Characteristics of Snow Cover in Japan*

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I. Snow Cover Distribution in Japan

In Japan a fairly detailed snow cover chart is made based on the observations at meteorological observatories and climatological stations (Central Meteorological Observatory, 1949). However, due to the limitation of networks in the mountainous regions, the distribution of snow cover in those regions shown in the charts has less reliability. Several methods have been presented to overcome this handicap. Among them a coaxial method (Ishihara, Fukui, 1959) and aerial photographic analysis technique (Takasaki, Seto and Iozawa, 1964) are worthy of special attention. The former, primarily through taking orographical factors into account gives fairly good result, while as to the latter although it can not help involving a certain error at present status it has a bright future.

Now looking from another point of view, from the standpoint of water resource utility, the equivalent water of snow cover is a great problem. Snow surveys have been carried out actively in Japan for a while (Ishihara, 1957). However a method to estimate the equivalent water of snow cover from the density and depth of snow cover is under study recently.

For the estimation of the density of snow cover, the theory developed by Kojima (1955–58) based upon the theorem of viscous compression of snow layer is useful. In case of firn snow however no acceptable method has been established yet.

II. The Water Budget for the Snow Cover of Honshu, Mainland of Japan

The special observation projects during a heavy snow period have been carried out by Japan Meteorological Agency since 1962. The observation generally covers approximately 2 weeks.

Using these data, Ninomiya (1964) made the analyses of water budget over the Japan Sea and Honshu, mainland of Japan. According to his analyses, a considerable amount of snowfall over Honshu is brought by the wind in solid form, that is the convergency of water vapor is not enough to explain the heavy snowfall. Ishihara (1966) made correlation analyses on the snowfall and all possible meteorological elements and obtained the similar conclusion.

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** In Japanese with English summary.