

Standard Operating Procedures (SOP) Planning and Implementation for Tsunami Response

Jointly organized by IOC-UNESCO and EC-JRC

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NTWC SOP Development -based on original PPTs by Dr L.Kong and M.Yamamoto-

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SOPs are like a
partiture for an
orchestra or a
band

Who does what,
when, and how

Simple partiture

SONATINE.
Op. 20. N° 3.

Allegro con spirito.

The image shows a page of musical notation for a sonatine. It features multiple staves with various musical notations, including notes, rests, and dynamic markings like 'f', 'p', 'dolce', and 'poco a poco cresc.'. The notation is in a standard musical format with a key signature of one flat and a 3/4 time signature. The piece is titled 'SONATINE. Op. 20. N° 3.' and is marked 'Allegro con spirito.'.

Edition Peters.

S172

alamy

Image ID: RYTM5
www.alamy.com



Orchestra partiture

BOIS

1 Flauto picc.
2 Flauti.
2 Oboi.
2 Clarinetti in B.
2 Fagotti.

CUIVRES

4 Corni in F.
2 Trombe in B.
1 Tromba in F C-Alta.
3 Tromboni.
Tuba.

PERCUS

3 Timpani in A.C.Des.
Triangolo.
Tamburo.
Piatti.
Cassa.

CORDES

Violini I.
Violini II.
Viole.
Violoncelli.
Contrabassi.

Allegretto. $\text{♩} = 152$

1 SOLO
con sord.

pizz.

2 Flöten
2 Oboen
Klarinetten in B.
2 Fagotte
Kontrafagott

1 Hörner in C¹/₂
in B³/₄

Trompeten in F

3 Posaunen

2 Pauken in F. C

1. Violine
2. Violine
Bratsche
Violoncell
Kontrabaß

Allegro con brio

Les deux flûtes, deux clarinettes, deux hautbois sont écrits sur une seule portée.

Les deux bassons sont écrits sur une seule portée.
Le contrebasson a une portée à part.

Les quatre cors sur deux portées

Deux trompettes sur une portée

Trois trombones sur deux portées

f *passionato*

Ludwig van Beethoven
5th Symphony

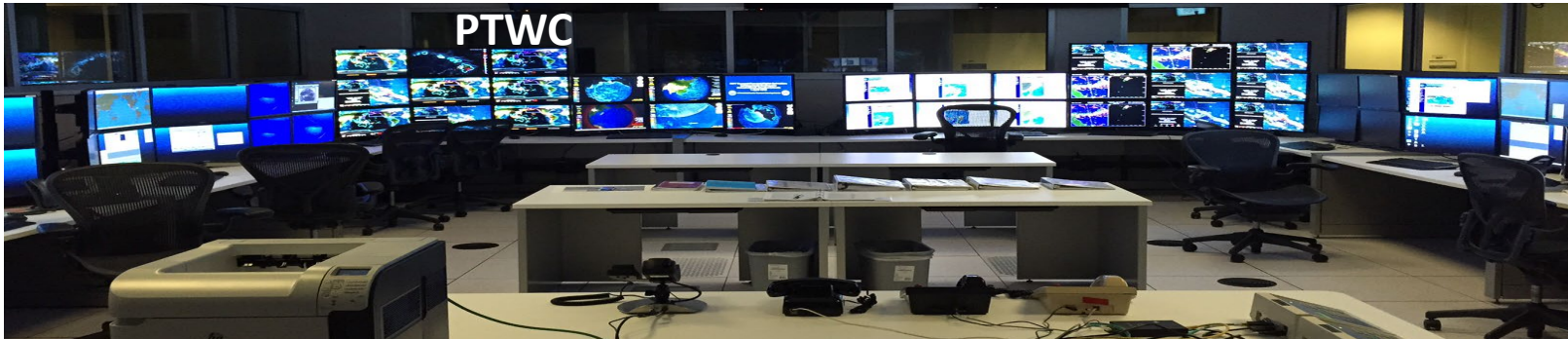
Rotterdam Philharmonic Orchestra
conductor: Ivan Meylmanis

https://www.youtube.com/watch?v=V_To4k9AJXc

Tsunami Warning Centers – IOC Definitions

Tsunami Service Provider (TSP)

Centre that monitors seismic and sea level activity and issues timely tsunami threat information within an ICG framework to National Tsunami Warning Centres/Tsunami Warning Focal Points and other TSPs operating within an ocean basin. The NTWCs/TWFPs may use these products to develop and issue tsunami warning for their countries. TSPs may also issue Public messages for an ocean basin and act as National Tsunami Warning Centres providing tsunami warnings for their own countries. Several ICG Tsunami Service Providers have been established



Tsunami Warning Centers – IOC Definitions

National Tsunami Warning Center (NTWC)

A centre officially designated by the government to monitor and issue tsunami warnings and other related statements within their country according to established national Standard Operating Procedures..

Fiji



Yap



Functions of an NTWC

BASIC

- Monitor and Locate Earthquakes
- Monitor and Detect Tsunami Waves
- Assess the Tsunami Threat
- Create and Disseminate Alerts
- Monitor Tsunami Impacts

OTHER – DURING CRISIS

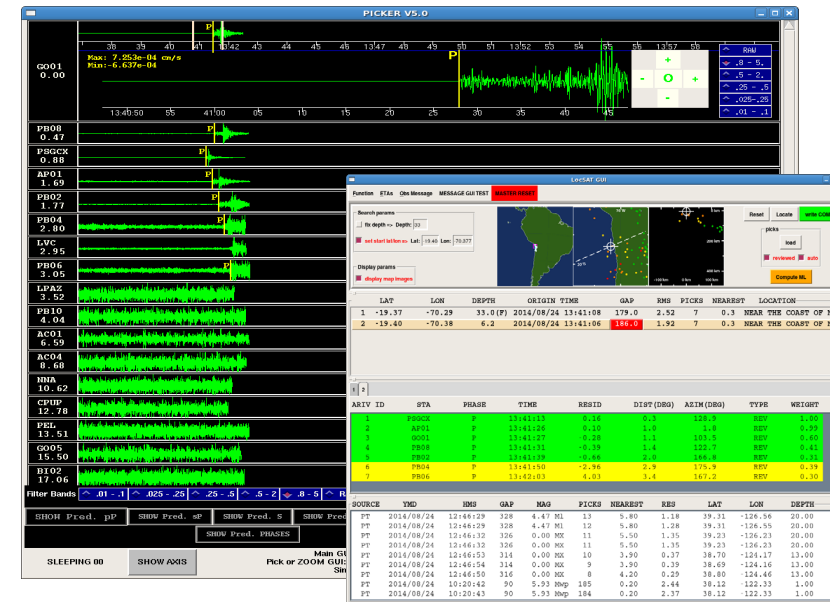
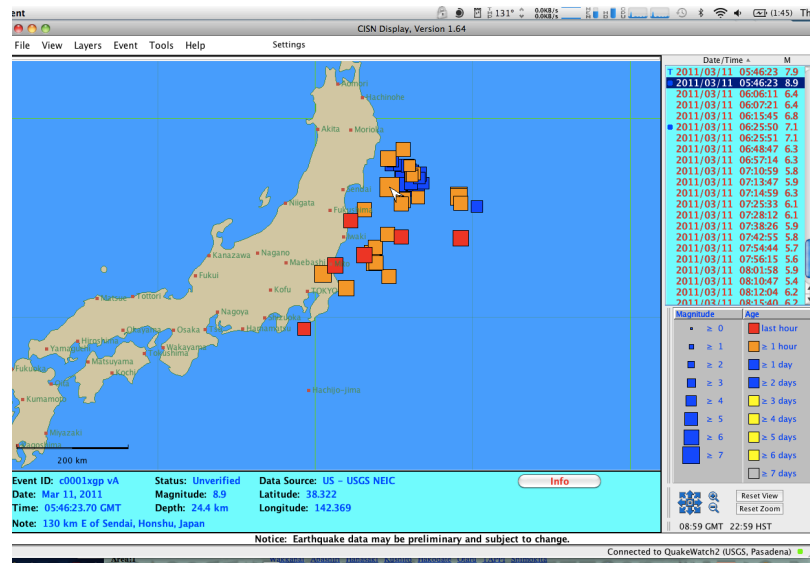
- Consult with NDMO During Events
- Brief the Media – Your Partner

OTHER – DURING NON-CRISIS

- Outreach

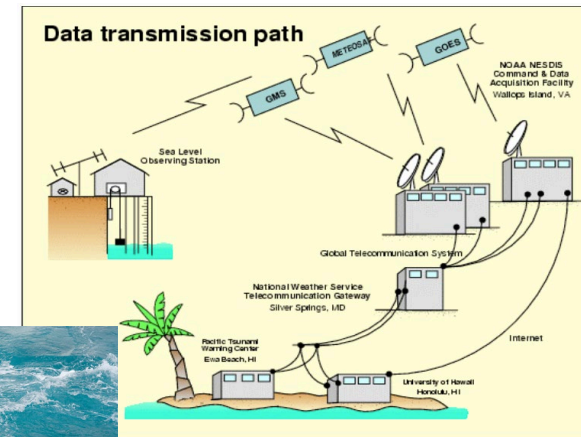
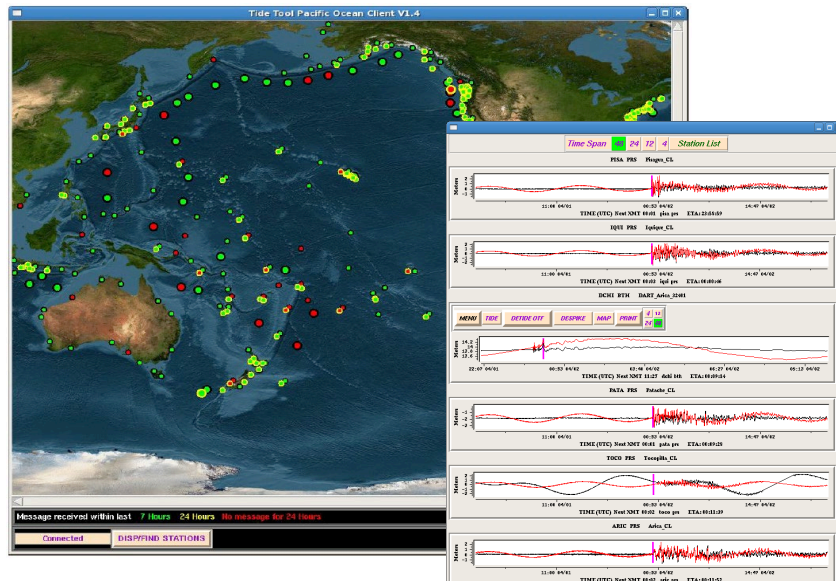
Basic Functions of an NTWC

- Monitor for Earthquakes
 - **SIMPLE** - Monitor other observatories real-time reporting of earthquakes (e.g., CISN).
 - **COMPLEX** – Operate a seismic network and perform real-time analysis of seismic waveform data.



Basic Functions of an NTWC

- Monitor for Tsunami Waves
 - **SIMPLE** – Run software to display data from existing global network of sea-level gauges (e.g., ISDL sea level network, TideTool software or IOC Sea Level Station Monitoring Facility)
 - **COMPLEX** – Operate (and monitor) network of coastal and deep-ocean sea level stations.



Basic Functions of an NTWC

- Assess the Tsunami Threat
 - **SIMPLE** – Base the tsunami threat entirely on TSP messages.
 - **COMPLEX** – Independently determine the tsunami threat based on the earthquake parameters, sea-level readings, historical data and/or forecast models, using TSP messages as triggering – for distant sources – or comparison-checking for near-field sources.

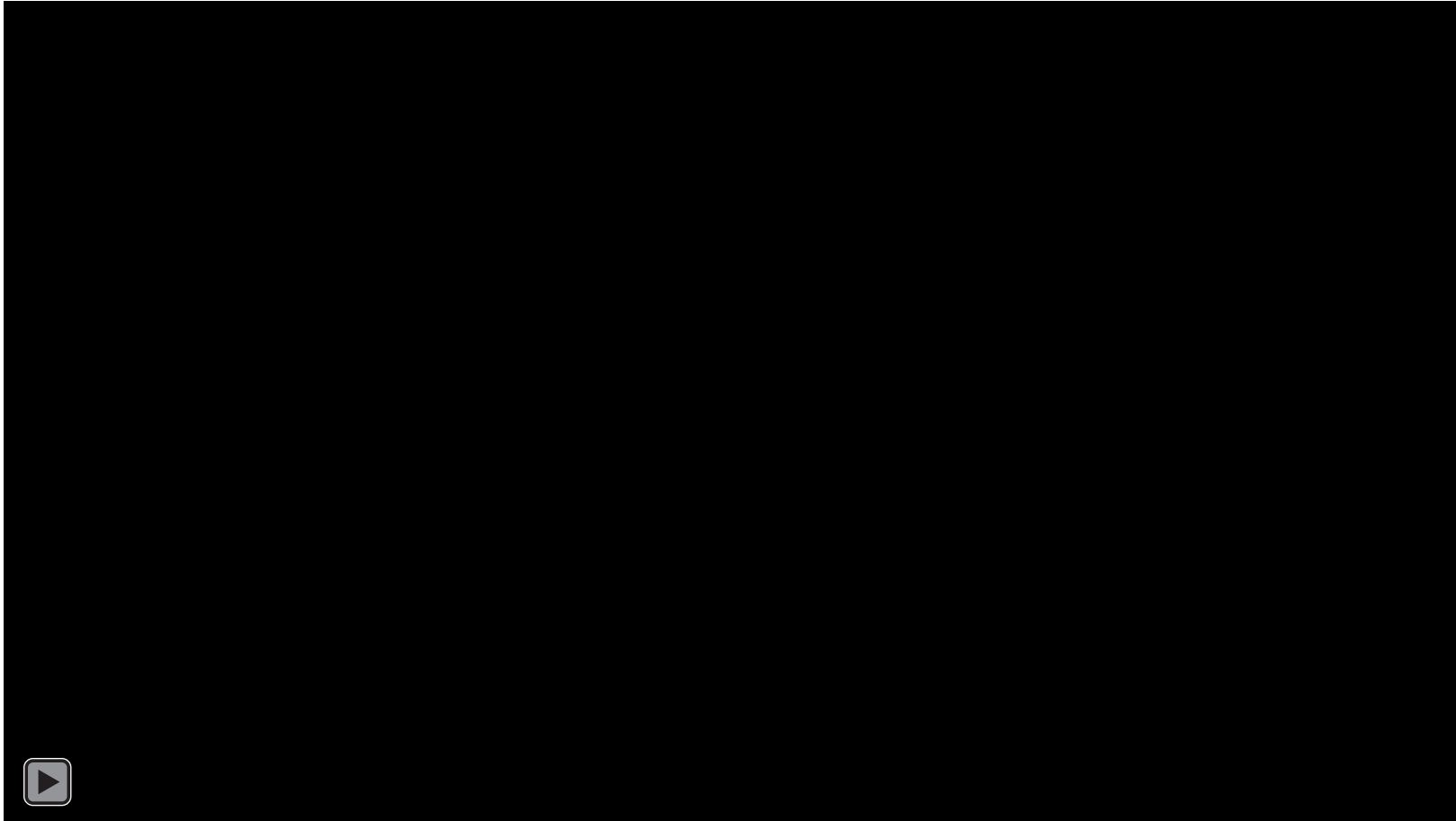
Basic Functions of an NTWC

- Create and Disseminate Alerts
 - **SIMPLE** – Issue warning / no warning to NEMO for all coasts based on maximum threat anywhere (NEMO alerts public)
 - **COMPLEX** – Issue area-specific alerts of different levels to NDMO and public by numerous communication methods.

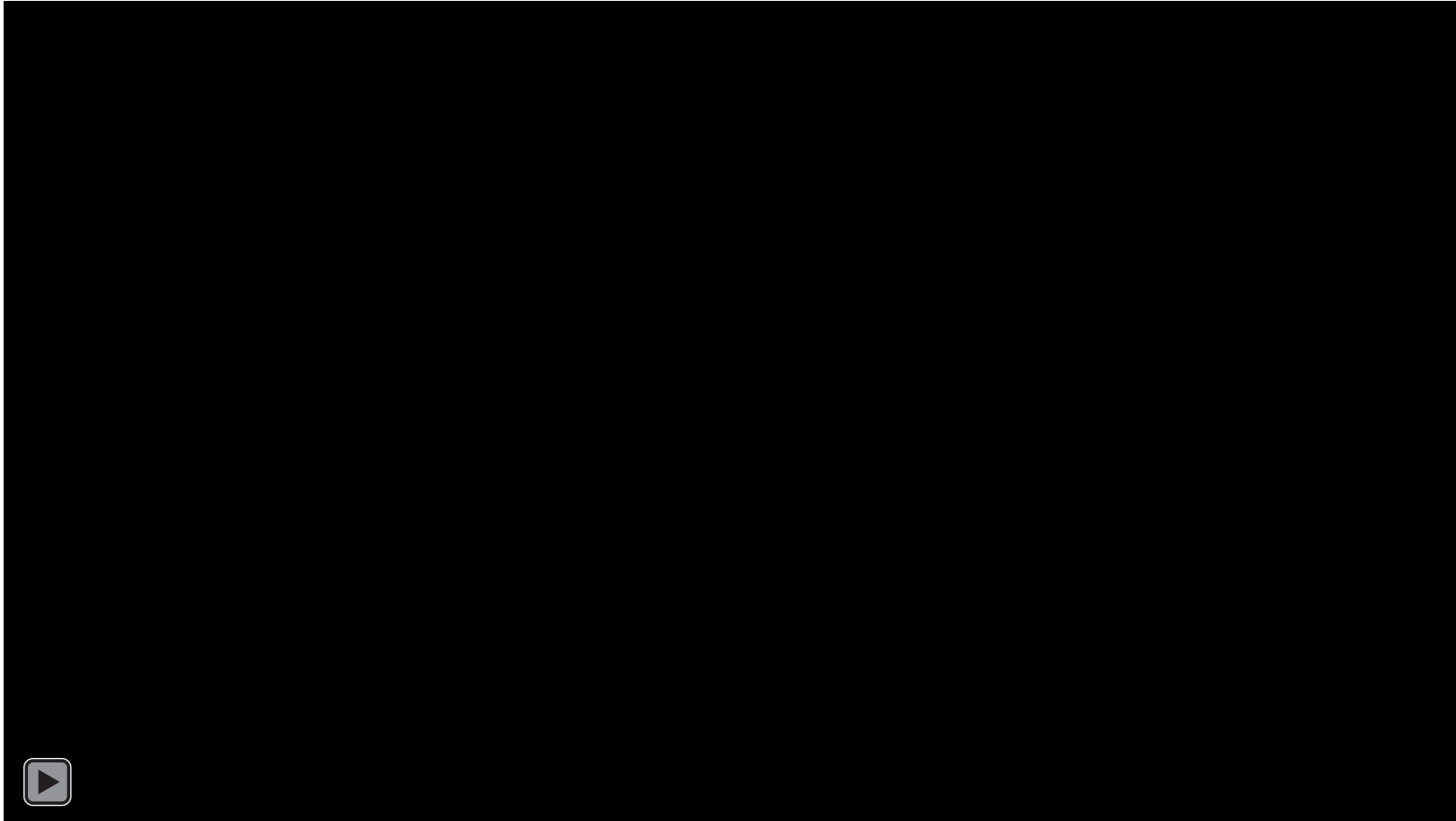
Basic Functions of an NTWC

- Monitor Tsunami Impacts
 - Monitor network of real-time reporting sea level gauges along coasts.
 - Monitor local television and radio for reports of tsunami impacts.
 - Get reports from EMs, police, fire department, other spotters, especially for vulnerable coasts.
 - Determine if / when alert levels should be raised, lowered, or cancelled.
 - Wait sufficient time to ensure threat has passed before cancelling.

NHK room - 2011



ONEMI (NEMO) room 2010



Other Crisis Functions of an NTWC

- Consult with NDMO During Events
 - **Consider other factors that may play into decision-making:**
 - Time of Day – Day, Night, Traffic
 - Season of Year – Temperature, Weather
 - Weekday, Weekend, Holiday, Special Events
 - **Advise about NTWC and tsunami status**
 - What Readings are Coming Next
 - Confidence in Forecast
 - Expected Level of Impacts
 - Places Expected to Have Biggest Impacts
 - When to Expect Cancellation

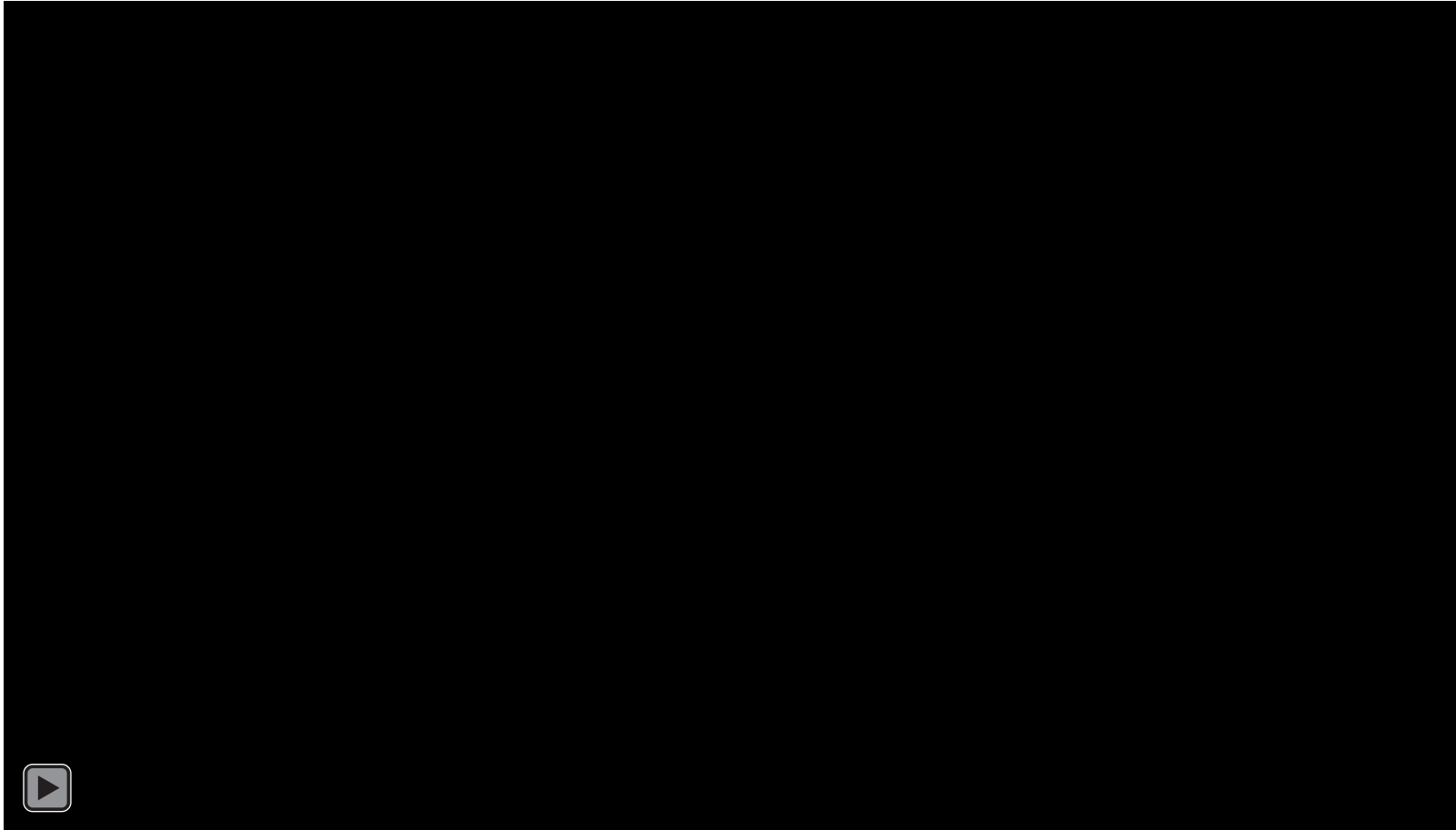
Other Crisis Functions of an NTWC

- Brief the Media – Your Partner
 - **Stay on Point – What is In Official Message**
 - Big Earthquake Occurred
 - Potential (Watch) or Confirmed (Warning)
Tsunami Threat
 - Take Warnings Seriously
 - Follow Instructions from NDMO
 - **Don't Over-Speculate or Over-Discuss**
 - Public Won't Take Action if Mixed Message
 - Media Will Want Your Opinions / Details
 - Give Official Message Only

Non-Crisis Functions of an NTCWC

- Outreach
 - **Advise NDMO, Media, Public on Tsunamis and Potential Tsunami Threats**
 - Tsunami Characteristics
 - Not If, But When
 - Potential Sources – Local, Distant
 - Potential Impacts – Lead Times,
 - **Advise NDMO, Media, Public on Limitations**
 - Many Unknowns: Exact Source, Coastal Effects
 - Limited Data: A Few Readings
 - You Act Conservatively
 - There will be Over-Warning

Non crisis function - media training



What TER can Expect from NTWC

- Rapid Notification of a Potential Tsunami Threat
- Cautious Evaluation of Tsunami Threat
- Reasonably Rapid Stand-Down if No Tsunami Threat
- NTWC Underlying Principles
 - Will Provide Forecast as Accurately as Possible but still Conservatively
 - Saving Lives is Highest Priority
 - Protecting Property only When Possible

Limitations to be Prepared For

- Over-Warning due to Conservative Criteria
- General Forecast of Threat with Few Specifics
- Potential for Error in ETAs
- Uncertainty About How Long Impacts will Last

THANK YOU FOR
ATTENTION!
QUESTIONS?
COMMENTS?

