



DGJRC

**COPERNICUS EMERGENCY MANAGEMENT SERVICE RISK
AND RECOVERY MAPPING**

**EMSN-050: POST MATHEW DAMAGE ASSESSMENT AND MONITORING OF
RECOVERY ACTIVITIES IN THE SOUTH REGION OF HAITI**

27 April 2018



indra

Geo**V**ille

Z_GIS



Soutenir et assister les travaux de recouvrement des capacités après le passage de l'Ouragan Mathieu du 4 Octobre 2016 dans deux aires spécifique



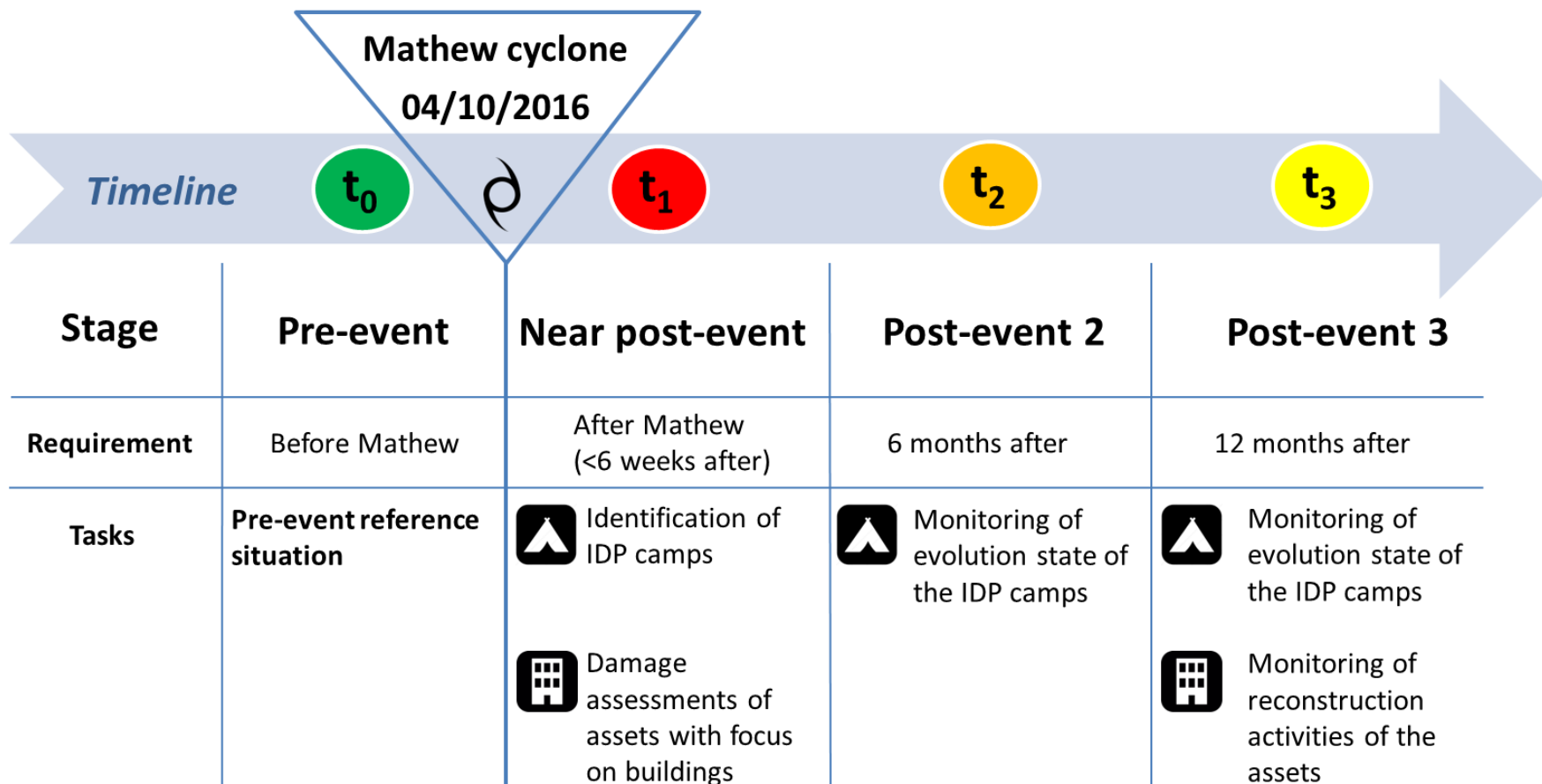
Produits:

Cartes de Reference :

- Eléments topographique, admin., hydrographique
- Physiographie
- Zones d'installations des populations
- Réseau de Transport
- Point d'intérêt des industries et facilités
- Occupation des sols

Produits Risk and Recovery :

- Etat des dommages Post-événement
- Suivi des activités de reconstruction
- Suivi de l'évolution de l'état des camps de réfugiés



METHODOLOGIE: CARTE DE RÉFÉRENCE

Basé sur l'ortho-imagerie (IGN France-2014) avec une résolution de 25 cm, et avec l'utilisation des données open sources (e.g. OSM et CLC) et des données fournies par le CNIGS (e.g hydrographie, limites administrative, etc.), les experts de l'analyse d'image extraient les informations des produits de références



EXEMPLE: CARTE DE REFERENCE

Carte de Reference pour la Ville de Jeremie



Slide Number: (N/A) Activation ID: EM04260
Product N: Reference Map v.1 (2016)

Post Mathew Damage Assessment and Monitoring of Recovery Activities in the South Region of Haiti
Pre-event Reference Map
City of Jeremie - Detail

Cartographic Information
1:4,000 Full color A1, high resolution (300dpi)
Scale: 0 0.075 0.15 0.3 Kilometers
Data: WGS 1984 Zone 18N map coordinate system
This map is a geographical coordinate system

Legend

Hydrography	Transportation	Points of Interest
Blue line: River	Yellow line: Primary Road	Red square: Health Facility
Blue line: River Area	Yellow line: Secondary Road	Red square: Fire Station
Blue line: Water Area	Yellow line: Local Road	Red square: Pharmacy
	Yellow line: Cart Track	Red square: Police Station
	Yellow line: Bridge	Red square: Religious Site
		Red square: Place of Worship
		Red square: Educational Facility
		Red square: Government Building
		Red square: Industrial Facility
		Red square: Cemetery
		Red square: University/Research
		Red square: Health Office
		Red square: Information
		Red square: Drinking Water
		Red square: Gas Station
		Red square: Commercial
		Red square: Bank
		Red square: Religious, religious, etc.
		Red square: Recreation
		Red square: Camp Site
		Red square: Landmark/Monument
		Red square: Other, Other

Map Information
Pre-event situation analysis for two locations in Haiti city of Jeremie (Grand Anse) and Les Cayes (Sud).
The main goal of the map is to provide a general reference context for the location of the city of Jeremie in the South Region of Haiti and to provide a general reference context for the location of the city of Jeremie in the South Region of Haiti.
The map is a general reference context for the location of the city of Jeremie in the South Region of Haiti and to provide a general reference context for the location of the city of Jeremie in the South Region of Haiti.

EM04260 - 1:4,000
Scale: 1:4,000
Scale: 1:4,000
Scale: 1:4,000

Data Sources
Aerial Photo: Aerial Photo (2016) (Acquired in several dates in 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 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3832, 3833, 3834, 3835, 3836, 383

1. Identification et suivi des camps de personnes déplacés (CPD)

Détection et évolution des CPD (6 et 12 mois après l'évènement) pour comprendre les vulnérabilités Durant la phase de reconstruction, par analyse d'images automatisés et interprétations des experts

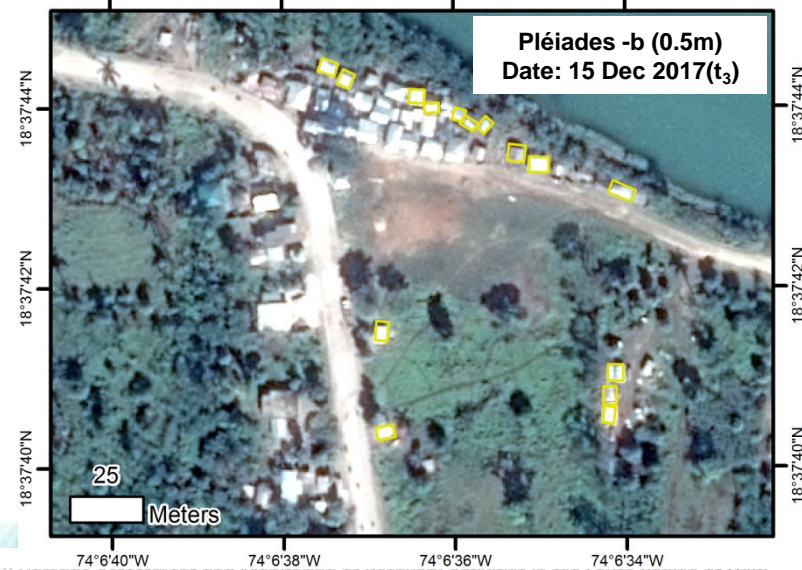
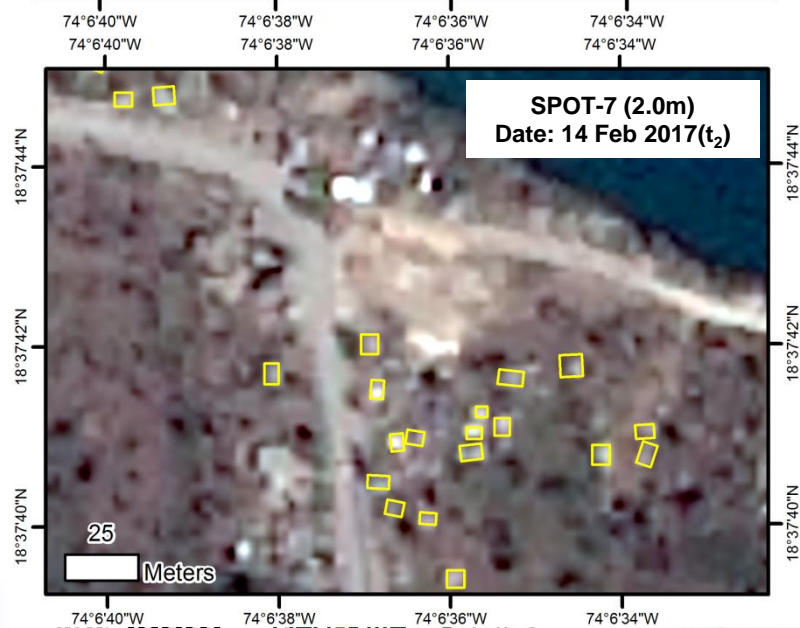
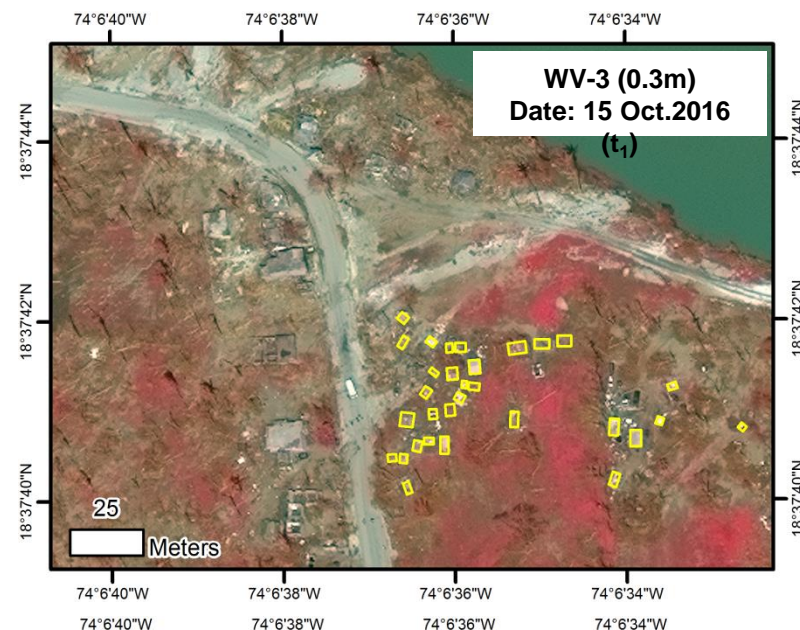
2. Evaluation des dommages des biens

Identification des bâtiments endommagés et autres biens (e.g. ponts, routes, murs, etc.) après l'évènement (dans les deux semaines suivantes) par les analystes experts.

3. Monitoring des activités de reconstruction

Analyse de la situation des dommages détectés plus d'un an après l'évènement (14 à 16 mois plus tard) pour effectuer un suivi des reconstructions.

EXEMPLES: IDENTIFICATION ET MONITORING DES CDP, DÉVELOPPENT DES HABITATIONS INFORMELS À JÉRÉMIE



EXEMPLES: IDENTIFICATION ET MONITORING DES CDP, DÉVELOPPENT DES HABITATIONS INFORMELS À JÉRÉMIE

- Dwellings of internally displaced persons are understood in this context as precarious housings of people who have left their previous place of living, in order to settle in open spaces available to them, preferably at the fringe of existing informal settlements.
- These dwellings were identified visually by comparison with pre-Matthew imagery (t0). Indications for precarious housing are groupings of dwellings with a disordered arrangement, and a relatively small size
- Thus, not every new building appearing in the post-event images was considered an IDP dwelling. New, single buildings adjacent to existing ones were not mapped. Also, newly constructed regular buildings or buildings under construction were not mapped as IDP dwellings. Where available, dwellings were compared to data collected by the IOM-DTM displacement matrix (Tabular data available at <http://haiti.iom.int/dtm>, which was georeferenced).
- The example shown here documents the formation and disappearance of an informal settlement on a previously open land outside of Jérémie. While the area is empty in the imagery taken before the storm, several small, disorderly spaced dwellings can be observed in the image taken immediately afterwards (t1). In the SPOT-image of Feb 2017, the existence of dwellings can still be deduced, despite the lower spatial resolution of that image. In December 2017, most dwellings have disappeared. The settlement in the north of the image has grown slightly.

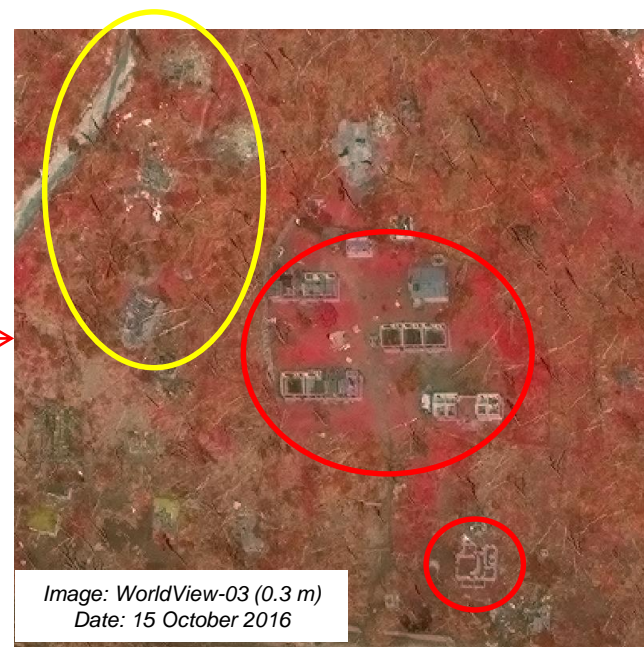
EXEMPLES: RECENSEMENT DES DOMMAGES AUX POINTS D'INTÉRÊT



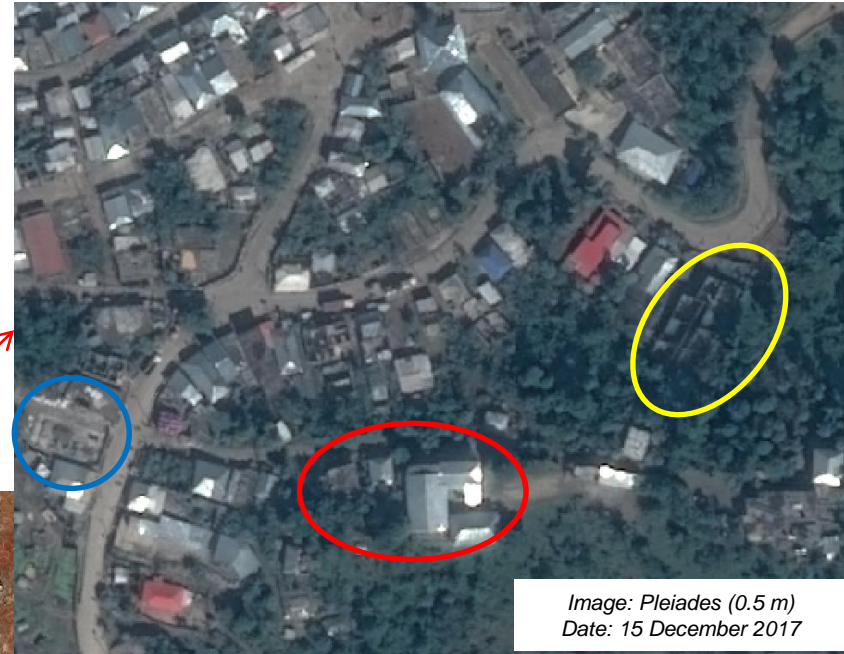
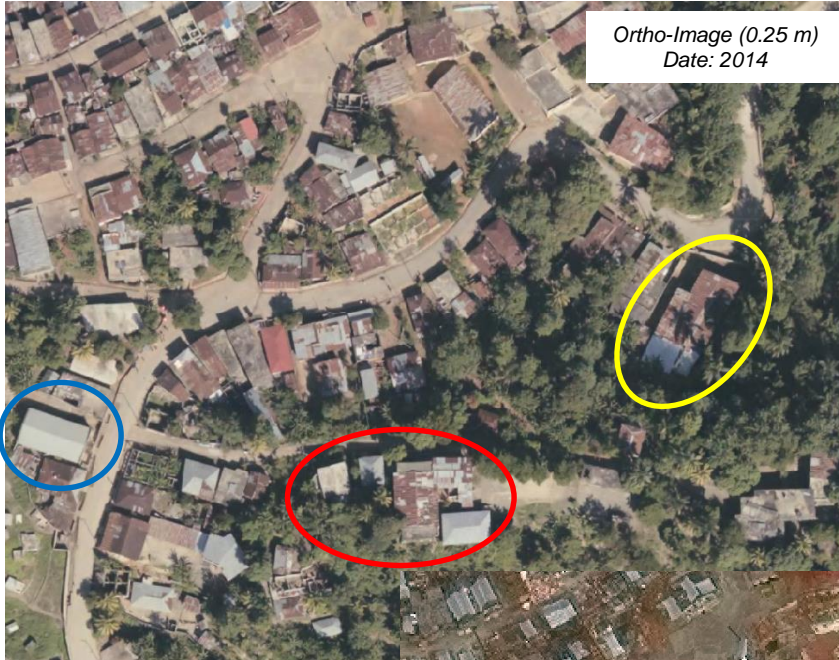
La végétation dans la zone a complètement disparue.

Cercles Rouge : Bâtiments endommagés sans toits

Cercles Jaune : Bâtiments complètement détruits



EXEMPLES: SUIVI DES ACTIVITÉS DE RECONSTRUCTION



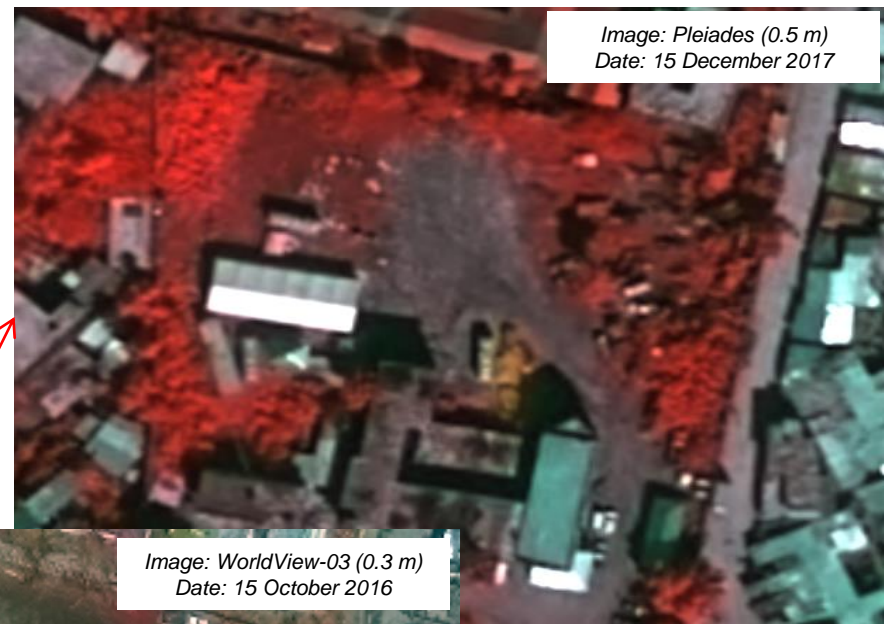
Végétation guérie

Cercles Rouge : bâtiments reconstruit après avoir été endommagé.

Cercles Jaune : bâtiments non reconstruit encore

Cercles Bleu : bâtiment endommagé après l'évènement ou l'aire a été nettoyé par la suite.

EXEMPLES: SUIVI DES ACTIVITÉS DE RECONSTRUCTION Infrastructures Humanitaires détectés



Aide humanitaire détecté rapidement après l'évènement. Présence de ces aides encore un an après l'évènement.

EXEMPLES: SUIVI DES ACTIVITÉS DE RECONSTRUCTION

Infrastructures Humanitaires détectés



*Aide humanitaire détectée rapidement après l'évènement (Aéroport de Jérémie).
N'est plus présente un an après l'évènement.*

RÉSULTATS PRÉLIMINAIRE POUR L'AOI 01 JEREMIE

State of the Building in t0 (before the event)	Number of Buildings	% Buildings
1-Fully Functional (pre-event)	1214	92%
2-Not functional (pre-event)	107	8%
Total buildings in t0	1321	100%

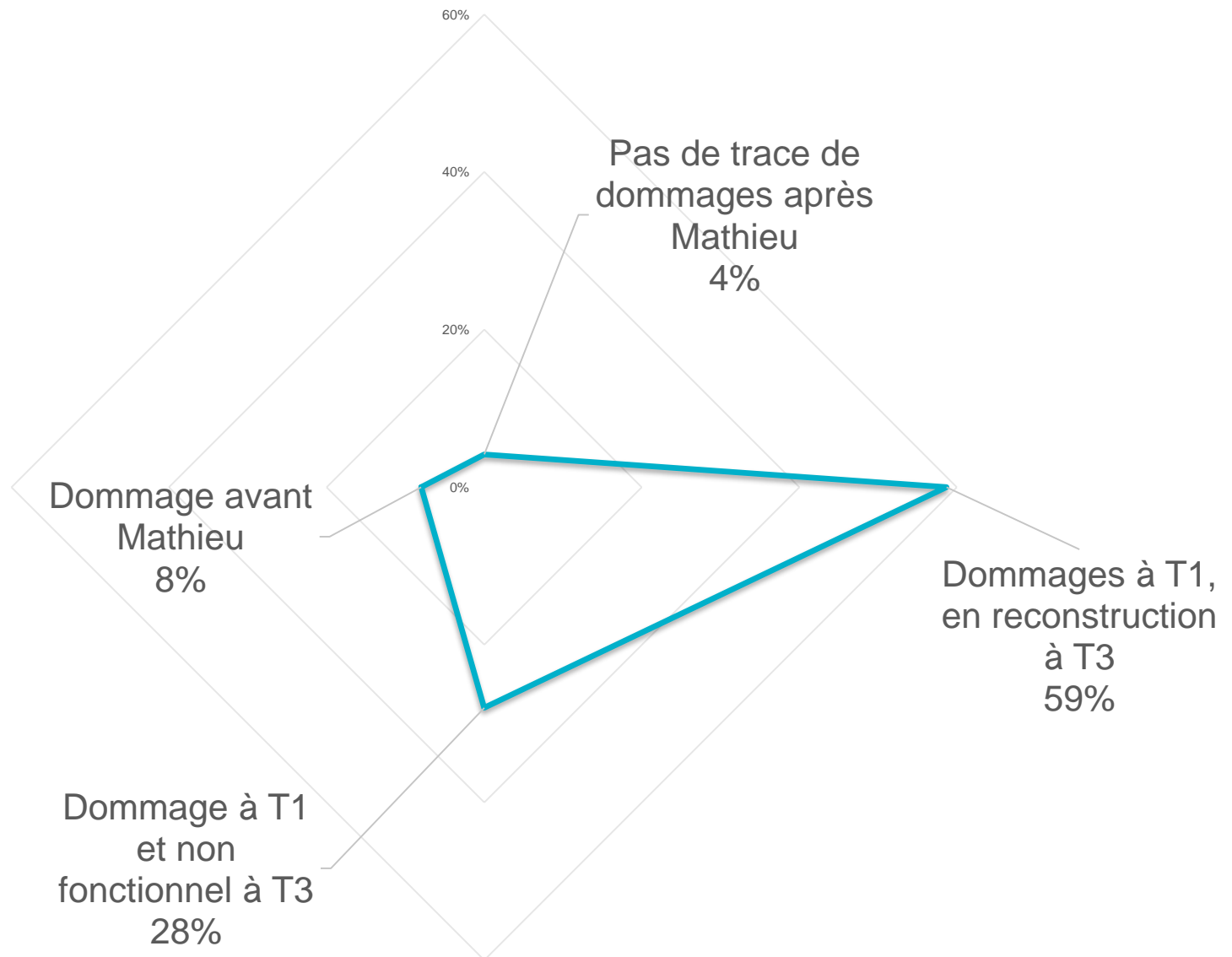
State of the Building in t1 (right after the event)	Number of Buildings	% Buildings
1-Not Visible Damage	102	7%
2-Damaged	1432	93%
999-Unkown	1	0%
Total buildings in t1	1535	100%

State of the Building in t3 (one year after the event)	Number of Buildings	% Buildings
1-Not Visible Damage	1024	59%
2-Damaged	207	12%
50-New Building	513	29%
30-Cleared	304	17%
Total buildings in t3	1744	100%

STATUS OF BUILDINGS IN EACH TIME STAGE

- Avant Mathieu (t0) **92% des bâtiments étaient “entièrement fonctionnel”** sans dommage apparent.
- Juste après Mathieu (t1) **93% des bâtiments était endommagé.**
- Après une année et les activités de reconstruction qui ont été mise en place, 59% des bâtiments n'ont plus de dommage visible et 29% sont complètement nouveaux (total de **88% de bâtiments “entièrement fonctionnel » à t3**).
- Les activités de Reconstruction incluent un nettoyage de 15% des débris issues des bâtiments détruits.
- **Un an après l'évènement, Il ne reste que 12% des bâtiments encore endommagés.**

GRAPHE DES DOMMAGES ET RECONSTRUCTIONS Copernicus



CONCLUSIONS

- Après l'évènement, la plupart des bâtiments sont vu comme endommagés : toits manquant, complètement détruit, etc.
- L'aide humanitaire est visible dès le premier mois après Mathieu.
- Il y a de claires traces d'activités de reconstruction durant l'année suivant l'évènement : la plupart des bâtiment sont déjà reconstruit et de nouveaux ont vu le jour
- Après un an certaines n'ont toujours pas été reconstruits
- Les activités de reconstructions incluent le nettoyage des débris des bâtiments détruits.

⇒ Ce sont actuellement des résultats préliminaires

⇒ Le Retour sur ces produits est primordiale

⇒ Validé par la communautés locale d'ici le 15 juin

⇒ Des produits mieux adaptés

⇒ Relancement dans un an du service



t0



t1



t3



t0



t1



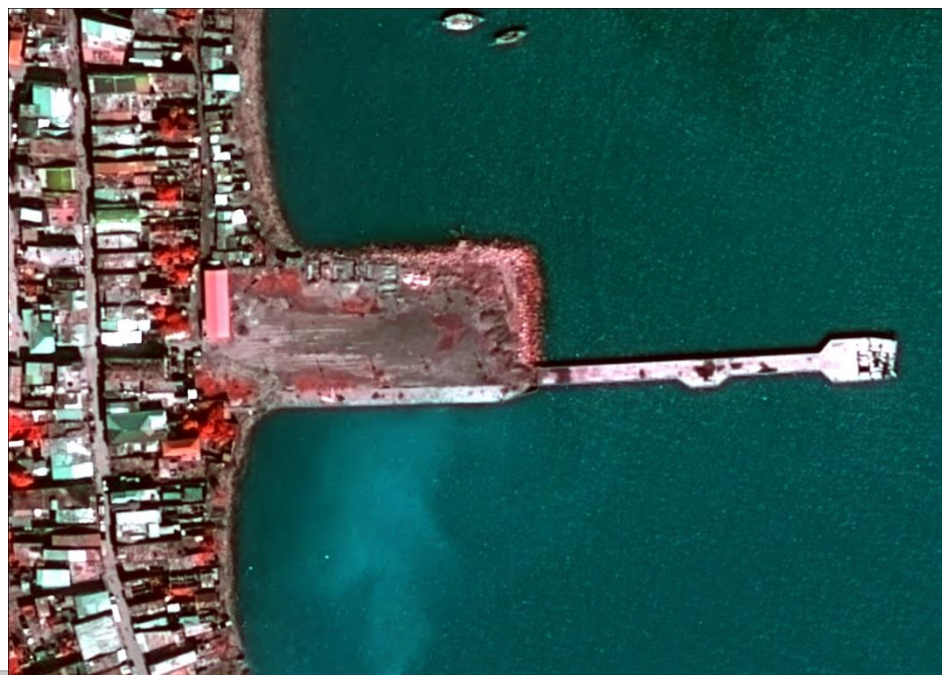
t3



t0



t1



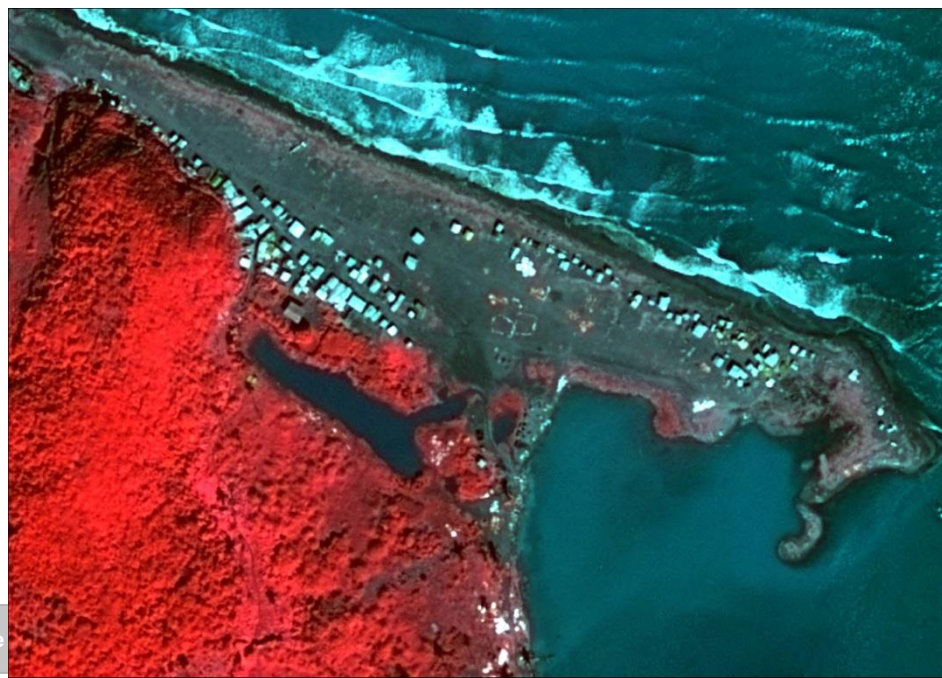
t3



t0



t1



t3



t0



t1



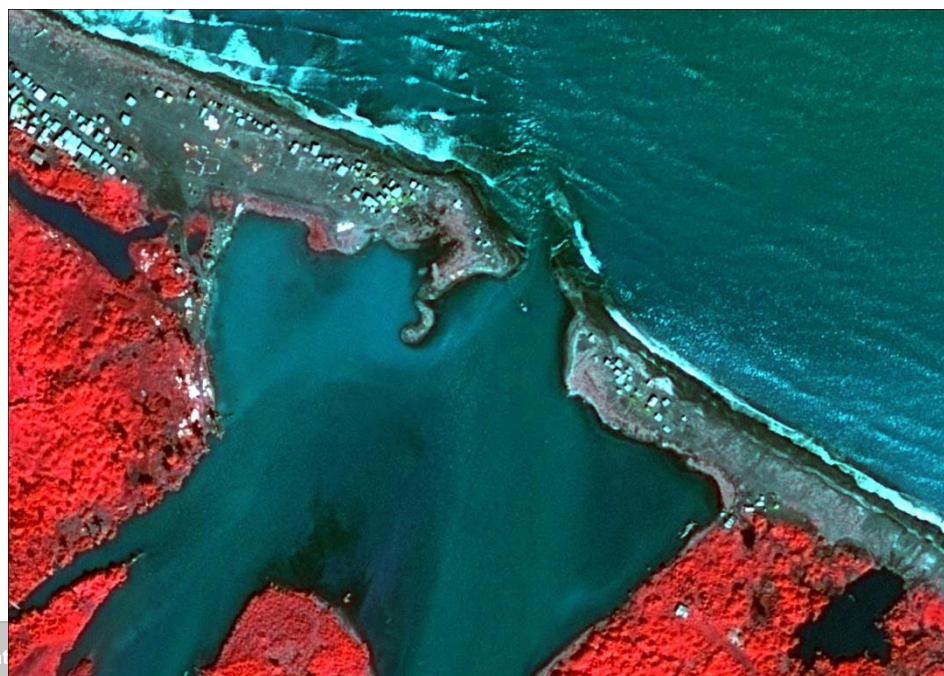
t3



t0



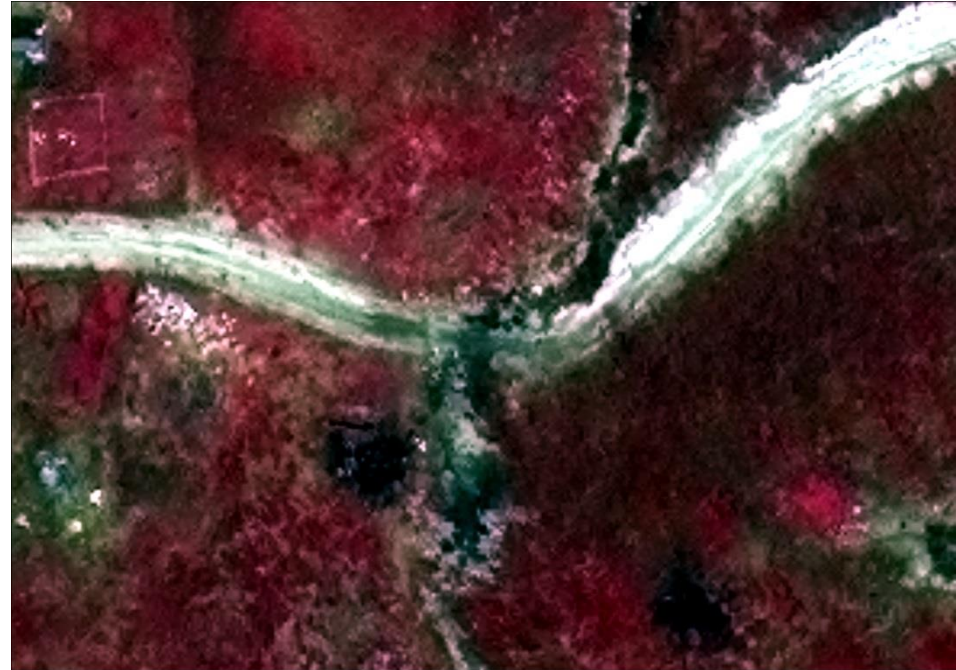
t1



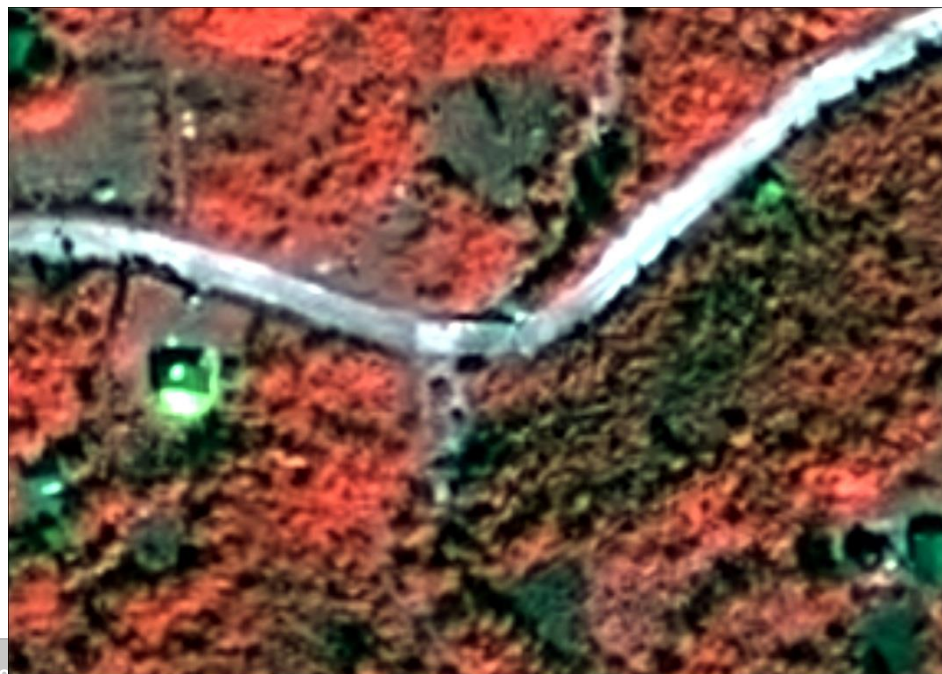
t3



t0



t1



t3



t0



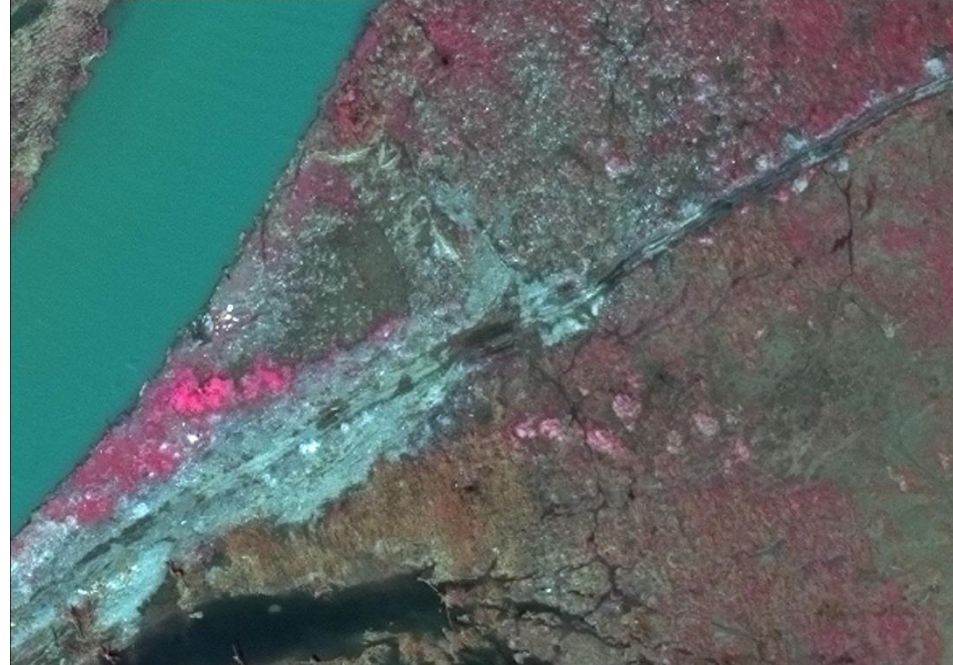
t1



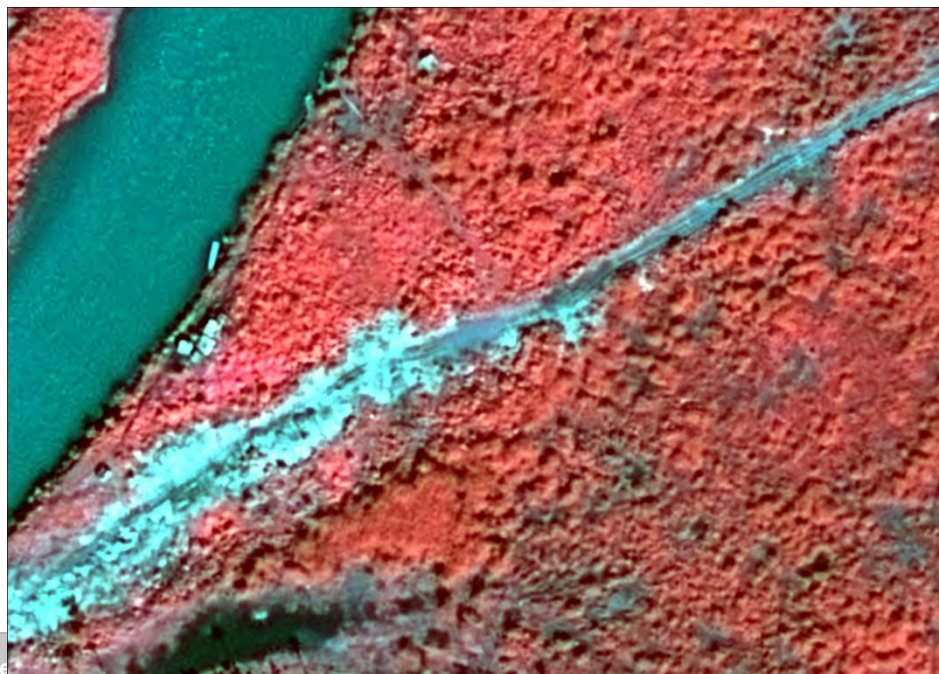
t3



t0



t1



t3



t0



t1



t3



t0



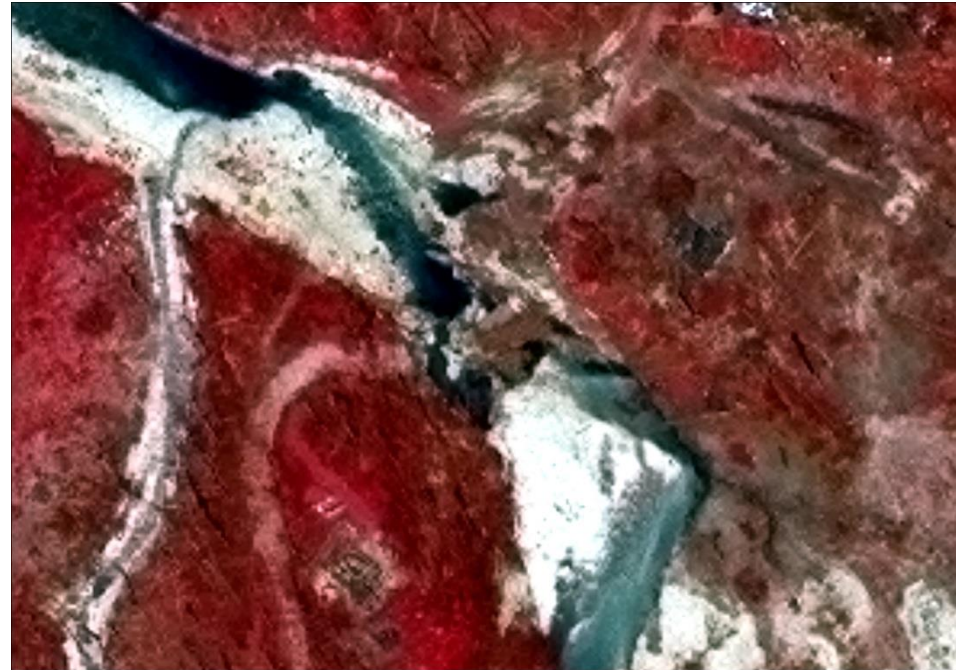
t1



t3



t0



t1



t3