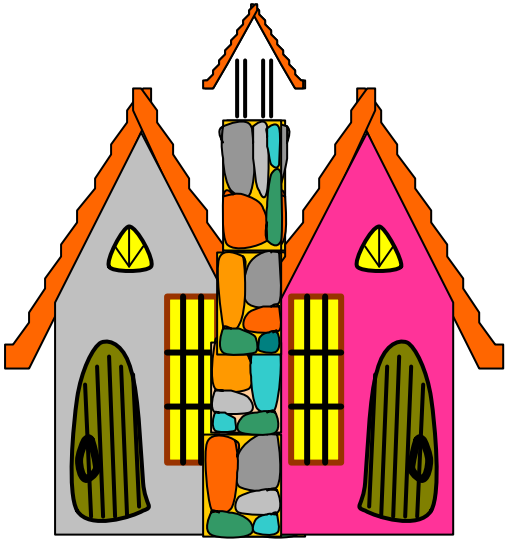
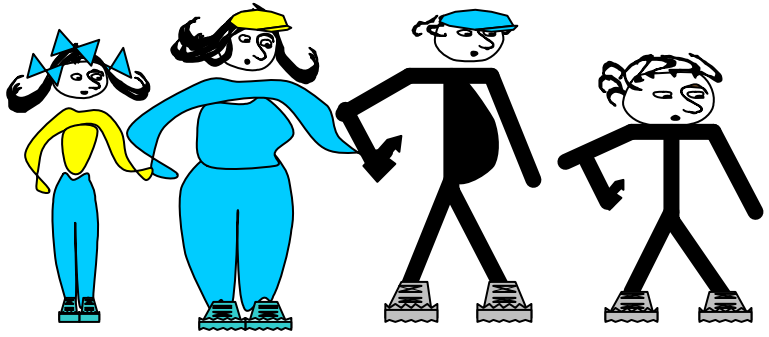


# Monitoring for fun: help yourself!



# What is the monitoring?

- Continuous or frequent standardized measurement and observation of the environment, often used for warning and control.

International Glossary of Hydrology, WMO, 1992

Environment: air (weather), water, land, biota

Visual observations are the key!

# Why monitoring is expensive?

- Needs specific knowledge of water (education): nature of a process specified, its measurable characteristics and indicators, standard procedures
- Needs specific tools for measurements, time and place for observation
- Needs technological resources for spatial and temporal description of the process: specialists, models and computers

**Due to lack of our knowledge about “habitat” components, especially water as the life essence!**

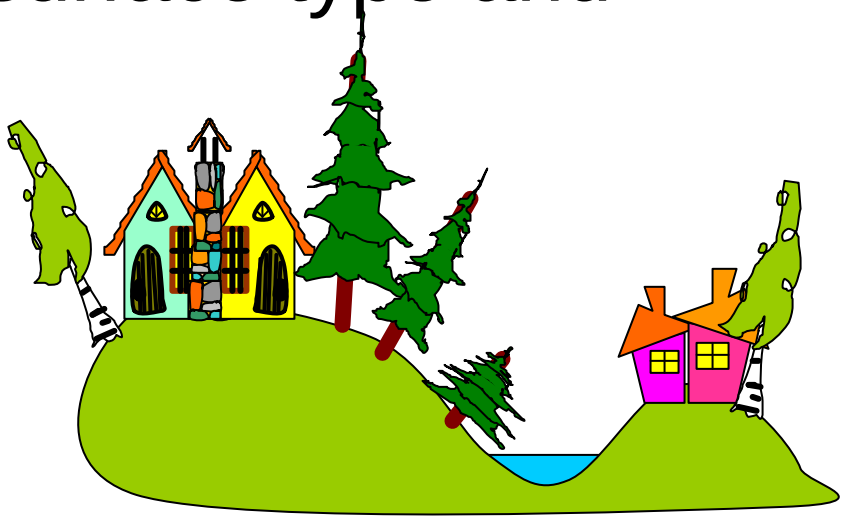
# Your environment: what to observe?

**Weather (air):** temperature, precipitation, wind, cloudiness

**Water (pond, stream):** level, velocity, temperature

**Land:** temperature, surface type and condition

**Biota:** variety, behavior, life cycle

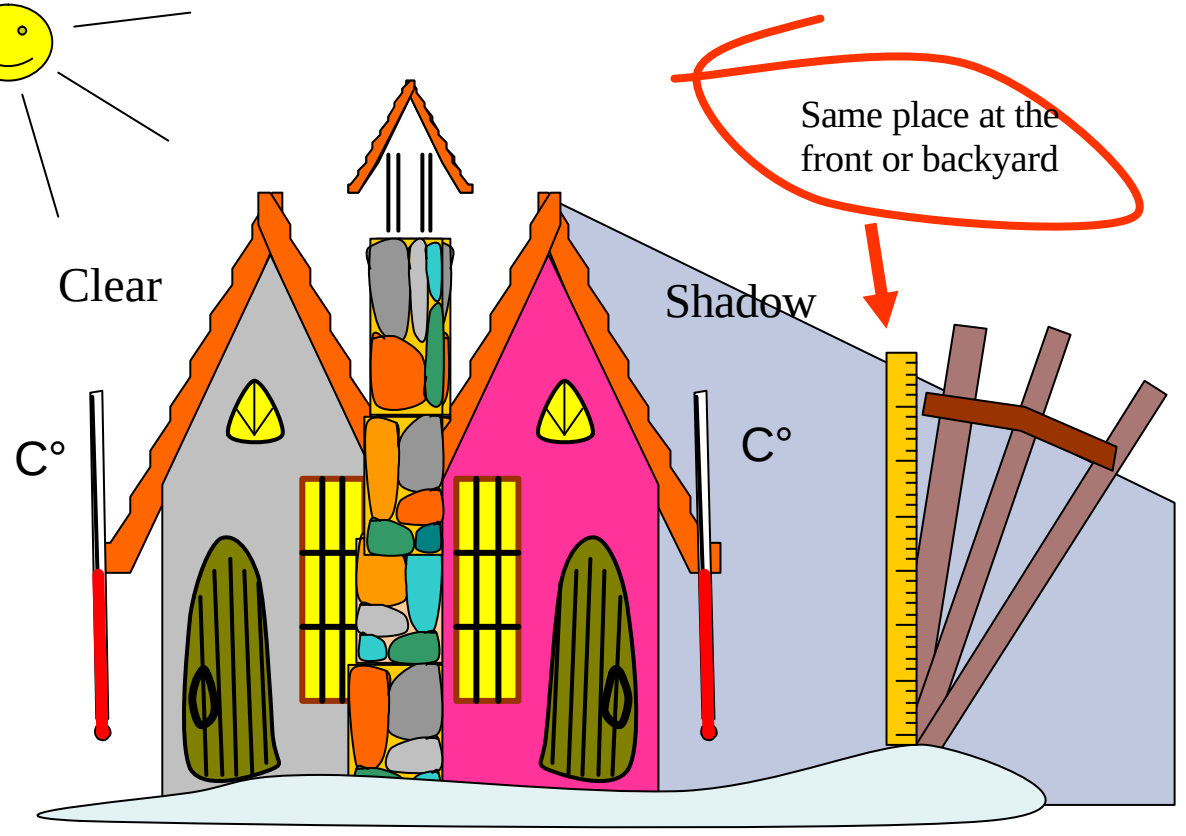


# “Fresh air” around my house

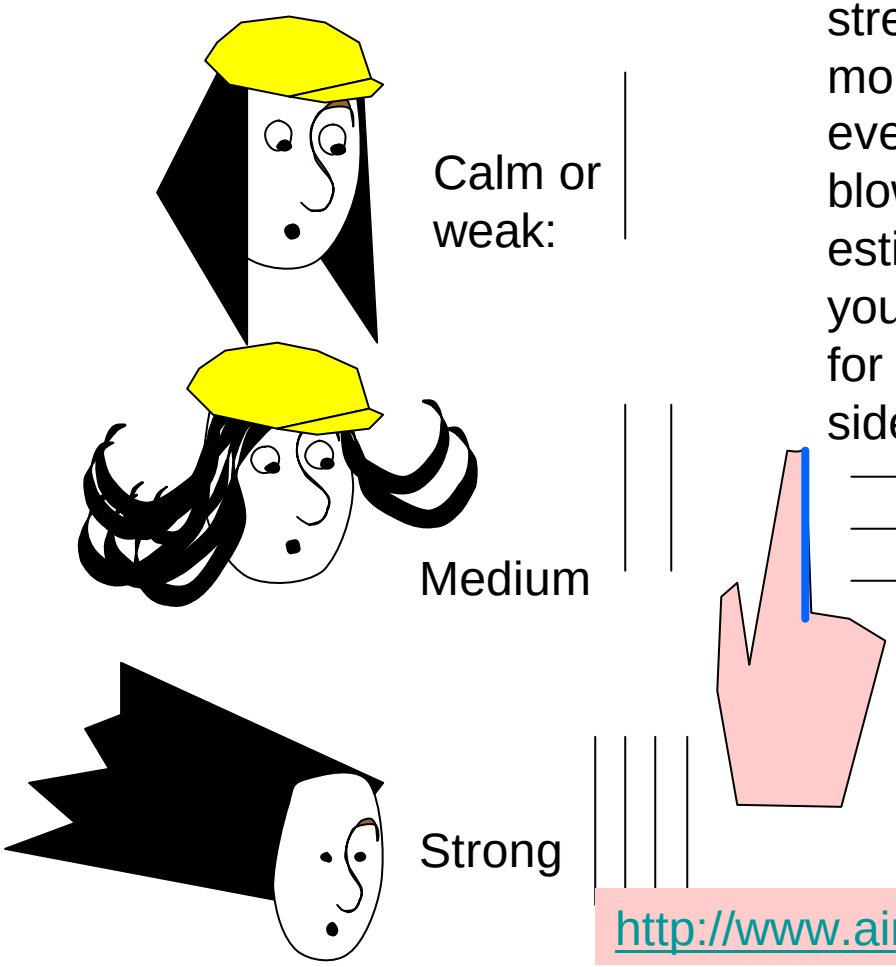
NB!

**This provides your own observations’ comparability AND comparability with the standard ones!**

Always observe approximately at the same time, which is the most convenient for you and when you are mostly able to spend for your observations: let say every Sunday around noon, or every day in the interval of 6-8 a.m., when you walk your dog (just an example)



# “Fresh air” around my house: wind




To observe and assess the direction and strength of wind always face north (the morning sun will be at your right, the evening – at your left). The north wind will blow straight in your face. In order to estimate the others wind directions wet/lick your forefinger and rise it above your head for a while: you will feel cool at the windward side of the finger. You can use a wind mill…

**Sniff air at this moment!**

Range the smell from fresh to stinky. You can find some help at the address below:

http://www.airqualityontario.com/reports/summary.cfm

# Records: air

Different sides of your house or apartment

Same place at the front or backyard

| Date | Time | Air | | | | | | Notes |
|---|---|---|---|---|---|---|---|---|
| | | Temperature | | Wind | Clouds | Precipitation | | |
| | | Shadow | Open | Direction, strength | | Type | Snowpack, cm | |
| 01.03.05 | 11:30 | -5 | 7 | \|\| |  | - | 22 | Bad smell |
| 02.03.05 | 11:20 | -8 | 4 | — |  | * | 20 | Snow at night |
| 03.03.05 | 11:45 | -2 | 2 | — |  | - | 22 | .Intensive snow melting |
| 04.03.05 | 11:35 | 0 | 2 | Calm |  | Rein | 8 | |
| 05.03.05 | 11:50 | 3 | 12 | \|\|\| |  | - | 3 | Snow patches ~ 10% |
| 06.03.05 | 11:25 | 5 | 18 | ⫽ |  | - | 0 | |
| 07.03.05 | 11:30 | 1 | 5 | \ |  | - | 0 | Hard to breath |

Compare your records with the closest standard meteo station, which records you can obtain on-line (this address for Canadians only):
www.climate.weatheroffice.ec.gc.ca/climateData/canada_e.html

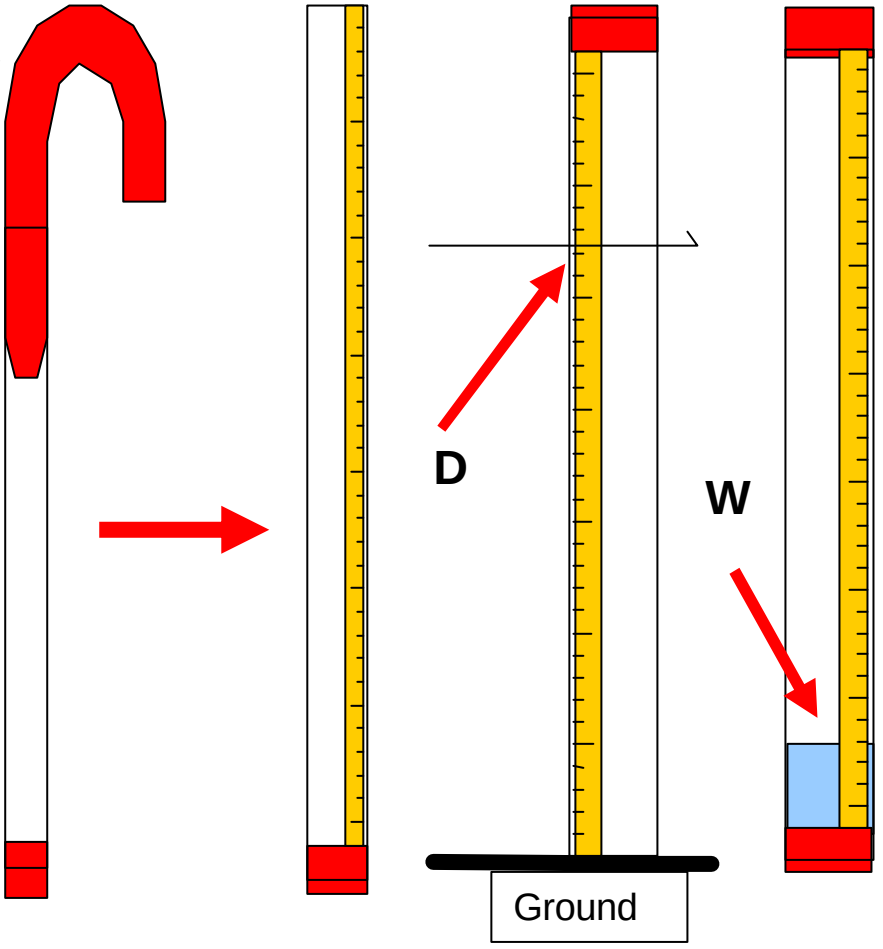
# Air – water relation: snow

To observe snow is a real fun: you can do it even when main snow is gone and just snow piles are left.

How to make a snow density meter from the Christmas Cane? You just graduate it from the top to bottom for snow depth measurements and from the bottom to top for melted water estimation

The tool

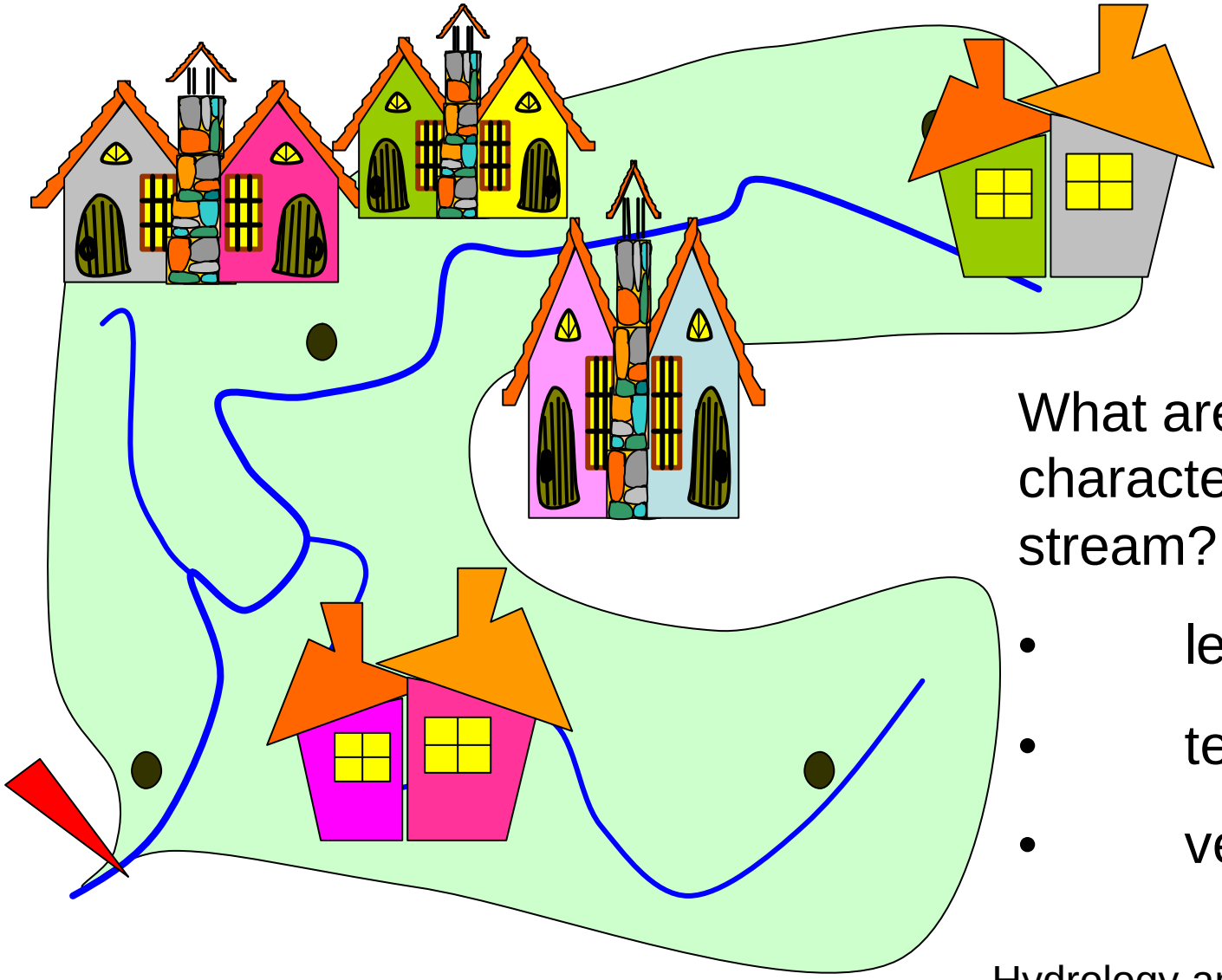
**Use**




What one can get from these observation? You can estimate a new snow density Sd, watch the “aging” process, retention capacity of snow for melted water, and more…

**Sd = W/D**

# Let’s watch our stream!

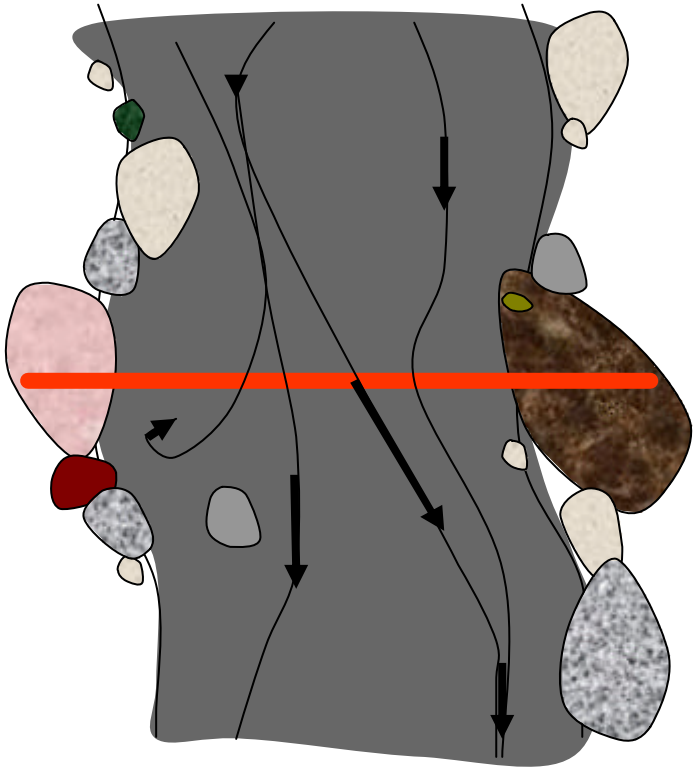


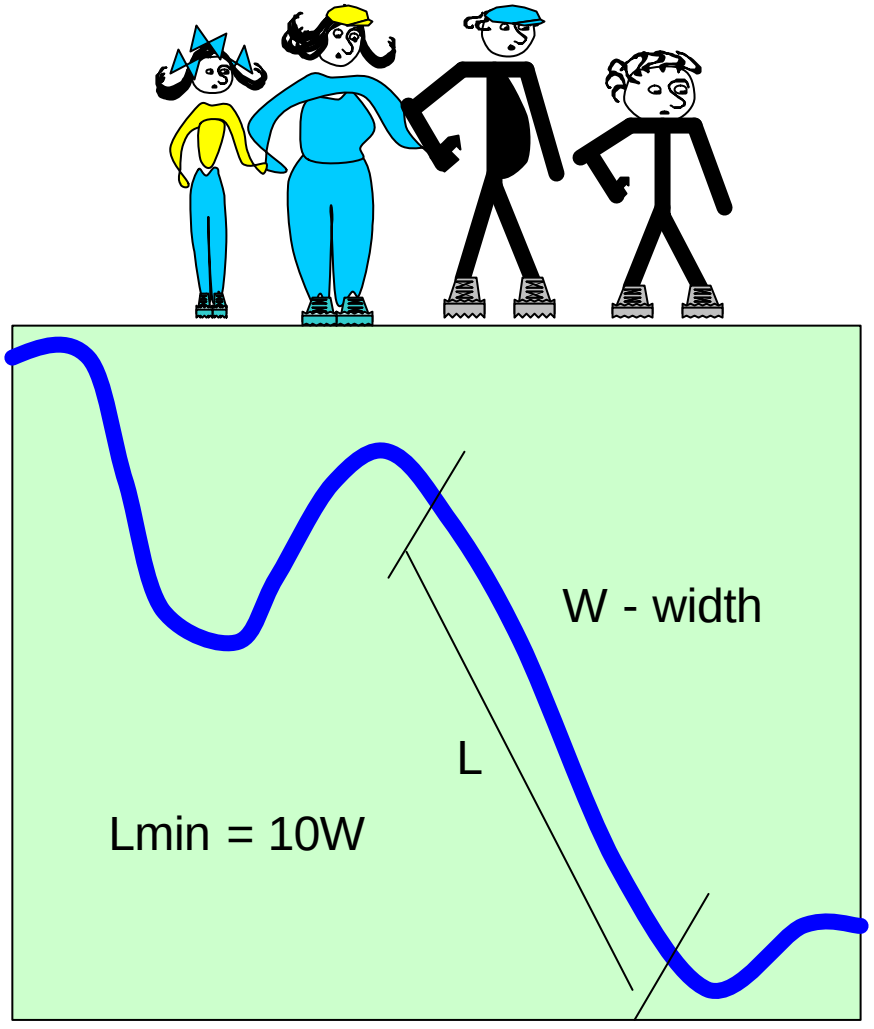
What are the measurable characteristics of a stream?

- level
- temperature
- velocity

# We will watch here!

- How to choose the right place?





# Health and Safety consideration

**Air and water are two spontaneous elements.**

**Be prepared!** It means be properly dressed, equipped and organized.

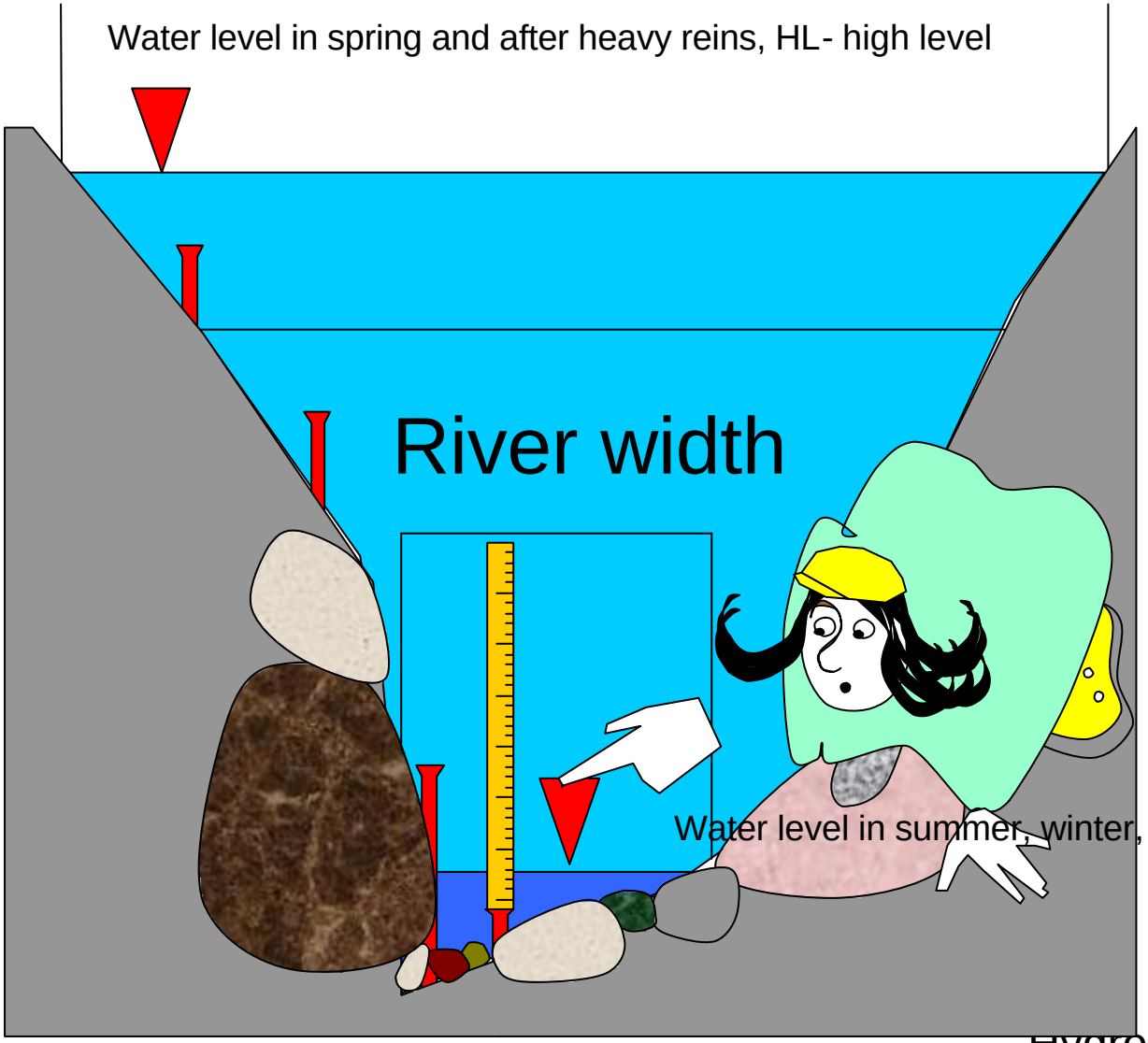
**In winter**: wind and water resistant, warm and light clothing; warm and dry, water resistant and non-slippery footwear; gloves and mittens; headwear and scarf

- **In summer**: hat; wind and water resistant clothing; water resistant, non-slippery footwear; sun glasses

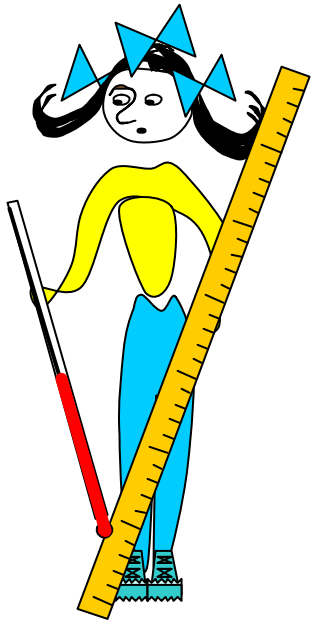
**Never hurry! Always watch your step and use the measuring pole as a cane. Always have spare socks, pen and piece of paper!**

**P.S: if you do measure in your own backyard, be reasonably precautious!**

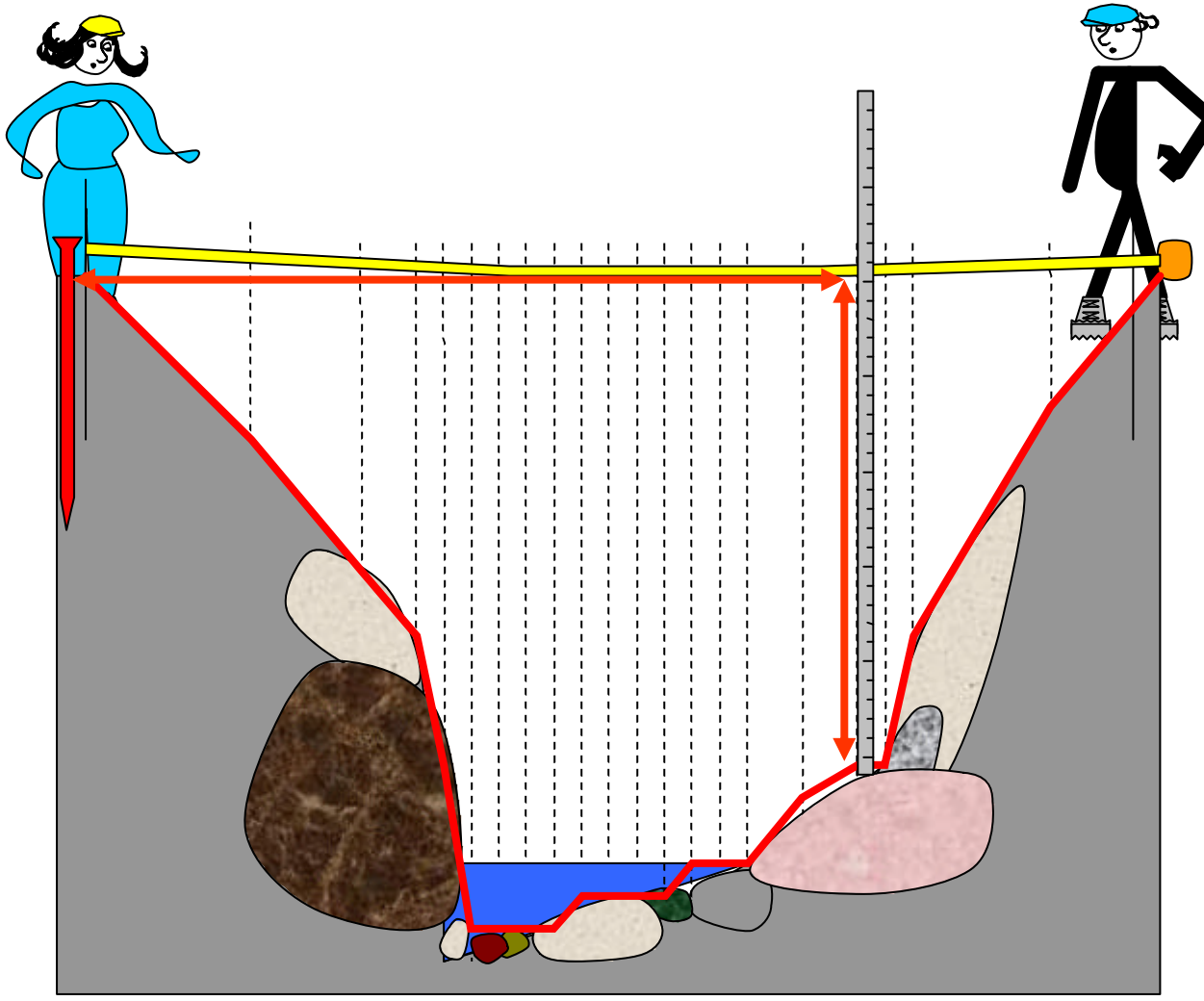
# Water level and temperature



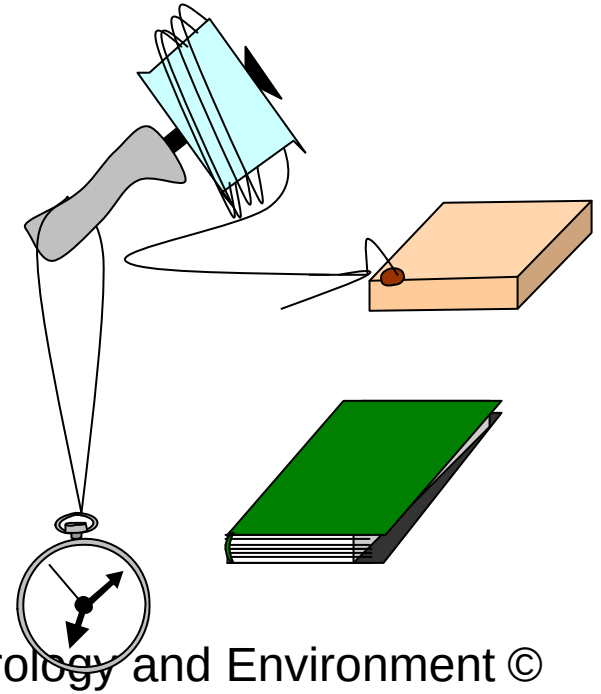

- Where to measure?
- How?
- How often?



# Discharge: geometry, velocity



- How?
- When?
- How often?

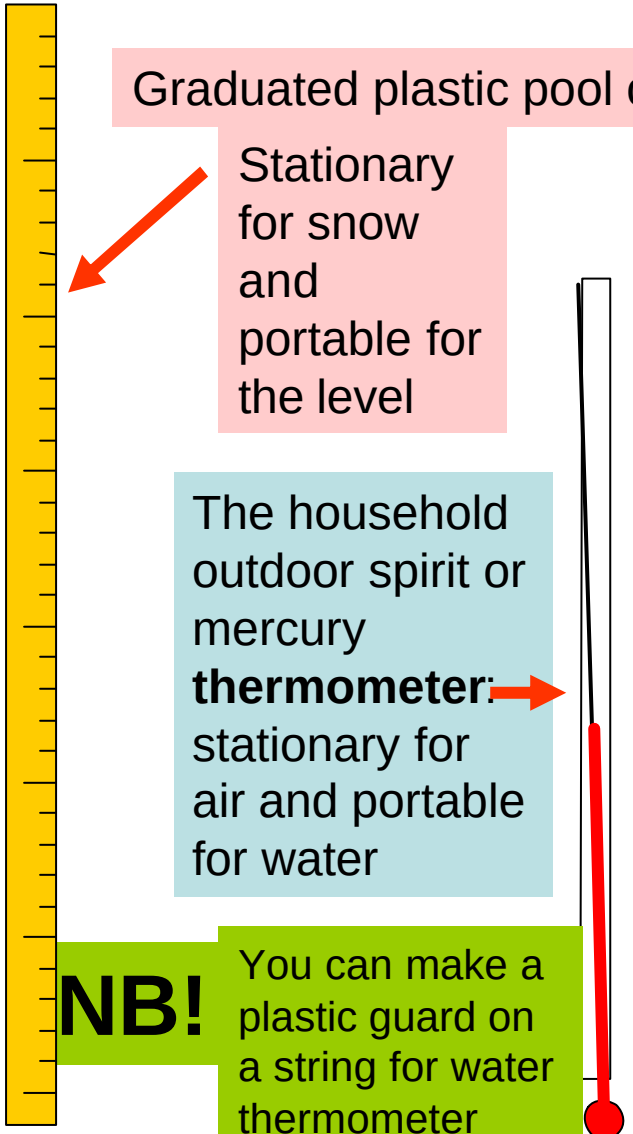


# Records: water

| Date | Time | Water | | | | | |
|---|---|---|---|---|---|---|---|
| | | Temperature, C° | Level, cm | Velocity, m/sec | Color | Vegetation, grade | Notes |
| 01.03.05 | 11:30 | 2 | 17 | 0.5 | - | 10* | Brown, algae-type, dead |
| 02.03.05 | 11:20 | 2 | 18 | 0.56 | -* | 10 | Floating snow and ice slash; hanging bank ice |
| 03.03.05 | 11:45 | 2 | 22 | 0.68 | Brownish* | 10 | Slightly cloudy, transparent |
| 04.03.05 | 11:35 | 2 | 42 | 0.95 | Brownish* | 10 | Cloudy, still transparent; rainbow film |
| 05.03.05 | 11:50 | 2 | 65 | 1.5 | Yellowish* | 10 | Cloudy, not transparent, foam, smell |
| 06.03.05 | 11:25 | 4 | 58 | 1.09 | Yellowish* | 10 | Cloudy, not transparent; foam |
| 07.03.05 | 11:30 | 4 | 44 | 0.9 | Brownish* | 10 | Cloudy, slightly transparent; smell |

Examples of notes are just examples of type of information needed for the analysis of the rating and water quality curves.

# Tools: air, water



Graduated plastic pool or ruler:

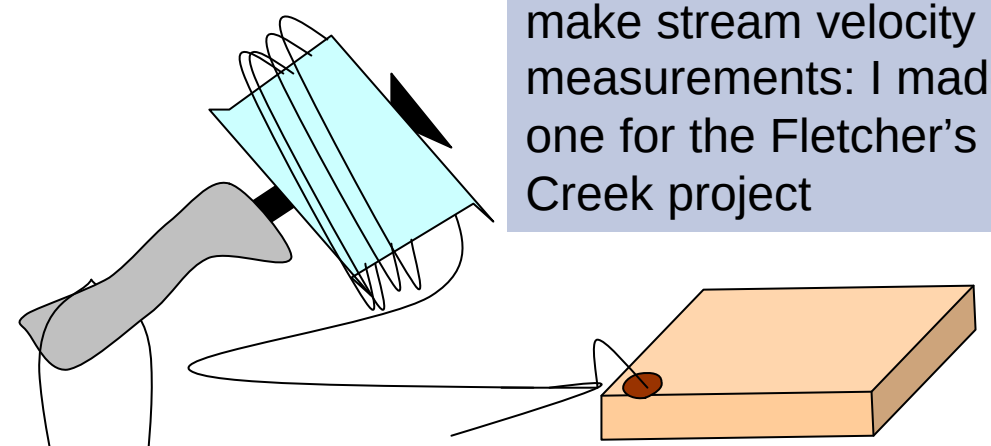
Stationary for snow and portable for the level

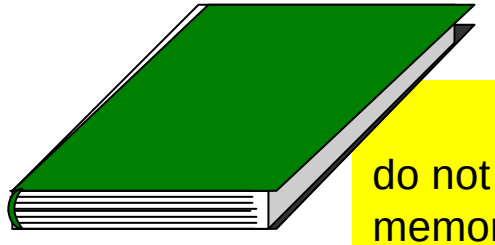
The household outdoor spirit or mercury **thermometer**: stationary for air and portable for water

**NB!** You can make a plastic guard on a string for water thermometer

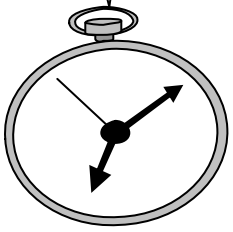
**Float on a string:**

You may need this to make stream velocity measurements: I made one for the Fletcher's Creek project





**Log book**: do not rely on your memory even you make just one-two observation in time: write it down at the 'site'!

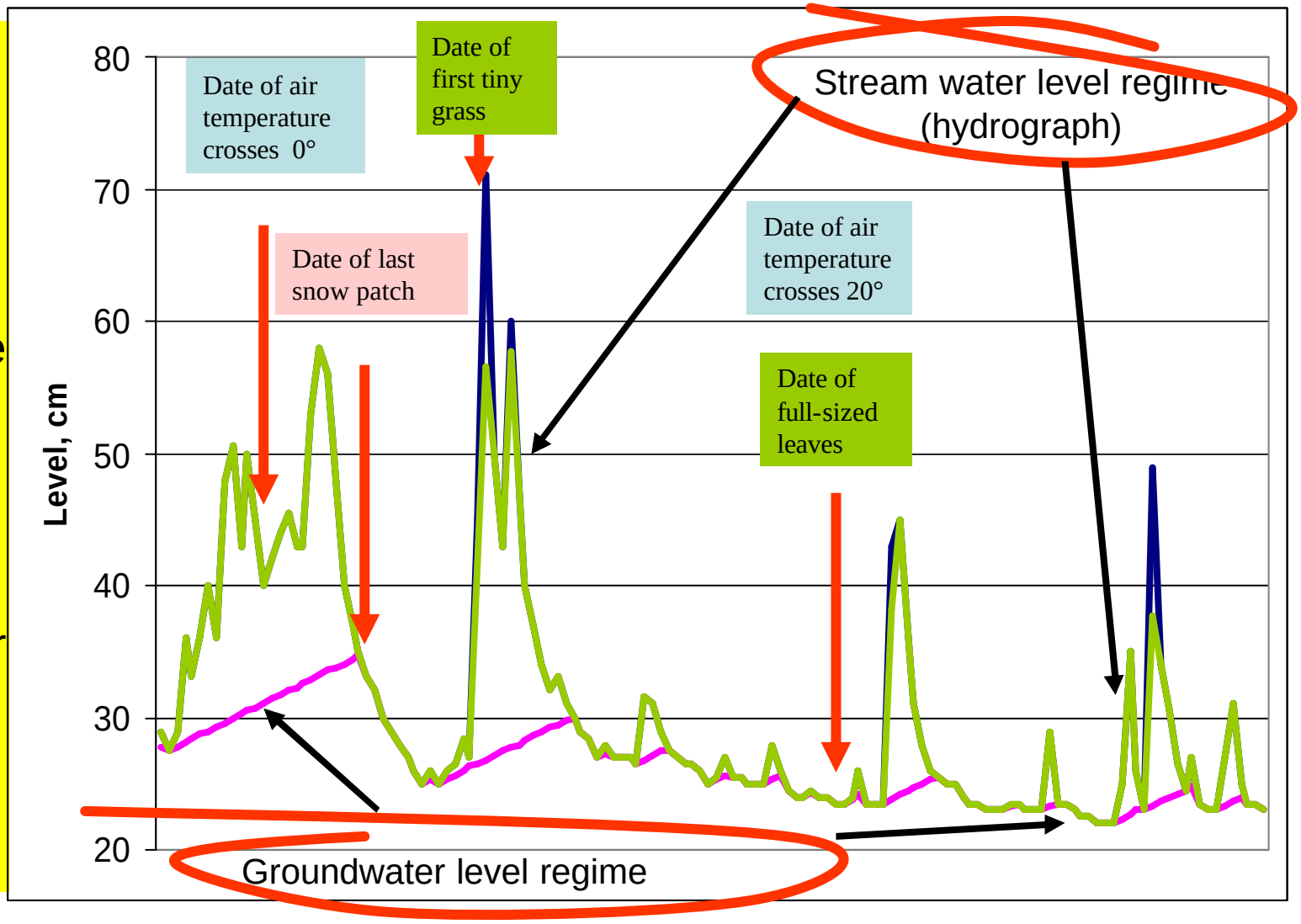


**Stop watch**

# Let’s watch our “room-mates”: biota

You can do it either in your own backyard or near the stream, where you measure.

The idea is to tight the weather-water regimes with the biological ones



# What is the result?

- First of all, you expand your knowledge about your own habitat
- You learn how to measure and then how to interpret the regimes of air, water, and biota
- Based on your own data you can assess any trend and impact: you will pay creating attention to “your habitat”
- You can model the interaction, limits of change, consequence

**Practice is the criterion of truth**