



Mission St Maarten – Damage assessment cultural heritage on paper  
Period: 30 October to 4 November 2017

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Figure 1. Front entrance New Government Building

## Introduction

The National Archives in The Hague asked me to assess damage of cultural heritage on paper after Hurricane Irma passed over the island of St Maarten. The Ministry of OCW (Education, Culture and Science) financing this operation, has also sent first aid materials to pack wet moldy archives in order to freeze them if necessary.

During four days Alfonso Blijden, applicatie beheerder at RIM (Records Information Management) has guided me through all the sites to assess damage to buildings and collections, to meet collection caretakers and to document by photo or film the situation almost two months after the hurricane had passed. My findings rely on visits of the following locations, all situated in Phillipsburg:

- New Government building (NGB)
- Old Government building (OGB)
- SIMARC (St Maarten Archeological Center)
- VROMI (Ministry of Public Housing, Spatial Planning, Environment and Infrastructure)
- Historical Museum
- National Library
- Kadastre
- Courthouse

I have also briefly met with Director of the Territorial Archives in Saint Martin, Stéphanie Dargaud.

After presenting a survey of damage to buildings and collections, this report will provide recommendations on the short term as well as the long term. Most important are the ones concerning health issues and preventive measures that should be taken rapidly to avoid new problems.

Despite shortage of time, some actions have been undertaken and demonstrations made in order for staff to help themselves and continue salvaging and cleaning work.

## Climatological context

After Hurricane Irma struck St Maarten on September 6<sup>th</sup> 2017, many buildings housing archives or cultural heritage have been partially or totally damaged. Heavy winds and small tornadoes have blown off roofs, destroying upper floors and in the worst cases making entire buildings collapse. Subsequently, heavy rains have infiltrated into buildings, causing water damage on walls, floorings, furniture and objects.

Water confined in closed spaces combined with high temperature is the ideal context for mold growth. Hygroscopic materials like paper and books will expand or warp, pages will start sticking together, inks or stamps can bleed and mold will start growing if the paper is not quickly dried. There are many different types of mold but it is generally accepted that the optimal environment for mold growth starts at a temperature above 25°C and with a Relative Humidity of 70% RH.

The average temperature and humidity on St Maarten is 27°C and 70% RH (on a rainy day, up to 90% RH). Right now rainy season is slowly ending. So even without a hurricane, conserving paper on St Maarten means housing it in a colder and dryer environment. Good ventilation of spaces will reduce the temperature and RH slightly, but the best conditions are only achieved with climate control.

These climatological factors have an impact on my recommendations in this report.

## Locations

St Maarten built a brand new Government Building (NGB) situated in Phillipsburg in an area called Pond Island, in 2012. Before that, ministries and government services were scattered around the same site in different buildings housing staff and archives. For instance, Record and Information Management (RIM), the Ministers Cabinet and Finance Department were sharing the old Government Building (OGB).

From 2016 to 2017 government was busy moving its personnel and archives to the New Government building (NGB). Before the hurricane, some of the offices in the OGB were still occupied and some of the archives had been transported to the new building.

Civil registers had also just moved to the NGB because their old building needed renovation.

After Irma, many services had to move to the NGB for shelter as well, like for instance VROMI.



*Figure 2. New government building (NGB)*

## Old government archives

Contact: Alfonso Blijden, applicatie beheerder (DIV) at RIM

- historical archives, mostly 19<sup>th</sup> century (4 meters)
- old PB's (Publicatie Bladen) (4 meters) dates?



Figure 3. Old government building

The historical archive was still stored in the OGB when hurricane Irma was announced. Despite the fact that this building was partly destroyed, the old archives have suffered no damage because its caretaker, Alfonso Blijden, fearing that the old building might not be strong enough, single handedly took the risk to bring it to his stronger built home, hoping it would be safer there.

This archive is now housed in the NGB, in the office of RIM, but has not yet been moved to the state of the art storage unit. Fortunately, the entire building is air-conditioned day and night but there are no meters indicating the exact temperature and RH levels.

## Government archives

Contact: Ingrid Gumbs-Arrindell, head of RIM

- dynamic and semi-static archives (990 meters) from 6 ministries. I have no list of the archives actually present in this storage unit. Spaces have been assigned to different services.

These archives are stored in the NGB in a state of the art storage space with rolling file cabinets and shelving. This room has a separate climate control and fire extinguishing system but unfortunately, the doors have caused some problems, which is why they stay open for now. Its situation is rather unusual as it is located between 2 office spaces from the same department and staff has to constantly walk through the storage.



Figure 4. Corridor before the storage unit.

Once again no meters are available to monitor climate, but I have not met anyone from the Technical staff.

Archives are being registered, described and digitalized using DECOS software system. There is no real selection made by a trained archivist that could reduce the volume of these archives in the long run.

Aruska Bell-Marlin, archive clerk, is also responsible for the material care of the Archives. She has been doing a good job so far without any schooling in this specific field. All the conservation materials are of high quality, according to ICN standards: boxes, folders and cover paper. Mrs Bell-Marlin would like to have more guidance when it comes to preventive conservation and has shown a lot of interest in the Reinwardt academy training program. Hopefully she will get the opportunity for schooling. She would then in return be able to manage any storage facility and train further incoming staff.

### Civil registry

Contact: Denise Warner, head of back office

- birth, death, marriage, acknowledgments registration from 1816 to 2017 (~30 meters) suffered no damage.
- doubles of the registers are still in the Civil registry building and need to be moved out.
- information archives (bijlagen) from 1998 to 2014, which had been housed temporarily in an air conditioned container was pushed by wind and water and sunk into the pond nearby. These archives, about 30% of the civil registry archives, are lost.



Figure 5. Old building civil registry

The Civil registry was housed in an old building that needed renovation: the building was outdated and there were rodents. Fortunately, this service moved to the new building one day before the hurricane.



*Figure 6. Recent registers*

The NGB now houses this archive on the ground floor. Registers are temporarily placed on wooden bookshelves and the oldest part is held in metal cabinets. The room is not fireproof but it is air conditioned day and night. They do not seem to have a space reserved in the new storage unit. They are planning to install new metal shelves.



*Figure 7. Oldest registers from Civil registry*

Civil registry has been entirely digitalized and scanned, except for the years 2015 to 2017.

**VROMI** (Public Housing, Spatial Planning, Environment and Infrastructure)  
Contact: none, briefly saw the head in the corridor of the new gov. building

- dynamic and semi-static archives (total volume unknown)

The building housing this ministry and its archive was almost totally damaged. Access to the building is still denied for security reasons, as it could collapse at any time. Some (I do not know what exactly and how much) archives that were wet have been packed and brought to the NGB where they are now



Figure 9. VROMI building after Irma.

stacked on the floor in the new offices. These documents are dry but often moldy and should at least be packed temporarily to avoid health hazard for the personnel working in the office. No action has been taken so far. It could also become an issue of contamination of the air-conditioning system.



Figure 8. VROMI office in the NGB.

A large volume of archives (504 meters) had moved to the NGB's new storage unit before the hurricane and therefore sustained no damage.

## Courthouse

Contact: Maritza James, head of courthous

- library (unknown volume)

This visit took place on our last day, 30 min before closing time. We did not get any further than the entrance hall of this historical building. Apparently, there was damage on the first floor where the library is situated. Wet books were packed into cardboard boxes and transported to another building, which also stores the archives of the courthouse. We have not been able to visit these archives.

No attempt has been made to dry the books before the move!

They are now waiting for the roof to be fixed and then the librarian, coming from Curaçao, will assess the situation and select the books that are still usable.

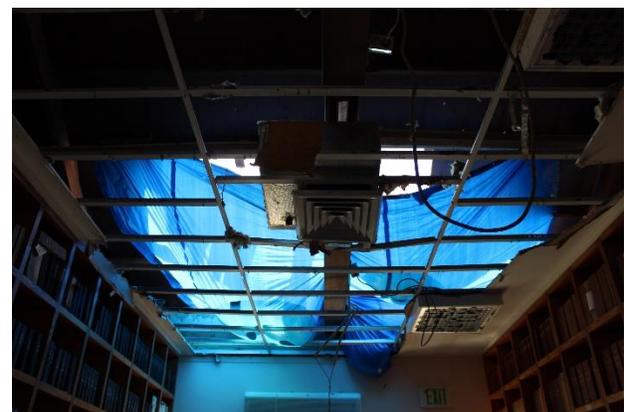


Figure 10. Damage to the Courthouse roof; pictures taken by A.Blijden right after the hurricane

## Kadastre

Contact: Marcia Peterson-Richardson, director and ?

- 2 storage units with registers, maps
- 2 flat file cabinets with tracing papers mostly rolled

The building is in rather good condition and the roof is intact but some beams have shifted allowing water to enter during the storm. A few centimeters of water covered the floors but has long been mopped away. There is no damage to the documents due to the hurricane but there are concerns about the storage system. There is permanent air conditioning day and night but here again no recordings of



temperature and RH. The wooden shelves must have absorbed a lot of moisture during the minor flooding and the storage room “feels” humid. Objects are lying directly on shelves and are sometimes in very poor condition. The boxes seen are not archival and none of the maps or technical drawings are stored in folders or in sleeves.

This type of archive, which is frequently used, suffers most of handling.

The service has recently acquired a scanner (brand: Zeutschel) to digitize its most fragile documents in order to prevent further damage



Figure 11. Scanner from brand Zeutschel

## St Maarten Jubilee Library

Contact: Monique Alberts, Director

- Books (amount unknown)
- St Maarten collection ~ 8 meters



Figure 12. Entrance (a few days after the hurricane) and inside the library

The library building is declared total loss and should be torn down. It is amazing that it is still open to the public. The central part of the building, which still has a roof, stores what is left of the book collection between pools of water. Many books (amount unknown) have been thrown away.

The so-called St Maarten collection survived the damage by being stored in a wooden cabinet with closed doors in one of the offices. My concern was that the collection was not in a safe environment because of the lack of climate control and the cabinets were resting on a layer of wet carpet.



Figure 13. St Maarten collection

This collection will be sent shortly to the NGB. A. Blijden kindly provided archival boxes to store all the documents and an agreement has been signed between the 2 parties for temporary storage.

**SIMARC** (St Maarten Archeological Center)

Contact: Dr. Jay B. Haviser, Director

- Mostly archeological artifacts, as you would expect but there were at least 10 meters of a personal library and archives.



Figure 14. Jay Haviser, Aruska Bell and myself at SIMARC

SIMARC was situated on the top floor of this building of which the walls are still standing. However, upstairs is completely shattered. Part of the roof is gone and walls have collapsed on bookshelves and



Figure 15. Alfonso Blijden, Jay Haviser and myself

showcases. Some of the artefacts, kept in plastic boxes have survived the hurricane but the books have been lying under the rubble in open rain for 2 months now. Jay Haviser has given up on trying to save his personal library. The financial archives, which were kept in a closed metal cabinet have suffered no apparent damage and were moved to a container in front of the building, which now serves as temporary office and storage place.

<http://caribischnetwerk.ntr.nl/2017/11/07/enige-archeologisch-centrum-op-sint-maarten-volledig-verwoest/>

## Historical Museum

Contact: Vida Hodge, Board member and volunteer, Elsje Bosch, ex-Director and Jerry Speentjes, owner of the building.

- Paintings, reproductions of old maps, ceramics (in or on top of an old wooden cabinet with glass doors), music instruments, artefacts of all kind (mixed materials) displayed in horizontal glass cabinets,
- Books (800)



Figure 16. First floor museum

The building suffered damage to the roof. Zinc plates were blown away as well as gutters between the museum and the building situated behind. The wooden beams and sheetrock were still in place but could not prevent the rain from pouring in the top floor of this old historical house. Because the gutter was broken, water infiltrated the walls and caused mold growth in the sheetrock. Rain has poured over bookshelves and the wet books have then been stacked up on the vitrines. Some of these books were still moist and had mild to severe mold growth. The floors are covered with carpet which dries slowly and where mold can grow too. First aid given to this collection is described further on.



Figure 17. Books piled up on horizontal vitrines

The table below gives an estimate of the damage to buildings and collections:

Locations	Damage to building	Loss of collection	Occupation
Old government building (OGB)	75% whole first floor and roof is gone	20% mostly finance	empty
New government building (NGB)	15% primarily roof and consequent infiltration	none	overfull occupation, in use
VROMI	95%	?	empty
Kadastre	5 % water infiltration so there was a layer of water on the floors	0%	In use
Courthouse	30%, primarily roof	Unknown, books have had water damage and were moved to another location.	open
St Maarten Jubilee Library	95%	?% books thrown away 0% St Maarten collection	still open!
Museum	30% primarily roof and consequent infiltration	15% loss or severe damage	closed for visitors
SIMARC	100%	25% of the archeological collection 95% of the personal library	empty except for a container in front of the building

## First aid and demonstration

First aid to documents was postponed to the last days of my stay, as we were waiting for protective materials like masks, gloves and wrapping materials that had been sent from the Netherlands. Unfortunately, it was not possible to track down their location as a large amount of help goods had been delivered to the island at the same time. So we had to improvise, protecting ourselves with what was available there.

My first concern was for the historical museum where piles of (some still damp) books needed to be sorted. We formed a team with Elsje Bosch, Vida Hodge, Alfonso Blijden, Aruska Bell-Marlin and myself wearing basic dust masks and plastic gloves and started working our way through the piles of books and other objects lying on the vitrines.

The books were separated in five stages of damage. Unsalvageable or easily replaceable books were photographed, listed and thrown away. Damp books were taken outside on the balcony and if possible, they were fanned out to dry. I also showed how to use copy paper and absorbent paper rolls interleaving them between damp pages to increase the drying.



*Figure 18. Assessing damage and Explaining the different level of damage on the books to a reporter*

Another demonstration was given (the day before to Vida) on how to get rid of superficial mold growth on dry documents. We used a Hoover, outside because we were not able to get a HEPA filter for this particular model, a gauze to cover the nozzle, attached with an elastic band and a make-up brush to brush the loose mold towards the nozzle. (see figure below)

Although the staff of the museum now has tools to continue working alone, a follow up on the conservation of damaged objects should be made. (see suggestions further on under Treatment)



*Figure 19. Vida Hodge vacuuming mold from a 19th century register*

## Health hazards and contamination

### Mold

My biggest concern now is the situation in the offices of VROMI where molded documents have been stacked between office desks. I do not know if this has also happened in other services but these objects should be packed and sealed or/and removed from the room.

The NGB is now dealing with mold growth between the ceilings and this affects the people working there, and maybe the air conditioning system as well. I do not know what type of filters this system has. Something for Marc Stappers, from the interdisciplinary mission, to look into maybe. Of course the roof should be fixed first!

The same concern is with archives that have been left behind in different buildings, like in the OGB where conditions are not good. There is no electricity, so no air conditioning and although they have not suffered damage, I am afraid that within a relatively short period of time, mold will start developing. It is very important that they be checked thoroughly before they are moved into a clean storage space. It would be a shame if they were to contaminate a sound archive. Also if they should end up in offices where people have to work.

Regarding the wet books from the courthouse library, I am very concerned that there might be an outburst of mold growth within the boxes and maybe contamination of the archives where they have been brought to.

## Ozone

I understand that spaces and collection have been disinfected using an ozone machine, spreading the ozone gas with blowers. It is a method that I am not familiar with. I only know that it has been experimented for bleaching documents. Alfonso Blijden has also noticed that it does slightly bleach (paper and ink) so I would recommend using it for spaces but not too often on documents.

For the same reason, I would not recommend putting copy machines, which are known to emit ozone, in storage spaces or near office desks.

## Recommendations

- Move archives out of spaces without climate control
- Control archives on mold before they are moved to new buildings
- Wash and disinfect bookcases before moving them to a new storage
- An air conditioned container could be used as a quarantine room where moist (not wet!) archives can dry before being moved, and where mold control can take place, as well as removal of dry mold by vacuum cleaning.
- Inquire about freezing facilities and possibilities of freeze-drying, as well as capacity. Staff from the Museum have found a company, Prime Distributors, that could freeze in books or objects. I did not have enough time to contact them.
- Prepare for the next disaster, working together with the Archives on the French side who had an emergency plan and have been using it. Stephanie Dargaud, director of the Archives at Saint Martin, can give a lecture on how they applied the plan and how it can still be improved in the aftermath of hurricane Irma.
  
- Designate one person to coordinate and centralize activities and give him or her a budget to implement recommendations and hire local help.

## Needs

### Building

There is a general consensus that a separate national archive should be built in order to house the static archives. Plans could be made for a larger storage unit, containing not only the growing archive but also valuable archives from other government departments as well as library and museum collections. Some 2 years ago, Head of RIM, Ingrid Gumbs-Arrindell, has made a proposal for a National Archive, but politics has not followed up on the project. Daphne Thomas, acting department head of Culture, Denise Warner from Civil registry and Marcia Peterson-Richardson from Kadastre, as well as Jay Havisser (SIMARC) and Monique Alberts (Library) support the plan for a common storage, and even a common building! But that might be impossible because of too many parties involved.

Whatever building it is, a quarantine space needs to be present in order to control incoming archives as well as a work space for simple conservation practice.

Maybe even a shelter to be on location after a disaster and provide first aid.

A generator and solar panel system to generate power if necessary.

## Equipment and tools

Thermohygrometers to monitor temperature and humidity, a museum vacuum cleaner with HEPA filters, a book or map scanner to scan fragile or damaged documents, a fume hood could be useful when large amount of mold have to be brushed of.

A freeze drying unit or a vacuum drying unit, depending on maintenance and available parts and know how on the island.

Masks with replaceable filters.

Smoke sponges to remove dust and dirt from paper, soft brushes and spatulas to separate pages.

## Treatment

None so far, except for dry removal of mold growth.

Most of the treatment should occur in the Historical Museum:

The cover of an old register from the Museum needs to be restored by a book conservator.

After the triage (we started doing at the museum) is finished, the most damaged books should be individually examined and sorted again, separating what is replaceable and of historical value. The books that are irreplaceable and considered cultural heritage should then be photographed and damage described as much as possible. Only then can a book conservator make a treatment evaluation.

For the rest treatment consists of dry removal of mold growth and disinfection with a mix of 1:3 (ethanol in water)

There was not enough time to assess all the other objects in the museum made of very different materials. Some paintings have been sorted in level of damage and put aside. Most of them are covered with mold and some paint layers are flaking. Other artifacts spread around the room are made of wood, metal, ceramic and other mixed materials, like for instance the music instrument collection. All objects hanging on walls should be removed, but further treatment needs to be assessed by paintings and objects conservators.

I am willing to set up a team of conservators who could carry out treatment on St Maarten or on Curaçao. I would look for specialists locally as much as possible or who have experience with treating objects in a tropical environment.

## Disaster preparedness

An emergency kit should be put together using the materials that have been sent from the Netherlands Making a plan in cooperation with Blueshield and seeking advice from the Archives on the French side, who implemented their Emergency Plan with satisfying results, even though Stéphanie Dargaud says there is room for improvement. Fortunately, cooperation with the French side is possible and welcome.

## Training and workshops

The following subjects and goals of the trainings should be:

- To increase awareness on preservation of historical and cultural heritage.
- To give basic knowledge of materials, especially paper and the necessity of preventive conservation.
- To learn how to give first aid to books and paper archives in case of flooding, using materials and equipment listed above.

I could give these courses myself or in combination with staff from the National Archives in the Netherlands. My impression is that guidance is welcome and it might be useful if I could go back to St Maarten to follow up on the implementation of my recommendations.

Alfonso Blijden is currently organizing a meeting of Unesco on St Maarten, planned before the end of the year, with speakers and workshops. He has invited Stéphanie Dargaud to share her experience on their Disaster preparedness plan.

## Conclusion

Despite the fact that Hurricane Irma has destroyed many buildings, most of the historical heritage on paper has been spared. The oldest documents, from the 19th century, were not damaged by the hurricane because the buildings storing them sustained the storm with little or no damage. They represent a rather small volume, approximately 50 to 60 meters of documents. These archives nevertheless need often better housing materials and climate control.

The books from libraries and museum that have been destroyed are often from the 20<sup>th</sup> century and hopefully, most of them can be replaced with the necessary funding. A list of damaged books has not been provided.

20<sup>th</sup> century archives are more difficult to evaluate and are spread out over so many buildings. This assessment is hard to make as I believe that not all government services have kept count of their archives. So far the only archives that have been officially registered are kept in the new storage unit. The volume of the archives left in the OGB still needs to be evaluated. Some of them (mostly from Finance I believe) have been stored for years in several containers outside the building, with no further care given to them. Some containers were rusty and had leaking roofs, even before Irma. They represent a serious health hazard and nobody wants to assess their content, quite understandably.

The new policy (2010) is to digitalize archives as much as possible from the moment they are registered, using a system called DECOS. All parties in the government do not always see this trend as a positive development. Unfortunately, St Maarten has to face much political unrest and regular changes of government, which makes it difficult to implement long-term policies. And long term planning is what conservation is all about!