

# **GENERAL REPORT OF THE RESEARCHES OF SNOWPACK PROPERTIES, SNOWMELT RUNOFF AND EVAPOTRANSPIRATION IN JAPAN**

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At the First Japan/US Snow and Evaporation Workshop held in Tokyo in March, 1982, eighteen Japanese and US scientists presented their papers and exchanged valuable information. After 2 days sessions in Tokyo, field trips to Japanese test sites were made and further earnest discussions were made under participation of scientists in respective test sites.

The participants of both countries agreed that the Japan/US cooperative project was useful to both countries and should be continued. A joint summary report of the project status was made in which the next steps were formulated. Since the First Workshop, necessary data have been exchanged, and research and experiments have been conducted in accordance with the agreed framework at the Workshop. A summary of the research activities in Japan is as follows:

## **DISTRIBUTION OF SNOW AND SNOW WATER EQUIVALENT OBTAINED FROM LANDSAT DATA AND DEGREE DAY METHOD**

The method of estimating snow water equivalent using Landsat derived snow line information and degree day method was discussed at the First Workshop. The problem in our country is that the useful and sufficient Landsat snow line data are not always available due to the meteorological condition. In order to solve that problem of data acquisition, we developed a new method of estimating distribution of snow and snow water equivalent by combining secular Landsat data with the degree-day method. This method enables us to estimate the maximum snow water equivalent of that year and distribution of snow at given time in the snow melting season, even if the Landsat data are obtained once in a snow melting season of that year. This method, however, involves some problems to be solved, so that it is necessary to conduct more experiments in order to improve its applicability.

## **SNOWMELT RUNOFF MODEL AND APPLICATION OF MARTINEC RANGO MODEL TO RIVER BASIN IN JAPAN**

At the First Workshop, our party presented the paper of snowmelt runoff model. This model had some problems since it was in the development stage. We took Dr. Rango's advice and continued the research. We have now developed a new method applicable to the basins in Japan. Experimental basin in this method is only Okutadami River, therefore, it is necessary to add more case studies in order to develop its applicability and to prepare a manual for users. The Martinec Rango model presented from US was applied to the river basins in Japan to verify its applicability and compared with the Japanese model.

## **STUDIES ON PHYSICAL PROPERTIES OF SNOW BASED ON MULTI-CHANNEL MICROWAVE SENSOR DATA AND ANALYSIS OF NIMBUS SMMR DATA**

Research and experiment with microwave sensors have been continued in Japan since the First Workshop. Microwave radiometer measurements were made from the tower over dry snow under natural and artificial condition in Hokkaido. The result of analysis of the data indicates existence of certain correlation between brightness temperature and snowpack properties.

Meanwhile, NIMBUS SMMR data sent from the US scientists have been analyzed. The correlation was recognized between brightness temperature and depth of snow in dry snow in inland plain area.

Further research and experiment with microwave sensors will be continued by using a moving rack as well as airborne sensor in 1984 and 1985.

## **ESTIMATION OF REGIONAL EVAPOTRANSPIRATION USING REMOTELY SENSED LAND SURFACE TEMPERATURE**

Research and experiment on calculation of evapotranspiration using airborne remote sensing data and a Priestley-Taylor type of equation have been conducted in Tsukuba area. Evapotranspiration from various surfaces was calculated. The differentiation of evapotranspiration with vegetation type is not remarkable, because the magnitude of evapotranspiration is very little in winter. We have been analyzing the experimental data obtained in October 1983.