The Information of Daniao Station

In 2009, the extremely heavy rain of typhoon Morakot caused the potential debris flow torrent upstream large-scale landslide in Daniao tribe, large amount of stones poured down from the mountain, burying downstream buildings and causing subgrade loss. In order to pre-warn the occurrence of debris flow, Soil and Water Conservation Bureau completed the construction of the Daniao station in Daniao Village, Dawu Township, Taitung County in 2010 (The potential debris flow torrent number, Taitung County DF097).

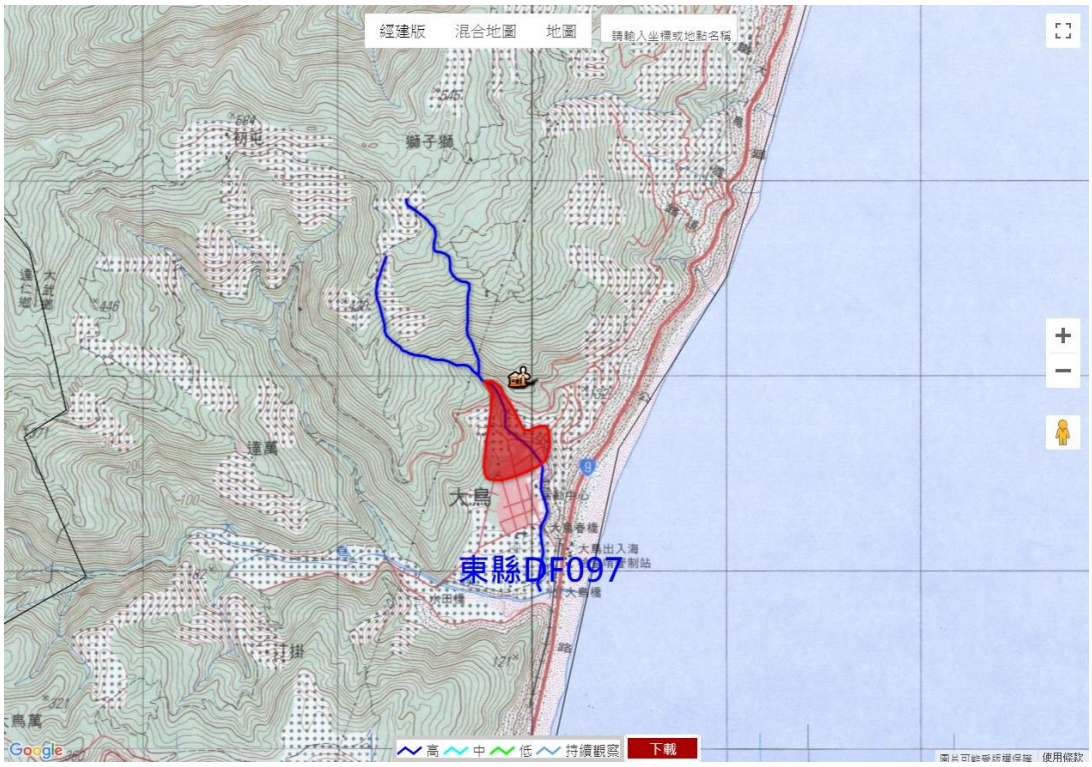
<table>
<tr><th colspan="4">The information of station　　Last updated：2023/06/30</th></tr>
<tr><td>District</td><td>Daniao Village, Dawu Township, Taitung County</td><td>Debris Number</td><td>Taitung County DF097</td></tr>
<tr><td>Drainage</td><td>Coastal rivers in Taitung</td><td>River</td><td>Coastal tributaries in Daniao</td></tr>
<tr><td>Rainfall threshold value for debris flow warning</td><td>450 mm</td><td>Disaster</td><td>Stream debris flow</td></tr>
<tr><td>River length</td><td>2.418km</td><td>Catchment area</td><td>88 hectares</td></tr>
<tr><td>Geology</td><td>Palaeogene period metamorphic rock</td><td>Slope</td><td>30~50°</td></tr>
<tr><td>Scale landslide in catchment area</td><td>Large-scale landslide, landslide rate＞5%</td><td>Downstream material accumulation</td><td>The average size of debris flow stones between 3″ ~12″</td></tr>
<tr><td>Hazards</td><td>Silting and burying, bumping</td><td>Priority processing level</td><td>High</td></tr>
<tr><td>Facility</td><td>Debris barrier, settling basin</td><td rowspan="2">Coordinate
(TWD97)</td><td rowspan="2">X coordinate：240780
Y coordinate：2476727</td></tr>
<tr><td>Elevation</td><td>190 m</td></tr>
<tr><td rowspan="2">Protected object</td><td>Residential</td><td>Public building</td><td>Transportation facilities</td></tr>
<tr><td>5 or more</td><td>Yes (Daniao primary school)</td><td>Provincial highway 9</td></tr>
<tr><td>Historical disaster</td><td colspan="3">Typhoon Morakot in August 2009.</td></tr>
<tr><td>Monitoring results</td><td colspan="3">1. In 2010, typhoon Namtheun (was merged by Lionrock) and typhoon Lionrock caused Daniao accumulated precipitation risen to the warning (9/2 18:51), but did not occur debris flow.
2. In 2010, typhoon Meranti caused Daniao accumulated</td></tr>
</table>

	precipitation risen to the warning (9/8 08:06), but did not occur debris flow. 3. In 2010, typhoon Fanapi caused Daniao accumulated precipitation risen to the warning (9/19 21:41) (9/19 21:41), but did not occur debris flow. 4. The extremely heavy rain on October 17, 2010 and typhoon Megi caused Daniao accumulated precipitation risen to the warning (10/22 13:16), but did not occur debris flow. 5. The extremely heavy rain on June 10, 2012. Daniao accumulated precipitation risen to the warning (06/14 14:13), but did not occur debris flow. 6. In 2012, typhoon Tembin caused Daniao accumulated precipitation risen to the warning (8/24 12:26), but did not occur debris flow. 7. In 2016, typhoon Nepartak occurred strong wind in Daniao. (1) Steel wires (up and down) in debris barrier were fractured. (07/08) (2) Steel wires (up and down) in settling basin were fractured at downstream. (07/08) (3) Steel wires (up and down) were fractured at upstream in Daniao tribal creek. (07/08) 8. In 2016, typhoon Aere caused Daniao accumulated precipitation risen to the 450mm warning (10/09 05:29), but did not occur debris flow. 9. In August 23, 2018. Tropical Depression caused Daniao accumulated precipitation risen to the 450mm warning (08/30 02:23), 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 Daniao station

Position map of instrument erection

Instrument description of Daniao station

Instrument name	Purpose	Quantity
CCTV	Monitoring the live situation of river, gather the information of real-time image on site.	4
Rain gauge	Measuring the local rainfall of monitoring station to be an important basis for release the debris flow warning.	2
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.	2
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	1

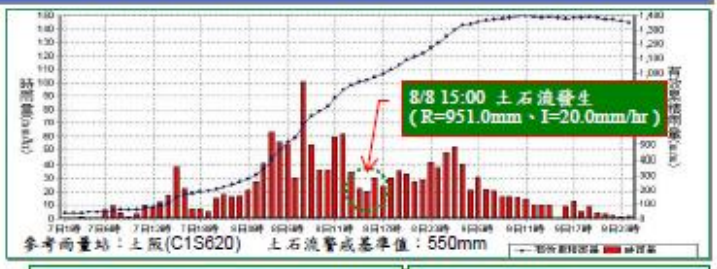
	research.	

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

台東縣—大武鄉大鳥村

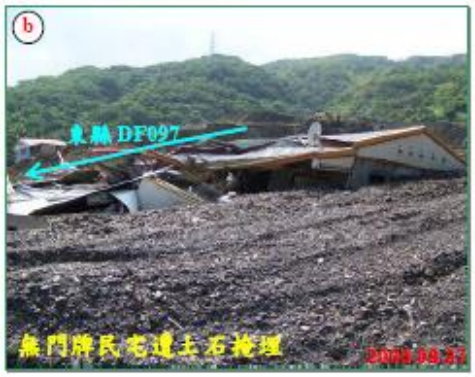


98 年莫拉克颱風-台東大武-002

- 災區位置：大武鄉大鳥村(台 9 線 420.5k 旁)
- 災害發生時間：8 月 8 日 15 時
- 災害類型：土石流 (東縣 DF097 與 東縣 DF098)
- 有效累積雨量：951.0mm

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

- 災損描述與統計：
  - 民宅大鳥 346 號等 8 戶，以及無門牌鐵皮屋及資櫃遭土石掩埋。
  - 大鳥村聯外道路亦遭土石掩埋。
  - 本次土石災害危害範圍甚廣，所幸村長即時進行村民之疏散避難，因此並無人員罹難。



優質、效率、團隊

行政院農業委員會水土保持局