



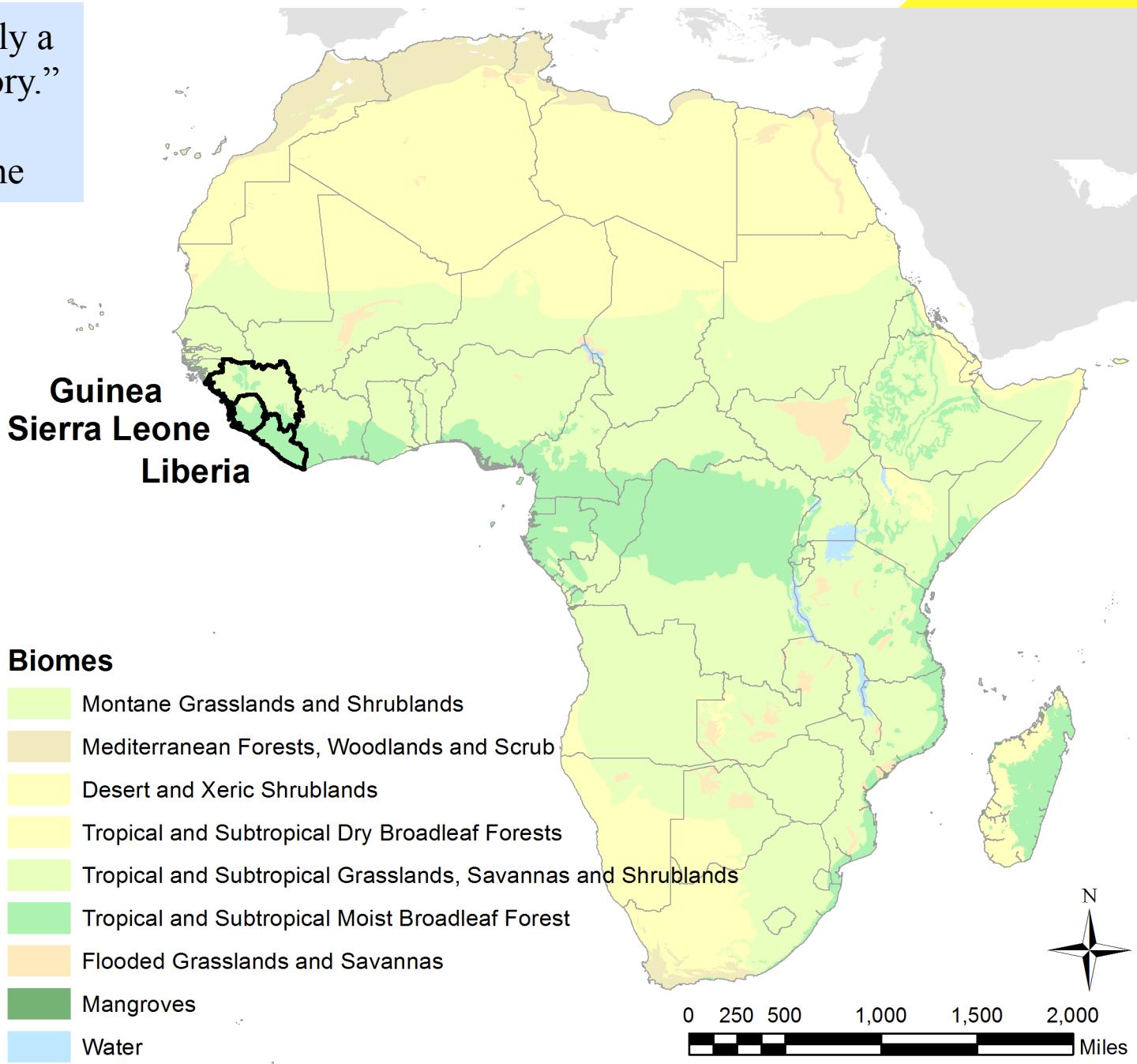
Go to <http://www.OpenStreetMap.org>  
and sign up for an account!  
(if you haven't already)

Photo: International Medical Corps/Stuart J. Sia

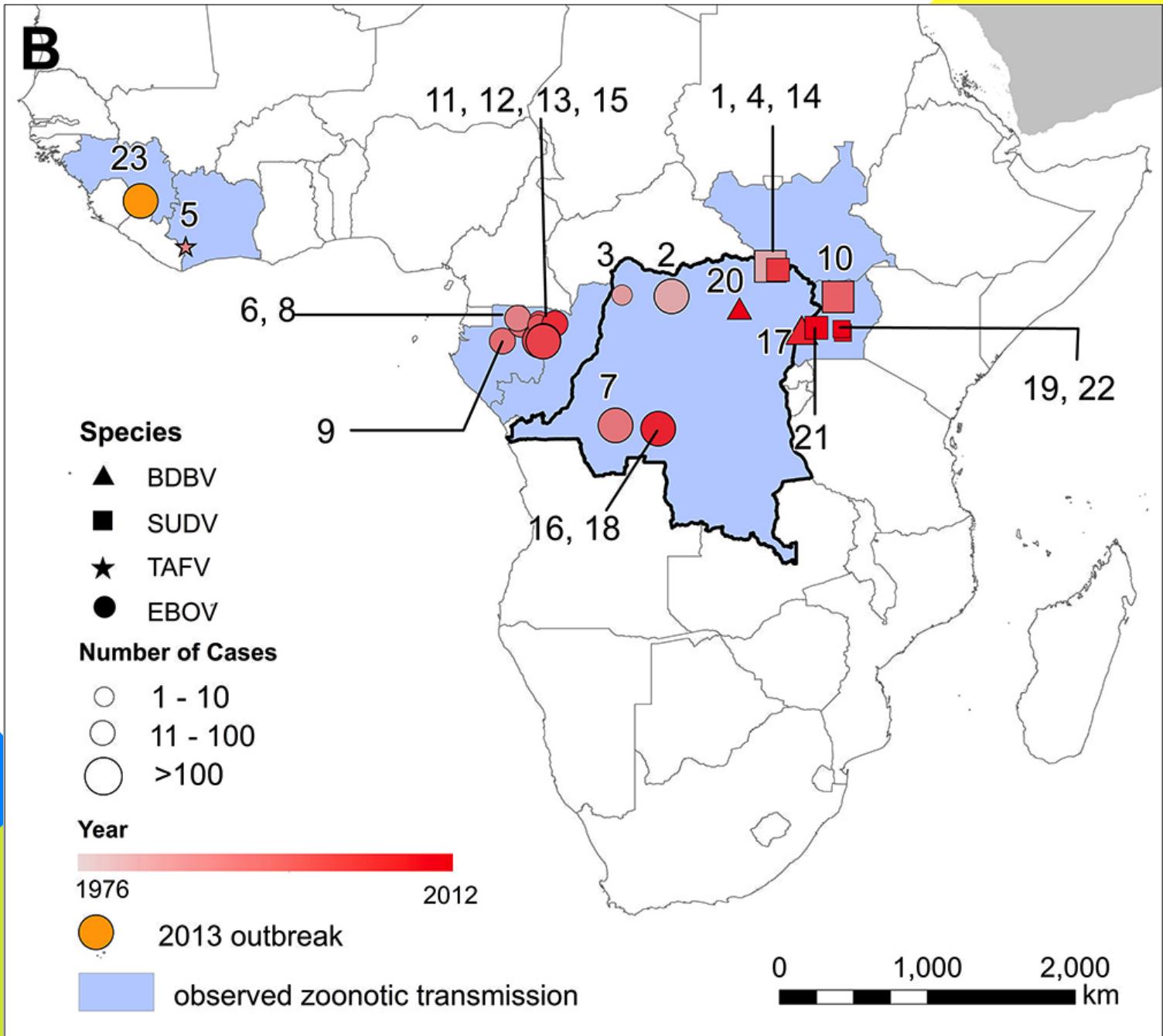
# Supporting Ebola First Responders in West Africa through OpenStreetMap

“Geography is really a huge part of the story.”  
— Michael Duffy,  
Time Magazine

Africa

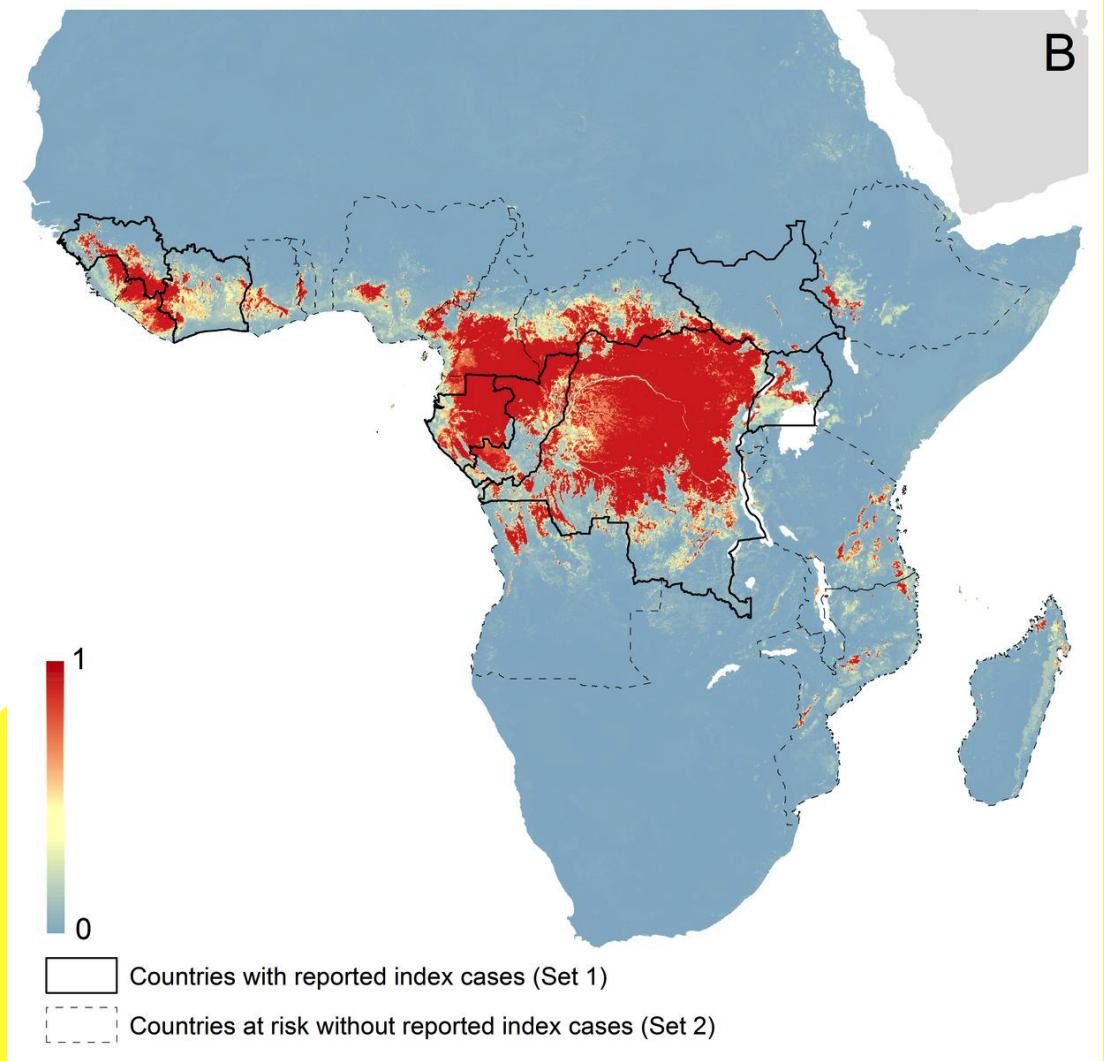


# Ebola



"Mapping the zoonotic niche of Ebola virus disease in Africa",  
Pigott, et al.,  
*eLife* 2014;10.7554/  
*eLife*.04395

# Risk



“Mapping the zoonotic niche of Ebola virus disease in Africa”,  
Pigott, et al.,  
*eLife* 2014;10.7554/  
*eLife*.04395

“A large survey of small mammals in and around Gabon identified three species of bats which were infected with Ebola viruses... Subsequent serological surveys and evidence linking the potential source of human outbreaks to bats lend support to the hypothesis of a bat reservoir.”

## EBOLA OUTBREAK RESPONSE: REGIONAL CONFIRMED AND PROBABLE CASES

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed and dotted lines represent approximate frontier lines for which there may not yet be full agreement.

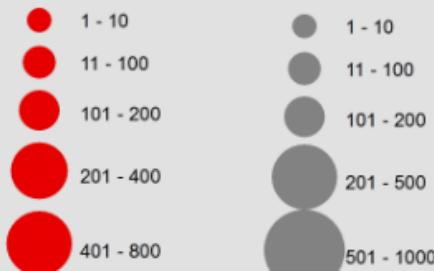


©WHO 2014. All rights reserved.

MAP DATE: 29 October 2014

Recent Cases  
(21 Days Prior)

All cases

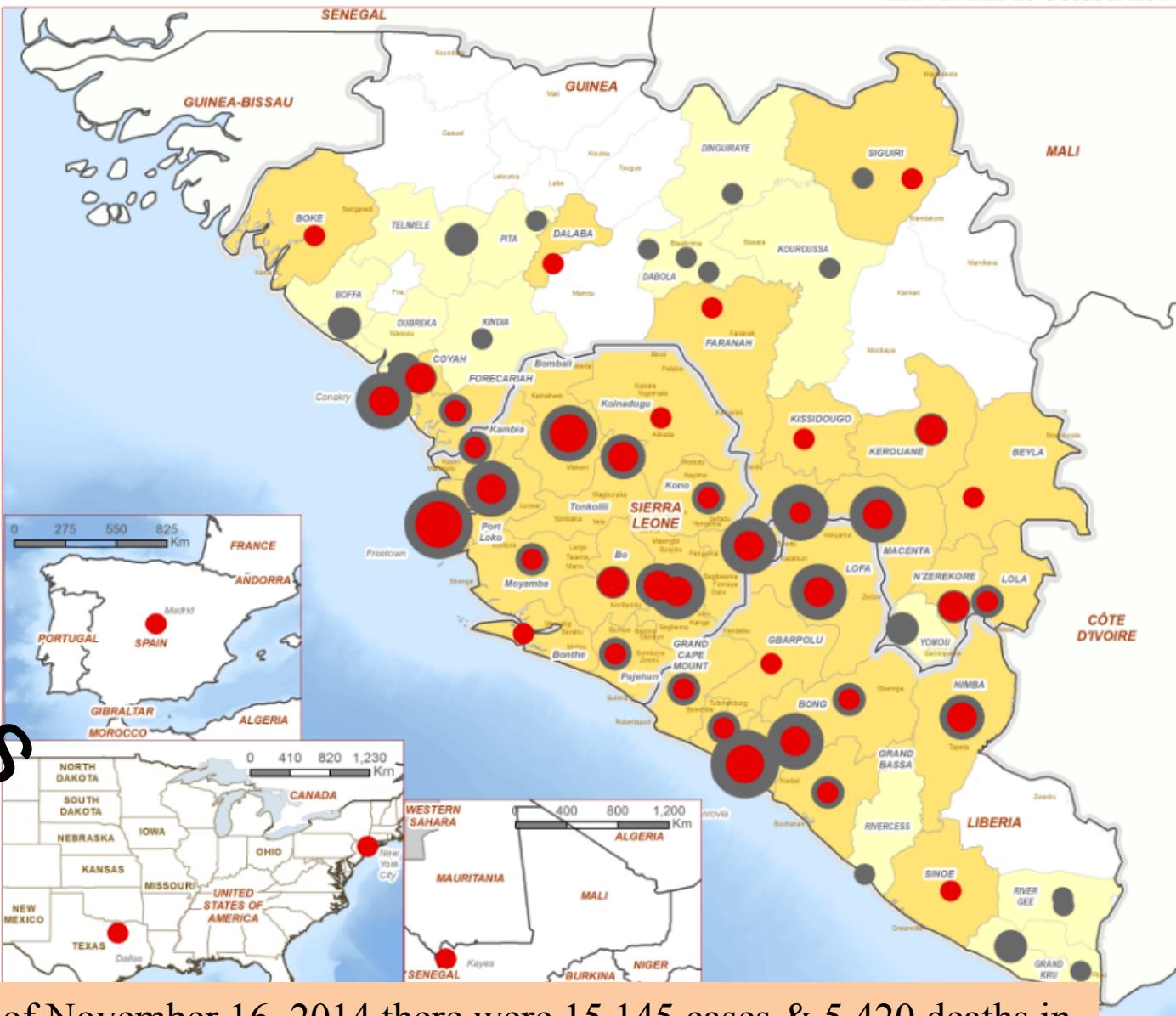


NOT ACTIVE - No cases in previous 21 days

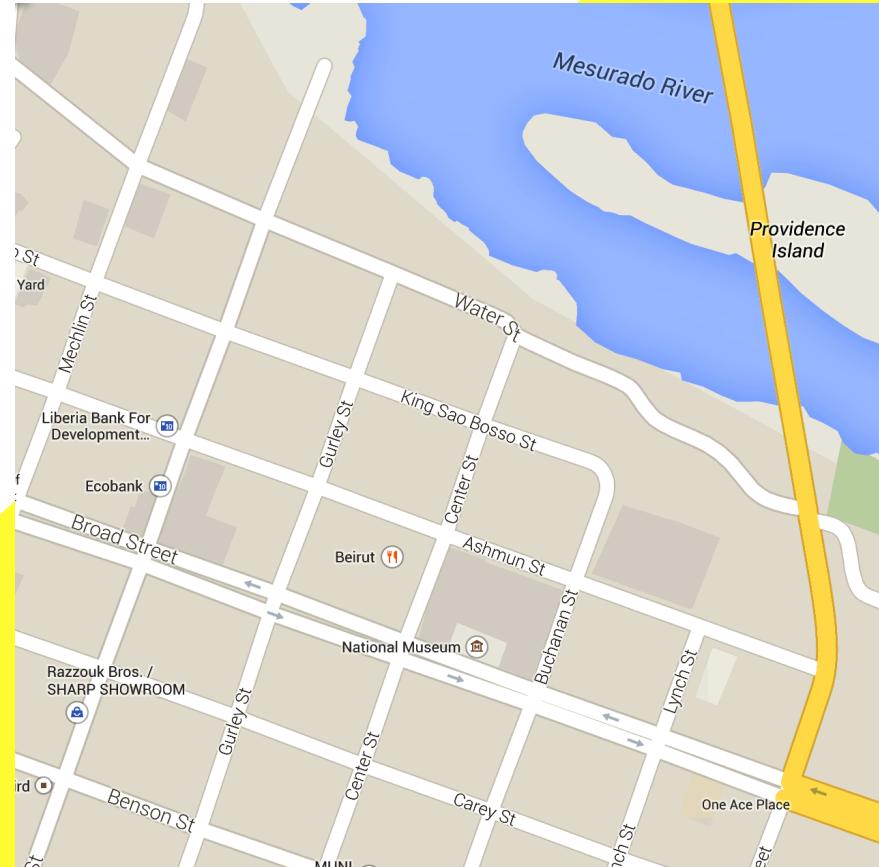
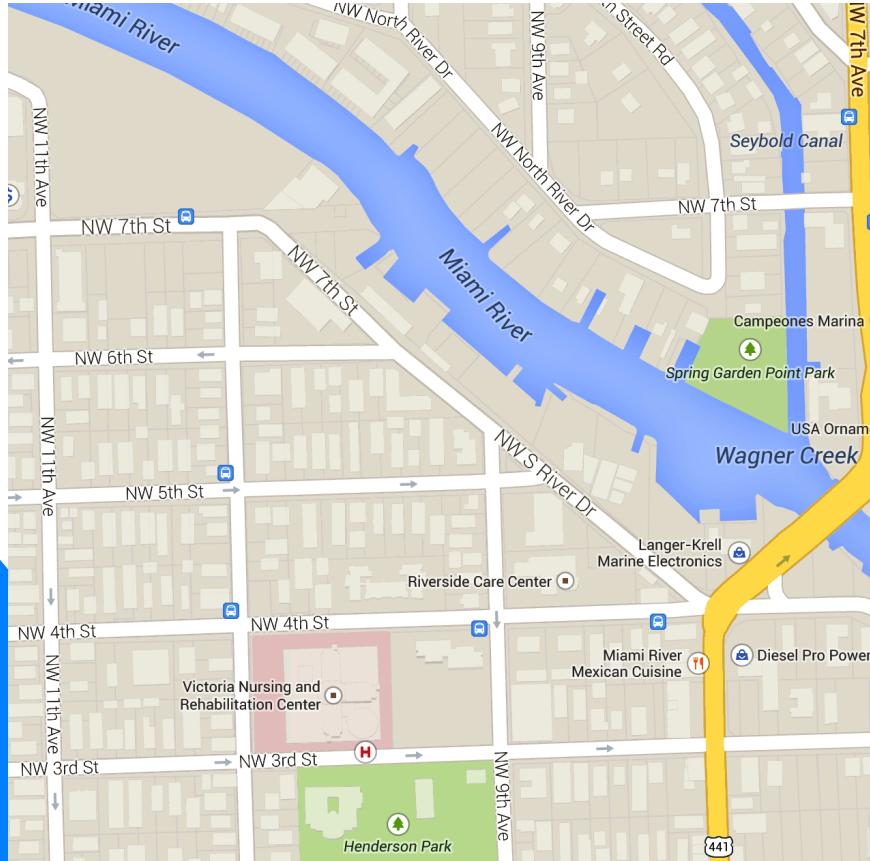
ACTIVE - New cases in previous 21 days

NEWLY INFECTED - New cases in previous 7 days (in previously uninfected areas)

Cases



WHO [reports](#) that as of November 16, 2014 there were 15,145 cases & 5,420 deaths in eight countries, and for health-care workers, 584 cases & 329 deaths in seven countries.

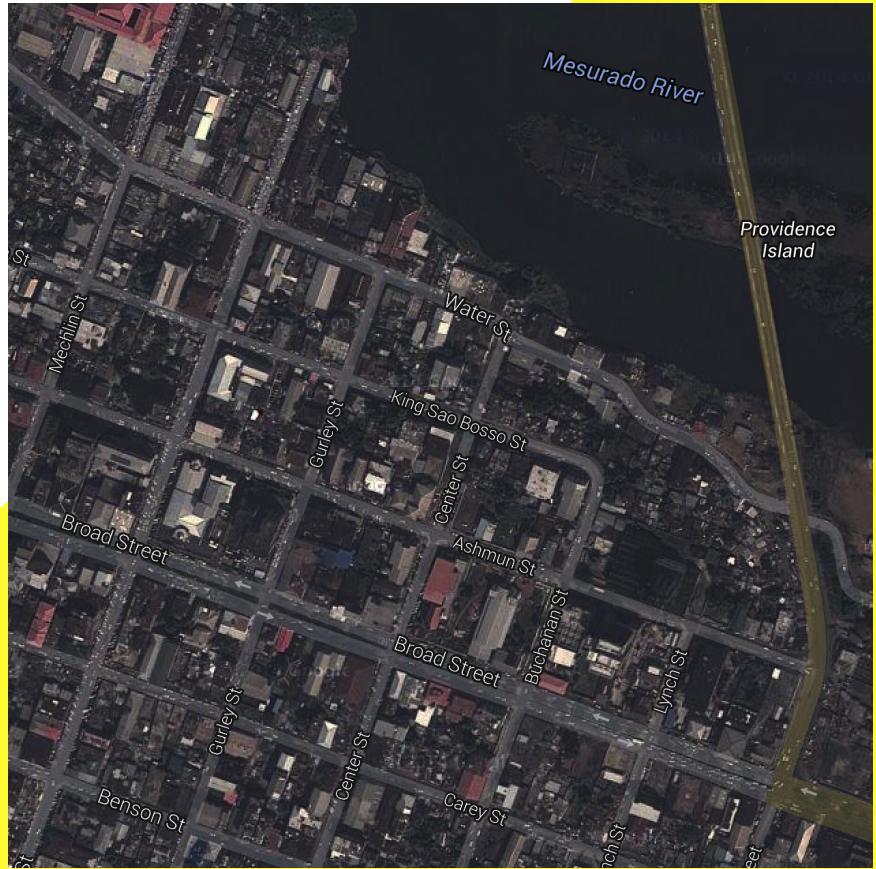
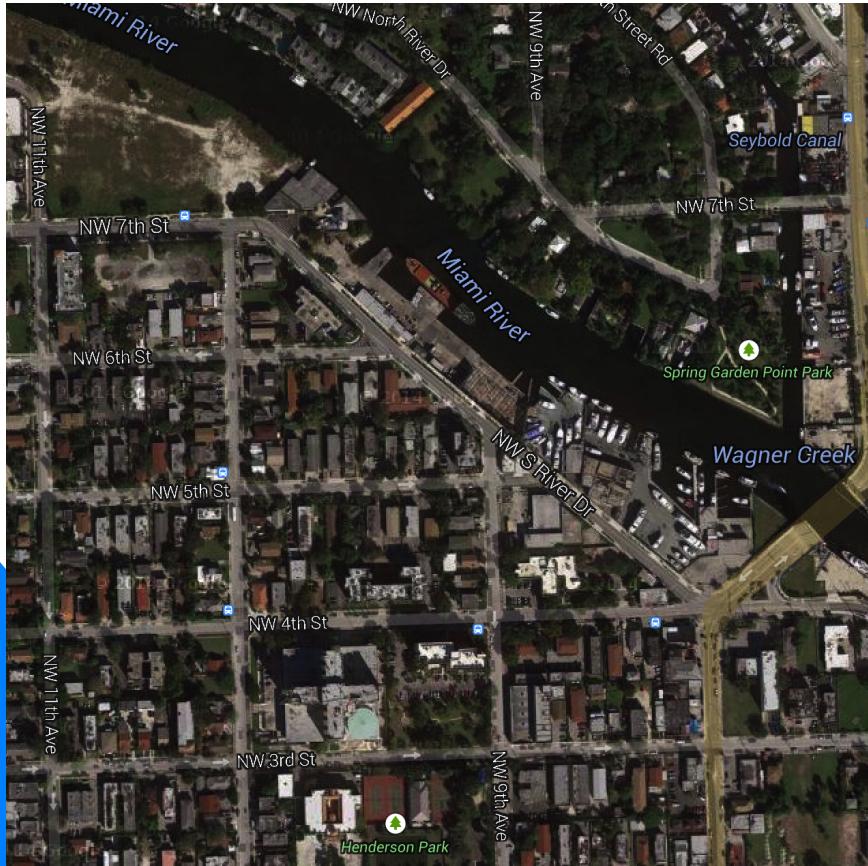


Map

Miami, Florida  
Population 417,650

Monrovia, Liberia  
Population 970,824

Where is the population at risk?  
How does one reach them?



# Satellite

Miami, Florida  
Population 417,650

Monrovia, Liberia  
Population 970,824

The population at risk is there, but harder to locate...  
as are entire villages and roads in rural areas.

Search

Where am I?

Go



## State of the Map 2014 ×

8th Annual Conference  
November 7th-9th 2014  
Buenos Aires, Argentina

## Node: Monrovia (27564980) ×

#otosm-task-662

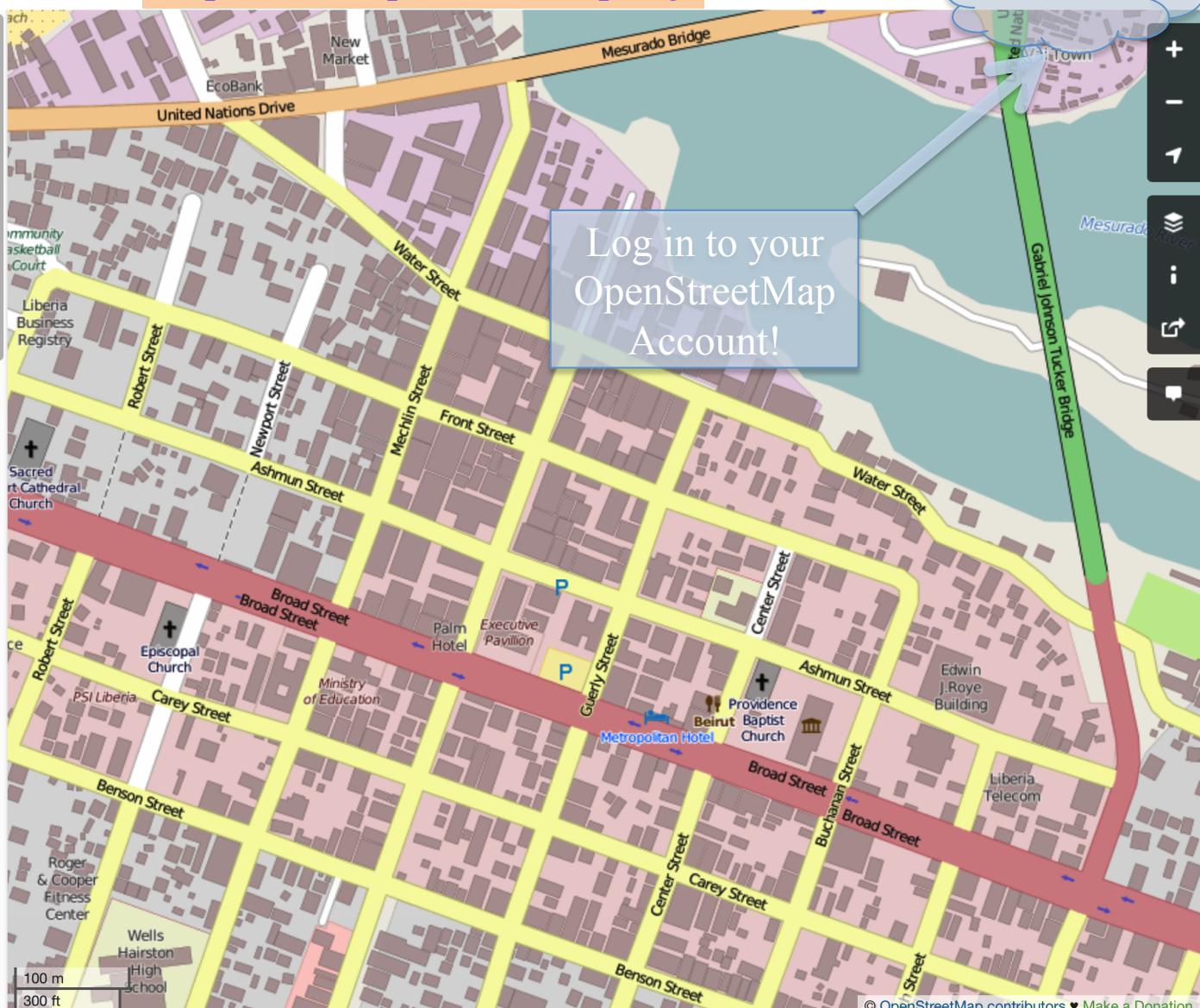
Edited 13 days ago by matthewsheffield

Version #17 · Changeset #25804002

Location: 6.3280343, -10.7977882

## Tags

admin_level	2
capital	yes
is_capital	country
is_in	Liberia
is_in:continent	Africa
is_in:country	Liberia
is_in:country_code	LR
name	Monrovia
name:am	ሞንጻዊያ
name:ar	مونرويفيا
name:de	Monrovia
name:be	Горад Манровія



Monrovia, Liberia — with **features** identified by volunteers like you!  
Using the OpenStreetMap platform — open data, open source.



FEATURED PROJECT

## West Africa Ebola epidemic

The Ebola Outbreak that struck Guinea in march 2014 later spread to Liberia, Sierra Leone and Nigeria causing at the beginning of august 1711 infections and 932 deaths. Aid organisations are taking emergency measures to contain the spread of this highly infectious and deadly virus. It is crucial for this work to drive rapidly through the territory and quickly locate those infected.

The Humanitarian OpenStreetMap Team [HOT] applies the principles of open source and open data sharing for humanitarian response and economic development.

The Humanitarian OpenStreetMap Team receives requests for better maps in specific areas from WHO, the Red Cross, Doctors Without Borders, et al.

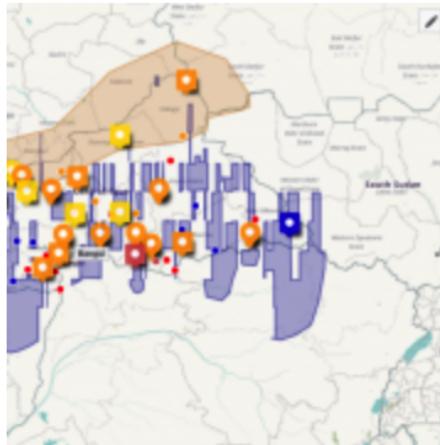
<http://hot.OpenStreetMap.org/projects>



West Africa Ebola  
epidemic  
**Active**



Haiti



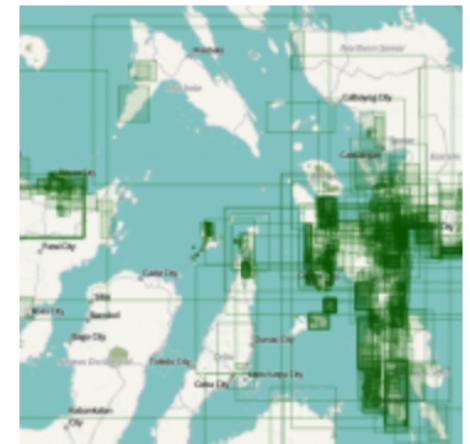
Central African Republic  
Activation



Mongolia, mapping  
Ulaanbaatar



OSM community  
mapping for Flood  
Preparedness in Malawi



Typhoon Haiyan

HOT works on many projects!

## GIS Support for the MSF Ebola response in Guinea in 2014 (Case Study)

We 03/26 10:00AM

We 03/26 18:00PM

Effective

Th 03/27 10:00AM

Th 04/17

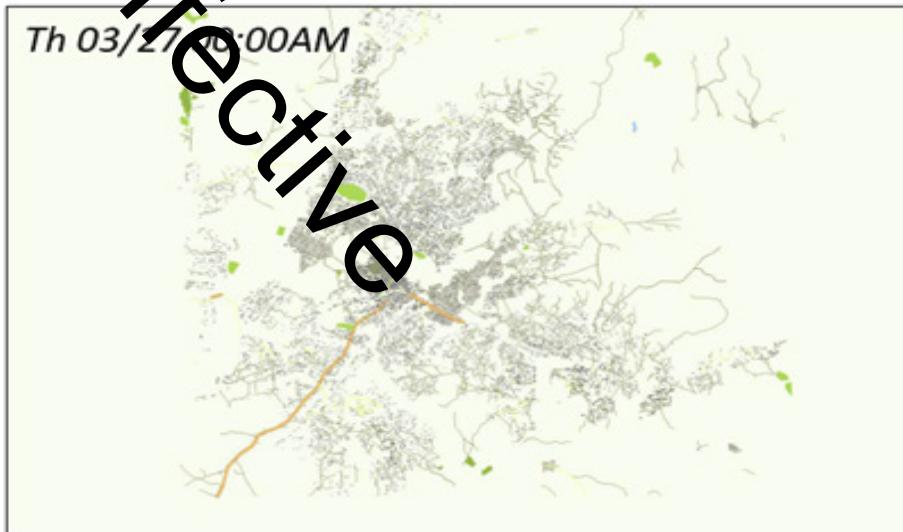


Table 2: Initial mapping of three cities as completed by the OSM volunteers within three days. Volunteers continued to work on maps of the region even after that period (see image bottom right).

“Based on this information, MSF [Doctors Without Borders] programme staff were able to respond to the outbreak faster, in a more targeted way and with fewer resources.”

[Toggle Legend](#)

## Legend

## Functional Laboratory Locations



## Drive Time (Hours)



1



3



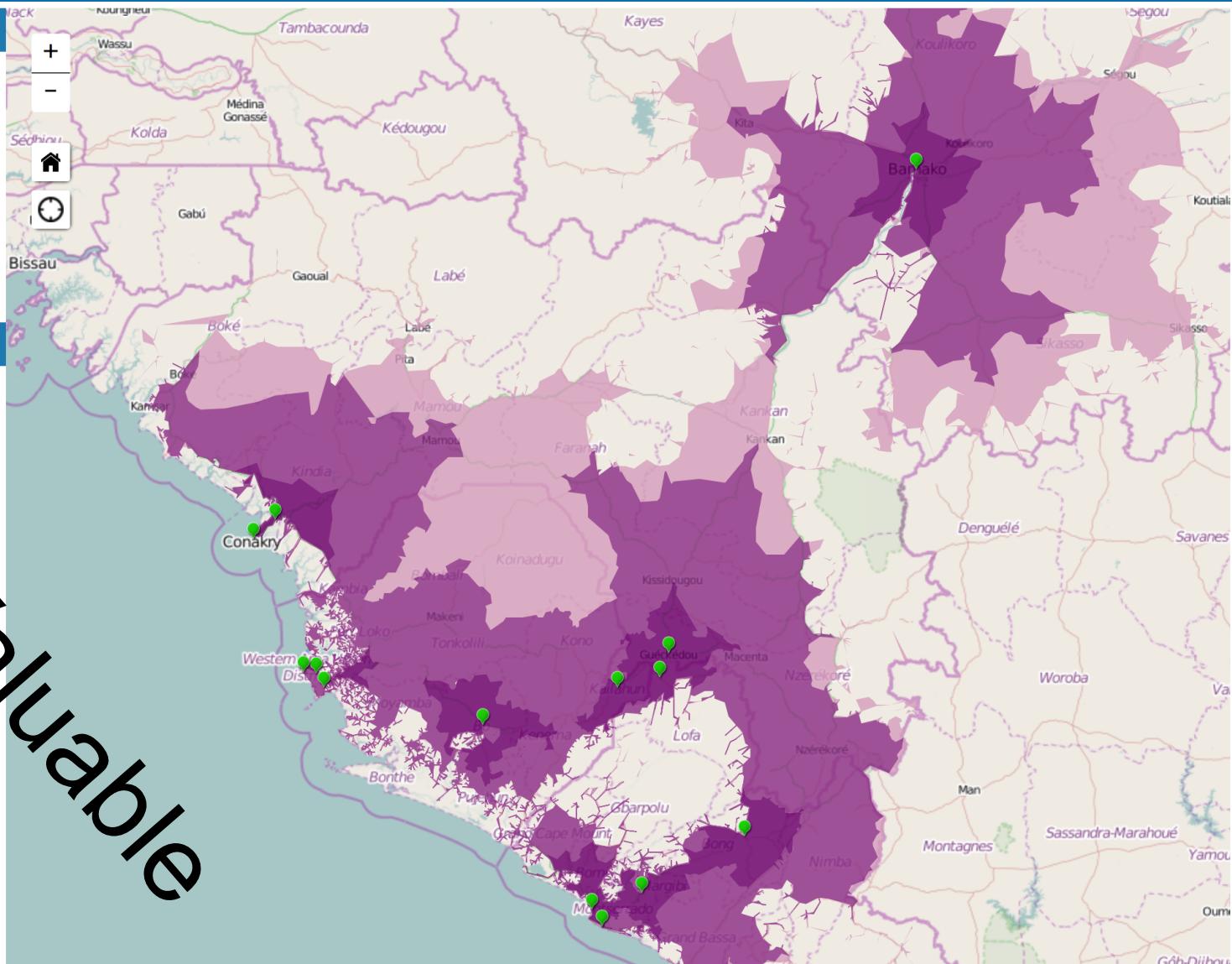
5

## About

NOTE: This is a draft product and should not be used for operational activities or analysis.

This map displays functional Ebola Virus Disease testing laboratories with 1-2-3-4-5 hour drive times calculated from OpenStreetMap Roads. Laboratory location, status and sponsor info is subject to change as updated data is received.

# Valuable



“This map displays functional Ebola Virus Disease testing laboratories with 1-2-3-4-5 hour drive times calculated from OpenStreetMap Roads.”

## Projects

 Search

Sort by: High priority first ▾

### #692 Ebola Outbreak, Freetown - More Buildings

- Author: HOT
- Requesting organization: MSF



Created by AndrewBuck - Updated 2 minutes ago - Priority: urgent

### #672 Ebola Outbreak, Port Loko, Bombali districts, road network

- Author: HOT
- Priority: High



Doctors Without Borders (MSF/DWB), the World Health Organization (WHO), and other humanitarian organizations are deploying for the Ebola epidemic going on there. More detailed basemap data (roads, villages, streets) is needed to assist in the response.

The purpose of this task is to make a first pass over the area and put in roads and important landuse areas.

Created by PierZen - Updated 7 minutes ago - Priority: urgent

# Projects

Each HOT project has one or more tasks, worked on by many individuals. Project #672 in this snapshot has six volunteers and a low completion rate of 32%. *Login, type in this web address, and click on a project.*

## About the Tasking Manager

OSM Tasking Manager is a mapping tool designed and built for the Humanitarian OSM Team collaborative mapping. The purpose of the tool is to divide up a mapping job into smaller tasks that can be completed rapidly. It shows which areas need to be mapped and which areas need the mapping validated.

This approach facilitates the distribution of tasks to the various mappers in a context of emergency. It also permits to control the progress and the homogeneity of the work done (ie. Elements to cover, specific tags to use, etc.).

## Questions About Tasks, Mapping or HOT?

If you have any questions about a project, a task or mapping in general please ask on our mailing list: [HOT E-Mail List](#)

Or visit us in our IRC Chat Channel, just select #hot from the pop down channel list: [OSM HOT IRC Channel #hot](#)

General inquiries and comments are welcomed at: [info@hotosm.org](mailto:info@hotosm.org)

Current volunteers and amount completed.

This site will request access to your OpenStreetMap account — allow it.

## #672 - Ebola Outbreak, Port Loko, Bombali districts, road network

[Instructions](#) [Contribute](#) [Activity](#) [Stats](#)

## Justification

There is a resurgence of the Ebola outbreak, and a risk of the epidemic spreading with the multiplication of sites of infection. Maps are needed to help locate people at risk and to support distribution of food and material.

Changeset Comment ?

#hotosm-ebola-672

2014 West Africa Ebola Response [Wiki Coordination Page](#)**Please map in all roads and residential landuse in the area using bing imagery.**

Map roads (dirt roads) and smaller paths for as far as you can follow them. Tag roads according to the [Highway Tag Africa](#) wiki page. Most roads connecting villages should either be *unclassified* or *tertiary* with only occasional small clusters of isolated houses being connected to the road network by a *track* (only use path if it would be too small to even drive a 4x4 vehicle on).

Also trace *landuse=residential* around clusters of houses and mark large open areas (not fields, just smooth open ground next to towns) as *leisure=common* as these are potential helicopter landing sites. Another common and useful feature to tag is school areas, easily identified as 1 or 2 long buildings at the edge of the village often with two small toilet buildings behind them. The schools are almost always accompanied by a large open area for the children to play in, tag the whole area of the school complex with *amenity=school* and trace the school buildings and bathrooms (don't worry about the buildings in the rest of the town for now).

Note that for some areas, clouds will obscure the view. In these areas, do your best. We will revise the mapping of these areas when new imagery is available.

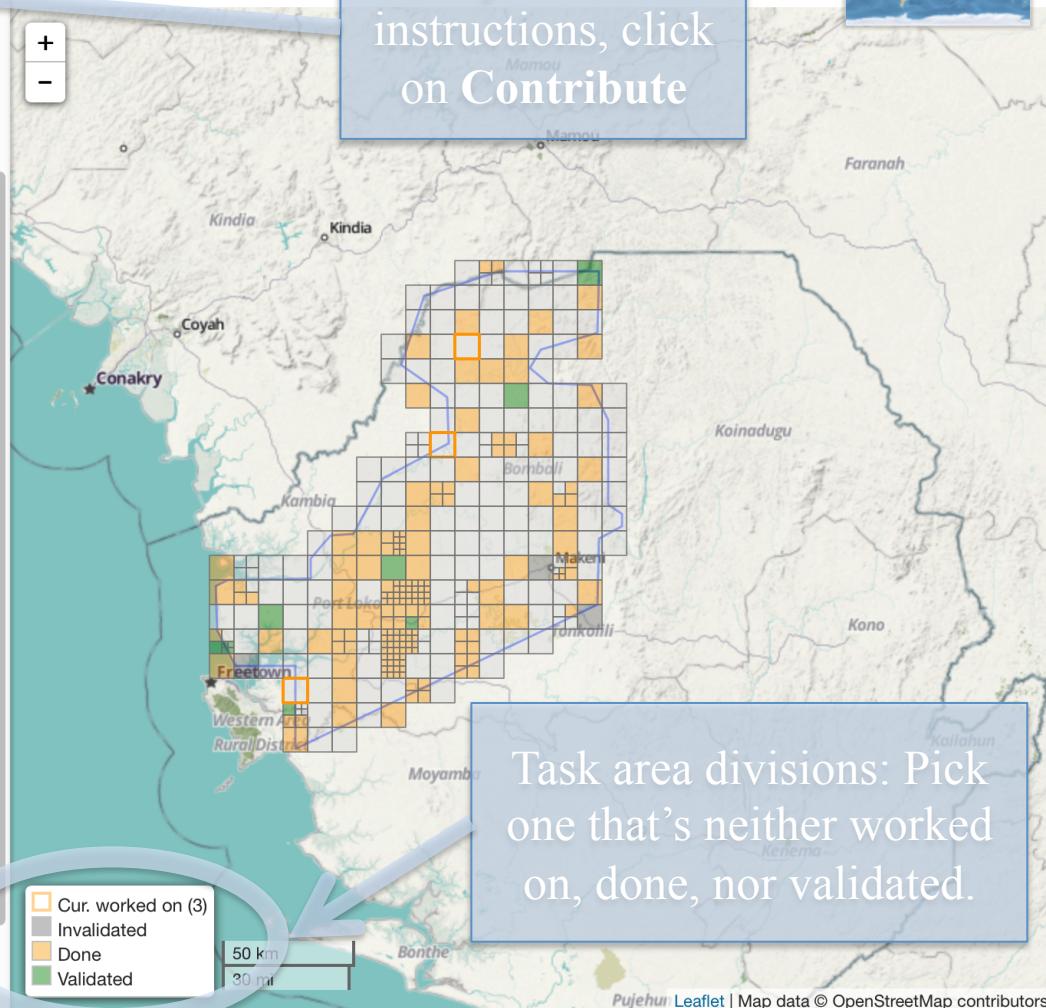
**Save with credit to NutOSM! Comment the changeset with: Sierra Leone,**

#hotosm-ebola-672

And use the following source tag either on the objects you create or on the changeset itself (if using JOSM): **source=Bing**

# Instructions

After you read the instructions, click on **Contribute**



Task area divisions: Pick one that's neither worked on, done, nor validated.

*Read the instructions carefully.*

Note the standard tags recommended, and the link to [Highway Tag Africa](#).

## #672 - Ebola Outbreak, Port Loko, Bombali districts, road network

[Instructions](#)[Contribute](#)[Activity](#)[Stats](#)

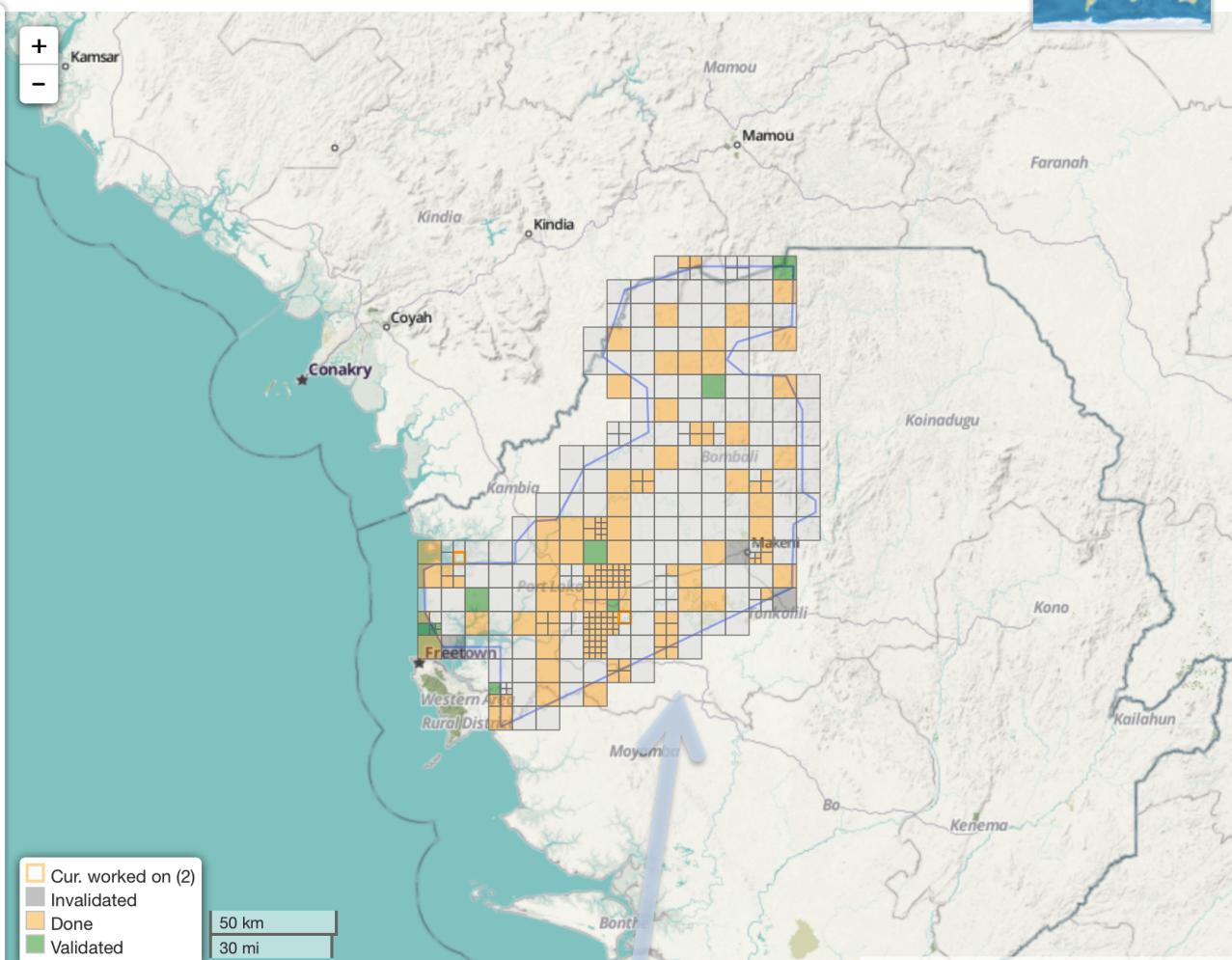
Select a task on the map



or

[Take a task at random](#)

# Tasks



Select a task: click on a square on the map, or take one at random.  
A small one is a good place to get familiar with the process.

## #672 - Ebola Outbreak, Port Loko, Bombali districts, road network

[Instructions](#)[Contribute](#)[Activity](#)[Stats](#)

Task #109

[Start mapping](#)

Leave a comment

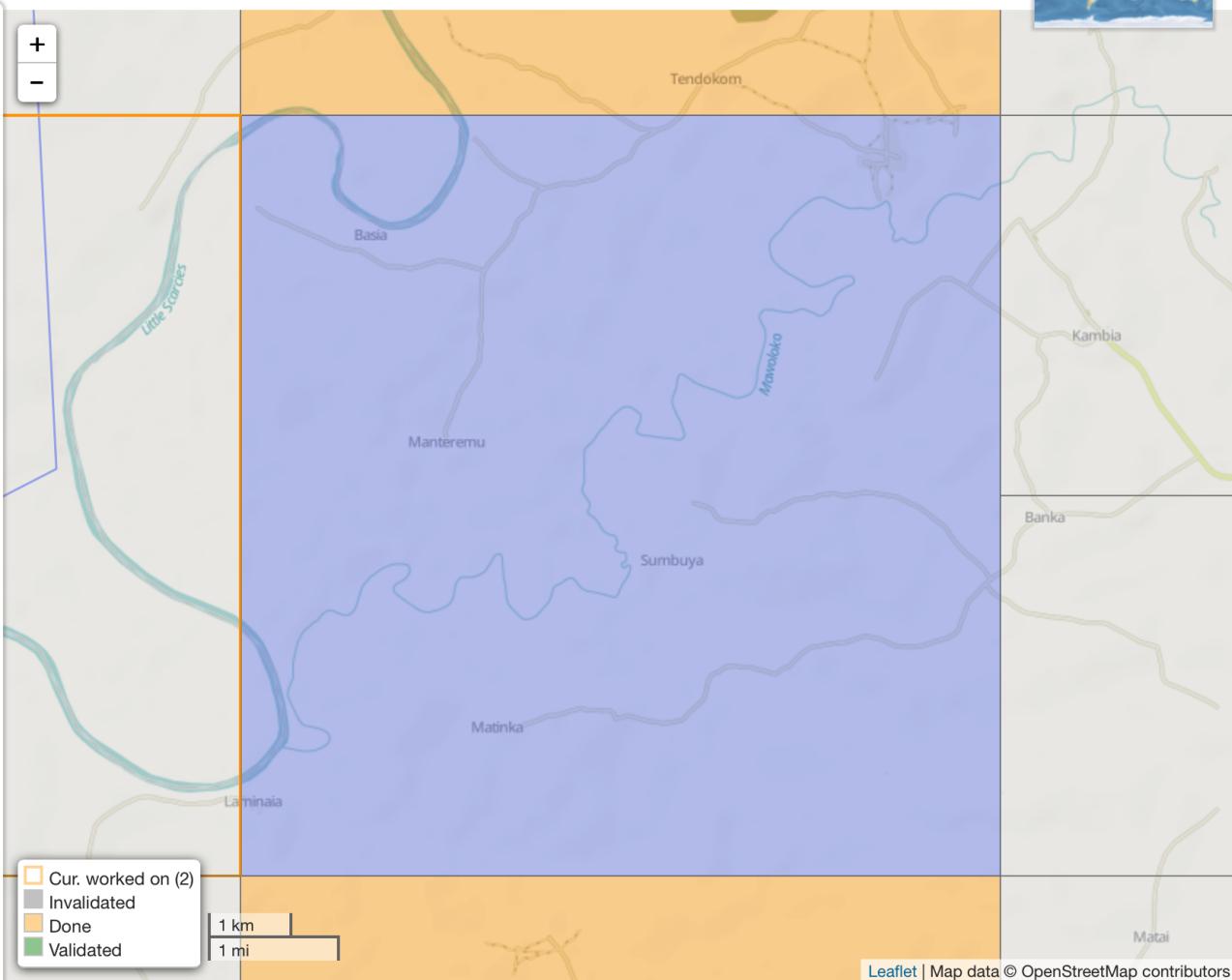
[Comment](#)

Nothing has happened yet.

OSM changesets

Review the area,  
then *Start mapping*

# Contribute



Leaflet | Map data © OpenStreetMap contributors

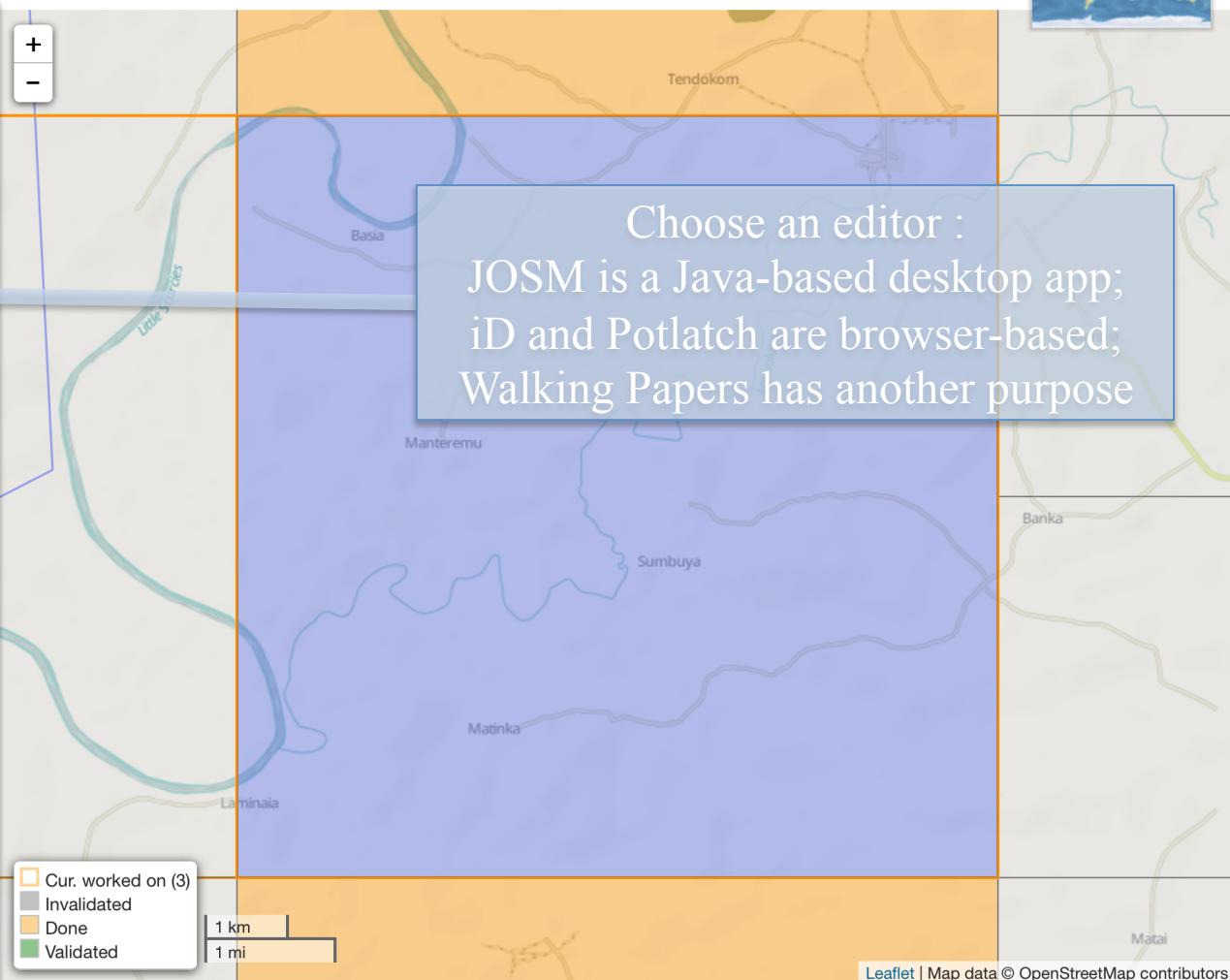
*Start mapping*When you click this button, you **lock** this area so no one else can work on it.

## #672 - Ebola Outbreak, Port Loko, Bombali districts, road network

[Instructions](#)[Contribute](#)[Activity](#)[Stats](#)**Task #109**

Locked by you.

- [Edit with](#)
- [JOSM](#)
- [iD editor](#)
- [Potlatch 2](#)
- [Walking Papers](#)

[Unlock](#)[✓ Mark task as done](#)[Leave a comment](#)Locked by Andy Anderson  
2 minutes ago[OSM changesets](#)*For now, choose the iD editor*

This works best with Google Chrome browser.

Note: you may also want to split an area here to make it smaller.

Point

Line

Area



Save

## Welcome to the iD OpenStreetMap editor

iD is a friendly but powerful tool for contributing to the world's best free world map. This is version 1.5.4. For more information see [ideditor.com](http://ideditor.com) and report bugs at [github.com](https://github.com).



Start the Walkthrough



Edit Now

+ Zoom in to Edit

Edit Now

The browser opens a new window with satellite imagery and an outline of the task area.

*Edit Now!*

bing © 2014 DigitalGlobe, © 2014 GeoEye, Pleiades Geographics SIO, © 2014 Microsoft Corporation

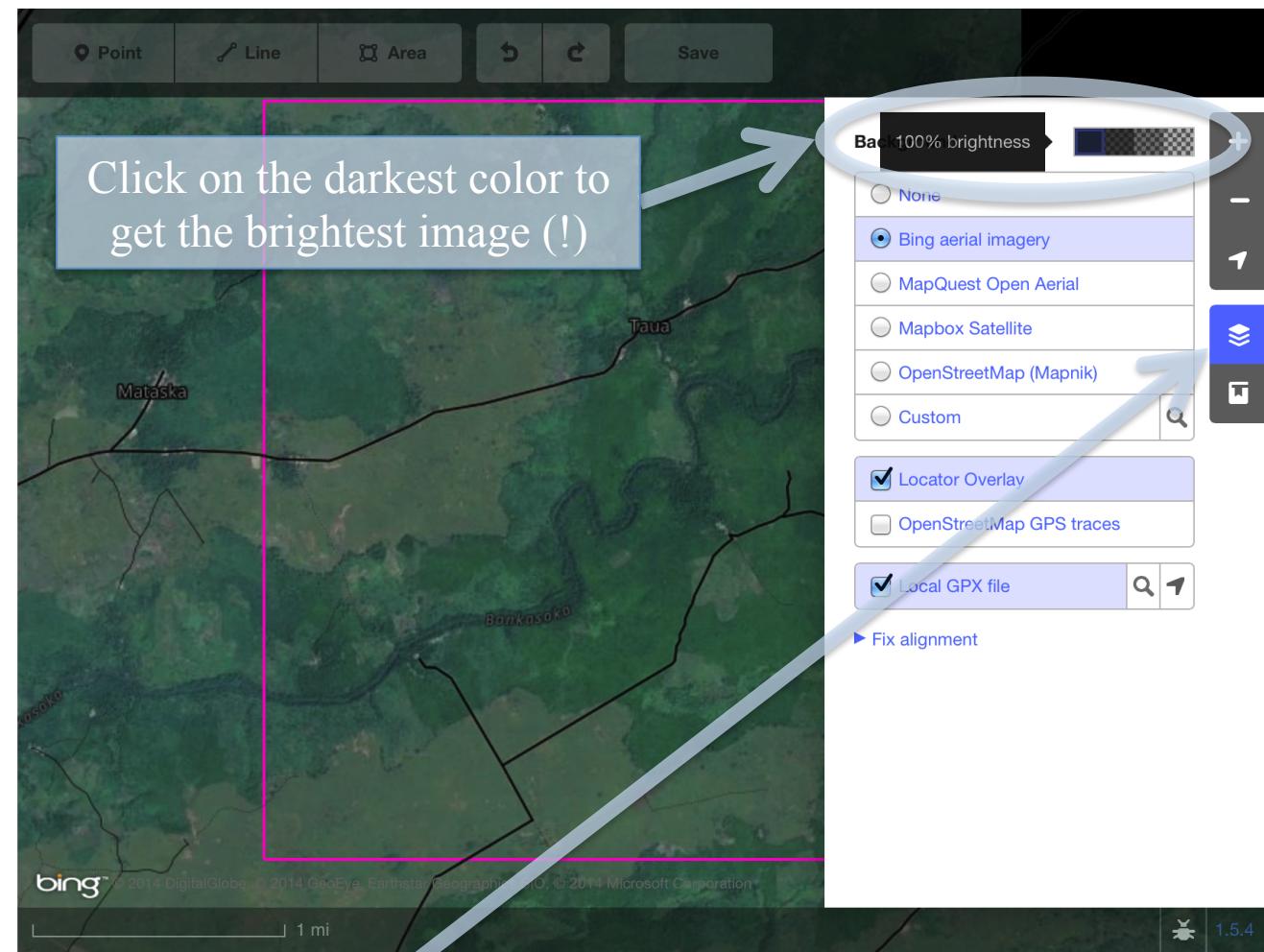
1 mi

Fengka

Terms & Feedback



1.5.4



# Brightness

You'll usually want a brighter image, so:

*Click on the **Background** button;*

*Click the **brightest** setting;*

*Click on the **Background** button again to dismiss the panel.*

## Edit feature

Point

Line

Area



Save



Residential

## Name

Common name (if any)

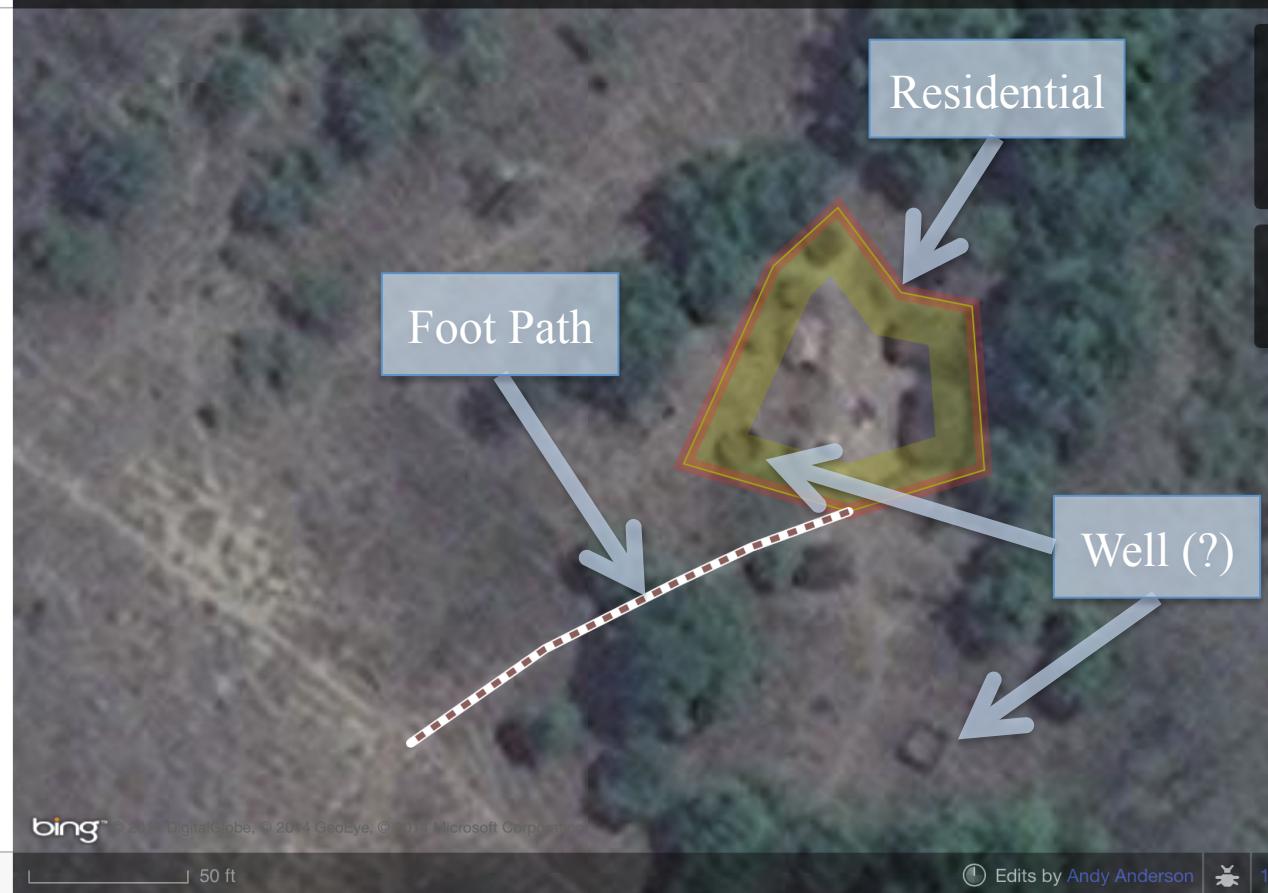
## Source

Bing aerial imagery

## All tags (2)

landuse	residential
source	Bing aerial imagery

## All relations (0)



# Identify

Scan the image to identify features to outline:

*Use + - to zoom in and out;*

*Click-and-drag ⌂ or use arrow keys to move the image around.*

## Edit feature



Residential

## Name

Common name (if any)

## Source

Bing aerial imagery

## All tags (2)

landuse

residential

source

Bing aerial imagery

## All relations (0)

The screenshot shows the OpenStreetMap editing interface. At the top, there's a toolbar with 'Edit', 'History', 'Export', 'GPS Traces', 'User Diaries', 'Copyright', 'Help', and 'About'. Below the toolbar, a sub-menu for 'Edit feature' is open, showing a 'Residential' icon and the word 'Residential'. There are sections for 'Name' (with 'Common name (if any)'), 'Source' ('Bing aerial imagery'), 'All tags (2)' (with 'landuse:residential' and 'source:Bing aerial imagery'), and 'All relations (0)'. On the right side of the screen, there's a map view showing a green residential area with a yellow outline, a red dashed line, and a blue point. A large grey callout box points to the 'Area' tab in the top menu. Arrows point from labels 'Area', 'Line', and 'Point' to their respective features on the map. The map also includes a 'bing' watermark and a scale bar of '50 ft'. At the bottom right, it says 'Edits by Andy Anderson' and '1.6.2'.

# Tools

*Choose a tool to outline a feature:*  
**Points** for wells, monuments, and other points of interest;  
**Lines** for roads, tracks, paths, and rivers;  
**Areas** for buildings, villages, school yards, and commons

Search features

Point

Line

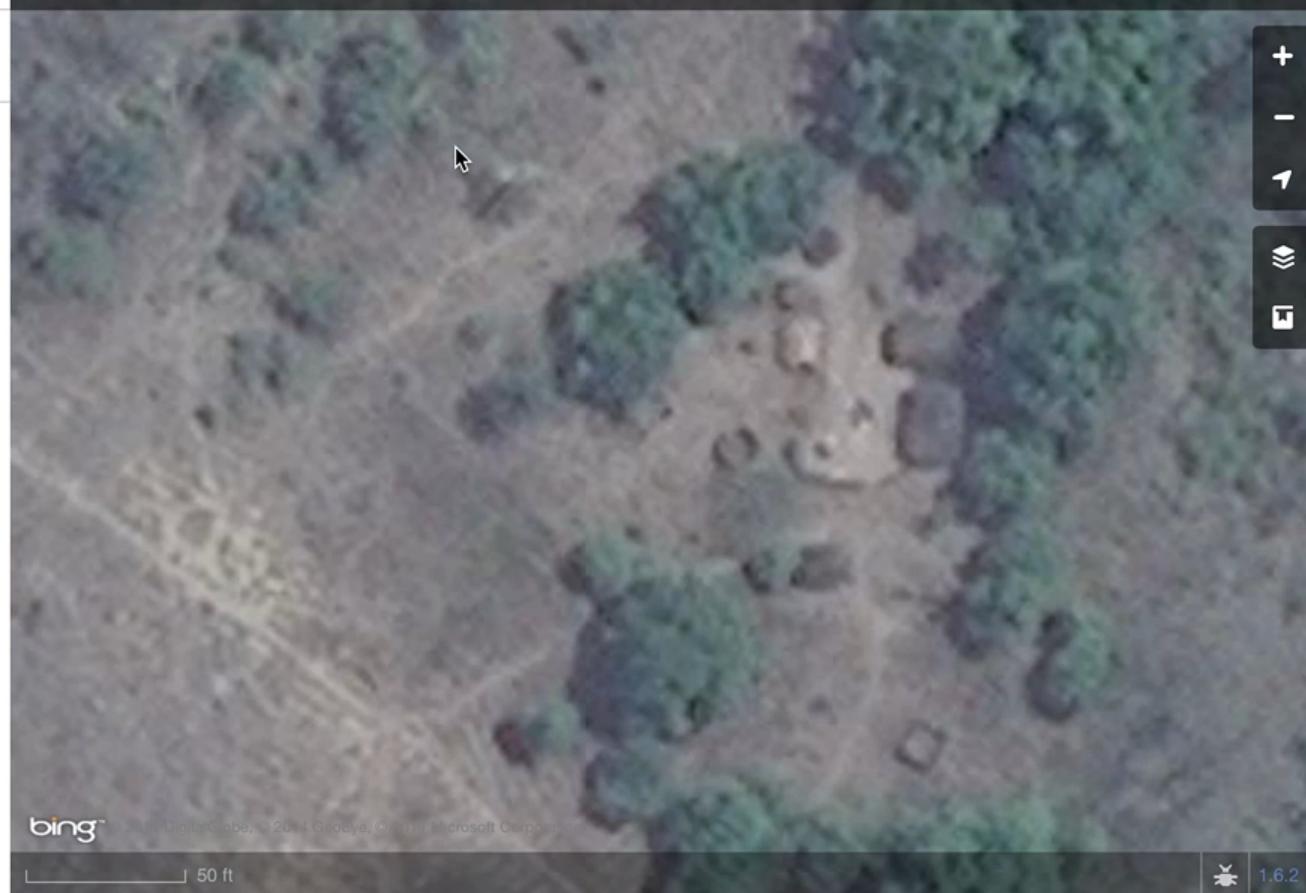
Area



Save

+  
-  
1  
  

Search



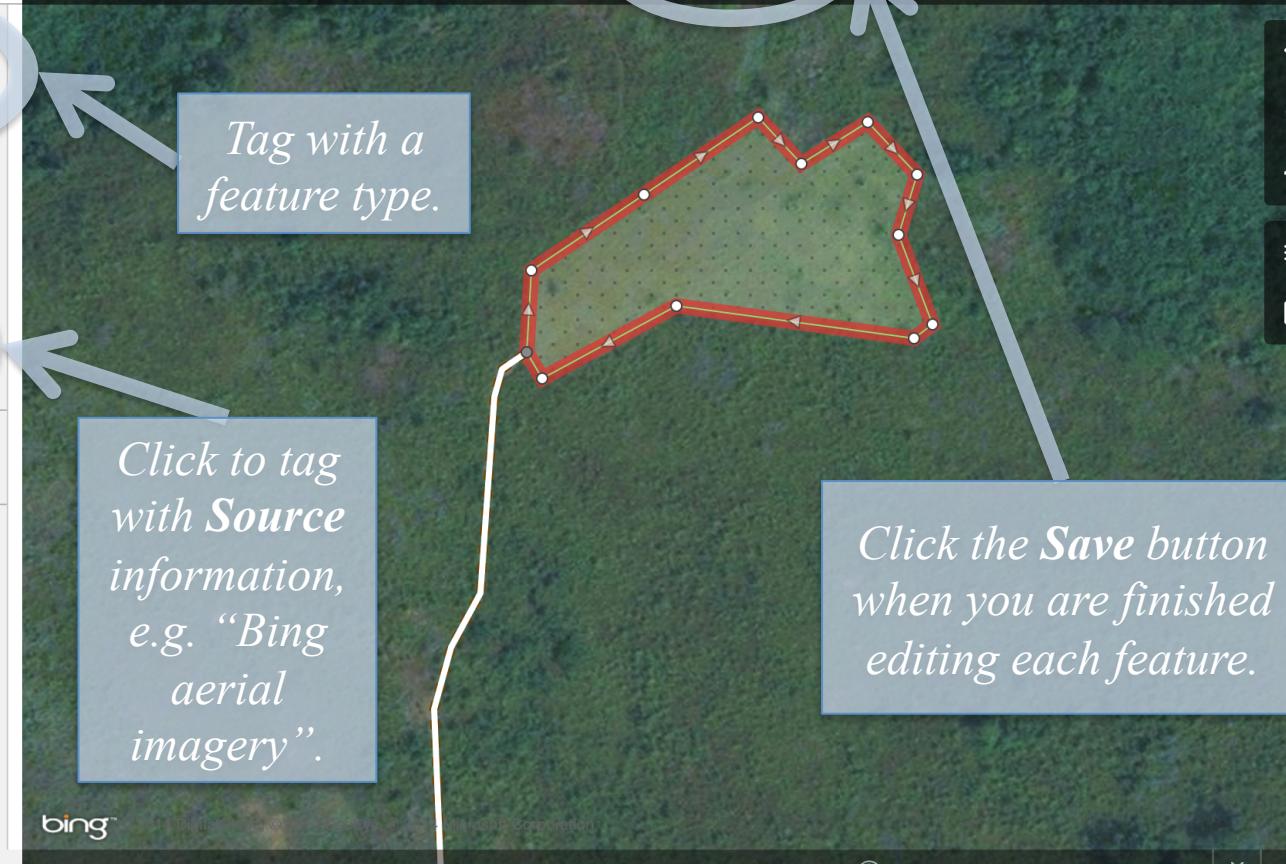
# Outline

As shown in the above video:

*To trace a feature, click where the first point should be, then click on bend points;  
To move the image, click-and-drag (won't leave a point) or use arrows keys.  
Double-click on the last point to finish (or, for areas, click the first point).*

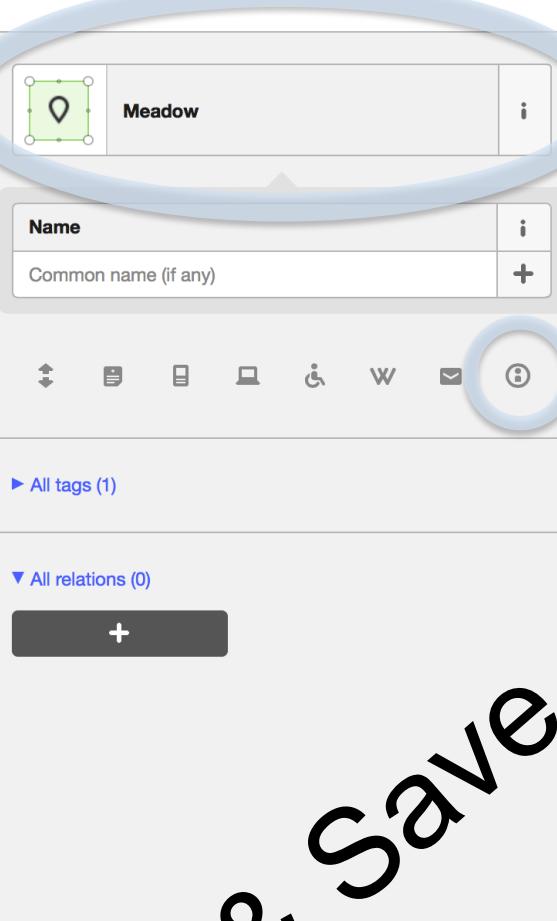
Edit feature

PointLineAreaSave



*Tag with a feature type.*

*Click to tag with Source information, e.g. "Bing aerial imagery".*



*Click the Save button when you are finished editing each feature.*

Tag &amp; Save

*Every feature you create should be tagged with a type.  
The source of imagery used should also be tagged (in the iD editor, not JOSM).  
Click the **Save** button when you are finished editing each feature.*

## Save Changes



Commit message

#hotosm-ebola-672

Save

The changes you upload as Andy Anderson will be visible on all maps that use OpenStreetMap data.

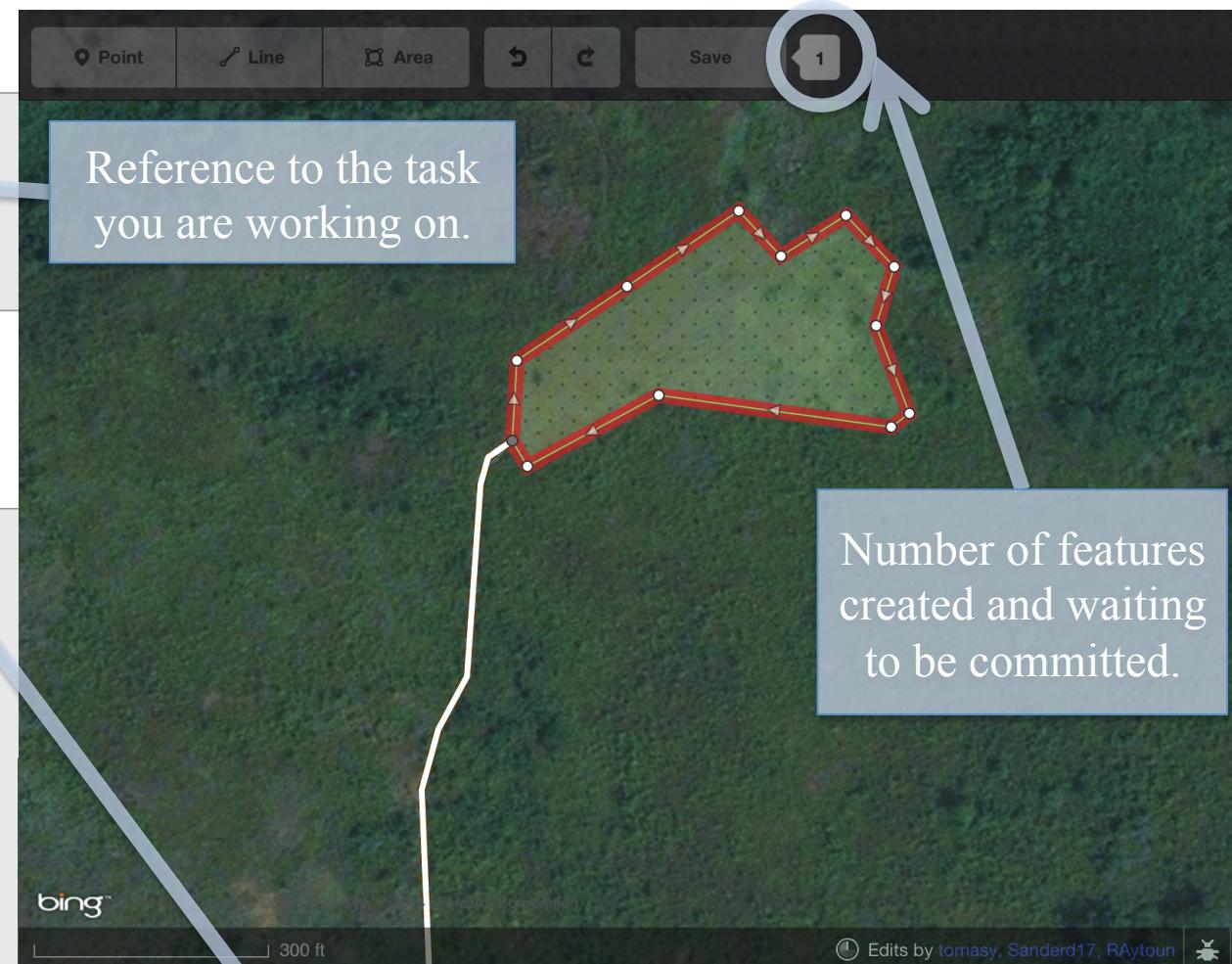
1 Changes

Created Track

Reference to the task you are working on.

1

Number of features created and waiting to be committed.



# Commit

*Click the second **Save** button to commit all of your changes to OpenStreetMap, where others can review them.*

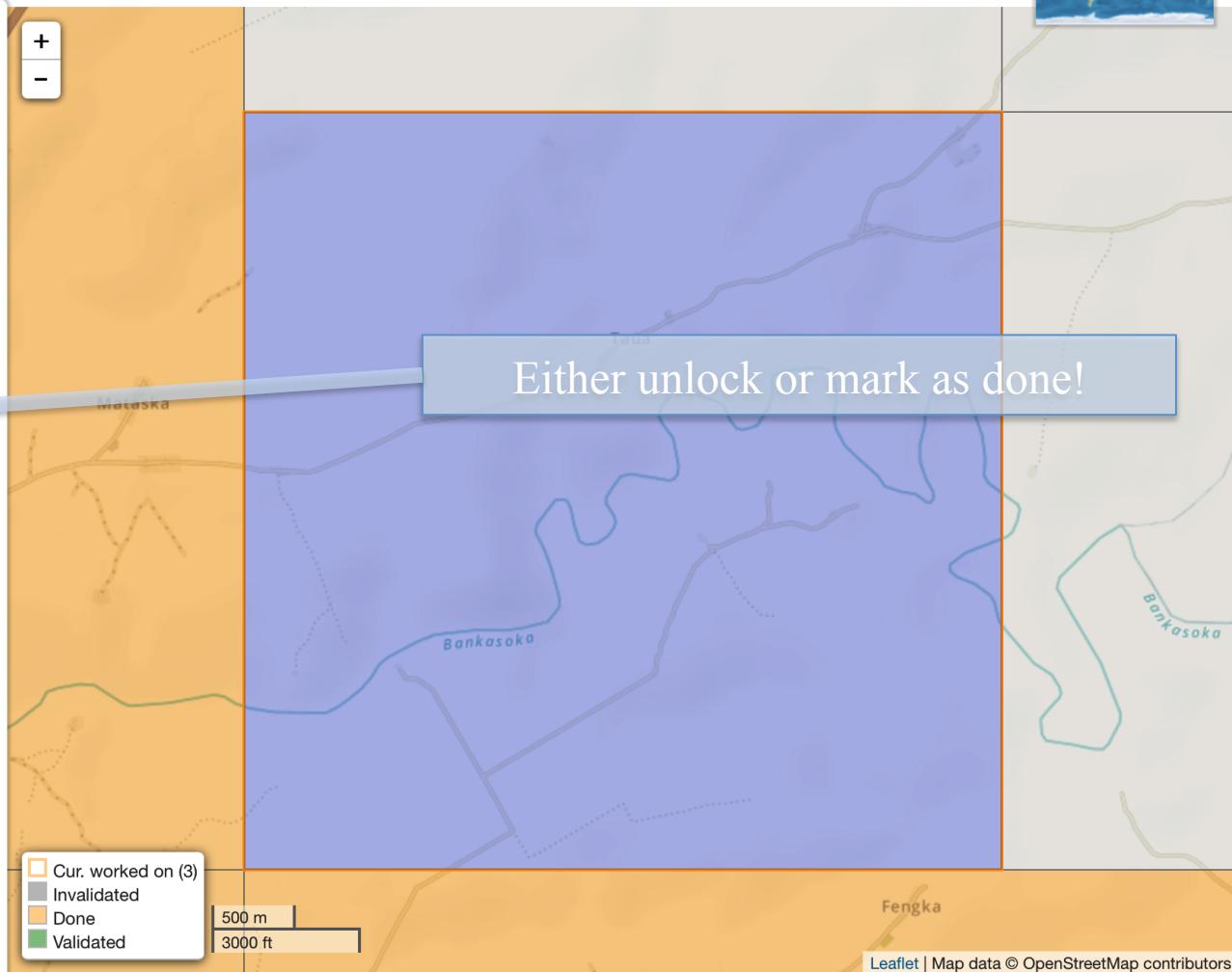
## #672 - Ebola Outbreak, Port Loko, Bombali districts, road network

[Instructions](#)[Contribute](#)[Activity](#)[Stats](#)**Task #401****Locked by you.**

87 min. left

[Edit with iD editor](#)[Task is too big? Split](#)

Leave a comment

[Unlock](#)[✓ Mark task as done](#)**Locked by Andy Anderson**  
about an hour ago[OSM changesets](#)**Either unlock or mark as done!**

*Finish by returning to the Task Manager window (separate from OpenStreetMap) and unlocking your task, or mark it as done!*

## Procedure Review:

1. From <http://www.OpenStreetMap.org>, Log in to Your Account.
2. From <http://tasks.hotosm.org>, Pick a Project.
3. For each project **Read the Instructions**.
4. Click on the link **Contribute**.
5. Click on **Select a Task**.
6. Click on **Start Mapping**.
7. From the menu, **Choose an Editor**.
8. Now back in OpenStreetMap, **Adjust the Brightness**.
9. Study the image to **Identify Features**, e.g. villages, roads, etc.
10. **Select a Tool**: Area, Line, Point and then **Outline a Feature**.
11. Set **Tags** for **Feature Type** and **Source**, and **Save (Feature)**.
12. Then **Repeat** the above three steps, and often **Save (Commit)**.
13. Return to Task Manager and either **Unlock or Mark as Done**.

Summary

## Resources for more information:

Magazine Article:

<http://www.fastcompany.com>

OpenStreetMap:

<http://www.OpenStreetMap.org>

HOT page:

<http://hot.OpenStreetMap.org>

Projects page:

<http://tasks.hotosm.org>

Tutorial:

<http://learnosm.org/>

Another tutorial:

<http://mapgive.state.gov>

HOT Mailing List:

<https://lists.openstreetmap.org/listinfo/hot>

Resources

## Western Massachusetts Contacts:

Andy Anderson [aanderson@amherst.edu](mailto:aanderson@amherst.edu)

Victoria Beckley [vbeckley@smith.edu](mailto:vbeckley@smith.edu)

Jon Caris [jcaris@smith.edu](mailto:jcaris@smith.edu)

Theresa Clary [tclary@workforcestrategies.com](mailto:tclary@workforcestrategies.com)