

A wide-angle photograph of a snowy mountain scene. In the foreground, a multi-chair ski lift extends from the left side of the frame towards the center. The ground is covered in a thick layer of snow. In the middle ground, a dense forest of evergreen trees stands on a hillside. The background features a large, hazy mountain range under a clear blue sky.

Project Flatlight

Daniel Côté

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Sunny day



Flatlight is when you cannot see contrast in snow



Consequences of flat light

- One cannot see bumps, cliffs, and any other topographical features
 - As close as a few meters
- Snowmobile accidents
 - Driving into a crevasse (and falling)
 - Driving into a large/medium bump/dip (and losing control)
 - Driving into uneven small bump (and tilting)
- Walking/running?
- Canadian Snowboarding at the Olympics :-(



Known to photographers



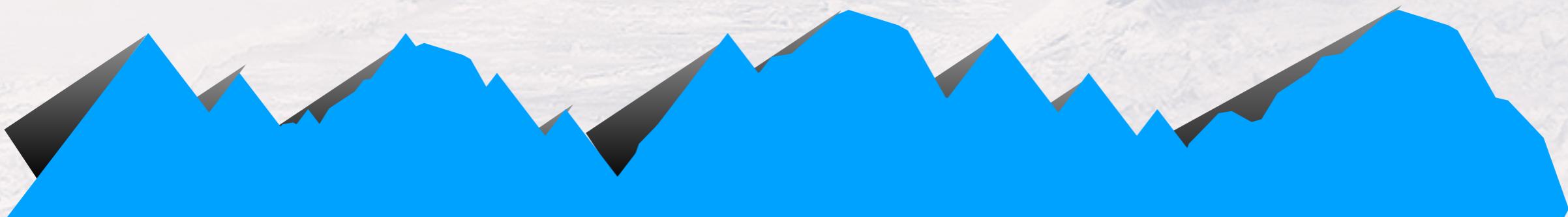
When does this occur?

- Late in the day at sunset, one loses contrast
 - Totally predictable
- On very cloudy days, thick cloud coverage
 - Could predict via weather, but not necessarily reliable(?). Only indirect measurement.

Where do shadows come from?



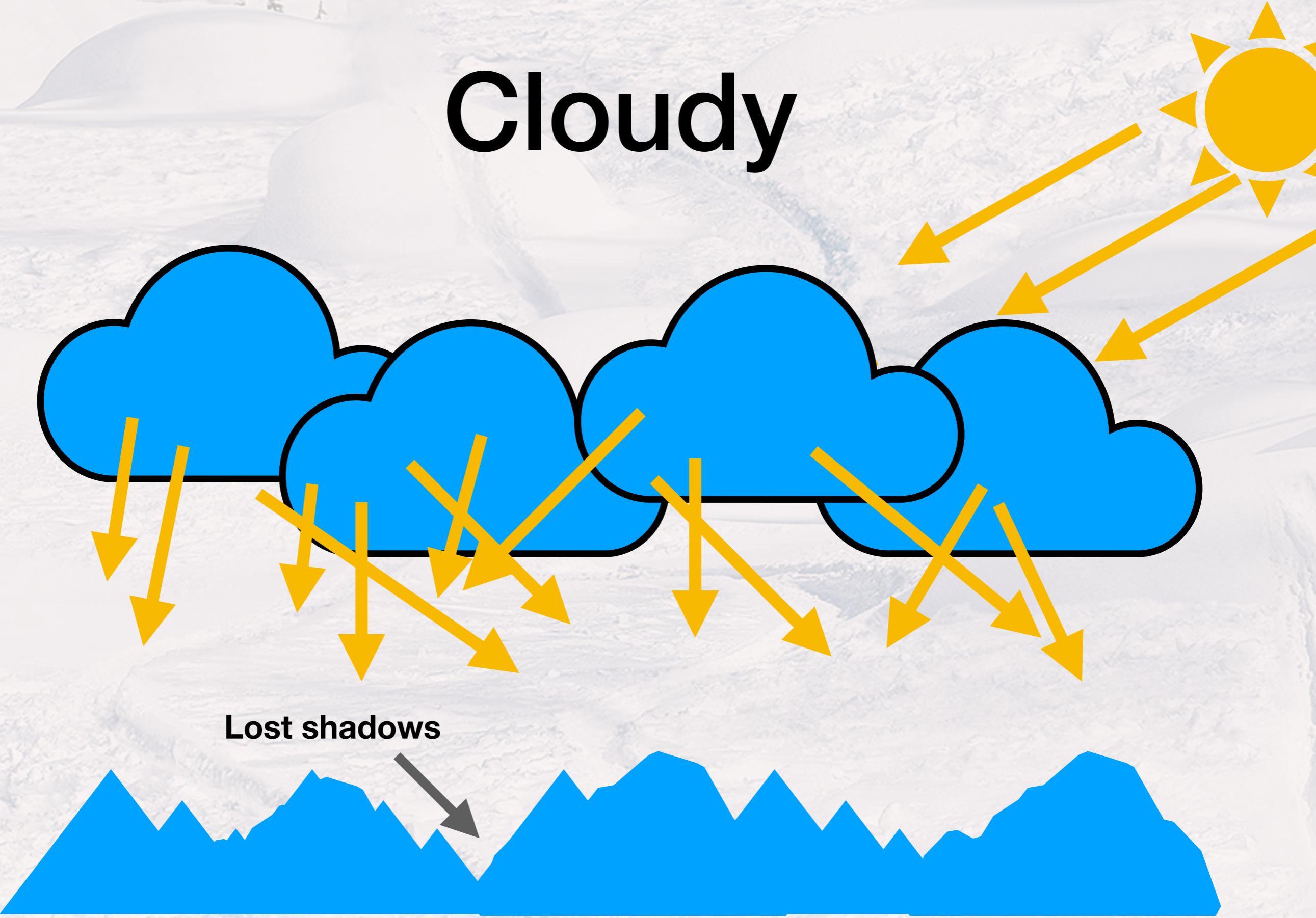
Sunny



Shadows show snow profile/topography



Cloudy



Flatlight makes contrast of snow profile/topography vanish

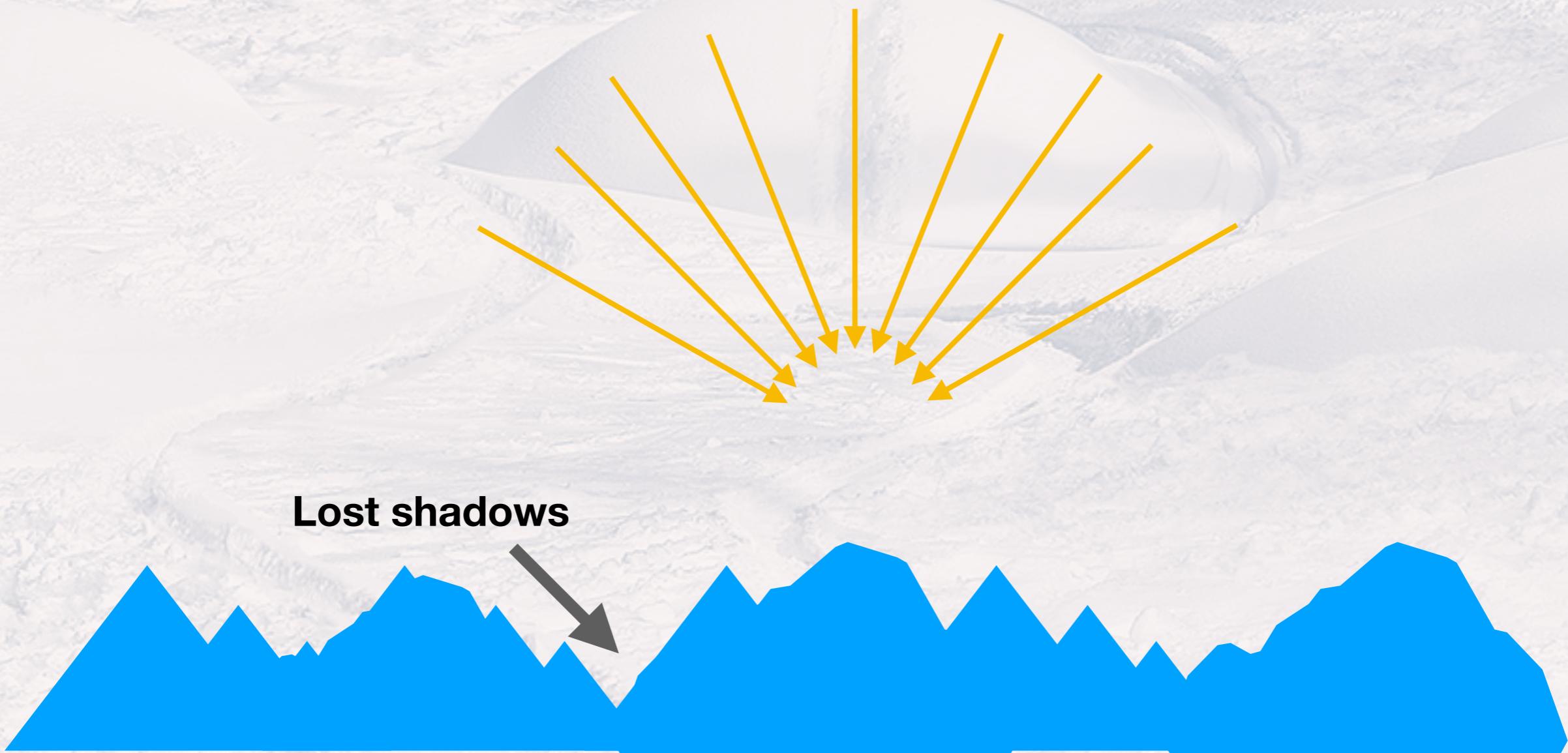


**Most important on snow because of uniform white colour
(as opposed to ground/grass/rocks)**

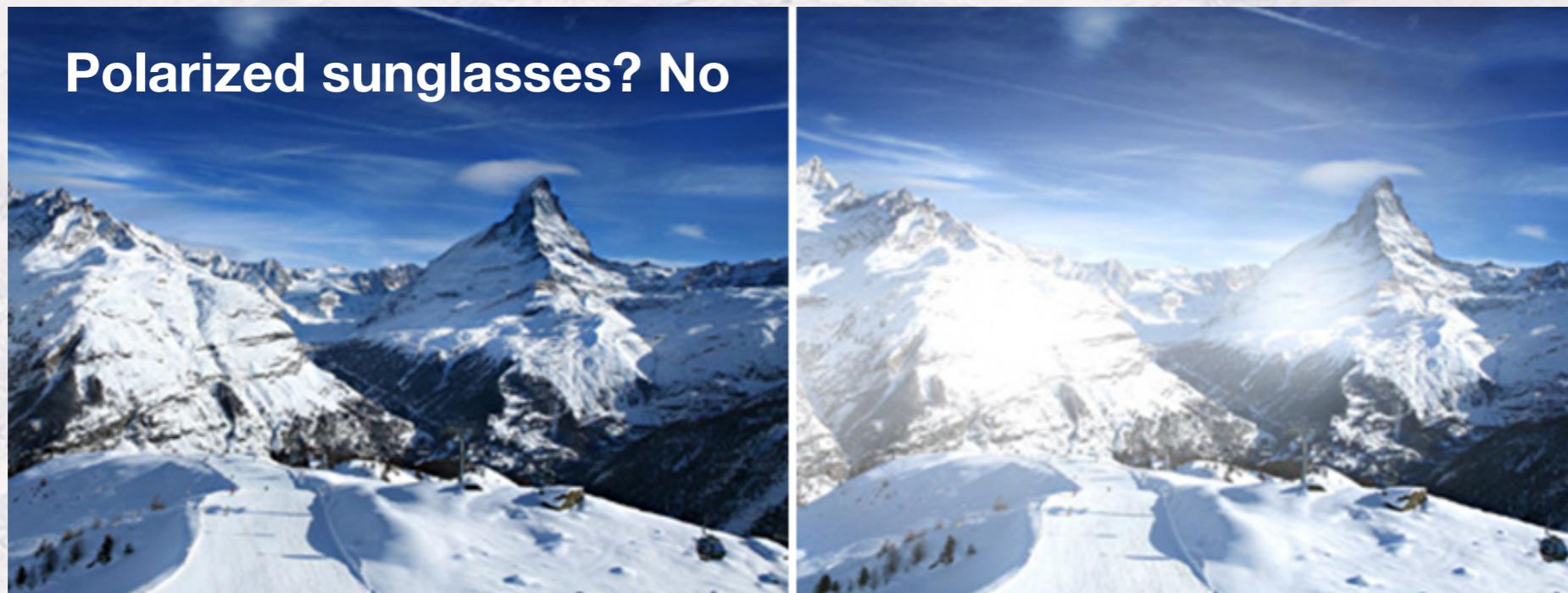
Technical definition

- In the sky
 - Light comes from every point in the sky
 - Partial clouds, partial flat light.
 - Light comes from all directions at any point
- On the ground
 - At a given point on the snow, light comes from everywhere with (same? Similar?) intensity

Where do shadows come from?



Mitigating solutions?



Project Flatlight

- **Overall objective**

- Predict flatlight conditions ahead of time to warn the population of changing conditions
- Same way we have the UV index, develop a flat light index (measured in Carpenter units).

- **Specific objectives**

- Measure and quantify light flatness
- Validate with local weather station
- Install Flatness Meters at different weather stations with remote communication capabilities, including local installation
- Build a predictive model from the network

Network of measuring devices

