



UNIS

The University Centre in Svalbard

Field Safety Summer & Autumn

Info Lecture

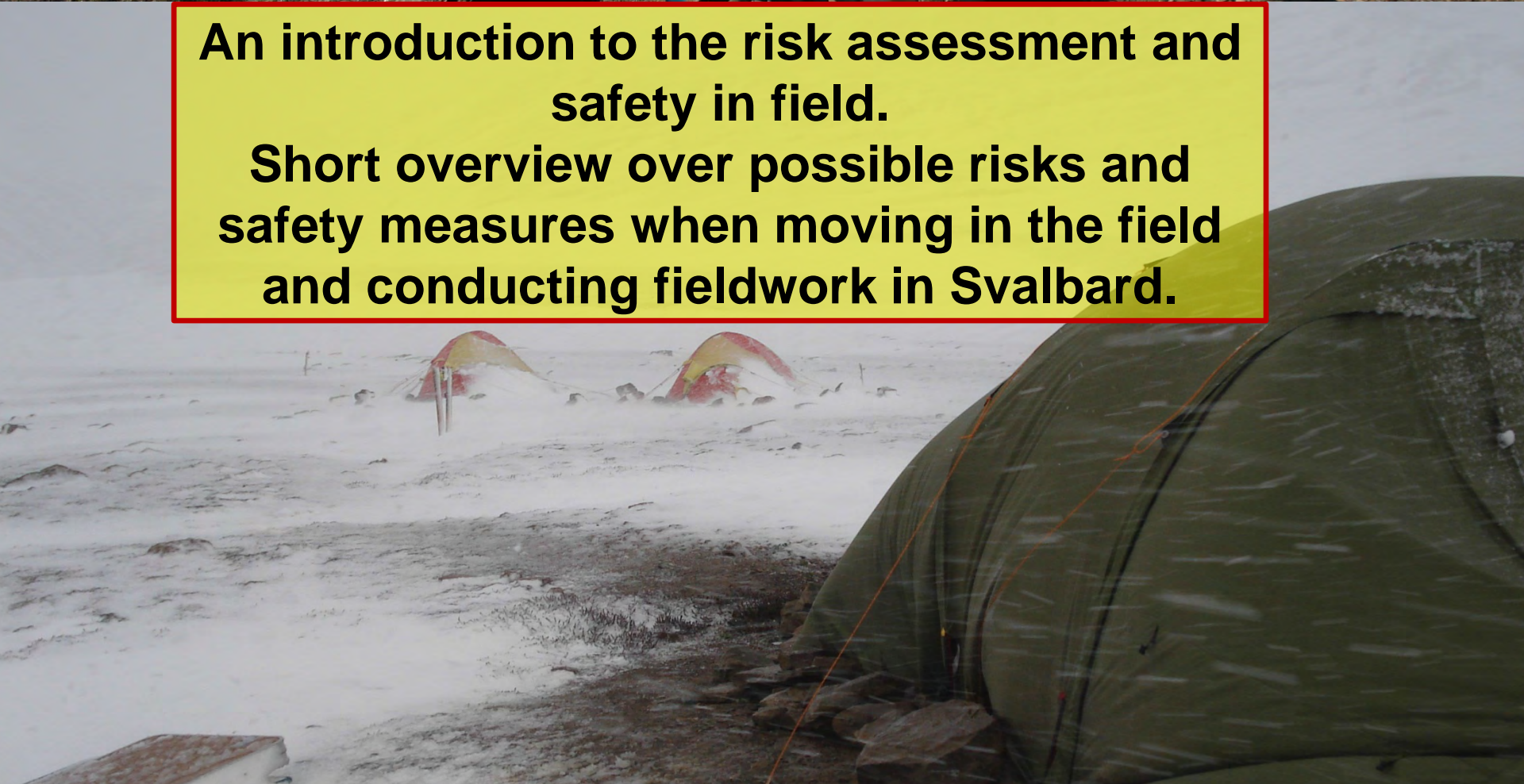




Objective of this Info Lecture

An introduction to the risk assessment and safety in field.

Short overview over possible risks and safety measures when moving in the field and conducting fieldwork in Svalbard.





Safety Challenges in Svalbard

- Very exposed to weather
- Cold + windy
- Cold water
- Low clouds + fog → limited visibility
- Long distances
- Polar bears
- Limited communication network
- Evacuation can take time or even be impossible – especially in bad weather

→ Even small mistakes/problems can lead to severe situations



Our main goal: Identify possible risks and avoid problems!



Safety buffers to control the risk



1. Risk identification and assessment – WHAT IF ?

WHAT CAN GO WRONG

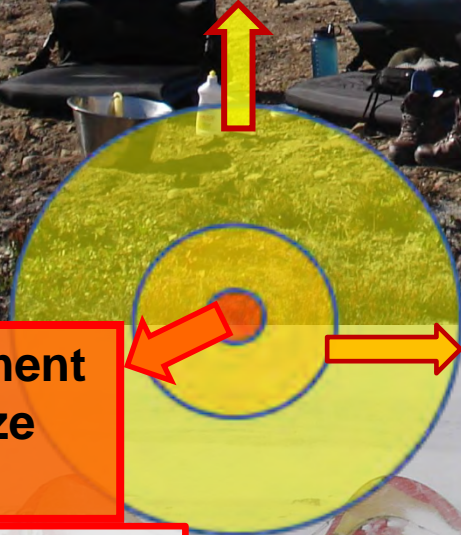
- Different risks: Nature-, activity-, gear-, human related
- Evaluate the risks → Probability & Consequence

3. Accident management and rescue – minimize damage

- Have safety + emergency gear with you in working order
- STOP, THINK, ORGANIZE GROUP to help
- 1. Own safety 2. Secure scene + Help 3. Further safety + keep warm

2. Protective measures – minimize risk & problems – decision making

- PLAN & check conditions
- Follow safety routines in field – Have & use safety gear
- When conditions change → STOP, THINK, EVALUATE
- **THINK & PLAN & CHANGE PLANS IF NEEDED EARLY ENOUGH**



Accident model – with safety measures minimizing the risks

YOU & YOUR ACTIONS ?

6. Help & Evacuation & Life

Safety barrier

5. Right safety & emergency gear, first aid, communication gear

5. Severe Incident & Injuries

Safety barrier

4. Right safety measures, safety gear, extra gear

3. Problem – Mistake - Incident

Safety barrier

2. Right risk assessment – right decisions – right actions

1. Risks with activity

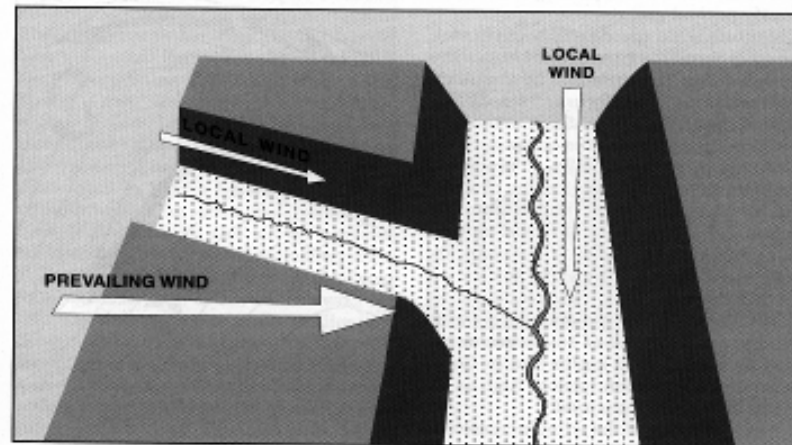
Risks and safety measures in the field

- Weather
- Clothing
- Travelling at sea
- Movement on sea ice
- Glaciers
- Steep mountain terrain
- Hiking on tundra
- Wildlife
- Tent camp
- Field safety equipment
- Transport with plane and helicopter
- Safety routines connected to fieldwork
- Some special environmental rules in Svalbard



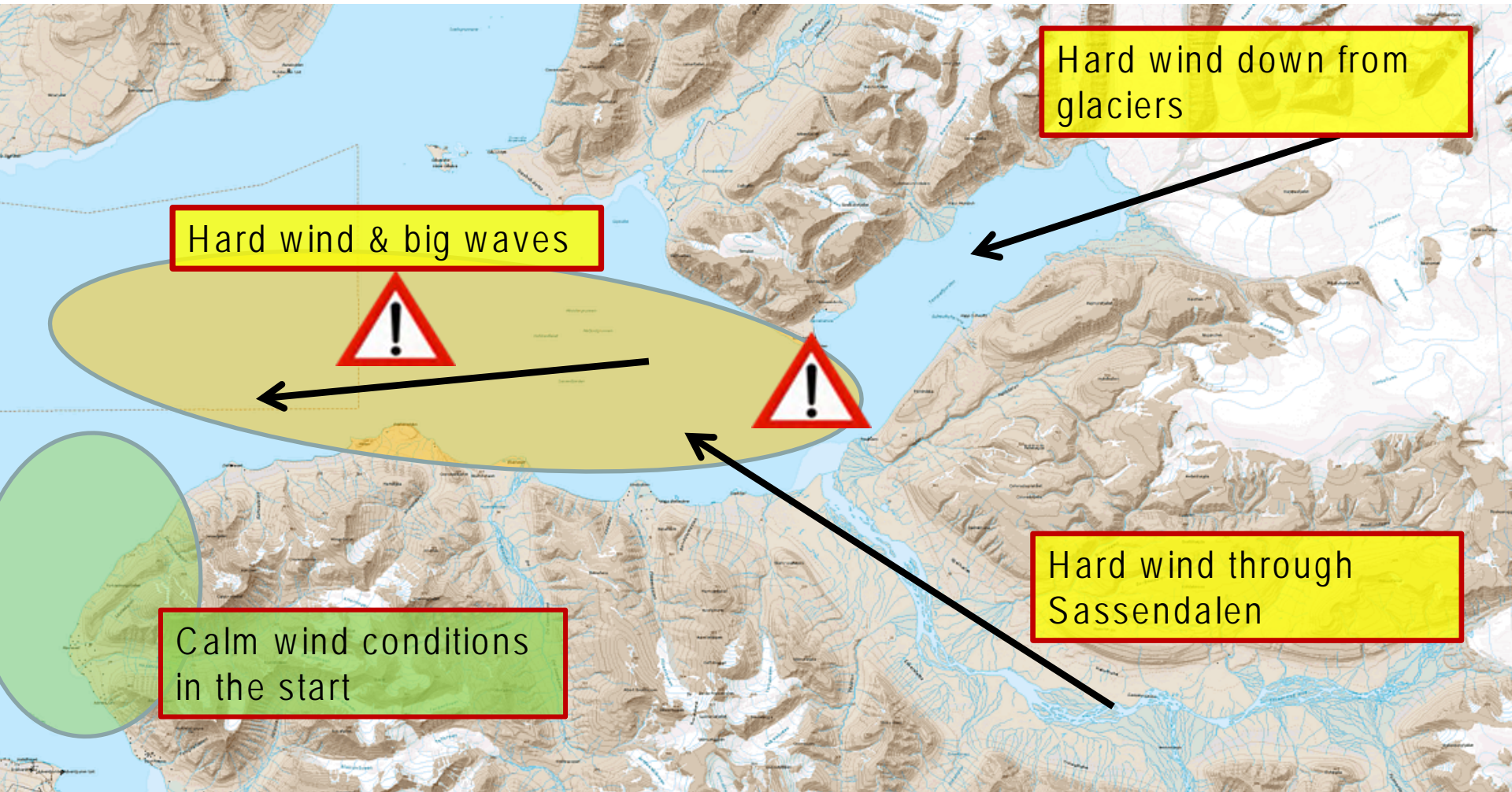
The weather in Svalbard

- Hard to predict the weather
- Big local variations.
- The weather may change very rapidly.
- Average temp. summertime: **2°C - 12°C**
- Arctic fog & low clouds common → low visibility
- Often windy → wind chill, boat travel, wind channelled through valleys and glaciers



Chilly & windy & exposed

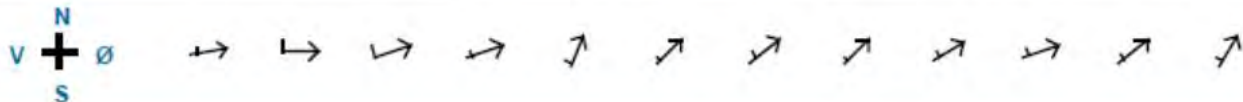
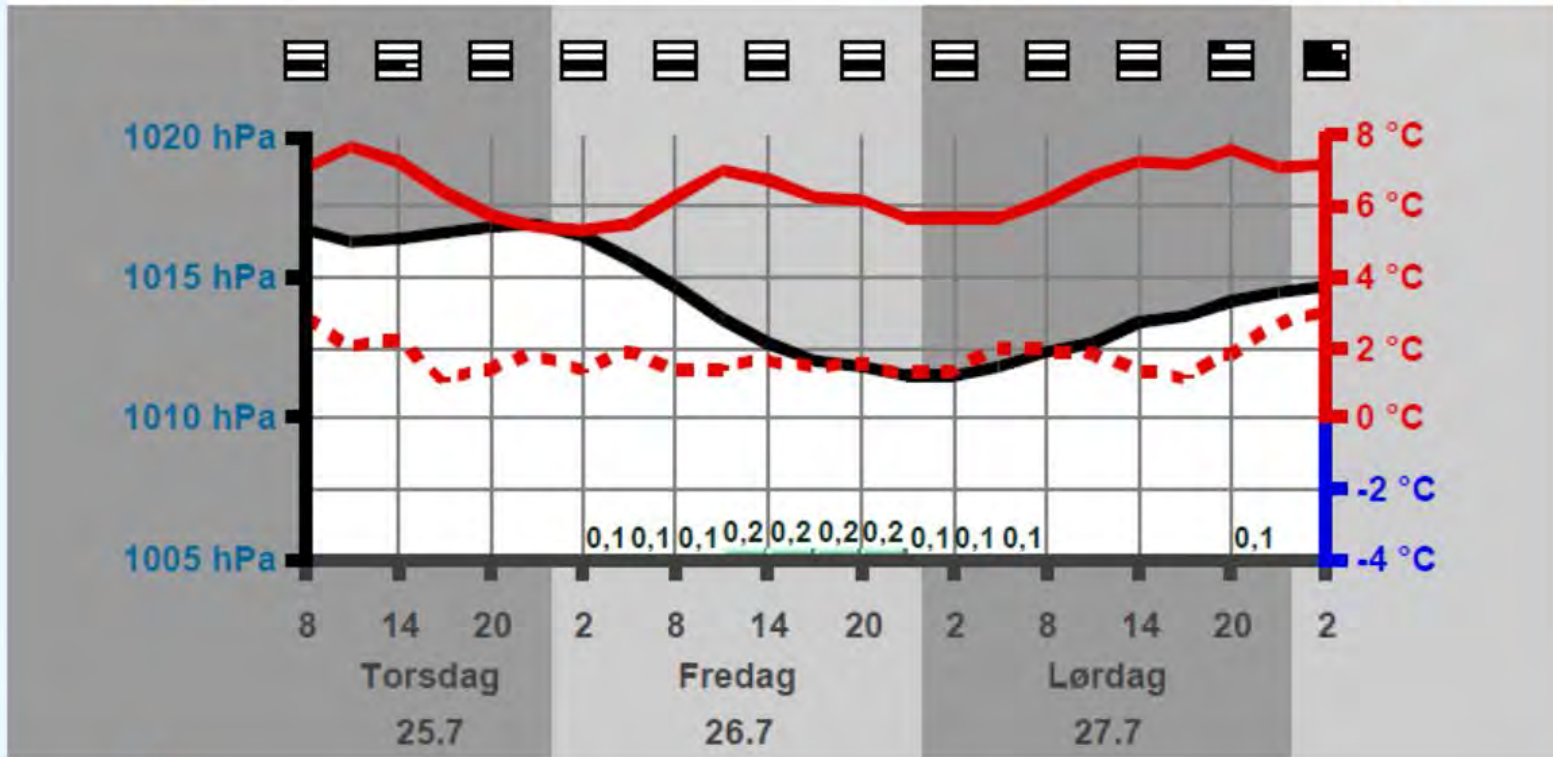
Local east-northeast wind conditions



Meteogram Weather forecast

Svalbard Lufthavn

Meteogrammet er levert av Meteorologisk institutt



Temperatur — Duggpunkt - - - Trykk — Nedbør ■

Also: www.yr.no

Clothing suited for fieldwork

- Clothing must be adapted to the activity → several layers
- In general same clothing as in the mountains of Scandinavia or Alps during Autumn.
- Strong, stable hiking boots – sometimes rubber boots
- **Headwear and gloves. Have extras!**
- **Always carry extra layers & spare clothing!**
- **Windproof !**



Hiking on Tundra

- Many small and larger rivers
- Sediments in the water → difficult to cross rivers
- Permafrost; only the upper layer will melt – soft, wet terrain

Terrain cover mostly either:

- Wet soft terrain – especially early season
- Uneven hard rocky, moraine terrain with sharp rocks



Safe & enjoyable hiking on tundra

River crossing

- Get rather wet boots than chances with wet clothes & broken bones
- Avoid jumping over where larger rocks → unstable, injuries

Good places

- River gets wider → shallower, more even bottom & depth
- Many smaller streams
- Stable, proper hiking boots
- Early season sometimes rubber boots better depending on activity



Steep mountain terrain risks

- Sedimentary mountains → loose stones
- Block fall and tumble stones, persons above you kicking down rocks
- Avoid steep gullies and ravines → falling rocks, snowdrifts and ice left high up in the mountainsides fall down
- Possible to fall and injure yourself → loose rocks & gravel, slippery in rain



Steep mountain terrain

Safety

- Helmets and gloves
- Stable, proper hiking boots
- Careful, slowly walking with short steps both up and down
- Keep group together & organized → if rocks kicked down easier to stop them and shorter fall distance
- Alarm others if rocks fall → shout ROCKFALL
- Responsibility for your own safety AND safety of others



Moving on Glaciers

- 60 % of Svalbard is covered by glaciers
- All glaciers are potentially dangerous
 - Crevasses
 - Melt water channels
 - Moraine areas
 - Local weather conditions
- **Snow covered areas HIGH RISK → everything hidden under snow**
- Blue ice areas LOWER RISK → ice surface visible - but can be very slippery

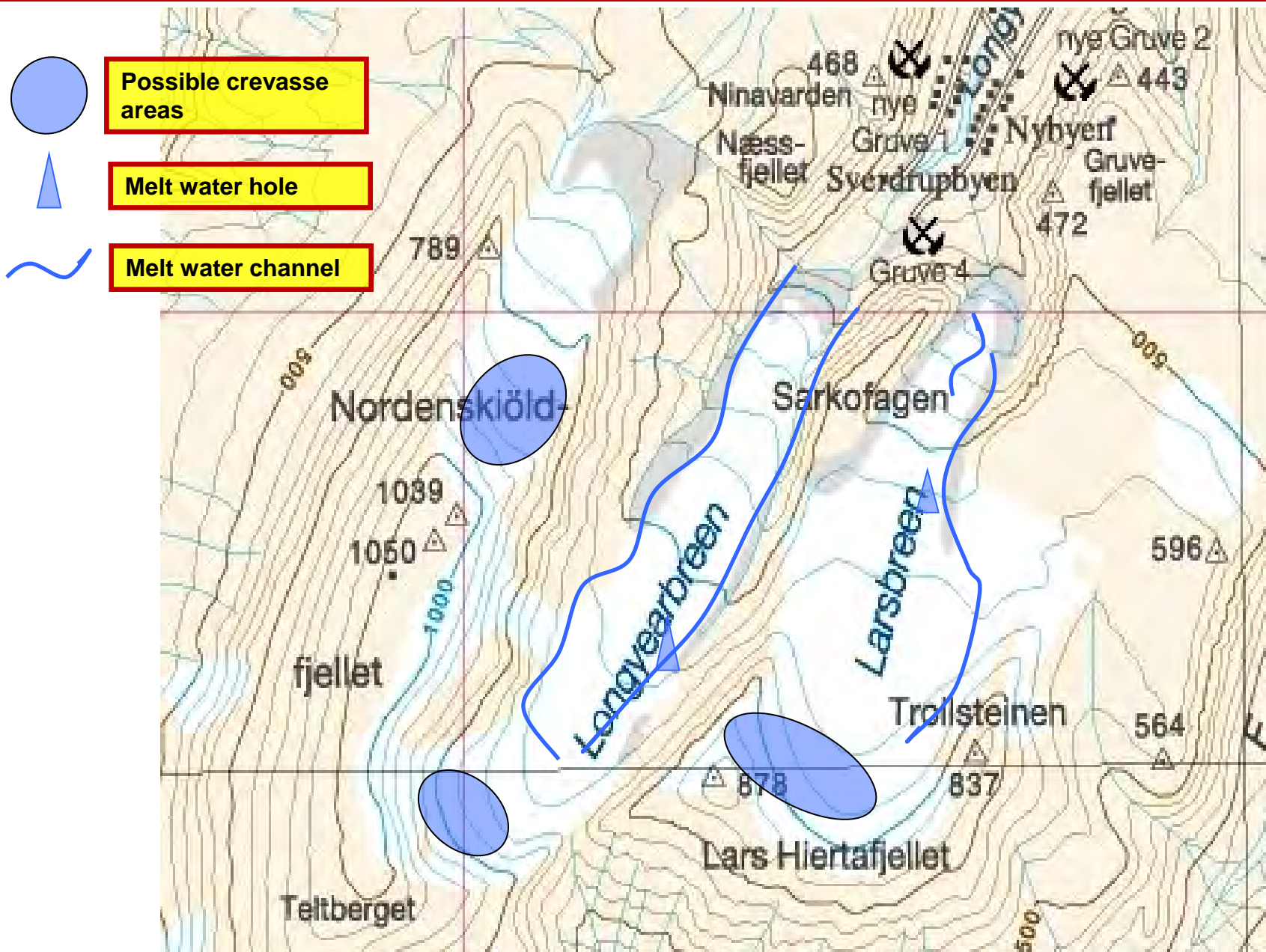


Glacier high risk areas

- Snow covered areas
- Close to fronts → lot of crevasses
- Steeper areas, curves, convex surface, close to cliffs → crevasses
- On the sides, close to moraines → melt water channels
- Early summer → many areas covered by snow



Potentially dangerous glacier areas south of Longyearbyen



Glacier melt water channels in Longyearbreen



Channels along sides of Longyearbreen

Crevasses and melt water holes on Larsbreen



Safety and equipment on glaciers

- Snow covered unknown glacier → move in rope team (bring a probe as well)
- Probe uncertain places
- Blue ice → crampons
- Blue ice → use always gloves (ice will cut your hands)



Travelling at sea – large vessels

Risks & Safety

- Heavy & dangerous equipment on deck → think what you do & **use helmets**
- Going over to small boats or on to the ice → extra careful
- Behaviour on deck, in bad weather or if sea sick:
 - Never alone on deck!
- **Safety brief on-board!**
- Alcohol is not allowed



Helmer Hanssen



Stålbass



Viking Explorer

Movement on sea ice

Risks

- Early summer season ice in the inner parts of fjords and on lakes.
- East and north coasts
- Sea ice during summer and autumn is very unsafe! – bad quality - cracks



Safety

- Check ice thickness and quality often
- Use ice spikes around your neck
- Use floatation suits (Regatta) or survival suits completely zipped up & hood on
- Have rescue throw line available or use rope
- Do not go out alone!



Travelling at sea – Zodiac rubber boats

Risks

- Inexperienced drivers
- Difficult landing spots when windy
- Shallow water + sediments many places → damage engine on bottom
- Timber and ice floating on surface
- Fast shifting weather & wind
- Engine or boat problems
- Glacier front collapses/calving
- Tide water 1-2 metres difference
- Partly closed survival suits – fill with water if fall into sea
- No GPS-map plotter



Travelling at sea – Zodiac rubber boats

Safety measures

- Zodiac driving course
- What if ?
- Check weather
- Map studies, ask logistics – shallow spots, landings ?
- Careful driving & look ahead
- Check tide table
- Keep minimum 200 m distance to glacier fronts

When driving

- **Communication, emergency and navigation tools** on-board & ready
- **Emergency beacon on body & attached**
- **Driver use emergency stop cord**
- **Survival suit hoods on & completely zipped up**
- Extra fuel
- Boat safety boxes on-board



Wildlife – Arctic fox

- Harmless & curious
- Can steal food

Be aware:

- Rabies
- "Mouse parasite" (*Echinococcus multilocularis*) – specially Grumant, Fuglefjella



- Store food & waste properly – do not feed foxes
- No drinking water from streams in high risk areas for *Echinococcus*-parasite (boiling kills it)
- Keep away & report aggressive foxes (Rabies) (report also immobile reindeers)



Wildlife – Walrus

- Growing population
- Also more common in Isfjorden
- Can be curious or even aggressive → can puncture or destroy small boats, risk also on ice edge



- Keep some distance & move away from close coming walrus
- Keep distance to walrus groups on land or on ice



Wildlife – Polar bear

- You can meet polar bear all over Svalbard and surrounding ice covered waters
- All kinds of terrain and places, also water
- Especially sea ice, sea shore, glacier fronts, carcasses on shore
- Curious hunter
- Moves surprisingly fast in all kinds of terrain
- Very good sense of smell
- Not always shiny white



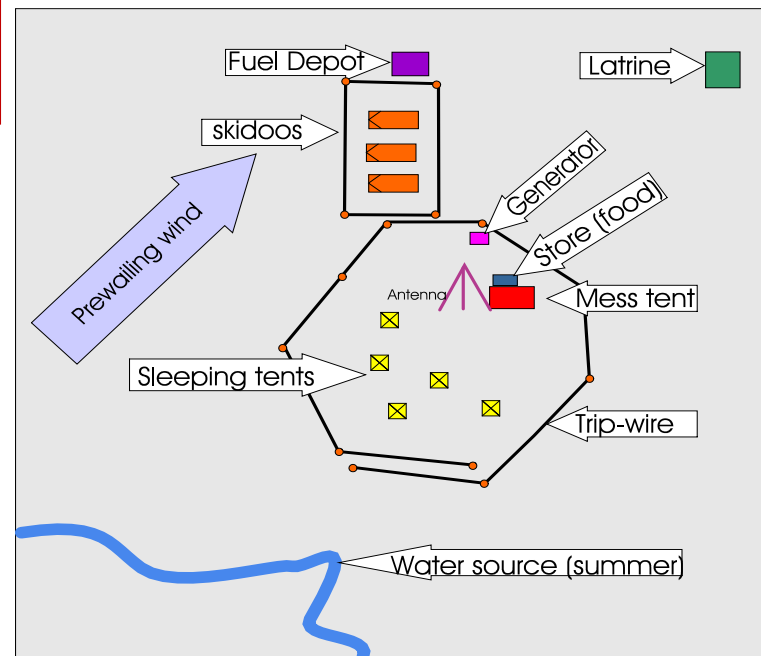
Wildlife – Encountering Polar bear

- Avoid all closer encounters & situations
- Stay alert – think how you use terrain - can you see around?
- Carry rifle & flare gun with you all times
- If you meet polar bear:
 - Gather the group
 - Try to walk away
 - Try to scare the Bear off in time
 - Bears can be shot only in self defence



Tent camp safety

- **Anchor always storm proof**
- Placement in terrain – wind, polar bears, cultural heritage min 100m
- Organize the camp & gear
- Polar bear safety – visibility, trip wire, bear watch, separate kitchen tent
- Choose tough, barren groundcover
- Spare parts, extra fuel + extra food
- Drinking water ?



Transport with plane and helicopter

- **Transport with helicopter:**
 - Special safety briefing
 - Some limitations regarding dangerous goods (fuel, ammunition)
 - Garbage from field parties must be stored in containers
- **Transport with fixed wing (plane):**
 - Same safety regulations as for commercial airliners!
 - No flammable goods, ammunition or batteries.
 - Limitations of what kind of petrol driven machinery it is allowed to bring on board.



Field safety & emergency equipment



Rifle & signal pistol

- Rifle with 10 pcs of high power hunting ammunition. All UNIS rifles are Ruger cal .30-06.
- A signal pistol is the best way to scare off bears. Always carry a signal pistol in addition to the rifle.
- Take good care of your weapons – check daily, keep clean!



Communication

- **Emergency beacon**
 - Emergency help transmitter
- **Satellite telephone**
 - Works everywhere
 - Daily contact to UNIS etc.
 - Emergency contact
- **VHF Radio**
 - Contact between field groups
 - Contact to boats/ships ch16



- Carry always with you !
- Satphone & VHF **extra batteries + possible charger for longer trips**

Emergency beacon

- Only in real emergency situations when satellite phone is not an option
- Transmits emergency signal & position through satellites when released.
- Can not communicate or give any details about emergency

1



Open

2



Release cover

3



Push red button

Map & compass & GPS

- Always bring map and compass
- Maps 1:100 000 (1cm=1km)
- GPS is only navigation aid!
Bring warm extra batteries.
- Low clouds & fog higher in the terrain & on the sea → no visibility + no landmarks
- Know where you are & where your camp/boat/pick up point is – use waypoints/tracks



Equipment day-long excursions

- Insulated, windproof bivouac bag (Jervenduk)
- Sleeping pad / sitting pad
- First aid kit
- Thermos with warm drink
- Extra food + snacks
- Extra clothing (**hat + gloves!**)
- Rifle & signal pistol
- Communication & contact numbers
- Map & compass & GPS



Environmental legislation and caution

- Research activities, physical installations & sampling regulated & need to be agreed on with local authorities
- Label all physical field installations (contacts, dates)
- Leave No Trace on nature on campsites
- Be aware of cultural heritage. Camping minimum 100m away.
- All traces of human activity dating from 1945 or earlier are protected elements



Governor of Svalbard

www.syssemmannen.no

Researchers

Whoever plans to carry out research activities in Svalbard needs to familiarize him or herself with current rules and regulations. As a rule, most field activities demand a permit from the Governor in Svalbard.



Safety routines with fieldwork

- All fieldwork and work at the labs need to be agreed on with the logistic department.
- HSE (health, safety and environmental) briefing before all fieldwork.
- Document with contact info, group members, plan, gear etc. before going out
- Contact with person on duty at UNIS if working after 1600 and if need for assistance.

"HSE" (Health, Safety and Environment) documentation

Pa

"HSE" documentation for field work operations at UNIS

Fieldwork/ excursion supervisor		
Topic / project name / Code		
Location:		
Time period:		
Object of work:		
Means of transportation:		
Means of communication, call signals and numbers:		
Satellite phone	Telephone number:	
VHF Radio	Call signal:	Channel:
Cell – phone (s)	Telephone number(s):	
Emergency beacon	LC number:	

Time of daily contact with UNIS, if out over several days.	
On weekdays:	On Saturday, Sunday or holidays:
Action to be taken from UNIS and the field-party if communication fails:	

Latest time of arrival / return (date and time):	
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Contact person at UNIS in this period:	
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Routines when returning from fieldwork:	1) Call "Contact person at UNIS" at 95 28 35 11.
	2) Put this form in the "returned" shelter.

Means of communications at UNIS	Radio VHF, UNIS	55540
	Radio, VHS, Contact person UNIS	55542
	Cell-phone, Contact person UNIS	95 28

Daily excursion plan (time, place and alternative routes). Use more paper, or attach map image, if necessary:

Emergency & Health & Problem contacts

Emergency Phone 112

Telephone to police 24 hours:
+47 79021222

UNIS CAMPUS

Daytime from 08.30 to 16.00: **Study administration.**

Phone: Tel: +47 79 02 33 00

E-mail addresses: Studadm@unis.no

Evening/nights from 16.00 to 08.30: **Duty officer.**

Phone: Tel: +47 95 28 35 11

Off campus alternatives:

Longyearbyen hospital

Emergency phone 113

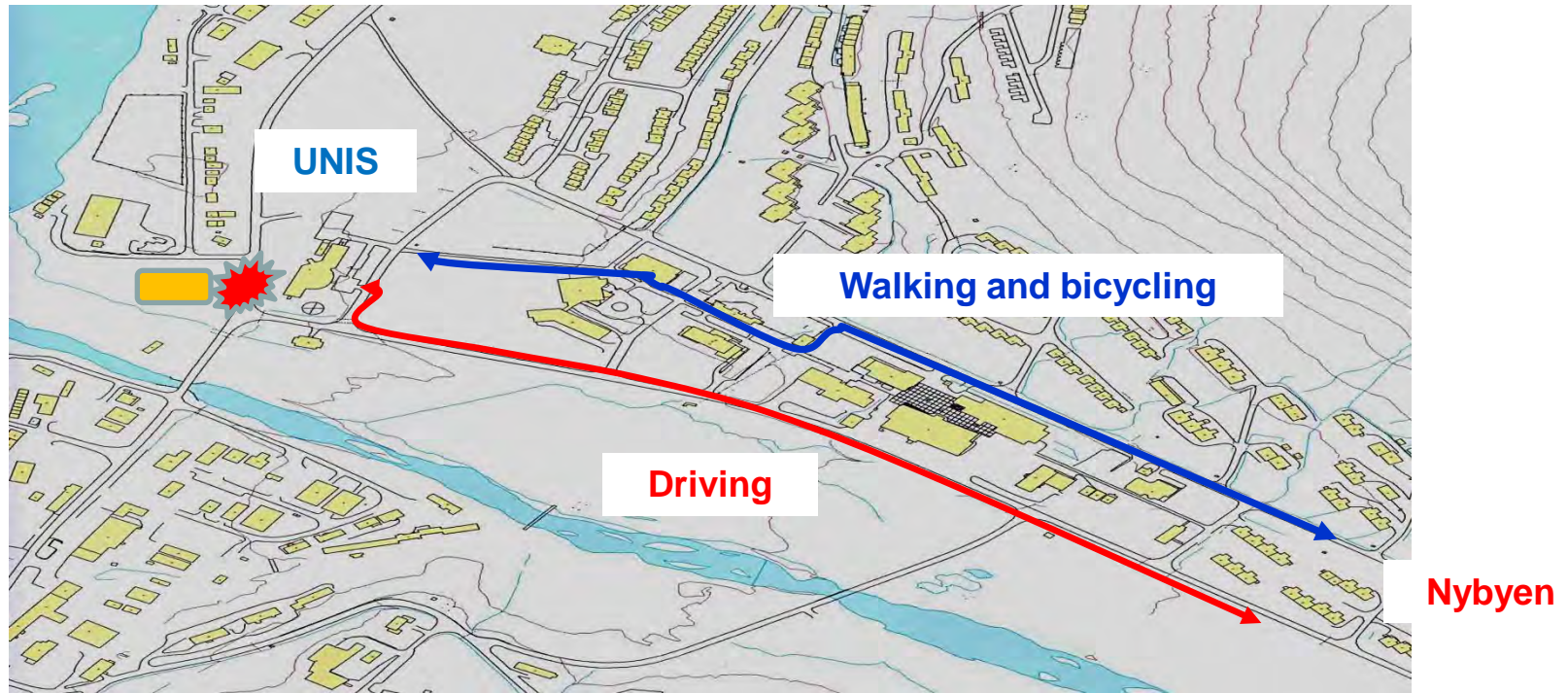
Phone nr. + 47 79 02 42 00

Svalbard Church

Phone nr. + 47 79 02 55 60

Urban safety challenges

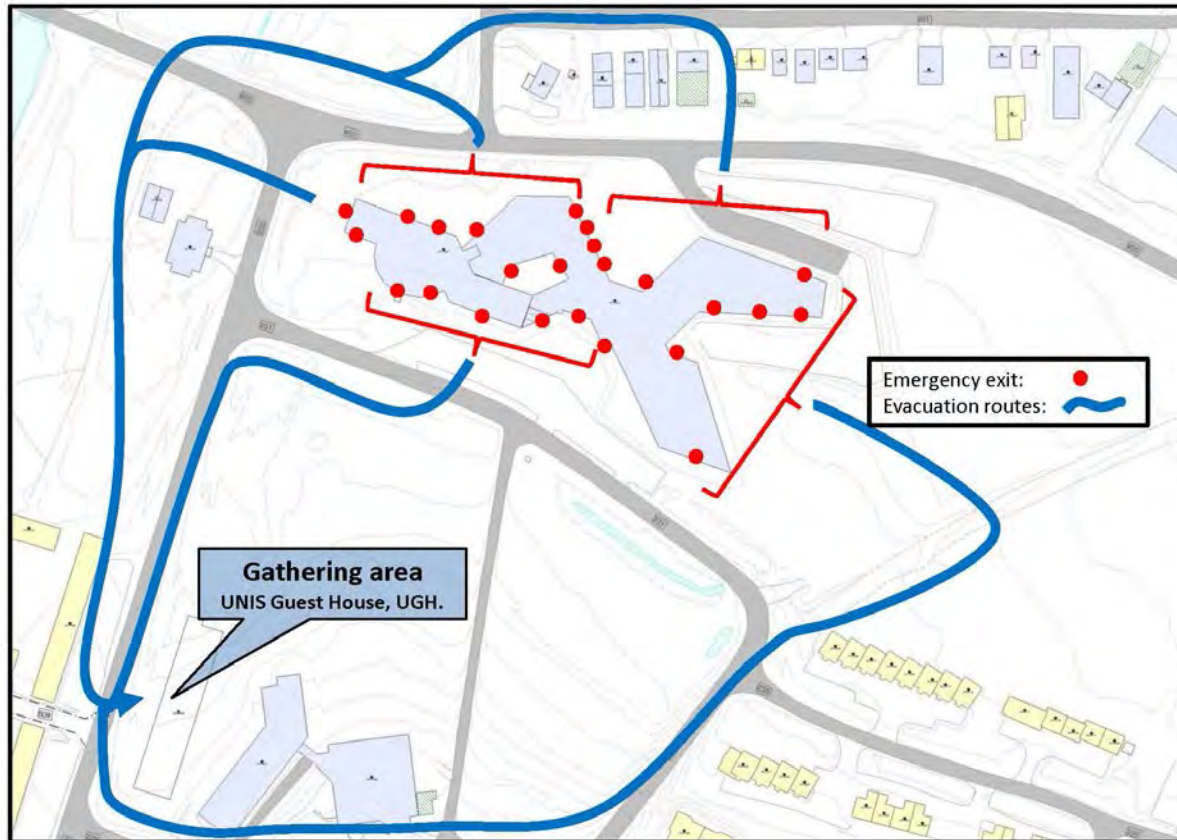
Traffic



Chose the safest way and use reflectors on your clothing and lights on your bike! Please mark the road crossing north of UNIS!

Urban safety challenges

Fire protection at UNIS



If the fire alarm goes off. Leave UNIS through the emergency exits, follow the evacuation routes and meet at UNIS Guest House.

UNIS has only got one type of alarm. The fire alarm will be used as a signal that something is seriously wrong and you have to leave the building through the nearest emergency exit.

Security

What to do in case of a criminal act or use of serious violence at campus.

- **Run. Get away from the area. Use the nearest emergency exit point and follow the evacuation routes to UNIS Guest House.**
- **If you cannot get away, hide yourself. Barricade and, if possible, lock yourself in. Set your phone on silence and stay still. Get away if it becomes possible.**
- **Report the incident to the police at the emergency number 112. Inform others if you can. If possible, trigger the fire alarm. UNIS has only got one type of alarm and this is the fire alarm.**
- **If possible; observe as much as you can.**
 - **How many?**
 - **How do they look like?**
 - **What type of weapon?**
 - **Where did they go?**
 - **Where did you see them last**
- **If you have no other choice, and only then, attack the perpetrator.**
- **In meeting with the police / armed response:**
 - **Stay calm and be aware that you might be pointed at with a weapon**
 - **Armed response is not there to carry out first aid, but to stop the perpetrators.**
 - **Keep your hands visible.**
 - **Follow their instructions.**

When going out on private excursions..

- Make sure someone knows where you are & your contact details & when you are supposed to be back!
- Take right equipment & right attitude
- Have fun & play safe!



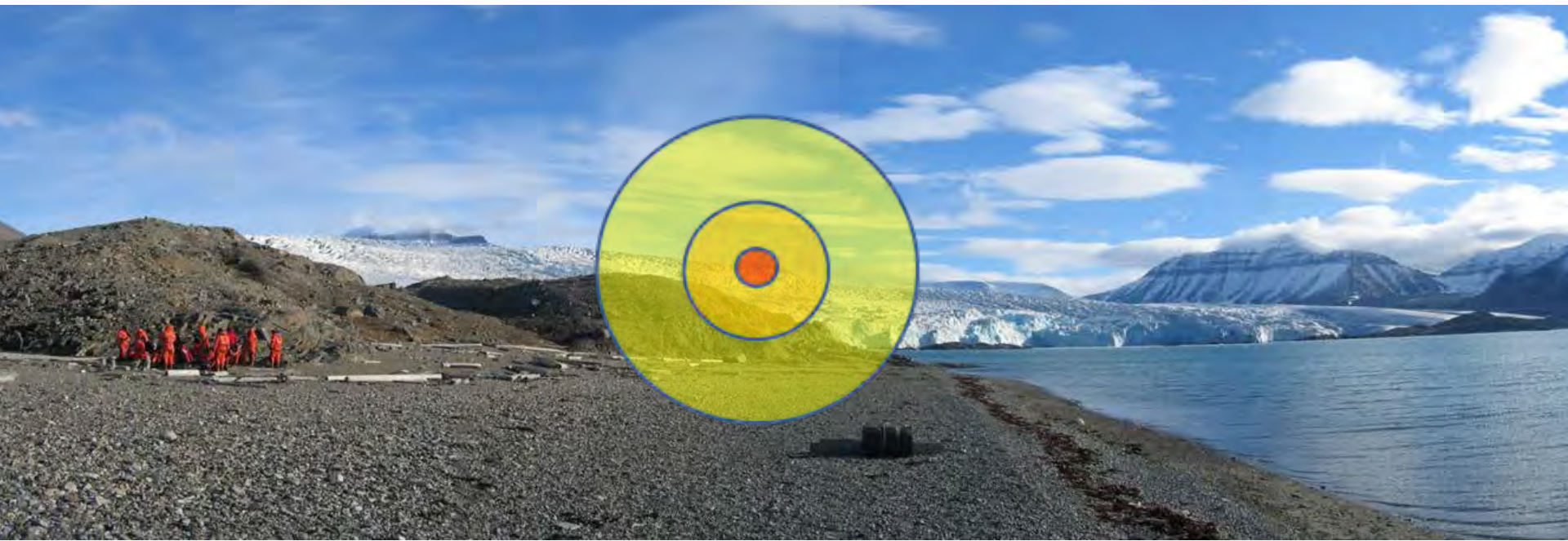
The most important tool to keep yourself safe is your head – take your time to use it early enough! **Most accidents happen because we do mistakes or bad decisions.**



1. Identify possible risks and avoid problems

2. Control the risks – plan ahead, act right, have & use safety gear

3. Minimize damage & get help – safety & emergency gear



Thank you!



The University Centre in Svalbard

Have a nice and safe stay in Svalbard!

UNIS Logistics Department