WEIGHING SNOW GAUGE

NIH has developed a Weighing Snow Gauge (WSG), which works on the principal of converting the weight of collected snow into equivalent depth of accumulated water. The WSG offers a great advantage over conventional systems by making possible high-resolution continuous measurement of snowfall. It does not require any antifreeze solution or heater for the measurement of snow water equivalent (SWE). Use of the instrument would provide reliable snowfall data, especially from the remote and difficult areas, to the hydrologists and water resource managers.

TECHNOLOGY

The instrument is based on a weighing mechanism. A strain gauge based load cell, in combination with a data logger, is used to weigh the accumulated snow on a platform. Precipitation is calculated from the measured weight of the accumulated snow, where every increase in the weight represents a certain volume of precipitation. The snowmelt, and any rainwater, is drained out through a slit opening in the weighing platform. The data logger continuously records the weight (and SWE) of the accumulated snow in an on-board solid-state memory, which can be downloaded to a laptop computer, whenever required.

Results of the comparison with conventional IMD snow gauge are encouraging, normally within the error of ± 5-10 %.

- Platform Catch Area: 500 mm X 500 mm
- Capacity: 300 kg (120 cm SWE)
- Resolution: 0.1 mm.
- Accuracy: within 3%.
- Operating Temp. Range: -15 to 50 °C.

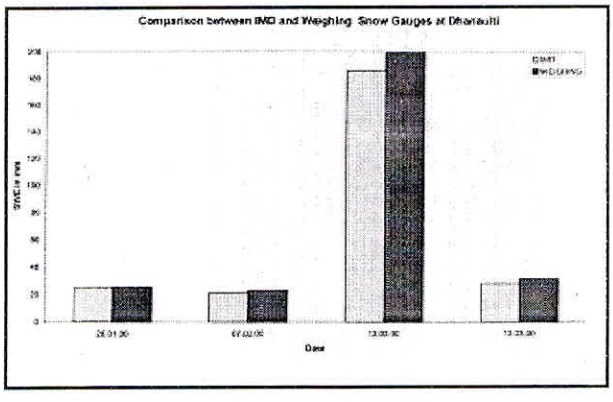

Figure – 1 Comparison of IMD snow gauge and WSG

ENVIRONMENTAL IMPACT

The technology has no adverse environmental impact.

Figure – 2 A view of WSG

ECONOMICS

Approximate cost of the sensor & accessories is Rs. 27,000/-, cost of data logger & accessories is US$ 2500, and cost of the software is US$ 500.

BENEFICIARIES

The main beneficiaries of the technology would be organizations and agencies involved in the monitoring of snowfall.

INTELLECTUAL PROPERTY RIGHTS

The technology has been developed at the National Institute of Hydrology, Roorkee. Therefore, the Institute owns the Intellectual Property Rights over indigenous component of this technology.