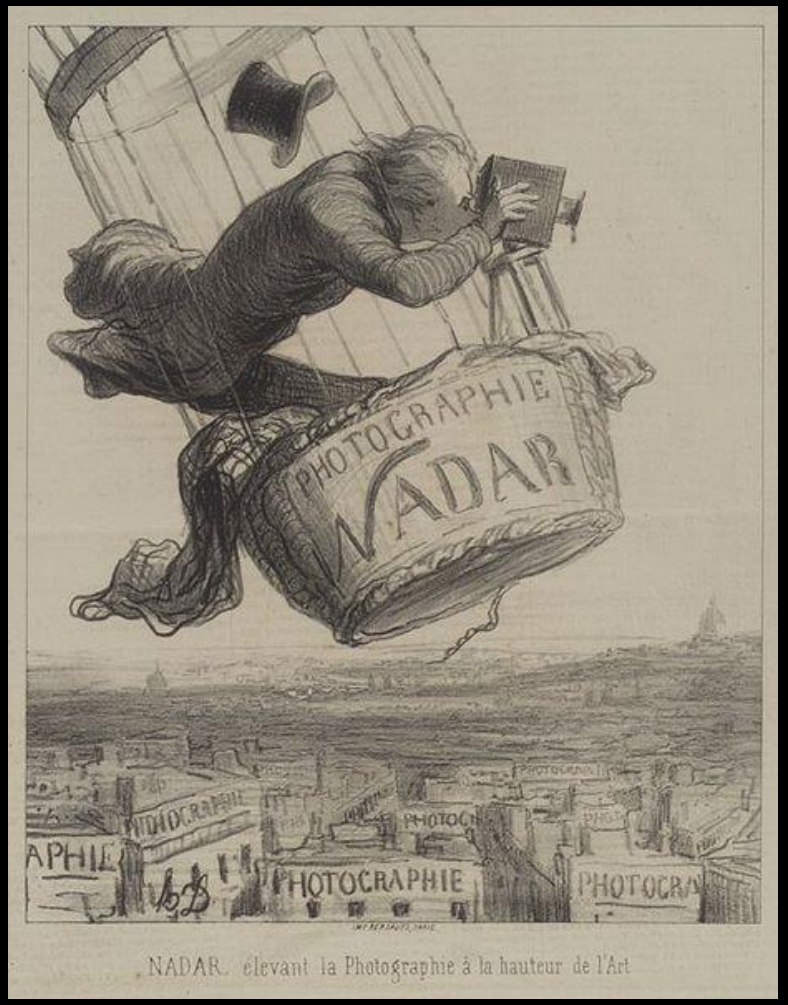
# Balónové mapování



NADAR élevant la Photographie à la hauteur de l'Art

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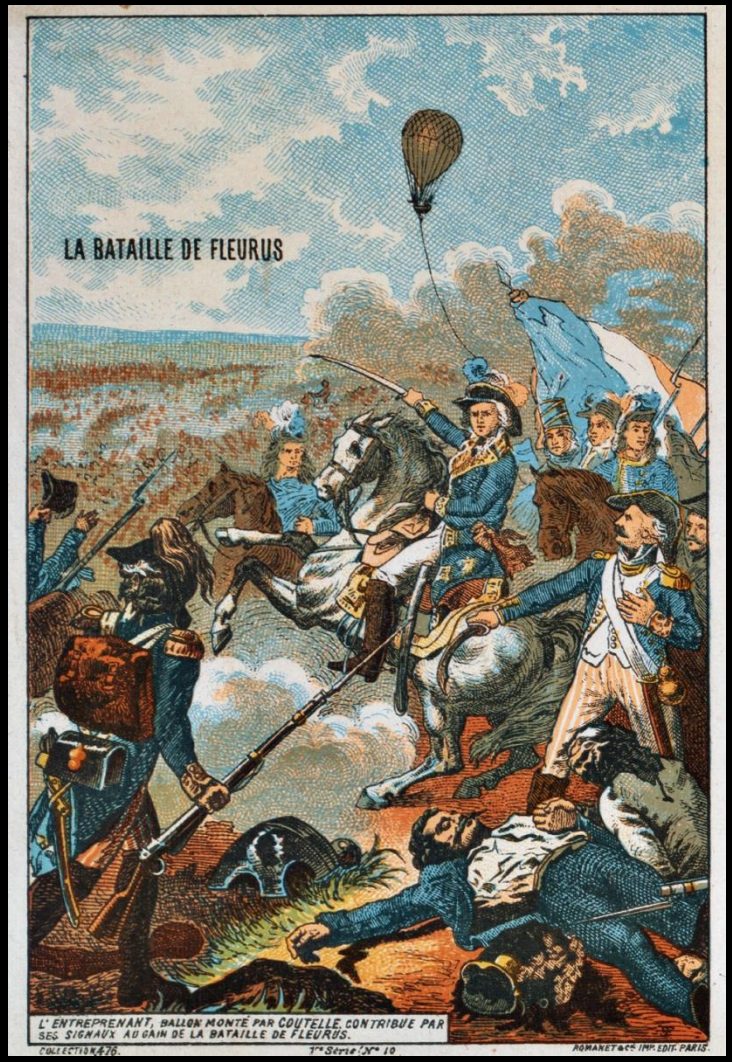
# Osnova

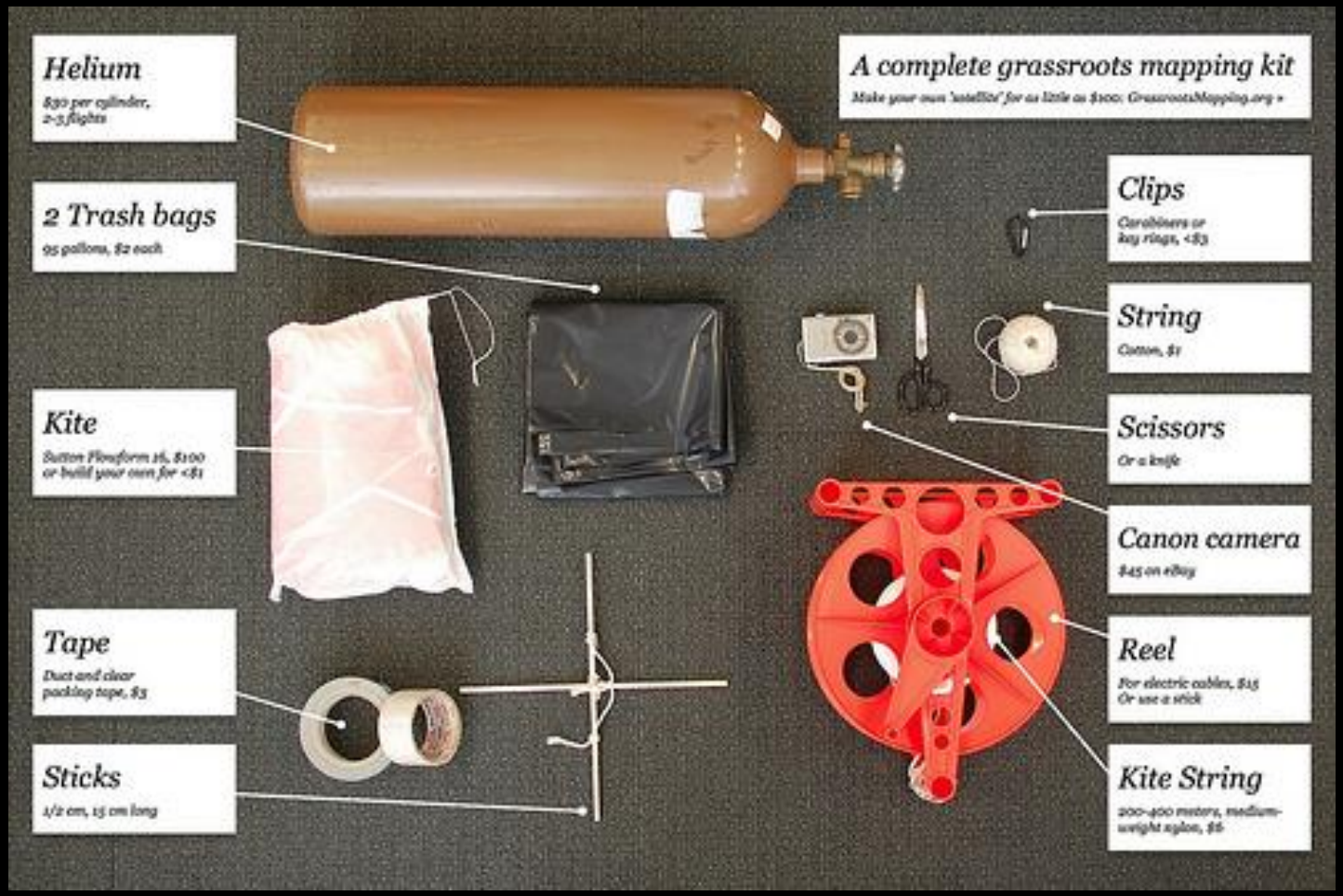
- Úvod
- Historie
- Jak to vlastně funguje
- Ukázky ze světa
- Ukázky z ČR
- Závěr

# Historie

- Francouzská armáda – 18. st.



# Jak to vlastně funguje?



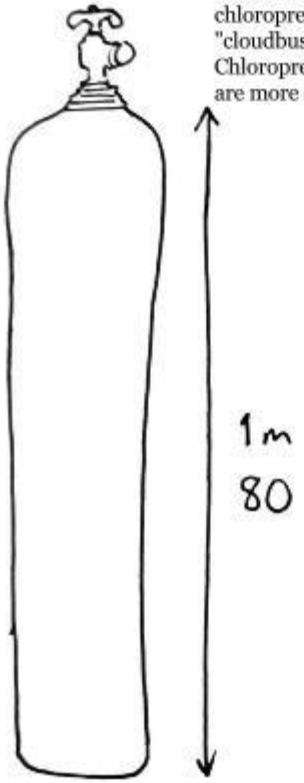
*An Illustrated Guide to*

# *Grassroots Mapping with Balloons and Kites* v. 2.2

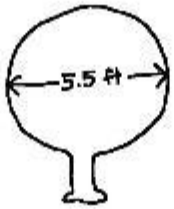
*To see all the latest contributions and video instructions, vis //publiclaboratory.org/tool/balloon-mapping*

*Do you want to make maps? Do you need satellite images but can't afford them? Do you want to see your home from above?*

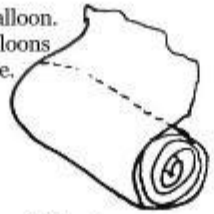
*Follow these instructions and you can, for as little as $100!*



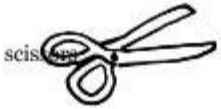

80 cubic feet or 1.5 cu. meters of helium




One 2 meter-wide weather balloon or 5 chloroprene "cloudbuster" balloon. Chloroprene balloons are more durable.

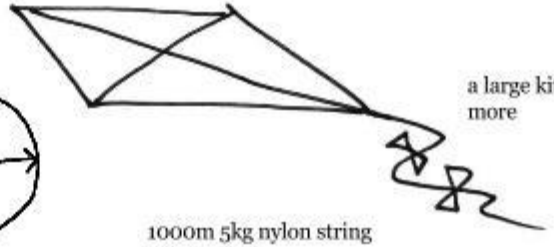


or 2 84" mylar sleeping bags

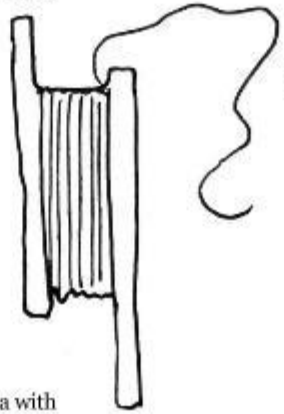
scissors

rubber bands



a large kite - 1m² or more

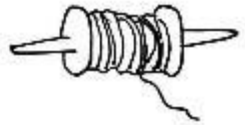
1000m 5kg nylon string for balloons




digital camera with continuous mode + 4 gb or larger memory

heavy work gloves

duct tape, gaffer tape is best



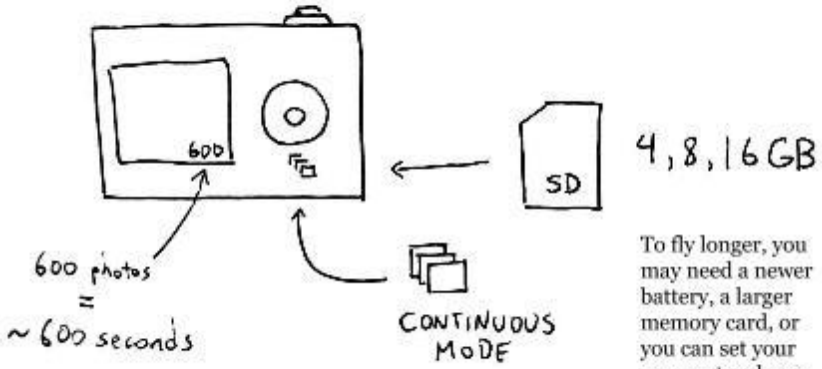
30kg+ strength nylon string for kites


plastic soda bottle

# Choose and prepare your camera

*for all options, see: [http://publiclaboratory.org/wiki/camera-trigger](http://publiclaboratory.org/wiki/camera-trigger)*

Any digital camera around 2-300 grams that has a 'continuous mode' can work. You can also use a Canon camera with the CHDK to trigger a photo every 5 seconds.

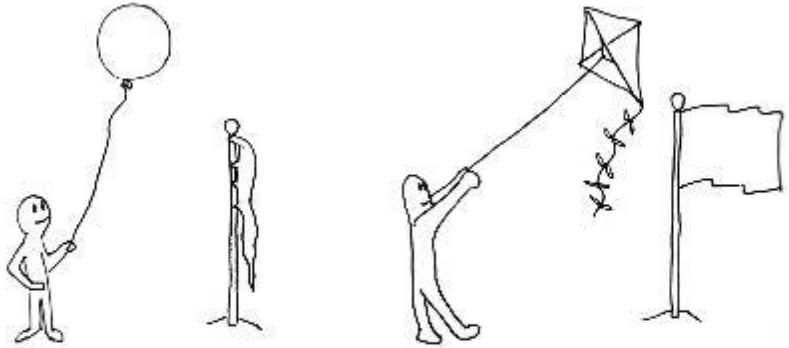



In 'Continuous Mode' a camera takes a picture every 1 second if the trigger is held down. Your display will show how many pictures you can take on your card.

To fly longer, you may need a newer battery, a larger memory card, or you can set your camera to a lower resolution. A 4 GB card fills up in about 35 minutes.

# Balloons or kites?

Decide whether to use a balloon or kite based on local wind conditions. While kites are cheaper, they're harder to fly, and you may have to prepare for both:

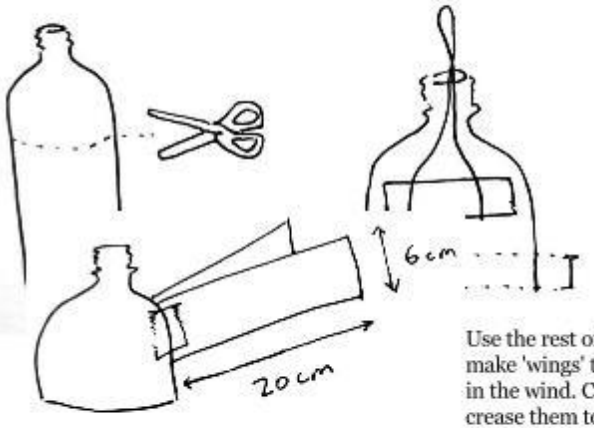


Balloons in <10kph wind; kites in more than that. Look at flags to decide.

# Build a camera capsule

*up to date: [http://publiclaboratory.org/wiki/pet-bottle-rubber-band-rig](http://publiclaboratory.org/wiki/pet-bottle-rubber-band-rig)*

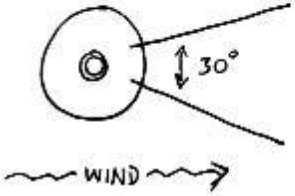
This simple protective cover stops your lens from hitting the ground, and protects your camera from hitting walls and trees.




Cut a soda bottle in half and put the camera inside the top with the loop through the bottle neck.

Be sure the camera lens is protected even when it's extended!

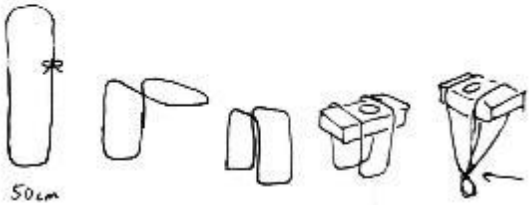
Use the rest of the bottle to make 'wings' to stabilize it in the wind. Cut strips and crease them to keep them straight.

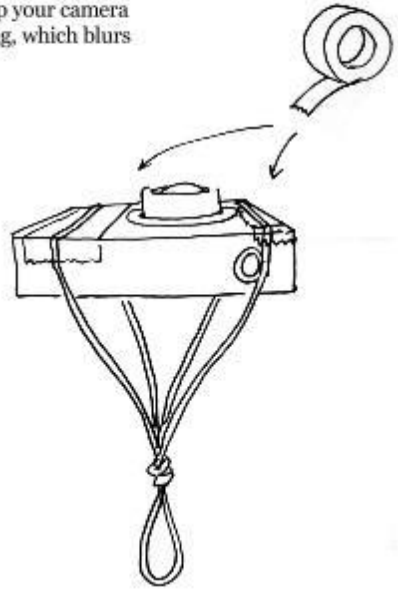



This will keep your camera from spinning, which blurs the photos.

Fold a 1 meter loop of string and tape it firmly onto your camera. Be sure the tape doesn't stop the lens from extending.

Press the tape down hard - its the only thing keeping your camera from slipping out of the string at 500 meters high!

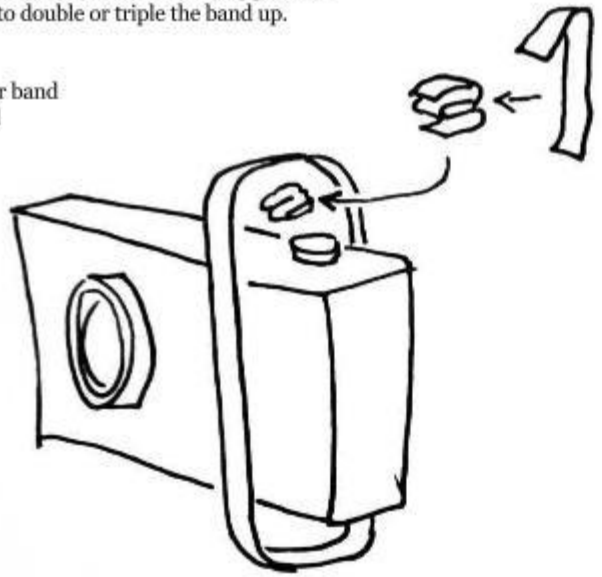


## Set up your camera to auto-trigger

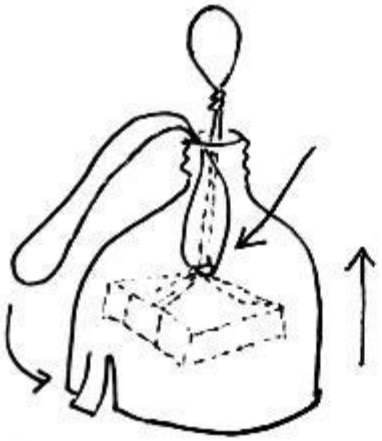
Set your camera on continuous mode. Wad up a bit of card paper or use a pencil eraser to hold down the camera trigger. A small knot works very well. Use a rubber band to hold it in place and apply pressure. Be sure the button is being pressed - you may have to double or triple the band up.

Move the rubber band to one side until you're ready to start.

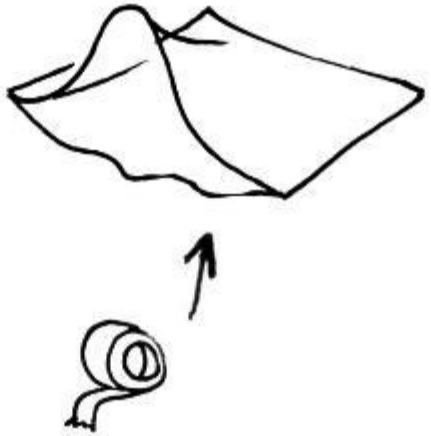


You can add a second loop or a rubber band and hook it on the bottom of the bottle to hold the camera firmly against the top.

Even better, put the cap on over the string when the camera is snugly in place, trapping the string.



## Prepare and fill your balloon

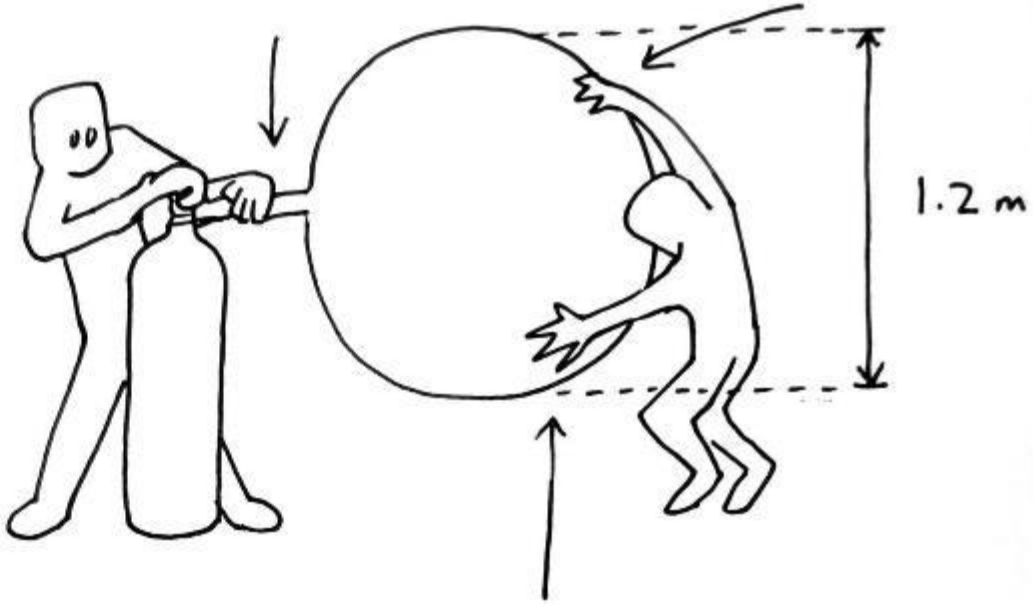


1.5 meter wide weather balloons work best, but if you can't get one, you can make one from plastic. You can use several giant trash bags, but they won't stay inflated for more than an hour -- mylar - or PET plastic is far more airtight.

Where available, *mylar sleeping bags* can be taped shut and will stay filled for several days, unlike weather balloons. Two of these are enough to lift a typical camera.

Test your valve first by letting some helium out with nothing attached. Then put your balloon on and slowly inflate it.

Someone should be in charge of not letting the balloon touch trees, bushes, or the ground.



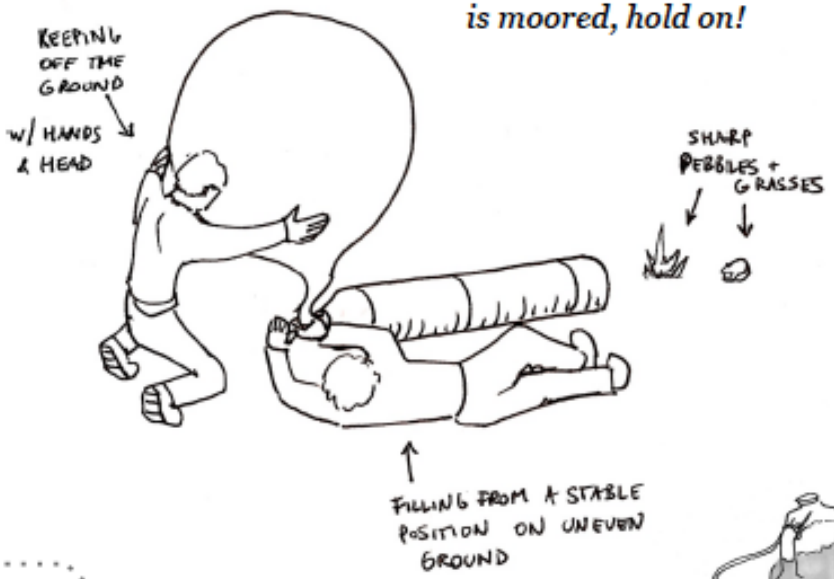
# *Balloon Mapping Quick Start Guide*

## Filling, closing, and mooring your balloon

1) Tie string to a carabiner with double overhand knot (see upper right box).

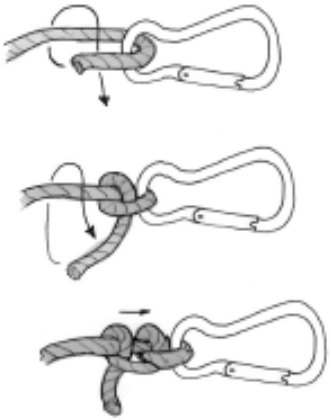
2) Tie the other end (5ft or so) to something heavy like a 1 gallon jug full of water -- so your balloon won't fly away as you're working.

3) Tie the clip swivel to the reel of kite string with the same knot.




*Unless your balloon is moored, hold on!*

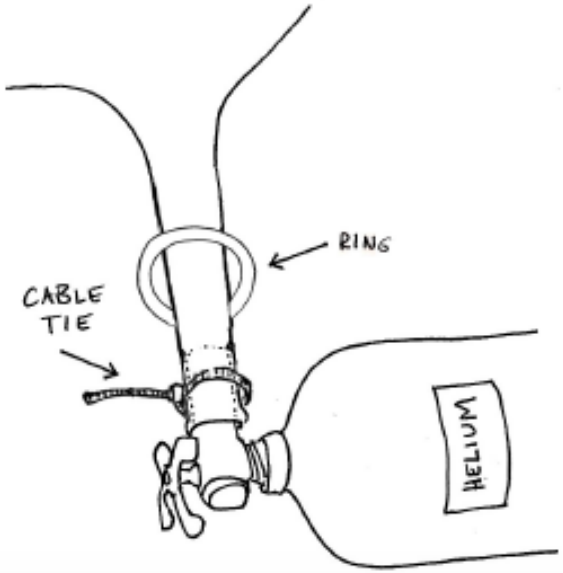
*Double overhand knot:*




Test the valve, and lay the tank on the ground .

1) Pull the balloon neck through the ring.

2) Cable tie the balloon to the helium tank. The balloon neck may need to be folded and squeezed tight. Continue holding on to your balloon.



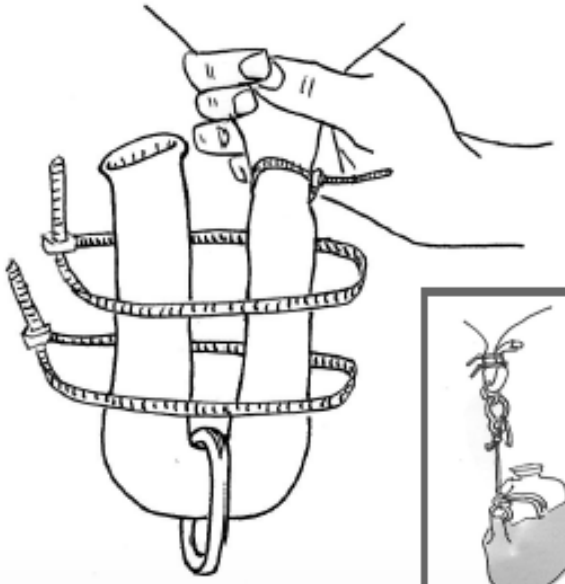

*mooring point*

3) When done filling, push helium out of the neck and close with a cable tie just below the balloon.

4) Release nozzle cable tie.

5) Fold the neck over onto itself and around the ring. Attach two more cable ties and pull tight.

6) Attach ring to the mooring point.



# *Balloon Mapping Quick Start Guide*

## Safely launching your balloon and camera

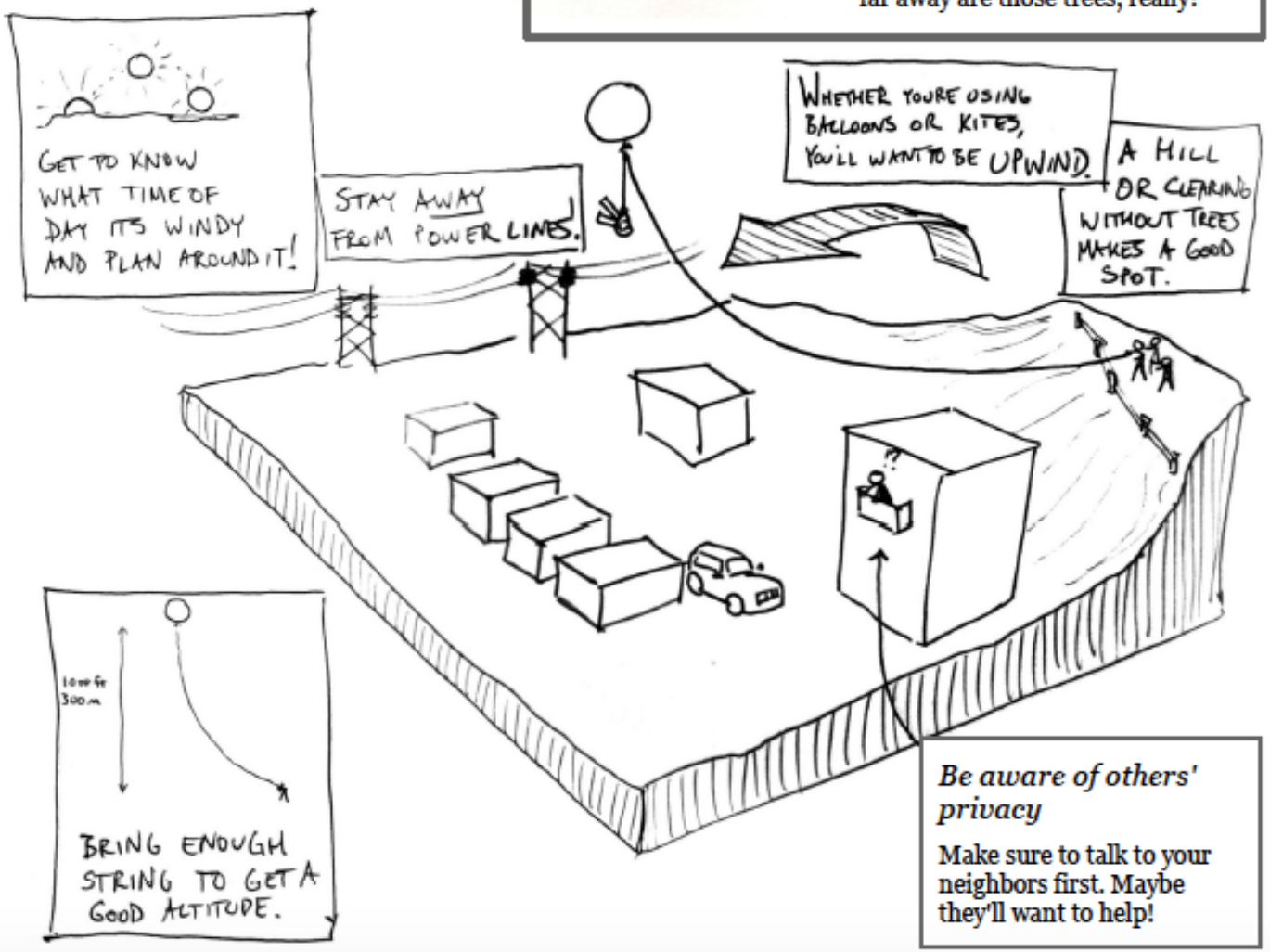

### *Look around you!*

Check tree tops, flag poles, clouds. Which way is the wind going on the ground? At tree level? Above in the sky? What obstacles will come up as you launch? Will the balloon change direction while rising? Check again on your satellite map -- how far away are those trees, really?`

### *Be safe and responsible*

Check that you are five miles or more away from the nearest airport. Otherwise, speak with the airport about sending a "Notice to Airmen". Print out satellite imagery of where you'll be mapping (Google, USGS, etc) to help in planning.

Do a test flight first, without a camera: reel out, then reel in, with about a hundred feet of string.

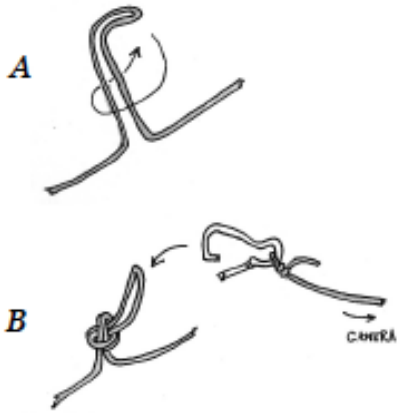



### *Be aware of others' privacy*

Make sure to talk to your neighbors first. Maybe they'll want to help!

### *Attach your camera*

Make a temporary loop by tying an overhand knot on a loop on the string below the balloon:



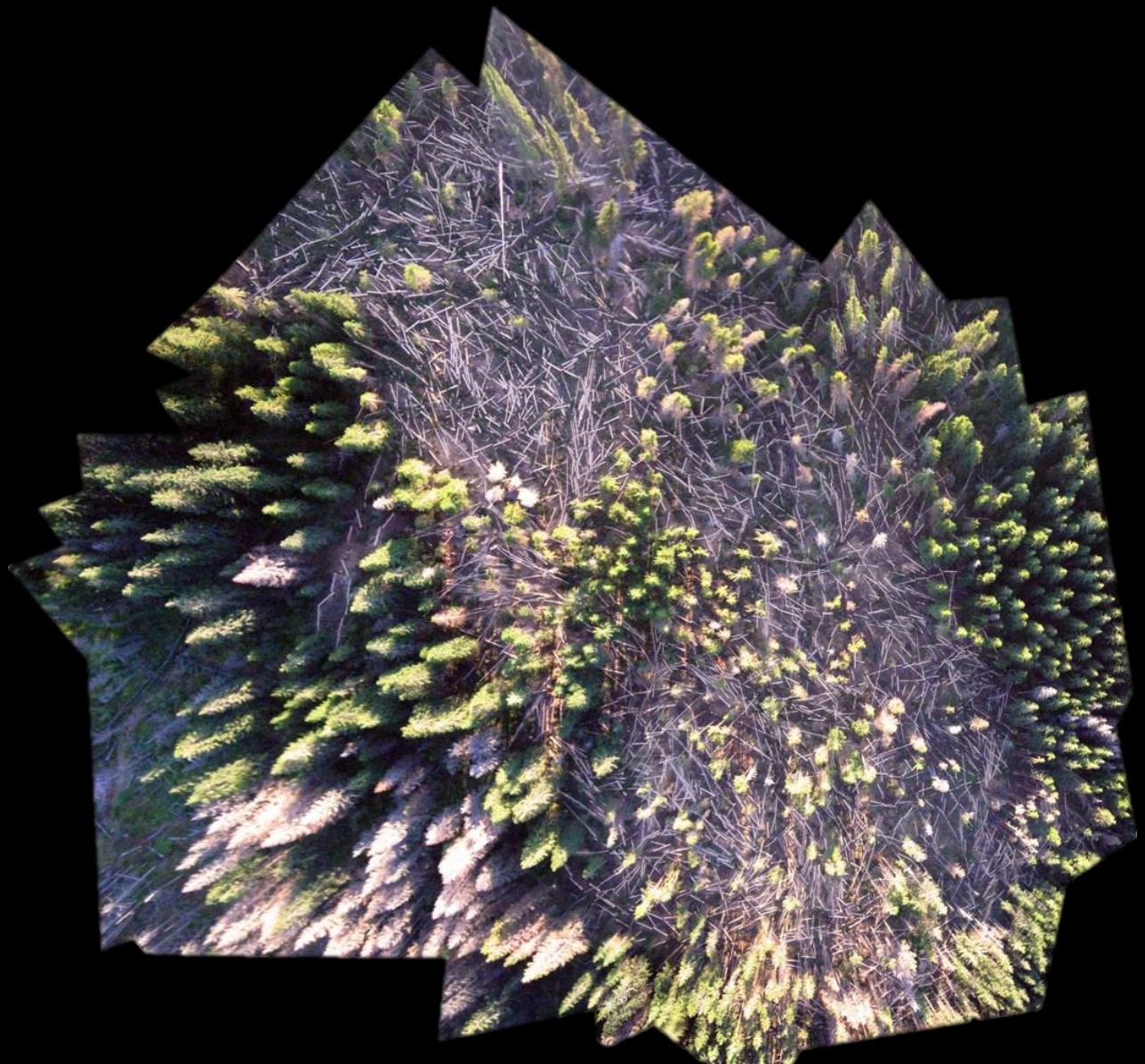

*A.* Slacken the line below the balloon & gather a loop in your hand

*B.* Loop it around & through itself and pull taut; attach your camera!

# Ukázky ze světa

- https://www.kickstarter.com/projects/1775485688/balloon-mapping-kits?ref=nav_search

# Ukázky z ČR



# Ukázky z ČR

- Mapování PřF UP Olomouc
- http://publiclab.org/notes/JirkaPanek/06-23-2014/balloon-mapping-at-faculty-of-science-olomouc-czech-republic

# Závěr

**Výhody**

- Jednoduché
- Participativní
- Jasně určitelný “zdroj”
- Rychlé
- Levné (drak)
- Málo legislativních omezení

**Nevýhody**

- Nepřesné
- Není vhodné do všech podmínek
- Vyžaduje určitou míru technických schopností
- Relativně drahé (helium)

# Diskuze

Dotazy?

Děkuji za pozornost

Jiří Pánek // JirkaPanek@gmail.com