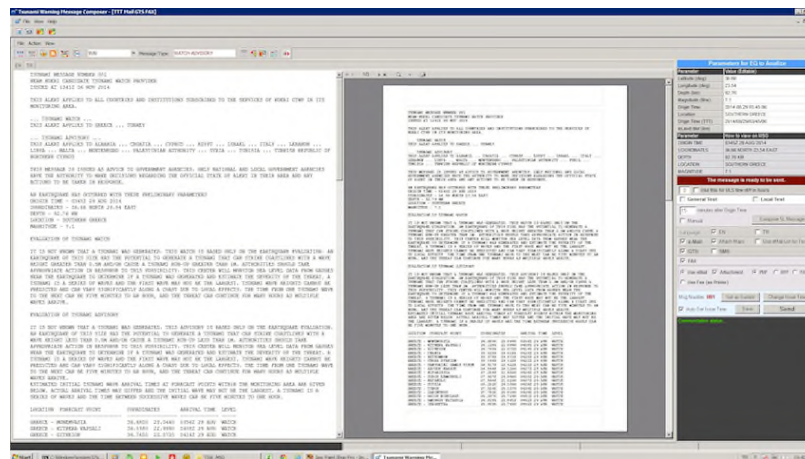
... available in operations ...

### MOD2-TR

... developed and available in operations ...



**TsuComp** is a software developed by KOERI within ASTARTE as a user-friendly interface to be used in the assessment of tsunamigenic potential and as a single-point entry for message dissemination.



Parameters for EQ to Analyze	
Parameter	Value (Editable)
Latitude (deg)	36.66
Longitude (deg)	23.54
Depth (km)	92.76
Magnitude (Mw)	7.1
Origin Time	2014.08.29 03:45:06
Location	SOUTHERN GREECE
Origin Time (TTT)	2014/08/29/03/45/06
inLand dist (km)	
Parameter	How to view on MSG
ORIGIN TIME	0345Z 29 AUG 2014
COORDINATES	36.66 NORTH 23.54 EAST
DEPTH	92.76 KM
LOCATION	SOUTHERN GREECE
MAGNITUDE	7.1

The message is ready to be sent.

Use this for DLS time diff in hours

General Test  Local Test

15 minutes after Origin Time

Manual

Language  EN  TR

e-Mail  Attach Maps  Use eMail List for Test

GTS  SMS

FAX

Use eMail  Attachment  PDF  RTF  TXT

Use Fax (as Printer)

Msg Number **001**

Auto Set Issue Time

TSUNAMI TATBİKAT MESAJI NO 001  
BOĞAZIÇI ÜNİVERSİTESİ  
KANDİLLİ RASATHANESİ VE DEPREM ARASTIRMA ENSTİTÜSÜ  
BÖLGESEL TSUNAMI İZLEME VE DEĞERLENDİRME MERKEZİ - BTİM

... TSUNAMI TEHLİKESİ ...

MESAJ GÖNDERİ ZAMANI: 1435L 28 OCT 2014

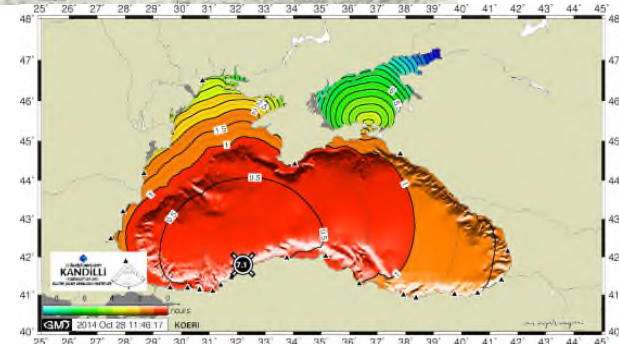
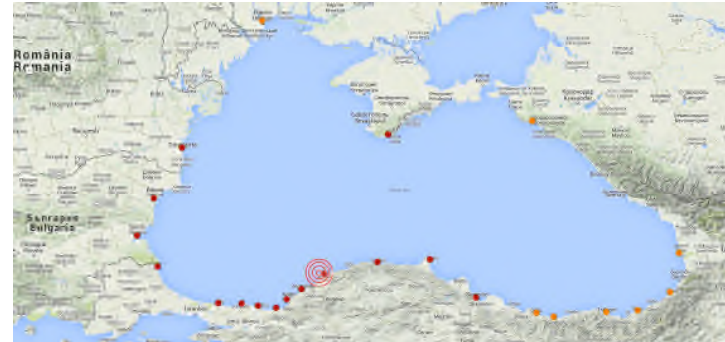
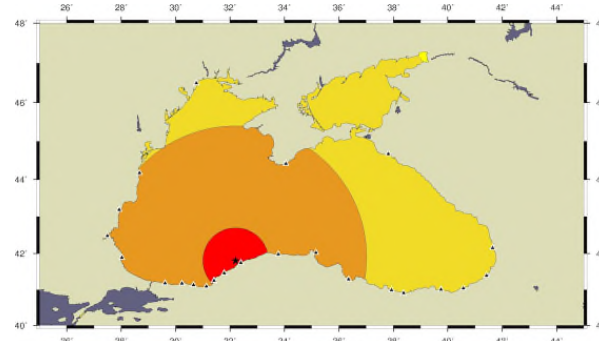
MERKEZİMİZ (BTİM) TARAFINDAN YAPILAN DEĞERLENDİRMEDE, ULUSAL DEPREM İZLEME MERKEZİ TARAFINDAN KAYDEDİLEN VE AŞAĞIDA BİLGİLERİ VERİLEN DEPREMİN BİR TSUNAMIYE NEDEN OLABİLECEĞİ BELİRLENMİŞTİR:

OLUŞ ZAMANI: 1230Z 28 OCT 2014  
KONUM: 41.80 KUZAY 32.20 DOĞU  
DERİNLİK: 7.50 KM  
YER: BLACKSEA-BARTIN  
BÜYÜKLÜK (M): 7.1

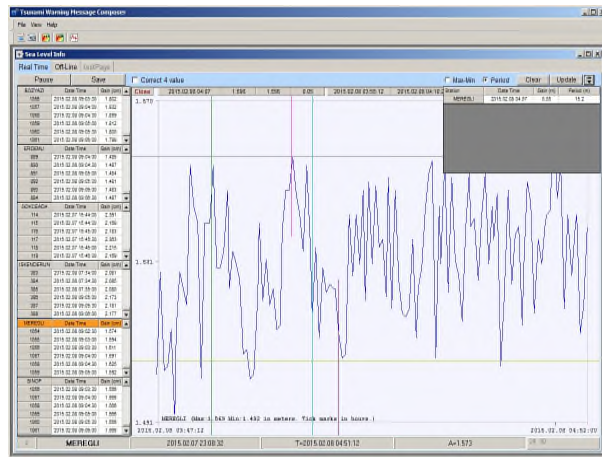
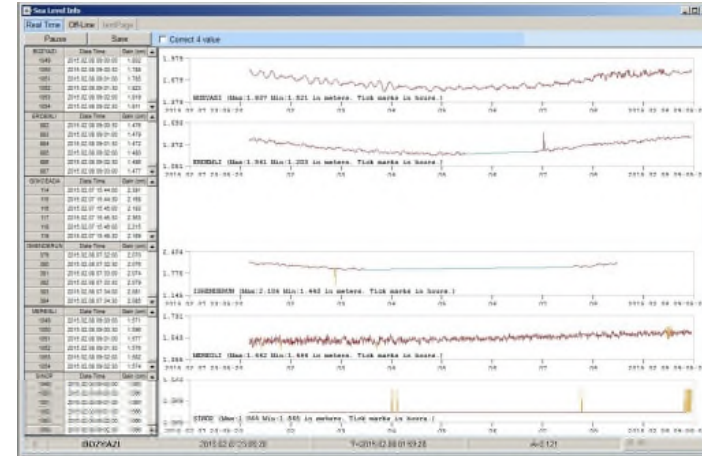
ETKİLENMESİ OLASI KIYI BÖLGELERİNDE TAHMİNİ TSUNAMI VARIS ZAMAN VE TEHLİKE DURUMU SEVİYELERİ AŞAĞIDA VERİLMİŞTİR. ÖNGÖRÜLEN VARIS ZAMANLARI VE İÇG/NEAMTWS KARAR MATRİSİ UYARINCA ELDE EDİLEN SEVİYELER, GEÇMEK TSUNAMI VARIS ZAMANLARI VE TEHLİKE DURUMU SEVİYELERİ İLE FARKLİLİK GÖSTERİBİLİR.

İL	YER	ENLEM	BOYLAM	VARIS ZAMANI	SEVİYE
AMASRA (M)		41.7442	32.3916	1242Z 28 OCT	UYARI
DÜZCE ARCAKOVA		41.0915	31.1208	1256Z 28 OCT	UYARI
İSTANBUL SİLE (M)		41.1804	29.6048	1313Z 28 OCT	UYARI
KASTAMONU İNEBOLU		41.9775	33.7697	1259Z 28 OCT	UYARI
KIRKLARELİ İĞNEADA (M)		41.8890	28.0237	1348Z 28 OCT	UYARI
KOCAELİ KEFKEN		41.1702	30.2232	1308Z 28 OCT	UYARI
SAKARYA İHSANİYE		41.1281	30.6498	1255Z 28 OCT	UYARI
SAMSUN		41.2865	36.3482	1340Z 28 OCT	UYARI
SİNOP (M)		42.0231	35.1495	1317Z 28 OCT	UYARI
ZONGULDAK		41.4549	31.7796	1244Z 28 OCT	UYARI
ZONGULDAK EREĞLİ		41.2556	31.4033	1254Z 28 OCT	UYARI
ARTVİN HOPA		41.3931	41.4175	1407Z 28 OCT	TAVSİYE
GİRESUN		40.9125	38.3726	1345Z 28 OCT	TAVSİYE
ORDU		40.9863	37.9281	1348Z 28 OCT	TAVSİYE
RİZE		41.0389	40.9730	1398Z 28 OCT	TAVSİYE
TRABZON (M)		41.0821	39.7444	1355Z 28 OCT	TAVSİYE

YUKARIDA SUNULAN BİLGİLER BİR TSUNAMININ HESINLIKLE OLUŞTUĞU ŞERHİNDE ANILANMAMALIDIR. BU UYARI MESAJI SADECE DEPREM PARAMETRELERİ (OLUŞ ZAMANI, BÜYÜKLÜK, DERİNLİK, ENLEM, BOYLAM) ESAS ALINARAK YAYIMLANMIŞTIR. İÇG/NEAMTWS KARAR MATRİSİ TEHLİKE DURUMU SEVİYELERİ KIYI BÖLGELERİNİN 0.5 METREDEN DAHA BÜYÜK GENLİLİ TSUNAMI DALGALARI İLE ETKİLENMESİNİN OLASI OLDUĞU YERLERDE UYARI, KIYI BÖLGELERİNİN 0.2 İLE 0.5 METRE ARASINDA GENLİLİ TSUNAMI DALGALARI İLE ETKİLENMESİNİN OLASI OLDUĞU YERLERDE TAVSİYE OLARAK TANIMLANMIŞTIR. BTİM, GÖZLEM VE ANALİZLERİNE DEVAM ETMEKTE OLUP, TAKİP EDECEK MESAJLARDA GÜNCEL BİLGİLENDİRMELER YAPILACAKTIR. AFET VE ACİL DURUM YÖNETİMİ ÜNİVERSİTESİNİN BU TÜR BİR DURUMDA TAKİP ETELERİ GEREKEN İŞLEMLERİ BAŞLATMALARI ÖNEMLİ TAVSİYE OLUNUR.



No	Country	FOP	Lat	Lon	App Time	AMPL	FREQ	Level	Station	Depth	CDM	ADDM	Home	Unit
1	GREECE	RHODOS	36.0870	28.0890	0814Z 08 FEB	00.02	00.0	WATCH	104.0	104.0	DR	M	✗	
2	TURKEY	AKOLGAÇ	36.6984	28.7781	0812Z 08 FEB	00.35	00.0	ADVISORY	109.2	109.2	TR	M	✗	
3	TURKEY	AKHILMAK	36.8044	28.6687	0812Z 08 FEB	00.12	00.0	ADVISORY	103.9	103.2	TR	M	✗	
4	TURKEY	AKHILMAK	36.2345	28.1534	0812Z 08 FEB	00.00	00.0	ADVISORY	32.1	103.1	TR	M	✗	
5	TURKEY	AKHILMAK	36.1905	28.6425	0812Z 08 FEB	00.00	00.0	ADVISORY	17.0	171.0	TR	M	✗	
6	TURKEY	RHODOS	36.4350	28.2103	0812Z 08 FEB	00.00	00.0	ADVISORY	142.1	170.0	GR	M	✗	
7	GREECE	KASTELOR	36.1000	28.0960	0812Z 08 FEB	00.00	00.0	ADVISORY	24.0	170.0	GR	M	✗	
8	TURKEY	AKHILMAK	36.9424	28.9032	0812Z 08 FEB	00.00	00.0	ADVISORY	106.1	170.0	TR	M	✗	
9	CYPRUS	PAPHOS	34.7501	24.4068	0802Z 08 FEB	00.00	00.0	ADVISORY	282.7	257.0	CY	M	✗	
10	TURKEY	HERSİN	36.0902	28.9803	0812Z 08 FEB	00.00	00.0	ADVISORY	283.1	252.5	TR	M	✗	
11	TURKEY	MUĞLA FC	36.0900	28.1164	0812Z 08 FEB	00.00	00.0	ADVISORY	72.2	264.0	TR	M	✗	
12	TURKEY	İSKİME HC	20.2405	20.2326	0802Z 08 FEB	00.00	00.0	ADVISORY	238.1	250.1	CY	M	✗	
13	TURKEY	MUĞLA HC	36.8772	28.3877	0842Z 08 FEB	00.00	00.0	ADVISORY	137.9	321.1	TR	M	✗	
14	GREECE	KARAFIYAH	36.4000	27.9800	0842Z 08 FEB	00.00	00.0	ADVISORY	253.2	322.2	GR	M	✗	
15	CYPRUS	ZYGH	34.7271	23.3364	0841Z 08 FEB	00.00	00.0	ADVISORY	300.0	327.1	CY	M	✗	
16	GREECE	MORFASIA	36.7420	26.9770	0842Z 08 FEB	00.00	00.0	ADVISORY	258.1	329.6	GR	M	✗	
17	GREECE	ISKAPHER	36.0000	25.7420	0842Z 08 FEB	00.00	00.0	ADVISORY	302.8	324.6	GR	M	✗	
18	GREECE	STRA	36.2000	24.9000	0812Z 08 FEB	00.00	00.0	ADVISORY	252.0	307.0	GR	M	✗	
19	GREECE	KALIMNOC	36.9710	26.9200	0802Z 08 FEB	00.00	00.0	ADVISORY	200.0	329.0	GR	M	✗	
20	GREECE	ADODIAH	36.2070	25.7200	0812Z 08 FEB	00.00	00.0	ADVISORY	285.2	408.7	GR	M	✗	
21	TURKEY	MUĞLA HC	37.0220	27.4220	0812Z 08 FEB	00.00	00.0	ADVISORY	220.2	408.6	TR	M	✗	
22	GREECE	GIARDIA	34.8400	24.1200	0812Z 08 FEB	00.00	00.0	ADVISORY	157.9	421.0	GR	M	✗	
23	GREECE	CHORAFI	36.1900	24.1320	0802Z 08 FEB	00.00	00.0	ADVISORY	120.0	432.0	GR	M	✗	
24	TURKEY	HERSİN HC	36.2315	28.8200	0812Z 08 FEB	00.00	00.0	ADVISORY	202.1	434.0	TR	M	✗	
25	TURKEY	HERSİN HC	36.9024	24.2020	0802Z 08 FEB	00.00	00.0	ADVISORY	490.2	441.0	TR	M	✗	
26	LEBANON	BEIRUT	33.9124	25.4406	0812Z 08 FEB	00.00	00.0	ADVISORY	579.1	467.3	LB	M	✗	
27	GREECE	SAPHIRO	36.4170	25.4020	0802Z 08 FEB	00.00	00.0	ADVISORY	381.2	466.0	GR	M	✗	
28	LEBANON	TYRE	33.2507	25.1711	0800Z 08 FEB	00.00	00.0	ADVISORY	180.0	404.1	LB	M	✗	
29	TURKEY	SARIZAL	28.1222	28.8800	0802Z 08 FEB	00.00	00.0	ADVISORY	387.1	468.0	CY	M	✗	



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# Boğaziçi University Kandilli Observatory and Earthquake Research Institute



TSUNAMI MESSAGE NUMBER 001  
NEAM KOERI TSUNAMI SERVICE PROVIDER  
ISSUED AT 2250Z 20 JUL 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 GREECE...TURKEY

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 - 2231 UTC THU JUL 20 2017  
COORDINATES - 36.96 NORTH 27.51 EAST  
DEPTH - 11.0 KM  
LOCATION - DODECANESE ISLANDS  
MAGNITUDE - 6.6

EVALUATION OF TSUNAMI WATCH  
IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED. THIS MESSAGE 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. KOERI 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.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES AT FORECAST POINTS WITHIN THE SERVICE AREA ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN SUCCESSIVE WAVES CAN BE FROM ONE MINUTE TO ONE HOUR.

LOCATION	FORECAST POINT CODE	TIME	LEVEL
GREECE-KOS	KEFALOS	20 JUL	WATCH
GREECE-KALIMNOS	PANORMOS	20 JUL	WATCH
GREECE-RHODOS	TOWN	20 JUL	WATCH
TURKEY-MUGLA	BODRUM (M)	37.03N 27.42E 2239Z	20 JUL WATCH
TURKEY-AYDIN	DIDIM	37.35N 27.28E 2257Z	20 JUL WATCH
TURKEY-MUGLA	AKSAZ (M)	36.84N 28.40E 2308Z	20 JUL WATCH

**TSP-TR**

- E-MAIL**
- FAX**
- GTS**
- SMS**

**SUBSCRIBERS**

TSUNAMI MESSAGE NUMBER 002  
NEAM KOERI TSUNAMI SERVICE PROVIDER  
ISSUED AT 2332Z 20 JUL 2017

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

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

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 - 2231 UTC THU JUL 20 2017  
COORDINATES - 36.96 NORTH 27.51 EAST  
DEPTH - 11.0 KM  
LOCATION - DODECANESE ISLANDS  
MAGNITUDE - 6.6

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

COUNTRY	GAUGE LOCATION	LAT	LOX	TIME	AMPL	PER
TURKEY	BODRUM	37.03	27.42	22:32	0.10	13.0

LAT - LATITUDE (N-NORTH, S-SOUTH)  
LOX - LONGITUDE (E-EAST, W-WEST)  
TIME - TIME OF THE MEASUREMENT (Z IS UTC TIME)  
AMPL - TSUNAMI AMPLITUDE MEASURED RELATIVE TO NORMAL SEA LEVEL.  
IT IS ...NOT... CREST-TO-TROUGH WAVE HEIGHT.  
VALUES ARE GIVEN IN METERS (M).  
PER - PERIOD OF TIME IN MINUTES (MIN) FROM ONE WAVE TO THE NEXT.

EVALUATION OF TSUNAMI WATCH  
SEA LEVEL READINGS INDICATE A TSUNAMI WAS GENERATED. THIS TSUNAMI 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. KOERI WILL MONITOR SEA LEVEL DATA FROM GAUGES NEAREST 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. GOVERNMENT MESSAGES WILL BE ISSUED AS SOON AS NEW DATA AND EVALUATION IS AVAILABLE. THE TSUNAMI ALERT WILL REMAIN IN EFFECT UNTIL AN END OF ALERT IS BROADCAST.

# KOERI TSP Daily Tests

Duty Officers perform a test of the operational system in each shift based on a pre-defined scenario using TAT and TSUComp, including testing of the access to the sea-level data.

These test are evaluated regularly and Duty-Officers receive feedback.

**Around 300 scenarios so far!!!**

From: Ceren Ozer <ccheren@gmail.com>  
 Date: Monday, September 9, 2013 3:38 PM  
 To: Feyza Ocal, Tugce Afacan, Aysegul Koseoglu, Didem Samut, pdeniz@boun.edu.tr, dilek.kepekci@boun.edu.tr, muzaffer.gul@boun.edu.tr, pektas@boun.edu.tr, remzi.polat@boun.edu.tr, Yavuz Günes, Dogan Aksari, Selda Altuncu, Fatih Turhan, mkara@boun.edu.tr, ogutcu@boun.edu.tr  
 Cc: Dogan Kalafat, Nurcan Meral Ozel, Kamuran TAYLAN ÇEVRE, Ocal, Mustafa Comoglu  
 Subject: Re: TAT Test Mesajları 9-15 Eylül 2013

Değerli UDİM personeli,  
 Bu haftaki testlerimiz aşağıdadır.

1) Test 32  
 2) Test 33  
 Bu testte depremden 25 dakika sonra Cyprus-Paphos mareografında hareketlilik gözlenmiş ve ilk hareketten 9 dakika sonra en yüksek su seviyesi 22 cm olarak ölçülmüştür.

Yine depremden 45 dakika sonra Cyprus-Zygi mareografında hareketlilik gözlenmiş ve ilk hareketten 8 dakika sonra en yüksek su seviyesi 23 cm olarak ölçülmüştür.

Depremden 75 dakika sonra Bozyazi mareografında hareketlilik gözlenmiş ve ilk hareketten 10 dakika sonra en yüksek su seviyesi 20 cm olarak ölçülmüştür.

Hepinize iyi bir hafta dilerim.

Ceren

```

TSUNAMI MESSAGE NUMBER 003
ISSUED AT 1856Z 20 SEP 2013

THIS ALERT APPLIES TO ALL COUNTRIES SUBSCRIBED TO THE SERVICES OF KOERI CTWP IN ITS MONITORING AREA.

... TSUNAMI WATCH
THIS ALERT APPLIES TO
SCYPT...GREECE...ISRAEL...LIBANON...LIBYA...PALESTINE...SYRIA...TURKEY

THIS MESSAGE IS ISSUED AS ADVICE TO GOVERNMENT AGENCIES. ONLY NATIONAL AND LOCAL 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 - 0640 UTC TUE SEP 17 2013
COORDINATES - 37.86 NORTH 26.04 EAST
DEPTH - 18.0
LOCATION - TEST 34-AGGIAN SEA
MAGNITUDE - 7.3

EVALUATION OF TSUNAMI WATCH
IT IS NOT KNOWN THAT A TSUNAMI WAS GENERATED. THIS MESSAGE 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.

ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES AT FORECAST POINTS WITHIN THE MONITORING AREA ARE GIVEN BELOW. ACTUAL ARRIVAL TIMES MAY DIFFER AND THE INITIAL WAVE MAY NOT BE THE LARGEST. A TSUNAMI IS A SERIES OF WAVES AND THE TIME BETWEEN SUCCESSIVE WAVES CAN BE FIVE MINUTES TO ONE HOUR.

LOCATION FORECAST POINT COORDINATES ARRIVAL TIME LEVEL
-----
SCYPT-ALEXANDRIA 30 00N 29 50E 0702Z 17 SEP WATCH
SCYPT-FYRT SAID 31 30N 32 30E 1047Z 17 SEP WATCH
GREECE-IKARIA AGIOS 37 10N 26 30E 0656Z 17 SEP WATCH
GREECE-KALUGHERI 38 10N 26 00E 0656Z 17 SEP WATCH
GREECE-CHIOS VOLISSOS 38 40N 26 00E 0706Z 17 SEP WATCH
GREECE-MEZIMOS CHORA 37 30N 26 00E 0706Z 17 SEP WATCH
GREECE-ANDROS 37 00N 26 00E 0706Z 17 SEP WATCH
GREECE-TINIOS 37 00N 26 00E 0707Z 17 SEP WATCH
GREECE-SERES ORNOUPOLE 37 00N 26 00E 0716Z 17 SEP WATCH
GREECE-KALIMNOS PAROSIS 36 00N 26 00E 0721Z 17 SEP WATCH
GREECE-ANORGOS KATAPOLA 36 00N 26 00E 0722Z 17 SEP WATCH
GREECE-LESVOS SIGRI 36 00N 26 00E 0724Z 17 SEP WATCH
GREECE-SVIA KIME 36 00N 26 00E 0726Z 17 SEP WATCH
GREECE-NAXOS CHORA 36 00N 26 00E 0727Z 17 SEP WATCH
GREECE-KOS KEFALOS 36 00N 26 00E 0731Z 17 SEP WATCH
GREECE-SANTORINI ORNOS 35 00N 26 00E 0736Z 17 SEP WATCH
GREECE-SKIATHOS 35 00N 26 00E 0741Z 17 SEP WATCH
GREECE-KASAPATOS MICHODI 35 00N 26 00E 0742Z 17 SEP WATCH
GREECE-LESVOS MILDIOS 35 00N 26 00E 0745Z 17 SEP WATCH
GREECE-LESVOS MITILINE 35 00N 26 00E 0747Z 17 SEP WATCH
GREECE-LIMNOS MERINA 35 00N 26 00E 0748Z 17 SEP WATCH
GREECE-MELIOS ADAMAS 35 00N 26 00E 0753Z 17 SEP WATCH
GREECE-SITZIA 35 00N 26 00E 0753Z 17 SEP WATCH
GREECE-RHODOS LIMNOS 35 00N 26 00E 0759Z 17 SEP WATCH
GREECE-ACIOS NEOLADOS 35 00N 26 00E 0806Z 17 SEP WATCH
GREECE-MONEMVASSIA 35 00N 26 00E 0807Z 17 SEP WATCH
GREECE-BETHLEHEM 35 00N 26 00E 0807Z 17 SEP WATCH
GREECE-RHODOS TOWN 35 00N 26 00E 0808Z 17 SEP WATCH
GREECE-SANTHRAKI 35 00N 26 00E 0808Z 17 SEP WATCH
GREECE-IZRAPETRA 35 00N 26 00E 0811Z 17 SEP WATCH
GREECE-KITHIRA KAPSALI 35 00N 26 00E 0811Z 17 SEP WATCH
GREECE-VOLIOS 35 00N 26 00E 0814Z 17 SEP WATCH
GREECE-KASTELORIZO 35 00N 26 00E 0815Z 17 SEP WATCH
GREECE-GITHIEDON 35 00N 26 00E 0822Z 17 SEP WATCH
    
```

# KOERI RegCTEs

*At the current stage, RegCTEs are very useful to identify and address any issue related to the Message Dissemination.*

**Regular CTEs are practiced every first Monday with the National CPA and every first Tuesday as TSP on the first full week of the month.**

**ICG/NEAMTWS Task Team on Operations is responsible for the evaluation of these RegCTEs.**

**TWFP\_TR MONTHLY COMMUNICATION TEST FORM**

\* Required

**BTIM**

MESSAGE SENDER \*

MESSAGE DATE AND TIME \*  
Please select the correct date and time which is written at message header

MEMBER STATE OF MESSAGE RECEIVER \*

ORGANIZATION NAME OF MESSAGE RECEIVER \*

FIRST NAME AND LAST NAME OF MESSAGE RECEIVER \*

E-MAIL ADDRESS \*

DID YOU RECEIVE E-MAIL MESSAGE \*  
 YES  
 NO

E-MAIL MESSAGE ARRIVAL DATE AND TIME

DID YOU RECEIVE FAX MESSAGE? \*  
 YES  
 NO

FAX MESSAGE ARRIVAL DATE AND TIME

DID YOU RECEIVE GTS MESSAGE? \*  
 YES  
 NO

GTS MESSAGE ARRIVAL DATE AND TIME

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TIME STAMP	MEMBER STATE OF MESSAGE RECEIVER	ORGANIZATION NAME OF MESSAGE RECEIVER	SALUTATION	FIRST NAME AND LAST NAME OF MESSAGE RECEIVER	E-MAIL ADDRESS	DID YOU RECEIVE E-MAIL MESSAGE	E-MAIL MESSAGE ARRIVAL DATE AND TIME	DID YOU RECEIVE FAX MESSAGE?	FAX MESSAGE ARRIVAL DATE AND TIME	DID YOU RECEIVE GTS MESSAGE?	GTS MESSAGE ARRIVAL DATE AND TIME	MESSAGE DATE AND TIME	MESSAGE SENDER	
10/8/2014 14:10:45	TURKEY	A/AD EARTHQUAKE DEPARTMENT AFAD		KEREM KUTERDEM	ksunam@afad.gov.tr	YES	10/6/2014 10:28:00	YES	10/6/2014 10:28:00	NO		10/6/2014 10:28:00	TWFP TR	tepekkir.ederc
10/8/2014 14:13:38	TURKEY	EARTHQUAKE DEPARTMENT NCGR		KEREM KUTERDEM	ksunam@afad.gov.tr	YES	10/7/2014 11:23:00	YES	10/7/2014 11:23:00	NO		10/7/2014 11:23:00	TWFP TR	tepekkir.ederc
10/9/2014 15:12:41	LEBANON	Prime Ministry Disaster and Emergency Management Presidency AFAD		Resonance Department	acikdurummerkezi@afad.gov.tr	YES	10/3/2014 14:17:00	YES	10/3/2014 14:17:00	NO		10/3/2014 14:17:00	TWFP TR	
11/4/2014 15:14:08	TURKEY	EARTHQUAKE DEPARTMENT AFAD		KEREM KUTERDEM	ksunam@afad.gov.tr	YES	11/3/2014 14:17:00	YES	11/3/2014 14:13:00	NO		11/4/2014 15:00:00	TWFP TR	tepekkir.ederc
11/4/2014 16:52:41	TURKEY	EARTHQUAKE DEPARTMENT SACDPR/DGPDE (SPAIN)		DENK ERKMEK	ksunam@afad.gov.tr	YES	11/4/2014 14:47:00	YES	11/4/2014 14:47:00	NO		11/4/2014 16:50:00	TWFP TR	TEPEKKIR.EDERC
11/4/2014 16:57:22	SPAIN			DUTY OFFICER	stacop@prociiv.mir.es	YES	11/4/2014 14:47:00	YES	11/4/2014 14:51:00	NO		11/4/2014 14:48:00	TWFP TR	no response
11/4/2014 17:00:44	Italy	Italian Civil Protection		Italian Civil Protection	salocoperativa@protezionecivile.it	YES	11/4/2014 15:48:00	NO		NO		11/4/2014 16:48:00	TWFP TR	1 - The mess Civil Protection / Management - (St
11/4/2014 17:01:50	GREECE	NOA-HLNTWC Bundesamt für Seeschifffahrt und Hydrographie DEUTSCHER Wetterdienst EGERECC		NI NIWC@noa.gr		YES	11/4/2014 2:46:00	YES	11/4/2014 2:47:00	YES	11/4/2014 2:36:00	11/4/2014 2:46:00	TWFP TR	
11/4/2014 17:02:03	Germany			Stefan Reinert OPERATEUR	wol@sh.de	YES	11/4/2014 14:55:00	YES	11/4/2014 14:50:00	NO		11/4/2014 14:48:00	TWFP TR	
11/4/2014 17:03:50	FRANCE			Delachier	operateur.cas@zeil.com.fr	YES	11/4/2014 14:46:00	YES	11/4/2014 14:46:00	YES	11/4/2014 14:48:00	11/4/2014 14:48:00	TWFP TR	
11/4/2014 17:05:03	Germany			DWV	no.hamburg	YES	10/4/2014 14:55:00	YES	10/4/2014 14:47:00	NO		10/4/2014 14:48:00	TWFP TR	
11/4/2014 17:49:54	EU			Rafaela Wagner	echo-erc@ec.europa.eu	YES	11/4/2014 15:47:00	YES	11/4/2014 15:48:00	NO		11/4/2014 15:47:00	TWFP TR	email message wa
11/5/2014 6:59:56	Israel	Gil and PMO		Yefim Gitelman	yefim@zqi.co.il	YES		NO		NO		11/4/2014 2:46:00	TWFP TR	Meteorological Ser
11/5/2014 10:09:48	Romania	National Institute for Earth Physics (INEP)		Raluca Partheniu	raluca@info.ro	YES	11/4/2014 14:46:00	YES	11/4/2014 14:47:00	NO		11/4/2014 14:46:00	TWFP TR	No comments
11/5/2014 10:17:06	LEBANON	NGCR		Constantin Ionescu	csionescu@com.edu.lb	YES	11/4/2014 14:46:00	YES	11/4/2014 14:46:00	YES		11/4/2014 14:46:00	TWFP TR	
11/5/2014 14:03:30	ITALY	INGV		Alberto Micheli (TWFP)	alberto.micheli@ingv.it	YES	11/4/2014 14:46:00	YES	11/4/2014 14:47:00	YES		11/4/2014 14:46:00	TWFP TR	

# Operational Manual

Operational Manual and Standard Operational Procedures KOERI-RETMC

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Operational Manual and Standard Operational Procedures KOERI-RETMC

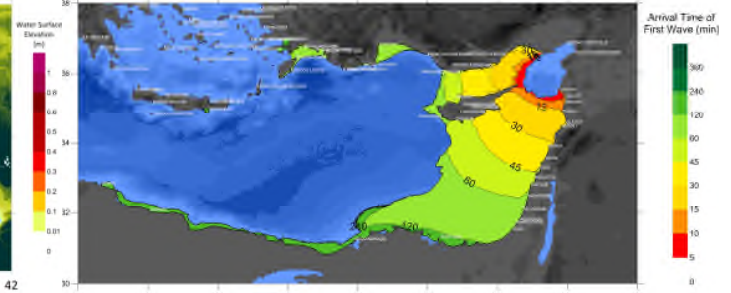
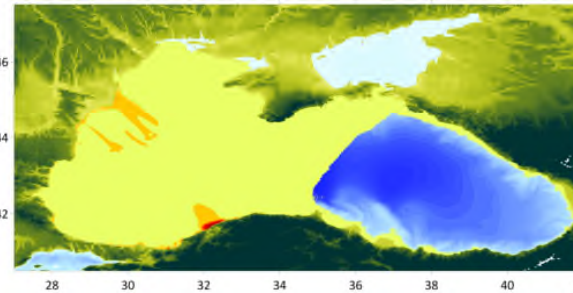
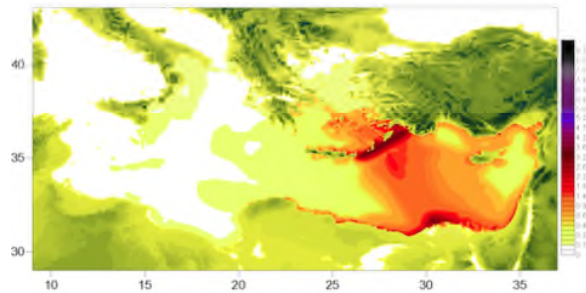
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... learning by doing ... living document ...  
... submitted during accreditation procedure ...



# NEAMTWS Tsunami and Communication Test Exercises



-  ECTE-1
-  CTE2
-  CTE3
-  CTE4
-  CTE5
-  CTE6

10 August 2011  
22 May 2012  
1 October 2013  
30 June 2014  
26 March 2015  
29 July 2015

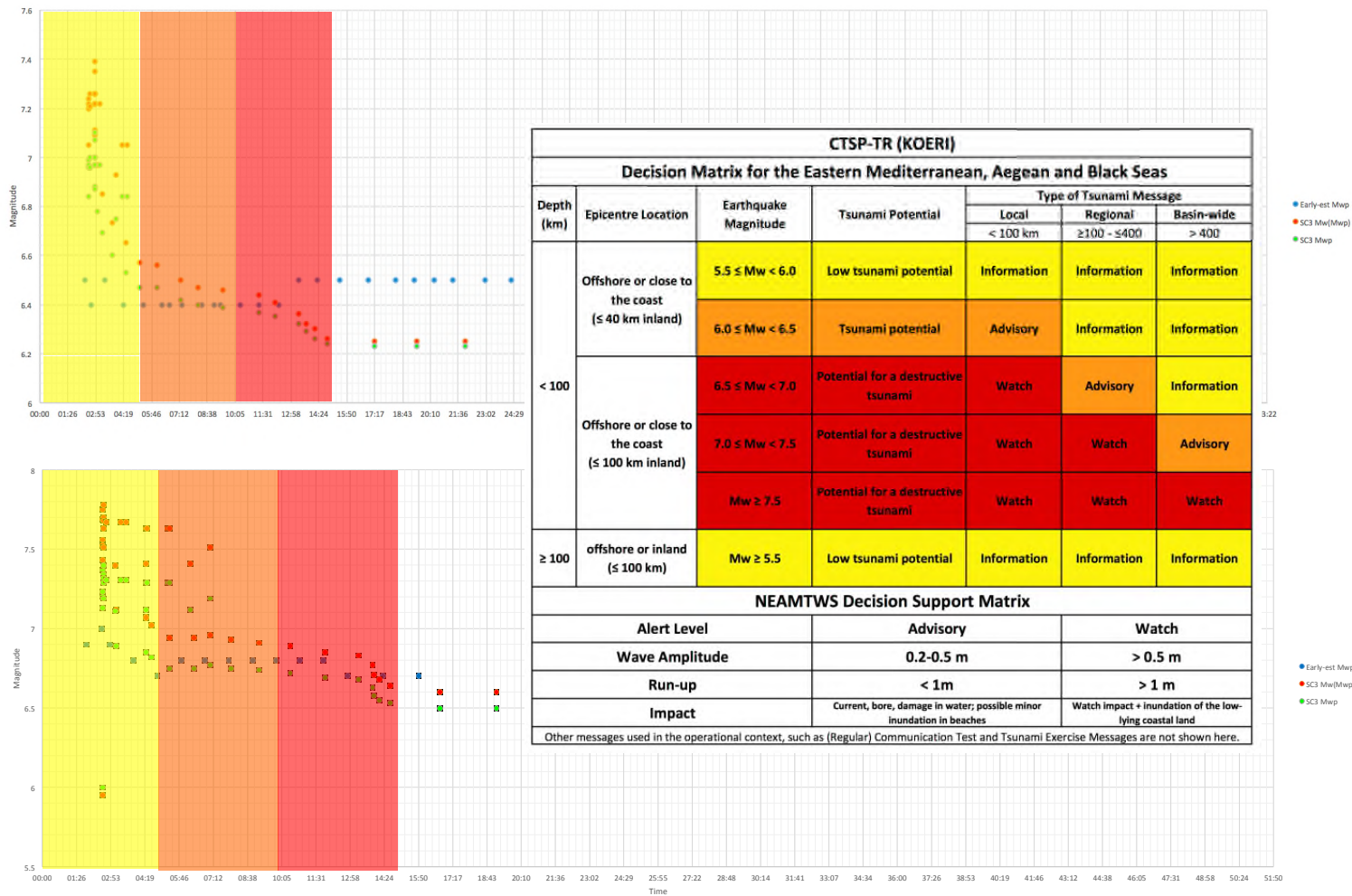
KOERI  
CEA  
NOA  
IPMA  
CENALT  
NOA

## 12 June 2017 and 20 July 2017 Events

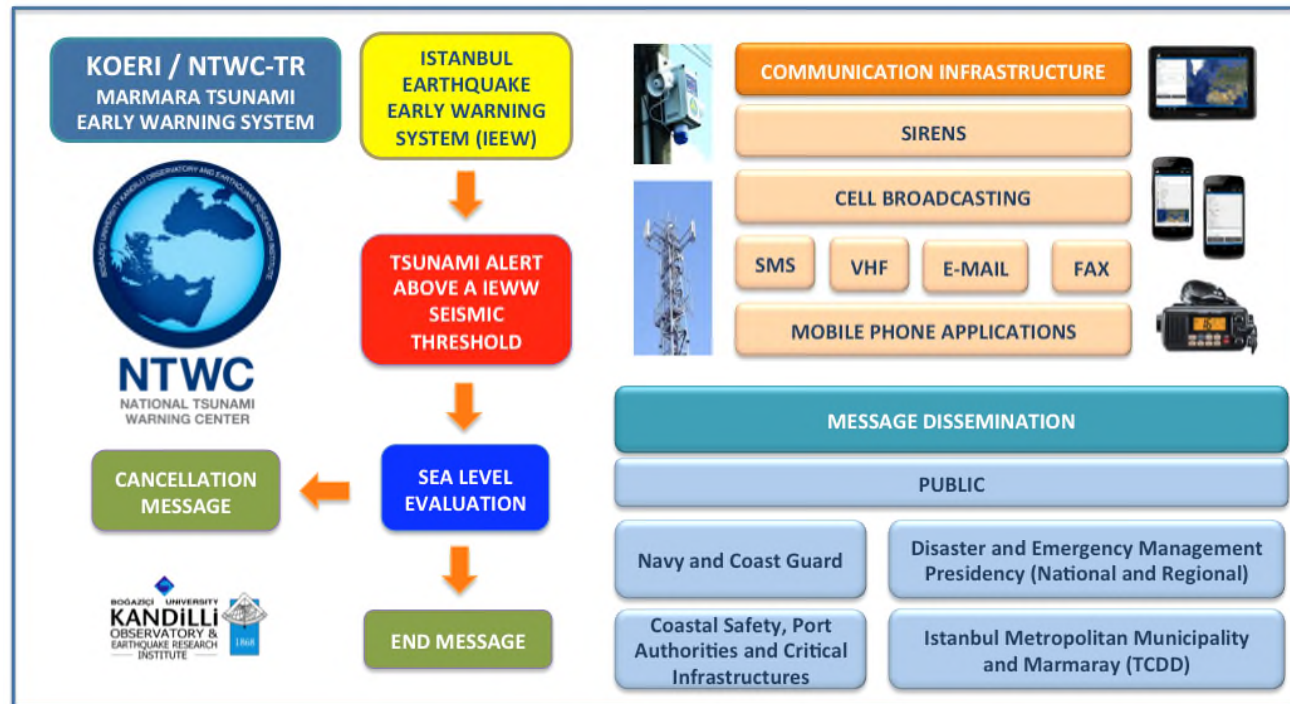
Event	Location	LAT	Lon	DEPTH	MAG	Message	Issue Time	Delay (min)	Comments	
12 JUN 2017 12:28	LESVOS					KOERI & INGV sent ADIVOSORY, NOA SENT WATCH-ADVISORY	KOERI & INGV 12:38 NOA 12:39	KOERI & INGV 10 NOA 11	CANCELLATION KOERI 14:10 NOA 14:24 INGV 14:27	
KOERI		38.83	26.32	10	6.3					Mw
NOA		38.83	26.38	10	6.2					ML
INGV		38.87	26.34	16	6.5					Mw
USGS		38.87	26.37	5	6.3					mww
EMSC	38.85	26.34	10	6.3	Mw					
20 JUN 2017 22:31	BODRUM-KOS					KOERI, NOA, INGV WATCH-ONGOING-END	INGV 22:41 NOA 22:49 KOERI 22:50	INGV 10, NOA 18, KOERI 19	ONGOING KOERI 23:32 INGV 01:02 NOA 01:53 END KOERI 01:30 INGV 01:46 NOA 02:37	
KOERI		36.96	27.51	11	6.6					Mw
NOA		36.96	27.59	10	6.4					ML
INGV		36.90	27.46	10	6.8					Mw
USGS		36.925	27.414	7	6.6					mww
EMSC	36.96	27.45	2	6.6	Mw					



# 12 June 2017 and 20 July 2017 Events



## 20 July 2017 Bodrum-Kos Earthquake/Tsunami



*... regardless of any model, the effectiveness of any tsunami early warning depends purely on the awareness and preparedness of the civil protection authorities and the public.*



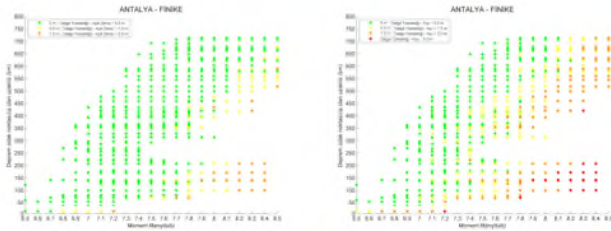
T.C. BOĞAZIÇI ÜNİVERSİTESİ  
KANDİLLİ RASATHANESİ VE DEPREM ARAŞTIRMA ENSTİTÜSÜ  
BÖLGESEL DEPREM-TSUNAMİ İZLEME VE DEĞERLENDİRME MERKEZİ  
(BDTİM)



# Inundation Maps

## TSUNAMİ TAHMİN NOKTASI BİLGİ NOTU

### ANTALYA – FİNİKE



MOD2-TR Tsunami Senaryo veritabanı uyarınca Ege ve Doğu Akdeniz'de meydana gelebilecek bir deprem için deprem büyüklüğü (Moment Manyitüdü-Mw) ve depremin Antalya-Finike'den uzaklığına bağlı olarak açık denizde (sol) ve kıyıda (sağ) beklenebilecek tahmini tsunami dalga yükseklikleri. Finike için tsunami tehlikesinin Mw > 7 depremler için söz konusu olabileceği düşünülmekte beraber daha küçük depremlerin tetikleyebileceği denizaltı heyelanları nedeni ile yerel tsunamiler oluşabileceği dikkate alınmalıdır.

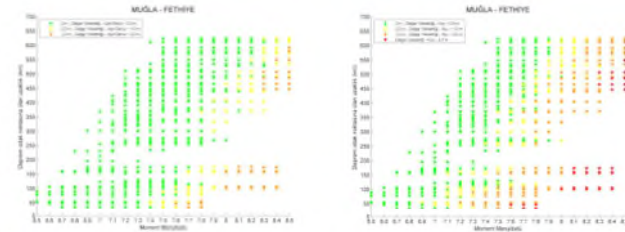


MOD2-TR Tsunami Senaryo veritabanında Antalya-Finike için en büyük dalga yüksekliği veren deprem senaryosu kullanılarak yapılan tsunami sayısal modellemesi uyarınca, topografik eşyükselti eğrileri esas alınarak hazırlanan en kötü senaryo tsunami baskın haritası. Modelleme çalışmaları 150m çözünürlüklü çalşıma alanları kullanılarak yapılmış olup tsunami baskın haritaları 3m çözünürlüklü topografik veri üzerine görsellenmiştir.

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## TSUNAMİ TAHMİN NOKTASI BİLGİ NOTU

### MUĞLA – FETHİYE



MOD2-TR Tsunami Senaryo veritabanı uyarınca Ege ve Doğu Akdeniz'de meydana gelebilecek bir deprem için deprem büyüklüğü (Moment Manyitüdü-Mw) ve depremin Muğla-Fethiye'den uzaklığına bağlı olarak açık denizde (sol) ve kıyıda (sağ) beklenebilecek tahmini tsunami dalga yükseklikleri. Fethiye için tsunami tehlikesinin Mw > 7 depremler için söz konusu olabileceği düşünülmekte beraber daha küçük depremlerin tetikleyebileceği denizaltı heyelanları nedeni ile yerel tsunamiler oluşabileceği dikkate alınmalıdır.





MOD2-TR Tsunami Senaryo veritabanında Muğla-Fethiye için en büyük dalga yüksekliği veren deprem senaryosu kullanılarak yapılan tsunami sayısal modellemesi uyarınca, topografik eşyükselti eğrileri esas alınarak hazırlanan en kötü senaryo tsunami baskın haritası. Modelleme çalışmaları 150m çözünürlüklü çalşıma alanları kullanılarak yapılmış olup tsunami baskın haritaları 3m çözünürlüklü topografik veri üzerine görsellenmiştir.

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# NEAMTWS Performance Monitoring Framework


 Provide a service  
...based on requirements  
and functions defined in  
the Accreditation  
Procedure...

 Ensure that combination  
of the services provided  
cover whole NEAM region...

 Ensure the sustainability  
of the services

 Address interoperability issues

 Implement KPIs

 Implement the Performance Monitoring Framework to  
continuously evaluate TSPs based on KPIs

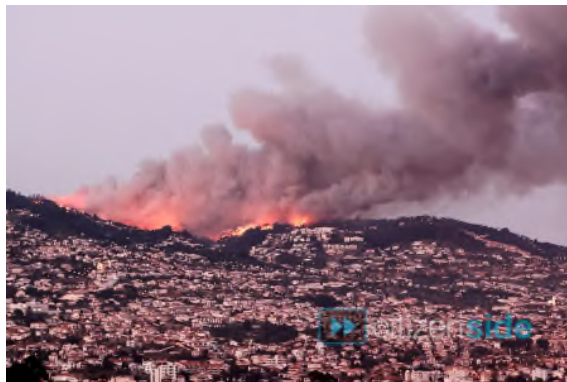
<b>KPI#</b>	<b>Description</b>	<b>value</b>	<b>Target</b>
<b>KPI01:</b>	Elapsed time from earthquake to the issuance of the first tsunami message	time	10 min
<b>KPI02:</b>	Elapsed time from the re-calculation of the earthquake magnitude to the issuance of corresponding tsunami message	time	3 min
<b>KPI03:</b>	Conformity of the threat level in the message according to the <a href="#">Decision Making Criteria</a> Implemented by the CTSP as described in its Operational Manual	+ / -	+
<b>KPI04:</b>	Compliance of the type of magnitude used in the issued message according to the description given in the CTPS' Operational Manual	+ / -	+
<b>KPI05:</b>	The detection of the earthquake within the service area	yes/no	yes
<b>KPI06:</b>	Difference between the <u>epicenter</u> of the earthquake in the initial message and revised location calculated after 30 min of the earthquake occurrence, with reference to GFZ/NEIC/EMSC (to be decided)	km	30 km
<b>KPI07:</b>	Difference between the depth of the earthquake in the initial message and revised depth calculated after 30 min of the earthquake occurrence, with reference to GFZ/NEIC/EMSC (to be decided)	km	15 km
<b>KPI08:</b>	Difference between the magnitude of the earthquake in the initial message and revised magnitude calculated after 30 min of the earthquake occurrence, with reference to GFZ/NEIC/EMSC (to be decided)	value	0.3
<b>KPI09:</b>	Accuracy of the forecasted tsunami threat level at 90% of TFPs in case a tsunami is generated and observed	+ / -	+
<b>KPI10:</b>	Accuracy of the forecasted arrival time of the initial tsunami in case a tsunami is generated and observed	min	5



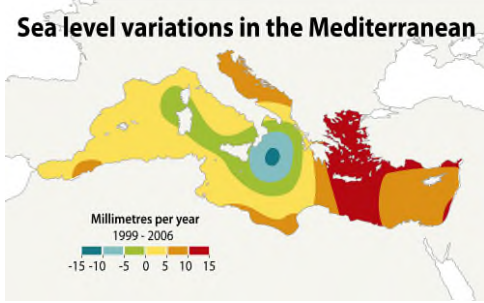
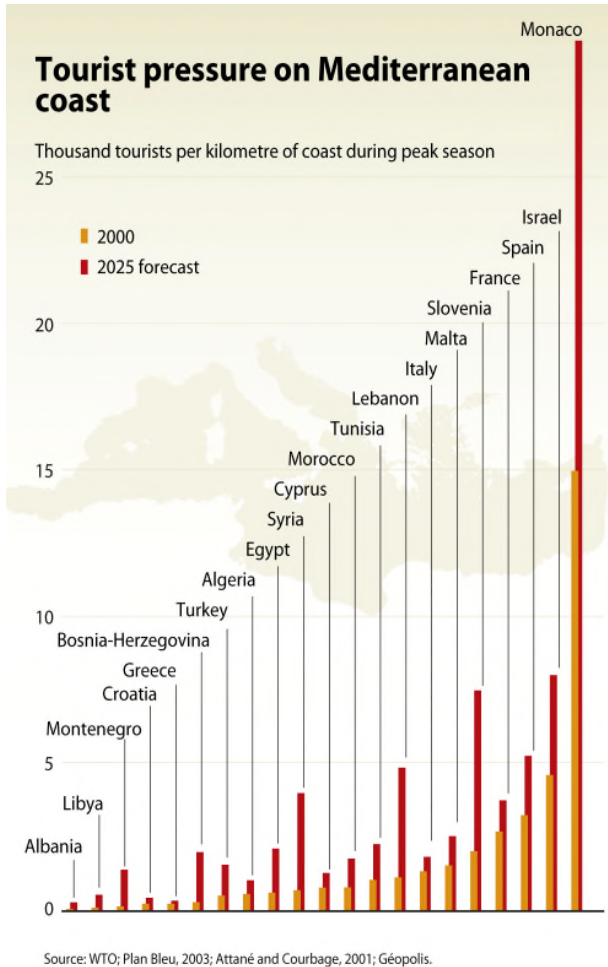
## Real-Life Events

> 3,100,000 in Turkey

3.8% of Turkey  
3.9% of Germany  
4.8% of France  
5.2% of Italy  
28.5% of Greece  
30.2% of Portugal



# Other factors...



Sea-level rise...



Coastal erosion...

Coastal Infrastructure development...



source: [www.grida.no](http://www.grida.no)

# Challenges

**Science must inform policy maker.**

## Scientific Challenges\*:

- Improving methodologies
- Avoiding false alerts

## Operational Challenges\*:

- Translating scientific information into operational language and procedures

## Policy Challenges\*:

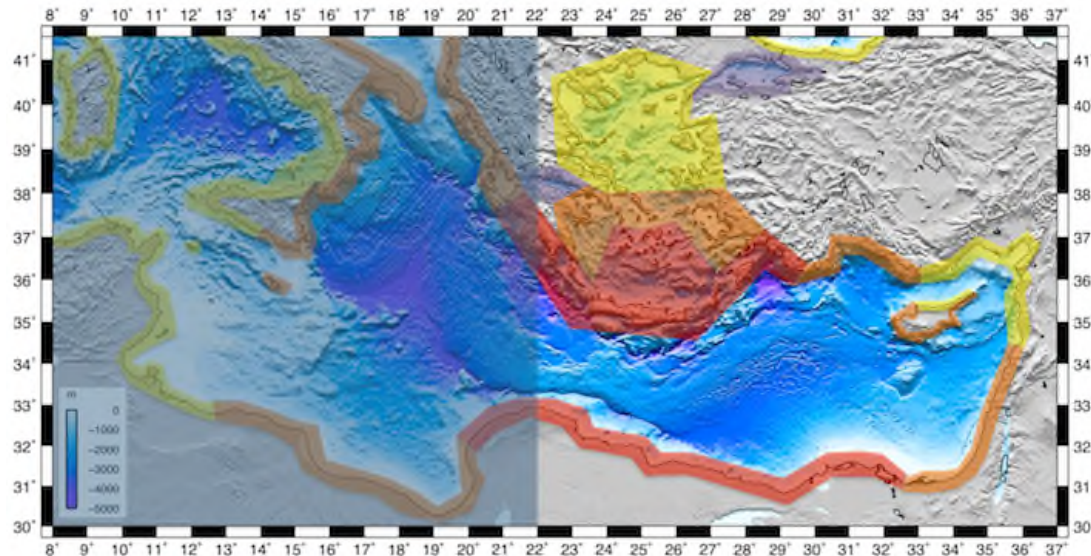
- Reaching decision-makers
- Reaching the people: the “last mile“ issue

*\*from Peter Billing – EU/MIC presentation at EGU 2012:*

*“The role and responsibilities of Geoscientists for Warning and Mitigation of Natural Disasters”*

## What if there would be a tsunami tomorrow?

**A tsunami in the Eastern Mediterranean triggered by an earthquake  
In Hellenic Arc ( $M_w > 8$ ) or Dead Sea Fault ( $M_w > 7$ )  
should also be considered as a potential threat to Global Security  
due to the humanitarian crisis it may generate  
and the political instability it could trigger  
as a result of the catastrophe generated by the earthquake and tsunami!**



**THANK YOU...**



*KOERI, Istanbul*  
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## Real Time Data Exchange

At NEAMTWS-IX, the following was included:

**... recognizes in particular the importance of real time sea level data exchange for completing the NEAMTWS**

This was again reemphasized during NEAMTWS-X:

**...as a priority, all sea level data should be made available to the CTWPs and NTWCs using bilateral agreements between NTWC's whenever possible...**

In the NEAMTWS-XI Report, the following is stated:

**The WG3 recommends:**

**(i) That all sea level data should be made available to the CTSP's and NTWC's using bilateral agreements, between NTWC's whenever possible.**

Accreditation

**WF7 Exchange sea level data and information with other CTSPs, TSPs and NTWCs**

Official requests have been made to INGV and NOA on 23 January 2015 for a bilateral agreement concerning real time seismic (NOA) and sea-level (INGV and NOA) data....

## To evacuate or not to evacuate?

