

Intergovernmental Oceanographic Commission

HUNGA TONGA-HUNGA HA'APAI VOLCANIC ERUPTION AND TSUNAMI POST-EVENT ASSESSMENT QUESTIONNAIRE

PTWS TNCs, NTWCs and TWFPs are kindly requested to provide one national consolidated response through this online questionnaire for their country by 15 February 2022. Responses will be compiled and a publication released by 1 April 2022.

If you have difficulty submitting online, you may submit your Questionnaire by email using a fillable-PDF form to the IOC PTWS Technical Secretary or the ITIC:

Bernardo Aliaga, PTWS Technical Secretary, b.aliaga@unesco.org Laura Kong, Director, International Tsunami Information Center, laura.kong@noaa.gov



Intergovernmental Oceanographic Commission

HUNGA TONGA-HUNGA HA'APAI VOLCANIC ERUPTION AND TSUNAMI POST-EVENT ASSESSMENT QUESTIONNAIRE

CONTACT DETAILS

Country

Contact Name

Name of Organization

Address

Phone

E-mail

Name of National Tsunami Warning Centre (NTWC)

NTWC Contact Email

Name of National Disaster Management Office or equivalent (NDMO)

NDMO Contact Email



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SECTION A – INFORMATION FROM TSUNAMI SERVICE PROVIDER (To be completed by NTWC)

A.1. When did you receive the <u>first (1st) information</u> that a big volcanic eruption had occurred? Who provided this information? Please list the time (UTC) and information source.

Time (UTC):	
How (Information Source):	

A.2. How did you receive the first (1st) information about the big volcanic eruption?

🔵 Email

Phone

- 🔵 Fax
-) SMS
-) gts
-) Website
- Other (please specify):

A.3. Did you receive tsunami messages from the PTWS TSP (Pacific Tsunami Warning Center)?

- 🔵 Yes
- 🔵 No

If the answer to question A.3. is Yes, please fill out the tables below (A.4-6) (all times in UTC)

	PTWC Messa	ages (Msg)			
1: 0623 UTC, 15 Jan, Message 2	1	7: 2006 UTC	c, 15 Jan, Mes	sage 7	
2: 0720 UTC, 15 Jan, Message 2	2	8: 2146 UTC	c, 15 Jan, Mes	sage 8	
3: 0852 UTC, 15 Jan, Message 3	3	9: 2311 UTC	c, 15 Jan, Mes	sage 9	
4: 1246 UTC, 15 Jan, Message 4	4 1	L0: 0043 UTC	c, 16 Jan, Mes	sage 10	
5: 1432 UTC, 15 Jan, Message 5	5 1	L1: 0145 UTC	c, 16 Jan, Mes	sage 11	
6: 1645 UTC, 15 Jan, Message 6	6 1	L2: 0246 UTC	c, 16 Jan, Fina	al Message	

A.4. What time were the messages received (UTC)?

	Date	Hours	Minutes
PTWC Msg 1			
PTWC Msg 2			
PTWC Msg 3			
PTWC Msg 4			
PTWC Msg 5			
PTWC Msg 6			
PTWC Msg 7			
PTWC Msg 8			
PTWC Msg 9			
PTWC Msg 10			
PTWC Msg 11			
PTWC Msg 12			
Comments			

	Msg 1	Msg 2	Msg 3	Msg 4	Msg 5	Msg 6	Msg 7	Msg 8	Msg 9	Msg 10	Msg 11	Msg 1
GTS												
Fax												
Email												
SMS												
Website												
comments												
6. Was the TSP (P	TWC) w	ebsite a	iccessik	le?								
	- /											
			Ye	es					Ν	10		
PTWC Msg 1			Ye	es					N	0		
PTWC Msg 1 PTWC Msg 2			Ye	es))					N (
			Ye	es)))								
PTWC Msg 2				es))))								
PTWC Msg 2 PTWC Msg 3												
PTWC Msg 2 PTWC Msg 3 PTWC Msg 4												
PTWC Msg 2 PTWC Msg 3 PTWC Msg 4 PTWC Msg 5												
PTWC Msg 2 PTWC Msg 3 PTWC Msg 4 PTWC Msg 5 PTWC Msg 6												
PTWC Msg 2 PTWC Msg 3 PTWC Msg 4 PTWC Msg 5 PTWC Msg 6 PTWC Msg 7												
PTWC Msg 2 PTWC Msg 3 PTWC Msg 4 PTWC Msg 5 PTWC Msg 6 PTWC Msg 7 PTWC Msg 8												
PTWC Msg 2 PTWC Msg 3 PTWC Msg 4 PTWC Msg 5 PTWC Msg 6 PTWC Msg 7 PTWC Msg 8 PTWC Msg 9												
PTWC Msg 2 PTWC Msg 3 PTWC Msg 4 PTWC Msg 5 PTWC Msg 6 PTWC Msg 7 PTWC Msg 8 PTWC Msg 9 PTWC Msg 10												

	l sunami-relateu	Information from	other sources? If	Yes, please prov	ide the time (UTC):
Yes					
🔘 No					
If the answer to question A	7. is Yes, please fill ou	ut the tables below (A.	8-10) (all times in UTC	C)	
A.8. What time was th	nis information rece	eived (UTC) from	other sources?		
		Hours		Minutes	
Other Message 1					
Other Message 2					
Other Message 3					
Other Message 4					
Other Message 5					
Additional Other Messages	s, or Comments				
A.9. How was this info					
	Ormation received Other Message 1	from other source Other Message 2	es? Other Message 3	Other Message 4	Other Message 5
GTS				Other Message 4	Other Message 5
GTS Fax				Other Message 4	Other Message 5
GTS Fax Email				Other Message 4	Other Message 5
GTS Fax Email SMS				Other Message 4	Other Message 5
GTS Fax Email SMS Website				Other Message 4	Other Message 5
GTS Fax Email SMS Website Other (Please specify)	Other Message 1			Other Message 4	Other Message 5
GTS Fax Email SMS Website	Other Message 1			Other Message 4	Other Message 5
GTS Fax Email SMS Website Other (Please specify)	Other Message 1			Other Message 4	Other Message 5
GTS Fax Email SMS Website Other (Please specify)	Other Message 1			Other Message 4	Other Message 5

A.10. Was the Other Infomation Source's website accessible?					
	Yes	No			
Other Message 1	\bigcirc	\bigcirc			
Other Message 2	\bigcirc	\bigcirc			
Other Message 3	\bigcirc	\bigcirc			
Other Message 4	\bigcirc	\bigcirc			
Other Message 5	\bigcirc	\bigcirc			
Additional Other Messages, or Cor	nments:				



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SECTION B - NATIONAL ACTIONS

The purpose of this section is to find out what actions were taken by <u>National Tsunami Warning</u> <u>Centres</u>, including independent analysis of the tsunami event, notification of relevant organizations, issuing and cancellation of warnings.

B.1. Was any action taken BEFORE receiving the TSP PTWC messages?

- O Yes
- O No

If Yes, please give details. Include time (UTC) and action:

B.2. What action was	s taken AFTER receiving the PTWC messages? Please list times (UTC) as well as
actions. Include deta	ails of organizations or government agencies contacted.
Action Taken (Time UTC)	
Additional Actions or Comments:	
•	ional Tsunami Warning Centre issue a tsunami warning and other tsunami related er agencies or organizations, and/or the Public?
O No	
Comments	

If the answer to question B.3. is No, please go to Section C.

If the answer to question B.3. is Yes, please specify the type of information released, time (UTC), and to which agencies or organisations (B.4-6).

B.4. Type of Information released to agencies or organisations (Tick all that apply):						
Warning (Evacua	Warning (Evacuate to high ground or inland)					
Marine Warning / Advisory (Stay out of water, away from beaches and waterways)						
Watch (Prepare,	Watch (Prepare, more information to follow)					
Information (No tsunami threat or no action needed at this time)						
Comment						
	on released to agencies or organisations (please list times (UTC) as n	eeded).				
Warning						
Marine Warning / Advisory						
Watch						
Information						
Other (Please specify):						

B.6. I	nformation released directly to which agencies or organisations (Tick all that apply):
	National Disaster or Emergency Management Agency
	Media
	First Responder (such as Police, Fire, Ocean / Beach Safety)
	Critical Infrastructure or Utilities (Electricity, Gas, etc)
	Marine or Port Authority
	Tourism Sector – Hotels
	Health Sector – Hospitals
	Education Sector - Schools
	Civil Society (social, gender, culture, age, language, religious, and other organizations)
	Other (please specify):
[

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SECTION B - NATIONAL ACTIONS

B.7. How was the warning or other tsunami related information issued to agencies or organisations (Tick	< all
that apply)?	

Phone - dedicated line
Phone - commercial line
SMS
Email
Fax
Radio – dedicated
Social Media (Please specify)
Other Methods (Please specify)
Comments

B.8. Was a tsunami warning and other tsunami related information issued to the Public?

🔵 Yes

🔵 No

B.9 Type of Inform	ation issued to Public (Tick all that apply):
Warning	
Marine Warning	(Advisory
Watch	
Information	
Other (Please sp	
Comments	
B.10. Time of Informat	ion issued to Public (please list times (UTC) as needed):
Warning	
Marine Warning / Advisory	
Watch	
l	
Information	
Other (Please specify):	
B.11. Authority issu	ing information to Public:
	i Warning Center (NTWC)
National Disaster	r Management Office (NDMO), National Emergency Management Agency (NEMA), or equivalent
🔵 Local Disaster M	anagement Office (DMO), Emergency Management Agency (EMA), or equivalent
Other (Please sp	ecify)
Comments:	
	sion <u>to issue or not to issue</u> a tsunami warning to the Public based on information from the
apply)?	Other Sources, and/or determined by your National Tsunami Warning Centre (Tick all tha
TSP PTWC	
National TWC	
Other Sources (F	Please specify)
Comments:	

D 12	. If a Tsunami Warning or Marine Warning / Advisory was issued to the Public, was a tsunami arrival time		
	ave height forecast provided?		
\bigcirc	Yes, Tsunami Arrival Time forecast		
\bigcirc	 Yes, Tsunami Wave Height forecast Yes, both a Tsunami Arrival Time and Wave Height forecast No Arrival Time or Wave Height forecast 		
\bigcirc			
\bigcirc			
Comn	nents		
B.14	. How was the warning/information communicated to the Public (Tick all that apply)?		
	Telephone		
	SMS		
	Cell/mobile phone broadcast		
	Radio		
	TV		
	Twitter		
	Facebook		
	RSS		
	Websites		
	Sirens		
	Public announcement systems		
	Public call centre		
	Police		
	Door-to-door announcements		
	Other (Please specify), and Comments		

3 15 Who is r	
	responsible for communicating with the Media?
	/FP
Both NTW	C/TWFP and NDMO
🔵 Local / Reg	gional DMO
Other (Plea	ase specify)
Comments	
	r National Tsunami Warning Centre or Disaster Management Office send tsunami warning or
other tsunami	related information to the National Media?
Yes	
O No	
Comments:	
f the answer t	to question B.16. is <u>Yes</u> , please specify:
3.17. <u>Method</u>	of communication used to <u>send to</u> National Media (Tick all that apply)
Phone	
Email	
Fax	
SMS	
Other (plea	ase specify):
Other (plea	ase specify):
Other (plea	ase specify):
Other (plea	ase specify):

В.18. <u>Тур</u>	pe of electronic media (Tick all that apply)
TV	
Radi	lio
Web	osite
Soci	ial Media
Othe	er (please specify):
B.19. If I V C	or Radio used, please list the TV and radio stations:
D 20 Ma	the definite method by Netional Media (Tick all that apply)
	ethod of information broadcast by National Media (Tick all that apply)
	gramme Interruption (TV, radio)
	olling/running text (TV)
Othe	er (please specify)
B.21. <u>Time</u> ((UTC) of first broadcast by National Media
B.22. If a Wa	arning or Marine Warning/Advisory was issued, at what time was it <u>canceled</u> (UTC)?
Time (UTC):	
	nat was the reason for the <u>cancellation</u> ?
	damaging waves
 Other 	er (Please specify)
Comments	

B.24	. How was this information communicated to the Public? (Tick all that apply)?
	Telephone
	SMS
	Cell/mobile phone broadcast
	Radio
	TV
	Twitter
	Facebook
	RSS
	Websites
	Sirens
	Public announcement systems
	Public call centre
	Police
	Door-to-door announcements
	Other (please specify):

B.25. Were there any communication problems with distributing the tsunami warning or cancellation information? (e.g., mobile phone network or websites overload or broken, people not answering phones, etc).

🔵 Yes

🔵 No

If Yes, please provide details or Comments:



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SECTION C - NATIONAL RESPONSE

The purpose of this section is to find out what the national and local response was to the event after the Tsunami Warning or Marine Warning / Advisory had been issued by the National Tsunami Warning Centre.

C.1. Were any actions taken by the National Disaster Management Office (NDMO, or equivalent national response organization)?

O Yes

🔿 No

C.2. If the answer to question C.1. is <u>Yes</u>, what actions were taken? Please list times (UTC) as well as actions. Include details of organizations or government agencies.

Action Taken (Time UTC)	
Action Taken (Time UTC)	
Comments:	

omr	Did the National Disaster Management Office (or equivalent national response organization) maintain nunication with the National Tsunami Warning Centre throughout the event?
\bigcirc	Yes
0	Νο
.4.	If the answer to question C.3. is <u>Yes</u> , what information was shared (Tick all the apply):
	Tsunami Source information (volcanic eruption time, location)
	Tsunami Wave Information (wave forecast arrival time and/or amplitude), wave observations
	Alert level (warning, marine warning, watch, information, etc)
	Evacuation guidance or Evacuation areas reports
	Safe-to-return or All-Clear guidance or reports
	Other (please specify), Comments:
	Did the National Disaster Management Office (or equivalent national response organization) maintair nunication with Local or Regional disaster management organisations (or equivalent)? ^{Yes} No
omm	nents

C.6. If the answer to question C.5. is <u>Yes</u> , what information was provided by	y the NDMO (or equivalent national
response organization) (Tick all the apply):	
Tsunami Source information (volcanic eruption time, location)	
Tsunami Wave Information (wave forecast arrival time and/or amplitude), wave observ	vations
Alert level (warning, marine warning, watch, information, etc)	
Evacuation guidance or Evacuation areas reports	
Safe-to-return or All-Clear guidance or reports	
Other (please specify):	
C.7. Were any actions taken by the Local or Regional disaster managemen	nt offices (or equivalent)?
Yes	
No	
C.8. If the answer to question C.7. is <u>Yes</u> , what actions were taken? Please lis	t times (UTC) and actions.
Include details of organizations or government agencies.	
Action Taken (Time UTC)	
Action Taken	
(Time UTC)	
Action Taken (Time UTC)	
Action Taken	
(Time UTC)	
Action Taken (Time UTC)	
Action Taken	
(Time UTC)	
Action Taken (Time UTC)	
Action Taken	
(Time UTC)	
Action Taken (Time UTC)	
Action Taken	
(Time UTC)	
Comments:	

C.9. Were any areas evacuated?

Yes

C.10. If the answer to question C.9. is <u>Yes</u>, provide details on the areas evacuated, time (UTC), and estimated number of people evacuated.

Area evacuated	
Time (UTC)	
Nbr of people	
Anna European	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Area Evacuated	
Time (UTC)	
Nbr of people	
Commenter	
Comments:	

C.11. Were Ts	
	sunami Inundation Maps available for evacuated areas?
Yes	
O No	
Comments:	
C.12. Were T	sunami Evacuation Maps available for evacuated areas?
O Yes	
O No	
Comments:	
0.40.11	
\sim	acuation occurred, did the process happen smoothly?
Yes	
🔵 No	
If No, please pro	vide details of problems encountered:
C.14. Did peo	pple in some areas self-evacuate before a Warning was issued?
O Yes	
🔘 No	
No None of th	ie above
None of th	ne above
None of th	ne above
None of th	ne above
	ne above
None of th	ne above
None of th	ne above

C.15. If the answer to question C.14. is <u>Yes</u> , please provide details on the area, tim	e (UTC), and estimated
number of people who self-evacuated.	
Area Self-evacuated Time (UTC)	
Nbr of people	
Area Self-evacuated Time (UTC) Nbr of people	
Area Self-evacuated Time (UTC)	
Nbr of people	
Area Self-evacuated	
Time (UTC) Nbr of people	
Area Self-evacuated Time (UTC)	
Nbr of people	
Area Self-evacuated	
Time (UTC) Nbr of people	
Area Self-evacuated Time (UTC)	
Nbr of people	
Area Self-evacuated	
Time (UTC) Nbr of people	
Area Self-evacuated Time (UTC)	
Nbr of people	
Area Self-evacuated	
Time (UTC) Nbr of people	
Comments:	



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SECTION D - MONITORING AND MODELLING

D.1. Were sea level data monitored during the event?

- 🔵 No
- Yes, all Pacific Stations
- Yes, some Pacific Stations

Comment

D.2. How where the stations monitored? (Tick all that apply)

GTS using	NTWC tools
-----------	------------

Tide Tool

IOC Sea Level Station Monitoring Facility

Other Sources or Tools (please specify):

	Yes	No
TS	\bigcirc	\bigcirc
C Sea Level Facility	\bigcirc	\bigcirc
de Tool	\bigcirc	\bigcirc
nments:		
D.4. Did your National Tsuna	mi Warning Centre use any numer	rical model tsunami scenarios during the e
(deep-ocean propagation an	d/or coastal inundation models)?	
Yes		
O No		
If Yes, please describe tools or soft	ware, and how they were used:	
	אמרכ, מות ווטא נווכץ שכוב משפע.	



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SECTION E - COMMUNITY PREPAREDNESS

E.1. From 0 (none) to 4 (very high), please rank the scientifically-assessed level of tsunami hazard, the level of community awareness of that hazard, and the level of pre-existing community tsunami preparedness in 5 of the main communities affected by this event.

Please list the names of the communities:

Community 1:	
Community 2:	
Community 3:	
Community 4:	
Community 5:	

E.2. Scientifically-assessed Level of Tsunami Hazard

	0	1	2	3	4
Community 1	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 2	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 3	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 4	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 5	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc

E.3. Level of Commu	nity Awareness				
	0	1	2	3	4
Community 1	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 2	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 3	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 4	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 5	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
E.4. Level of Pre-exis	ting Community T	sunami Preparedr	ness		
	0	1	2	3	4
Community 1	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 2	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 3	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 4	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
Community 5	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc
E.5. Were there ar	ny Tsunami Prepa	redness activities	in these Commun	ities, or nationally,	prior to the event?
O Yes					
O No					

Comments:

	answer to question E.5. is <u>Yes,</u> what Preparedness activities were conducted? Please provide dates nts (Tick all the apply):
	ni Education in school
	patory evacuation planning
	ation map made
	ssembly Area or Evacuation facilities identified
	ni Exercise
	(Please specify)
)ther (Please	e specify), Dates of activities, and Comments
pply)?	ere been any government support with regards to the following prior to the event (Tick all the
_	I Evacuation Sites and Procedures
Hazaro	
Evacua	ation Maps
Evacua	ation Route Mapping
Other ((please specify)



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SECTION F - CAPACITY DEVELOPMENT REQUIREMENTS

Capacity development is a fundamental component of all IOC UNESCO programmes. To assist us to prioritise and plan our future training activities within our limited resources, please indicate the training needs you consider to be a high priority for your country.

F.1. What training events or other assistance from IOC would be useful for your NTWC, NDMO, and other response organizations in the next 12 months? (Tick all that apply, and provide your priority)

Seism	ic training
Sea Le	evel training
Risk A	ssessment training
Standa	ard Operating Procedures training
Inunda	ation Modelling training
Evacu	ation Mapping training
Comm	nunity Awareness and Preparedness training
Exerci	ises and Drills training
Media	Awareness training
	support requested (Please specify). iple supports are ticked, please list your priority order.
L	



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SECTION G - OTHER INFORMATION

G.1. Please feel free to provide any further information you would like to be included in the report. This could include comments which you can type below, or attachments such as photographs, or any other documents you consider relevant. We would particularly welcome copies of any national post-event assessment reports that are available.

Please send attachments to the PTWS Technical Secretary or the ITIC Director.



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Thank you for participating in UNESCO/IOC's Hunga Tonga - Hunga Ha'apai VOlcanic Eruption and Tsunami Post-Event Assessment Questionnaire.

If you have further questions or need additional tsunami information, please do not hesitate to contact: Bernardo Aliaga (b.aliaga@unesco.org), ICG/PTWS Technical Secretary Laura Kong, ITIC Director (laura.kong@noaa.gov)

Click "Done" to submit your Post-Event Assessment Questionnaire.