

# Comprehensive Sediment Related Disaster Prevention Countermeasures in Kagoshima Prefecture

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## INTRODUCTION

The landscape of Kagoshima prefecture is primarily covered by special soils, including “shirasu.” In addition, since it is located in one of Japan’s most rainy zones, the prefecture experiences sediment related disasters almost every year. The prefecture conducts comprehensive sediment control measures from both structural and nonstructural perspectives, including, the development of sediment control dams and other facilities, and provides information concerning danger locations and disaster prevention to prefectural citizens. This paper explains some of the efforts made by the prefectural government.

## OVERVIEW OF KAGOSHIMA PREFECTURE

Kagoshima Prefecture is located on the southern tip of Kyushu Island. It comprises two large peninsulas (Satsuma and Osumi) as well as many remote islands including Tanegashima, Yakushima, and the Amami Archipelago. It is a vast prefecture measuring 272 km from east to west and 590 km from north to south. The prefecture extends across temperate and subtropical climate zones, resulting in complex and varied weather, and a high level of precipitation. On geology, more than half of mainland Kagoshima is covered in volcanic deposits such as Shirasu soil, etc., which can be easily-eroded. The prefecture is subjected to concentrated torrential rains and typhoons, causing massive sediment related disasters and damages. For the past 10 years, about 7% the total number of sediment related disasters in Japan occurred in Kagoshima (Table 1).

**Tab. 1** Total number sediment related disasters in Kagoshima prefecture for the past 10 years

Year		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
<b>Kagoshima</b>	Debris Flow	15	25	13	6	3	0	36	30	9	1	138
	Landslide	1	1	2	1	3	1	6	3	1	0	19
	Slope Failure	16	49	161	86	55	7	124	70	86	27	681
	<b>Total</b>	<b>32</b>	<b>75</b>	<b>176</b>	<b>93</b>	<b>61</b>	<b>8</b>	<b>166</b>	<b>103</b>	<b>96</b>	<b>28</b>	<b>838</b>
National Total		2,537	814	1,441	966	695	1,058	1,128	1,422	834	941	11,836

## Sediment related disaster Prevention Countermeasure Policy in Kagoshima Prefecture

In Kagoshima, where sediment related disasters occur frequently, one of the biggest challenges the prefectural government faces is the preservation of the prefectural lands, and the lives and properties of the Kagoshima people, so as to build a safe and prosperous place for everyone to live in. In order to prevent sediment related disasters and reduce damages, the prefecture has introduced a comprehensive, two-pronged approach, using structural measures such as the construction of sabo dams, and non-structural measures such as warning and

evacuation systems, and also providing the residents with information on disaster prevention and areas prone to sediment related disasters(Photo 1).

## SEDIMENT RELATED DISASTER WARNING INFORMATION

Sediment related disaster risks increases during heavy rainfall. On days of heavy rain, Kagoshima prefecture and the Kagoshima Local Meteorological Observatory will issue warnings to the respective municipalities, and assist the latter with decision-making on whether to activate disaster prevention and evacuation calls(Fig.1). Such early warnings help residents make independent decision on whether to evacuate and seek refuge. Kagoshima is the first prefecture in Japan to implement the sediment related disaster warning information in September 2005. By 2013, eight years since its implementation, 75 warnings have been issued, out of which 46 met with actual sediment related disasters.

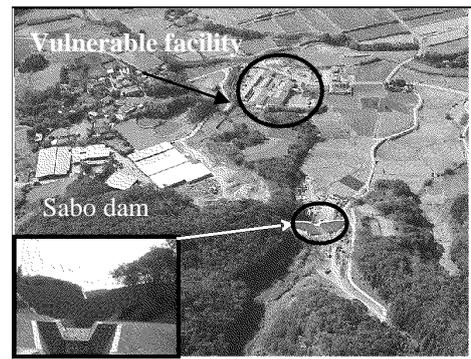
## SEDIMENT RELATED DISASTER ALERT ZONE

Based on the Sediment related disaster Prevention Law enforced in 2001, Kagoshima has been working to identify more sediment related disaster alert zones in the prefecture, and implementing non-structural measures such as disseminating information on the potential dangers in these areas, maintaining the early warning system, etc., so as to reduce loss of lives from sediment related disasters. Up till March 2014, 13,245 areas in 35 out of the 43 municipalities of Kagoshima prefecture have been officially identified as sediment related disaster alert zones. The prefecture would continue to work with the individual municipalities to identify more of such potentially dangerous zones, with top priority placed on areas which have recently experienced sediment related disaster damages, and areas with vulnerable facilities.

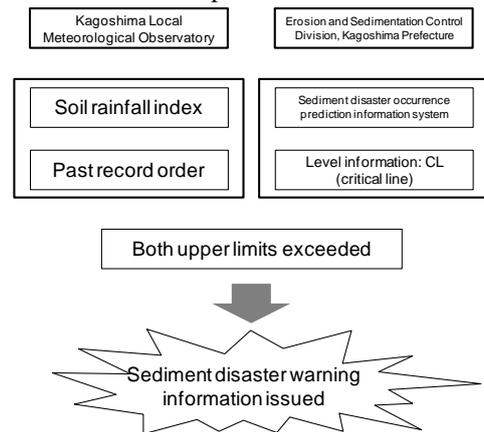
## CONCLUSIONS

Kagoshima prefecture has suffered a number of sediment related disasters. In order to prevent sediment related disasters and mitigate their damage, it is necessary for the administration as well as all citizens and voluntary disaster prevention organizations to understand their respective roles and jointly conduct sediment related disaster control measures with a positive attitude about sediment related disaster readiness. In this respect, the prefecture is determined to continue comprehensive sediment control measures from both structural and non-structural perspectives, with the joint effort of the people and the administration, in order to realize a safe and secure prefectural land.

**Keywords: comprehensive sediment related disaster prevention measure, sediment related disaster warning information, sediment related disaster alert zone**



**Photo 1.** Nishinoomote City: Sabo Dam built to protect a vulnerable



**Fig.1.** Standard procedure for issue of sediment related disaster warning information in Kagoshima prefecture