

ONLINE SESSION

CLIMATE IMPACT ATLASES:

EXPERIENCES AND INSPIRATION FROM THE DUTCH CARIBBEAN

The session will focus on the development and application of Climate Impact Atlases - open-access tools designed to support climate resilience.

It will showcase the use of these atlases in the Dutch Caribbean islands.

WEDNESDAY 8 OCTOBER

10:00 - 11:00 CET



Moderated by

Jim Lilly

*IPDC Country Coordinator Bangladesh
Disaster and Flood Risk Specialist, Deltares*

Practicalities

- ◆ Post your questions in the chat!
- ◆ Please turn your microphone off during presentations

Today's program

Opening and Introduction

*Jim Lilly
Sonja Pans*

Climate Impact Atlases in the Dutch Caribbean

Subtitle

*Kim van Nieuwaal
Amber van de Kerkhof*

Application of Climate Impact Atlases

Subtitle

Sjon van Dijk

Interactive Discussion

All

Reflection and Closing

Jim Lilly

Opening words by the IPDC



Sonja Pans

*IPDC Secretariat
Senior advisor, Deltares*

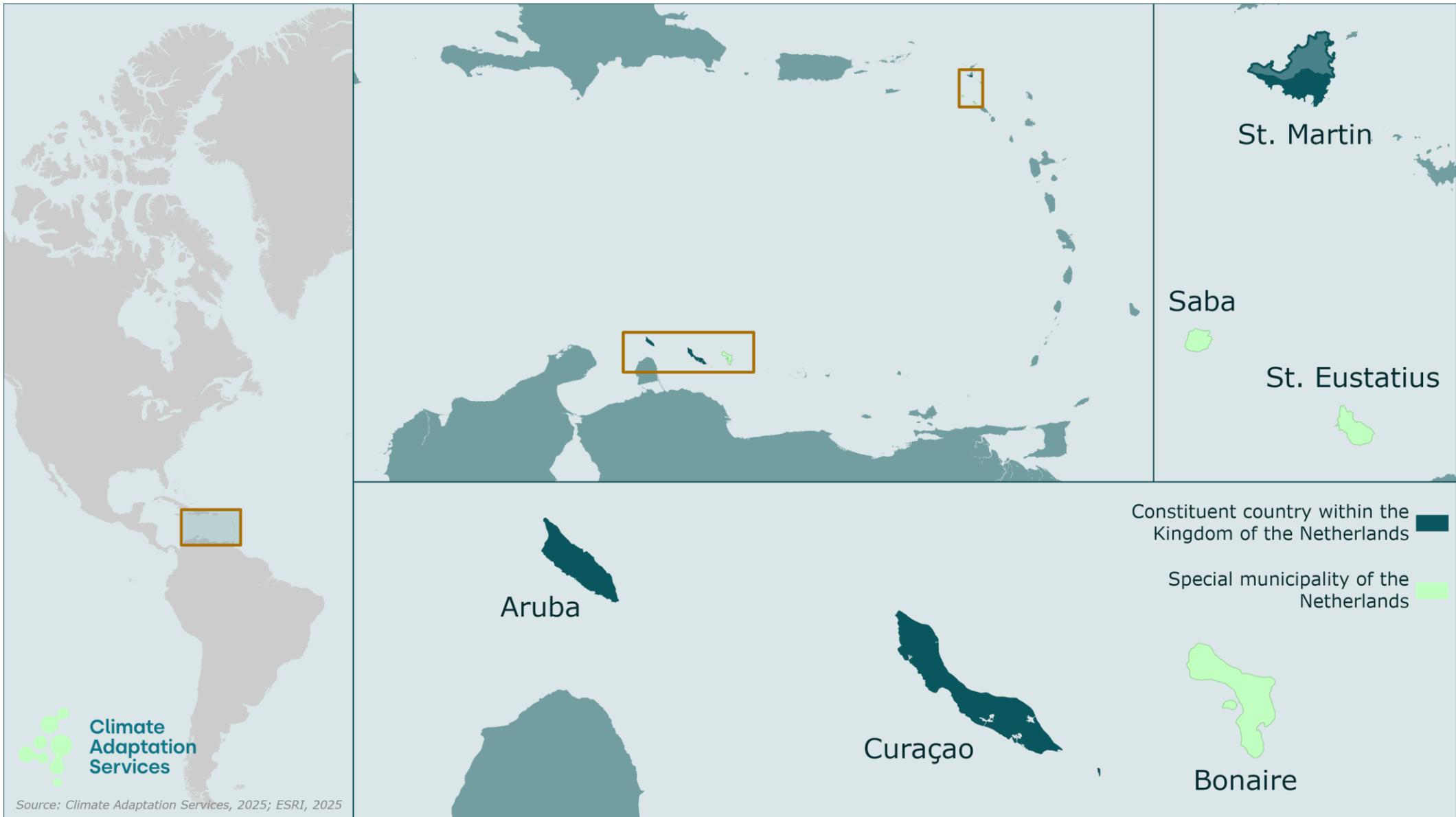
Climate Impact Atlases in the Dutch Caribbean



Kim van Nieuwaal
IPDC Management Team
Climate Adaptation Services (CAS)



Amber van de Kerkhof
Climate Adaptation Services (**CAS**)



Dutch Caribbean islands mentioned in NAS-NL-2016 and in forthcoming NAS-NL-2025



The Caribbean Netherlands

A separate plan

Climate-related issues in the Caribbean Netherlands are significantly different to those in Europe and demand a separate plan. During the first half of 2017, the Ministry of Infrastructure and the Environment will hold talks with the 'special municipalities' of Bonaire, Sint Eustatius and Saba, and will offer assistance in producing a climate adaptation strategy. Should they so wish, the autonomous islands of Aruba, Curaçao and Sint Maarten can avail themselves of the same opportunity, subject to the approval of Interparliamentary Council of the Kingdom.

IPDC DUTCH CARIBBEAN TIMELINE UP TO NOW



December, 2022
Regional Conference
Curaçao



March, 2024
Working Conference
Rotterdam



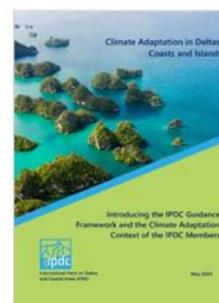
August, 2024
IPDC Dutch
Caribbean Scoping



March, 2023
IPDC Launch
New York



May, 2024
IPDC Report with input from
Dutch Caribbean



Co-designed
projects that
strengthen island
adaptation plans



Curaçao



Aruba



St. Martin



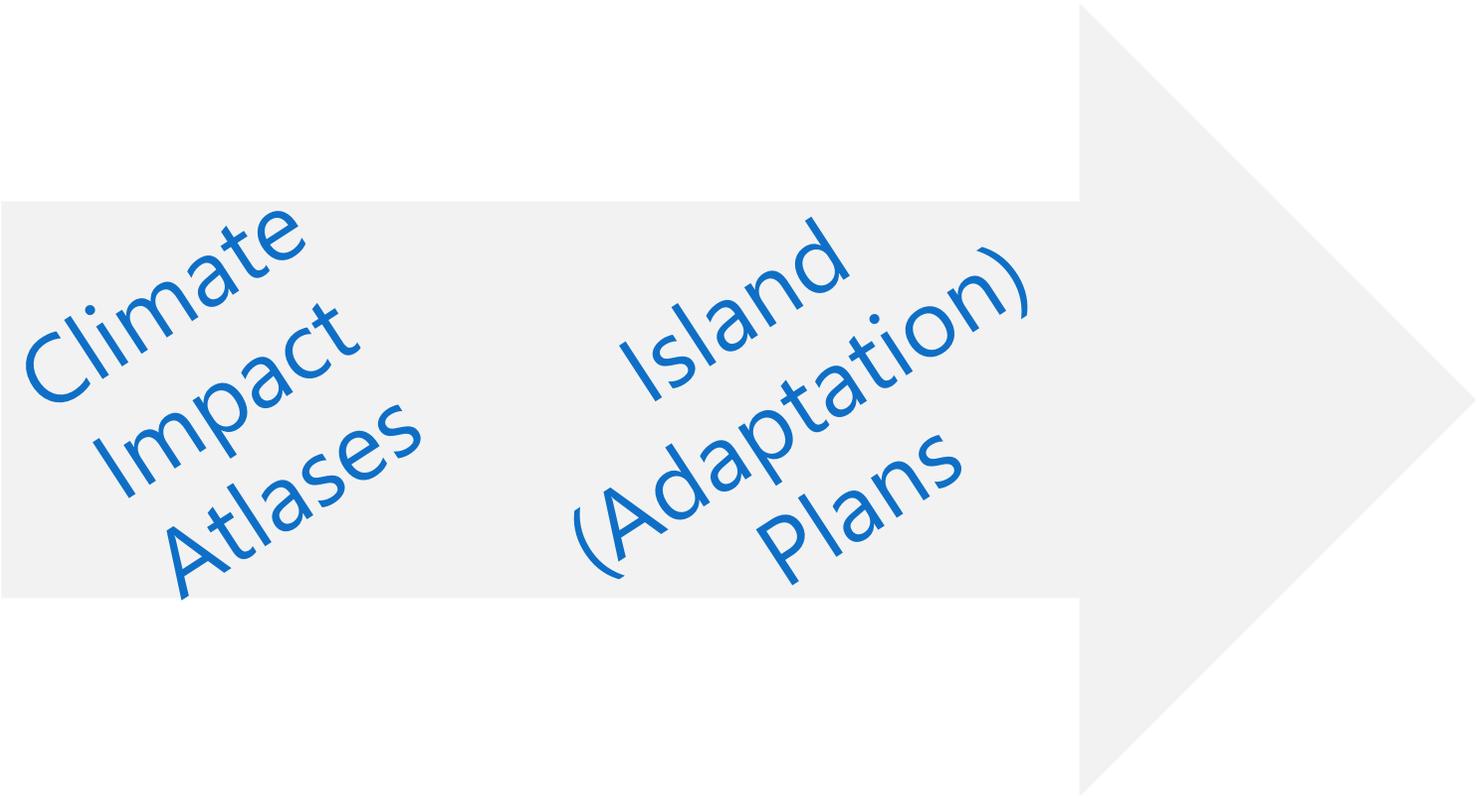
Bonaire



St. Eustatius

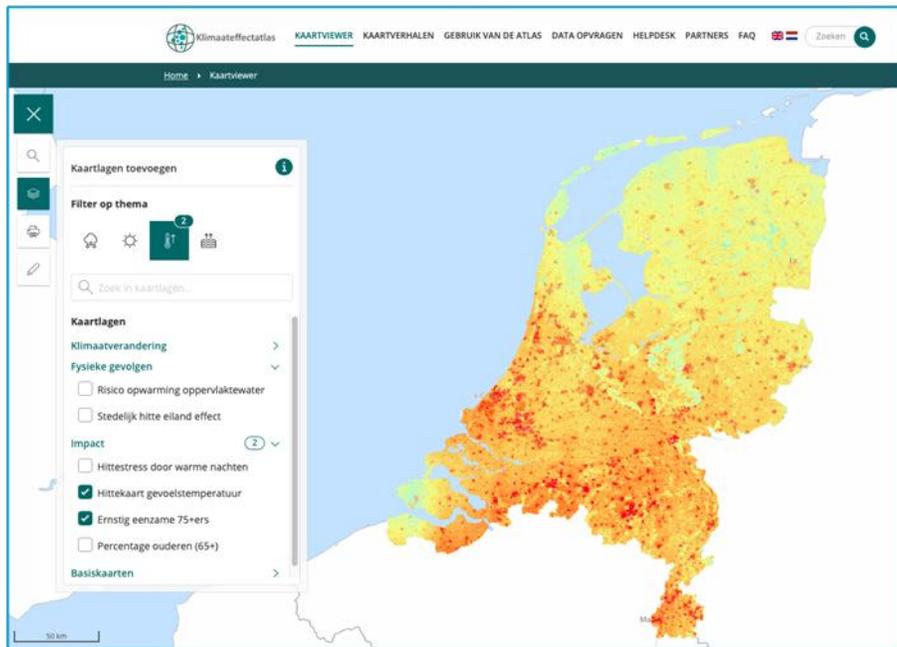


Saba



Model of the Netherlands – coordinated by CAS - as source of inspiration for Dutch Caribbean

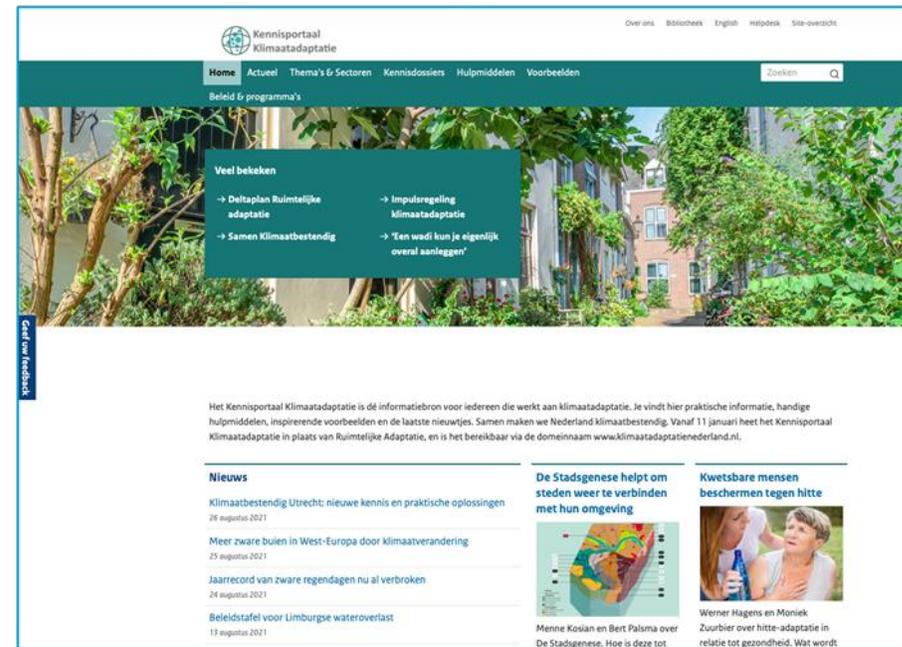
Climate Impact Atlas



klimaateffectatlas.nl/en/
~ 500 visitors / day



Knowledge Portal



climateadaptationplatform.nl
~ 1500 visitors / day

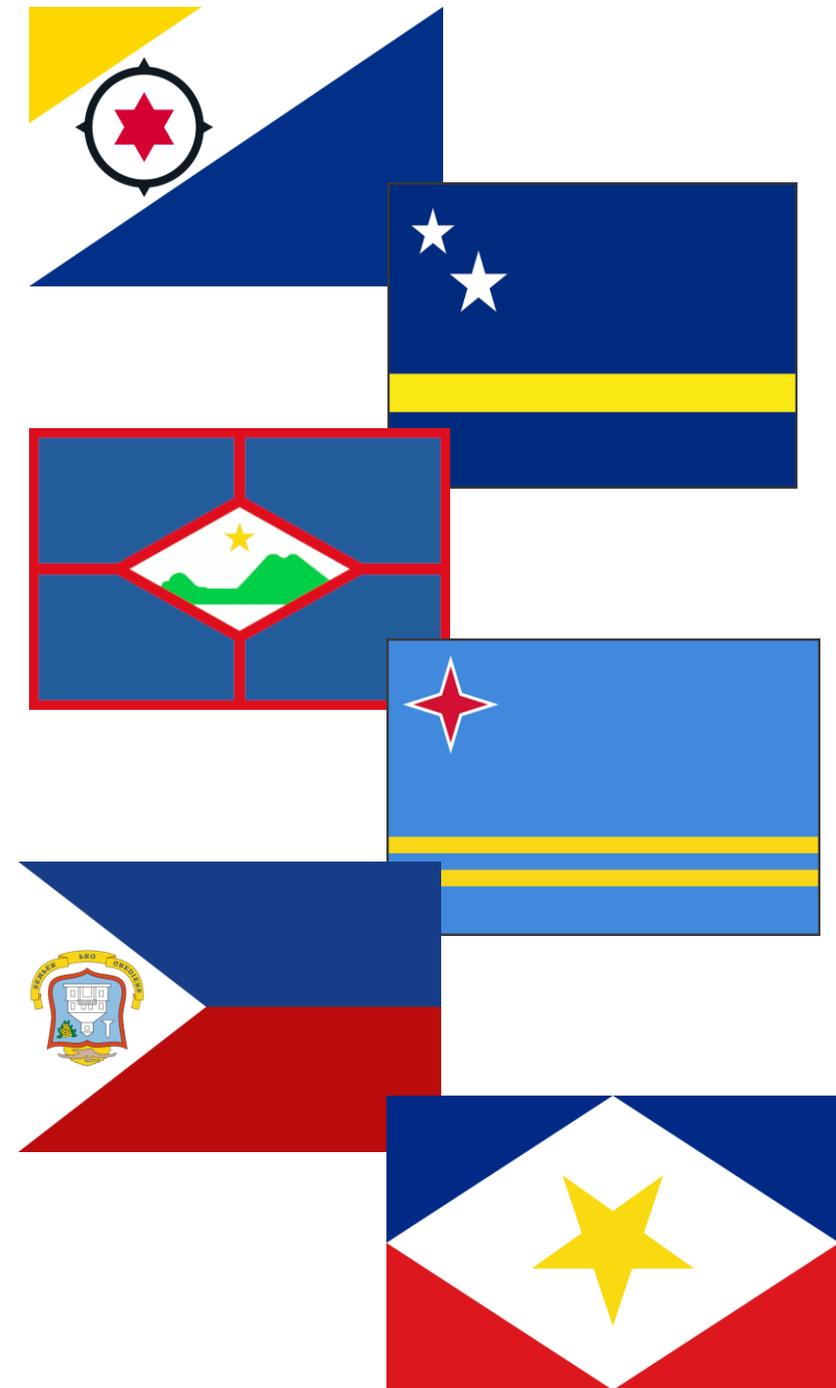


With local partners, NGOs, knowledge institutes, businesses & government

A real joint effort!



Let's take a closer look at the Climate Impact Atlases



Why develop a Climate Impact Atlas?

- We need local data to act: National plans need tailored, local-level (down-scaled) climate data to make evidence-based decisions.
 - Aim: work together with local parties, to incorporate local expertise & tailor to each island's context and needs.
- The Climate Impact Atlas is an action tool: A digital, open-access website & map showing risk hotspots, vulnerabilities, and climate trends, helping decision-makers, businesses and communities to plan smarter.



The Climate Impact Atlases of the Dutch Caribbean

Curaçao

Over ons FAQ Andere atlasen  Zoeken

Climate Impact Atlas
Aruba

HOME KAARTEN KAARTUITLEG KLIMAATGEVOLGEN KLIMAATSTATISTIEKEN VERHALEN HELPDESK DATA OPVRAGEN

Statistieken

Infographics over veranderingen in temperatuur, orkanen, neerslag en zeespiegelstijging.

[Ga naar de statistieken](#)

Kaarten

In de viewer voor Aruba staan alle kaarten met een korte uitleg.

[Ga naar de kaarten](#)

Kaartuitleg

De kaartuitleg geeft achtergrondinformatie bij de belangrijkste kaarten.

[Ga naar de kaartuitleg](#)

Klimaatgevolgen

De mindmap geeft een overzicht van de gevolgen van klimaatverandering.

[Ga naar de mindmap](#)

Verhalen

De verhalen laten u de belangrijkste klimaatgevolgen ervaren en mogelijke oplossingen zien.

[Ga naar de verhalen](#)

Kennisportaal Klimaatadaptatie

Wil je meer weten over klimaatadaptatie in het caribisch deel van het Koninkrijk der Nederlanden?

[Bekijk het Kennisportaal](#)

Aruba

Over ons FAQ Andere atlasen  Zoeken

KlimaKòrsou

HOME KAARTEN KAARTUITLEG KLIMAATGEVOLGEN STATISTIEKEN VERHALEN HELPDESK DATA OPVRAGEN

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Meer weten over de klimaatplannen van Curaçao?

Het Kennisportaal Klimaatadaptatie geeft meer informatie over klimaatadaptatie in het Caribisch deel van het Koninkrijk der Nederlanden.

[Ga naar het Kennisportaal Klimaatadaptatie](#)

BES islands

Over ons FAQ Andere atlasen  Zoeken

Climate Impact Atlas
Bonaire, Sint Eustatius & Saba

HOME KAARTEN KAARTUITLEG KLIMAATSCENARIO'S HELPDESK DATA OPVRAGEN

Bonaire

Bekijk de informatie over klimaatverandering voor Bonaire.

[Ga naar de pagina](#)

Sint Eustatius

Bekijk de informatie over klimaatverandering voor Sint Eustatius.

[Ga naar de pagina](#)

Saba

Bekijk de informatie over klimaatverandering voor Saba.

[Ga naar de pagina](#)

Meer weten over klimaatadaptatie?

Wil je meer weten over klimaatadaptatie op de eilanden?

[Bekijk het Kennisportaal](#)

St Martin

Coming soon!
Launch 2025



Visit the atlases

at: <https://www.klimaat-effectatlas.nl/en/caribbean-atlases>

The 6 components of the atlases

Map explanations

The map explanations provide background information on the most important maps.

[Go to the map explanations](#)



Climate statistics

Information on changes in temperature, rainfall, wind speed and sea level rise.

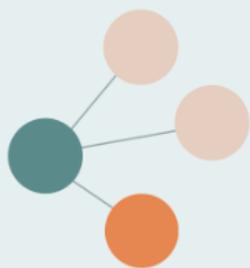
[Go to statistics](#)



Climate impacts

The mind map gives an overview of the impacts of climate change.

[Go to the mind map](#)



Stories

The stories illustrate how climate changes are affecting the people on St. Martin and what we can do about it.

[Go to the stories](#)



Maps

The map viewer for Aruba contains all the maps with a brief explanation.

[Go to the maps](#)



Knowledge Portal

Do you want to know more about climate adaptation in the Caribbean part of the Kingdom of the Netherlands?

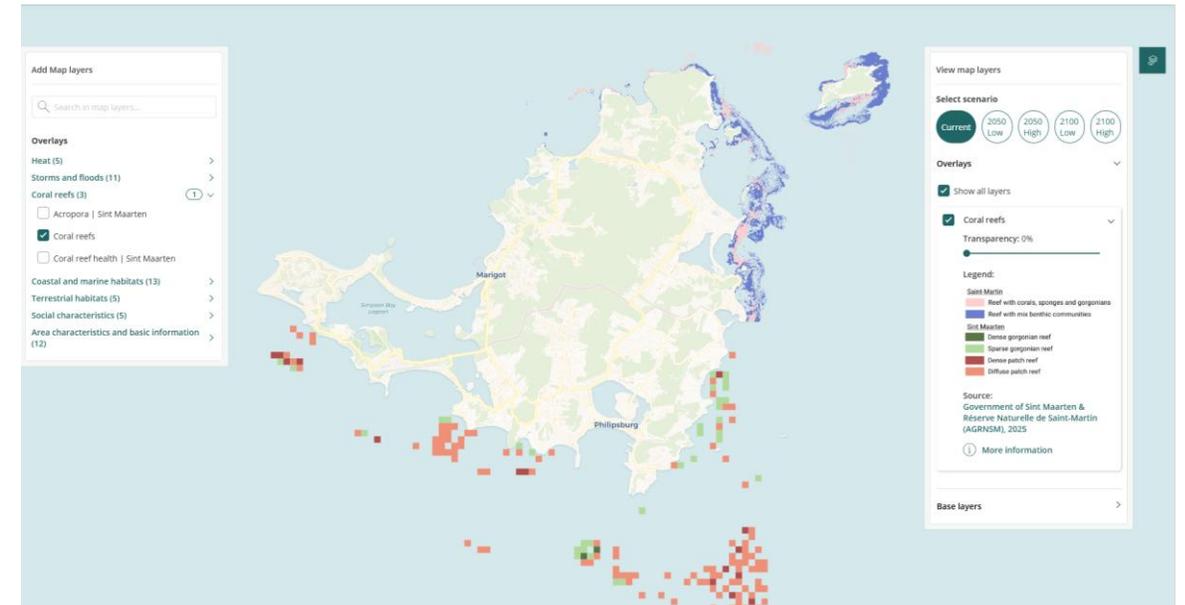
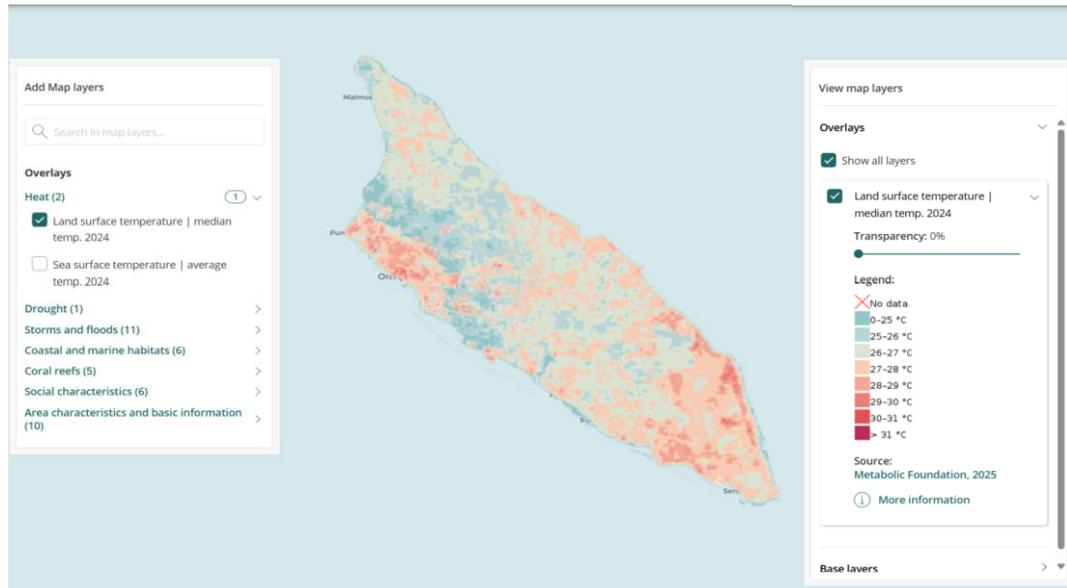
[View the Knowledge Portal](#)

A demo of a Climate Impact Atlas

The screenshot shows a web browser displaying the Climate Impact Atlas for Aruba. The browser's address bar shows the URL <https://aruba.climateimpactatlas.com/en/>. The website's navigation menu includes links for HOME, MAPS, MAP EXPLANATIONS, CLIMATE IMPACTS, CLIMATE STATISTICS, STORIES, HELPDESK, and DOWNLOAD DATA. The main content area features six interactive cards:

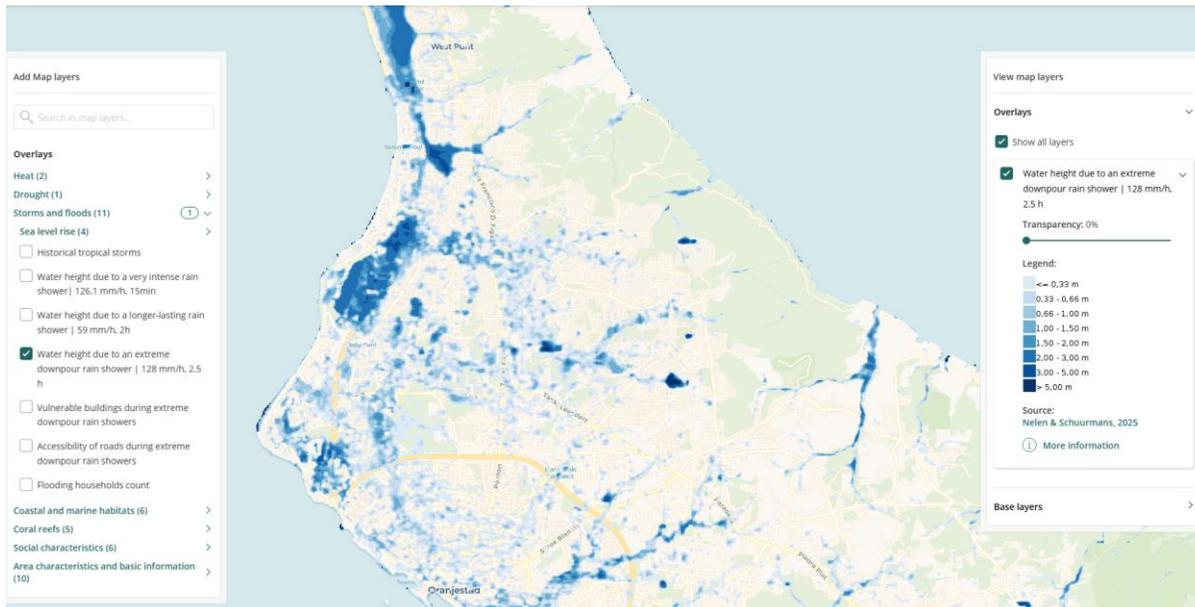
- Statistics:** "Infographics on changes in temperature, tropical storms, precipitation and sea level rise." Includes a "Go to statistics" button and an illustration of a sun, rain, and water.
- Maps:** "The map viewer for Aruba contains all the maps with a brief explanation." Includes a "Go to the maps" button and an illustration of a map of Aruba with a magnifying glass.
- Map explanations:** "The map explanations provide background information on the most important maps." Includes a "Go to the map explanations" button and an illustration of a map of Aruba with an information icon.
- Climate impacts:** "The mind map gives an overview of the impacts of climate change." Includes an illustration of a mind map.
- Stories:** "The stories provide illustrative narratives of key climate impacts and potential solutions." Includes an illustration of a sun, clouds, and a tree.

1. The map viewer: Maps presenting the existing knowledge base



2. Map Explanations give context and tools for adaptation

- A map explanation provides context and background information to a map on the map viewer.
- The map explanation gives insight into how a map can be interpreted and used.
- Guideline to possible measures and solutions.



The screenshot shows a web browser displaying a map explanation page. The browser address bar shows the URL: <https://aruba.climateimpactatlas.com/en/water-depth-during-short%2C-heavy-rain-showers>. The page header includes the 'Climate Impact Atlas Aruba' logo and navigation links: HOME, MAPS, MAP EXPLANATIONS, CLIMATE IMPACTS, CLIMATE STATISTICS, STORIES, HELPDESK, and DOWNLOAD DATA. The main content area has a title 'Water height during short, heavy rain showers' and the location 'Aruba'. To the right of the text is a diagram showing a house and a vertical scale bar, with water level rising to the roofline. The diagram is a semi-circle with a blue upper half and a brown lower half, representing water and land respectively.

3. Mindmaps including local knowledge

Climate Impact Atlas Aruba

HOME MAPS MAP EXPLANATIONS CLIMATE IMPACTS CLIMATE STATISTICS STORIES HELPDESK DOWNLOAD DATA

The mind map shows an overview of climate change impacts on Aruba, based on the [Climate Impacts of Aruba report](#). Select a theme below.

Its getting warmer

Its getting drier

Storms, rains & cyclones

Warmer and more acid sea

The sea level is rising

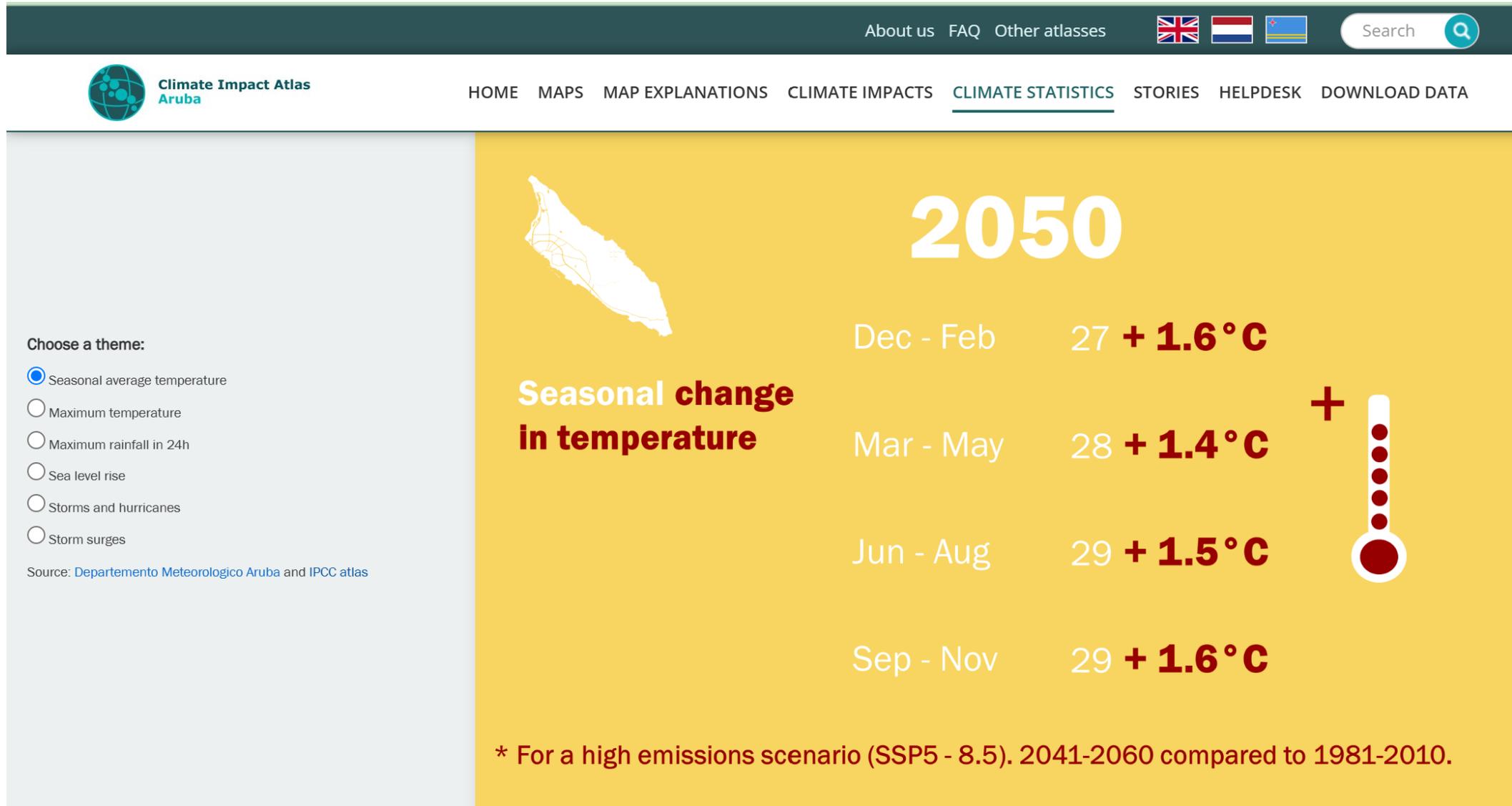
Changing wind

Legend

- Climate theme
- Climate hazard
- Economic impact
- Socio-cultural impact
- Environmental impact
- Identified during workshop



4. Climate statistics show future climate trends



Curaçao



TSEAN AND THE RISING SEAWATER

Tsean and his best friend Luka notice that part of the sandy shore has disappeared and the waves are coming farther than before. They go to Mr. Terry to ask what is going on.

[Go to the story >](#)



LISA AND THE EXTREME HEAT

On a scorching hot day, lottery saleswoman Lisa faints. Fortunately, Ella is there to help her. They talk about the increasing heat in Curaçao. What can you do to protect yourself?

[Go to the story >](#)



THE DRY DAYS OF FARMER OMAR

Due to the drought, Farmer Omar is finding it increasingly difficult to grow his crops properly. His peanut and corn yields are lower than ever. Wildfires are also more frequent.

[Go to the story >](#)



JAY AND THE WARM SEA

Diving instructor Jay tells his group of students that the coral is fading and there are fewer and fewer fish than usual swimming around. Fisherman Buchi notices it too, he has to go further and further out to sea to catch enough.

[Go to the story >](#)



CHRISSY AND THE WIND OF CHANGE

With climate change, the wind changes direction more often. It also blows harder more often. Chrissy and her father Terry notice it when they want to surf in the Sint Jorisbaai. Then it starts to rain...

[Go to the story >](#)



THE STORM

A sunny day suddenly turns into a day of panic. Everyone is bracing for a big storm. But if the residents are well prepared and help each other, they can meet any challenge.

[Go to the story >](#)

Aruba



THE REEF RESET

In a quest to heal Aruba's ocean, Michelle restores reefs and plants mangroves. But as the tide rises, her uncle helps her see that saving paradise takes more than points and perfect timing.

[Go to the story >](#)



THE TURN OF THE TRADEWIND

Eager to train with windsurfing legend Sarah-Quita Offringa, Jonathan wakes to a strange Aruba where winds shift wildly and the ocean is covered in thick, brown seaweed. A surreal lesson on the water leaves him wondering if it's just a dream... or a glimpse of the future.

[Go to the story >](#)



THE SILENCE AFTER THE STORM

After her home floods during an extreme rainstorm, Kimberly presents a 'what if' tale imagining Aruba's future under climate change. But as her classmates listen, they begin to realize her story isn't so fictional after all.

[Go to the story >](#)



THE LAST SCAN

On a futuristic mission, Captain Figaroa explores a scorched, uninhabitable Aruba, where invasive species spread unchecked, beaches lie empty, and towns crumble in the heat. When the film ends, two teens leave the theater wondering: how close are we to this reality?

[Go to the story >](#)



Climate
Adaptation
Services

6. The Knowledge Portal gives insights in adaptation measures and information

- The Caribbean part of the Kingdom of the Netherlands - Climate Adaptation Platform Netherlands

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and platforms

The Caribbean part of the Kingdom of the Netherlands

Welcome to the knowledge portal section on the Caribbean part of our Kingdom. This section presents information on climate change and on the steps that the Caribbean islands of Aruba, Curaçao, Sint Maarten, Bonaire, Sint Eustatius, and Saba can take to adapt to the consequences.



Why does this knowledge portal feature a separate section on the Caribbean islands?

Climate change has a major impact on the Caribbean islands. Furthermore, the consequences of climate change differ sharply from those faced by the European Netherlands. Therefore, it is important for these islands to have a dedicated central location where they can find climate information. This is

Lessons and conclusion

- The climate impact atlases provide the Dutch Caribbean islands with available data to support **informed decision-making**.
 - Close the gap between what is needed and what is produced may be facilitated with iterative development of the atlas.
- Tailoring to the Caribbean context is possible thanks to the shared effort of local and regional expertise, which is prioritized in the development of the atlases.
 - Capacity is a main challenge; regional knowledge sharing may help parties combine and profit from each other's effort and help capacity building.
- Mind maps of climate impacts are incorporated to include local knowledge.
- The included climate stories make the atlas a **climate awareness** tool, making climate impacts more tangible for the general public.

Visit the atlases at: <https://www.klimateffectatlas.nl/en/caribbean-atlases>

Application of Climate Impact Atlases



Sjon van Dijk

Nelen & Schuurmans
Flood Modeller

Application of Climate Atlases – the Flood map Case

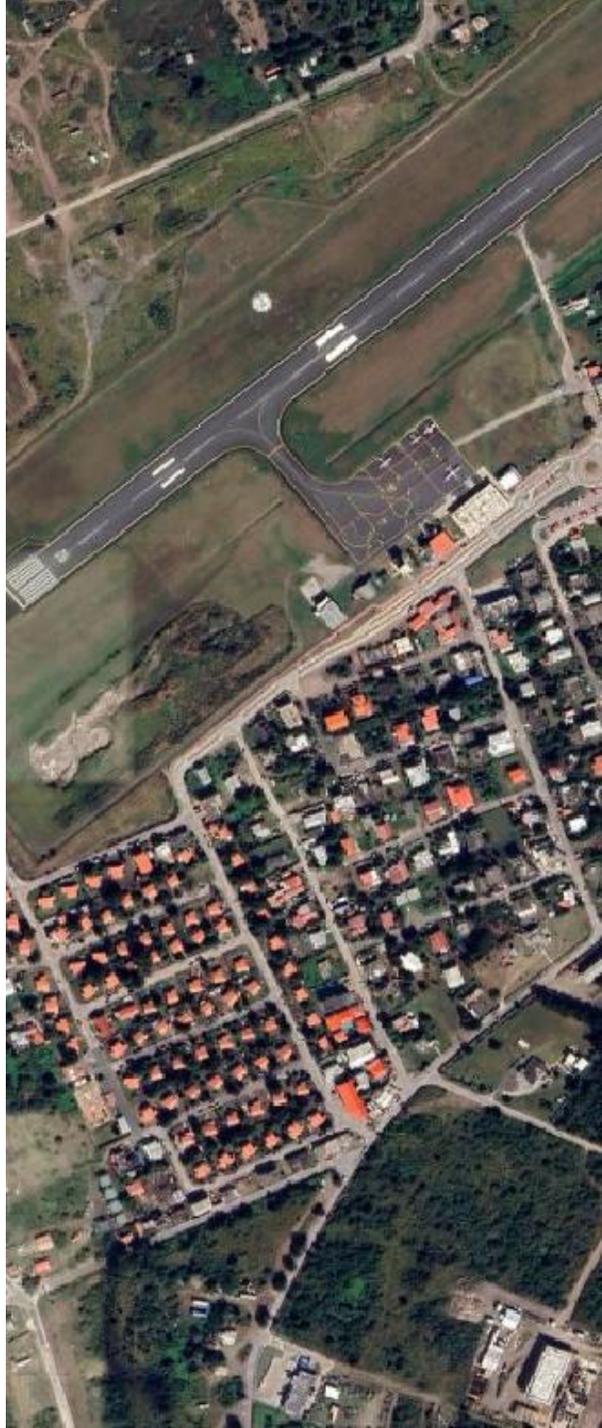


Approach

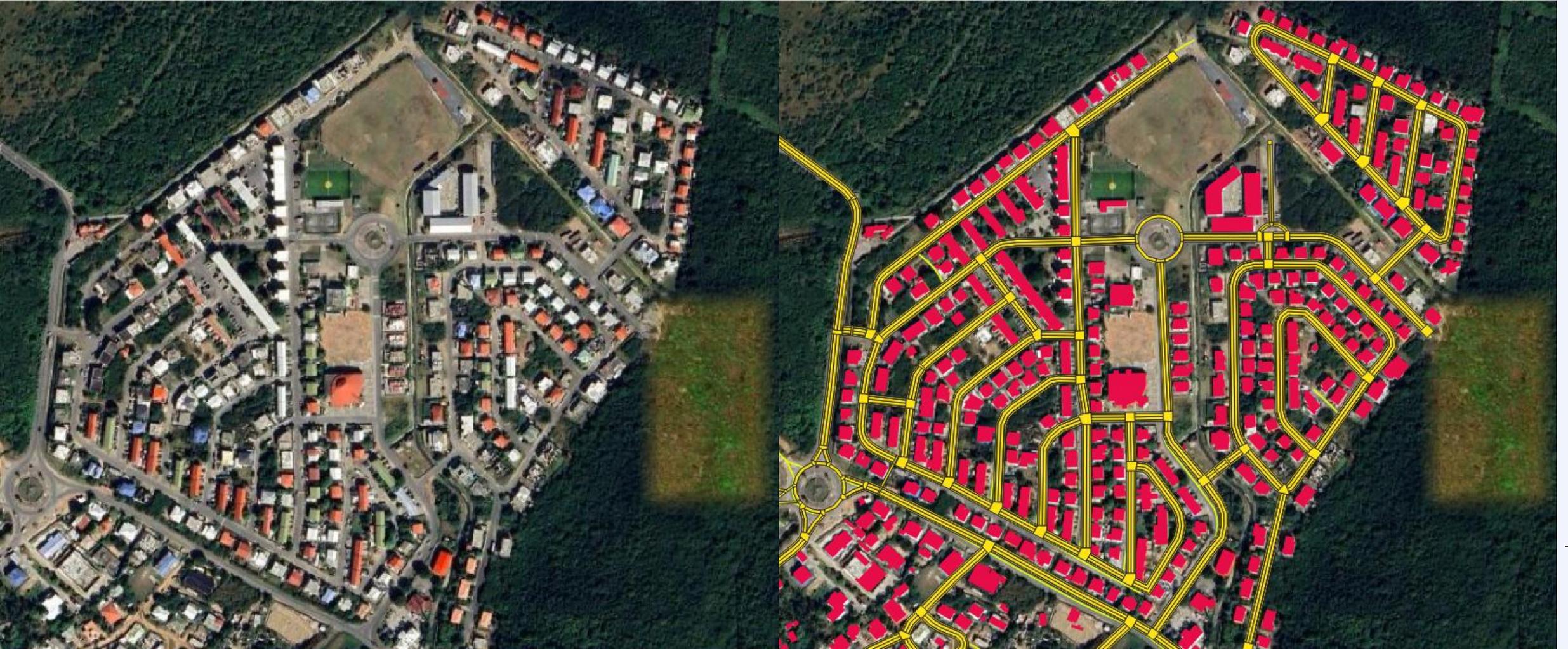
- We gather flood modelling inputs.
- Our priority is local data, stories and knowledge.
- We fill the gaps with open data.



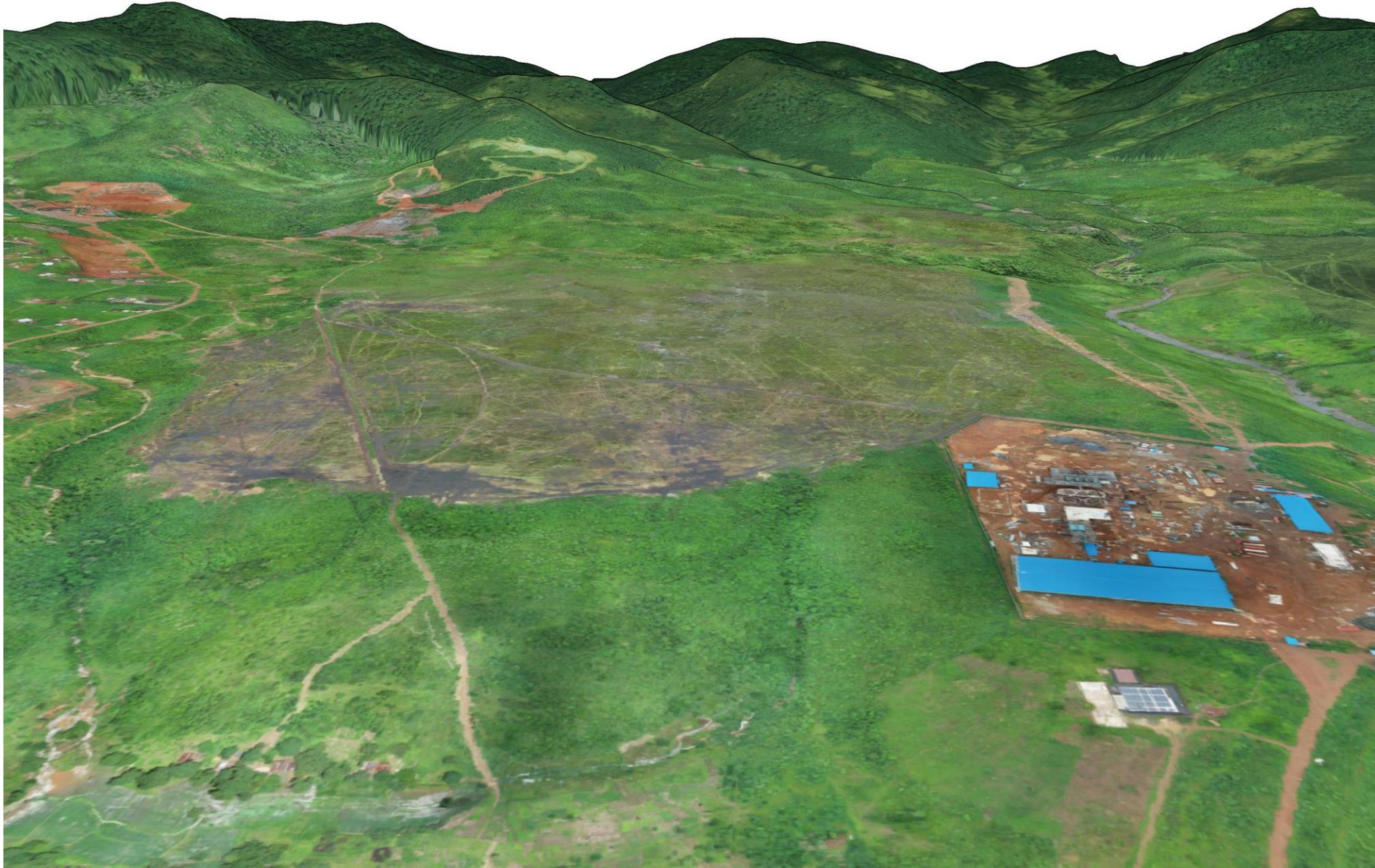
Better inputs lead to improved flood modelling



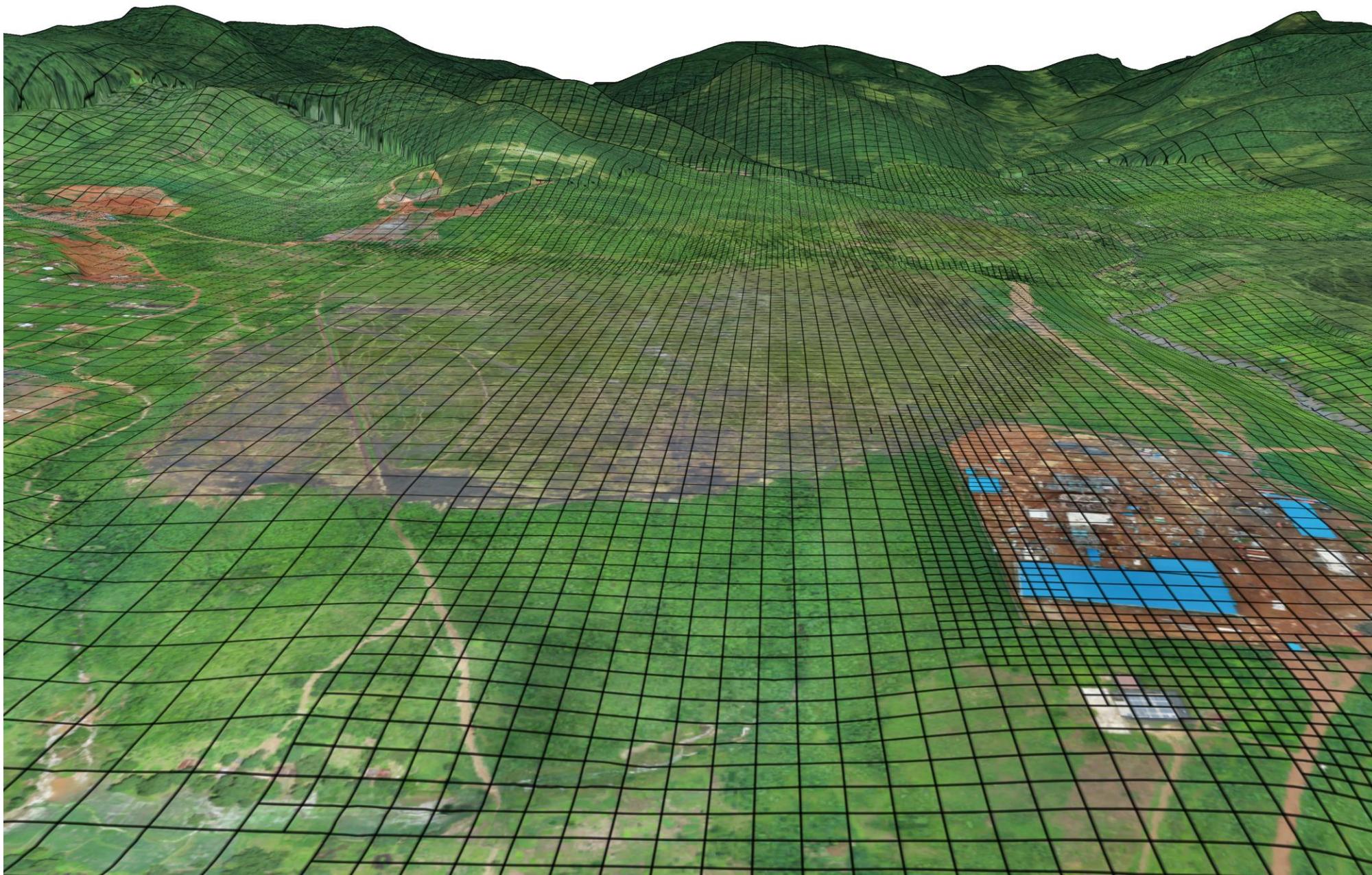
If no local data is available, open data is used.



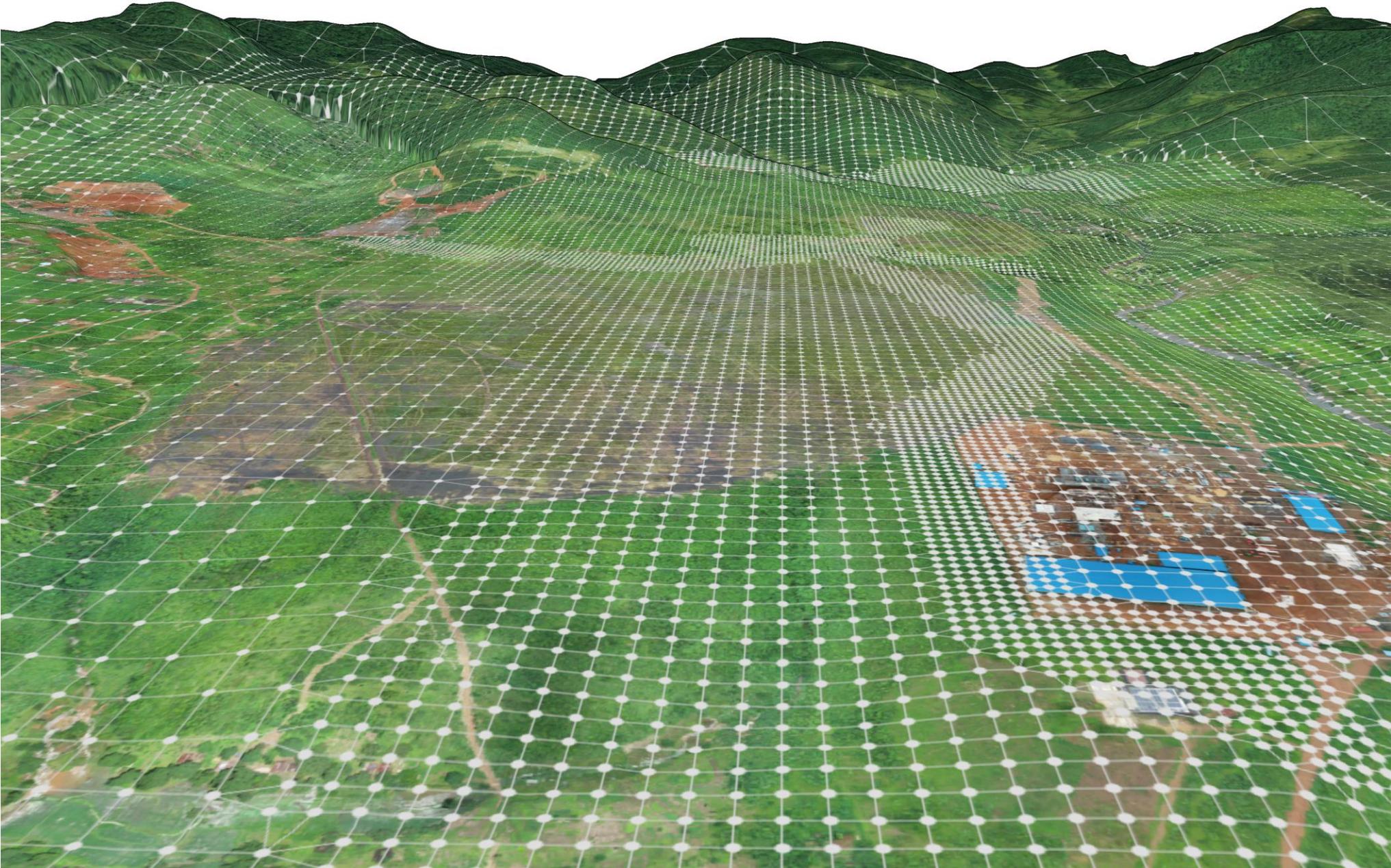
Digital Elevation Model



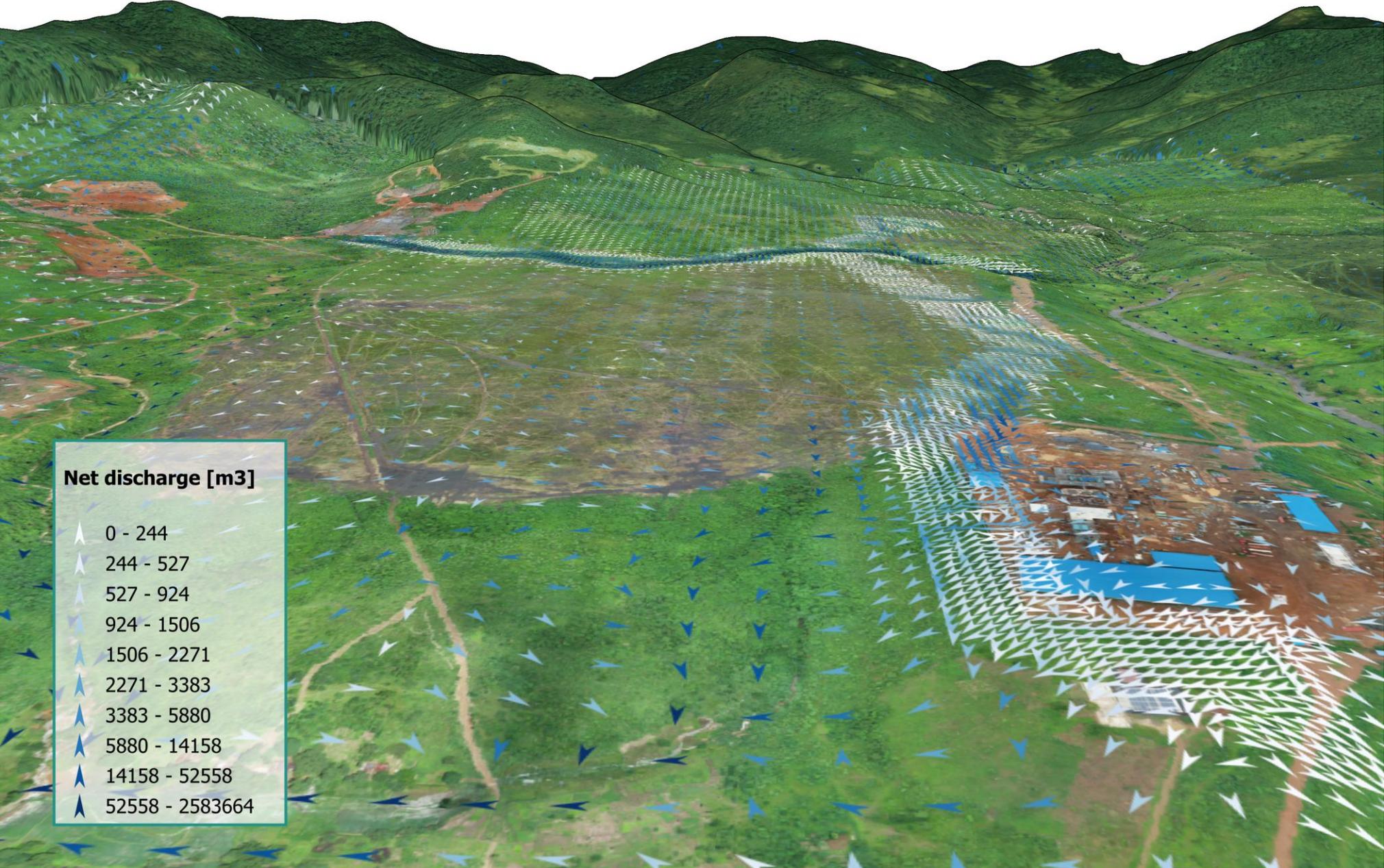
Computational Grid



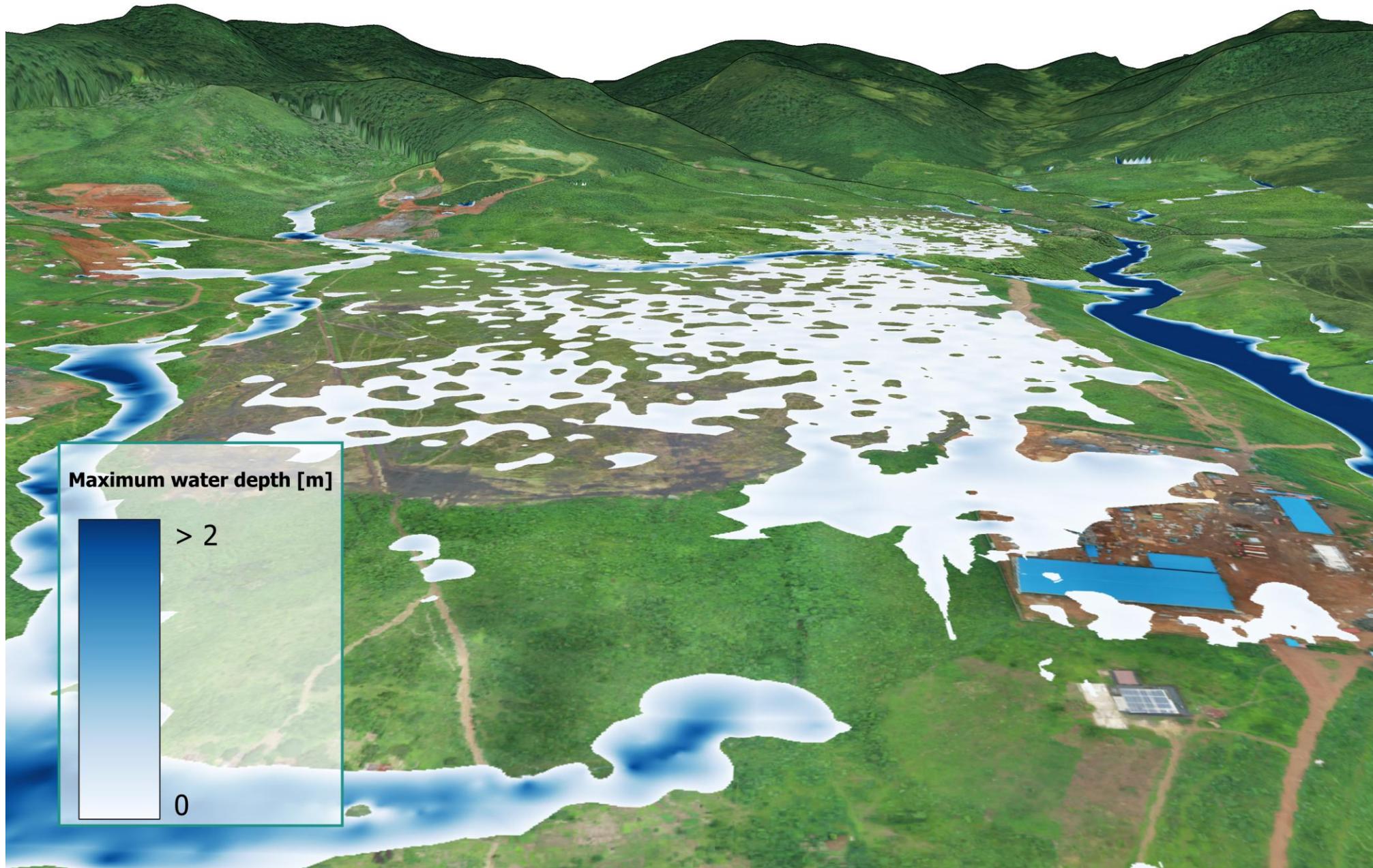
Model Flowlines



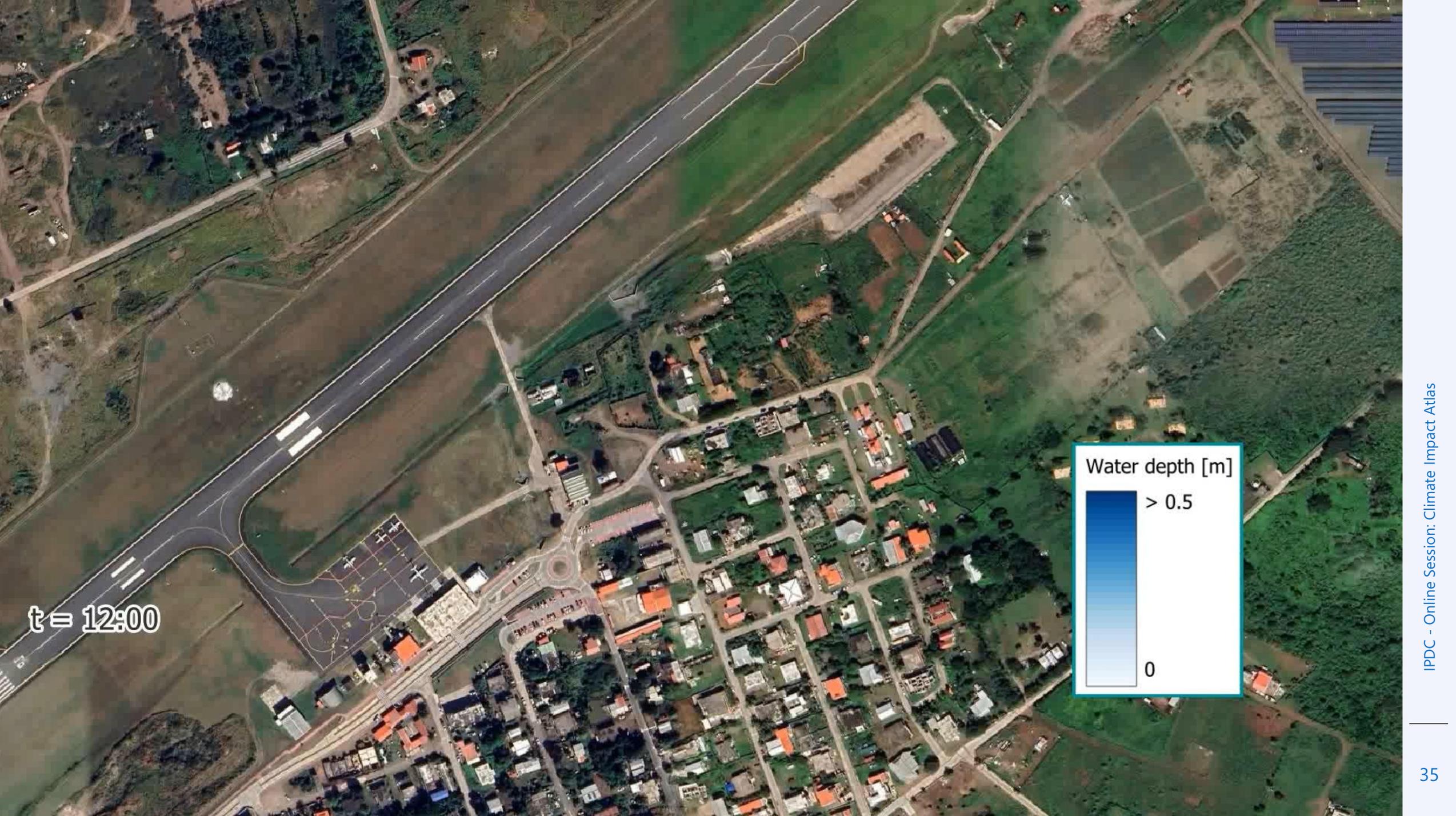
Flow Pattern from Rain Event



Maximum Water Depth from Rain Event

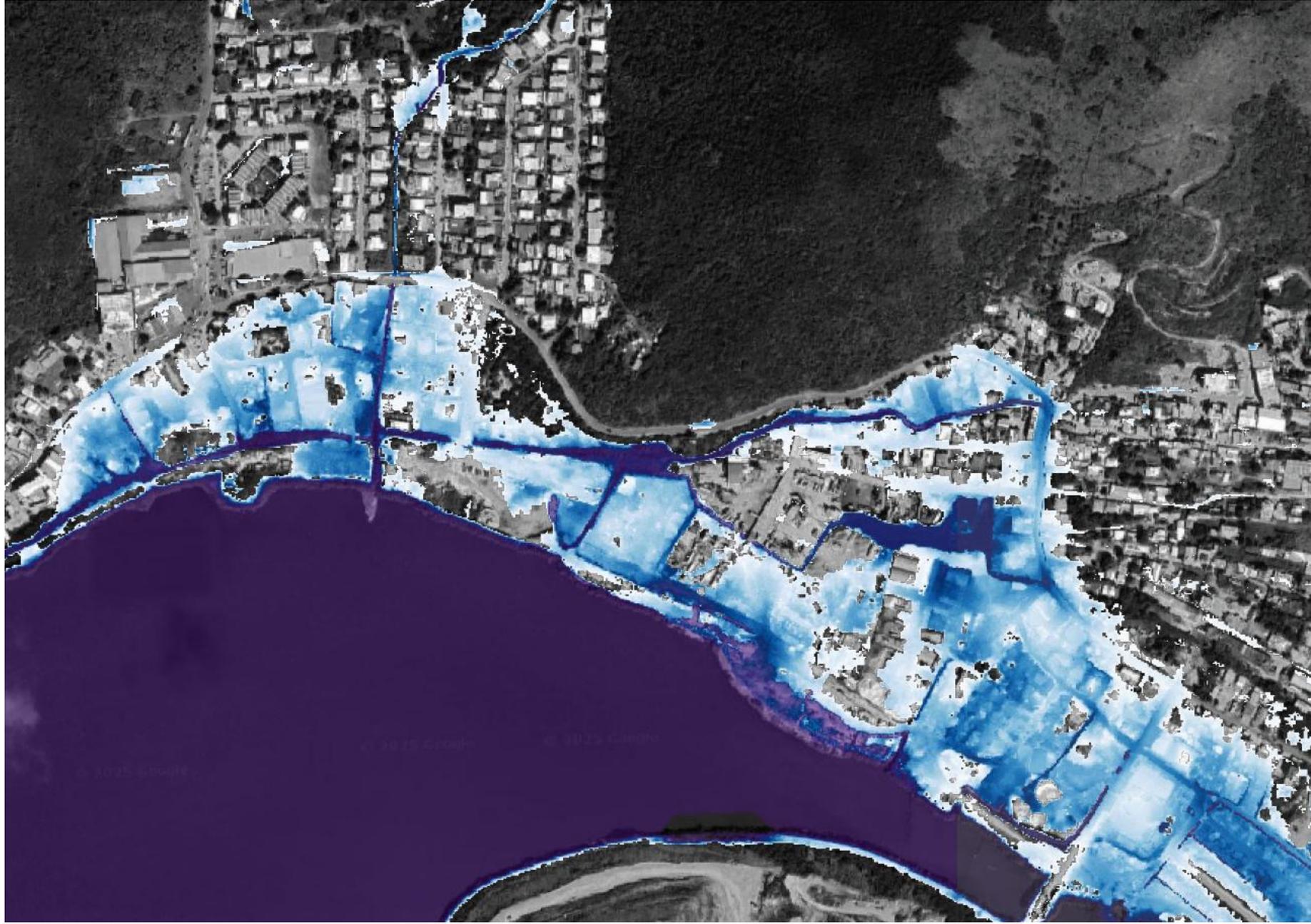


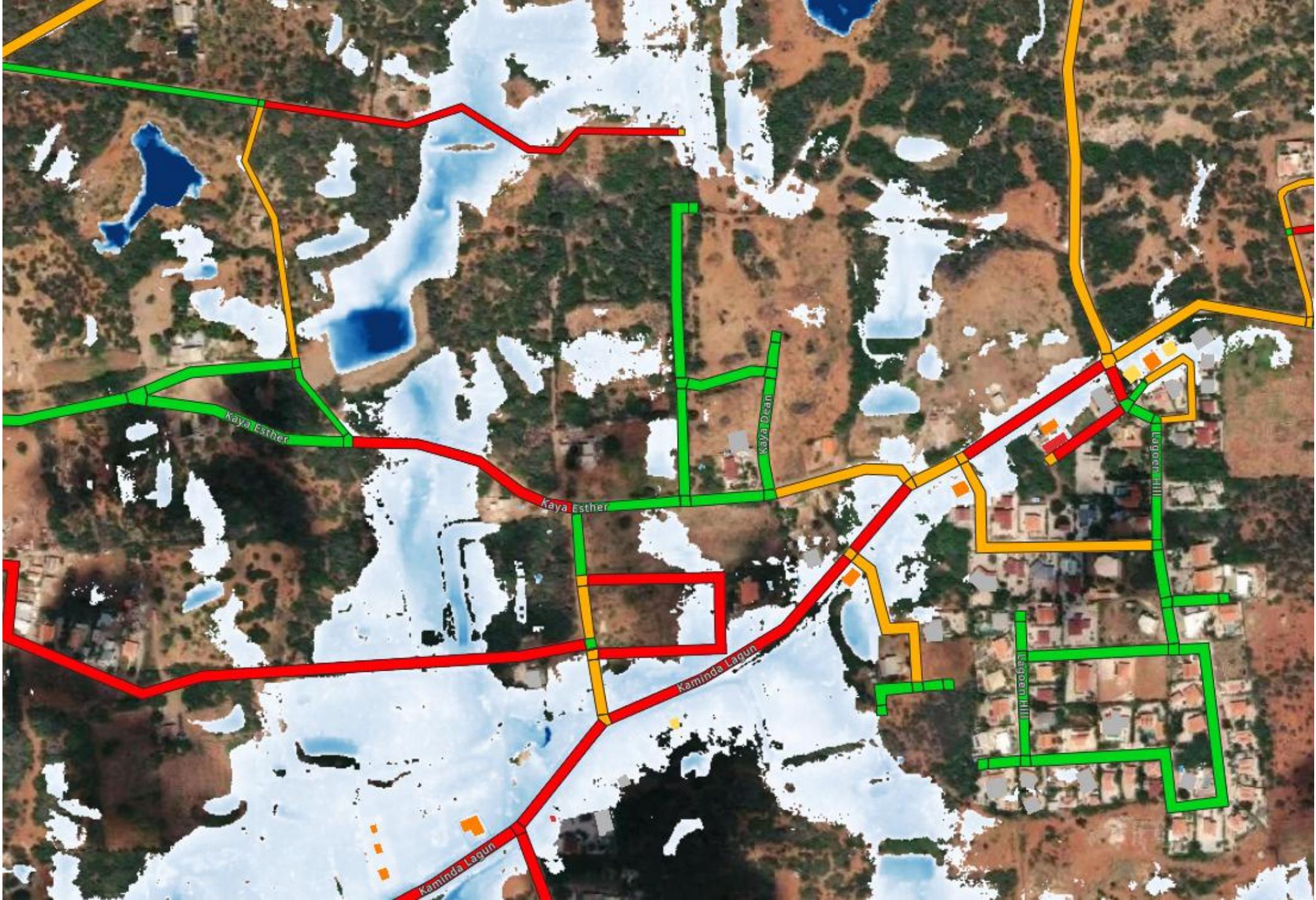




Results

- ◆ We made flood maps for Aruba, Bonaire, Curacao, Saba, Statia and St. Martin.
- ◆ Bonaire, Statia and Saba have just gotten high-end new digital elevation models. Allowing for the very first high-resolution models for these islands.
- ◆ In validation session we discussed the results and looked for nuances on our findings.





How to use this in the future?

- ◆ All the islands now have a detailed map of roads and buildings vulnerable to flash floods.
- ◆ The atlases also give an indication on what areas are prone to flooding.
- ◆ One thing might be to embed this flood information into spatial planning and maintenance plans.
- ◆ Another thing is to go from static maps, to dynamic flood maps. To directly see the impact of proposed plans, or heavy rain events.

Interactive Discussion

Contact details IPDC



Boussinesqweg 1
2629 HV, Delft



ipdc-climate-action.org



ipdc@deltares.nl

