

SNOWMELT PROCESSES

During certain times of the year, water from snowmelt can be responsible for almost all of the streamflow in a river. It's important for hydrologists to understand these processes in order to accurately forecast river floods.

FLOOD SCIENCE

Snowmelt Processes



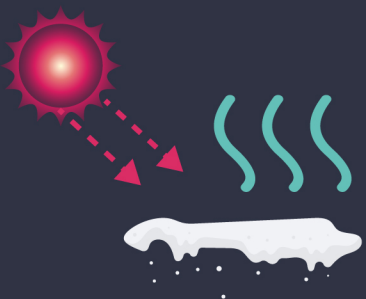
Snow Distribution

The path that weather systems take is the most important factor in determining snowpack, but terrain and vegetation also influence how snow accumulates on the ground.



Snowpack Characteristics

The temperature and the amount of water (snow water equivalent) in the snowpack are important to the melting process. Before rapid melting can occur, the snowpack as a whole needs to be warmed to 32°F.



Snow Energy Exchanges

Incoming solar radiation, emitted longwave radiation, turbulent transfer of heat, ground conduction, and heat transferred during rainfall are all important factors in heating or cooling the snowpack.



Weather Factors

Strong winds and high dew point temperatures aid in melting by limiting the effects of evaporative cooling and allow the layer directly above the snowpack to remain warm due to turbulent mixing. Rain falling on a snowpack can accelerate the melt process, as



Where the Water Goes

Once rapid melting begins, the water will either infiltrate into the soil, run off into streams and other bodies of water, pool in place and potentially refreeze as ice, or a combination. Ice jam flooding can occur if the river channel has excessive ice cover.