

· 坡地水保 · 智慧防災 >>>

110年水土保持成果發表會

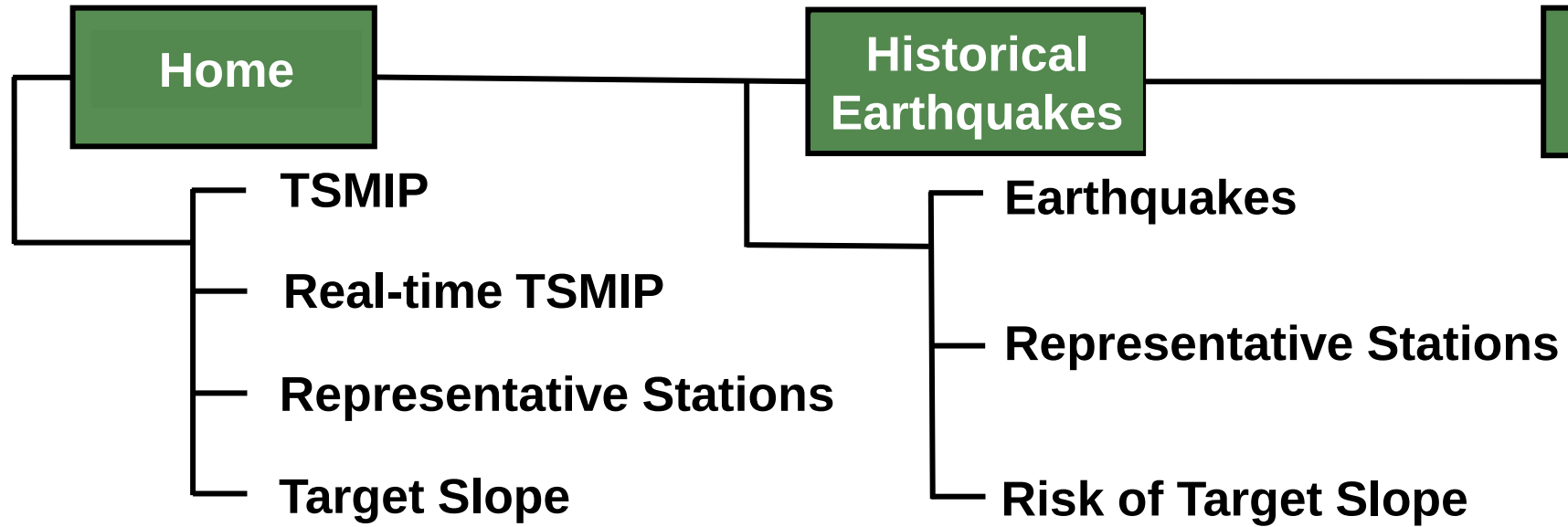
近即時震波式同震山崩潛感圖(2)

國立聯合大學土木與防災工程學系 楊哲銘

國立陽明交通大學土木工程學系 趙韋安

111年7月26日

Web-based Display System

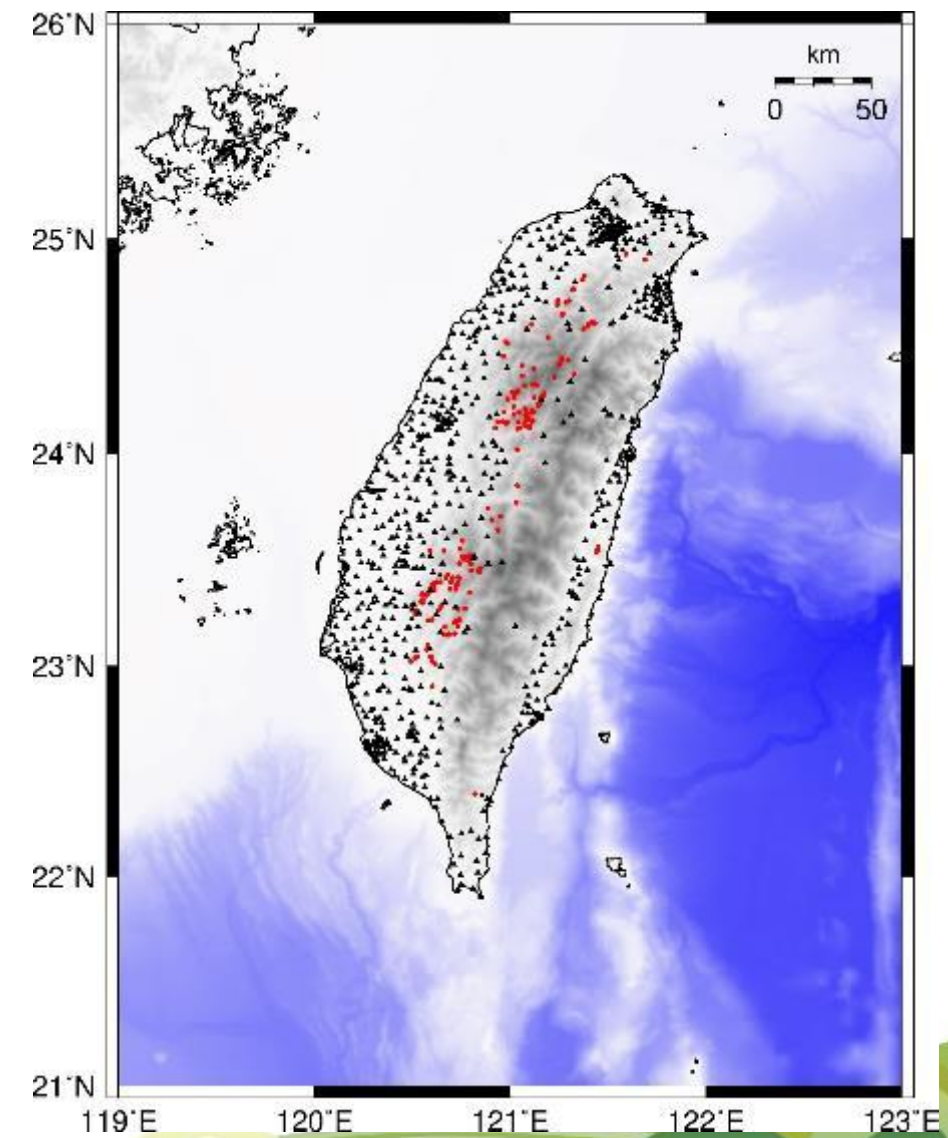
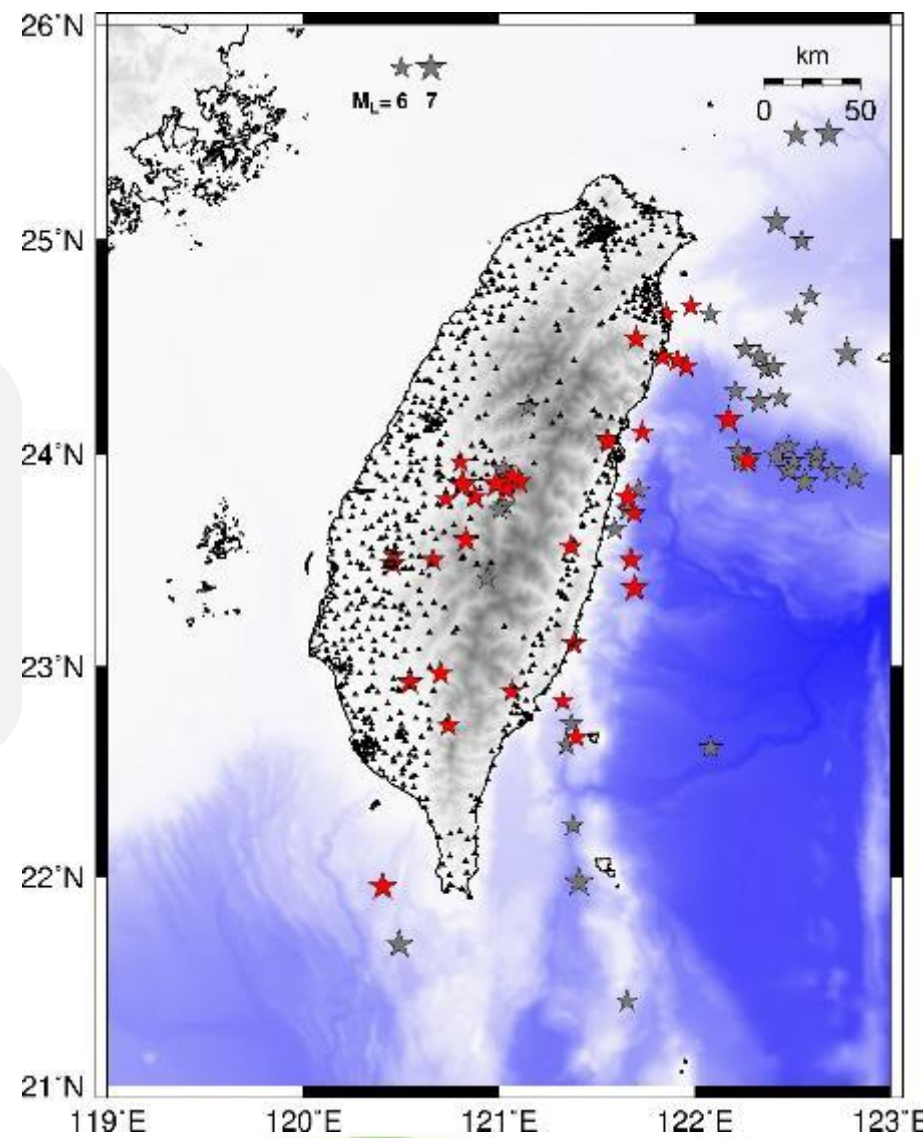


Earthquakes

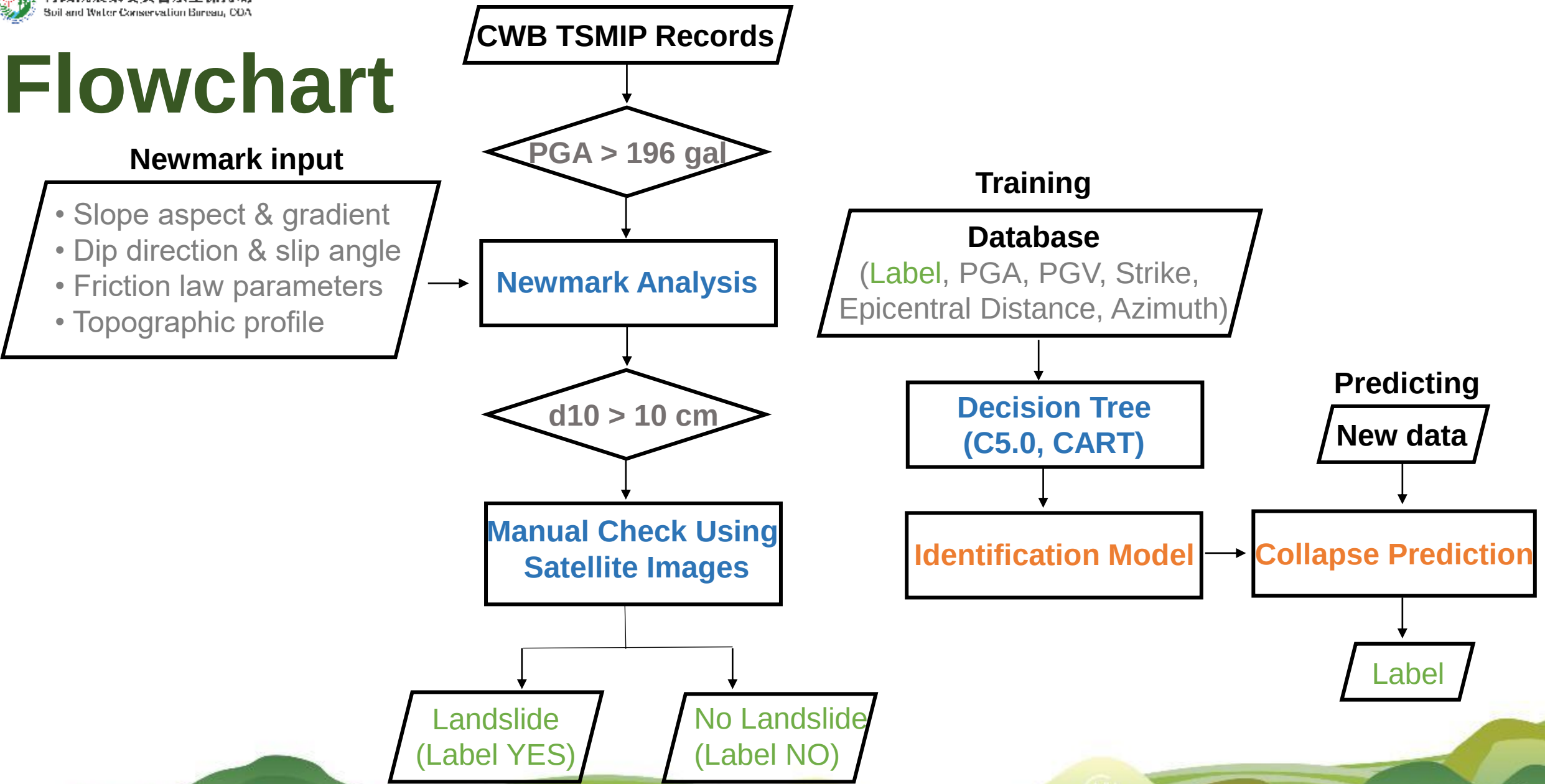
Target Slopes

Data

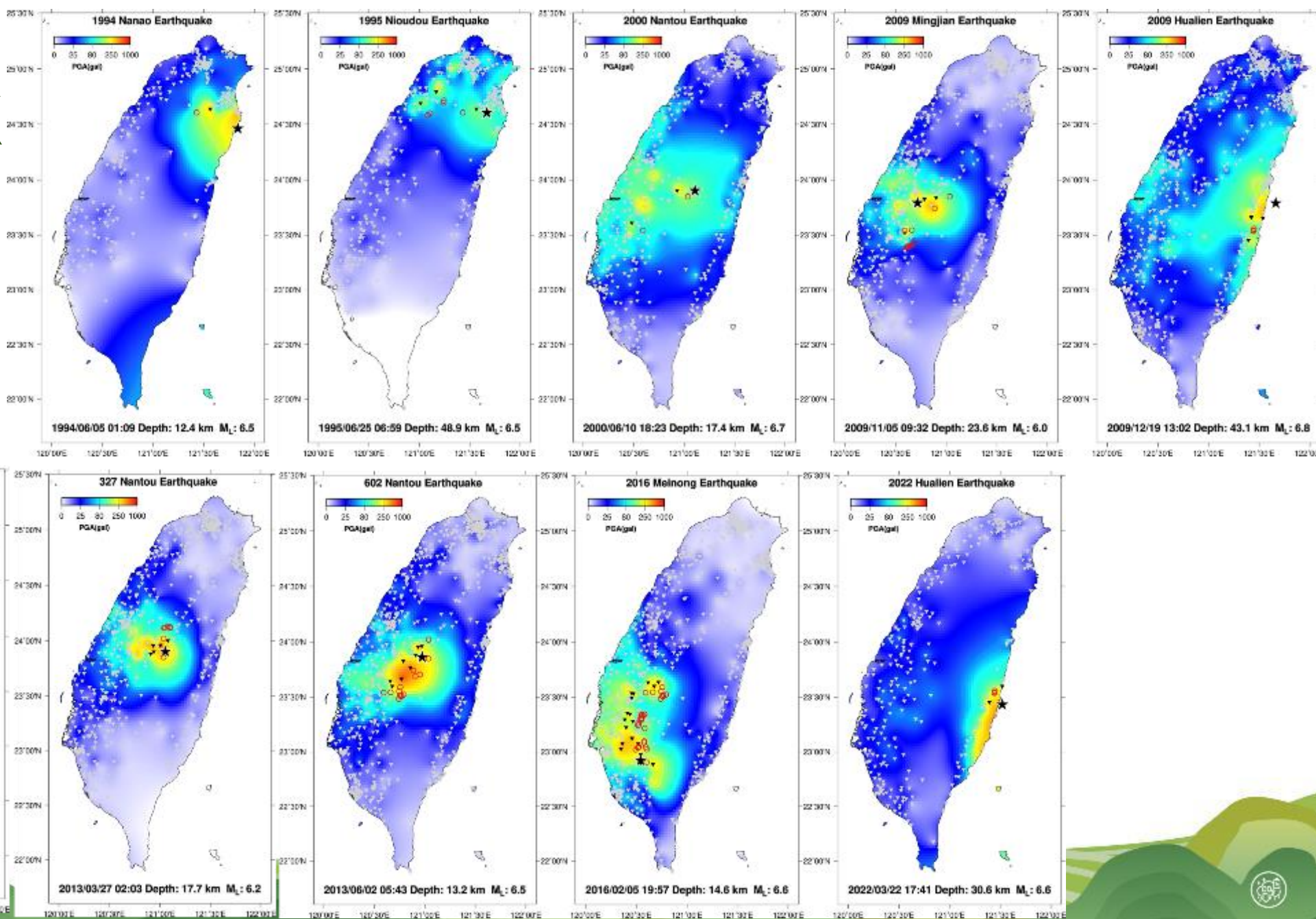
1990-2020
 $M_L > 6.0$: 116
Target Slopes: 175
TSMIP Stations: 848



Flowchart



Newmark Analysis

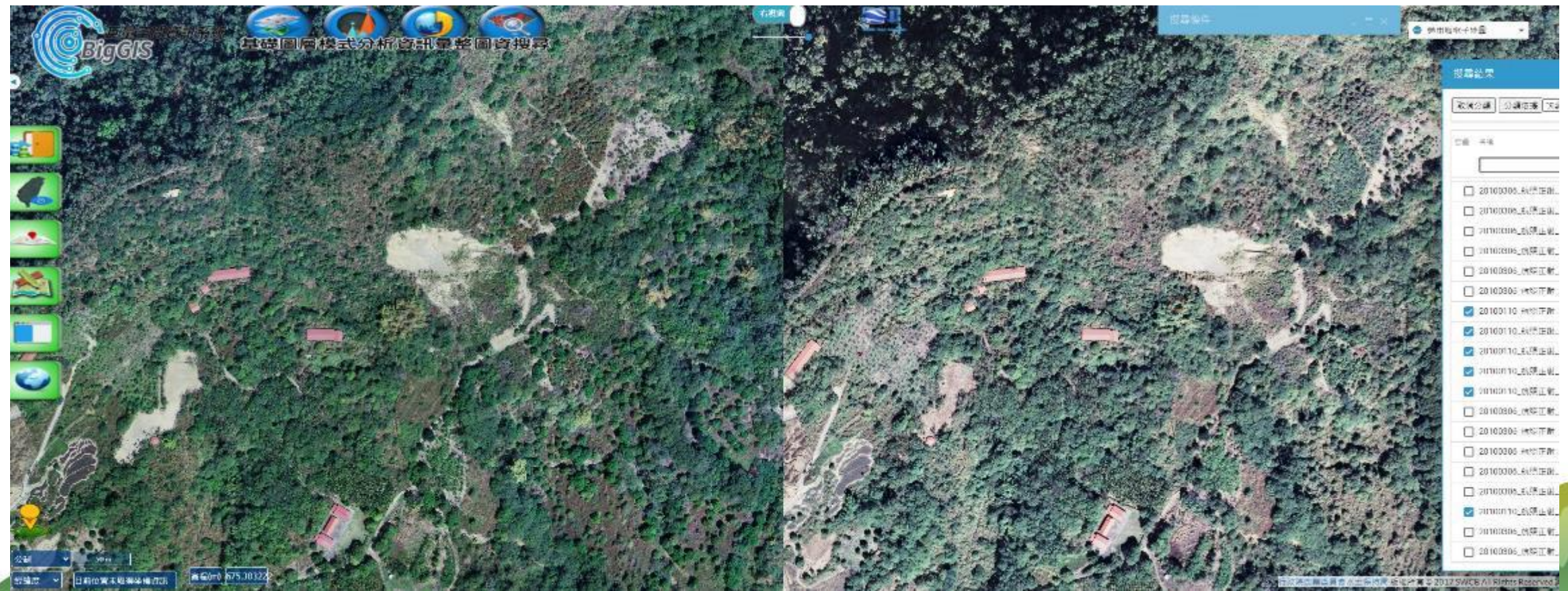


Manual Check Using Satellite Images

2010/03/04 Jiasian Earthquake (Slope ID: 064)

After the Earthquake (2010/03/06)

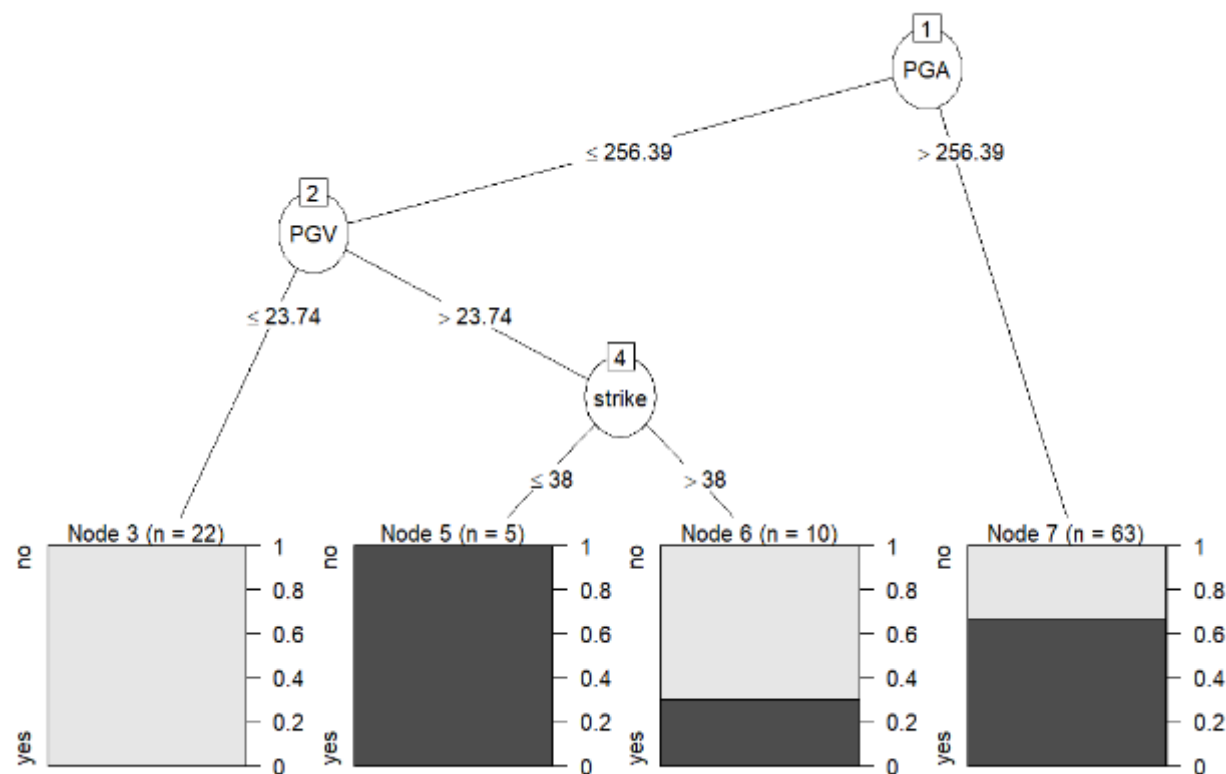
Before the Earthquake (2010/01/10)



Decision Tree (All region)

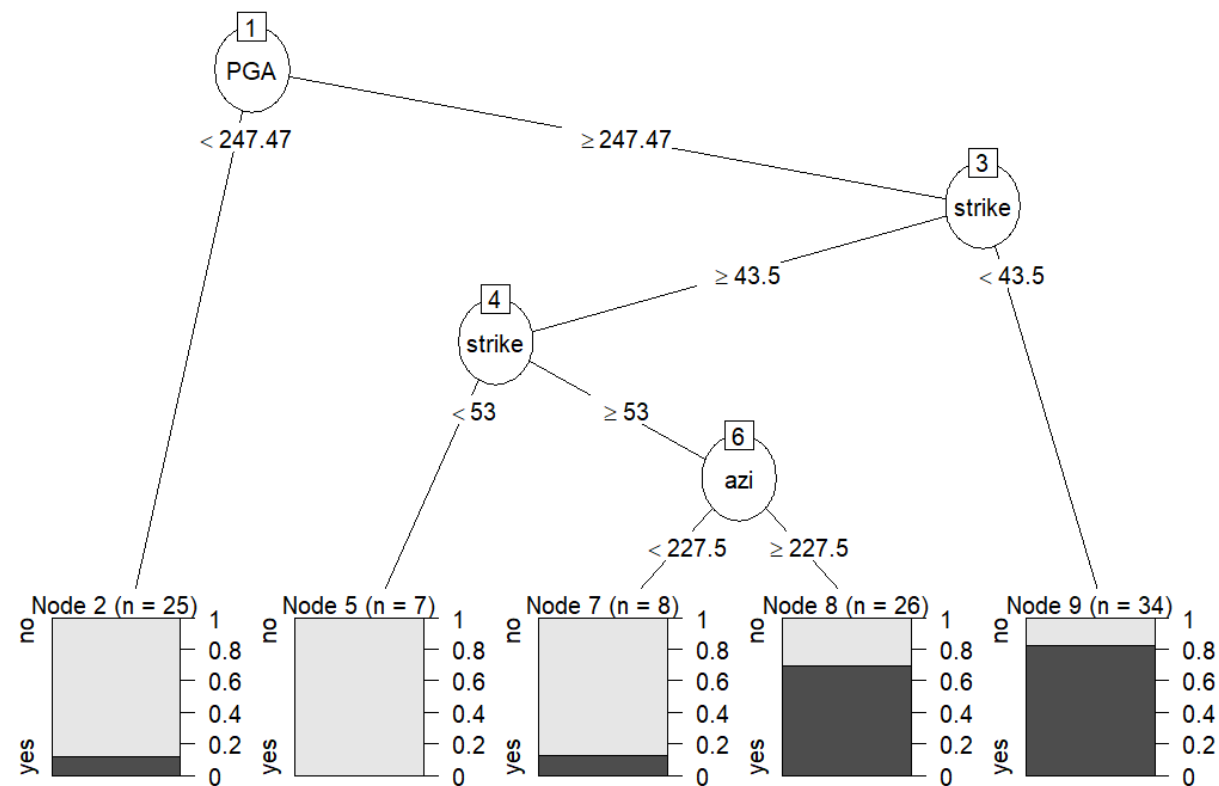
All Area C5.0 Decision Tree

Accuracy = 83.3% FNR = 10.7%



All Area CART Decision Tree

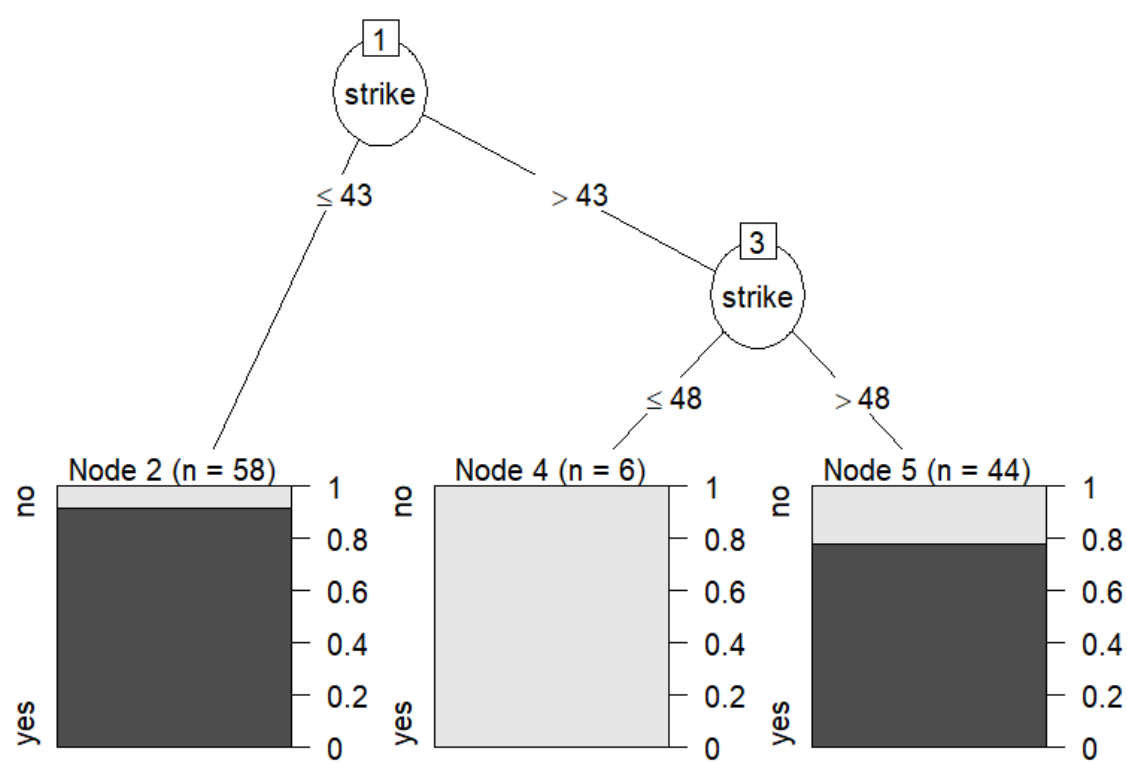
Accuracy = 81.9% FNR = 12.5%



Decision Tree (South & Central)

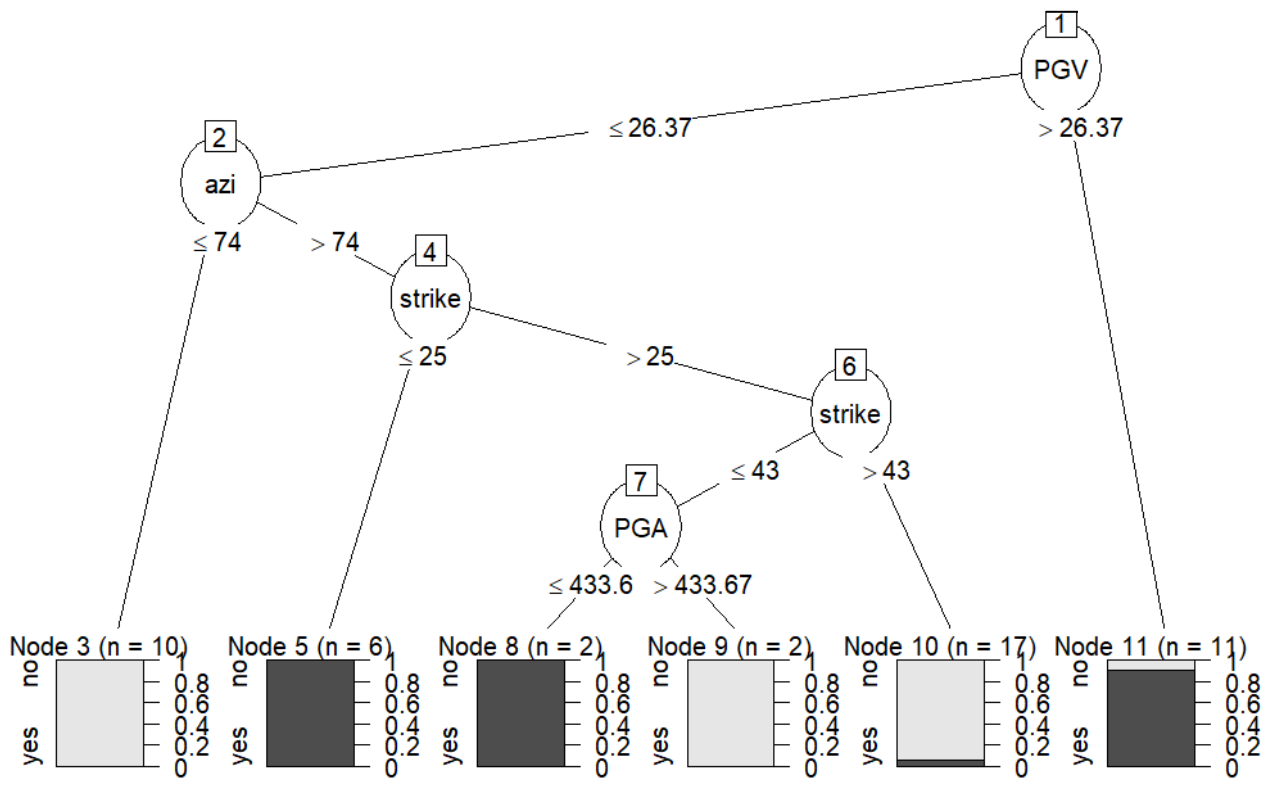
South C5.0 Decision Tree

Accuracy = 86.1% FNR = 0%



Central C5.0 Decision Tree

Accuracy = 95.8% FNR = 5.6%

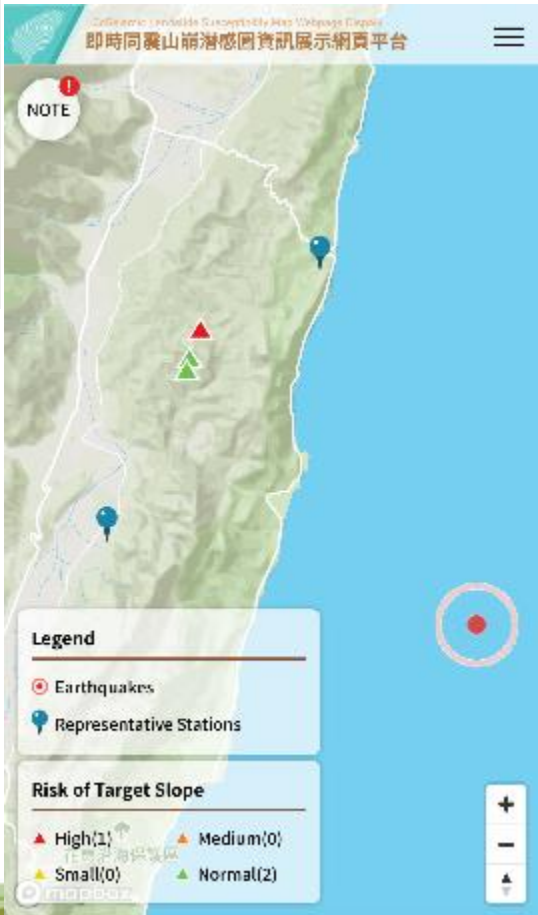


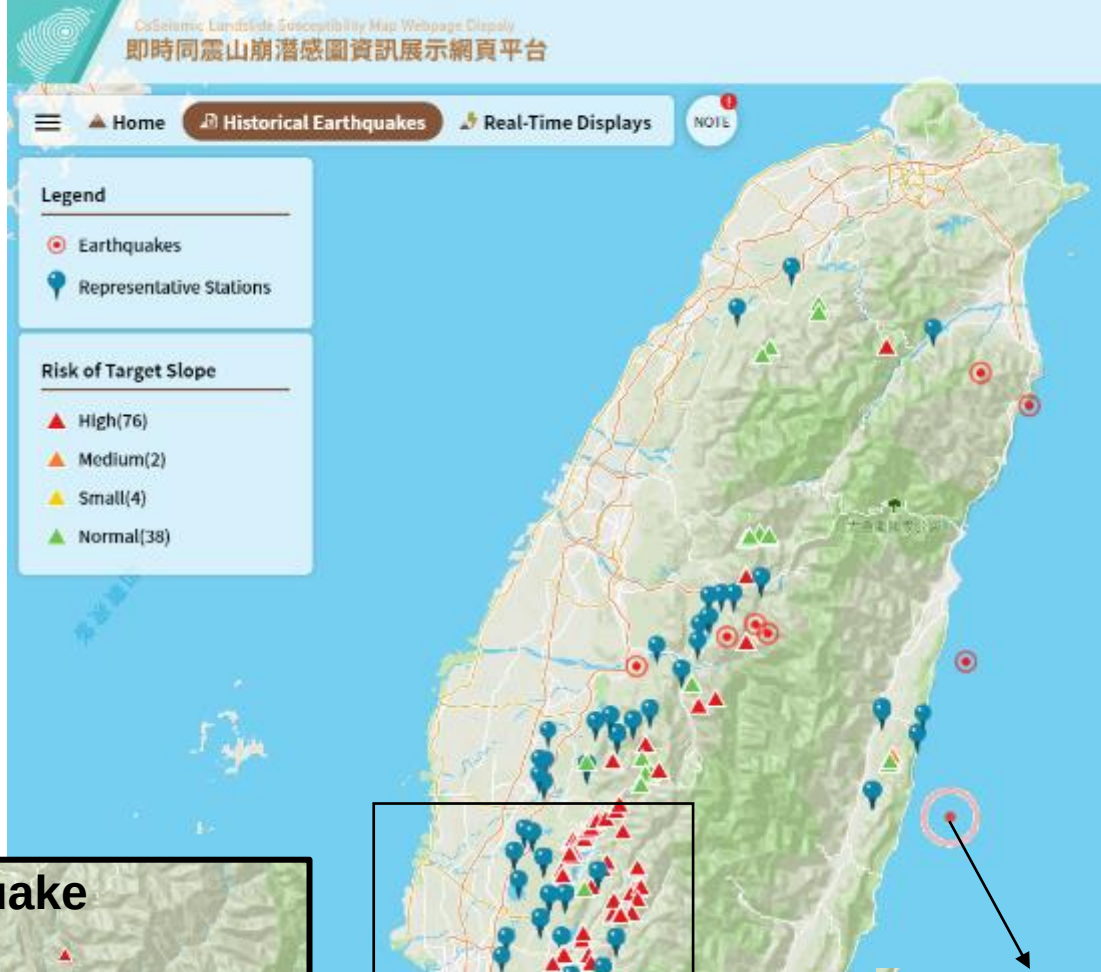
Case: 2022 Hualien Earthquake

Slope ID	Station	D10 (cm)	PGA (gal)	PGV (cm/s)	Strike (°)	Epi. (km)	Azi. (°)	Collapse	Prediction
161	HWA002	984	210.04	8.72	41	18.6	0	no	no
162	HWA002	1229	210.04	8.72	51	18.6	0	no	no
163	HWA002	1108	210.04	8.72	51	18.6	0	no	no
161	HWA037	970	323.86	35.42	41	13.1	281	no	yes
162	HWA037	1212	323.86	35.42	51	13.1	281	no	no
163	HWA037	1093	323.86	35.42	51	13.1	281	no	no

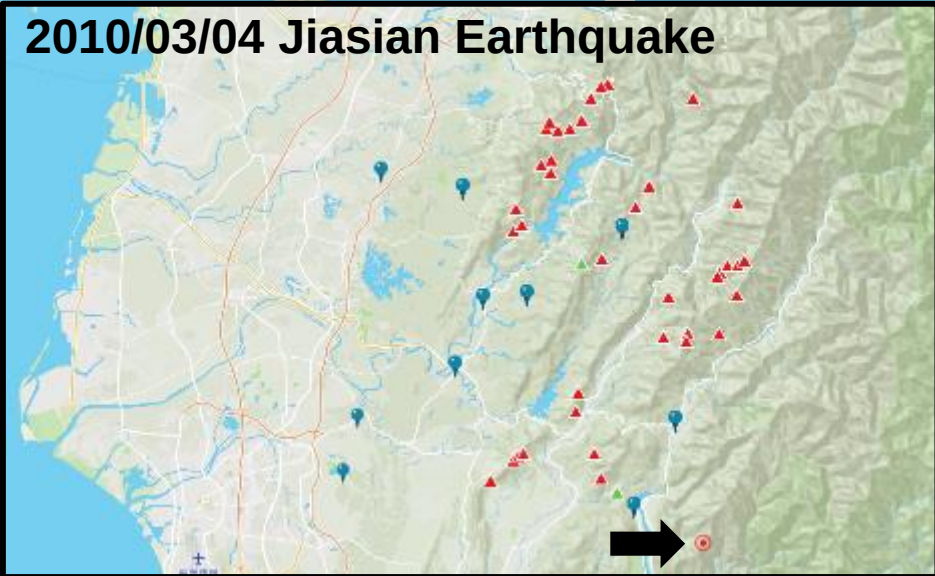
All Area C5.0/CART Decision Tree Confusion Matrix
Accuracy = 83.3% FNR = 0%

	Observed YES	Observed NO
Predicted YES	0	1
Predicted NO	0	5





2010/03/04 Jiasian Earthquake



Earthquake Name	2022 Hualien Earthquake
Time (GMT)	2022/03/22 17:41
lon/lat	121.6118,23.3985
Depth (km)	25.7
M _L	6.7

報告完畢
敬請指教

