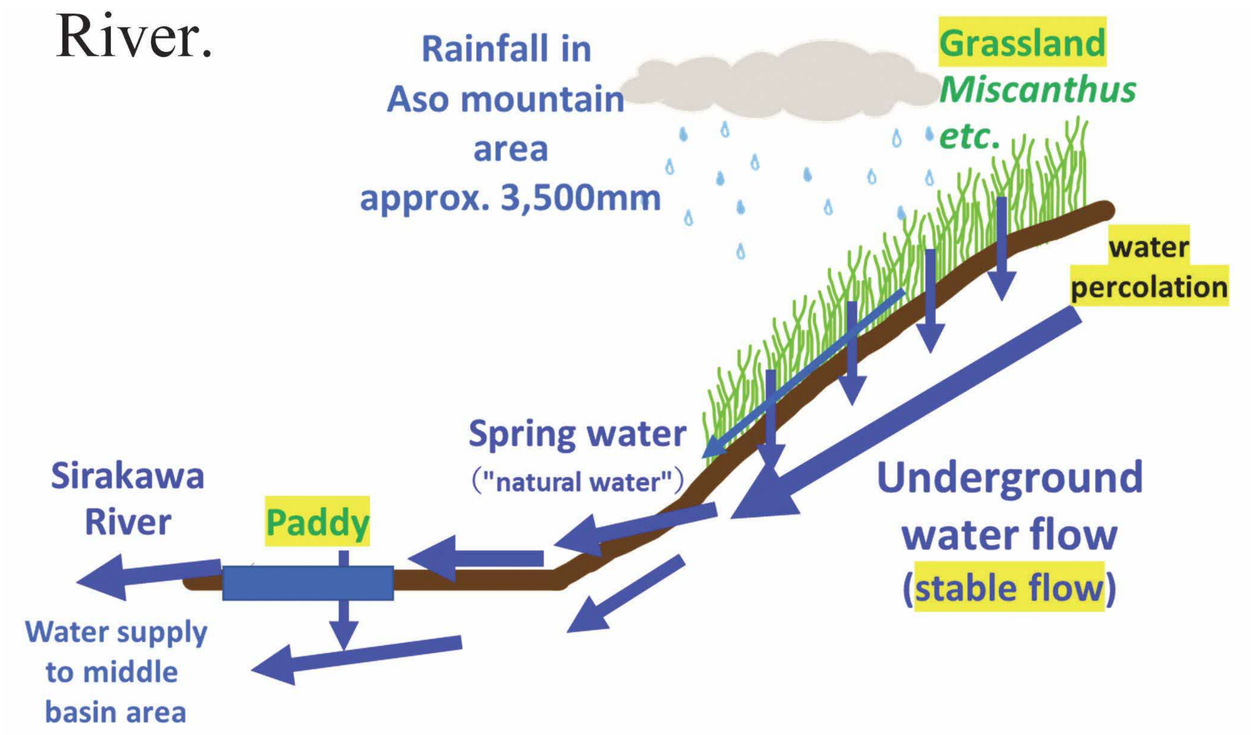
Agriculture and Groundwater Resources in Aso

– The Importance of Watural Water Resources at a Disaster

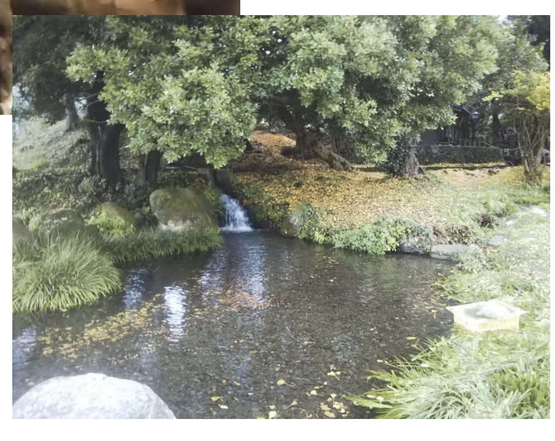
Jun Abe (School of Agriculture, Tokai University) Kumamoto, Japan

Aso mountain area receives 3500 mm/year of precipitation, which is approximately twice the amount of precipitation in Japan's flatlands. Some of this water percolates underground in agricultural fields such as grasslands and paddies, becomes groundwater, and is used for agricultural and domestic water within the Aso caldera before being slowly flows into Shirakawa River.



At dairy farms in the foothills of Aso, water supply was cut off for several months to a year and a half, but they were able to continue raising cattle by transporting several tons of nearby spring water each day. In dairy farming, securing water during disasters is extremely important.

Transporting spring water for the cattle



The 2016 Kumamoto Earthquake severely damaged modern irrigation systems for paddy fields and water supplies for dairy farms.

Modern irrigation systems pump large volumes of water from a large river, push the water up through underground sewers to the highest paddy fields, and then flow it downward into irrigation canals. It took three years to restore the modern irrigation system, which had its underground sewer system cut to pieces. On the other hand, traditional irrigation systems using natural groundwater could be restored within a few months and the farmers could cultivate rice.

A paddy field damaged by the earthquake

Water canal using ⇒ natural ground water

Although natural groundwater resources are important in this way, there are concerns that the decline in Aso's grasslands and rice fields will reduce underground infiltration of rainwater, leading to a decrease in groundwater. A decrease in underground seepage also increases the amount of water that flows directly into the river after rainfall, increasing the risk of flooding in the Shirakawa River.