Stereoscopic observation of rainfall flux in a basin with precious water resources

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In locations such as the basin of Lake Gatun, that supports the shipping of the Panama Canal so that the importance of water resources is extremely high, accurate and detailed rainfall measurement is indispensable as a basic requirement for advanced water resource management. Since the tipping bucket rain gauge used for usual rainfall measurement can capture only the vertical flux component, raindrops carried by strong wind, colliding obliquely against inclined ground, or intercepted by hill slope vegetation can neither be measured nor evaluated correctly. In addition, conventional observation systems that require ground facilities such as power supplies and communication cables cannot work sufficiently under harsh conditions such as unmanned areas, oceans, and mountainous areas. In this research project, we are developing a rainfall observation system that conforms to the performance requirements of advanced water resources management in Lake Gatun basin, by combining a “Three-Dimensional Rain Gauge” capable of precisely measuring the stereoscopic direction of arrival and flying amount of rainwater, and communication terminals that use Inmarsat satellites, which is compact, lightweight, low power consumption, low cost and reliable communication in harsh environments, and will verify the effectiveness of the system by continuous field observation.