



## **Using MODIS Images to Characterize Snow Cover on the Lebanese Mountains**

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Three geomorphologic units constitute the Lebanese territory. They are two elongated mountain chains that are separated by a depression. These mountainous regions receive considerable amounts of snow that cover about one-quarter of the Lebanese terrain, thus contributing to water sources in different hydrologic regimes. The steep terrain, as well as the acute dip of rock stratum in the area creates a rapid flow in precipitated water; hence, water loss to the sea becomes an essential environmental issue. Besides, the snowmelt in mountainous regions regularly feeds surface and subsurface water; therefore, it results in permanent water flow in major surface watercourses (i.e. rivers), in addition to sufficient recharge to aquiferous rock formations. It is not an exaggeration to say that Lebanon (as a water tower) would be a dry area without snow. In this topic, few studies and estimates on snow cover have been done due to the lack of adequate measuring instrumentations. However, the development of remote sensing has significantly contributed in delineating snow cover over the Lebanese mountains. Thus, a number of satellite images are used to monitor and cartography of snow coverage. Due to their short retrieval time (i.e. daily) of MODIS (250-m resolution) satellite images, they are successfully utilized in this study. They could provide sequential, information on snow accumulation, thus helping to monitor the dynamic change in snow cover, including its coverage and density of distribution. This, in combination with field surveys and site measures, enables the measurement of water derived from snowmelt. It is unique and valuable information that is required to calculate an accurate water budget in Lebanon.