

## WEIGHING RAIN GAUGE

NIH has developed a Weighing Rain Gauge (WRG) which works on the principal of converting the weight of collected precipitation into equivalent depth of accumulated water. The WRG offers a great advantage over conventional systems by making possible high-resolution continuous measurement of the rainfall intensity and the total accumulated rainfall. Use of the instrument would provide reliable rainfall 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 is used to weigh the accumulated rain on a platform. Rainfall is calculated from the measured weight of the accumulated water, where every increase in the weight represents a certain volume of rain. The accumulated rain after a preset level is drained out using a siphon arrangement. A collector rim of 205 mm diameter is used on an outer container from which the water is collected through a funnel into an inner container. The inner container rests on the load cell and has been designed to store 10 cm of rainfall. A data logger has been used with the load cell sensor for measuring and

recording the rainfall data. The data logger continuously records the weight (and equivalent depth) of the accumulated rain in an on-board solid-state memory, which can be downloaded to a laptop computer, whenever required.

Results of the comparison with conventional SRRG and Tipping Bucket rain gauges are encouraging, normally within the error of  $\pm 5\%$ .

- Catch Area: 205 mm.
- Capacity: 100 mm rain in one siphon-cycle.
- Resolution: 0.1 mm.
- Accuracy: within 3%.
- Operating Temp. Range: -15 to 50 °C.

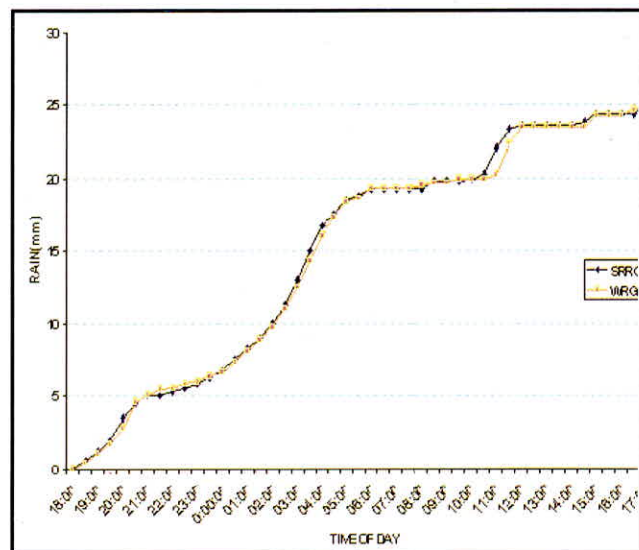


Figure - 1 Comparison of records of SRRG and WRG

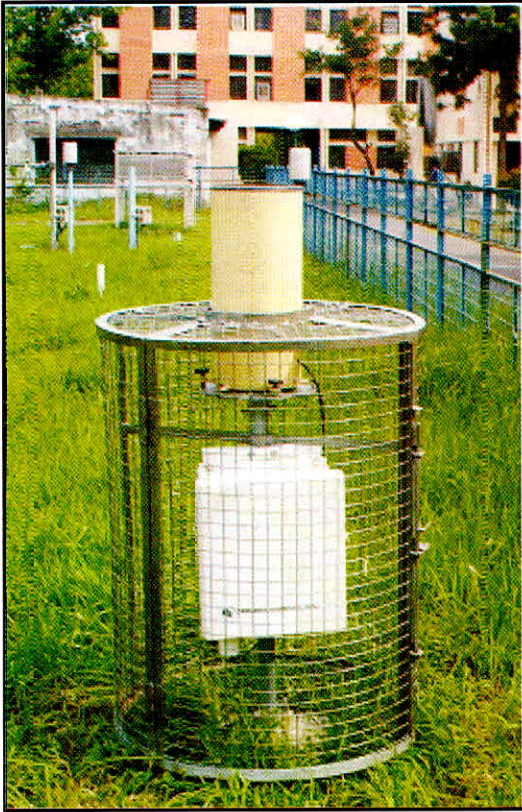


Figure – 2 A view of WRG

### **ENVIRONMENTAL IMPACT**

The technology has no adverse environmental impact.

### **ECONOMICS**

Approximate cost of the sensor & accessories is Rs. 12,000/-, cost of data logger & accessories is US\$ 2500, and cost of the software is US\$ 500.

### **BENEFICIARIES**

Organizations and agencies involved in the monitoring of rainfall.

### **INTELLECTUAL PROPERTY RIGHTS**

The Institute owns the Intellectual Property Rights over indigenous component (sensor) of this technology.