

The Information of Huashan Station

During the Jiji earthquake, the upstream of Huashan occurred a severe landslide. The debris flow was accumulated in the river. The extremely heavy rain on June 2000, the typhoon Nari occurred debris flow in Huashan river, causing many of buildings to be destroyed, the roads and bridges were also damaged. In 2009, typhoon Morakot also caused debris flow in Huashan river, there were no casualties and damaged. In order to pre-warn the occurrence of debris flow, Soil and Water Conservation Bureau completed the construction of the Huashan station in Huashan Village, Gukeng Township, Yunlin County in 2003 (The potential debris flow torrent number, Yunlin County DF002).

The information of station		Last updated : 2023/06/30	
District	Huashan Village, Gukeng Township, Yunlin County	Debris Number	Yunlin County DF002
Drainage	Beigang river	River	Huashan bridge creek
Rainfall threshold value for debris flow warning	300 mm	Disaster	Stream debris flow
River length	3.844 km	Catchment area	502 hectares
Geology	Cenozoic Tertiary Sedimentary Rock	Slope	30~50°
Scale landslide in catchment area	No obvious landslide, landslide rate < 1%	Downstream material accumulation	The average size of debris flow stones are between 3" ~ 12"
Plant growth in the catchment area	Plantation forest , medium sparse vegetation	Hazards	Silting, burying and bumping
Facility	sand-blocking dam	Priority processing level	Medium
Elevation	542 m	Coordinate (TWD97)	X coordinate : 209977 Y coordinate : 2610061
Protected object	Residential	Public building	Transportation facilities
	5 or more	Yes	Roads, bridges

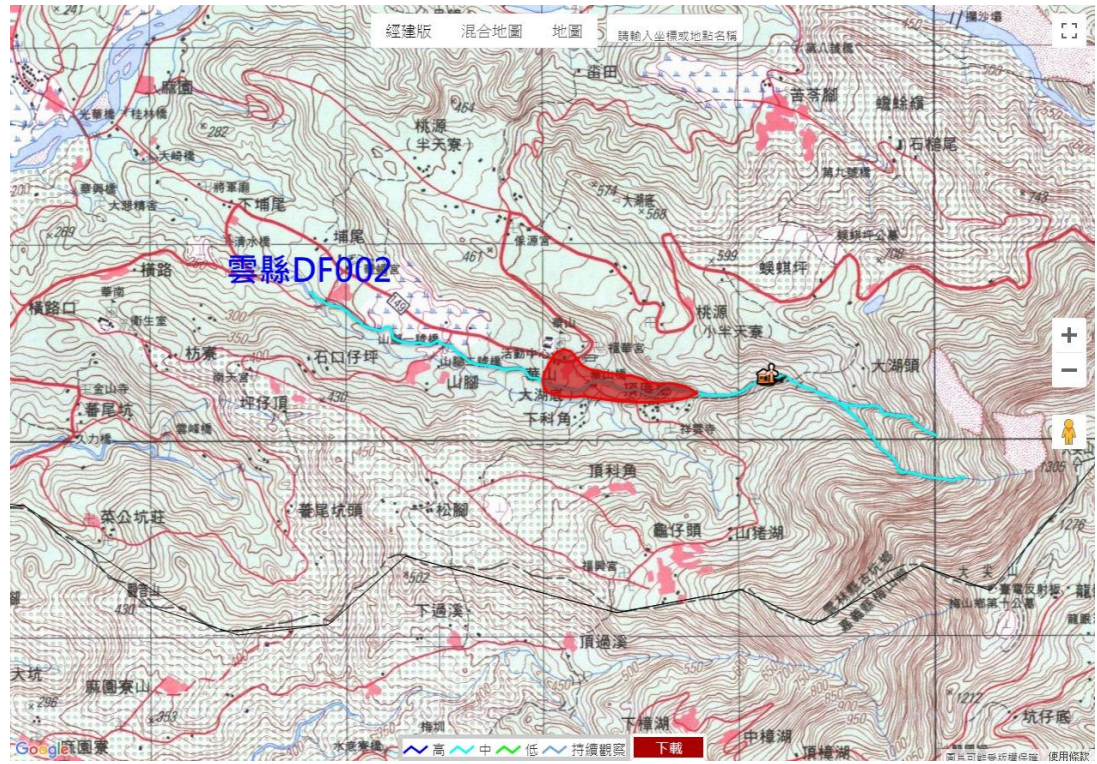
Historical disaster	The extremely heavy rain on June 2000. Typhoon Nari in September 2001. Typhoon Morakot in August 2009.
Monitoring results	<ol style="list-style-type: none"> 1. In 2004, typhoon Aere caused Huashan flooding and steel wire 3 was fractured (8/25 05:05). 2. In 2005, typhoon Talim caused Huashan flooding and accumulated precipitation risen to the warning (9/1 07:30), the steel wire 5 was fractured (9/1 12:56). 3. In 2007, typhoon Sepat caused Huashan accumulated precipitation risen to the warning (8/19 15:50), but did not occur debris flow. 4. In 2008, typhoon Kalmaegi caused Huashan flooding. <ol style="list-style-type: none"> (1) Accumulated precipitation risen to the warning (7 /18 03:10) (2) Steel wire 1 was fractured (7/18 02:55). (3) Steel wire was fractured at downstream (7/18 04:42). 5. In 2008, typhoon Sinlaku caused Huashan accumulated precipitation risen to the warning (9/15 08:00), but did not occur debris flow. 6. In 2009, typhoon Morakot caused Huashan debris flow. <ol style="list-style-type: none"> (1) Accumulated precipitation risen to the warning (8/8 18:46). (2) Steel wire (down) was fractured at upstream (8/9 05:26). (3) Steel wire (up) was fractured at upstream (8/9 05:34). (4) Steel wire (down) was fractured at downstream (8/9 00:49). 7. The extremely heavy rain on June 10, 2012. Huashan accumulated precipitation risen to the warning (6/13 18:26), but did not occur debris flow. 8. In 2012, typhoon Saola caused Huashan accumulated precipitation risen to the warning (8/2 11:01), but did not occur debris flow. 9. In 2013, typhoon Trami caused Huashan accumulated precipitation risen to the warning (8/22 00:37), but did not occur debris flow. 10. In 2013, typhoon Kong-rey caused Huashan accumulated precipitation risen to the warning (8/29 06:46), but did not occur debris flow.

11. In 2014, typhoon Matmo caused Huashan accumulated precipitation risen to the warning (7/23 18:21), but did not occur debris flow.
12. In 2015, typhoon Soudelor caused Huashan accumulated precipitation risen to the warning (08/08 16:03), but did not occur debris flow.
13. In 2015, typhoon Dujan caused Huashan accumulated precipitation risen to the warning (09/29 08:42), but did not occur debris flow.
14. In 2016, typhoon Megi caused Huashan accumulated precipitation risen to the 300mm warning (09/27 23:30), but did not occur debris flow.
15. The extremely heavy rain on June 1, 2017. Huashan occurred flooding.
 - (1) Accumulated precipitation risen to the 300mm warning (06/03 01:04)
 - (2) Steel wire (down) was fractured at upstream in Huashan river (06/03 07:27).
16. In 2017, typhoon Nesat and typhoon Haitang caused Huashan accumulated precipitation risen to the 300mm warning (07/31 06:34), but did not occur debris flow.

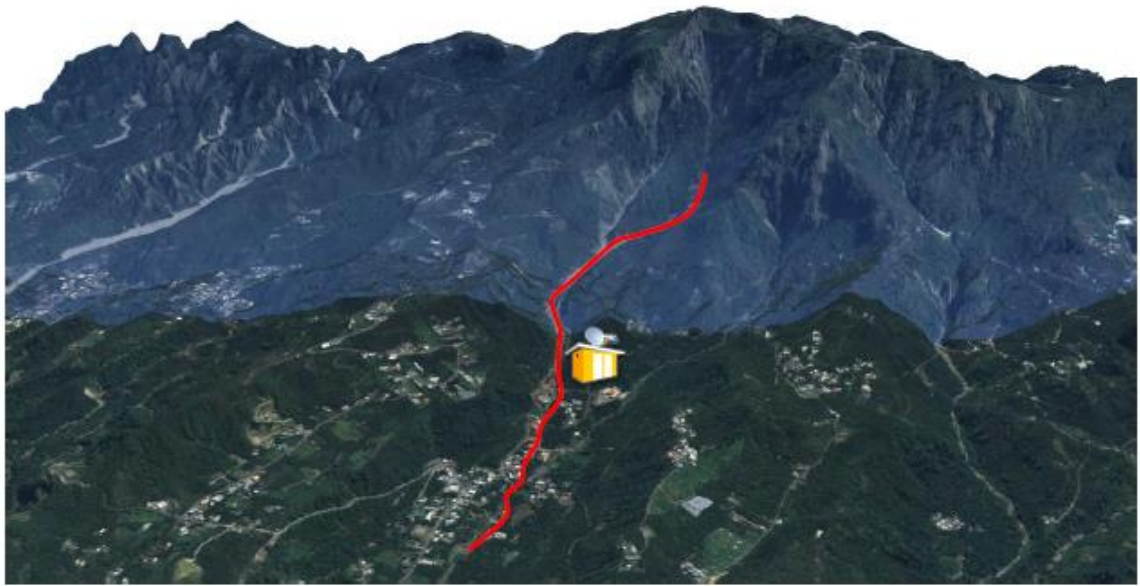
Note: Landslide rate= landslide in watershed area/watershed area

Geographical position map

Basic topographic map



Three-dimensional map



The instrument erection of Huashan station

Position map of instrument erection



Instrument description of Huashan station

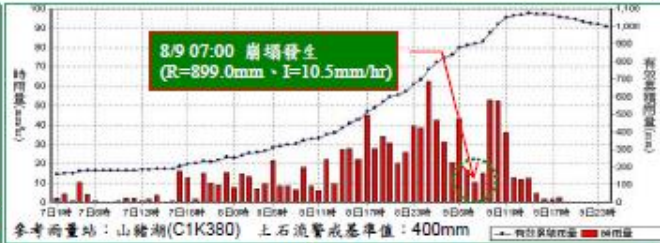
Instrument name	Purpose	Quantity
CCTV	Monitoring the live situation of river, gather the information of real-time image on site.	3
Rain gauge	Measuring the local rainfall of monitoring station to be an important basis for release the debris flow warning.	1
Wire sensor	The impact of debris flow fractured the steel wire and send out the debris flow warning, which can obtain the time data of debris flow.	2
Geophone	Surface vibration caused by the rolling of debris flow is measured by the geophone. If the vibration frequency exceeds the warning value, the system will automatically sends the warning message.	1
Soil moisture meter	The soil moisture meter can record the water saturation of soil, provide the different soil and the relationship between moisture content with debris flow analysis research.	1

Debris flow disaster report

98年莫拉克颱風重大土石災例最速報

98年莫拉克颱風

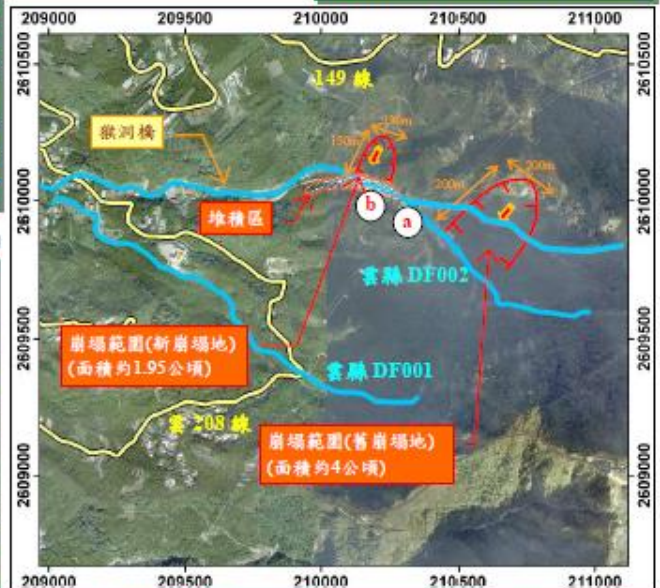
雲林縣—古坑鄉華山村



- 98年莫拉克颱風-雲林古坑-001
- 災區位置：古坑鄉華山村 (華山溪上游距發源橋約820公尺)
 - 災害發生時間：8月9日7時
 - 災害類型：崩塌
 - 有效累積雨量：899.0mm
- 災情描述與統計：
- 本次颱風豪雨造成華山溪上游既有崩塌地擴大及一處新增崩塌地，初估造成約12萬方土石堆積於主河道上，而部分土石掩沒發源橋上方施工便道，目前已清理完畢。
 - 施工便道遭土石淤埋約820公尺。



註1：坐標採TWD97系統
註2：降雨組體圖資料來源—水土保持局土石流防災資訊網



優質、效率、團隊

行政院農業委員會水土保持局