We research hydrometeorology while paying attention to monsoon circulation which has important role for global water circulation. Especially, Asian monsoon provides abundant rainfall in Asian countries, so that this has big role of not only a part of global water circulation but also human activities such as agriculture, drinking water, and so on. Seasonal and annual variabilities affect to human society. We proceed the research of monsoon variation from the viewpoint of climatology.

To understand monsoon circulation, we analyze using observation data. However, observation density is not enough in some countries. To cover that, some researches employs numerical simulation results. But when we evaluate that, observation data is still necessary. So, it is necessary to select area where we need and to conduct observation by ourselves. To understand monsoon circulation, we conduct observation network in Thailand, Laos, Cambodia, Bangladesh, and India.

Cambodia is located downstream of Mekong river and flood-prone zone. There is interesting lake, named Tonle Sap Lake, in central area. In rainy season, this lake expands because of backflow from Mekong River, while water in dry season flow into Mekong River. Due to historical background, rainfall and other measurements in this region are limited. We conduct observation using high time resolution rain gauges. In cooperation with operational agencies, we construct database of hydrometeorology and flood at same time.

Brahmaputra river basin includes world highest rainfall area, where there are some stations more than 10,000mm / year, so that floods are frequency occur. We conduct high time resolution rain gauges network in Assam State, Meghalaya State, in India and Sylhet State in Bangladesh. In cooperation with some academic institutes and operational agencies in India and Bangladesh, we research and construct database.

In Indochina Peninsula, there are mountain chains north and south, and there is abundant rainfall due to dominance of southwesternly monsoon season. So that rainfall in monsoon is very important for human activities. Moreover, due to orographic effects for rainfall pattern, there are differences of rainfall amount west and east. To detect this phenomena in high time resolution, we conduct rainfall observation network in Myanmar, Thailand, Laos, and Vietnam. For flush flood in Vietnam, we conduct rainfall network while paying attention to a valley near Da Nang city in central of Vietnam. In cooperation with academic institutes, operational agencies, and international institute (Mekong River Commission), we employs hydrometeorological data and analyze.

There is very important issues about effect on monsoon circulation by global warming, but there is little researches. We analyze water scarcity using change of rainfall and population pattern, and water demand by human activities in the future.