


17 Jan 2022


Volcanic Eruption of the 15th of January 2022 and induced tsunami, Hunga Tonga-hunga Ha'apai Volcano



Preliminary Satellite-Derived Damage Assessment

Kingdom of Tonga

 Status: Affected structures and affected facilities observed in all island after tsunami triggered by volcanic eruption

 Further action(s): Continue monitoring

AOI 1- HUNGA TONGA - HUNGA HA'APAI VOLCANO

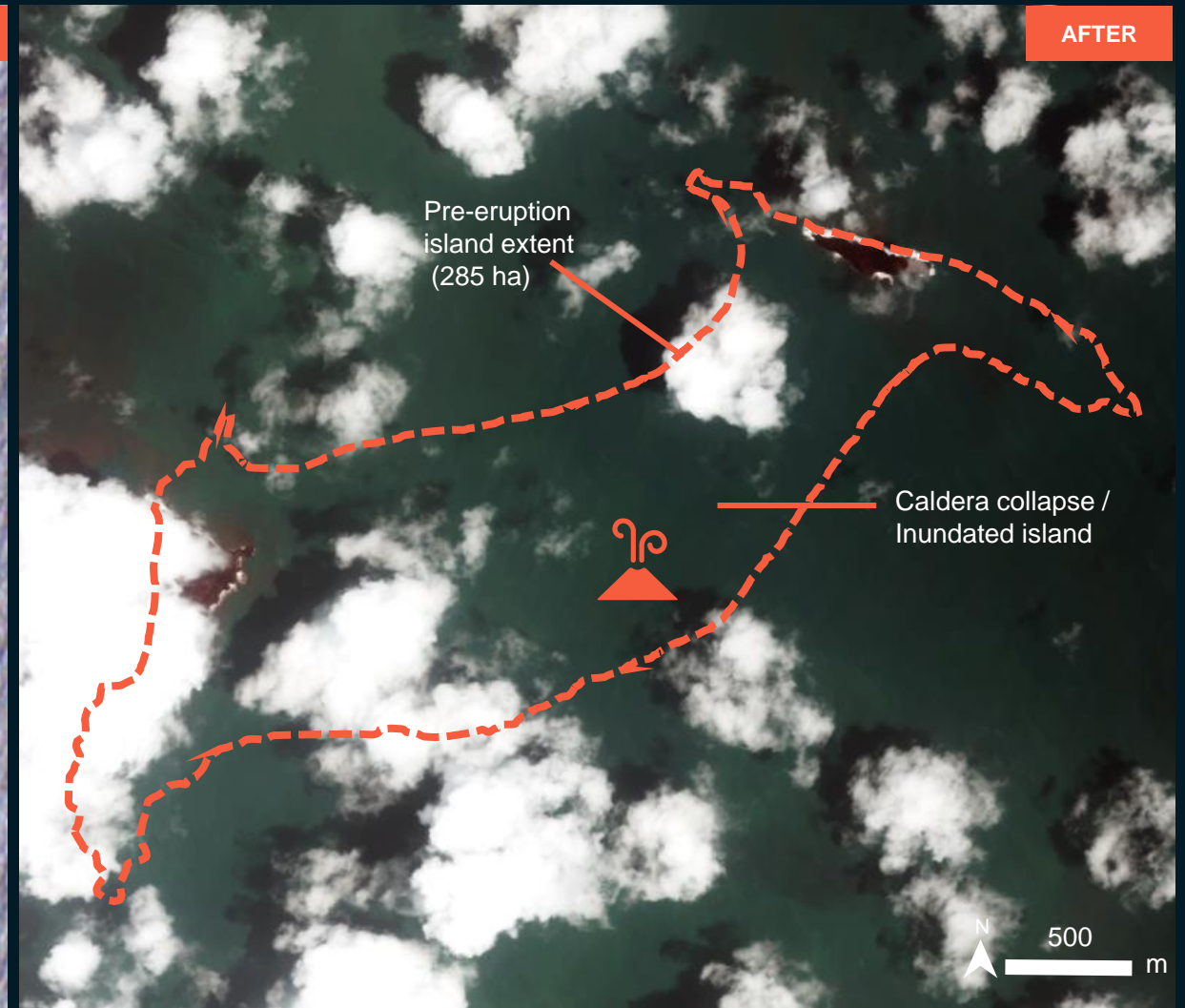
Image center:
175°23'26.689"W
20°32'39.82"S



Destroyed area around the volcano / Collapse of the caldera



Sentinel-2 / 8 Dec 2021

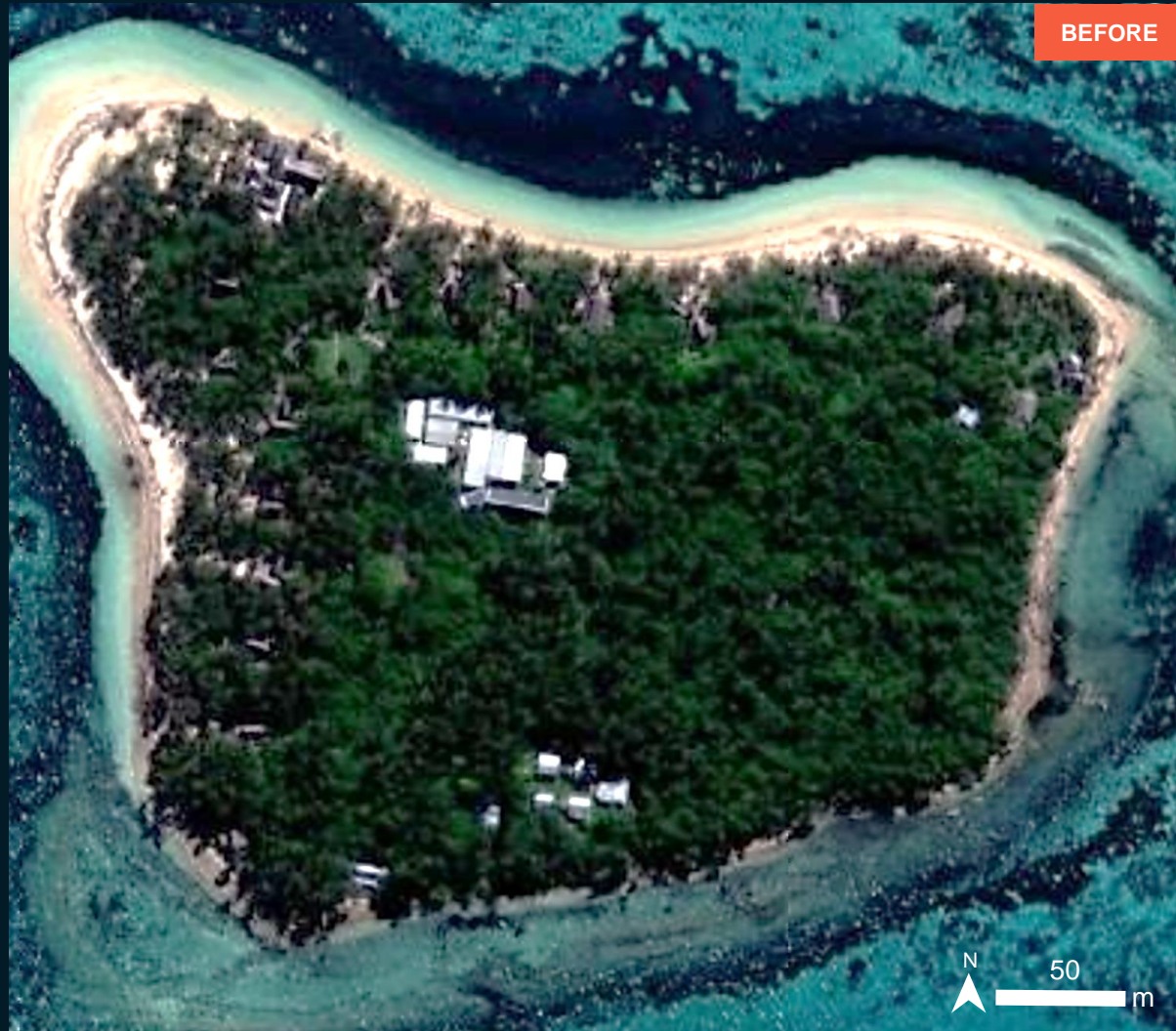


Pléiades / 16 Jan 2022 (21:53 UTC)

AOI 2-1 – FAFAA VILLAGE, KOLOFO'OU DISTRICT, TONGATAPU DIVISION

Water invasion evidence and affected structures

Image center:
175°9'30.184"W
21°5'13.665"S



ESRI Basemap / Worldview-2 / 5 Nov 2020



Pléiades / 16 Jan 2022

AOI 2-2 – KOLOMOTU'A VILLAGE, KOLOMOTU'A DISTRICT, TONGATAPU DIVISION

Water invasion evidence and potentially affected structures along the shoreline

Image center:
175°13'25.981"W
21°7'32.015"S



BEFORE



AFTER

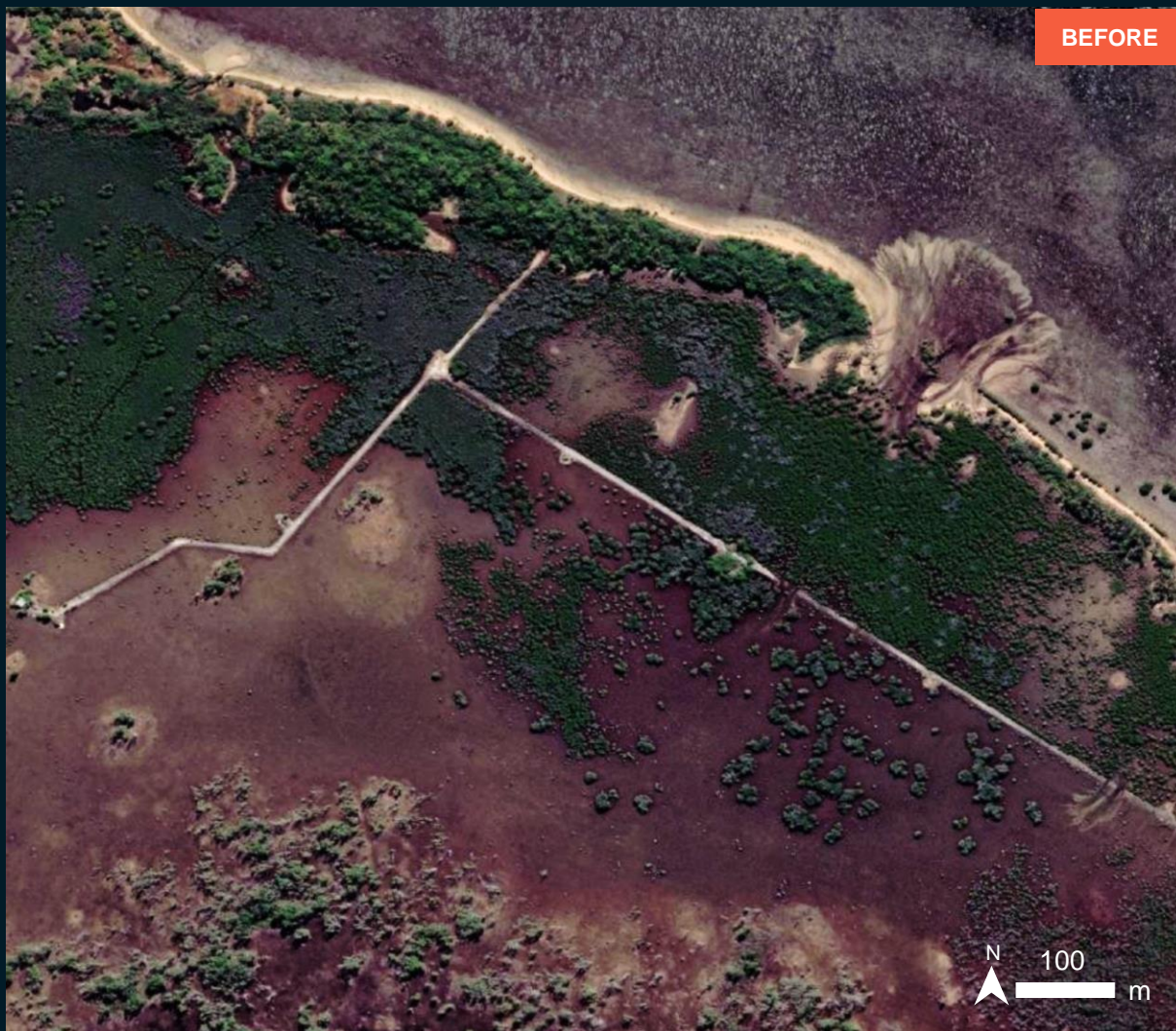
ESRI Basemap / Worldview-2 / 7 Feb 2020

Pléiades / 16 Jan 2022

AOI 2-3 – KOLOMOTU'A VILLAGE, KOLOMOTU'A DISTRICT, TONGATAPU DIVISION

Inundated road along the shoreline

Image center:
175°14'30.787"W
21°6'49.11"S



ESRI Basemap / Worldview-2 / 7 Feb 2020

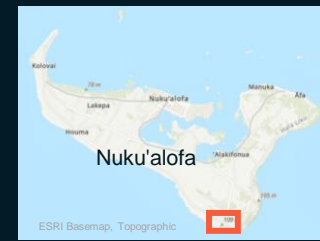


Pléiades / 16 Jan 2022

AOI 2-4 –FEFE HO LOTO GOLDEN SANDS, TATAKAMOTONGA DISTRICT, TONGATAPU DIVISION

Affected area along the shoreline

Image center:
175°8'42.723"W
21°16'8.48"S



ESRI Basemap / Worldview-2 / 5 Nov 2020



Pléiades / 16 Jan 2022

AOI 2-5 – FUA'AMOTU AIRPORT, TATAKAMOTONGA DISTRICT, TONGATAPU DIVISION

Inundated runway and potentially affected structures

Image center:
175°8'37.057"W
21°14'41.329"S



BEFORE



AFTER

AOI 3-1, LIFUKA VILLAGE, PANGAI DISTRICT, HA'APAI DIVISION

Water invasion evidence, affected road, and affected structures

Image center:
174°21'8.738"W
19°48'38.373"S



AOI 3-2, PANGAI TOWN, PANGAI DISTRICT, HA'APAI DIVISION

Water invasion evidence and affected structures

Image center:
174°21'1.624"W
19°48'14.767"S



ESRI Basemap / Worldview-2 / 19 April 2020



Pléiades / 16 Jan 2022

AOI 4-1, FELEMEA VILLAGE, 'UIHA DISTRICT, HA'APAI DIVISION

No visible damage

Image center:
174°24'40.044"W
19°54'30.004"S



ESRI Basemap / Worldview-3 / 19 April 2020

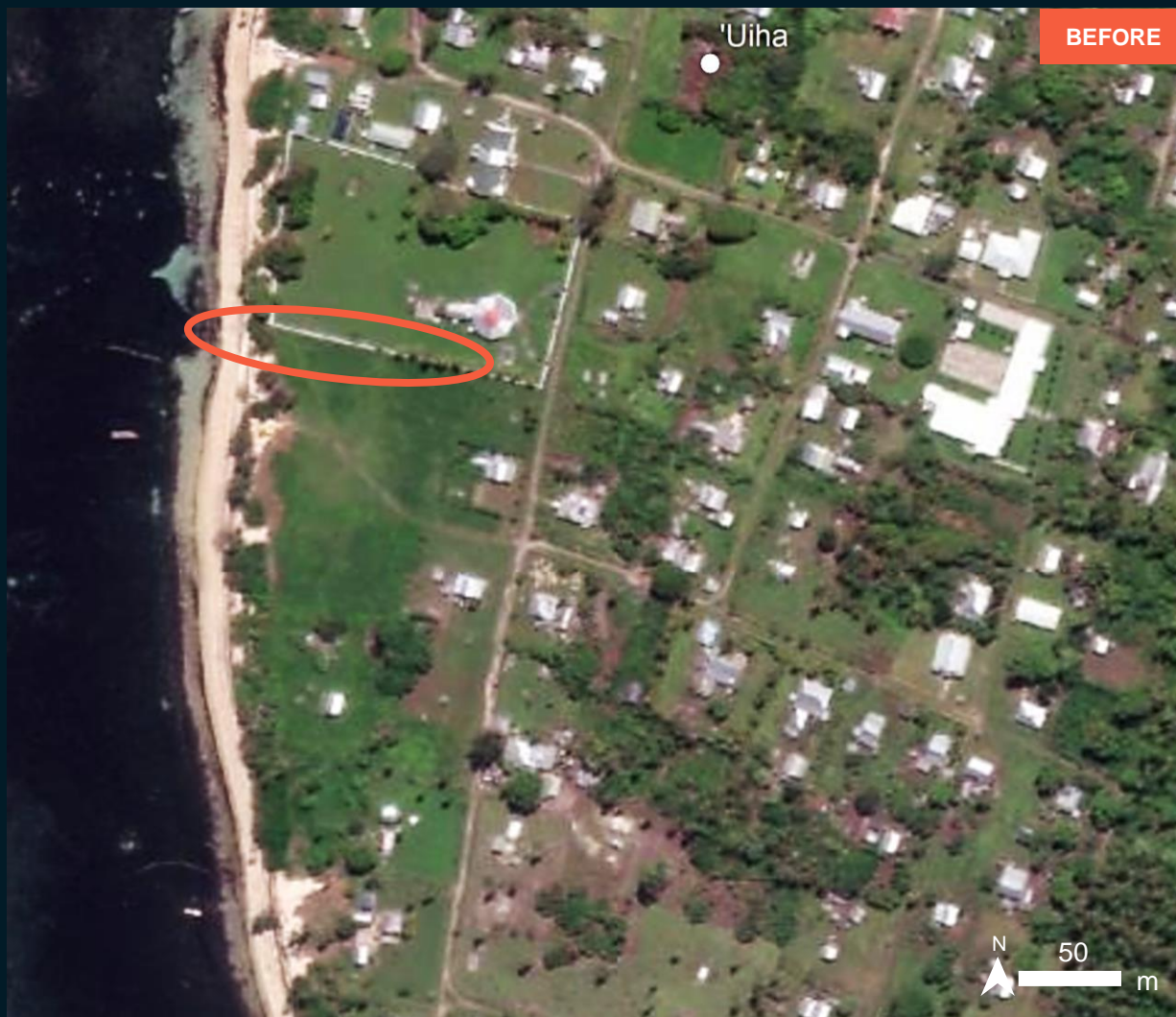


Pléiades / 16 Jan 2022

AOI 4-2, 'UIHA VILLAGE, 'UIHA DISTRICT, HA'APAI DIVISION

Water invasion evidence and affected structures

Image center:
174°24'26.681"W
19°53'34.324"S



AOI 5-1, NOMUKA VILLAGE, MU'OMU'A DISTRICT, HA'APAI DIVISION

Affected shoreline, structures and road

Image center:
174°47'44.558"W
20°15'42.891"S



BEFORE



AFTER

Affected structures

Affected structures

Affected structures

Affected road

Affected area along the shoreline

SUMMARY OF FINDINGS

Hunga Tonga - Hunga Ha'apai

- Collapse of the caldera of the Hunga Tonga - Hunga Ha'apai Volcano after the eruption of the 15 January 2022;
- Surface of the island 285 ha (08 December 2021)

Nuku'alofa Island

- Ash deposits observed in Tongatapu division as of 16 Jan. 2022;
- Water invasion evidence, affected structures and inundated road observed in Tongatapu division as of 16 Jan. 2022;
- Ash deposits, inundated runway and potentially affected structures observed in Fua'amotu Airport, Tatakamotonga district, Tongatapu division as of 16 Jan 2022;

Uoleva Island

- Ash deposits, water invasion evidence, affected structures and inundated road observed in Lifuka village & Pangai town, Pangai district, Ha'apai division as of 16 Jan. 2022;

Uiha Island

- Ash deposits observed in Uha Island as of 16 Jan. 2022;
- Water invasion evidence, affected roads and affected structures observed in 'Uha village, 'Uha district, Ha'apai division as of 16 Jan 2022;
- No visible damage observed in Felemea Village, 'Uiha district, Ha'apai division observed as of 16 Jan 2022;

Nomuka Island

- Ash deposits, observed along the shoreline, affected structures and affected road observed in Nomuka Village, Mu'omu'a District, Ha'apai Division as of 16 Jan 2022.

COPYRIGHTS AND SOURCES

Data sources:

(1) Satellite Image (Post-event)

Pléiades : 16 Jan 2022

Resolution: 50 cm

Copyright : © CNES (2021), distribution Airbus D&S

Source : Airbus Defense and Space

(2) Satellite Image (Pre-event)

Sentinel-2 : 8 Dec 2021

Resolution: 10 m

ESRI Basemap

(3) Ancillary data

Administrative boundaries: Secretariat of the Pacific Community, Statistics for Development Division

Populated place: OpenStreetMap

Analysis: United Nations Satellite Centre (UNOSAT)

Production: United Nations Satellite Centre (UNOSAT)

 **@UNOSAT**

 **@UNITAR.unosat**



UNOSAT, United Nations Institute for Training
and Research (UNITAR)
7 bis, Avenue de la Paix, CH-1202 Geneva 2,
Switzerland

T +41 22 917 4720
E unosat@unitar.org
www.unosat.org