



How QGIS assists the humanitarian work of Red Cross

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An initiative of
the Netherlands
Red Cross

- red cross movement
- who we are
- themes and topics
- our way of working
- how we started
- how we use qgis
- why we love qgis
- power of community

About me

Angelina Savchuk

- MA in Geo-Information
- 4 years with 510 Netherlands Red Cross
- Role: GIS and Cash Aid analyst
- Open Source <3



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UNIVERSITÉ DE
SHERBROOKE



Utrecht
University

International Red Cross and Red Crescent Movement

The world's largest humanitarian network made up of three parts



The International Committee of the Red Cross, ICRC

- Operates worldwide helping people affected by conflict and armed violence.
- Promotes the laws that protect victims of war. Is an independent and neutral organisation.

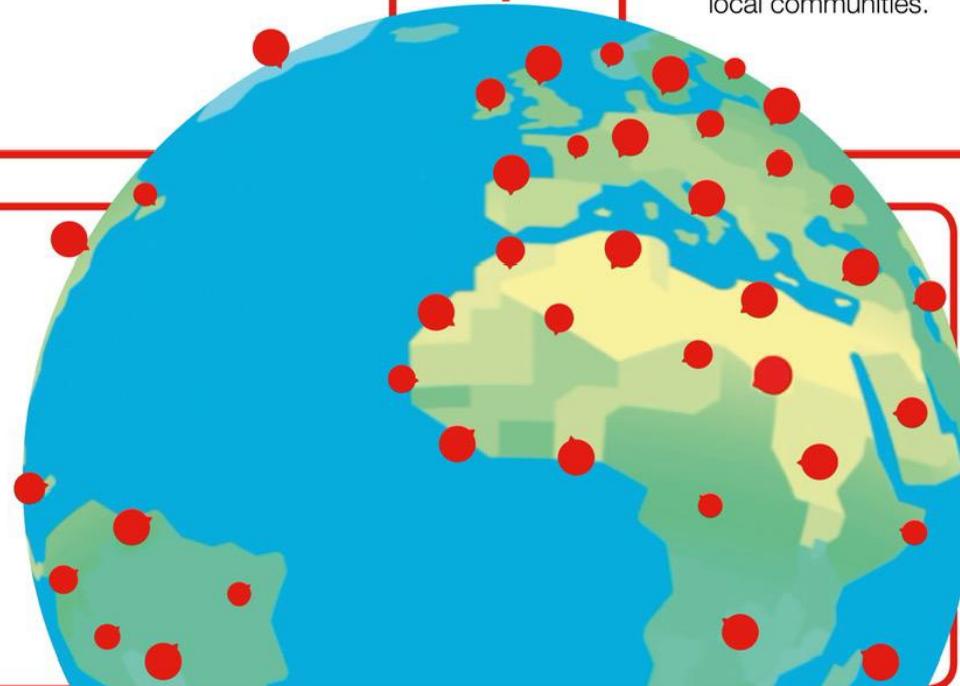
The International Federation of the Red Cross and Red Crescent Societies, IFRC

- Co-ordinates international relief provided by National Societies for victims of natural disasters and refugees and displaced persons outside conflict zones.
- Supports National Societies plan and implement disaster responses and development projects in local communities.



The National Red Cross and Red Crescent Societies

- Each Society has a responsibility to help vulnerable people within its own borders, and to work in conjunction with the Movement to protect and support those in crisis worldwide.

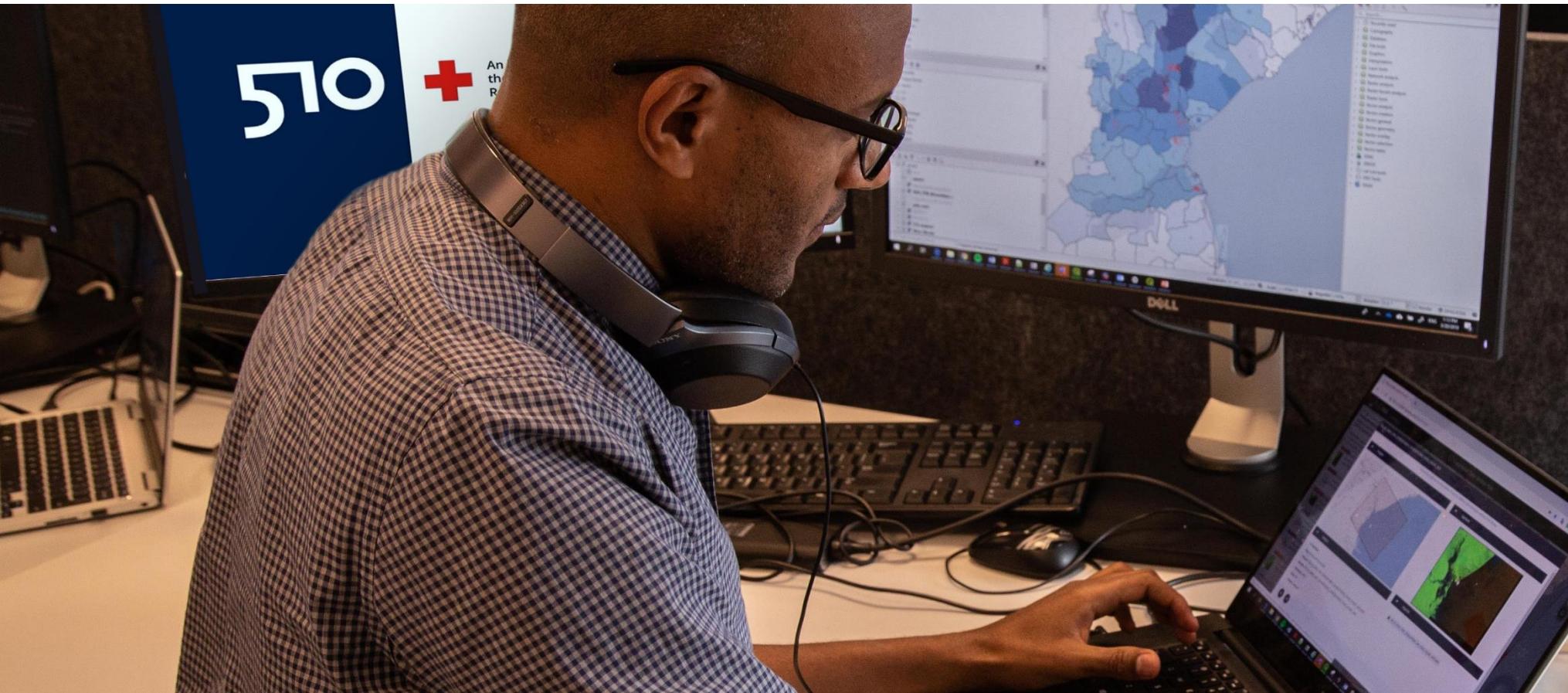


192

National Societies

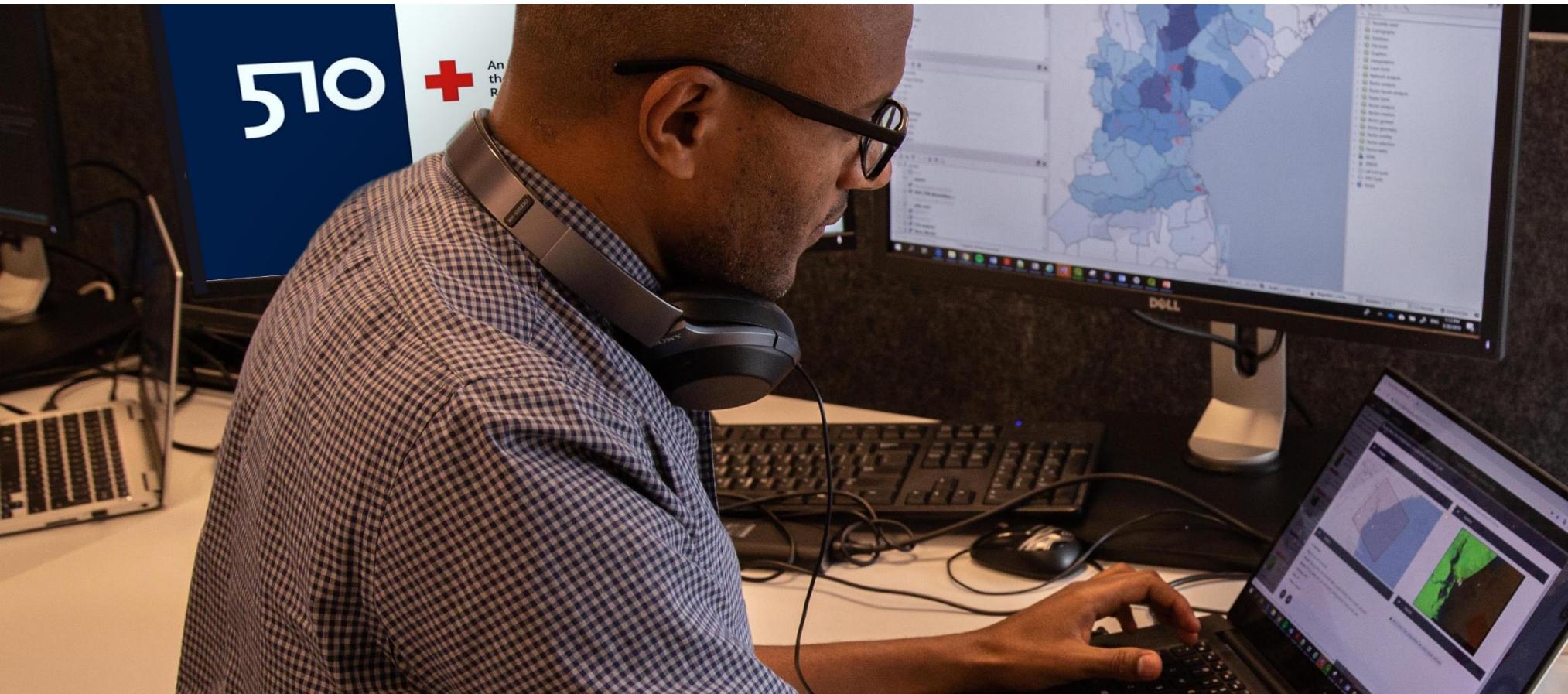
510: The Netherlands Red Cross' Data & Digital initiative

510 is the data & digital initiative of The Netherlands Red Cross. 510 aims to help every Red Cross and Red Crescent National Society in need anywhere. 510's purpose is to improve speed, quality and cost-effectiveness of humanitarian aid by creating products and services using data and digital. 510 started in March 2016 with a core team of 3 and never stopped growing. Currently, 510 has 108 team members of whom 72 professional volunteers.



The image features a large, bold white '50' centered on a dark blue rectangular background. Below this, on a white background, is a red cross symbol to the left of the text 'An initiative of the Netherlands Red Cross'.

**510 million square kms
total surface of the earth.**



Our themes and topics



Anticipatory Action

- Impact Based Forecasting
- Understanding the Risk



Cash Aid

- Digital Cash Aid
- Direct Digital Aid



Digital Transformation



Emergency Support

- Automated damage assessment



Water & Landscape

- Landscape Restoration
- Data for Water



Our way of working

- Community Engagement and Accountability
- Human Centered Design
- Data & Digital Responsibility
- Volunteers
- Academic Research

Our way of working

- With and for National Society
- Open-source based tools
- Open data
- <https://github.com/rodekruis>
- Data Responsibility
- Do No Harm
- Embracing voluntarism
- Also in data scarce regions
- Making technological advancement accessible to humanitarians



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Product Solutions Open Source Pricing

Search Sign

Netherlands Red Cross

16 followers Netherlands https://www.rodekruis.nl/

Overview Repositories 115 Projects 1 Packages People 5

Pinned

IBF-system Public

Tools required to trigger, manage and execute the Red Cross Early Action Protocols for natural disasters.

TypeScript ⭐ 9 15

Typhoon-Impact-based-forecasting-model Public

Typhoon Impact forecasting model This tool was developed as trigger mechanism for the typhoon Early action protocol of the philipiness resdcross FbF project. The model will predict the potential da...

Jupyter Notebook ⭐ 12 11

CommunityRisk Public

The Community Risk Assessment dashboard is a data-driven solution to identify the geographic areas that are most affected by a humanitarian disaster or crisis and the individuals that are most in n...

JavaScript ⭐ 11 6

automated-building-detection Public

Automated Building Detection using Deep Learning

Python ⭐ 68 20

caladrius Public

Forked from gulfaraz/caladrius

Automated Damage Assessment using Deep Learning

Python ⭐ 9 8

helpful-information Public

A web-app People Affected can use to lookup useful organizations and information.

TypeScript ⭐ 1 1

Repositories

Find a repository... Type Language Sort

GlobalTropicalCycloneModel Public

Global model to predict the Impact of Tropical cyclone

Jupyter Notebook ⭐ 0 GPL-3.0 0 10 4 Updated 9 hours ago

People

Top languages

Python Jupyter HTML

Most used

qgis qgis2r

How it started

2017 Hurricane Irma in Caribbeans

1. 4th of September 2017 promoted to a CAT 4 storm
2. In the night of the 5th to the 6th of September the Dutch side (South side) of the island was mapped and validated at 95%.
3. Landfall on the 6th of September 2017
4. By 6 PM 6th September the **whole island** was mapped by remote volunteers

More than 5600+ buildings were added to OpenStreetMap



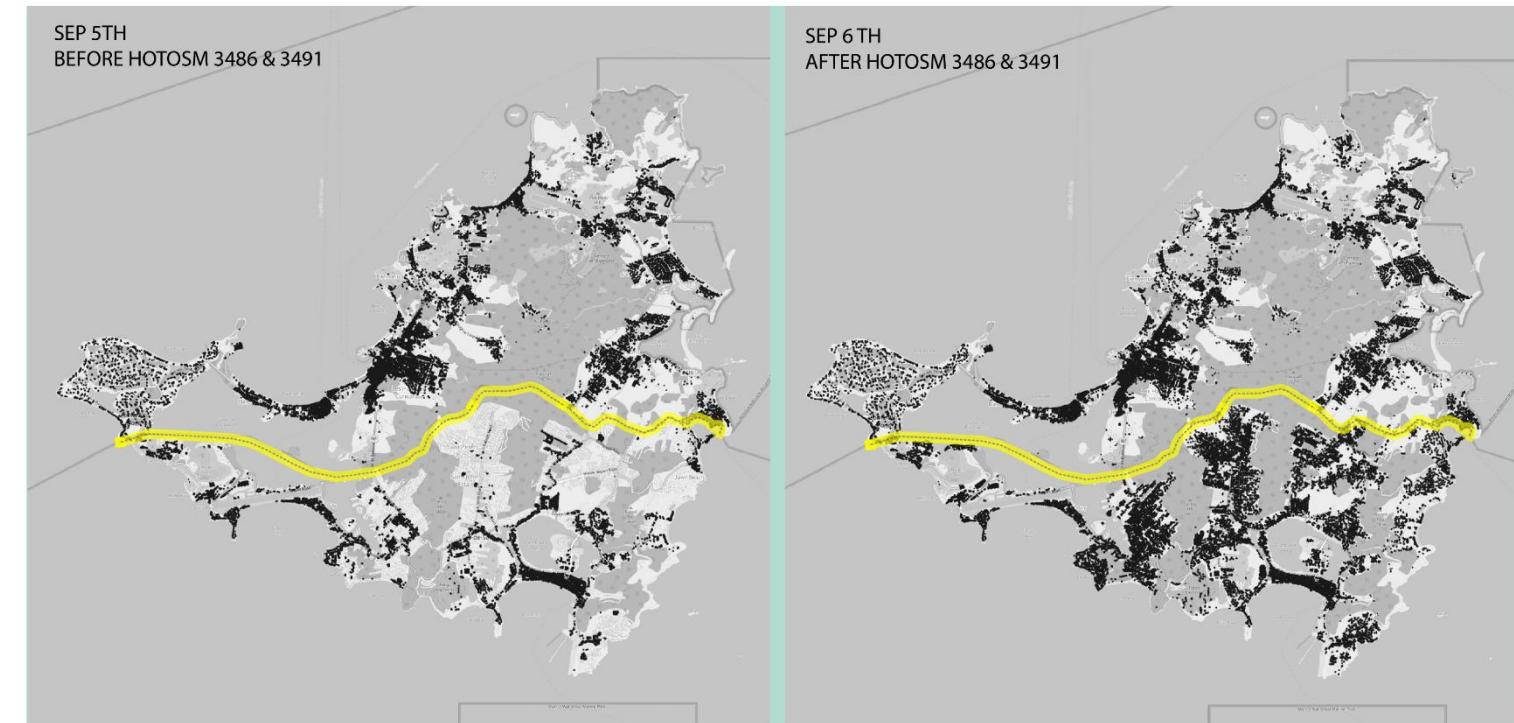
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SINT MAARTEN & SAINT MARTIN MAPPED

510 Global sets HOTOSM tasks
#3486 for south (Dutch) side of island
#3491 for north (French) side of island
Collectively adding 5683 new buildings.

Sources: 510GLOBAL, Hotosm tasks



The maps used do not imply the expression of any opinion on the part of the International Federation of Red Cross and Red Crescent Societies or National Societies concerning the legal Status of a territory or of its Authorities. Produced by 510 An initiative from the Netherlands Red Cross. Base map: OpenStreetMap
CONTACT: support@510.global

2017 Hurricane Irma

QGIS as a visualization
tool

Damage assessment St. Maarten

Date : 12 September 2017

- The maps used do not imply the expression of any opinion on the part of the International Federation of Red Cross and Red Crescent Societies or National Societies concerning the legal status of a territory or of its authorities.

- Produced by 510 An initiative from the Netherlands Red Cross, St. Maarten Red Cross.

- Sources: OpenStreetMap, Copernicus Emergency Management Service, GH5 POPULATION GRID JRC

Legend

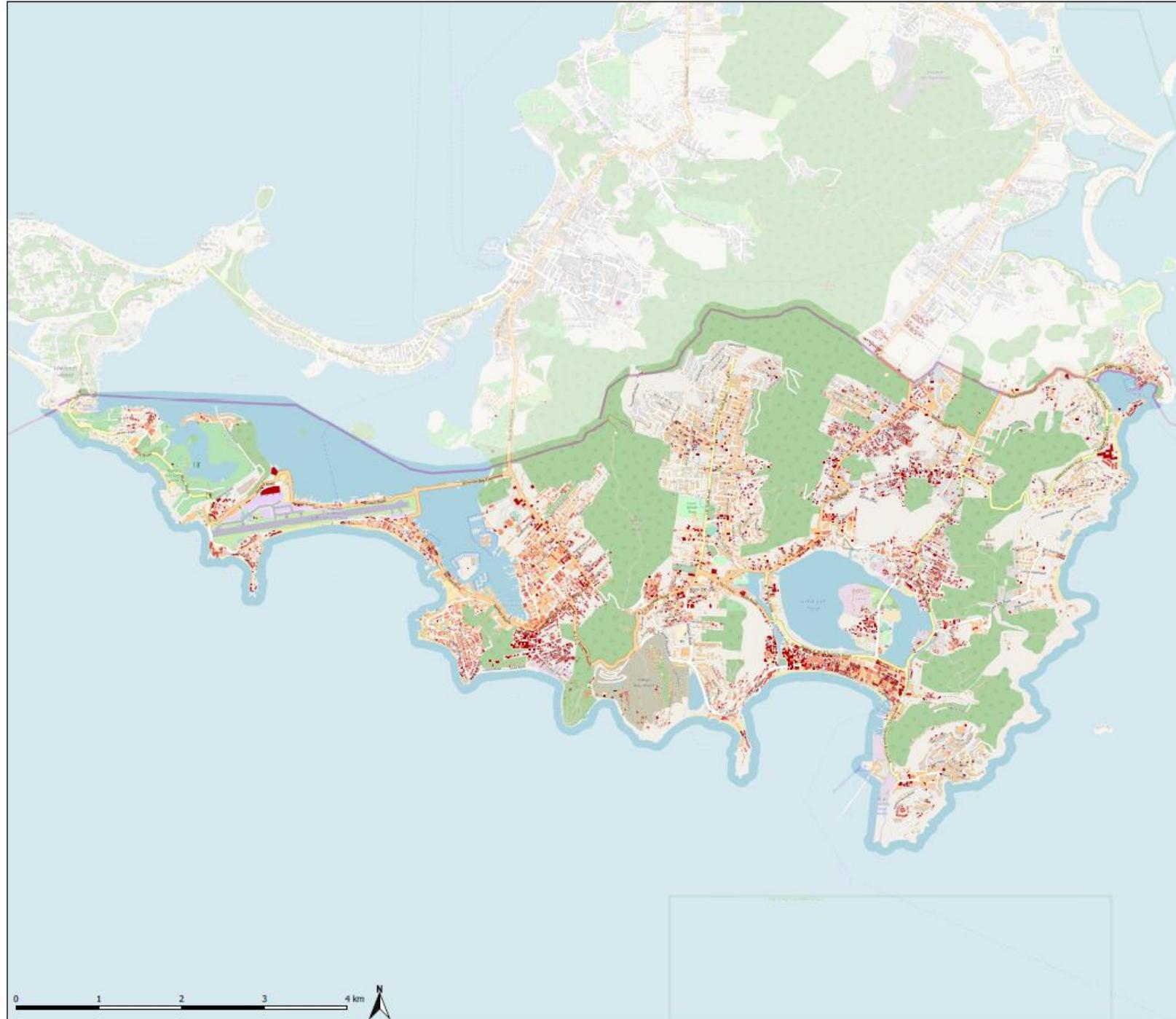
Building Damage

- Completely Destroyed
- Highly Damaged
- Moderately Damaged
- Negligible to slight damage
- Not Affected

Buildings	Percentage
Completely Destroyed	2363
Highly Damaged	1020
Moderate Damaged	1396
Negligible to Slight Damage	5153
Not Affected	1110
Total	12550
Total Affected	11440
	100%

Estimated Population affected: 19438*

* Population refers to the percentage of people living in Completely Destroyed, Highly Damaged, Moderate Damaged Building



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510 + AN INITIATIVE OF
Red Cross + THE NETHERLANDS
St. Maarten



Damage Percentage per Sub-Area* of St. Maarten

Date : 12 September 2017

*Boundaries on this map do not reflect any administrative division within St. Maarten. Boundaries are defined by 510 based on natural breaks, to support the prioritisation of areas.

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Sources: OpenStreetMap, Copernicus Emergency Management Service

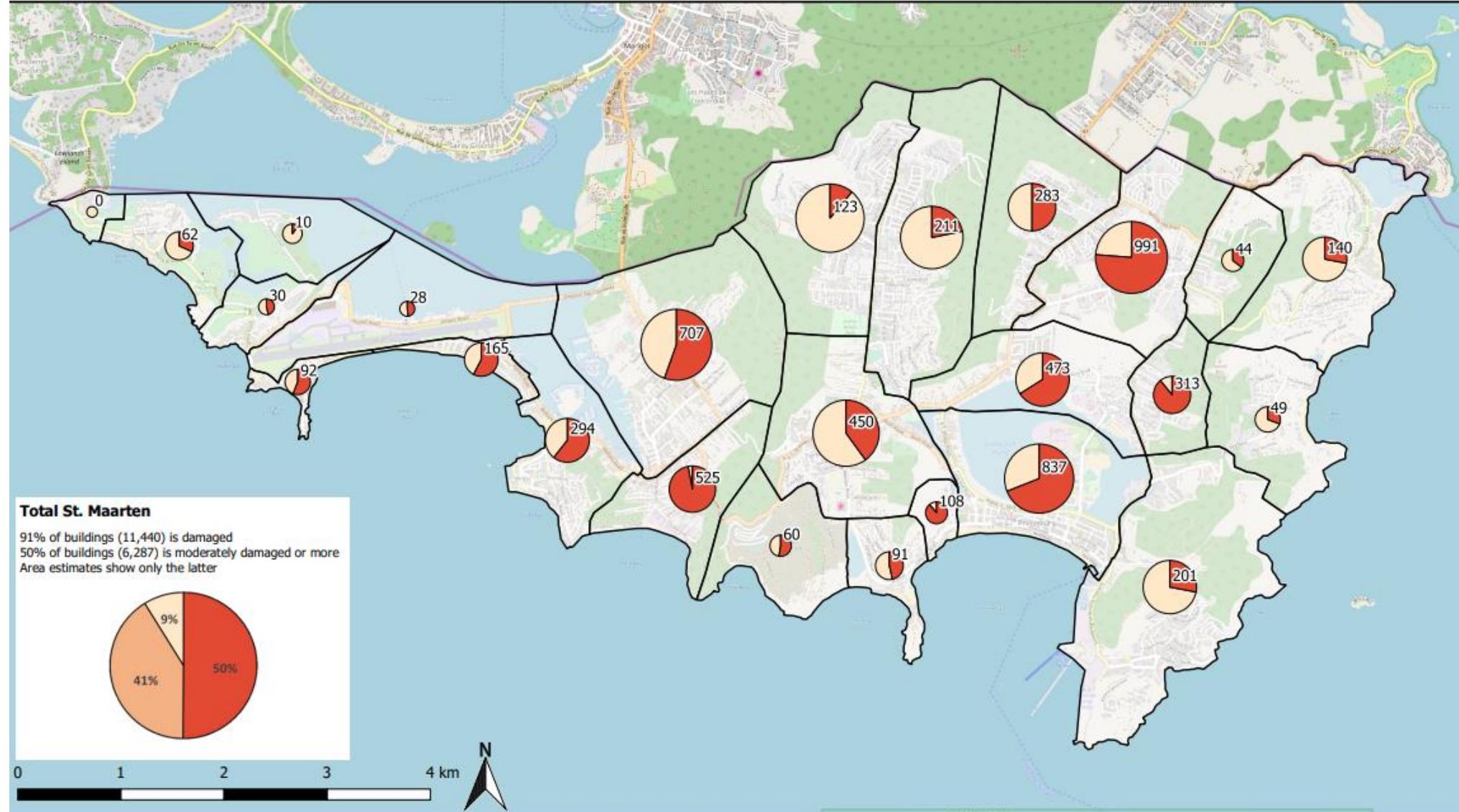
Legend

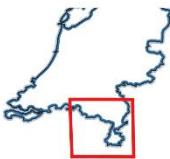
- 123 # Moderate/High/Complete Damaged
- % Moderate/High/Complete Damaged
- % Not/Slightly Damaged
- Size represents Total # of Buildings

2017 Hurricane Irma

Slowly turning into QGIS
 as a analysis tool

Damage per sub-area

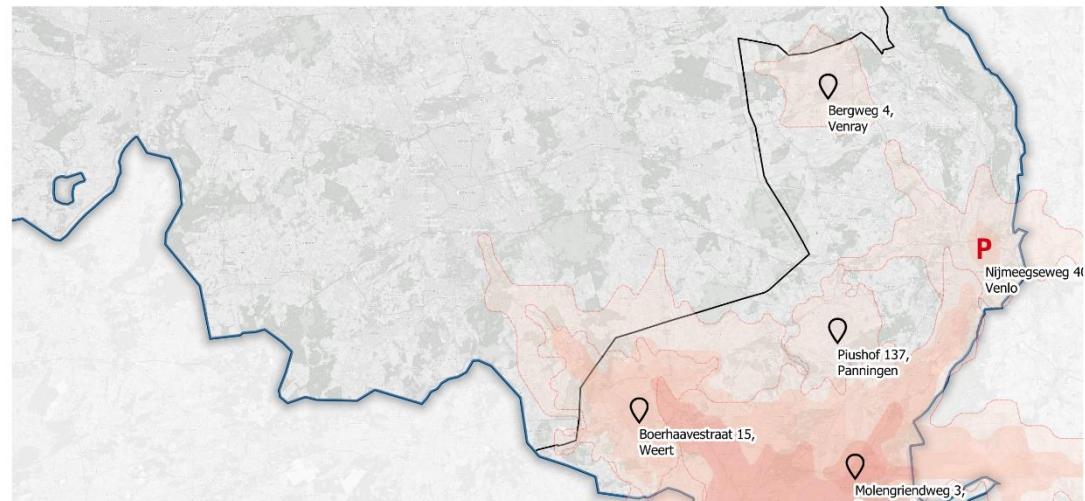




Limburg: gebieden die binnen 45 min bereikt kunnen worden - meest

2019 Limburg Reach areas

Slowly turning into QGIS as a analysis tool



Ontmoetingspunten

CAR/Pick up

pick up

Bereikbaar gebied

25 % beschikbaar na alarmering

50 % beschikbaar na alarmering

75 % beschikbaar na alarmering

Het scenario is gebaseerd op werkelijke verkeerssituatie op 2 oktober 2019 om 17:00.

Reistijden zijn gebaseerd op Google maps.
Reistijden zijn berekend voor:

Adres van vrijwilligers naar het ontmoetingspunt;
Adres van de chauffeur naar het voertuig;
De reistijd van het voertuig naar het ontmoetings- punt.

Een model is gemaakt om de tijd te berekenen dat een compleet team beschikbaar kan zijn op het ontmoetingspunt. Een team bestaat uit 1 leider, minstens 2 NHT en 4 vrijwilligers.

Het gebied dat bereikt kan worden vanaf het ontmoetingspunt is berekend met Google en HERE route service.

QGIS SIMS PLUGIN

- Standardizing map-making for 192 RC organisations
- Guiding layouts
- Most of the time, used by non-professionals
- Making sure that the most crucial map elements are not forgotten

Thanks to



Raymond

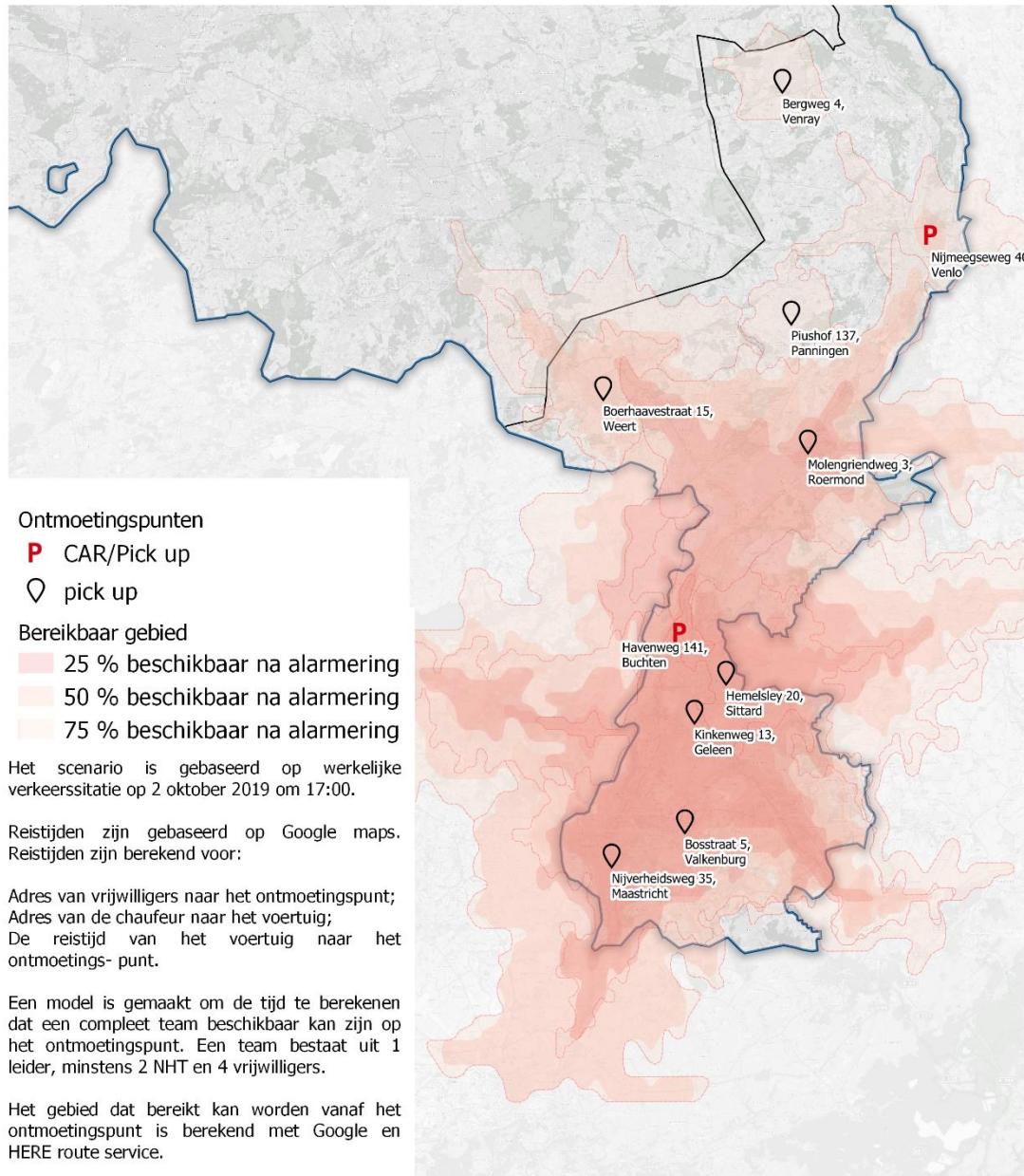
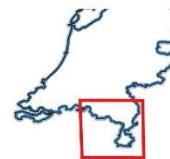


Aron

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Limburg: gebieden die binnen 45 min
bereikt kunnen worden - meest



Data bronnen: Reistijd - Google & HERE,
Ontmoetingspunten - NLRC, Grenzen - PDK,
Achtergrond - OpenStreetMap

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RED CROSS

0 5 10 15 20 km



QGIS SIMS PLUGIN

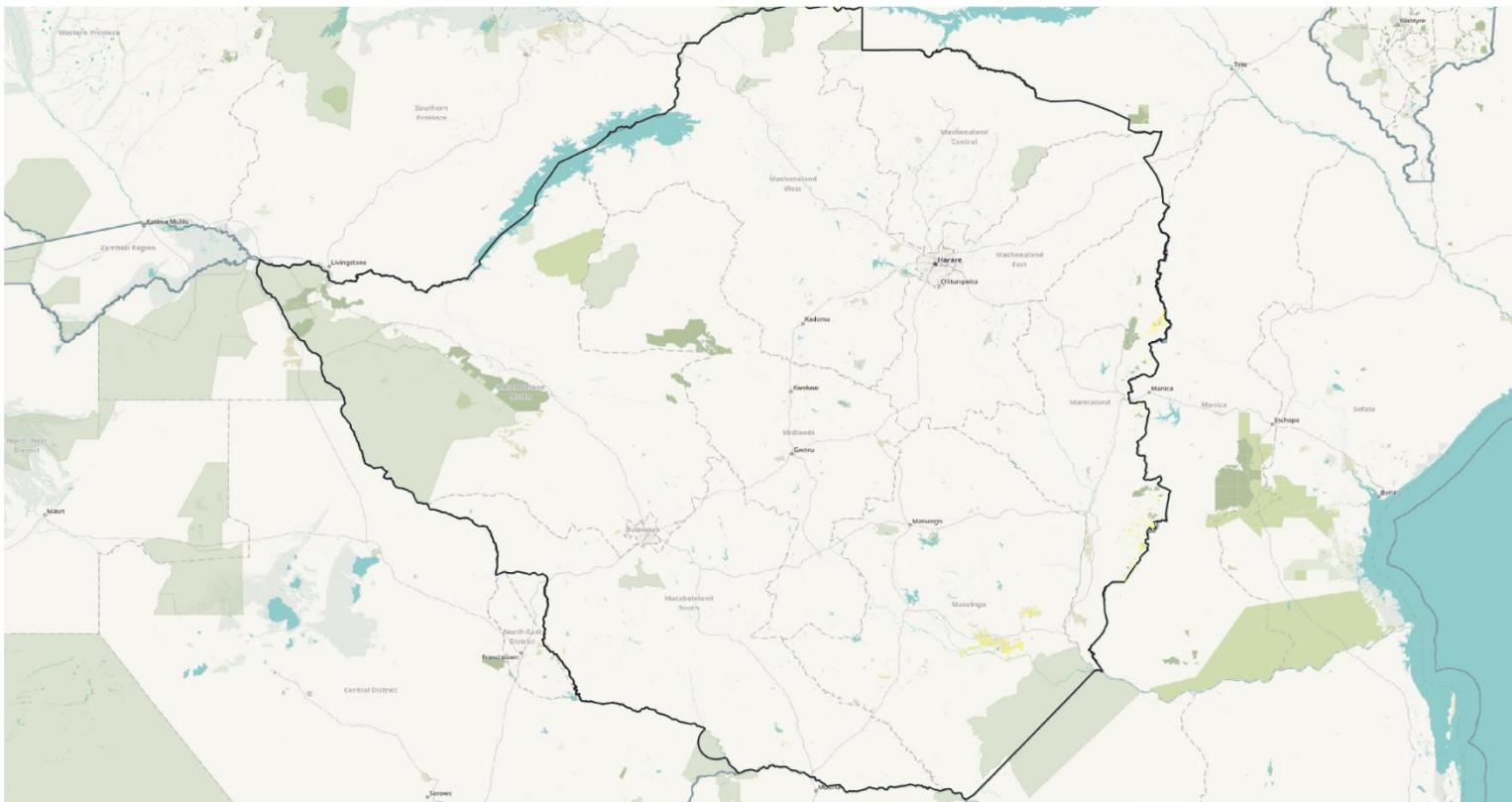


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RED CROSS

01 October 2020



zwe_basemap



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0 50 100 150 200 km



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Power of Open Source Data

The availability of open data also generates interest in open-source software

Before - paper maps

Now – interactive maps

Motor - OpenStreetMap!



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Power of Open Source Data



Power of Open Source Data

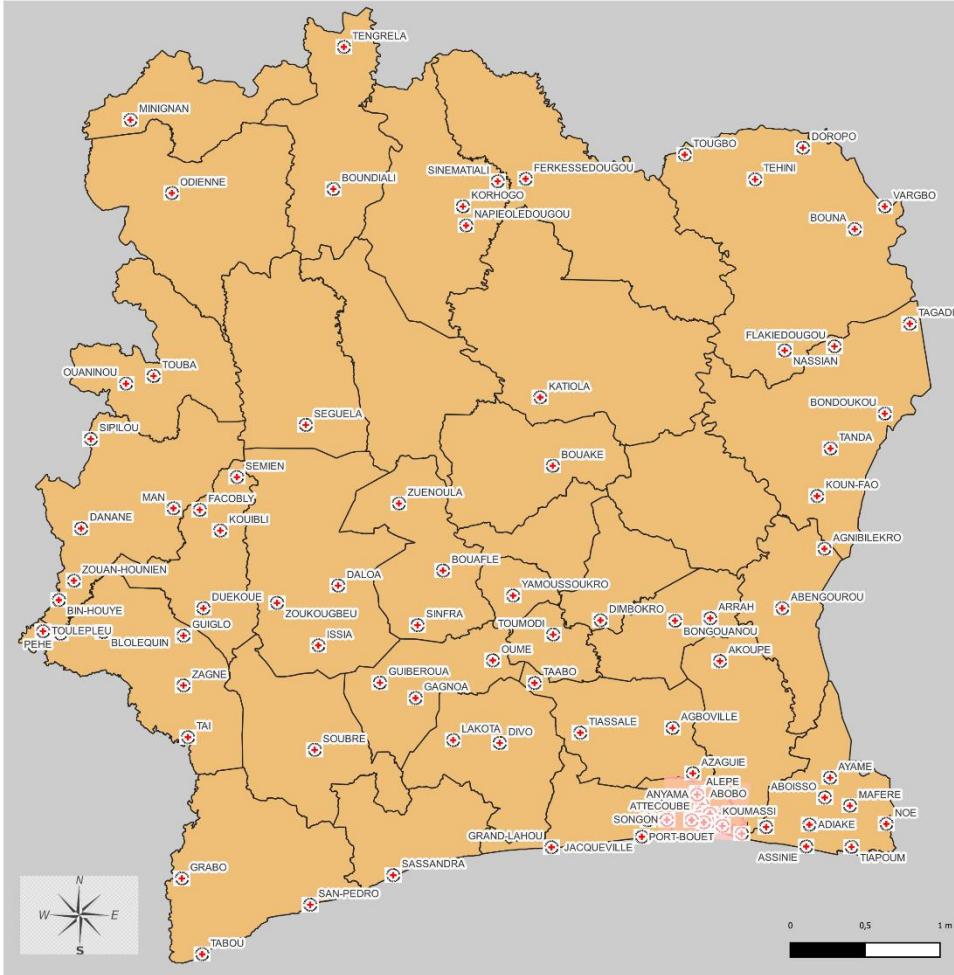
The collage illustrates the power of open source data through two different mapping platforms:

- OpenStreetMap (Top Left):** Shows a map view with a search result for coordinates 12.0526, 43.2018. The results include a dashed line representing a route or path, and text indicating "Piste Obock - Ouaddi / اودي - نجح - طربق، Obock District, Obock, Djibouti".
- Google Maps (Top Right):** Shows a satellite view of a coastal area with a red marker at the same coordinates. A sidebar provides details about the location: "12°03'09.4"N 43°12'06.5"E" and "12.052600, 43.201800". It also lists nearby points of interest like "Obock, Djibouti" and "3632+2PM Obock, Djibouti".
- OpenStreetMap (Bottom Left):** Similar to the top-left screenshot, showing a map view with a search result for coordinates 12.0526, 43.2018.
- Google Maps (Bottom Right):** A satellite view of a desert-like landscape with a red marker at the coordinates. It includes a sidebar with location details and nearby points of interest, identical to the top-right screenshot.

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Power of QGIS

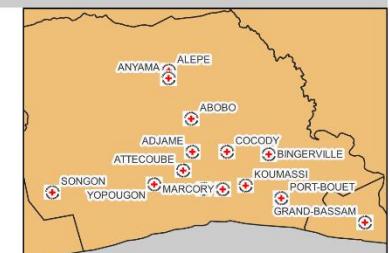
- 2 years of occasional QGIS use
- No prior experience
- Forces the organisation to think in data



LEGENDE

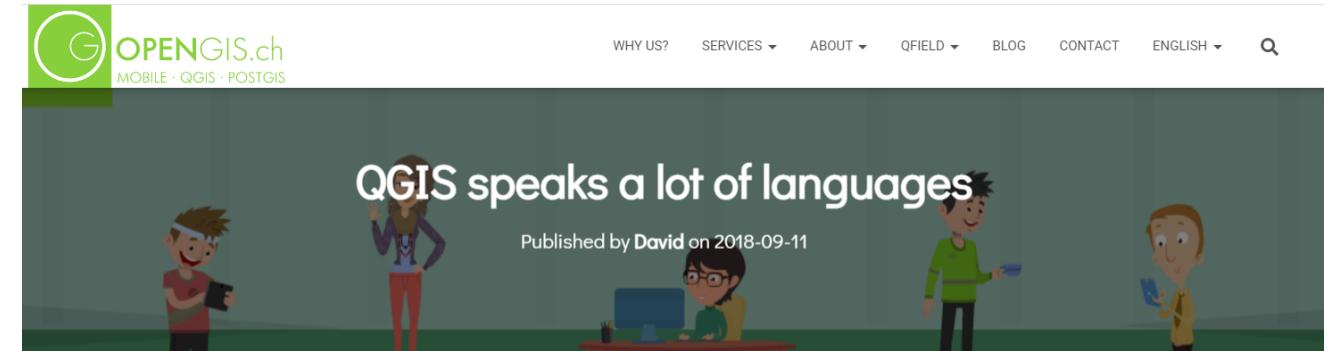
comités locaux Côte d'Ivoire

Source de donnée:
Croix-Rouge de Côte d'Ivoire



Power of QGIS

- 40 languages as of 2018



QGIS is a real cosmopolitan. Born in Alaska sixteen years ago, it has spread all over the world since. Thanks to its open source mentality, it finds not only in economically strong countries big usergroups. No question, that beside all the developers, there is a bunch of brave translators giving everything to make and keep QGIS multilingual. It's translated in over forty languages – even to Mandarin Chinese and Esperanto. Not only the application, but also its plugins.
And since the feature-loaded long term release 3.4.0 even the QGS-Projects themselves. Thanks to the friendly support of [QGIS Usergroup Switzerland](#) and the [QGEP Project](#).

WHAT WE DO WITH QGIS

Ukraine response

- Automatization
- No licensing problem
- Several countries
- Multiple teams
- High turnover
- Chaos
- Rapidly changing situation

Updated: 24 March 2022

Reported Population Movement from Ukraine to 'Third Ring' Countries Ukraine and Impacted Countries Crisis



Over
3,600,000
people have crossed the borders of
Ukraine since the start of the
military offensive on 24 Feb 2022.

While countries immediately bordering
Ukraine have seen the largest influx,
other countries in the region are also
beginning to receive arrivals from
Ukraine and provide them with
supportive services. These countries,
which do not immediately border
Ukraine, are known as "third-ring"
countries.

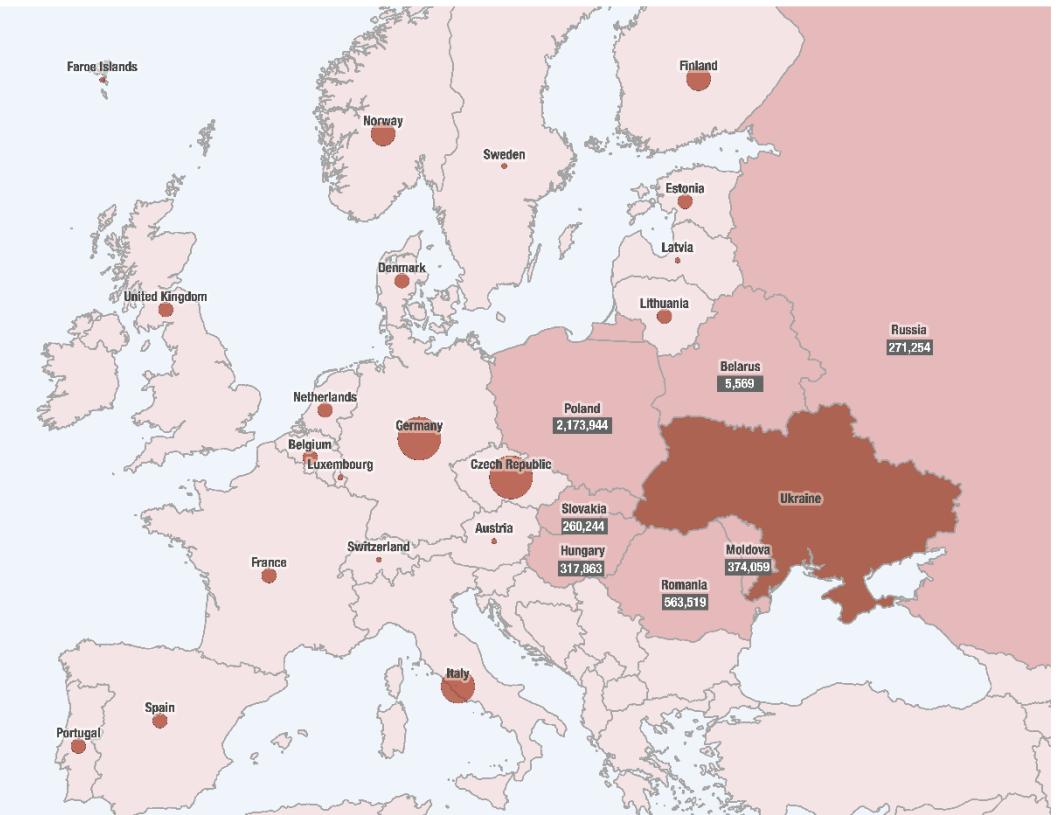
Map displays numbers of reported arrivals
from Ukraine in third-ring countries*

■ Ukraine
■ Countries bordering Ukraine
■ Third-ring countries

■ >75,000 arrivals
■ 50,000-75,000 arrivals
■ 25,000-50,000 arrivals
■ 10,000-25,000 arrivals
■ <10,000 arrivals

■ Number in box refers to total people
who have arrived in Ukraine's border
countries from Ukraine (Source:
UNHCR Ukraine Data Portal, 24 March)

*The map presents known country destination
trends to date. Refugee populations are based
on numbers reported by national agencies. The
absolute numbers are likely to be an under-
estimation as reporting is not provided by all
countries, and many refugees may not have
registered due to current visa status. Efforts to
triangulate and engagement with authorities to
access up-to-date figures are ongoing.



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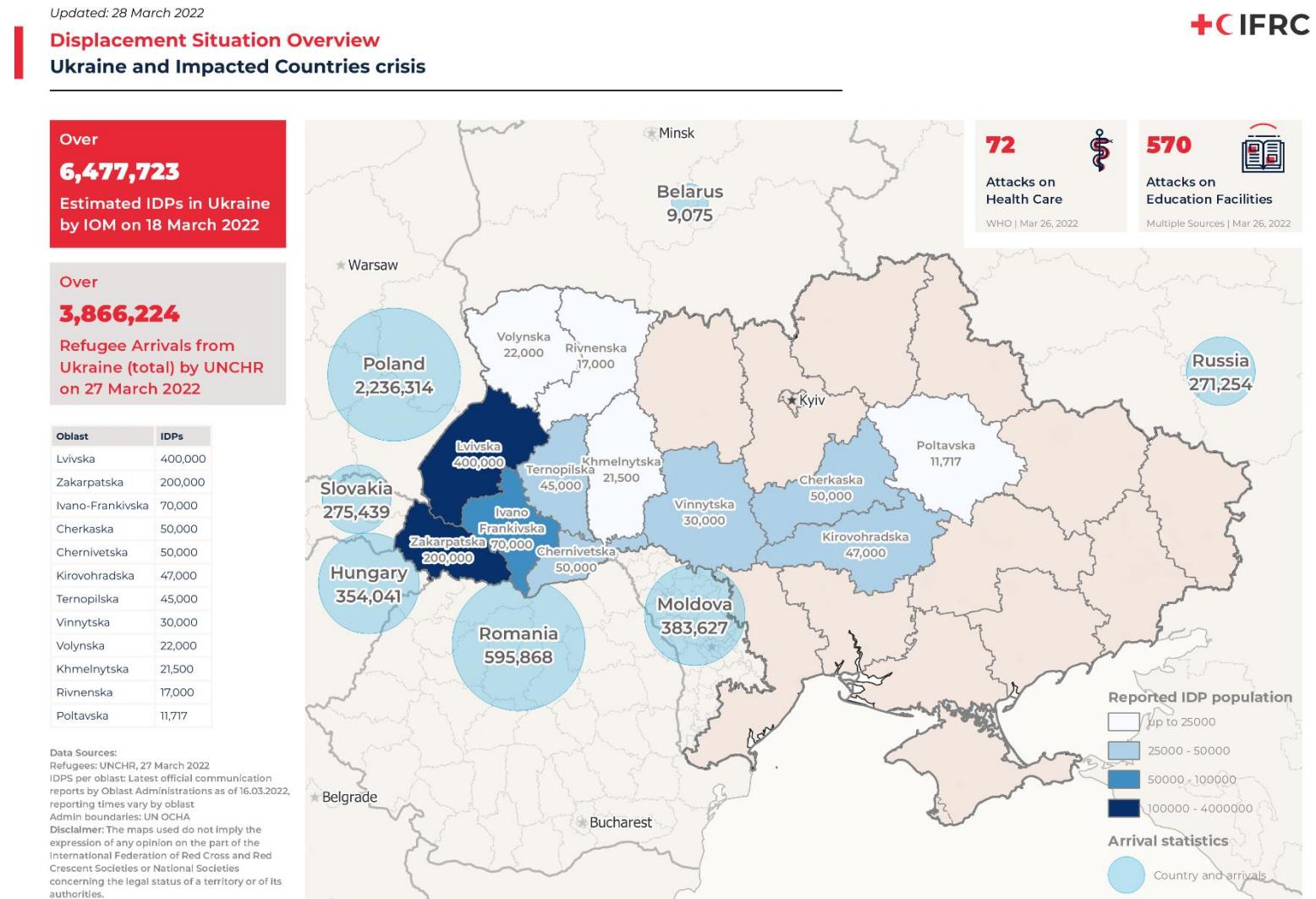


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WHAT WE DO WITH QGIS

Ukraine response

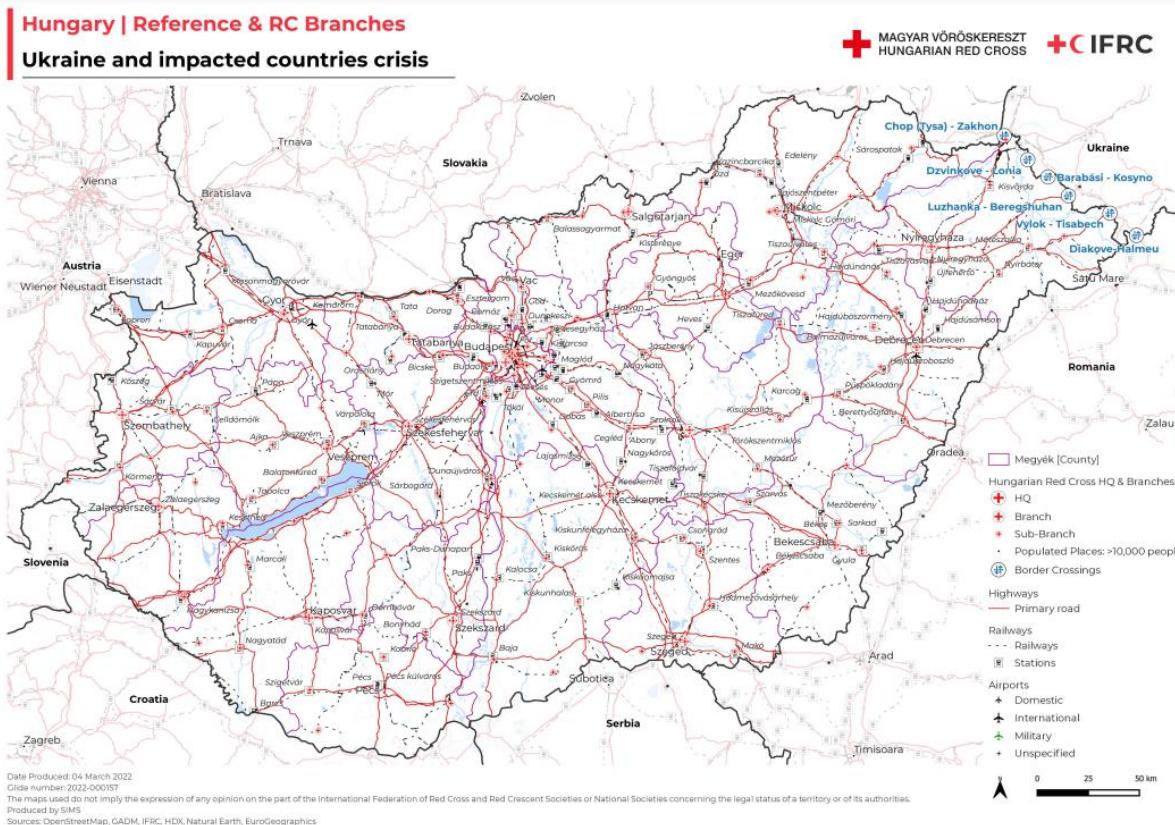
- Automation
- No licensing problem



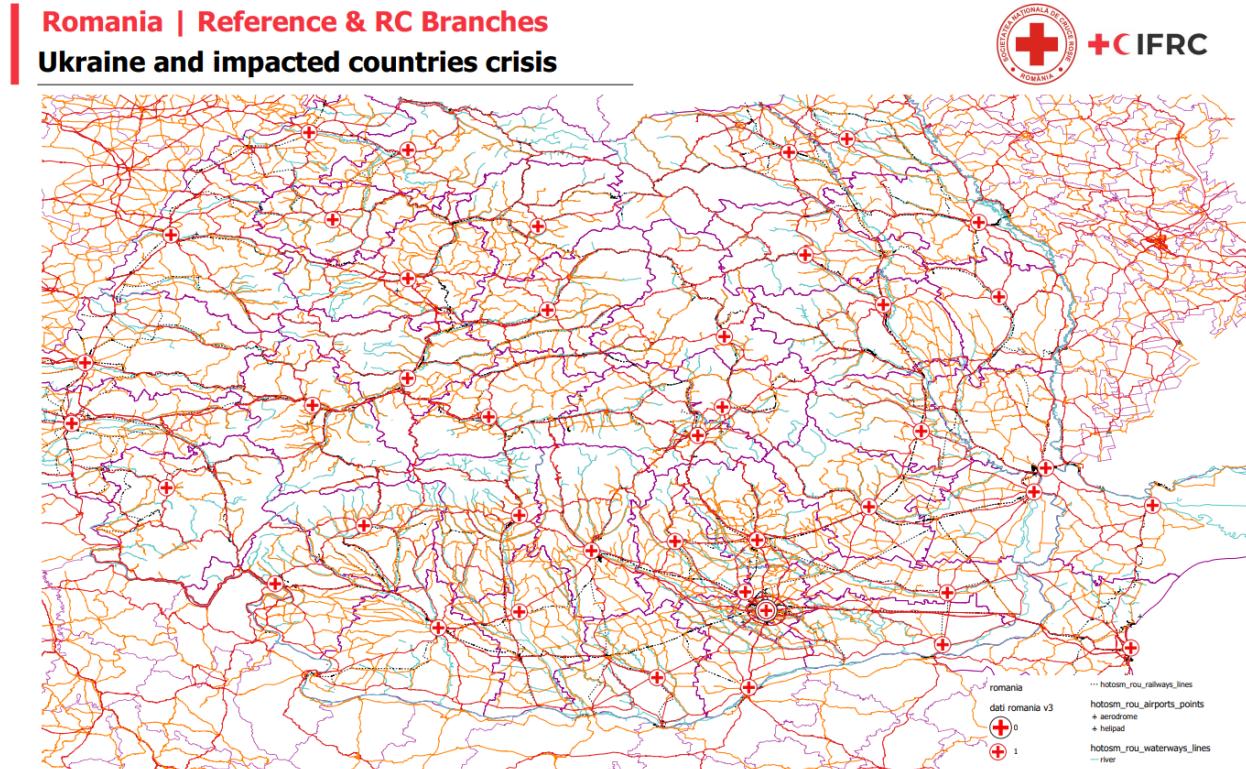
WHAT WE DO WITH QGIS



maptiler



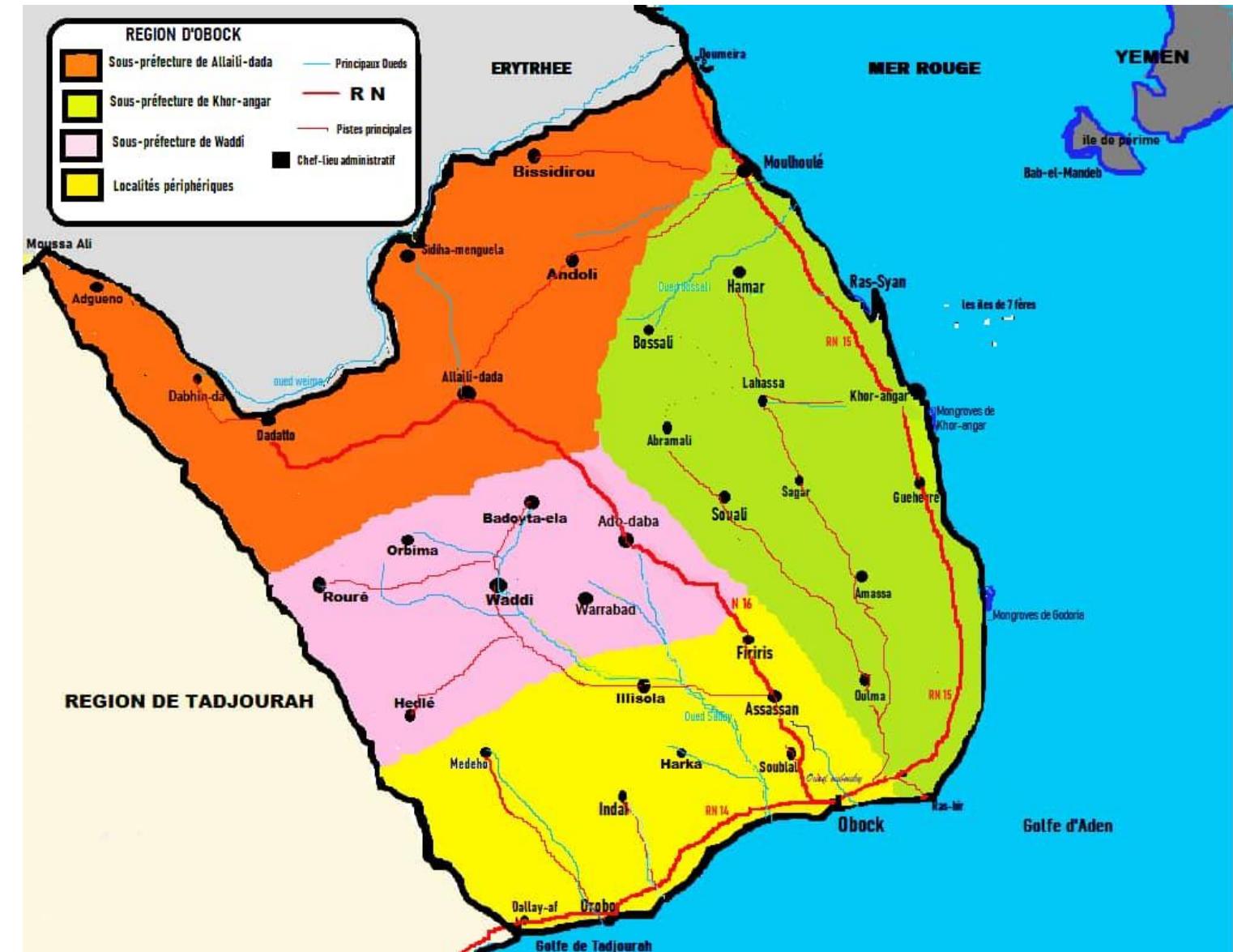
Romania | Reference & RC Branches
Ukraine and impacted countries crisis



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Power of QGIS

- Most wanted document
- Gold when printed
- Made in Paint



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Addressing the challenges from the field

Challenge

- Software is expensive
- How to make knowledge more digestible to humanitarians?

Solution

- Use Open Source
- ?



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Thank you!



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Thank you!

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