

## General Information and Personal Equipment List

### NASA SnowEx 2017 – Grand Mesa/ Silverton, CO

**Clothing.** No cotton outdoor gear – remember in cold, damp, or wet environments, cotton *kills* people! We will not supply clothing. Bring everything you need. Don't count on getting it in Colorado. If you don't already have it, get it. If you don't get it, don't come. This is a fundamental safety issue, not a comfort or style issue. Come prepared to spend long days in the field; there will normally be no opportunities to warm-up inside until the very end of the day. Weather may be extreme. Typical air temperature range between -40°C and 0°C (-40°F and 32°F), but may be either colder or warmer than this range during our work. Rain is unlikely, but possible. Gore-Tex or other water repellent outer clothing is recommended, as it will also protect you from melting snow. Grand Mesa/Silverton is a windy environment so wind chill often depresses air temperatures substantially. Windproof out layers are essential. Otherwise warm porous layers, such as wool, fleece and other synthetics, provide very little protection in windy conditions.

Use the layer method. Have lots of warm layers so that you can add layers when you get cold or are standing around, and so that you can take away layers when you are moving or get too warm. The goal is to manage both temperature and perspiration. If you get too warm, you get wet. If you get wet, you get cold regardless of how much clothing you have. This can lead to excessive heat loss, hypothermia, and can be fatal.

If you show up with inadequate outdoor clothing, you will not be allowed to work in the field. Inadequate clothing includes cotton base clothing, cotton sweat shirts or sweat pants, clothing in poor or compromised condition.

Expect a media presence. You represent your home institution *and* NASA; we cannot look like a group of careless dirt bags. This is true for all venues including restaurants and lodges. Feel free dress any way you want in your own cabin, but be respectful of your cabinmates or roommates.

**A word about boots.** Boots may be the most important clothing item. If your feet are cold, you will not be effective in the field and you will compromise safety of the larger group and project. Boots must fit well, have a heavy sole, be waterproof, and have adequate lining. Ideal boots are Sorel, Baffin, or similar brands that have a rubber bottom, high, laced leather top, with a removable wool liner. You should bring an extra pair of liners that you can dry and use on alternate days. If your feet get cold easily, consider bringing electric foot warmers that can be recharged each night, or chemical foot warmer packs. Be sure to waterproof the leather tops before you come to Colorado. Be sure your gaiters fit snugly over your boot/pants combination and will not let snow in the top or bottom of the gaiter. If your overpants, bibs, or shells have inner gaiters, make sure the fit is good on the boot. There will be times where you are wallowing in the snow and if your boot/pant/gaiter seal is not good, you will get snow in your boots. Snow in your boots means cold, wet feet regardless of how good your boot is.

If you show up with inadequate footwear, you will not be allowed to work in the field. Inadequate footwear includes unlined leather or rubber work boots of any kind, hiking boots, outdoor shoes, *après* ski or moon boots. If you are bringing skis and will work in ski boots, be sure that you can survive a day of standing around in them without much motion. Skiing will

consist of sampling depth transects or getting from a snowmobile to a pit location. There won't be opportunities to get turns – the terrain is flat for the most part. Even if you plan to work in ski boots, bring regular winter boots for alternate activities, unforeseen work assignments that do not include ski equipment, and general winter comfort. If you have questions about your boots, contact us immediately.

***Helmets.*** Anyone driving or riding on a snowmobile will be required to wear an approved helmet. We will provide helmets. You may bring a ski helmet if you wish, but these will not substitute for approved helmets while snowmobiling.

***Indoor clothing.*** Please bring adequate clothing for a week of indoor use. You should bring some warm layers (sweaters, fleece pants and tops, etc.), as the cabins and lodges may be cooler than your normal comfort range. There are no laundry facilities on the Mesa. Those staying for more than a week may do a laundry run to nearby Cedaredge on the changeover day, but be prepared to forego this luxury if weather makes roads unsafe. If you are desperate, you can do laundry in your bathroom, and take solace in the fact that we will all be compromised to some degree.

***Other personal equipment.*** All scientific equipment will be provided. Please do not bring your own unless it is already approved in the scientific study plan. If you bring your own measurement tools, we may compromise results by measuring parameters differently, we may have calibration issues, or you may lose your equipment in the daily exchange. There are exceptions.

***Backpacks.*** Please bring a backpack or two. You will be carrying your own personal gear (clothing, food, water, etc.), and also a portion of the safety, measurement, communication, and navigation equipment. A minimum of 40 L capacity is needed in a backpack; 50 L and 60 L pack will be useful in some circumstances. Do not bring the small book backpacks used on campus or around town and do not bring the small day outing backpacks that will only hold your personal gear.

***Cabin life.*** You will have your own bed, but not necessarily your own room. Earplugs are a good idea in case you have a snorer in your room or building. Bedding, linen and towels will be provided. We suggest you bring your own soap and shampoo, and obvious personal items. Rooms will not receive maid service during your stay. You are responsible for daily cleaning of your residence, dishes, etc. Please be mindful of your roommates. Please leave your residence in reasonable shape for the staff and the next residents.

***Food.*** The Mesa Lakes Lodge will serve hot breakfast and dinner every day. They will provide sack lunches for the field. There will be no lunch service during the day, even for those working near Mesa Lakes Lodge, but sack lunches will be available for all regardless of work plans or location. Lunches will be available for pick up at the lodge after breakfast. In theory, all your food will be taken care of by the lodge. Experienced participants will bring their own snacks and favorite foods for the field and cabin. These should be supplementary and not necessary for all your sustenance. Candy bars, granola bars, etc. and other special needs should be purchased before arrival. There is no grocery store on the Mesa, although both lodges have a limited selection of such items on hand.

***Health.*** Please practice community health. It will be unfortunate if anyone gets sick, and disastrous to the project if a major illness moves through the field community. Wash your hands often. We will have hand disinfectant available at the lodge and bathrooms – please use it often. When handling community food be especially careful. If you are sick, let us know immediately. If you are traveling by airplane to Colorado, consider taking preventative immune boosters before boarding your flight. There are few better places to pick up a bug than a flight.

***Alcohol and drugs.*** Although Colorado has legalized personal use of marijuana, the federal government does not recognize this use and it is still illegal on Federal lands. We will be working on Federal lands at all times and the two lodges occupy Forest Service property on long-term leases. Marijuana use will not be tolerated at any time on the project and its use will result in removal of the participant from the project. Alcohol is a personal choice. We are counting on prudent use and do not want coincident use of alcohol with training, meetings, or field activities. Improper use will result in removal of the participant from the project. This is an important international science project, not a vacation, and your behavior will directly affect the outcome.

***Safety.*** We will have an extensive safety plan in place and all participants will be appropriately trained on site. A comprehensive communication plan and emergency response protocol has been developed. There will be required daily safety briefings. Details will be provided during mandatory on-site training.

## List

### *Clothing:*

Winter boots

Boot liners

Warm socks – many pairs (minimum 5)

Underwear and Long underwear bottoms (2 pr)

Fleece pants

Waterproof snow pants (shells, bibs, etc.)

Gaiters

Synthetic long underwear shirts (2)

Warm shirts – wool or synthetic (at least 2)

Fleece jacket

Down jacket

Waterproof shell that will go over all your layers

Warm hat (2)

Balaclava or hood that attaches to your coat

Goggles

Sunglasses (2 pr)

Warm gloves (3 pr)

Mittens - for snowmobile or emergency (1 pr), if you use daily or hands get cold easily (2 pr)

### *Gear:*

Backpack/Rucksack (larger than 40L)

Water bottle – 2 (1 L capacity) – good to have foam cover to slow freezing

Thermos

Sunscreen

Lip balm

Headlamp

Multitool or pocketknife

Some small roll of duct tape and/or rope

Snowshoes

Ski poles

Skis only if you are really competent at travel in difficult conditions with a backpack

    If skis, then ski boots, poles, and skins

    Skis should be telemark, AT, or other substantial model.

    Alpine, light touring or skating skis are not acceptable.

    Fixed-heel bindings are not acceptable.