



## Avalanche Terrain Classification

The Avalanche Terrain Exposure Scale (ATES) is a new development from Parks Canada, which offers an avalanche classification system based on the landscape – not the snow. The system presents two models: technical, and public communication.

The technical model has been designed for users trained and skilled in the subtle nuances of avalanche terrain. The public communication model is designed for communicating technical concepts to the public, who is largely unable to comprehend the technical details. Both models represent the same thing – spoken in two languages.

The ATES can be applied at whatever scale is appropriate. Parks Canada has chosen to link with popular guidebooks, and apply ATES ratings to backcountry trips, which are well described in these books. This classification could however, be applied to any given piece of terrain – it is all a question of scale.

This is a brand new concept, and as such it is expected that this scale will evolve over time, as experience with using avalanche terrain ratings grows. This model has a time stamp (v.1-04), and will likely be revisited in the summer of 2005.

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## Avalanche Terrain Exposure Scale

### Public Communication Model (v.1- 04)

| Description        | Class    | Terrain Criteria  |
|--------------------|----------|---|
| <b>Simple</b>      | <b>1</b> | Exposure to low angle or primarily forested terrain. Some forest openings may involve the runout zones of infrequent avalanches. Many options to reduce or eliminate exposure. No glacier travel.   |
| <b>Challenging</b> | <b>2</b> | Exposure to well defined avalanche paths, starting zones or terrain traps; options exist to reduce or eliminate exposure with careful routefinding. Glacier travel is straightforward but crevasse hazards may exist.   |
| <b>Complex</b>     | <b>3</b> | Exposure to multiple overlapping avalanche paths or large expanses of steep, open terrain; multiple avalanche starting zones and terrain traps below; minimal options to reduce exposure. Complicated glacier travel with extensive crevasse bands or icefalls. |



## Avalanche Terrain Exposure Scale

### Technical Model (v.1- 04)

|  | 1 - Simple  | 2 - Challenging  | 3 - Complex   |
|--|---|--|---|
| <b>Slope angle</b>                           | Angles generally < 30°  | <i>Mostly low angle, isolated slopes &gt;35°</i>                             | <i>Variable with large % &gt;35°</i>  |
| <b>Slope shape</b>                           | Uniform   | Some convexities   | Convoluted  |
| <b>Forest density</b>                        | Primarily treed with some forest openings                         | Mixed trees and open terrain   | Large expanses of open terrain. Isolated tree bands                               |
| <b>Terrain traps</b>                         | Minimal, some creek slopes or cutbanks                            | Some depressions, gullies and/or overhead avalanche terrain                  | <i>Many depressions, gullies, cliffs, hidden slopes above gullies, cornices</i>   |
| <b>Avalanche frequency</b><br>(events:years) | 1:30 ≥ size 2   | 1:1 for < size 2<br><b>1:3 for ≥ size 2</b>                                  | 1:1 < size 3<br><b>1:1 ≥ size 3</b>   |
| <b>Start zone density</b>                    | Limited open terrain  | Some open terrain. Isolated avalanche paths leading to valley bottom         | Large expanses of open terrain. Multiple avalanche paths leading to valley bottom |
| <b>Runout zone characteristics</b>           | Solitary, well defined areas, smooth transitions, spread deposits | Abrupt transitions or depressions with deep deposits                         | Multiple converging runout zones, confined deposition area, steep tracks overhead |
| <b>Interaction with avalanche paths</b>      | Runout zones only   | Single path or paths with separation   | <b>Numerous and overlapping paths</b>   |
| <b>Route options</b>                         | Numerous, terrain allows multiple choices                         | A selection of choices of varying exposure, options to avoid avalanche paths | <b>Limited chances to reduce exposure, avoidance not possible</b>                 |
| <b>Exposure time</b>                         | None, or limited exposure crossing runouts only                   | <b>Isolated exposure to start zones and tracks</b>                           | <b>Frequent exposure to start zones and tracks</b>                                |
| <b>Glaciation</b>                            | None  | <b>Generally smooth with isolated bands of crevasses</b>                     | <b>Broken or steep sections of crevasses, icefalls or serac exposure</b>          |

### Using this scale:

Any given piece of mountain terrain may have elements that will fit into multiple classes. Applying a terrain exposure rating involves considering all of the variables described above, with some default priorities.

Terrain that qualifies under an *italicized* descriptor automatically defaults into that or a higher terrain class. Non-italicized descriptors carry less weight and will not trigger a default, but must be considered in combination with the other factors.