United Nations
Educational, Scientific and
Cultural Organization

Intergovernmental
Oceanographic
Commission

Member State Report for *IRAN*

Ali Khoshkholgh
INIOAS

Intersessional Meeting of the ICG/IOTWMS
November 2021

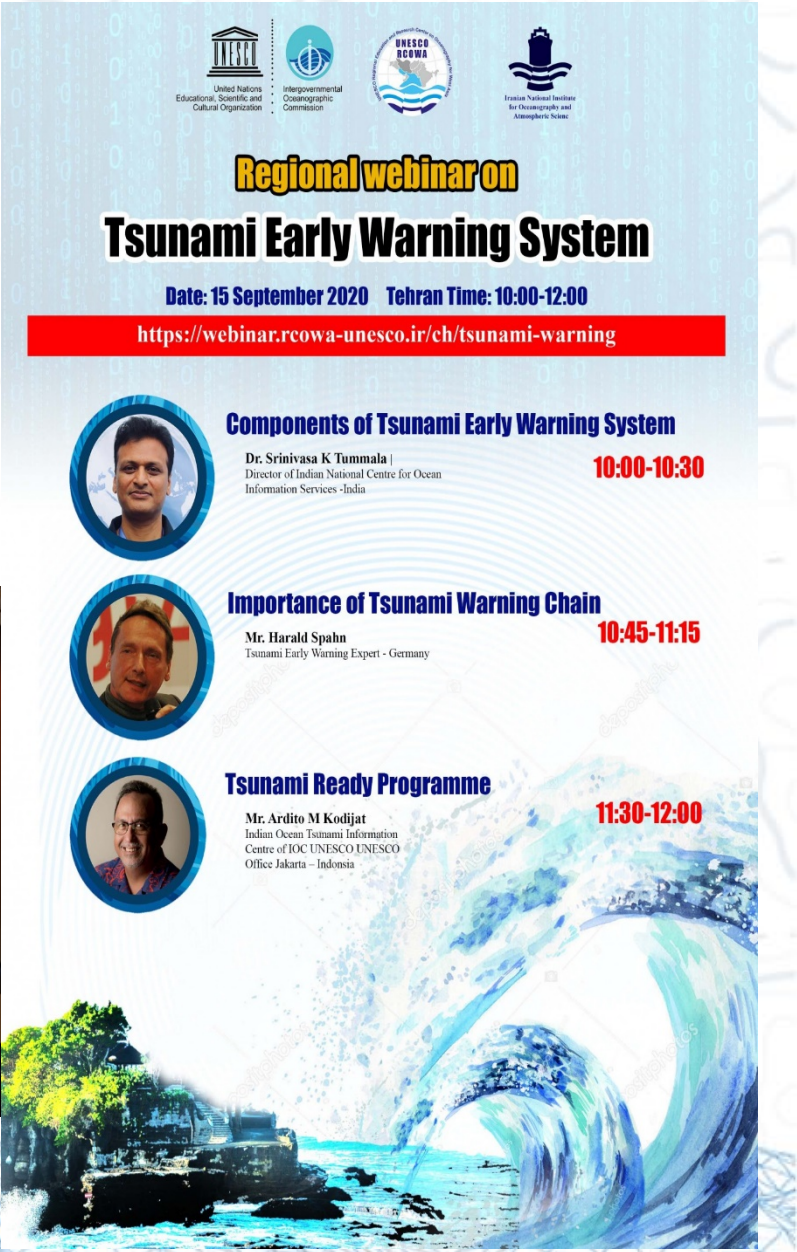
Activities

- Increasing the awareness and preparedness for Tsunami Hazard
- Development of a Tsunami Scenario Database for Makran Subduction Zone
- Providing Inundation and evacuation map for Chabahar and Jask
- Active Participation at UNESCAP Project's meeting(Strengthening Tsunami Warning in the North West Indian Ocean through Regional Cooperation)
  - Development of Tsunami Warning Chain for Iran(Draft version)
  - Development of SOP for NTWC of Iran
  - Harmonising of NTWC Warning Levels: Thresholds, Terminology and Colour Codes
  - Lessons Learnt from the project's meeting to transfer to other stakeholders

Increasing the awareness and preparedness for Tsunami Hazard

Holding a Regional webinar on Tsunami Early Warning System

Workshop Title	Date	Number of Lecturers	Number of Participants
Tsunami Early Warning System	15 September 2020	3	110



Increasing the awareness and preparedness for Tsunami Hazard

World Tsunami Awareness Day (5th November)

Jask-2020

Chabahar-2020

Chabahar-2021

Increasing the awareness and preparedness for Tsunami Hazard

World Tsunami Awareness Day (5th November)

Holding a webinar on Importance of increasing the awareness and preparedness for Tsunami Hazard

Increasing the awareness and preparedness for Tsunami Hazard

Increasing the awareness and preparedness for Tsunami Hazard

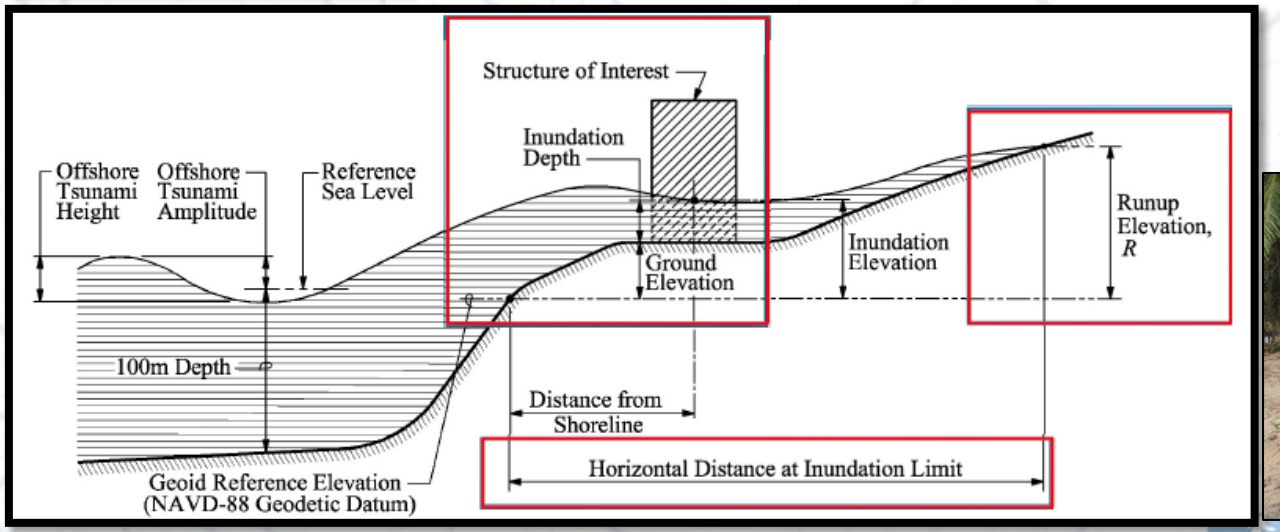
Providing the TSUNAMI TECHNICAL GUIDELINE based on ASCE Standard by Port and Maritime Organization

6 CHAPTERS

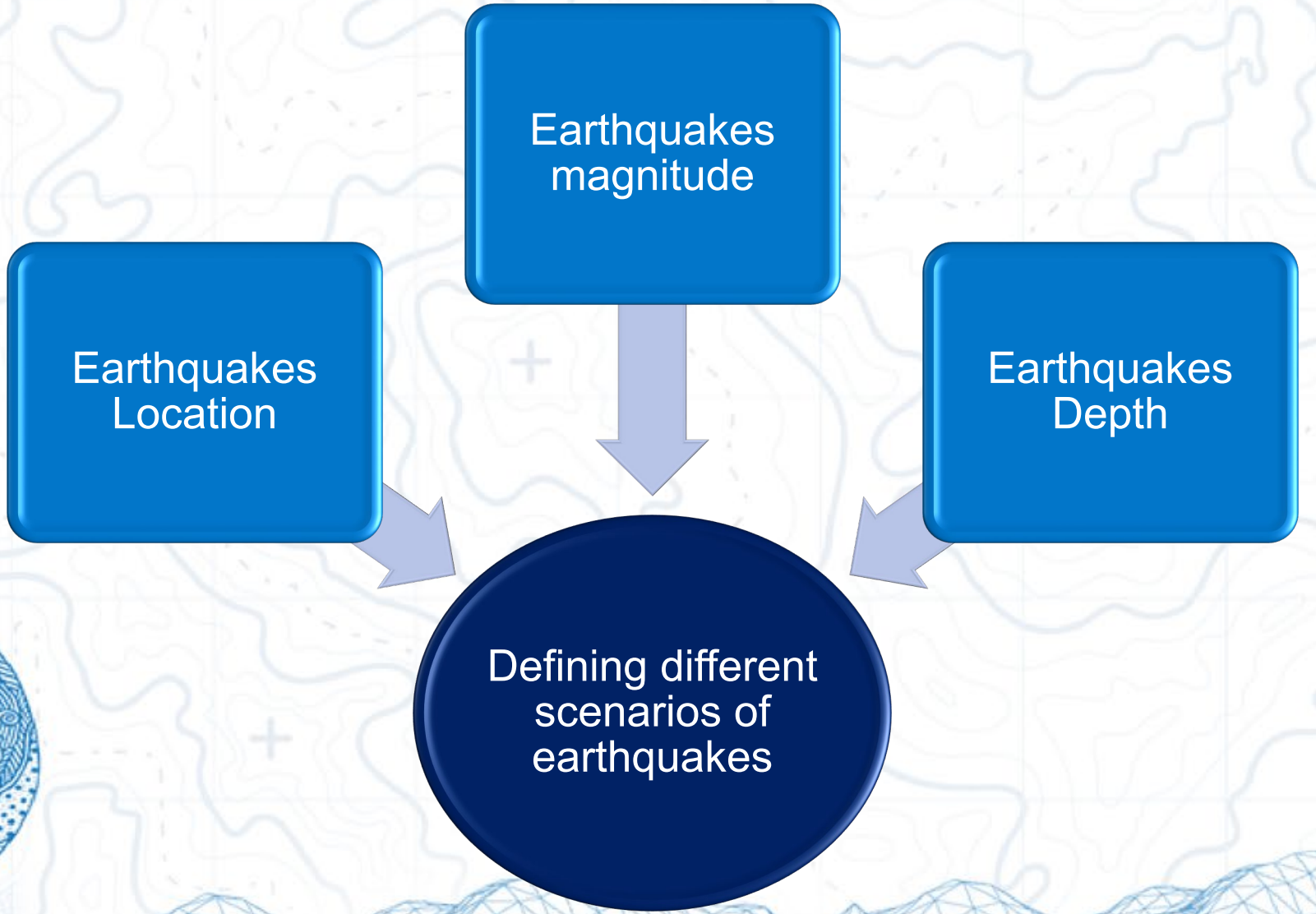
- INTRODUCTION
- STRUCTURAL DESIGN PROCEDURES FOR TSUNAMI EFFECTS
- TSUNAMI LOADS
- FOUNDATION DESIGN
- TSUNAMI VERTICAL EVACUATION REFUGE STRUCTURES

2 APPENDIXES

- TSUNAMI IN IRAN'S COASTS
- MAKRAN SUBDUCTION ZONE

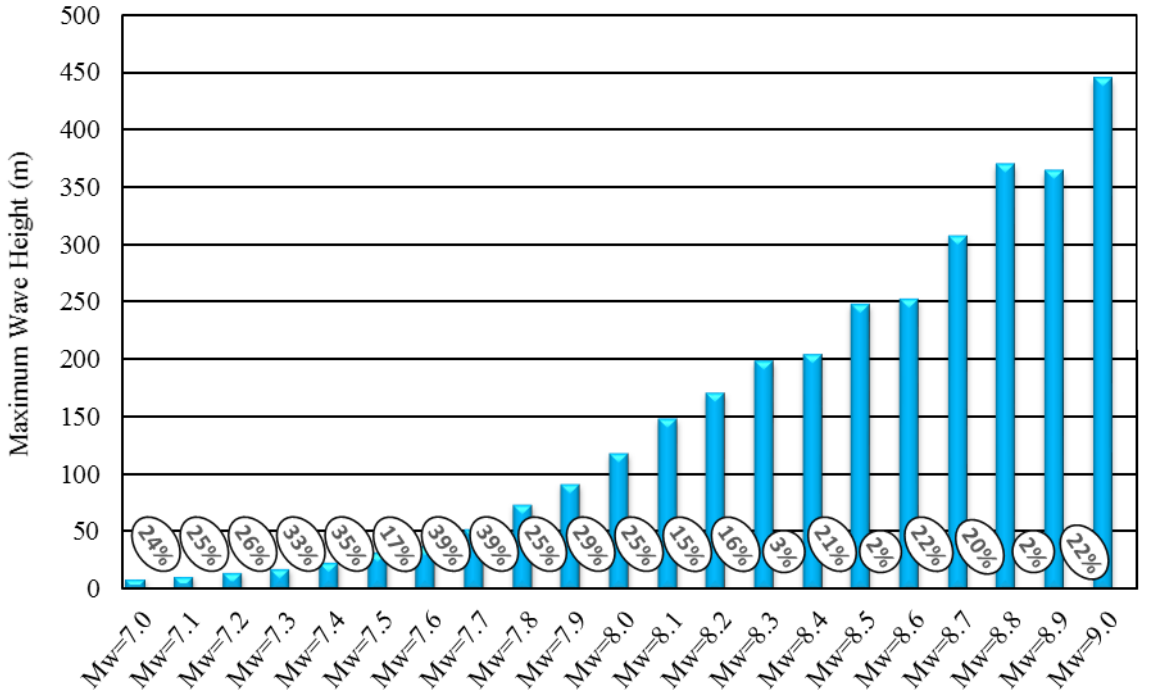


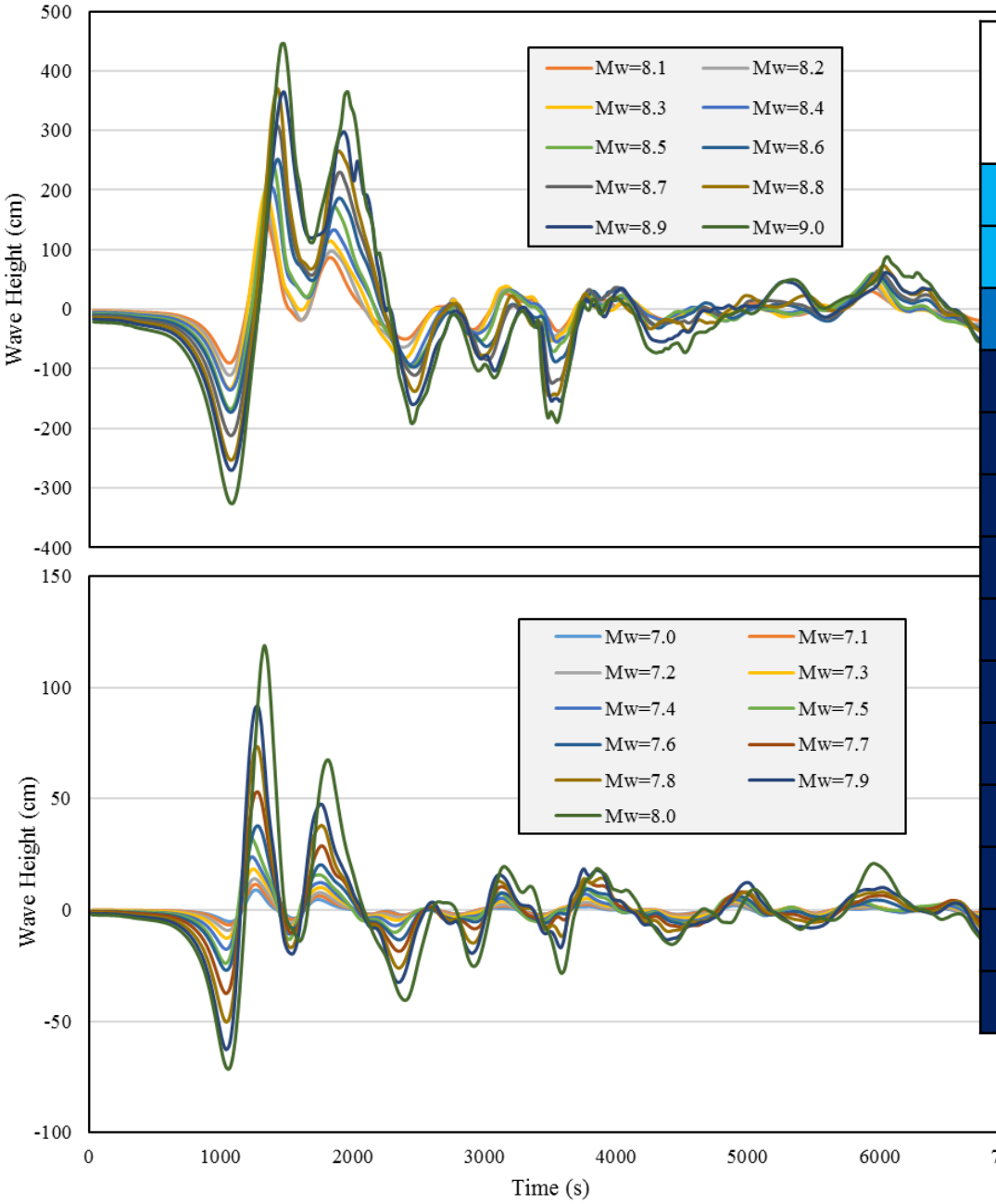
Development of a Tsunami Scenario Database for Makran Subduction Zone



Development of a Tsunami Scenario Database for Makran Subduction Zone

- Performing sensitivity analysis for the uncertain parameters

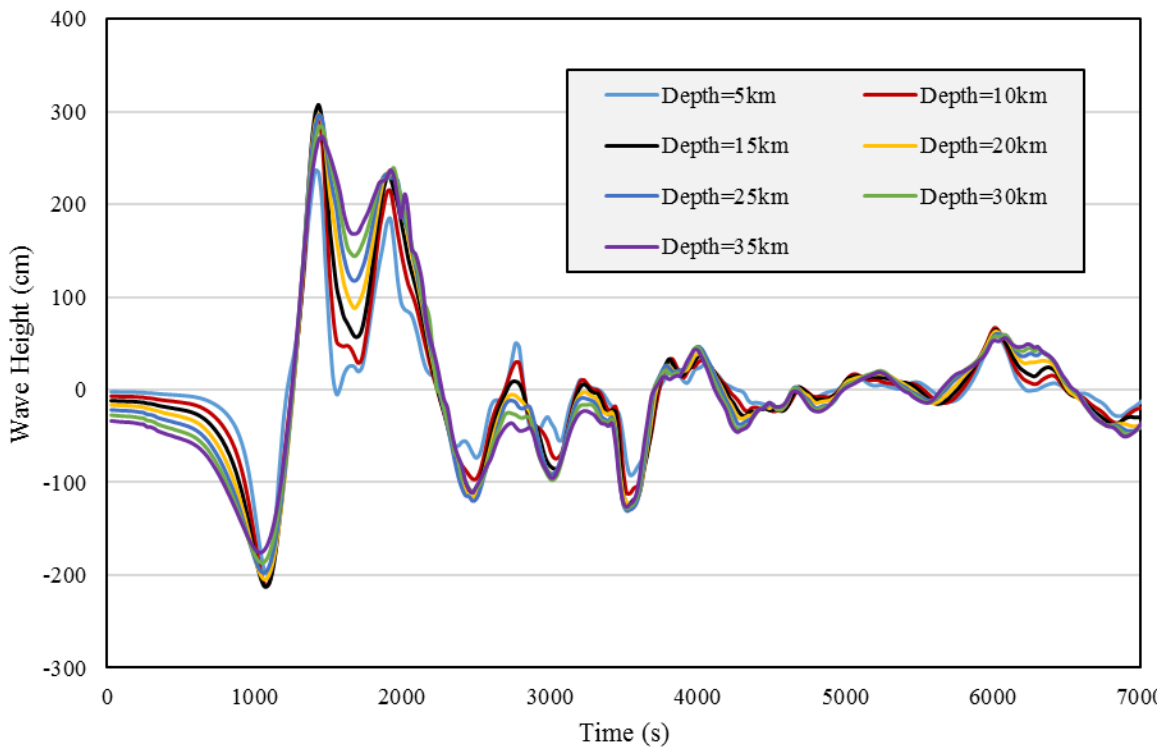


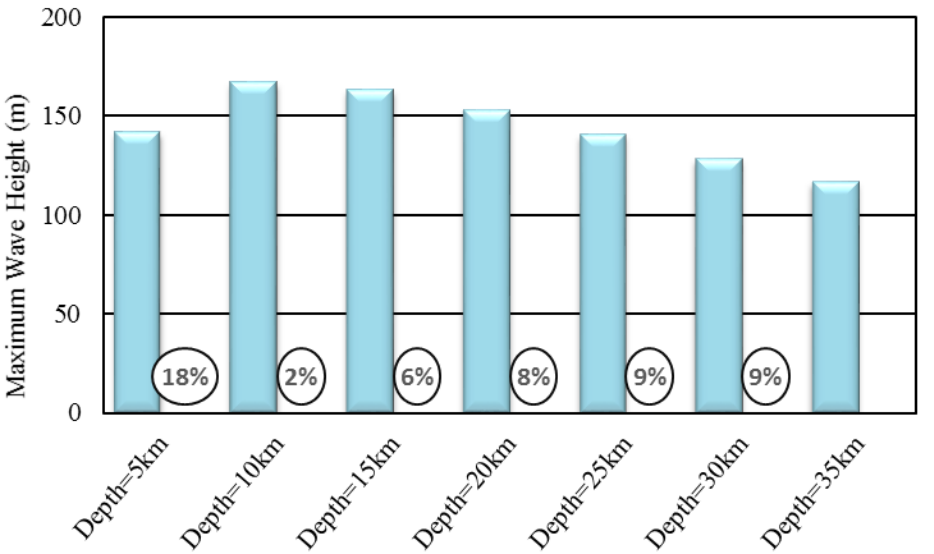


Earthquakes magnitude in scenarios
7.0 Mw
7.5 Mw
7.8 Mw
8.0 Mw
8.1Mw
8.2 Mw
8.3 Mw
8.4 Mw
8.5 Mw
8.6 Mw
8.7 Mw
8.8 Mw
8.9 Mw
9.0 Mw

Development of a Tsunami Scenario Database for Makran Subduction Zone

- Performing sensitivity analysis for the uncertain parameters





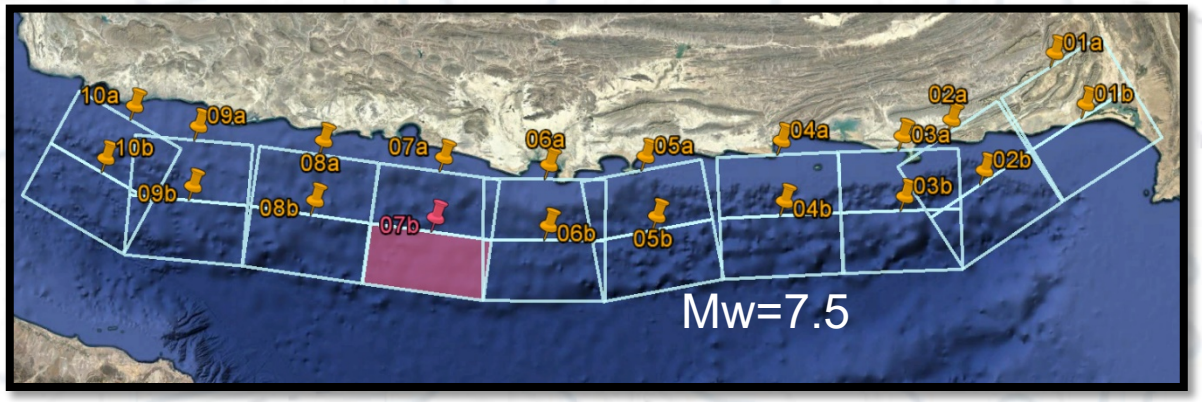
Earthquakes depth in scenarios
5 Km
15 Km
25 Km
35 Km

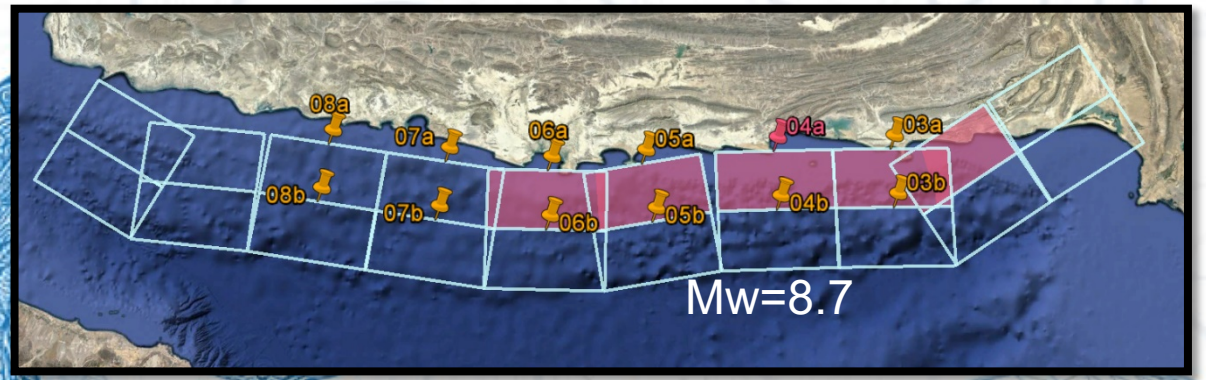
Earthquake Depth

Development of a Tsunami Scenario Database for Makran Subduction Zone

- Scenarios of earthquakes based on variation of earthquakes magnitude, depth and location

Earthquake Location:





- Final Number of tsunami scenarios: 206 × 4 = **824**

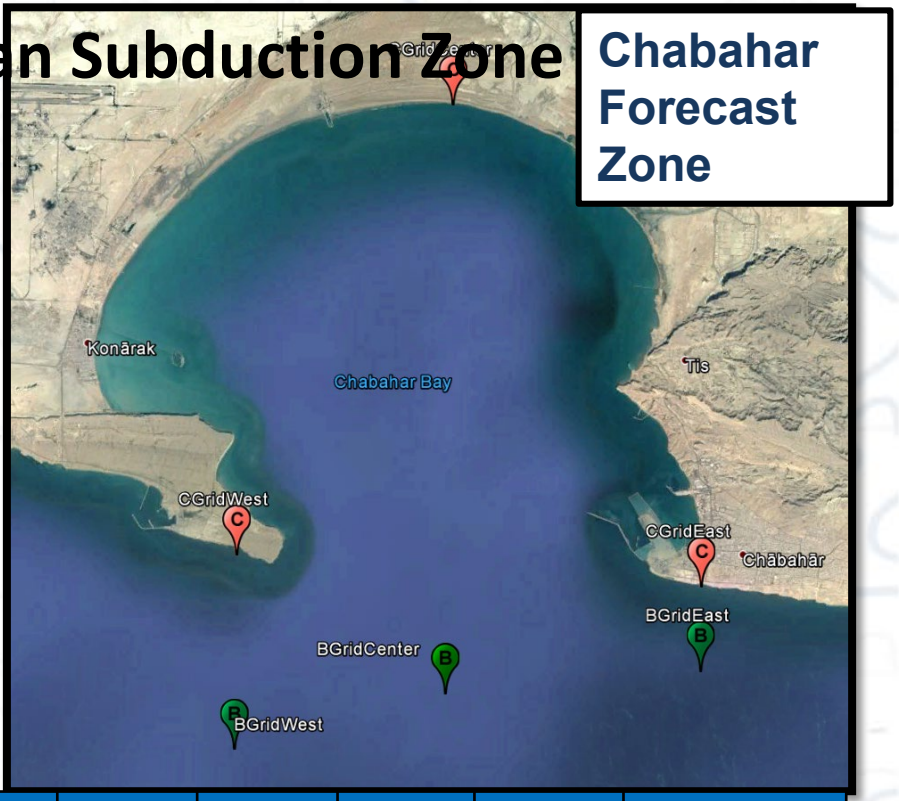
Magnitude	L(km)	W(km)	U_0 (m)	Number of scenarios based on possible location
7.0 Mw	60	18	1.07	20
7.5 Mw	110	25	2.37	20
7.8 Mw	170	29	3.82	18
8.0 Mw	200	35	5.25	18
8.1Mw	230	37	6.15	18
8.2 Mw	260	40	7.21	16
8.3 Mw	300	42	8.45	16
8.4 Mw	340	44	9.91	16
8.5 Mw	400	45	11.61	14
8.6 Mw	455	48	13.61	14
8.7 Mw	515	51	15.96	12
8.8 Mw	610	52	18.71	10
8.9 Mw	720	53	21.93	8
9 Mw	850	54	25.70	6

206 Scenario

Development of a Tsunami Scenario Database for Makran Subduction Zone

Desired parameters: (same as those reported by RTSPs):

- T1 : Arrival time of first detectable tsunami wave (2 cm amplitude wave).
- T2 : Arrival time of first wave exceeding 0.5 m threat threshold.
- T3 : Arrival time of maximum amplitude wave.
- T4 : Arrival time of last wave exceeding 0.5 m threat threshold.
- Max-deep: the maximum height of tsunami wave.
- Max-beach: the maximum height of tsunami wave at 1m depth point.



ZONE PREDICTIONS FOR IRAN:

COUNTRY ZONE ▼▲	MAX BEACH (m) ▼▲	MAX DEEP (m) ▼▲	DEPTH AT MAX DEEP (m) ▼▲	T1 (UTC) First Wave ▼▲	T2 (UTC) First Above Threat Level ▼▲	T3 (UTC) Max Wave ▼▲	T4 (UTC) Last Above Threat Level ▼▲
SIRIK	3.6	1.68	21	08 Sep 0632Z	08 Sep 0640Z	08 Sep 1142Z	09 Sep 0600Z
VANAK	12.69	3.49	175	08 Sep 0600Z	08 Sep 0600Z	08 Sep 0610Z	09 Sep 0554Z
JASK	7.38	3.18	29	08 Sep 0600Z	08 Sep 0600Z	08 Sep 0600Z	09 Sep 0520Z
MISKI	3.77	1.23	88	08 Sep 0600Z	08 Sep 0616Z	08 Sep 0630Z	09 Sep 0530Z
SAR RIG	3.03	1.37	24	08 Sep 0730Z	08 Sep 0744Z	08 Sep 0824Z	09 Sep 0344Z
BIR	5.99	2.16	59	08 Sep 0600Z	08 Sep 0600Z	08 Sep 0654Z	09 Sep 0600Z
MACHAN	6.76	1.84	182	08 Sep 0600Z	08 Sep 0600Z	08 Sep 0610Z	09 Sep 0600Z
PUSHT	7.88	2.13	187	08 Sep 0600Z	08 Sep 0600Z	08 Sep 0608Z	09 Sep 0600Z

	T1 (s)	T2 (s)	T3 (s)	T4 (s)	Max beach or deep (cm)
C Grid (west)	1440	1440	1536	43136	2053.70
C Grid (center)	2944	2944	3488	28928	205.46
C Grid (east)	832	864	1056	24672	1274.15
B Grid (west)	960	960	1152	26784	1244.15
B Grid (center)	896	896	1088	26880	884.47
B Grid (east)	672	672	960	22816	1171.93

Development of a Tsunami Scenario Database for Makran Subduction Zone

Watch

Time Arrival (H>2cm) =59.7333 min

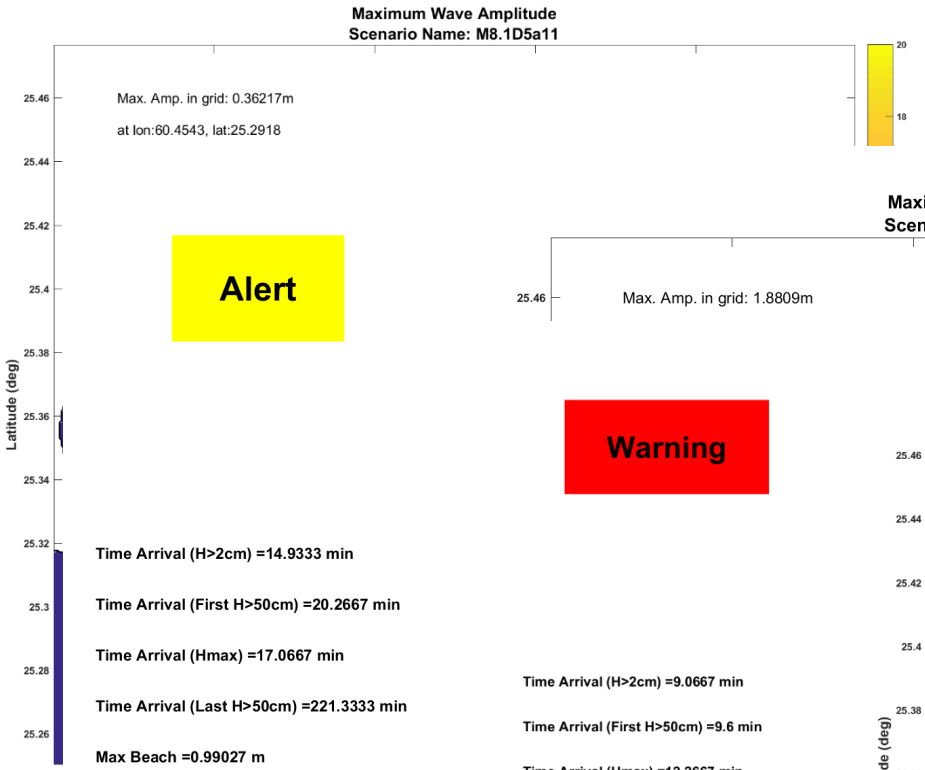
Time Arrival (First H>50cm) = Not Available

Time Arrival (Hmax) =104.5333 min

Time Arrival (Last H>50cm) = Not Available

Max Beach =0.21081 m

Max Deep =0.12976 m



Alert

Time Arrival (H>2cm) =14.9333 min

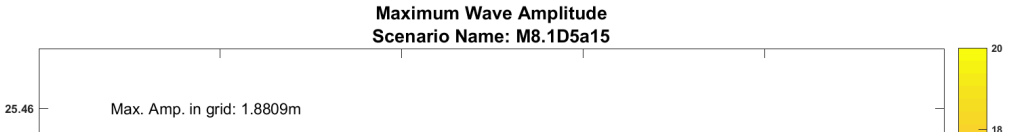
Time Arrival (First H>50cm) =20.2667 min

Time Arrival (Hmax) =17.0667 min

Time Arrival (Last H>50cm) =221.3333 min

Max Beach =0.99027 m

Max Deep =0.44286 m



Warning

Time Arrival (H>2cm) =9.0667 min

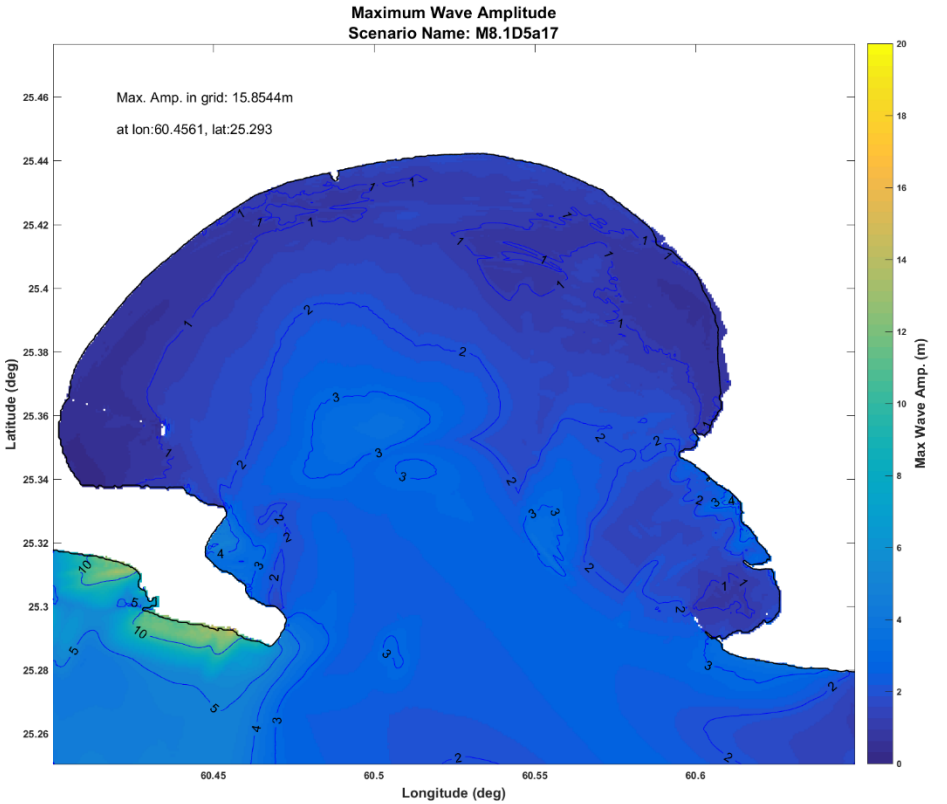
Time Arrival (First H>50cm) =9.6 min

Time Arrival (Hmax) =12.2667 min

Time Arrival (Last H>50cm) =122.1333 min

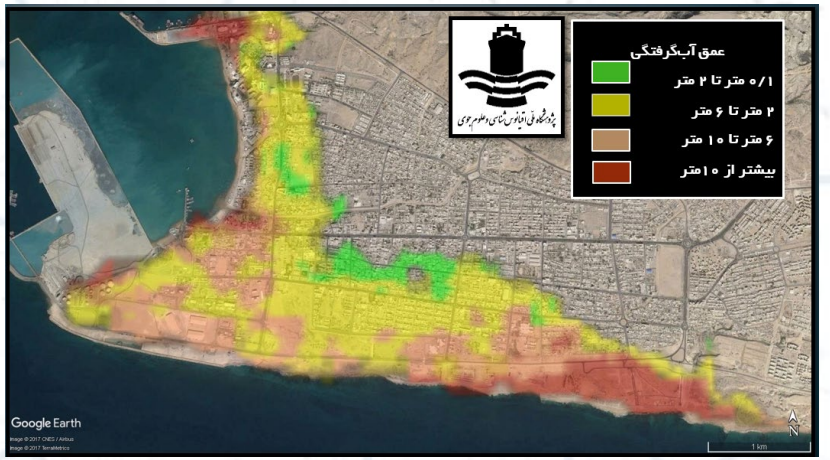
Max Beach =12.0467 m

Max Deep =3.7403 m

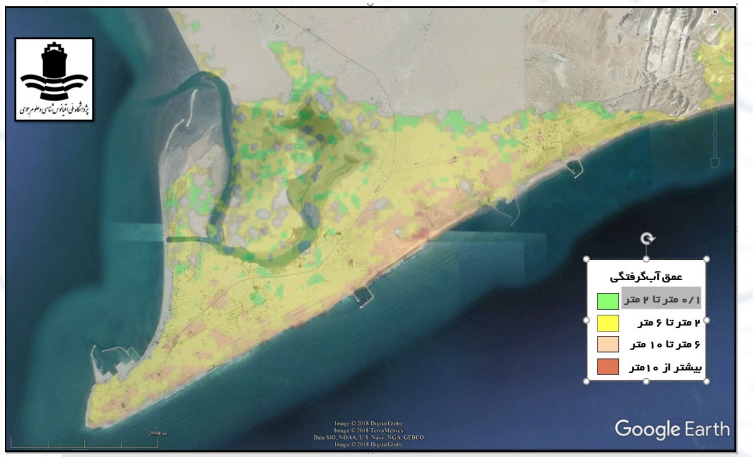


Providing Inundation and evacuation map for Chabahar and Jask

Chabahar

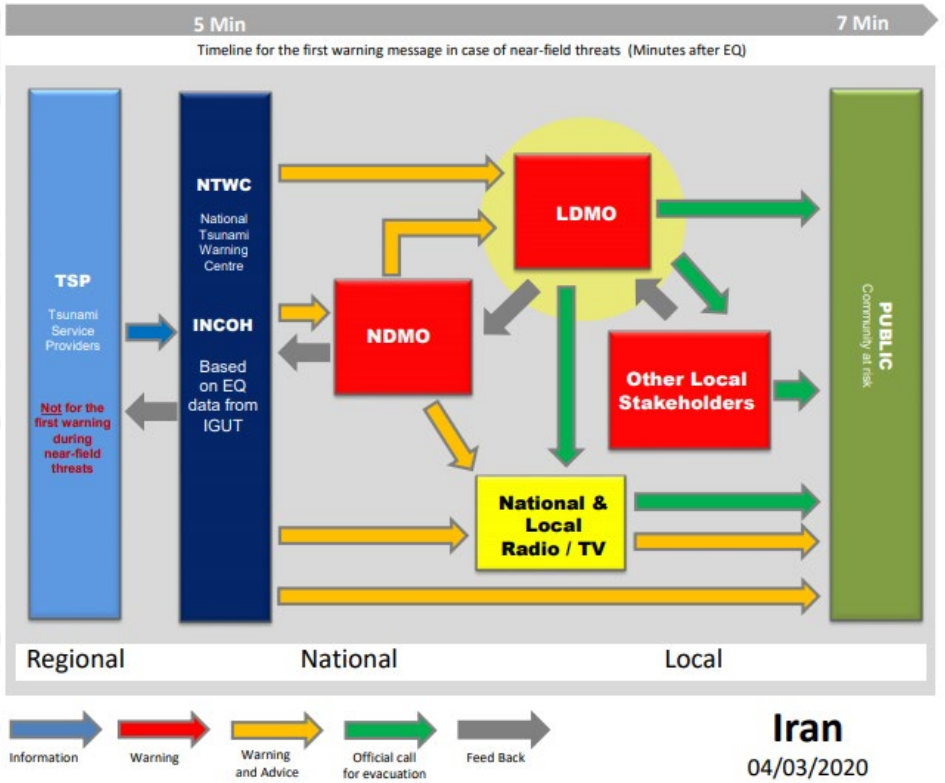


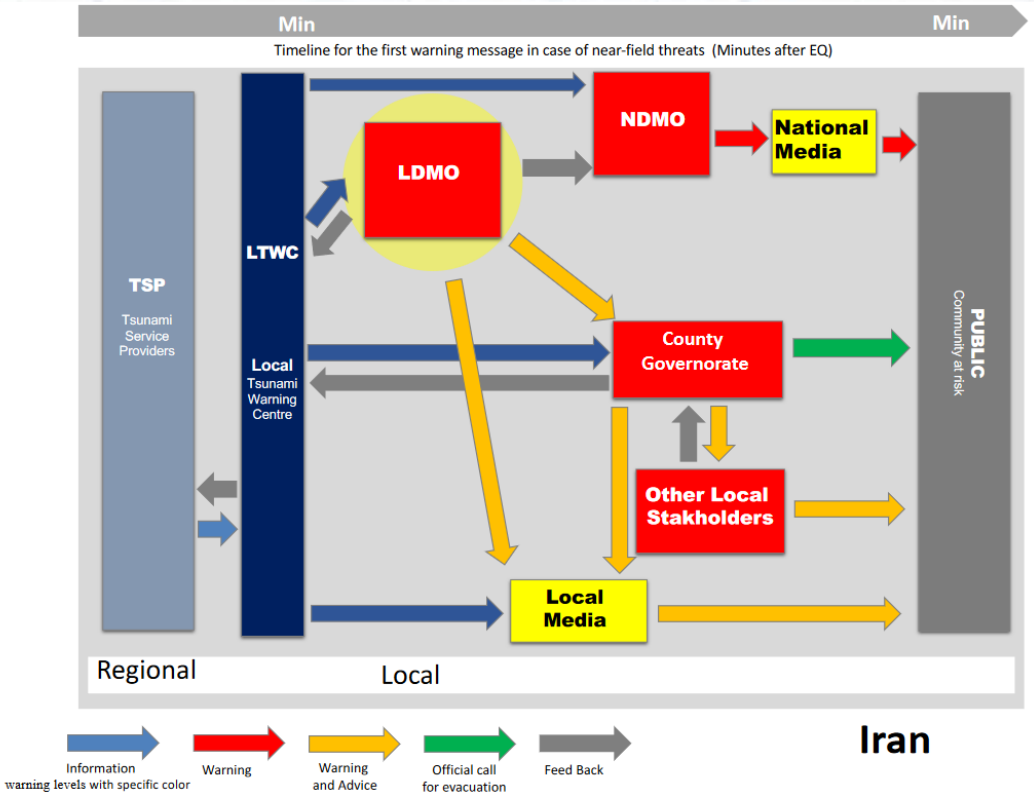
Jask



Development of Tsunami Warning Chain for Iran(Draft version)

Tsunami warning chain of Iran should be finalized





Colour Codes and Definitions

Colour code	Definition
→	**TSP Information to NTWC**
→	**Warning by NTWC** (without advice attached): seems that this is currently not practised in the NWIO countries
→	**Warning and Advice issued by NTWC**: ideally agreed upon with NDMO. Content of advice depends on the respective warning level
→	**Official call for evacuation issued by mandated authority**: this implies a separate decision making process by the respective authority and issuing a specific message
→	**Feedback information** between NTWC and TSP or between other institutions involved in the warning chain

Development of SOP for NTWC of Iran

NTWC SOP of IRAN

00:00(mm:ss)-Seismic sensors start recording /EQ felt at coastal area.

05:00(mm:ss)-NTWC receive EQ information from IGUT through SMS/FAX/E-mail/Social media and also Phone if the magnitude is larger than 7.0 at MSZ

07:00(mm:ss)-The proper **B.1**(EQ information and potential of Tsunami generation and Warning Level) will automatically be prepared by NTWC software and disseminate to LDMO/NDMO/Media/Public based on the following criteria through SMS/Fax/E-mail/Social media and also Phone if the magnitude is larger than 7.0 at MSZ based on the following criteria:

Earthquake Magnitude at Makran Area	Warning level	Advice
8.0≤Mwp	Warning	Evacuate to high Ground
7.5≤Mwp<8	Alert	Stay away from beaches
7≤Mwp<7.5	Watch	Be prepared to act
Mwp<7	No threat/threat passed	

10:00(mm:ss)-NTWC receives updated information of EQ from IGUT .

10:00(mm:ss)-NTWC receives feedback from NDMO.

12:00(mm:ss)-Updated EQ information and the details of tsunami information including warning level, Maximum wave height and tsunami estimated time arrival by NTWC software will be issued to LDMO/NDMO/Media/Public through SMS/Fax/E-mail Social media at **B.2.** The warning level at this bulletin is based on estimated wave height as follow:

Threshold of Estimated Wave Height	Warning level	Advice
>2m	Warning	Evacuate to high Ground
0.5-2m	Alert	Stay away from beaches
0.2-0.5m	Watch	Be prepared to act
<0.2m	No threat/threat passed	

15:00 Based on sea level monitoring and other witnesses, the information of **B.2** will be confirmed and updated at **B.3** and will be issued to LDMO/NDMO/Media/Public through SMS/Fax/E-mail Social media. It could to be updated every **5 minutes**.

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00:00+Max T4+2hr- NTWC will issue **Final Bulletin** as cancellation of warning to LDMO/NDMO/Media/Public through SMS/Fax/E-mail Social media.

Issues and Future Plans

- Active Cooperation of other Stakeholders specially NDMO/LDMO/MEDIA
- Finalizing and approving the Tsunami Warning Chain in Iran Specially by NDMO
- Providing SOP of NDMO/LDMO/MEDIA/… for Tsunami Hazard
- Integrating the SOPs of all stakeholders
- Implementing the Tsunami Ready Program as a Pilot at Chabahar with cooperation of LDMO and Chabahar Free Zone Organization
- Continuing the activities for Increasing the awareness and preparedness for Tsunami Hazard

Thank you
for
your attention