Is the weather contributing to the instability?

Basic Orographics:

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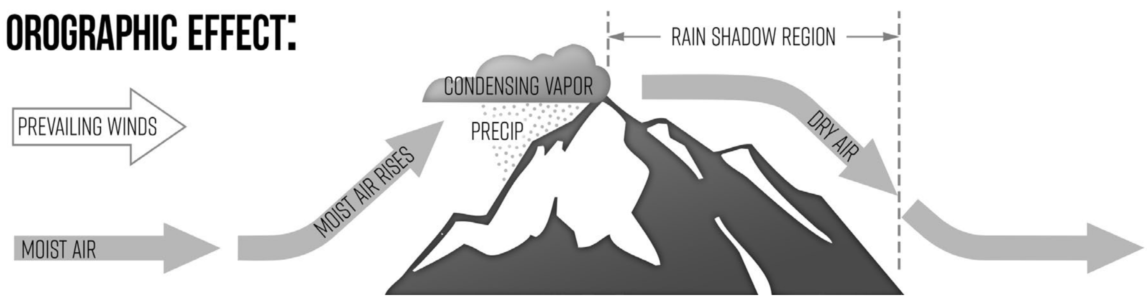
Orographics:

graphic: Glissemedia LLC



Orographics is the lifting effect created by mountains with air flow up against them. The mountains force air to rise, and the rising motion can create clouds and precipitation over the mountains, where no clouds or precipitation are occurring in adjacent valleys.

Large-scale Orographic Effects:

Mountainous terrain, like the Western United States, creates friction and slows the movement of storms down and can influence the direction that storms track. The Continental Divide is a major barrier to storm systems. Storms moving from west to east will generate upslope & downslope winds from one side of the divide to the other. Typically, storms that are still on the west side of the Divide will provide good lift on the west side, and enhanced precipitation/snowfall, while at the same time, cause a drier downslope flow on the east side of the Divide.

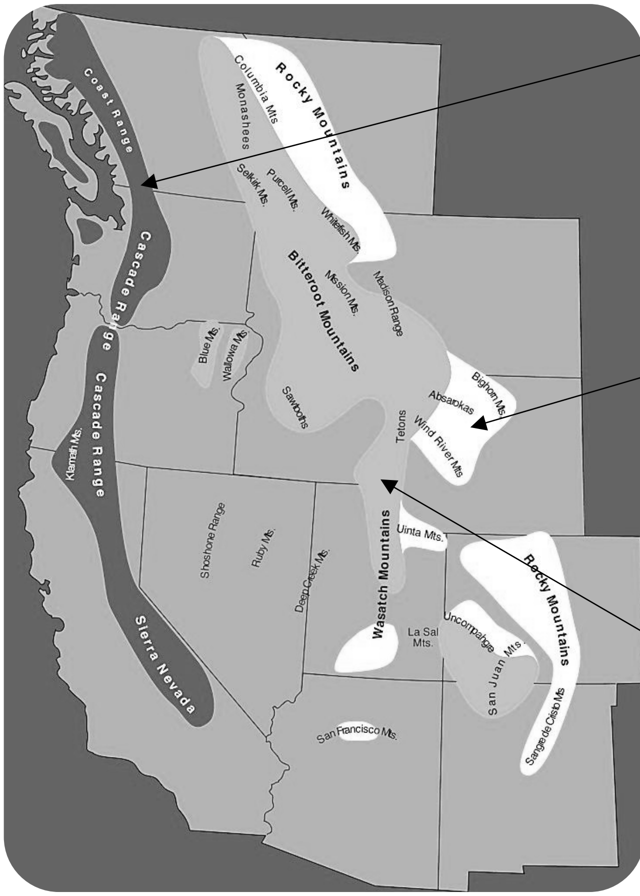
Small-scale Orographic Effects:

A perpendicular flow of air in relation to the orientation of a mountain range provides the best orographic enhancement. An oblique flow of air in relation to the orientation of a mountain range provides somewhat less of an orographic effect. In a parallel flow of air, the orographic effect is nil.

Localized Orographic Effects:

Air flow into a confined canyon, for instance, can provide additional lifting due to terrain-convergence. Combining optimal orographic lifting with terrain convergence can enhance precipitation and/or snowfall greatly.

Climatological variations in weather and subsequent snowpacks:



Graphic from Staying Alive in Avalanche Terrain, Tremper

Maritime snowpack:

Coastal regions, warmer temps, wetter, higher snow amounts = higher snow densities, higher precipitation rates, deep snowpacks (ex. Cascades, Sierras)

Continental snowpack:

Higher elevations, colder, lower snow amounts, lower snow densities, thin snowpack. (ex. Rocky Mountains)

Intermountain snowpack:

Has both maritime and continental characteristics –moderate snow amounts, mid-range snow densities, moderate snow depth. (ex. Tetons, Wasatch Mountains)

Weather’s Influence On The Snowpack:

PRECIPITATION

- Type – *rain vs snow*
- Duration – *how long has it been storming?*
- Intensity – *how hard is it raining/snowing?*

Red flags

- *6” or more in 6 hrs or less*
- *12’ or more in 24 hrs*
- *Rain on dry snow*

WIND

- Speed – 10 mph is enough to move snow
- Direction – note what aspect the snow is loading
- Duration – how long has snow been moving?
- Loading pattern

Red flags

- *15 mph+ for several hours*
- *Visible plumes of snow*
- *Obvious wind loading – cornices, wind pillows*

TEMPERATURE

- Trends during storms – *warm to cold = right side up. cold to warm = upside down.*
- Rapid warming – *increases creep and decreases stability*
- Inversions – *temperatures increase as elevation increases*
- Cold & Clear – *these conditions can form surface hoar and facets*

Red flags

- *Rapid temperature rise – 12°+ in 12 hrs or less*
- *Temperatures rising above freezing*

Regional and Local Wind Variations:

Wind direction and speed are variable due to valley and ridge orientations. Various flow patterns exist due to funneling

**Passes, cols, and gaps typically increase the wind speed and often skew the wind direction. The best indication of wind direction is on a summit of a peak that is not surrounded by other higher peaks.

Clues to recent wind direction and speed include:

- Riming – *forms on the windward side of objects*
- Snow on trees
- Snow surface textures and patterns