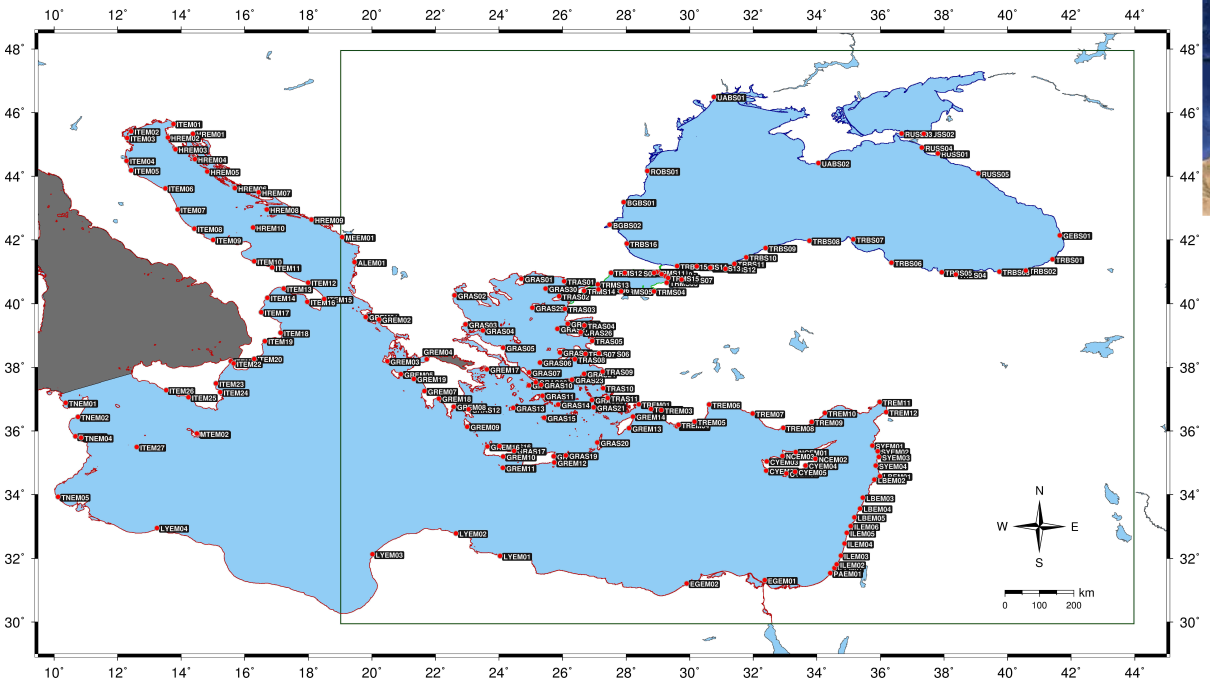
RETMC

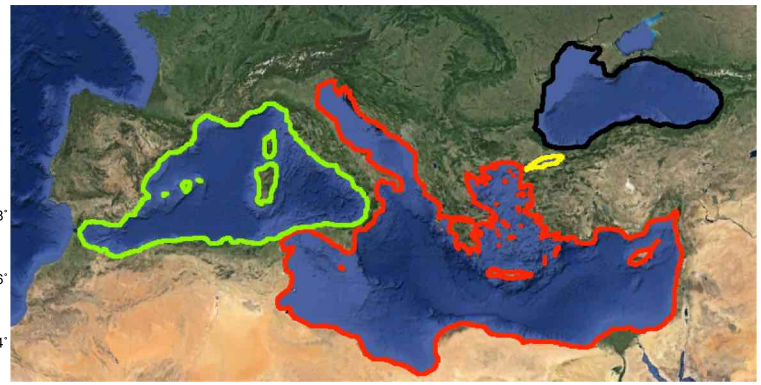
KOERI
NTWC-TR / TSP-TR
Status Update 2021

ICG/NEAMTWS-XVI
24-26 November 2021
online

Present Status

TSP-TR is operational since 1 July 2012.





SUBSCRIBERS:

CDH (CYPRUS), NIOF (EGYPT), CENALT (FRANCE), BSH (GERMANY), DWD (GERMANY), NOA (GREECE), PMO (ISRAEL), INGV (ITALY), NCGR (LEBANON), IPMA (PORTUGAL), NIEP (ROMANIA), TYPHOON (RUSSIAN FEDERATION), DGPCE (SPAIN), IGN (SPAIN) CCS (UNITED KINGDOM), ERCC (EU), IOC Secretariat

15 Institutions from 13 Member States

2 International Organizations

AFAD (CPA) and MUĞLA Metropolitan Municipality at the national level

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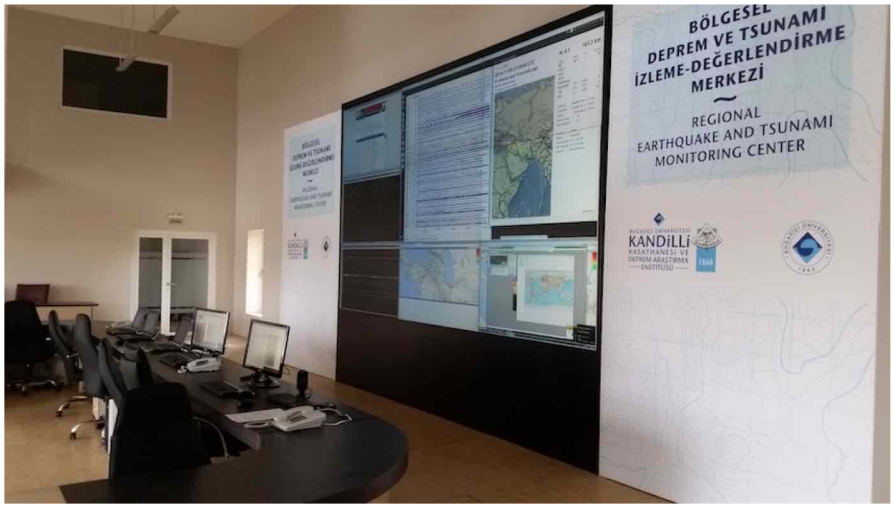
AFAD MINISTRY OF INTERIOR DISASTER AND EMERGENCY MANAGEMENT PRESIDENCY

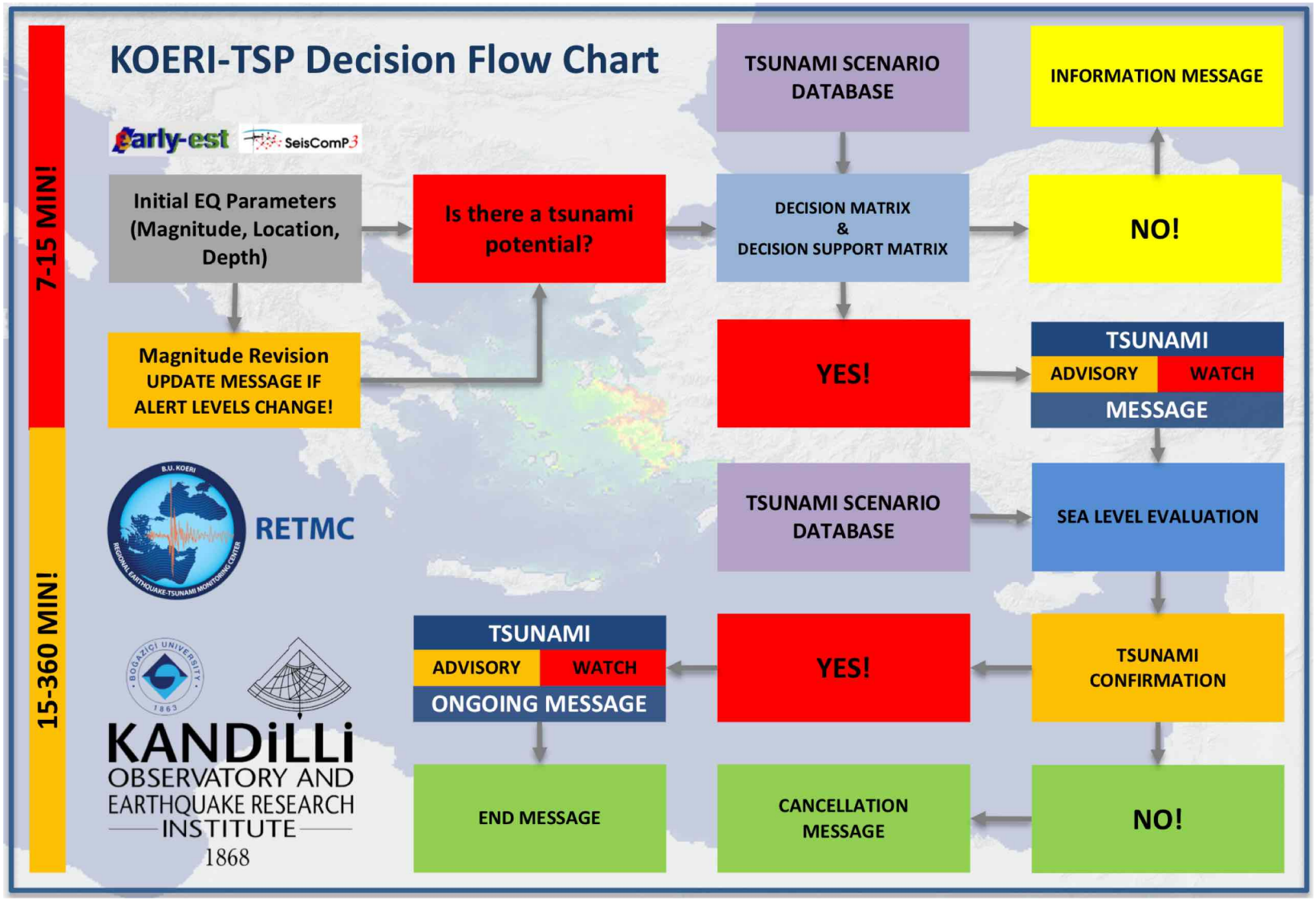
Muğla Metropolitan Municipality
Directorate of Fire Department

KOERI Daily Operational Set-Up



- Day Shift (8:30-17:30) and Two Night Shifts (17:30-01:00 and 01:00-08:30)
- One duty officer per shift
- One stand-by Duty Officer per day shift
- One back-up Duty officer per night shift
- Total number of Duty Officers: 16 – 5 of them are assigned only to night shifts.

Concepts of Operations – Decision Support System



KOERI Decision Matrix

TSP-TR (KOERI)						
Decision Matrix for the Eastern Mediterranean, Aegean and Black Seas						
Depth	Epicentre Location	Earthquake Magnitude	Tsunami Potential	Type of Tsunami Message		
				Local	Regional	Basin-wide
				< 100 km	≥100 - ≤400 km	> 400 km
< 100 km	Offshore or close to the coast (≤ 40 km inland)	5.5 ≤ Mwp or mb ≤ 5.9	Low tsunami potential	Information	Information	Information
		6.0 ≤ Mwp ≤ 6.4	Tsunami potential	Advisory	Information	Information
	Offshore or close to the coast (≤ 100 km inland)	6.5 ≤ Mwp ≤ 6.9	Potential for a destructive tsunami	Watch	Advisory	Information
		7.0 ≤ Mwp or Mwpd ≤ 7.4	Potential for a destructive tsunami	Watch	Watch	Advisory
		Mwpd ≥ 7.5	Potential for a destructive tsunami	Watch	Watch	Watch
	Inland (>40km and < 100km)	6.0 ≤ Mwp ≤ 6.4	Low tsunami potential	Information	Information	Information
≥ 100 km	Offshore or inland (≤ 100 km)	Mwp ≥ 6.0	Low tsunami potential	Information	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

What alert level do we assign to seal-level readings < 20cm?
Recall ONGOING messages disseminated during 30 October 2021 Samos-Izmir EQ-TS with 2cm, 3cm, 6 cm, 8cm readings…
If the reading does not represent the alert level, how should we treat it?

Non-Instrumental SL Observations

TSUNAMI MESSAGE NUMBER 002
NEAM NOA HL-NTWC TSUNAMI SERVICE PROVIDER
ISSUED AT 1323Z 30 OCT 2020

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

COUNTRY	GAUGE LOCATION	LAT	LON	TIME	AMPL	PER
GREECE	KOS	36.89	27.30	13:00	0.06	15.0
GREECE	PLOMARI	38.97	26.37	12:55	0.02	8.0

TSUNAMI WAVES HAVE BEEN OBSERVED IN SAMOS, PYTHAGOREIO AND IZMIR

Can we have a standard or guidance?

TSUNAMI MESSAGE NUMBER 002
NEAM NOA HL-NTWC TSUNAMI SERVICE PROVIDER
ISSUED AT 0153Z 21 JUL 2017

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY

COUNTRY	GAUGE LOCATION	LAT	LON	TIME	AMPL	PER
TURKEY	BODRUM	37.03	27.42	22:54:08	0.13	13.0
GREECE	KASOS	35.42	26.92	01:07:00	0.07	11.0
GREECE	PLIMIRI	35.93	27.86	00:07:17	0.03	8.0

According to Press Reports and eyewitness Accounts the coastal Zone of Kos city,Dodecanese island (Greece)flooded and Tsunami removed inland small boats and cars.Tsunami Flood was reported also from Bodrum(Turkey).

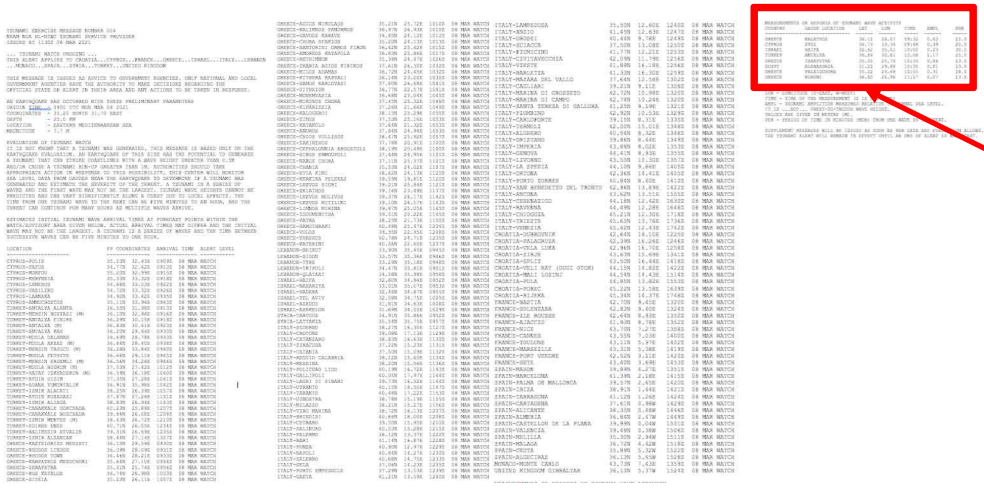
TSUNAMI MESSAGE NUMBER 002
NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY)
ISSUED AT 1432Z 30 OCT 2020

SEA LEVEL READINGS AND EYEWITNESS OBSERVATIONS INDICATE A TSUNAMI WAS GENERATED.

TSUNAMI MESSAGE NUMBER 002
NEAM NOA HL-NTWC TSUNAMI SERVICE PROVIDER
ISSUED AT 1323Z 30 JAN 2020

EVALUATION OF TSUNAMI ADVISORY
SEA LEVEL READINGS INDICATE A TSUNAMI WAS GENERATED.
OBSERVATIONS AND MODELS INDICATE THAT NO MORE TSUNAMI WAVES ARE EXPECTED.

ONGOING Message Improvements



TSUNAMI EXERCISE MESSAGE NUMBER 006
NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY)
ISSUED AT 1140Z 08 MAR 2021

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

.. TSUNAMI WATCH ONGOING ...
THIS ALERT APPLIES TO ALBANIA ... CROATIA ... CYPRUS ... EGYPT ... GREECE ... ISRAEL ... ITALY ... LEBANON ... LIBYA ... MALTA ... MONTENEGRO ... PALESTINE ... SYRIA ... TUNISIA ... 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 - 0900Z 08 MAR 2021
COORDINATES - 35.20 NORTH 31.70 EAST
DEPTH - 20.00 KM
LOCATION - EASTERN MEDITERRANEAN
MAGNITUDE - 7.7

MEASUREMENTS OR REPORTS OF TSUNAMI WAVE ACTIVITY.

COUNTRY	GAUGE LOCATION	LAT	LON	TIME	AMPLITUDE(M)	PERIOD(MIN)
TURKEY	ANTALYA	36.8304	30.6087	0910Z 08 MAR	01.09	15.0
	GIRNE	35.3406	33.3338	0912Z 08 MAR	01.06	09.0
TURKEY	MERSIN TASUCU	36.2815	33.8362	0936Z 08 MAR	01.28	25.0
TURKEY	MUGLA MARMARIS	36.8381	28.3850	0942Z 08 MAR	01.42	38.0
	GAZIMAGUSA	35.1232	33.9495	0943Z 08 MAR	00.22	16.0
TURKEY	MERSIN ERDEMLI	36.5637	34.2554	0944Z 08 MAR	00.54	11.0
ISRAEL	HAIFA (IDSL-26)	32.8225	35.0070	0950Z 08 MAR	00.32	19.0
TURKEY	MUGLA BODRUM	37.0322	27.4235	1011Z 08 MAR	00.27	30.0
TURKEY	HATAY ISKENDERUN	36.4156	35.8852	1012Z 08 MAR	00.18	13.0

LAT - LATITUDE (N-NORTH)
LON - LONGITUDE (E-EAST)
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. THIS CENTER WILL CONTINUE TO MONITOR SEA LEVEL GAUGES NEAREST THE REGION AND REPORT IF ANY ADDITIONAL TSUNAMI WAVE ACTIVITY IS OBSERVED. AUTHORITIES SHOULD TAKE APPROPRIATE ACTION IN RESPONSE TO THIS POSSIBILITY. 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.SUPPLEMENT MESSAGES WILL BE ISSUED AS SOON AS NEW DATA AND EVALUATION ALLOWS. THE TSUNAMI ALERT WILL REMAIN IN EFFECT UNTIL AN END OF ALERT IS BROADCAST.

END OF TSUNAMI EXERCISE MESSAGE NUMBER 006

LOCATE SL READINGS AT THE TOP BELOW EQ INFO AND ADD ESTIMATED INITIAL TSUNAMI WAVE ARRIVAL TIMES - ALERT LEVEL AT FORECAST POINTS ONLY WHEN THE SEA LEVEL READING DICTATES A CHANGE IN THE ALERT LEVEL DEFINED EARLIER.

Reporting on SL Observations

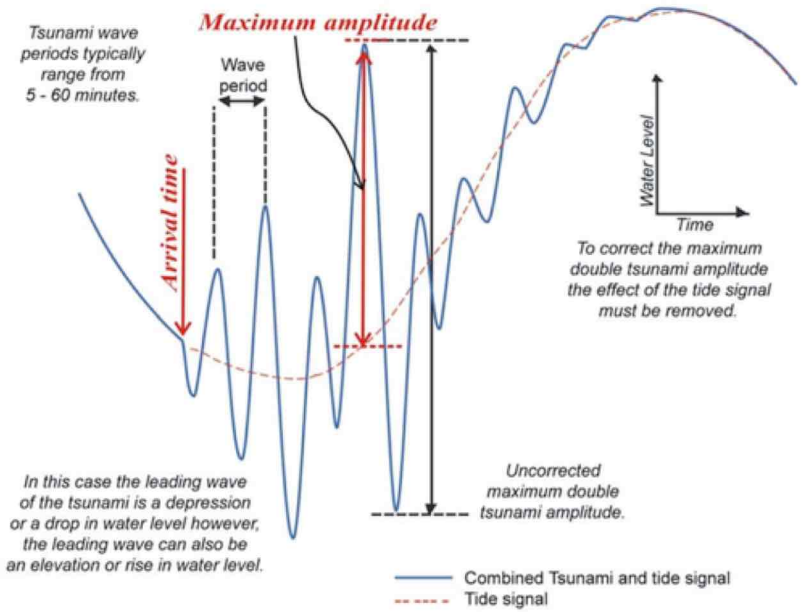
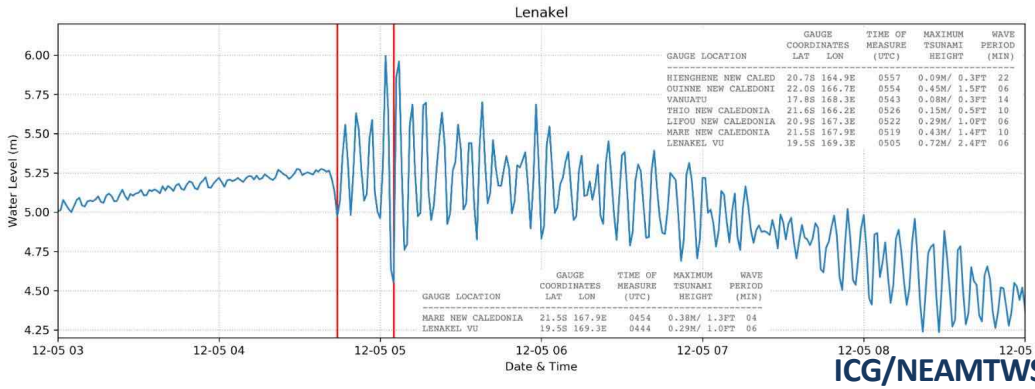
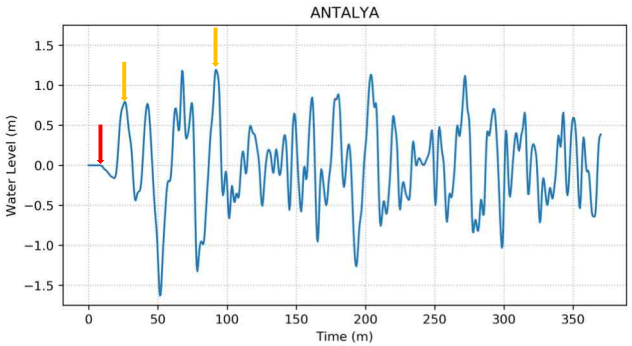
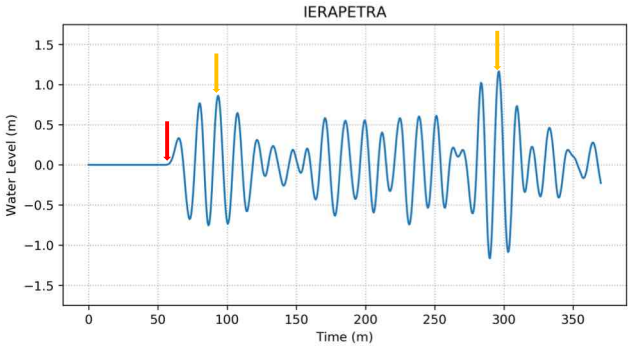
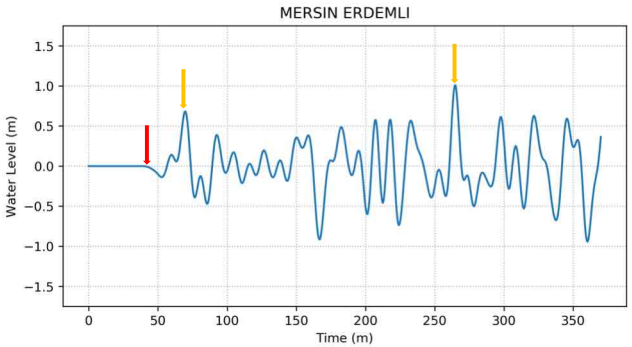


Figure 1 – Definition of the main parameters that are communicated between RTWC, National TWFP, NTWC and emergency managers: (i) the estimated tsunami arrival time (ETA); (ii) the maximum tsunami amplitude. Adapted from the Tsunami Glossary, by IOC/ITIC.



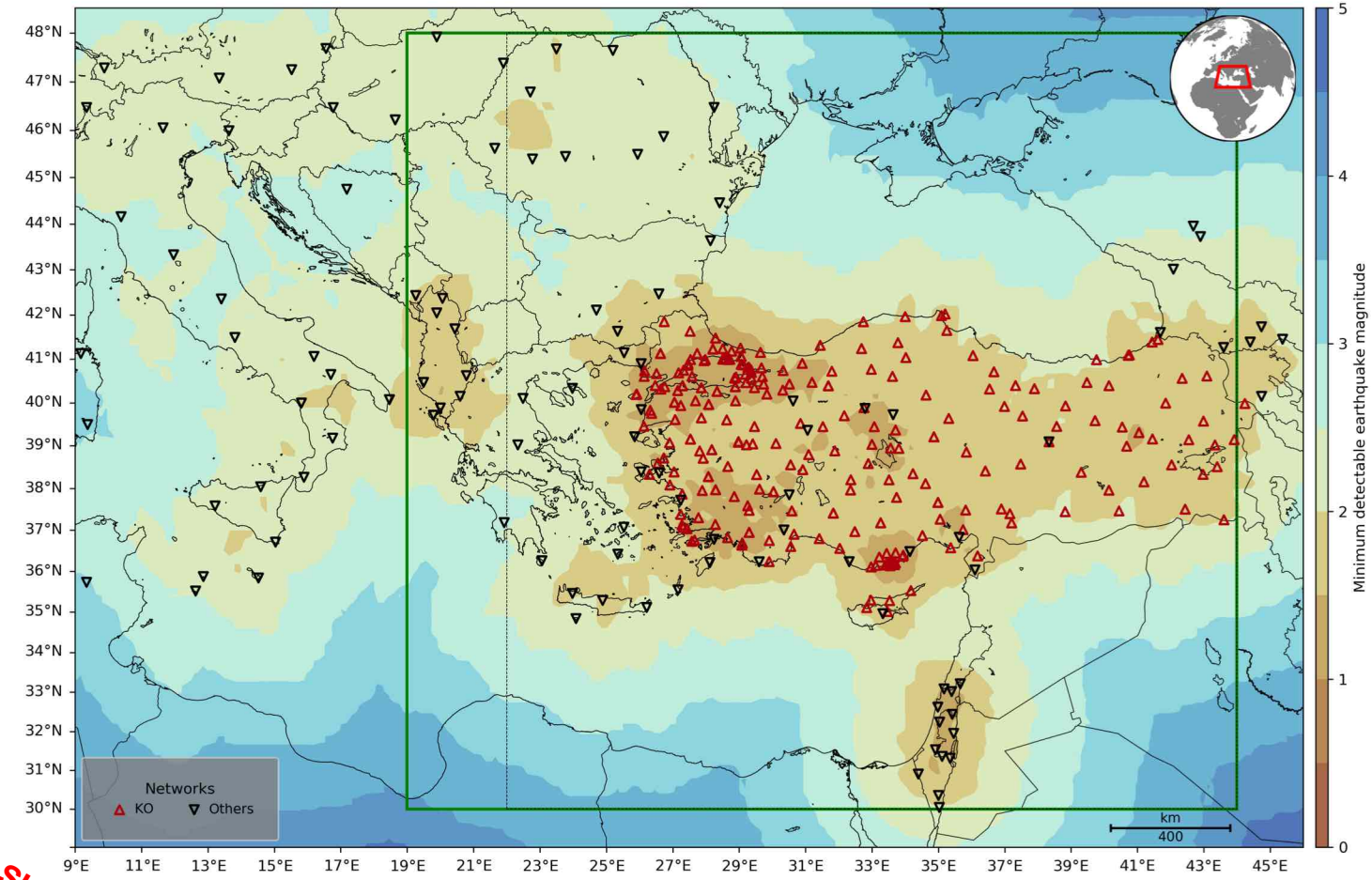






Regional Seismic Network

REMTC operates a seismic network including 256 sensors that comprise broadband (BB), accelerometer (SM) and short-period (SP) seismometers. Sensor numbers exceed 350 when including other national and international institutes operating and distributing data around the Mediterranean Region.



SUBMITTED!

applied sciences

Article

KOERI's Tsunami Warning System in the Eastern Mediterranean and Its Connected Seas: A Decade of Achievements and Challenges

Öcal Necmioğlu *, Fatih Turhan, Ceren Özer Sözdinler, Mehmet Yilmazer, Yavuz Güneş, Musavver Didem Cambaz, Selda Altuncu Poyraz, Tuğce Ergün, Doğan Kalafat and Haluk Özener

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Sea Level Monitoring

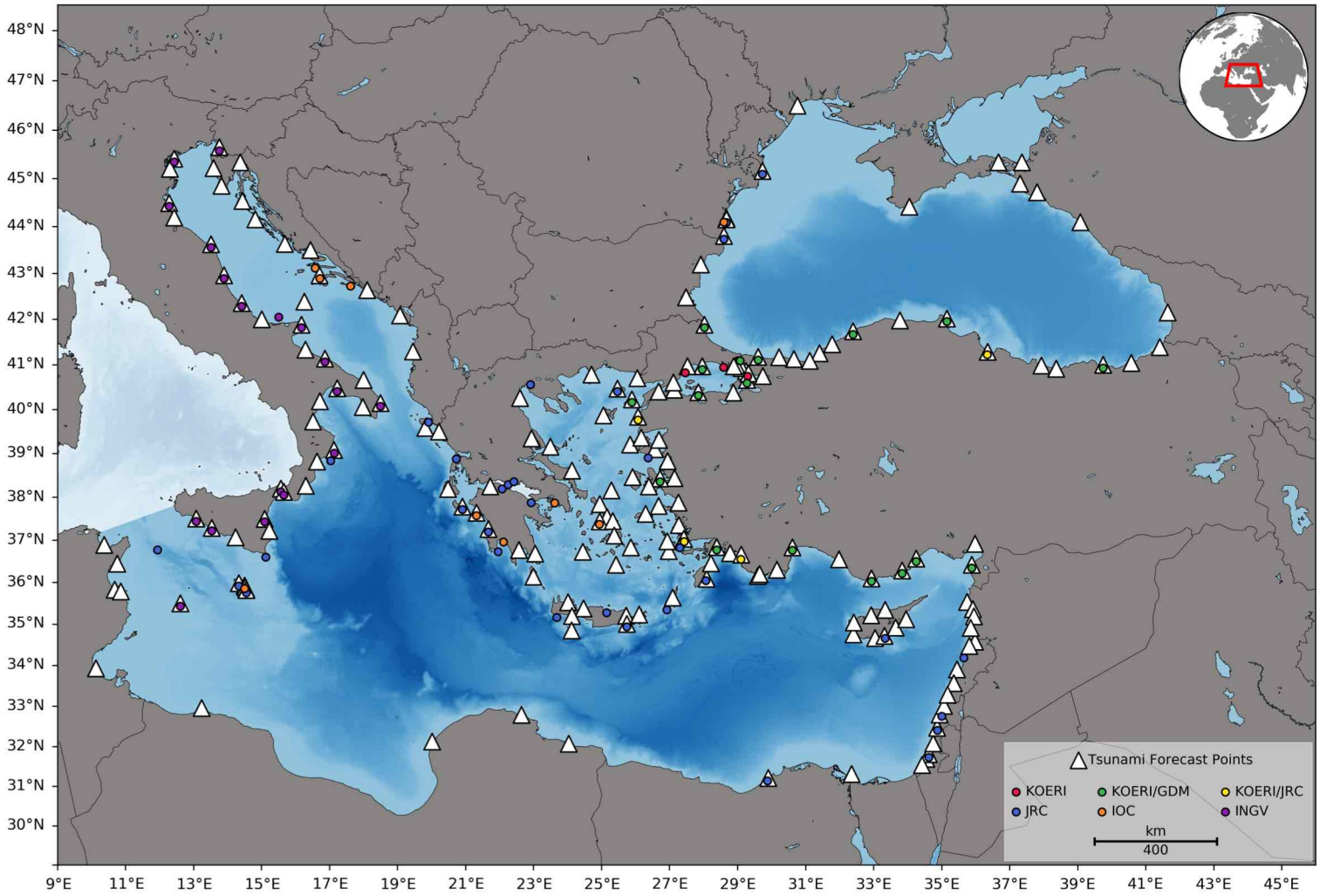
SUBMITTED!

applied sciences

Article

KOERI's Tsunami Warning System in the Eastern Mediterranean and Its Connected Seas: A Decade of Achievements and Challenges

Öcal Necmioğlu [1,*], Fatih Turhan [1], Ceren Özer Sözdinler [2], Mehmet Yılmazer [1], Yavuz Güneş [1], Musavver Didem Cambaz [1], Selda Altuncu Poyraz [1], Tuğçe Ergün [1], Doğan Kalafat [1] and Haluk Özener [1]



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Data Availability

- Major data transmission problem during 13 September – 3 November, even though data was available internally.
- The problem was related to the SQL server which we were not able to identify.
- Data transmission to IOC and INGV has been restored on 3 November 2021 through html protocol.

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Real Time Data Exchange

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

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…

NEAMTWS-XI :
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

NEAMTWS-XIII, NEAMTWS-XIV, NEAMTWS-XV and NEAMTWS-XVI
That all sea level data should be made available to the TSPs and NTWCs using bilateral agreements, between NTWCs whenever possible


TWFP_TR MONTHLY
COMMUNICATION TEST FORM

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 CTSP on the first full week of the month.

There is no ICG/NEAMTWS mechanism established for the evaluation of these RegCTEs. This is a primarily TSP task.

Feedback is poor and problematic.

Reporting of local time instead of UTC, confusion about message receipt times.

Times are not reported at all in some cases.

Status of the TWFP Database ? The link on the IOC web site does not function:

http://ioc-tsunami.org/images/secure/List%20of%20TWFPs%20and%20TNCs%2014082014.xls

AYLAR	PAZARTESİ								
	AFAD						IPMA		
	GİDEN			AFAD'DAN GERİ BİLDİRİM			GELEN		
	MESAJ	FAX		EMAİL	FAX	SMS	EMAİL	GTS	FAX
		BAŞARILI	BAŞARISIZ						
ARALIK 2020	1	Haziran 2021 Ayından itibaren AFAD'a FAX mesajı gönderilmiştir.		1		1	1	1	0
OCAK 2021	1			1		1	1	1	1
ŞUBAT 2021	1			1		1	1	1	1
MART 2021	1			1		1	1	1	0
NİSAN 2021	1			1		1	1	1	1
MAYIS 2021	1			1		1	1	1	0
HAZİRAN 2021	1	1	0	2	1	2	1	1	0
TEMMUZ 2021	1	??	??	2	1	2	1	1	1
AĞUSTOS 2021	1	??	??	2	1	2	1	1	1
EYLÜL 2021	1	2	0	2	1	2	1	1	0
EKİM 2021	1	2	0	1	1	1	1	1	1
KASIM 2021	1	1	0	1	1	1	1	1	1
GENEL TOPLAM	12	6	0	16	6	16	12	12	7

SALI												
ÜYE ÜLKELER												
GİDEN			GERİ BİLDİRİM YAPAN ÜYE SAYISI	ÜYELERDEN GERİ BİLDİRİM								
MESAJ	FAX			EMAİL		FAX		GTS		SMS		
	BAŞARILI	BAŞARISIZ		BAŞARILI	BAŞARISIZ	BAŞARILI	BAŞARISIZ	BAŞARILI	BAŞARISIZ	BAŞARILI	BAŞARISIZ	
1	22	14	14	14	0	10	4	7	7	Mart 2021 Ayından itibaren ÜYE ÜLKELERE SMS mesajı gönderilmiştir.		
1	22	13	12	12	0	7	5	6	6			
1	23	12	14	14	0	10	4	7	7			
1	22	19	27	25	2	13	14	9	18	7	17	
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1	21	17	17	0	8	9	7	7	10	3	10	
1	22	17	17	17	0	10	7	8	9	5	9	
1	??	??	18	18	0	9	9	8	10	4	12	
1	26	15	23	23	0	12	11	11	12	4	7	
1	19	22	17	17	0	9	8	6	11	4	9	
1	21	20	14	14	0	5	9	3	11	3	11	
1	21	17	15	15	0	8	7	7	8	3	10	
12	240	183		186	10	111	93	86	119	36	95	

ÇARŞAMBA			PERŞEMBE			CUMA		
CENALT			NOA			INGV		
GELEN			GELEN			GELEN		
EMAİL	GTS	FAX	EMAİL	GTS	FAX	EMAİL	GTS	FAX
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1	1	1	1	1	1	1	1	1
1	1	0	1	1	0	1	1	1
1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1
12	11	11	12	11	9	12	12	12

Delivery Rates

E-MAIL 95%

FAX 55%

GTS %42

SMS %28

>90 90-80 80-70 <70

Scenario Based Daily Tests

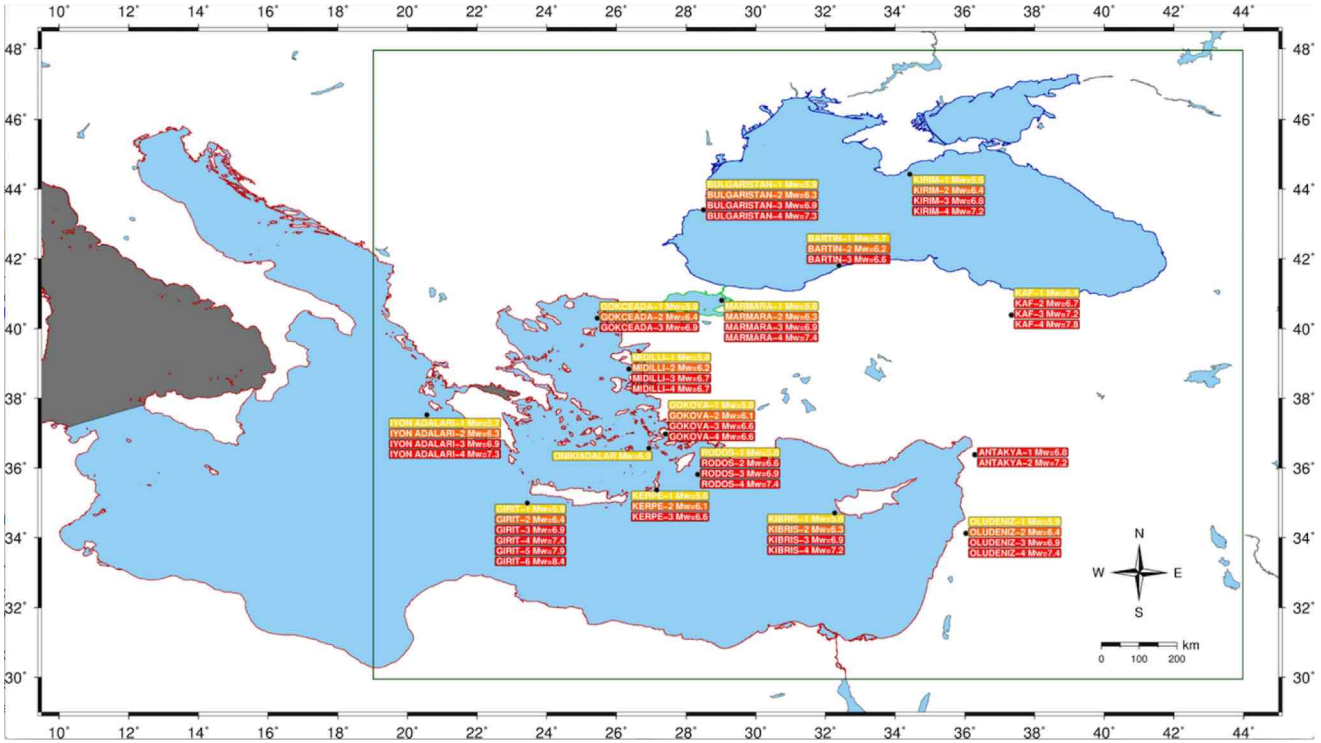
Duty Officers Perform a test of the operational system in each shift based on a pre-defined scenario using TsuComp, including testing of the access to the sea-level data.

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

Success Rate

TsuComp 97%

>90% 90%-80% 80%-70% <70%



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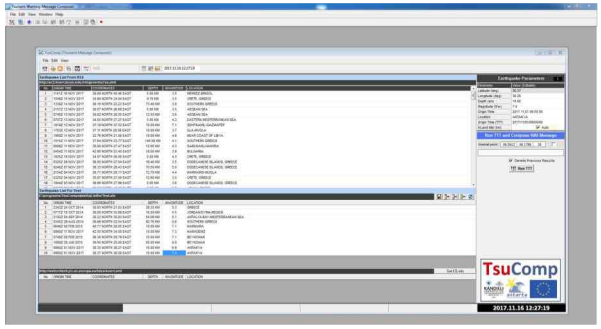
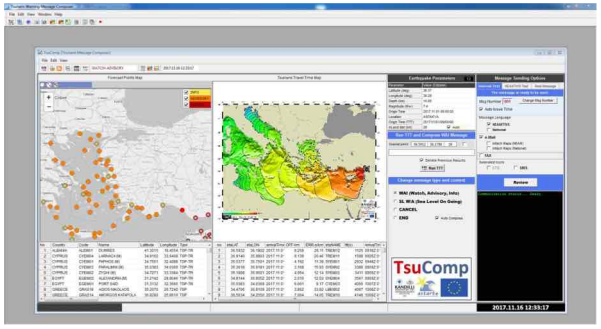
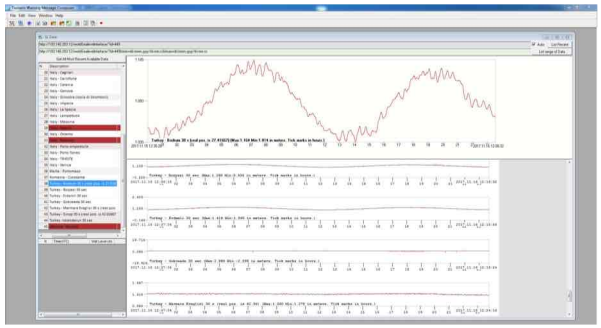
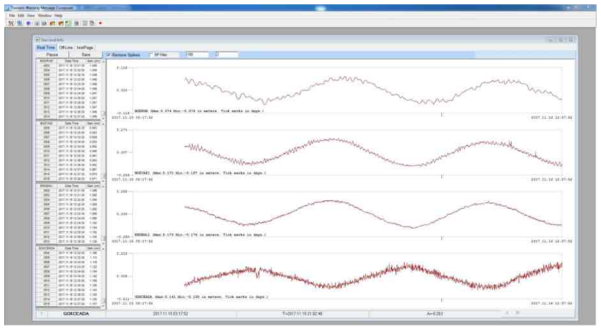
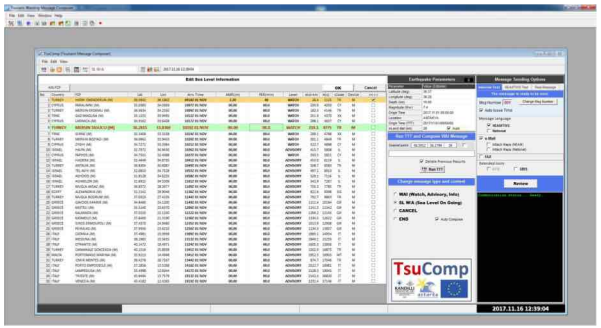
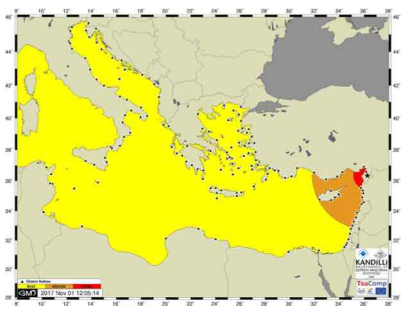
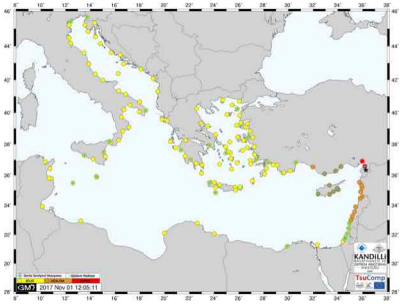
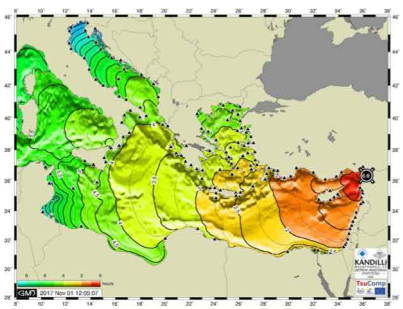
… in operations as of 1 January 2018 …



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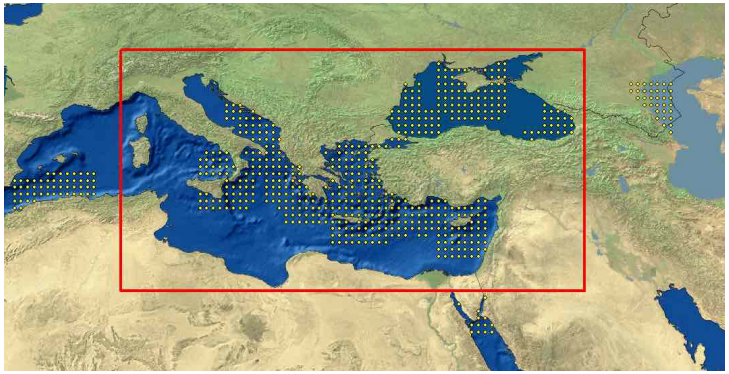
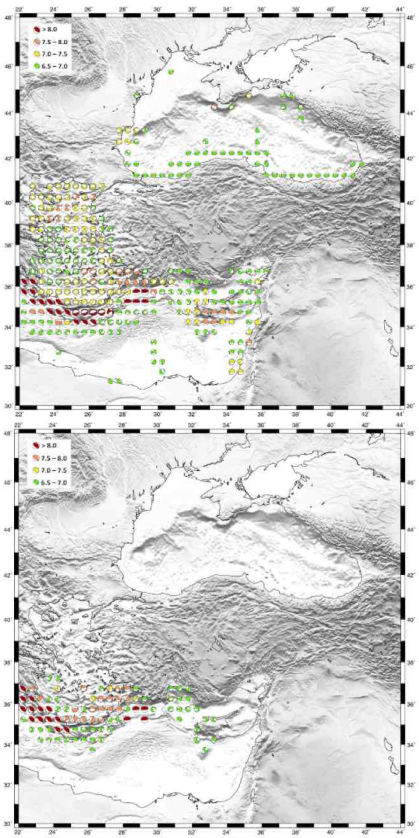
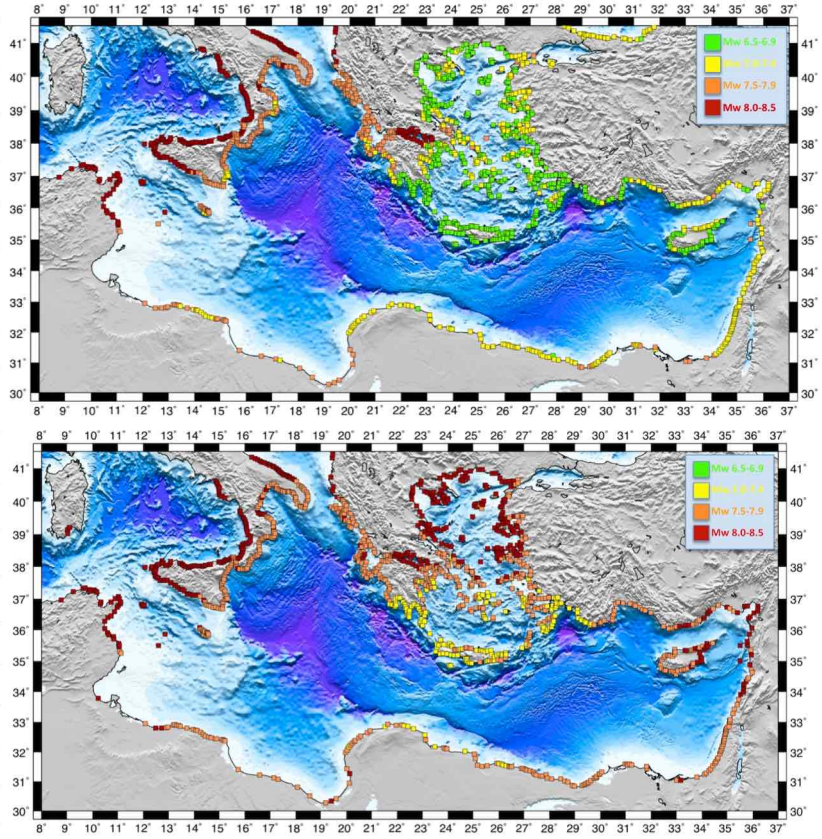
EC-JRC Collaboration / SDBs

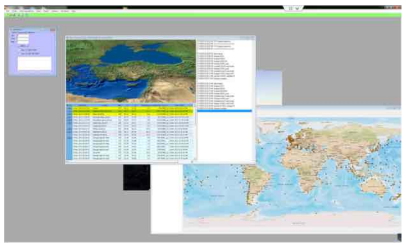


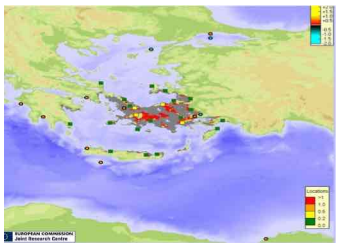


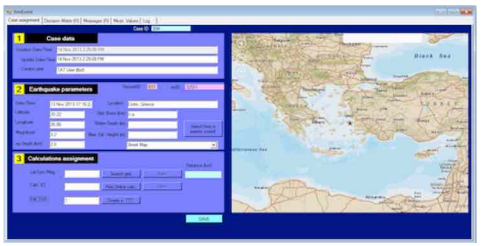


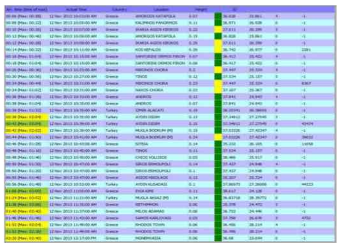
MOD2 & MOD2-TR

… available in operations …









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.

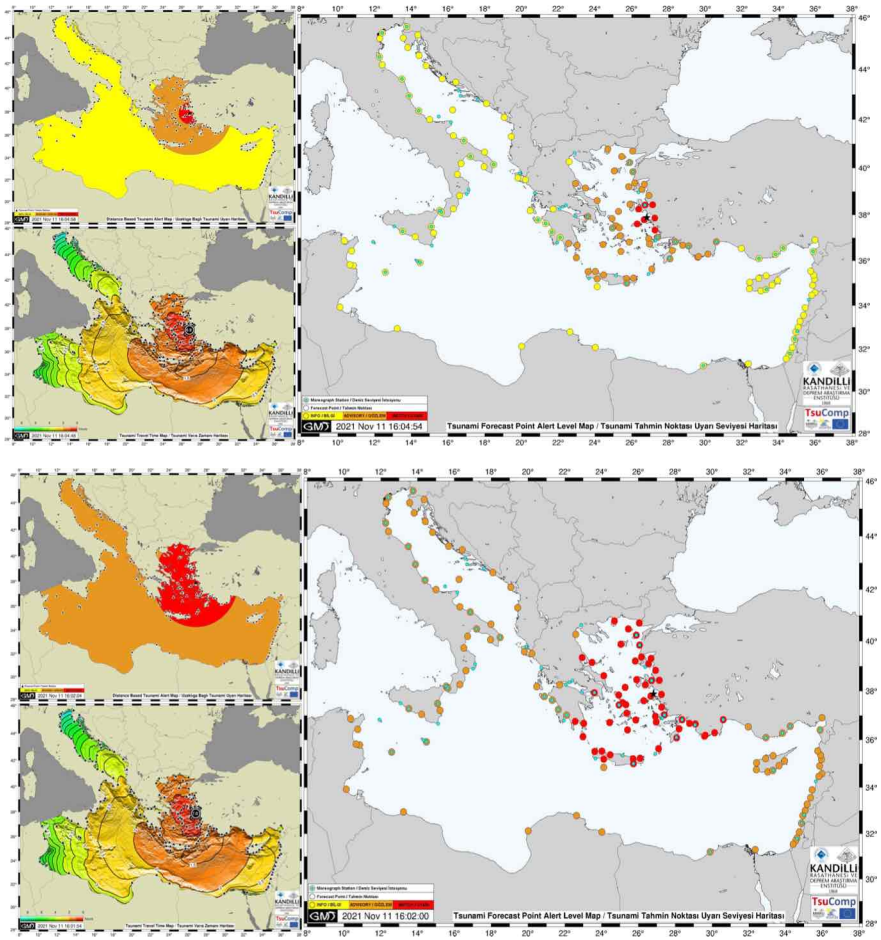
EC-JRC Collaboration / SDBs

SUBMITTED!

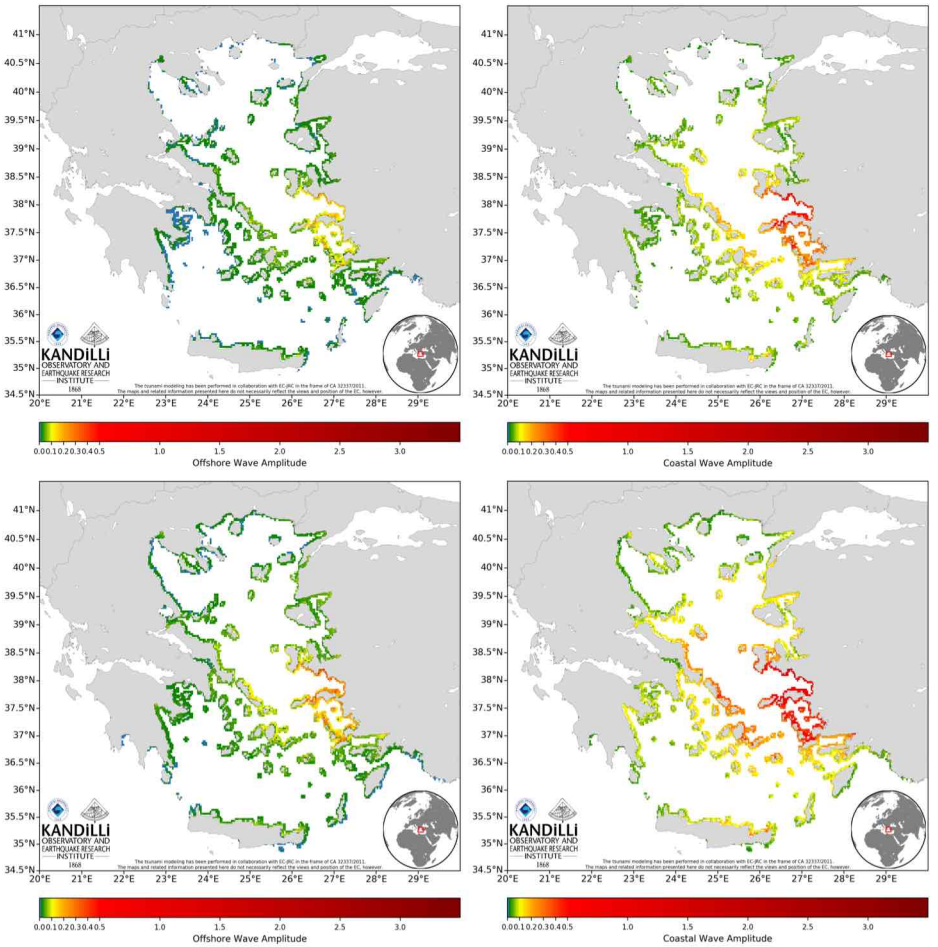
applied sciences
Article

KOERI's Tsunami Warning System in the Eastern Mediterranean and Its Connected Seas: A Decade of Achievements and Challenges

Öcal Necmioğlu [1,*], Fatih Turhan [1], Ceren Özer Sözdinler [2], Mehmet Yılmazer [1], Yavuz Güneş [1], Musavver Didem Cambaz [1], Selda Altuncu Poyraz [1], Tuğçe Ergün [1], Doğan Kalafat [1] and Haluk Özener [1]



Distance–based tsunami alert map (**top left**), tsunami travel time map (**bottom left**) and tsunami forecast point alert level map (**right**) corresponding to 30 October 2020 Samos earthquake based on Mw 6.9 (top) as the final magnitude calculated for this earthquake by KOERI and Mw 6.9 used in the initial warning message.



A comparison of offshore (actual value calculated in the last "wet" cell in tsunami modeling) (**left**) and coastal (projection of the offshore wave amplitude to the coast line through Green's law approximation) (**right**) wave amplitudes derived from MOD2–TR tsunami scenario database for the 30 October 2020 Samos earthquake, with Mw 6.9 (**top**) and Mw 7.0 (**bottom**) being the final initial Mw values, respectively, used by KOERI in the tsunami warning message

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Events & Messages

Event #	Message #	Date	UTC Time	Location	Latitude (KOERI)	Longtitude (KOERI)	Latitude (USGS)	Longtitude (USGS)	Δ Epicenter (ΔE)	Δ Hypocenter (ΔH)	Depth (KOERI)	Depth (USGS)	Δ Depth (ΔD)	Magnitude (KOERI-TSP)	Magnitude (USGS)	Δ Magnitude (ΔM)	Alert Level	Latency (min)	S
1	N/A	09.07.2012	13:55	Eastern Mediterranean	35.51	28.99	35.604	28.919	12.3	36.8	21.1	55.8	-34.7	6.0 ML	5.6 mww	0.4	N/A	N/A	
2	N/A	12.09.2012	03:27	Eastern Mediterranean	34.48	23.99	34.783	24.11	35.4	41.9	10	32.4	-22.4	5.5 ML	5.5 mww	0.0	N/A	N/A	1.5
3	N/A	23.12.2012	13:31	Black Sea	42.49	41.02	42.42	41.075	9.0	13.6	5	15.2	-10.2	5.8 Mw(mB)	5.7 mww	0.1	N/A	N/A	
4	1	08.01.2013	14:16	Aegean Sea	39.66	25.53	39.656	25.54	1.0	3.0	10	12.8	-2.8	6.2 ML	5.7 mww	0.5	INFORMATION	29	
5	2	17.01.2013	21:17	Egypt	31.75	30.45	32.027	30.624	34.9	36.3	10	20.0	-10	5.5 Mw(mB)	4.9 mb	0.6	INFORMATION	9	
6	3	17.02.2013	03:12	Ionian Sea	37.33	20.74	37.329	20.74	0.1	6.4	10	3.6	6.4	5.4	4.9 mb	0.5	INFORMATION	6	
7	4	15.06.2013	16:11	Crete	34.19	24.88	34.4	25.02	26.7	26.7	10	10.0	0	6.0 Mw (mB)	6.2 Mwp	0.2	INFORMATION	6	3.1
8	5	16.06.2013	21:39	Crete	34.16	24.97	34.347	25.159	27.1	28.6	10	19.0	-9	5.9 Mw (mB)	6.0 mww	0.1	INFORMATION	6	
9	6	12.10.2013	13:11	Greece	35.56	23.31	35.5142	23.2523	7.3	10.1	47	40.0	7	6.4 Mw	6.6 mww	0.2	WATCH	14	
10	7	28.12.2013	15:21	Antalya Bay - Turkey	35.95	31.27	36.028	31.31	9.4	32.1	10	40.7	-30.7	6.1 Mwp	5.9 mww	0.2	INFORMATION	6	
11	8	24.05.2014	09:25	Aegean Sea	40.24	25.33	40.2893	25.3889	7.4	18.2	23	6.4	16.57	6.6 Mw	6.9 Mw	0.3	WATCH	18	
12	9	29.08.2014	03:45	Aegean Sea	36.63	23.54	36.685	23.706	16.0	17.1	86	80.0	6	5.6 Mw	5.8 mww	0.2	INFORMATION	9	3.1
13	10	16.04.2015	18:07	Crete	35.06	26.88	35.1891	26.8235	15.2	15.6	16.5	20.0	-3.5	6.2 Mw	6.0 mww	0.2	INFORMATION	6	3.3
14	11	12.06.2017	12:28	Lesbos	38.83	26.32	38.9296	26.365	11.7	11.9	10	12.0	-2	6.3 Mwp	6.3 mww	0.0	ADVISORY	10	
15	12	20.07.2017	22:31	Bodrum-Kos	36.96	27.51	36.9293	27.4139	9.2	10.0	11	7.0	4	6.6 Mw	6.6 mww	0.0	WATCH	19	
16	13	05.02.2019	02:26	Albania	39.07	20.54	39.052	20.5868	4.5	5.0	10	7.7	2.27	5.6 Mw	5.4 mww	0.2	INFORMATION	5	
17	14	20.03.2019	06:34	Aydın-Turkey	37.45	29.43	37.4078	29.531	10.1	14.9	19	8.0	11	5.8 Mwp	5.7 mww	0.1	INFORMATION	13	
18	15	01.06.2019	04:26	Greece-Albania	40.48	20.51	40.5257	20.7025	17.1	17.1	10	10.0	0	5.5 Mwp	5.2 mww	0.3	INFORMATION	8	
19	16	19.07.2019	11:13	Greece	38.11	23.51	38.0951	23.5251	2.1	10.2	20	10.0	10	5.5 Mwp	5.3 mww	0.2	INFORMATION	9	
20	17	21.09.2019	14:04	Albania	41.34	19.42	41.3375	19.5303	9.2	9.2	20	20.0	0	5.8 Mw	5.6 mww	0.2	INFORMATION	9	
21	18	26.09.2019	10:59	Marmara Sea	40.83	28.17	40.9035	28.1502	8.3	8.6	10	8.0	2	5.7 Mwp	5.7 mww	0.0	INFORMATION	8	
22	19	26.11.2019	02:54	Albania	41.39	19.41	41.5138	19.5256	16.8	20.6	10	22.0	-12	6.5 Mwp	6.4 mww	0.1	WATCH	6	
23	20	27.11.2019	07:23	Crete	35.53	23.11	35.7174	23.2284	23.4	23.5	71	69.0	2	6.1 Mwp	6.0 mww	0.1	ADVISORY	9	
24	21	10.12.2019	21:58	Crete	35.1	26.34	35.4972	26.4467	45.2	52.0	83.5	57.9	25.6	5.7 Mw	5.4 mww	0.3	INFORMATION	9	
25	22	30.01.2020	01:28	Dodecanese Islands	35.13	27.94	35.1565	27.8845	5.8	5.8	10	10.0	0	6.1 Mwp	5.5 mww	0.6	ADVISORY	7	
26	23	30.01.2020	11:21	Dodecanese Islands	35.08	27.79	35.1817	27.7814	11.3	11.3	10	10.0	0	5.8 Mwp	5.7 mww	0.1	INFORMATION	8	
27	24	21.03.2020	00:49	Greece-Albania	39.41	20.48	39.3567	20.6383	14.8	14.8	10	10.0	0	5.8 Mwp	5.7 mww	0.1	INFORMATION	6	
28	25	02.05.2020	12:51	Crete	34.06	25.67	34.1818	25.7101	14.0	14.0	10	10.0	0	6.7 Mwp	6.5 mww	0.2	ADVISORY	12	
29	N/A	18.05.2020	23:22	Crete	34.14	25.53	34.1855	25.5173	5.2	7.2	5	10.0	-5	5.6 Mwp	5.7 mww	0.1	N/A	N/A	3.3
30	26	20.05.2020	23:43	Crete	35.07	20.25	35.1594	20.2775	10.3	10.8	10	13.5	-3.5	5.7 Mwp	5.7 mww	0.0	INFORMATION	8	
31	27	18.09.2020	16:28	Crete	34.71	25.18	35.0368	25.3034	38.0	39.1	35	44.0	-9	5.8 Mwp	5.9 mww	0.1	INFORMATION	7	
32	28	30.10.2020	11:51	Samos Island	37.89	26.83	37.8973	26.7838	4.1	11.8	10	21.0	-11	7.0 Mwp	7.0 mww	0.0	WATCH	11	
33	29	03.03.2021	10:16	Greece	39.8	22.16	39.7546	22.1757	5.2	5.6	10	8.0	2	6.3 Mwp	6.3 mww	0.0	INFORMATION	9	
34	30	21.06.2021	22:14	Dodecanese Islands	36.37	27.08	36.4391	27.0416	8.4	8.9	12	9.0	3.0	5.6 Mwp	5.5 mww	0.1	INFORMATION	8	
35	31	01.08.2021	04:31	Dodecanese Islands	36.34	27.06	36.3958	27.0112	7.6	10.2	17	10.1	6.9	5.8 Mwp	5.6 mww	0.2	INFORMATION	8	
36	32	27.09.2021	06:17	Crete	35.17	25.22	35.244	25.2697	9.4	10.2	10	6.0	4	6.1 Mwp	6.0 mww	0.1	ADVISORY	13	3.6
37	33	12.10.2021	09:24	Crete	34.91	26.26	35.1693	26.2163	29.1	29.5	15	20.0	-5	6.2 Mwp	6.4 mww	0.2	ADVISORY	6	
38	34	19.10.2021	05:32	Crete	34.46	28.35	34.5883	28.3882	14.7	34.8	10	41.5	-31.5	6.0 Mwp	5.9 mww	0.1	INFORMATION	9	

Legend

Latency (min)	≤ 7 min	< 7-10 ≤ min	< 10-15 ≤ min	> 15 min
ΔM (USGS-KOERI)	≤ 0.1	0.1 < Mdiff ≤ 0.2	0.2 < Mdiff ≤ 0.3	> 0.3
ΔD, ΔE, ΔH (USGS-KOERI)	≤ 10 km	10 km < Mdiff ≤ 20 km	20 km < Mdiff ≤ 30 km	> 30 km
Alert Level	CORRECT		WRONG	
Performance Level	Good	Acceptable	Poor	Bad
	4	3	2	1

Temporary Service Outage

twfp_tr TWFP_TR 2 July 2021 at 15:53

[Bdtim Personel] Temporary service outage of the NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY)

To: CTWP_TR Liste

To all subscribers of the NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY),

This is to inform you that due to an infrastructure problem, services of the NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY) will be interrupted until further notice. Necessary actions are being undertaken to resolve the problem as soon as possible.

Thank you for your kind understanding.

Regional Earthquake and Tsunami Monitoring Center
Kandilli Observatory and Earthquake Research Institute

twfp_tr TWFP_TR 2 July 2021 at 21:10

[tsp_tr] NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY) back in operations

To: CTWP_TR Liste

To all subscribers of the NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY),

This is to inform you that the infrastructure problem has been resolved and NEAM TSUNAMI SERVICE PROVIDER KOERI(TURKEY) resumes its services.

Thank you for your kind understanding.

Regional Earthquake and Tsunami Monitoring Center (RETMC)
Kandilli Observatory and Earthquake Research Institute (KOERI)

Erroneous Cancellation Message

twfp_tr

TWFP_TR 28 July 2021 at 16:08

[tsp_tr] Erroneous message by the NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY)

To: CTWP_TR Liste

To all subscribers of the NEAM TSUNAMI SERVICE PROVIDER KOERI (TURKEY),

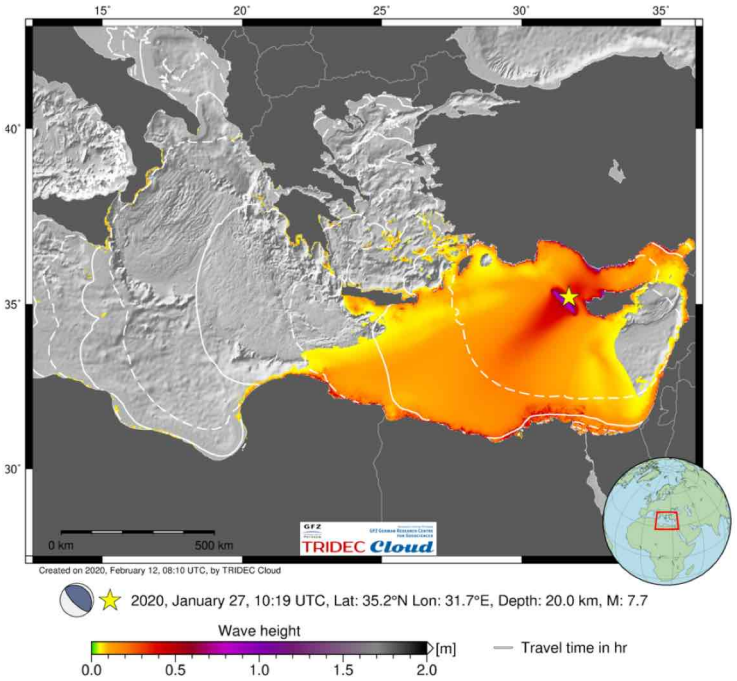
This is to inform you that during one of the regular internal tsunami exercises conducted by KOERI, a CANCELLATION message has been sent out erroneously as a real message by the duty officer.

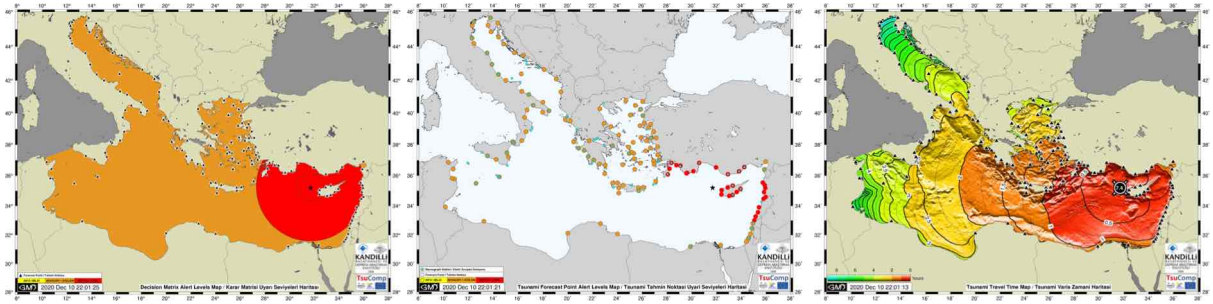
We sincerely apologize for this mistake and any inconenience this may have caused.

Thank you for your kind understanding.

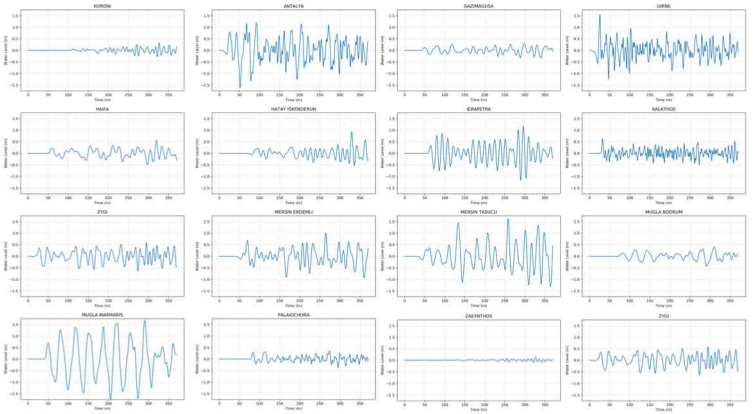
Regional Earthquake and Tsunami Monitoring Center (RETMC)
Kandilli Observatory and Earthquake Research Institute (KOERI)

NEAMWave21



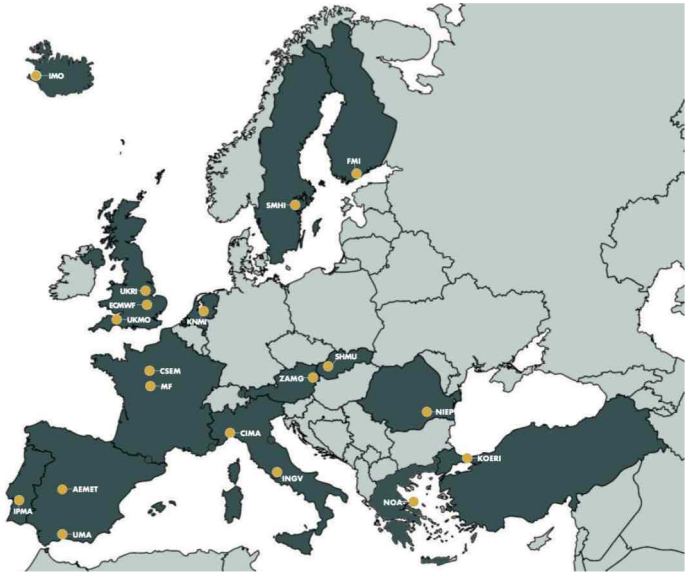


KOERI and National Observatory of Athens (NOA) have combined their efforts through a joint scenario in the Eastern Mediterranean based on a M7.7 earthquake along the western segment of the Cyprian Arc. The modelling of the KOERI-NOA scenario had been done by KOERI through the Easy Wave tsunami modelling tool embedded in GFZ's TridecCloud©, which is a cloud- and web-based prototype Tsunami Early Warning Decision Support platform based on the experiences and the knowledge gained in various research projects. During the conduct of the exercise, TridecCloud© was also utilized for the real-time simulation of the sea-level readings KOERI's enanced products were appreciated once again by the participants.



ARISTOTLE-*e*ENHSP

All **R**isk **I**ntegrated **S**ystem **TO**wards **T**he ho**L**istic **E**arly-warning
*e*nhanced **E**uropean **N**atural **H**azards **S**cientific **P**artnership



EPOS Thematic Core Service

KANDILLI OBSERVATORY AND EARTHQUAKE RESEARCH INSTITUTE 1868

KOERI welcomes and is following closely the development of a TSUNAMI-TCS under EPOS as a supporting and complementing action to the NEAMTWS, especially with the understanding that EPOS TS-YCS will never have any intention or future de-facto status of replacing/substituting/introducing any governance and/or technical mechanisms that may be seen as controversial to the ICG/ NEAMTWS.

Tsunami Ready & DG-ECHO/IOC Project

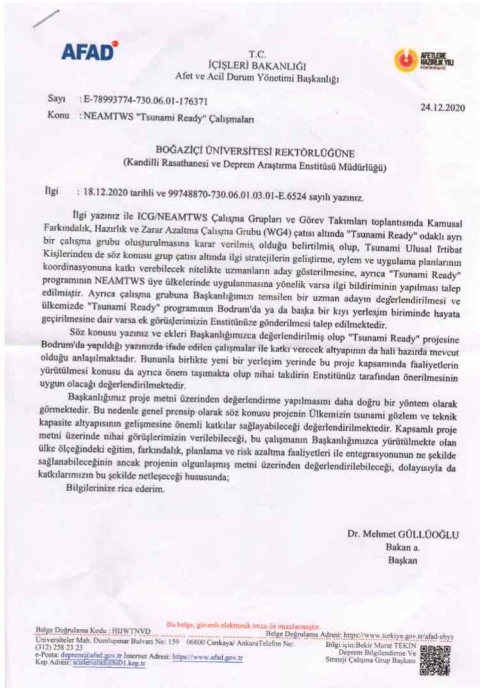
KANDILLI OBSERVATORY AND EARTHQUAKE RESEARCH INSTITUTE 1868

- KOERI has confirmed its support and interest to participate in the DG-ECHO/IOC Project “Strengthening the Resilience of Coastal Communities in the North-East Atlantic and Mediterranean Region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazard.

- Prof. Dr. Ahmet Cevdet Yalçıner has been nominated as the in-country liaison/focal point for the project.

- Istanbul Metropolitan Municipality has agreed to be part of this important initiative. In addition, based on important achievements made thanks to the "Last Mile-Turkey" project in Bodrum executed in 2019, we anticipate similar support from the Bodrum Municipality.

- In addition to the Istanbul Metropolitan and possibly Bodrum Municipality, key national stakeholders and partners are expected to be AFAD (Disaster and Emergency Presidency), İstanbul and Muğla Provincial Directorates of AFAD, and Bodrum Governorate. Engagement of relevant NGO’s is considered to be a possibility.



AFAD

T.C.
İÇİŞLERİ BAKANLIĞI
Afet ve Acil Durum Yönetimi Başkanlığı

Sayı : E-78993774-730.06.01-176371
Konu : NEAMTWS "Tsunami Ready" Çalışmaları

24.12.2020

BOĞAZİÇİ ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Kandilli Rasathanesi ve Deprem Araştırma Enstitüsü Müdürlüğü)

İlgi : 18.12.2020 tarihli ve 99748870-730.06.01.03.01-E.6524 sayılı yazınız.

İlgi yazınız ile ICG/NEAMTWS Çalışma Grupları ve Görev Takımları toplantısında Kamusal Farkındalık, Hazırlık ve Zarar Azaltma Çalışma Grubu (WG4) çatısı altında "Tsunami Ready" odaklı ayrı bir çalışma grubu oluşturulmasına karar verilmiş olduğu belirtilmiş olup, Tsunami Ulusal İrtibat Kişilerinden de söz konusu grup çatısı altında ilgi stratejilerin geliştirme, eylem ve uygulama planlarının koordinasyonuna katkı verebilecek nitelikte uzmanların aday gösterilmesine, ayrıca "Tsunami Ready" programının NEAMTWS üye ülkelerinde uygulanmasına yönelik varsa ilgi bildiriminin yapılması talep edilmiştir. Ayrıca çalışma grubuna Başkanlığımızı temsilen bir uzman adayın değerlendirilmesi ve ülkemizde "Tsunami Ready" programının Bodrum'da ya da başka bir kıyı yerleşim biriminde hayata geçirilmesine dair varsa ek görüşlerimizin Enstitünüze gönderilmesi talep edilmektedir.

Söz konusu yazınız ve ekleri Başkanlığımızca değerlendirilmiş olup "Tsunami Ready" projesine Bodrum'da yapıldığı yazınızda ifade edilen çalışmalar ile katkı verecek altyapının da hali hazırda mevcut olduğu anlaşılmaktadır. Bununla birlikte yeni bir yerleşim yerinde bu proje kapsamında faaliyetlerin yürütülmesi konusu da ayrıca önem taşımakta olup nihai takdirin Enstitünüz tarafından önerilmesinin uygun olacağı değerlendirilmektedir.

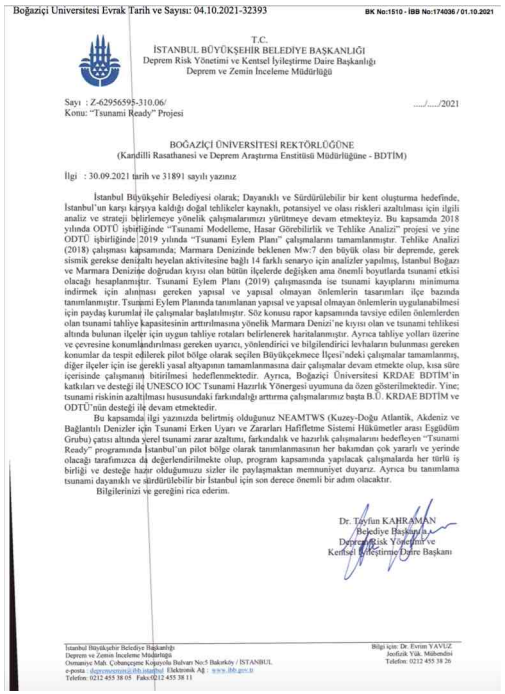
Başkanlığımız proje metni üzerinden değerlendirme yapılmasını daha doğru bir yöntem olarak görmektedir. Bu nedenle genel prensip olarak söz konusu projenin Ülkemizin tsunami gözlem ve teknik kapasite altyapısının gelişmesine önemli katkılar sağlayabileceği değerlendirilmektedir. Kapsamlı proje metni üzerinde nihai görüşlerimizin verilebileceği, bu çalışmanın Başkanlığımızca yürütülmekte olan ülke ölçeğindeki eğitim, farkındalık, planlama ve risk azaltma faaliyetleri ile entegrasyonunun ne şekilde sağlanabileceğinin ancak projenin olgunlaşmış metni üzerinden değerlendirilebileceği, dolayısıyla da katkılarımızın bu şekilde netleşeceği hususunda;

Bilgilerinize rica ederim.

Dr. Mehmet GÜLLÜOĞLU
Bakan a.
Başkan

Bu belge, güvenli elektronik imza ile imzalanmıştır.
Belge Doğrulama Kodu : HJWTNVD
Belge Doğrulama Adresi: https://www.turkiye.gov.tr/afad-ebys
Universiteler Mah. Dumlupınar Bulvarı No: 159 06800 Çankaya/ Ankara Telefon No: (312) 258 23 23
e-Posta: deprem@afad.gov.tr İnternet Adresi: https://www.afad.gov.tr
Kep Adresi: afadturkiye@hs01.kep.tr
Bilgi için:Bekir Murat TEKİN
Deprem Bilgilendirme Ve Strateji Çalışma Grup Başkanı

ICG/NEAMTWS-XVII



Boğaziçi Üniversitesi Evrak Tarih ve Sayısı: 04.10.2021-32393 BK No:1510 - İBB No:174036 / 01.10.2021

T.C.
İSTANBUL BÜYÜKŞEHİR BELEDİYE BAŞKANLIĞI
Deprem Risk Yönetimi ve Kentsel İyileştirme Daire Başkanlığı
Deprem ve Zemin İnceleme Müdürlüğü

Sayı : Z-62956595-310.06/ ...../...../2021
Konu: "Tsunami Ready" Projesi

BOĞAZİÇİ ÜNİVERSİTESİ REKTÖRLÜĞÜNE
(Kandilli Rasathanesi ve Deprem Araştırma Enstitüsü Müdürlüğüne - BDTİM)

İlgi : 30.09.2021 tarih ve 31891 sayılı yazınız

İstanbul Büyükşehir Belediyesi olarak; Dayanıklı ve Sürdürülebilir bir kent oluşturma hedefinde, İstanbul'un karşı karşıya kaldığı doğal tehlikeler kaynaklı, potansiyel ve olası riskleri azaltılması için ilgili analiz ve strateji belirlemeye yönelik çalışmalarımızı yürütmeye devam etmekteyiz. Bu kapsamda 2018 yılında ODTÜ işbirliğinde "Tsunami Modelleme, Hasar Görebilirlik ve Tehlike Analizi" projesi ve yine ODTÜ işbirliğinde 2019 yılında "Tsunami Eylem Planı" çalışmalarını tamamlanmıştır. Tehlike Analizi (2018) çalışması kapsamında; Marmara Denizinde beklenen Mw-7 den büyük olası bir depremde, gerek sismik gerekse denizaltı heyelan aktivitesine bağlı 14 farklı senaryo için analizler yapılmış, İstanbul Boğazı ve Marmara Denizine doğrudan kıyısı olan bütün ilçelerde değişken ama önemli boyutlarda tsunami etkisi olacağı hesaplanmıştır. Tsunami Eylem Planı (2019) çalışmasında ise tsunami kayıplarını minimuma indirmek için alınması gereken yapısal ve yapısal olmayan önlemlerin tasarımları ilçe bazında tanımlanmıştır. Tsunami Eylem Planında tanımlanan yapısal ve yapısal olmayan önlemlerin uygulanabilmesi için paydaş kurumlar ile çalışmalar başlatılmıştır. Söz konusu rapor kapsamında tavsiye edilen önlemlerden olan tsunami tahliye kapasitesinin arttırılmasına yönelik Marmara Denizi'ne kıyısı olan ve tsunami tehlikesi altında bulunan ilçeler için uygun tahliye rotaları belirlenerek haritalanmıştır. Ayrıca tahliye yolları üzerine ve çevresine konumlandırılması gereken uyarıcı, yönlendirici ve bilgilendirici levhaların bulunması gereken konumlar da tespit edilerek pilot bölge olarak seçilen Büyükçekmece İlçesi'ndeki çalışmalar tamamlanmış, diğer ilçeler için ise gerekli yasal altyapının tamamlanmasına dair çalışmalar devam etmekte olup, kısa süre içerisinde çalışmanın bitirilmesi hedeflenmektedir. Ayrıca, Boğaziçi Üniversitesi KRDAE BDTİM'in katkıları ve desteği ile UNESCO IOC Tsunami Hazırlık Yönergesi uyumuna da özen gösterilmektedir. Yine; tsunami riskinin azaltılması hususundaki farkındalığı arttırma çalışmalarımız başta B.Ü. KRDAE BDTİM ve ODTÜ'nün desteği ile devam etmektedir.

Bu kapsamda ilgi yazınızda belirtmiş olduğunuz NEAMTWS (Kuzey-Doğu Atlantik, Akdeniz ve Bağlantılı Denizler için Tsunami Erken Uyarı ve Zararları Hafifletme Sistemi Hükümetler arası Eşgüdüm Grubu) çatısı altında yerel tsunami zarar azaltımı, farkındalık ve hazırlık çalışmalarını hedefleyen "Tsunami Ready" programında İstanbul'un pilot bölge olarak tanımlanmasının her bakımdan çok yararlı ve yerinde olacağı tarafımızca da değerlendirilmekte olup, program kapsamında yapılacak çalışmalarda her türlü iş birliği ve desteğe hazır olduğumuzu sizler ile paylaşmaktan memnuniyet duyarız. Ayrıca bu tanımlama tsunami dayanıklı ve sürdürülebilir bir İstanbul için son derece önemli bir adım olacaktır.

Bilgilerinizi ve gereğini rica ederim.

Dr. Tayfun KAHRAMAN
Belediye Başkan Yardımcısı
Deprem Risk Yönetimi ve
Kentsel İyileştirme Daire Başkanı

İstanbul Büyükşehir Belediye Başkanlığı
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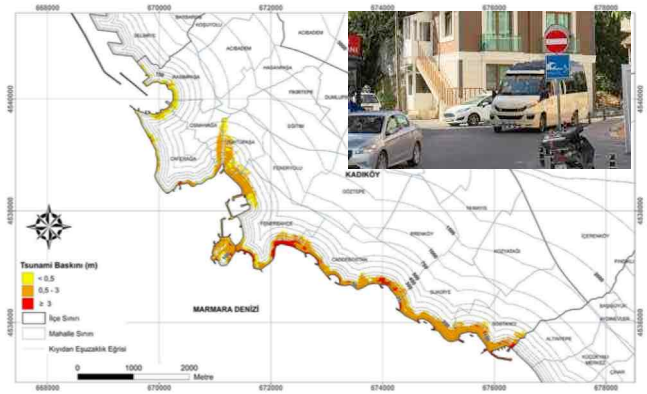
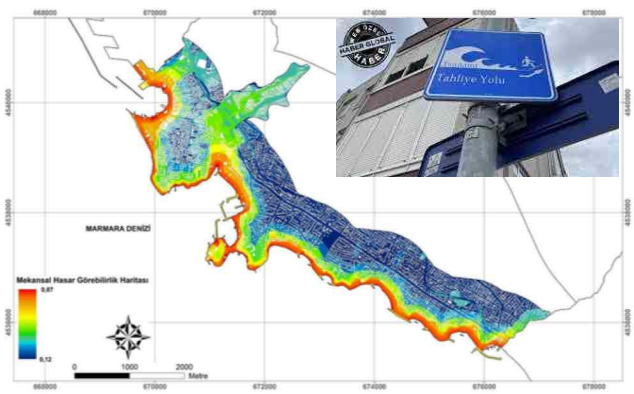
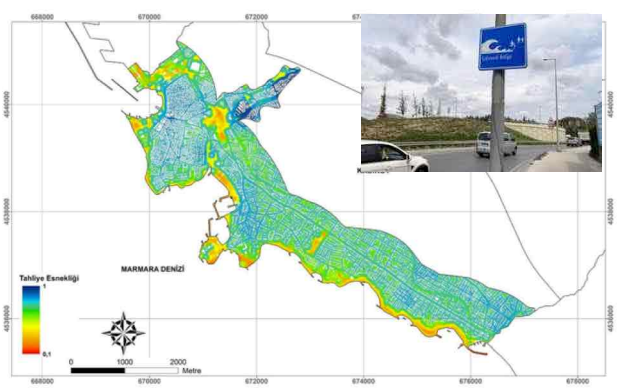
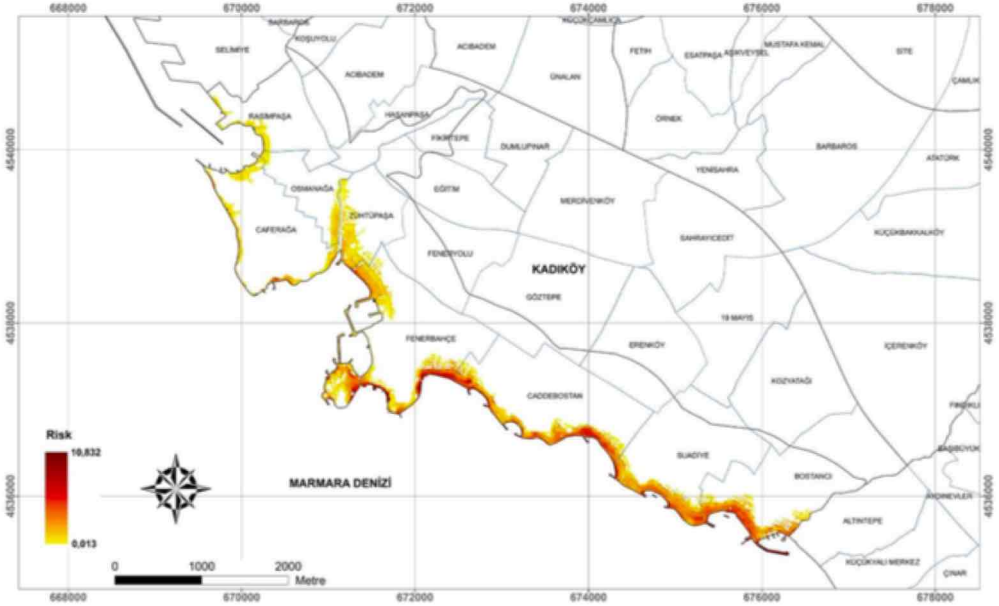
Progress in Istanbul



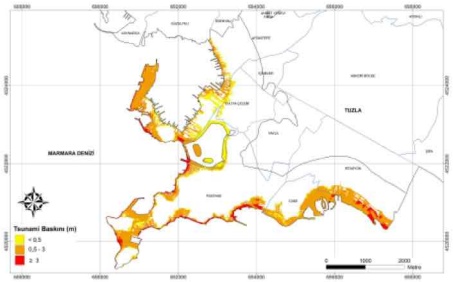






İSTANBUL İLİ MARMARA KIYILARI TSUNAMİ MODELLEME, HASAR GÖREBİLİRLİK VE TEHLİKE ANALİZİ GÜNCELLEME PROJESİ SONUÇ RAPORU

2018



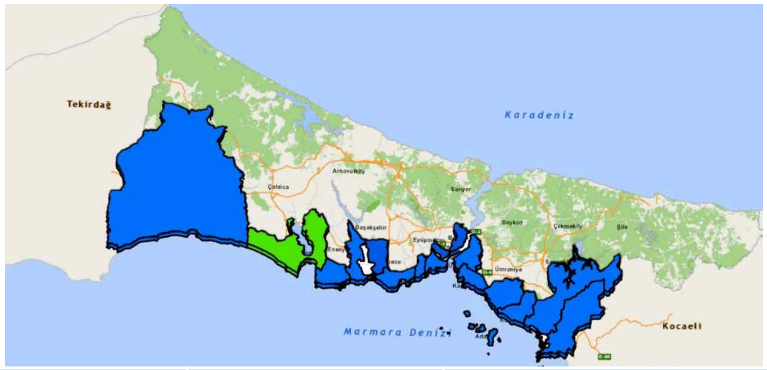
İSTANBUL BÜYÜKŞEHİR BELEDİYESİ

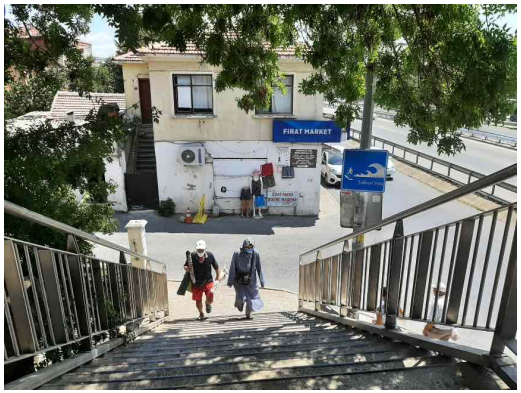
ORTA DOĞU TEKNİK ÜNİVERSİTESİ

ODTÜ METU

https://depremzemin.ibb.istanbul/guncelcalismalarimiz/#stanbul-tsunam-eylem-plani
https://depremzemin.ibb.istanbul/guncelcalismalarimiz/#le-tsunam-blg-ktapiklari

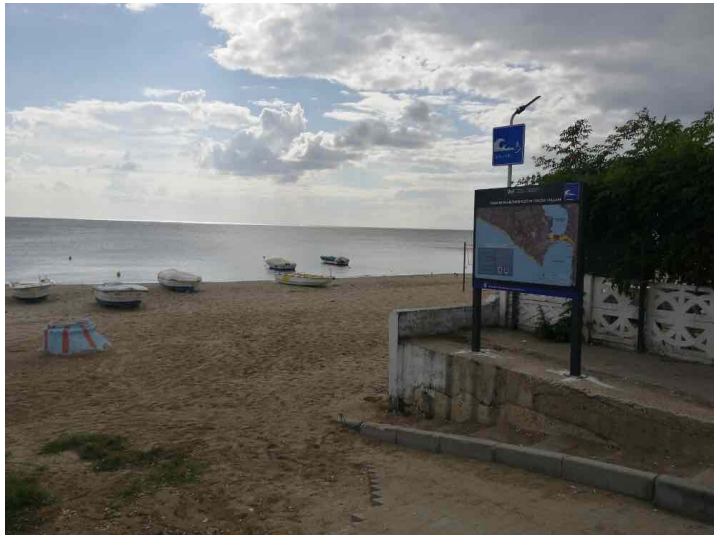
Progress in Istanbul

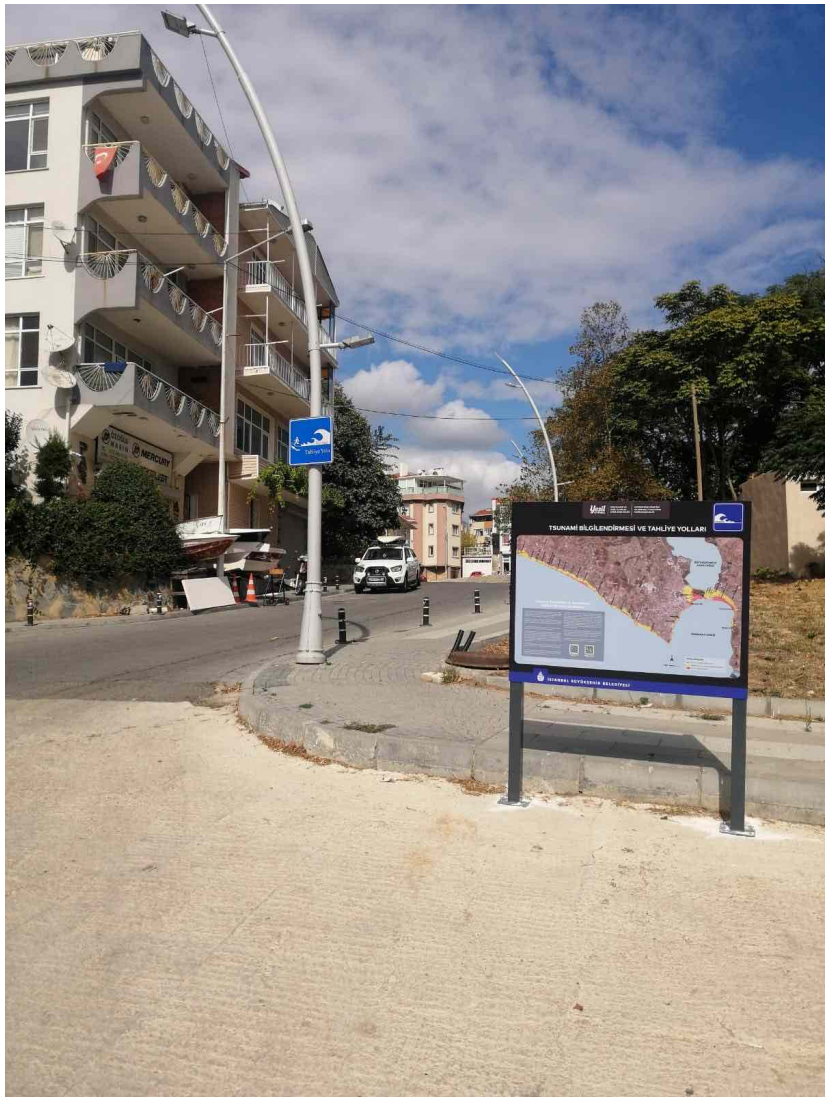




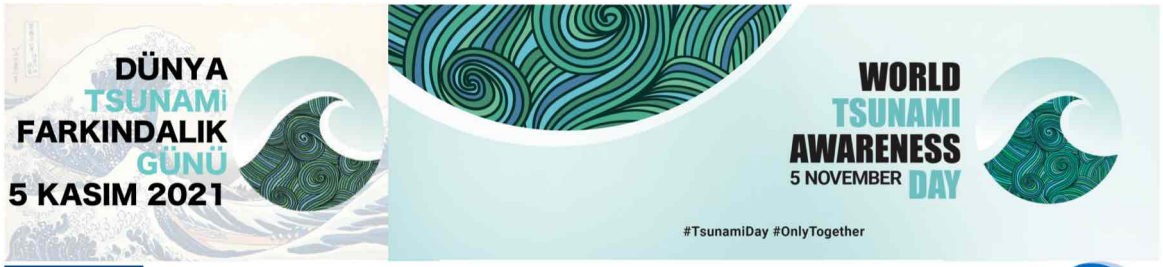
DISTRICT	NUMBER OF EVACUATION ROUTES	NUMBER OF INFORMATION PANELS	NUMBER OF SECURE AREA SIGNS	NUMBER OF EVACUATION ROUTE SIGNS
ADALAR	24	26	24	37
AVCILAR	8	14	8	6
BAKIRKÖY	14	17	14	32
BEŞİKTAŞ	8	18	8	17
BEYLİKDÜZÜ	10	11	10	15
BEYOĞLU	12	16	12	24
FATİH	15	37	15	36
KADIKÖY	22	27	22	35
KARTAL	8	5	8	19
KÜÇÜKÇEKMECE	2	15	2	5
MALTEPE	6	9	6	9
PENDİK	6	12	6	13
SİLİVRİ	33	50	35	55
TUZLA	12	11	12	27
ÜSKÜDAR	9	14	9	18
ZEYTİNBURNU	3	6	3	9

Progress in Istanbul





World Tsunami Awareness Day



İSTANBUL BÜYÜKŞEHİR BELEDİYESİ

KANDİLLİ RASATHANESİ VE DEPREM ARAŞTIRMA ENSTİTÜSÜ 1868

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

JICA

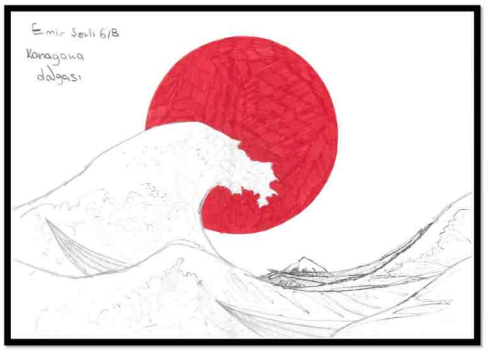
An awareness seminar was organized at Istanbul Metropolitan Municipality on 5 November 2021. The seminar was attended by high-level officials from IMM and included presentations on basics of tsunami hazard and risk (by Prof. Dr. A. Cevdet YALÇINER METU), implementation of tsunami action plan of Istanbul (by Kemal Duran – IMM Directorate of Soil and Earthquake, KOERI's TWS and İstanbul's tsunami resilience from a multi-hazard perspective (by Dr. Öcal Necmioğlu-KOERI), and real-time tsunami monitoring system in Japan (by Prof. Dr. Yoshiyuki Kaneda, Kagawa University/JICA). The event hosted also a physical and virtual exhibition of paintings on tsunami theme from primary school students in Istanbul.

World Tsunami Awareness Day

KANDILLI OBSERVATORY AND EARTHQUAKE RESEARCH INSTITUTE 1868

Ömer DEMİRCİ

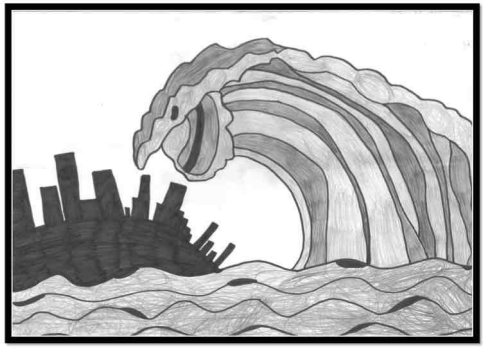
Mehmet Eren SONGÜN



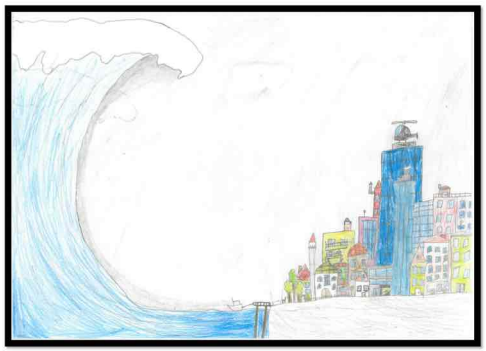
Emir ŞEVLİ

Furkan TOPÇU

Furkan TOPÇU



Beril Azra ATÇI



Halit Kerem TUNÇAZ

Ali Hakan HURŞİTOĞLU

Ayşe Naz TANGÜLER

Ocean Decade

Our "National Decade Committee on Ocean Decade" has been established and the "national kickoff event" was carried out on 24 Aug 2021 (via remote video call) under the coordination of UNESCO Turkey National Commission and our Office of Navigation, Hydrography and Oceanography."

Offshore Buoy Systems

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Project Albatross / Dove

A Draft Concept for a
Joint Initiative for the Deployment of DARTs within NEAMTWS through NATO's The Science for Peace and Security (SPS) Programme
based on ASTARTE Outcomes

Öcal Necmioğlu

Kandilli Observatory and Earthquake Research Institute
Boğazici University

NEAMTWS Steering Committee Meeting
30 March 2015

Two options exist: 1) International Collaboration or 2) National Initiative

Option 1:International Collaboration
Coordinator: TBD

Steering Committee: Representatives of NEAMTWS TSPs

Additional Partners: NOAA, SAIC, CMRE, EC-JRC

Advisory Board: NEAMTWS Chair and Secretariat (if not partner)

- Cumbersome process in terms of application of the project…
- Easier in the implementation and strong contribution to NEAMTWS

Option 2: National Initiative
Self-explanatory…
- Easier process in terms of application…
- Problematic in the implementation and limited contribution to NEAMTWS

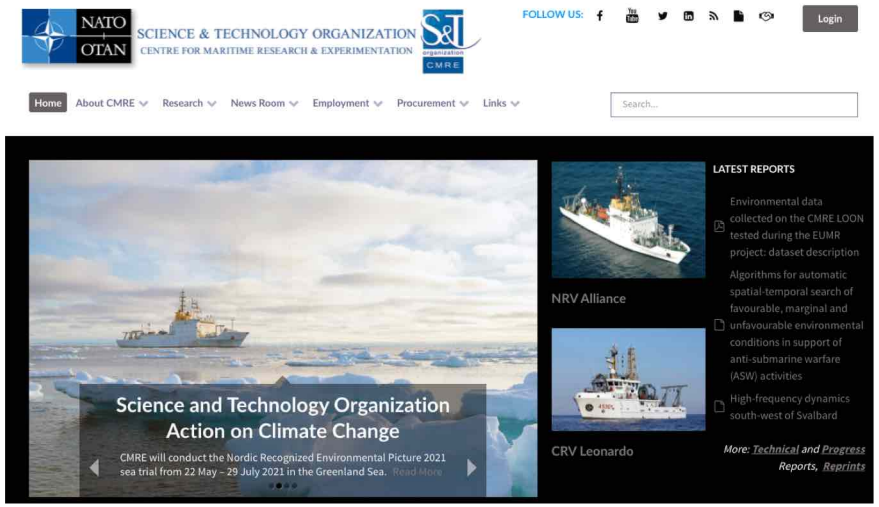
- **Maintenance?**
  a) Handover to CMRE with a MoU
  b) TSPs' responsibility ?

NORTH ATLANTIC TREATY ORGANIZATION
The Science for Peace and Security Programme

The Science for Peace and Security (SPS) Programme is a policy tool that enhances cooperation and dialogue with all partners, based on scientific research, innovation, and knowledge exchange. The SPS Programme provides funding, expert advice, and support to security-relevant activities jointly developed by a NATO member and partner country. It enhances cooperation and dialogue with all partners, based on scientific research, innovation, and knowledge exchange.

The SPS Programme promotes civil, security-related practical cooperation, and focuses on a growing range of contemporary security challenges, including terrorism, defence against chemical, biological, radiological, and nuclear (CBRN) agents, cyber defence, energy security and **environmental concerns, as well as human and social aspects of security**.

Interested parties submit an application for funding that must be led by project directors from at least one Allied and one partner country.



IOC Partnership with Fugro

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UNESCO Building peace in the minds of men and women

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Fugro commits Geo-data expertise and experience to UN Ocean Decade under new partnership agreement

Fugro has signed a partnership agreement with the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organisation (IOC-UNESCO) to improve the coordination of and access to global ocean science data.

The partnership will directly support the United Nations Decade of Ocean Science for Sustainable Development 2021-2030 (the "Ocean Decade"), a multifaceted initiative focused on reversing the cycle of decline in ocean health and creating improved conditions for sustainable ocean development worldwide.

What are the possibilities of NEAMTWS-TSPs to benefit from the partnerhsip established between IOC and Fugro, especially focusing on Fugro's Seawatch tsunami monitoring systems using seabed pressure gauges?

Can we better schedule ICG/NEAMTWS Sessions?

Special thanks to KOERI-RETMC Staff Members…