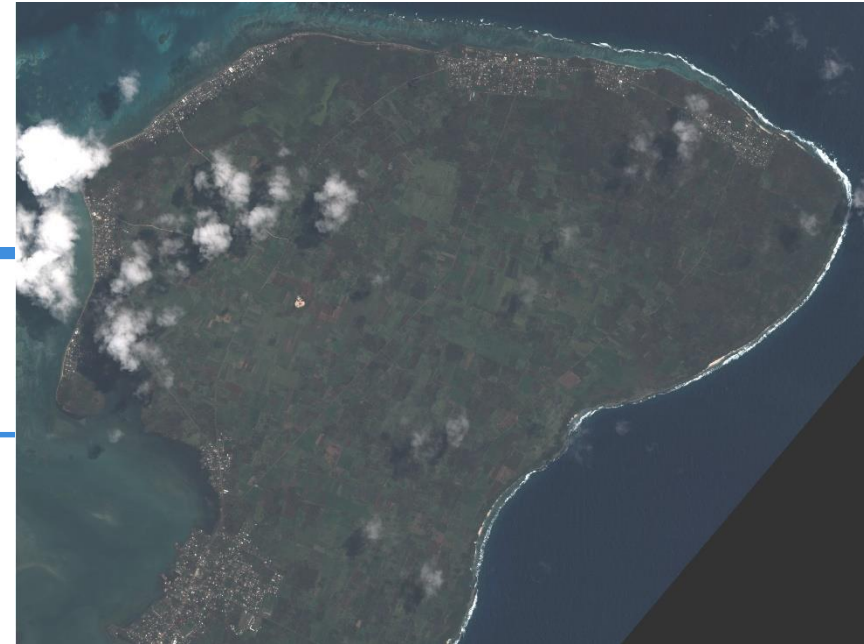


Damage assessment of the Cultural Heritages Sites in Tongatapu Island, Tonga – Tropical Cyclone GITA-18



Pleiades Image collected on 16 February 2018
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23 February 2018

UNITAR – UNOSAT, following the request of UNESCO Office for the Pacific States Samoa, has performed a satellite based analysis of the cultural heritages sites of :

- **Ha'amonga 'a Maui Trilithon Historic Park (Niutoua)**
- **Lapita Pottery Archaeological Site (Nukuleka)**
- **Ancient Royal Tombs of Lapaha (Mua)**

The aim is to search for signs of damage, after the passage of the Tropical cyclone GITA-18 that struck Tongatapu Island, Tonga on the 12 February 2018.

For this analysis UNOSAT has used a post-event cloud free images of the area, collected on 15 & 16 February 2018, and the most recent pre-event satellite image before the cyclone occurred, collected on 12 January 2018.

Comparison between these two images allows to identify and detect changes that happened in this period of time and they can be related to the impact caused by Tropical Cyclone GITA-18.

The findings are illustrated in the following pages.

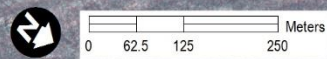
This is a preliminary analysis and has not yet been validated in the field. Please send ground feedback to UNITAR - UNOSAT



12 January 2018



COORDINATES: 175°2'40.50"W 21°8'16.43"S

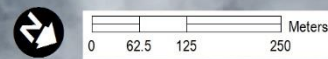


Imagery Copyright: © 2018 DigitalGlobe

15 February 2018



COORDINATES: 175°2'40.50"W 21°8'16.43"S



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Ha'amonga 'a Maui Trilithon Historic Park as of 15 February 2018



Affected vegetation

Damaged building

Affected vegetation

Damaged building

Damaged buildings

Potential damage
to fence

Megalithic Gate of Ha'amonga 'a Maui
No major damage observed

Damaged building

Image collected on 15 February 2018 shows the presence of damaged buildings and structures within the Ha'amonga 'a Maui Trilithon Historic Park and the surrounding area. Also vegetation has been affected, as highlighted by fallen trees and debris around the site. The Megalithic Gate of Ha'amonga 'a Maui does not present major visible damage, however this might be underestimated due to the characteristics (resolution, angle, cloud cover percentage...) of the satellite image. Field assessments are necessary to validate this analysis and determine whether damage not detected by satellites is present.



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Lapita Pottery Archaeological Site
Visible damaged buildings



Damaged building

Affected vegetation

Damaged building

Image collected on 16 February 2018 shows the presence of damaged buildings and structures within the Lapita Pottery Archaeological Site. Also affected vegetation, fallen trees and debris are observed in the surrounding area. The damage of the Lapita Pottery Archaeological Site might be underestimated due to the characteristics (resolution, angle, cloud cover percentage...) of the satellite image. Field assessments are needed to validate the analysis and determine whether other damage not observed in the satellite image is present.





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Ancient Royal Tombs of Lapaha as of 15 February 2018



Image collected on 15 February 2018 shows the presence of potentially damaged tombs inside the Ancient Royal Tombs site of Lapaha in the town of Mua. Also affected vegetation, fallen trees and damaged buildings are observed in the surrounding area. The damage of Ancient Royal Tombs of Lapaha might be underestimated due to the characteristics (resolution, angle, cloud cover percentage...) of the satellite image. Field assessments are needed to validate the analysis and determine whether other damage not observed in the satellite images is present.

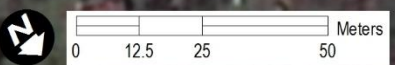
Ancient Royal Tombs of Lapaha
Potential visible damage

Damaged buildings

Damaged buildings

Affected vegetation

Affected vegetation



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