

PAKISTAN METEOROLOGICAL DEPARTMENT

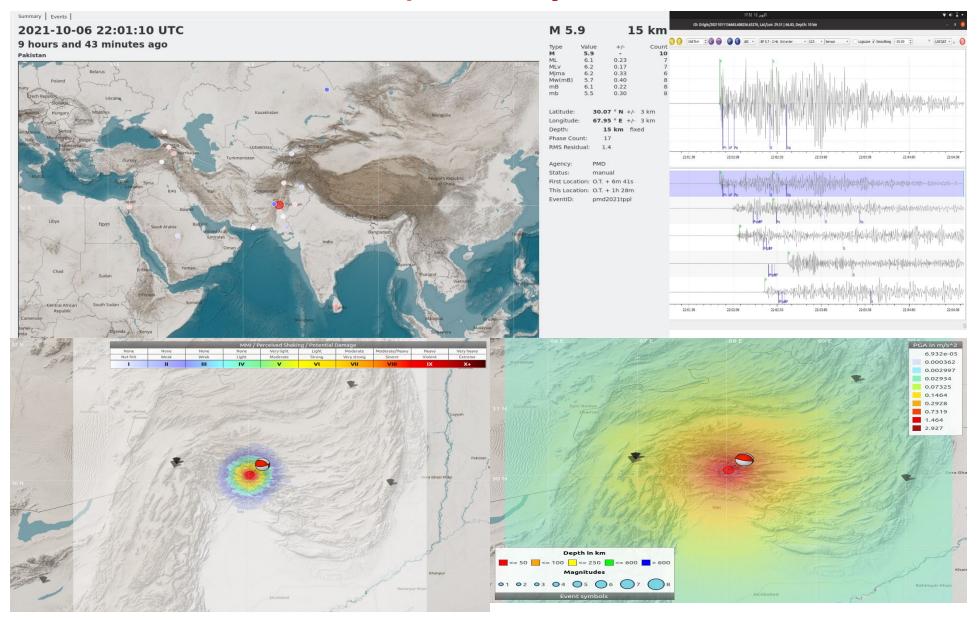
Presented by

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Director

National Tsunami Center Karachi

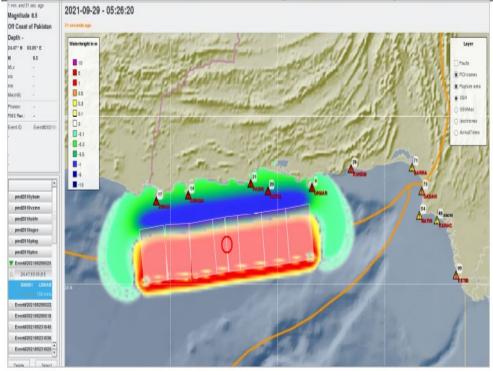
SeiscomP3 Earthquake Analysis Software



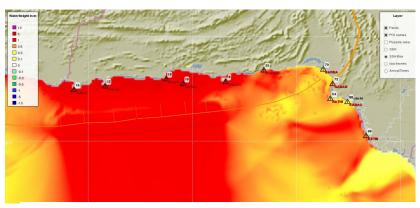
Harni earthquake M 5.9 dated 8th Oct. 2021 analysisled by SeiscomP3 interface

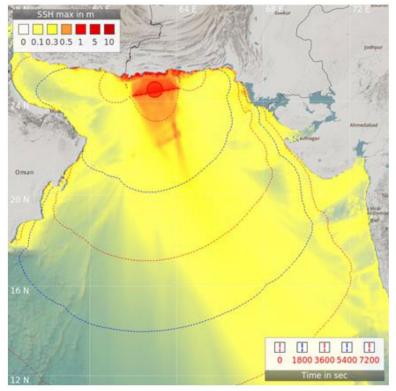
Tsunami Simulation Results

Coastal Point	Maximum Wave	Arrival Time	Wave Speed
	Height(m)	(min.)	(m/s)
Gwadar	4.3 meters	14 min	4-6 m/s
Pasni	3.0 meters	18 min	4-6 m/s
Jiwani	3.4 meters	17 min	4-6 m/s
Ormara	3.5 meters	9 min	4-6 m/s
Karachi	0.4 meters	87 min	4-6 m/s
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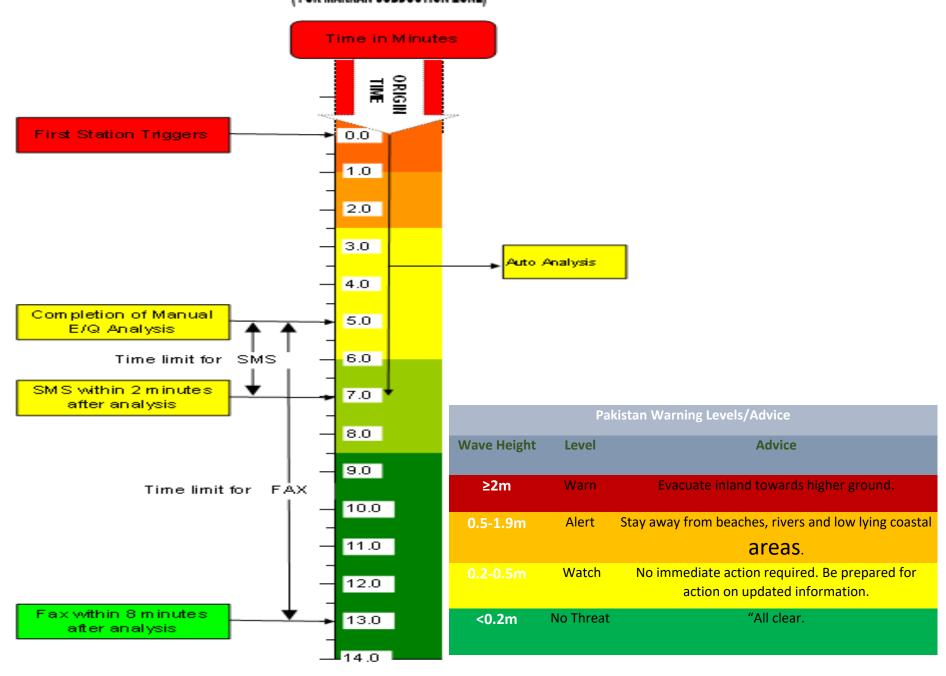


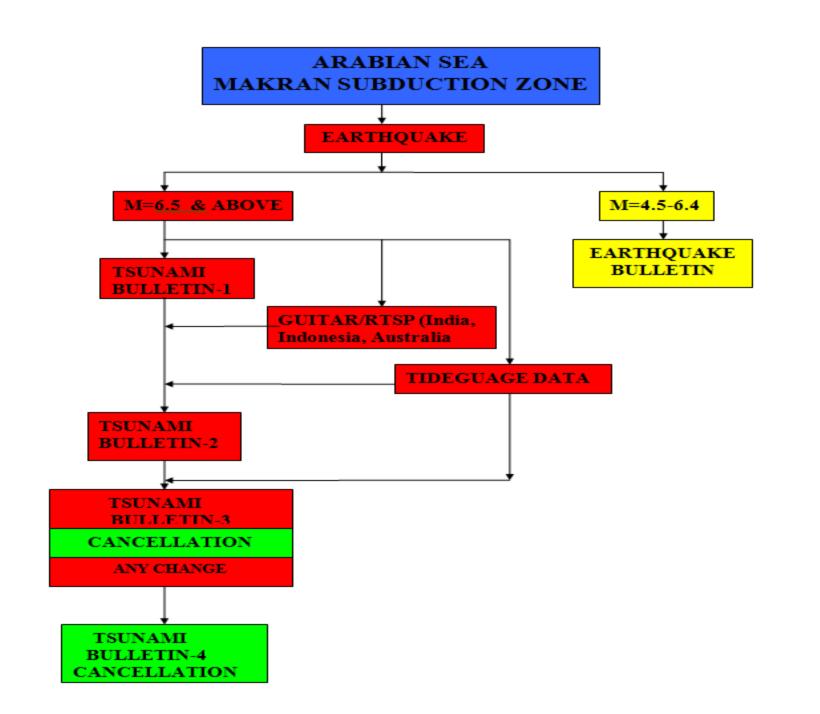
Makran Subduction Zone Mw 8.5 Simulation (Arrival Times (minutes)





TIME LINE FOR EARTHQUAKE PROCESSING AND DISSEMINATION OF TSUNAMI BULLETIN (FOR MAKRAN SUBDUCTION ZONE)





Modes of Early Warning Dissemination



PMD Website







Siren System

SOP FOR ISSUANCE OF "TSUNAMI BULLETINS" IN ARABIAN SEA (MAKRAN SUBDUCTION ZONE)

- 1. For earthquakes having magnitude between **4.5** to **6.4**, only earthquake parameters will be sent to **RESPONSE AUTHORITIES** and **MEDIA** through **SMS** and **FAX**.
- 2. Maximum four Bulletins will be issued for earthquakes having magnitude **6.5** or above to **RESPONSE AUTHORITIES** and **MEDIA**.
- 3. **BULLETIN-1**:- This bulletin will contain;
- i. Earthquake Parameters.
- ii. Tsunami evaluation based on historical earthquake and tsunami data.
 - •This bulletin will be issued according to time line of Bulletin-1.
- 4. **BULLETIN-2**:- This bulletin will contain;
- I Revised Earthquake Parameters (if so).
- ii. Estimated arrival times and wave heights at various locations along Pakistan Coast based on Toasts /GTS of Australia, Indonesia and India.
- iii .Tide gauge data if generation of tsunami has been confirmed.
- This bulletin will be issued soon after the dissemination process of Bulletin-1 is completed.
- •In case the Tsunami generation is confirmed, the first sentence of Evaluation will be deleted.

- 5. **BULLETIN-3**:- This bulletin will contain;
- i. Revised earthquake parameters (if so).
- ii.Tide gauge data of Pakistan Coast to confirm the generation of tsunami.
- iii. Any change if tsunami has been confirmed in **Bulletin-2**.
- •This bulletin will be issued when ever tide gauge data confirms the tsunami generation (CONFIRMATION).

- 6. BULLETIN-4:- (Cancellation)
- i. This bulletin will contain earthquake parameters and tsunami evaluation regarding cancellation.
- ii. This will be the last bulletin and will serve as cancellation.

Important. Supplementary bulletins (SMS/FAX) will be issued in between regular bulletins depending upon the prevailing situation.











Media Group liciters / 2-3 minutes. Breaking News. /2-3 Electronic./minuter 1 -Disital (Within 10 minutes 3 -Social Media U1 -WIHAT'S minuter. PS-Enferts (PDMA) 4 7-Beeper - 8.7- Earthquare. Written SOPs. 8-9-1x10sques -

THANK YOU