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LANDSLIDE HAZARD INVESTIGATION IN CHANGWAT NAN

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A Thesis Submitted in Partial Fulfillment of the Requirements
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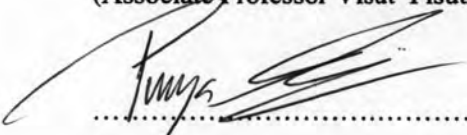
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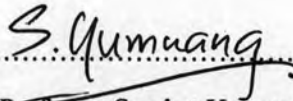
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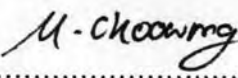
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จังหวัดน่านในภาคเหนือประเทศไทยถูกเลือกเป็นพื้นที่ศึกษาอันตรายจากแผ่นดินถล่ม เนื่องจากเหตุการณ์ดินถล่มครั้งใหญ่เมื่อ 23 สิงหาคม 2549 ซึ่งสร้างความเสียหายแก่ชีวิตและทรัพย์สินเป็นอย่างมาก การสำรวจและศึกษารังนี้มีวัตถุประสงค์เพื่อประเมินค่าและจัดทำแผนที่อันตรายจากแผ่นดินถล่มในพื้นที่ศึกษาจังหวัดน่าน โดยใช้โทรมัสมัสดและระบบข้อมูลสารสนเทศภูมิศาสตร์ (GIS) ตำแหน่งหรือรอยดินถล่มในจังหวัดน่านถูกจำแนกด้วยผลจากการแปลภาพถ่ายทางอากาศ, ภาพจากดาวเทียม Landsat 7 ETM และ IKONOS ที่ปรับปรุงคุณภาพเพื่อสร้างแผนที่รอยแผ่นดินถล่ม ตัวแปรหลายตัวที่มีผลกระทบต่อกรเกิดแผ่นดินถล่มซึ่งประกอบด้วยชั้นความสูง ความลาดเอียง การใช้ประโยชน์พื้นที่ แนวเส้น โครงสร้าง และสภาพทางธรณีวิทยา ได้ถูกตรวจหาและแสดงเป็นแผนที่โดยใช้ GIS หลังจากนั้นจึงทำการประเมินแผ่นดินถล่มโดยวิธีความน่าจะเป็นแบบคู่ควบ (bivariate probability) และตามด้วยการให้ค่าน้ำหนัก (weighting) ของปัจจัยที่เกี่ยวข้อง

ผลการศึกษาบ่งชี้ว่าพื้นที่ป่าที่มีความลาดเอียงสูงซึ่งประกอบด้วยหินจำพวกหินทรายและหินเถ้าภูเขาไฟ รวมทั้งตั้งอยู่ใกล้แนวรอยเลื่อนและรอยแยกยาวจัดว่าเป็นบริเวณที่อันตรายต่อแผ่นดินถล่ม ระดับโอกาสในการเกิดแผ่นดินถล่มถูกแบ่งเป็นหลายระดับตั้งแต่ระดับโอกาสในการเกิดต่ำมากจนถึงสูงมาก ผลการศึกษาแสดงในรูปแผนที่โอกาสเกิดแผ่นดินถล่มซึ่งได้ผ่านการตรวจสอบย้อนกลับได้เป็นที่น่าพอใจ ซึ่งแผนที่บ่งชี้บริเวณที่มีโอกาสเกิดแผ่นดินถล่มสูงถึงสูงมากจะเป็นบริเวณที่อกเขาสูงชันในเขตอำเภอเฉลิมพระเกียรติ อำเภอสองแคว อำเภอเชียงกลาง และอำเภอปัว ส่วนหลายอำเภอในจังหวัดน่าน เช่น อำเภอนาน้อย อำเภอเวียงสา และอำเภอน่าน ซึ่งอยู่ทางตอนใต้จะมีโอกาสในการเกิดอันตรายที่ต่ำกว่ามาก

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KRITTAPOB AKKRAWINTAWONG: LANDSLIDE HAZARD INVESTIGATION IN
CHANGWAT NAN. THESIS ADVISOR: ASSOC. PROF. PUNYA CHARUSIRI, Ph.D.,
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The Nan province in northern Thailand was selected for landslide hazard investigation because there was a series of landslides in August 23, 2006 that damaged properties and lives. The investigation is aimed to evaluate the susceptibility or hazard mapping of landslides in the Nan study area using remote-sensing interpretation and geographic information system (GIS). Landslide locations or scars were identified in the Nan study area from interpretation of aerial photographs as well as enhanced Landsat 7 ETM and IKONOS image for constructing the scar map. Then several factors affecting landslides, including elevation, slope, landuse, lineaments and lithology were identified and displayed as maps using GIS. Later, landslide assessment was done using bivariate probability method and followed by weighting analyses of involving factors.

The results indicates that the open-forest areas dominated by the steep slopes, sandstones / tuffaceous rocks, proximal long faults / fractures, are prone to landslide hazard. Subsequently, degrees of landslide hazards were expressed as very low to very high hazard levels. The result is shown as a landslide hazard map with a satisfactory cross validation agreement. The outcome map also indicates that high- to very high-level hazard areas are the mountainous areas in Chalerm Prakiat, Song Khwae, Chiang Klang and Pua Districts. Several districts, such as Na Noi, Wiang Sa and Nan in the southern part of the Nan study area have much lower hazard level.

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