

We count lights, because the night counts!

The **Nachtlichter** app project

Nachtlichter is one of two projects within the Citizen Helmholtz Network for the study of night light phenomena (**Nachtlicht-BÜHNE**), a citizen science project funded by the Helmholtz Association of German Research Centres.



What's it about?

Nachtlichter is an [app](#) that was co-designed by a team of citizen scientists and researchers at the German Research Centre for Geosciences (GFZ). The main project aim was to count the sources of light emission from human settlements, and campaigns for this purpose were run in 2021. Now we're running a second, smaller campaign, in order to understand **how lights change throughout the course of the night**. If you'd like to help us do that, then this document is for you!

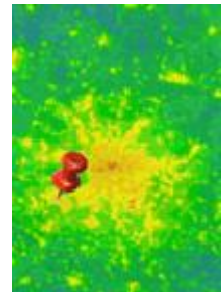
How do we count lights?

We aim to document **all of the artificial lights** that are visible from publicly accessible spaces in selected areas, from bright floodlights to dim doorbells. In order to make this easy and fun, we've developed a mobile app called '**Nachtlichter**' ('**night lights**'). This free app allows participants to systematically count light sources, and document their **type, color, emission direction, size, and brightness**. Data are collected along street segments. Privacy is ensured by including either zero or more than 3 households along a given transect (typically from one street corner to another).



Where do we count lights?

Measurement campaigns can be organized anywhere that artificial lights are visible from publicly accessible spaces. For this analysis, we're looking for a diverse set of situations, especially including commercial areas and residential areas.



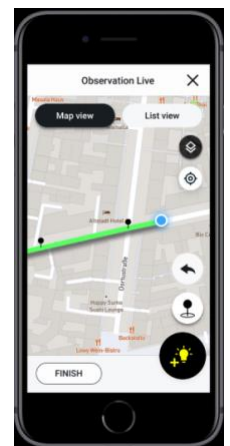
How can I take part?

As a first step, you should do our [online tutorial](#), which explains our categorization system and how to use the app in 15-20 minutes. Next, you'll have to choose a street (or multiple streets). If you live in one of the areas from our 2021 campaign, you can do your survey along one of those street segments ("transects"). If not, you will have to create your own transects. We explain how to do this below.

On the next page, provide a few more details about what time and on which days we would like you to make observations.

What happens next?

After the campaigns, our team of GFZ researchers and citizen scientists will analyze the results. The data and project results will be published in **open access** form, and the collected data will also be published under an **open data license**.





Detailed instructions for taking part

Step 1: Make sure you want to do this

- Make sure that such a measurement campaign is legal in your country, and that it is legal for you to send your data to servers in the European Union.
- Go through our [tutorial](#), so that you understand the app works, and if you like, watch our [instructional video](#) to learn more about the project.
- Make sure the app works on your phone by [installing it](#), creating an account, and checking that your location is found when you click the button shown at the right.
- If you have problems with these steps, please check our [Frequently Asked Questions](#) page. If you need further help, contact us directly (see end of document).



Step 2: Choose a street (or streets) to survey

- If it is possible for you to do the experiment on multiple streets in your town, that would be helpful. This is especially the case if you can survey streets with different characters (e.g. a residential streets and a street in shopping area).
- To preserve the privacy of individuals, we have a rule that transects must contain either zero or at least four households.
- If you use a transect that's already in the app, then this is taken care of. If you create your own transect, please be sure to follow this rule!
- Transects should generally go from one street corner to the next, but if you are defining your own transects, you may need to sometimes do something different (e.g. do two streets as one transect) to ensure that you don't have 1-3 households living along your transect.
- Do not create transects in areas where you do not have permission to be (e.g. private back yards)!

Step 3: Choose times at which to make the observations

- We are running the current campaign from February 22 until April 13.
- We particularly need observations from the early and late part of the evening:
 - The first observation should ideally be before 20:45.
 - The final observation should ideally be after 23:15 (after midnight is even better).
 - Even if these times don't work for you, you're still welcome to take part!
 - There should be at least 1 hour between the observations.
 - Please don't make observations at a time very close to when you know that lights on a timer will turn off.
 - We need at least 2 observations **taken by the same team on the same night**. But you are welcome to do 3 or 4 observations.
 - That said, you are welcome to repeat the experiment on a different night!
- **Please DO NOT make observations on March 26 (the night of "Earth Hour")!**
- You can make observations on any day of the week that works for you, but we'd especially appreciate data taken during Tuesday-Saturday nights.

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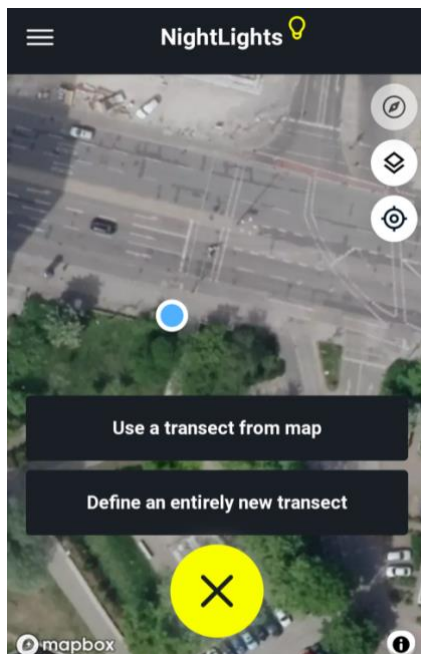


Step 4: Go out at night, and count the lights!

- Go to the location where you want to start your first survey.
- If the transect exists already, then select it by clicking on “use a transect from map”
- If you have to create a new transect from scratch, follow the next steps

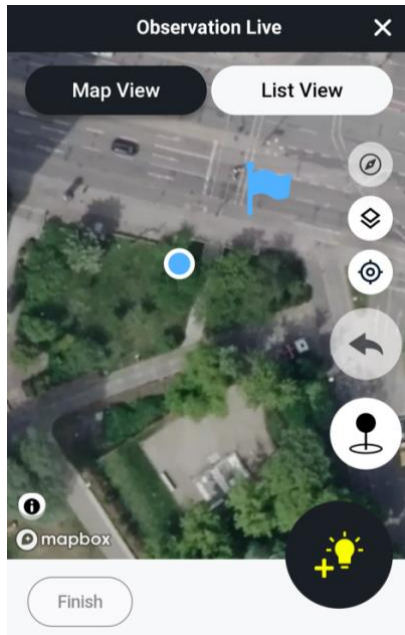
(Note: if transects already exist where you want to survey, you can skip to step 5)

- Go to the location where you want to start your first transect.
- If your location is not already shown by the blue dot, click the location button.
- Make sure that the blue dot is correct (to within about 15 meters). If the location is very wrong, wait a bit to see that it finds your correct location, or quit and start the app again.
- Click the yellow + button, and then “Define an entirely new transect”:

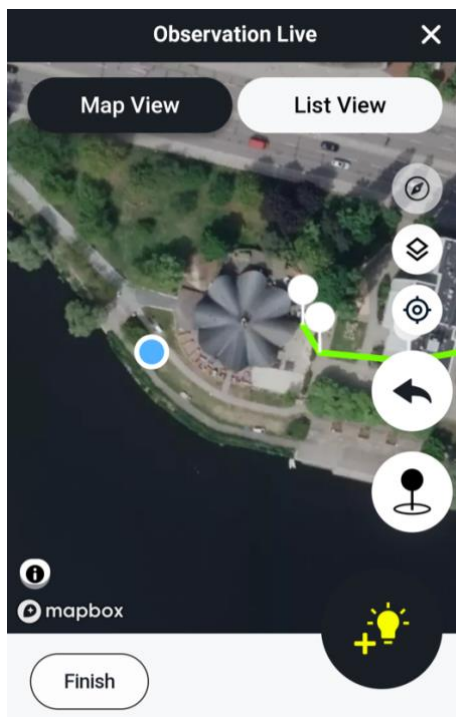




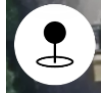
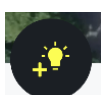
- The app will add a blue flag at your starting location (see below).
- **IMPORTANT:** Make sure the flag is correct (within about 15 meters)! If it is shown in the wrong location, then your transect will be marked incorrectly on the map.

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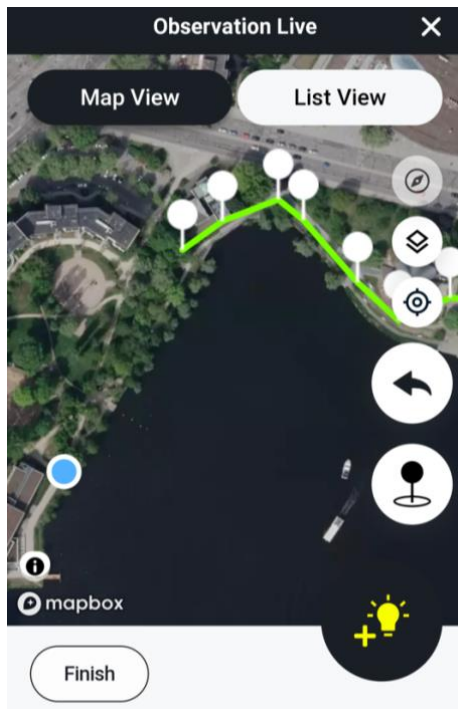
- Use the “add light” button (bottom right) to add the first light source you see.
- Walk along your transect, adding lights as you go.
- If you come to a bend in the road, use the “pin” button to mark your path.



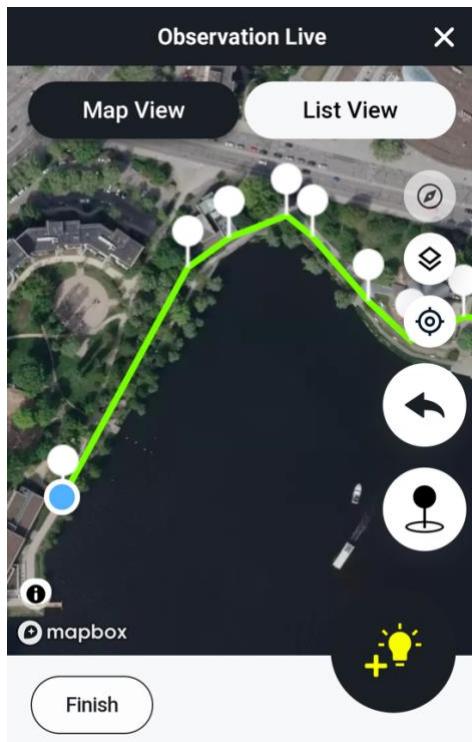
-  Location button
-  Undo pin button
-  Pin button
-  Add light button

- If you placed a pin and then realize that it is in the wrong location, use the undo button to remove the last pin.
- Continue adding lights (and pins if necessary) as you walk along your transect.

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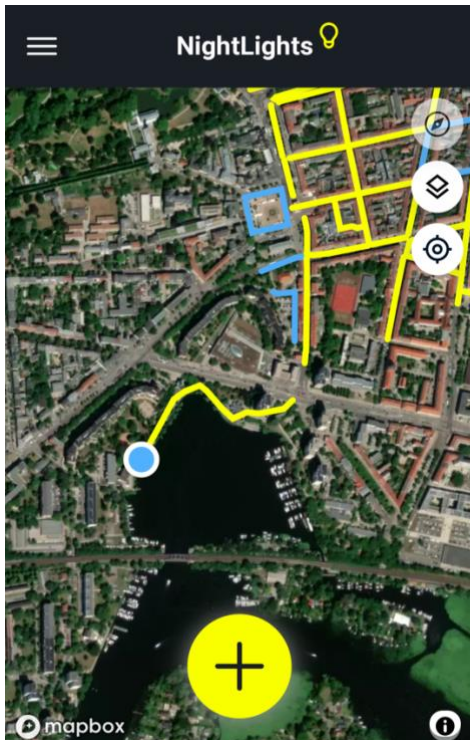


- **IMPORTANT:** When you reach the end of your transect, do not forget to add a final pin! Otherwise, the transect will end at the last point you added a pin, not at your current location shown by the blue dot (see the screen above)
- Once you have counted all the lights placed your final pin, click the “Finish” button.
- Answer the final questions, and submit your transect.



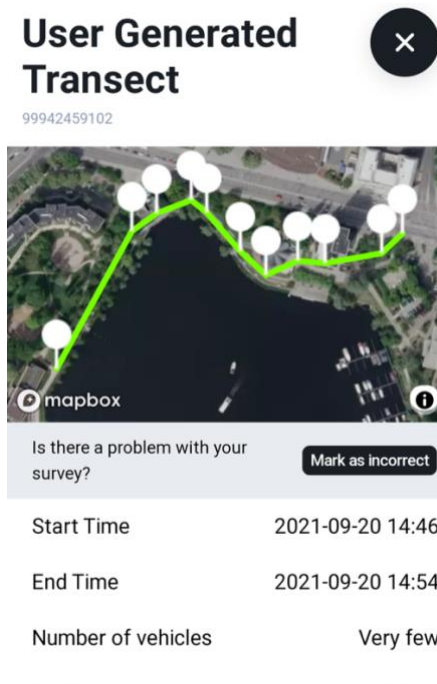
- Your new transect and data should now be shown within the app:

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Step 5: Check your data

- Your data will be shown within the app, and can also be viewed on a desktop.
- If you made a mistake, and want to delete your data, you can flag it as incorrect by going to “My Recordings” and clicking “Mark as incorrect” (see below).



- If you click this button by accident, it can be undone.
- If this was the only observation along this transect, then the transect will no longer be shown on the map.

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Step 6: Go inside, warm up, and then go back out to do another observation a few hours later

- Remember, the purpose of this campaign is to understand how lights change over the course of the night. In order for your data to contribute to our analysis, it's therefore important that you make at least two observations on a single night.



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LICHTER2021](https://bit.ly/nachtLICHTER2021)

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