# 2.020 Impact of atmospheric light absorbing aerosol deposition on the seasonal water balance in snow dominated catchments.

Early Career Scientist

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Abstract:

The deposition of atmospheric aerosol is poorly constrained in atmospheric transport models, yet this variable has the potential to exert significant variability on the seasonal water balance in a snow dominated catchment. Light absorbing aerosols deposited on snow impact the snow melt by increasing the snow's ability to absorb short wave radiation. The consequences are a shortening of the snow duration and, on a catchment scale, a temporal shift in the discharge generation during the spring melt season. This has potential to alter ecosystem processes, especially in cold climate regions and high mountain areas, where the growing season is strongly dependent on the snow duration. To investigate the impact of Light Absorbing Impurities (LAI) on the snow pack evolution and discharge generation on a catchment scale, we use a hydrologic catchment model and have implemented a dynamic surface energy balance scheme for the snow that is forced directly from deposition rates of LAI from an atmospheric transport model.