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EVALUATION OF POTENTIAL FOR 2001 DEBRIS FLOW AND DEBRIS FLOOD
IN THE VICINITY OF NAM KO AREA, AMPHOE LOM SAK,
CHANGWAT PHETCHABUN, CENTRAL THAILAND

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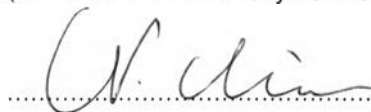
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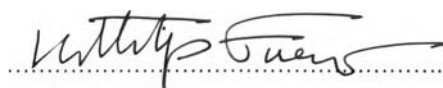
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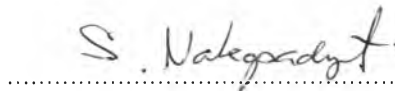
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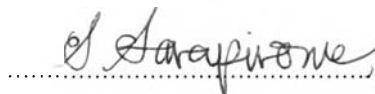
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การศึกษาปัจจัยที่มีอิทธิพลต่อการเกิดตะกอนไหลถล่มและน้ำปนตะกอนป่า ที่เกิดขึ้นเมื่อวันที่ 11 สิงหาคม 2544 บริเวณพื้นที่น้ำก้อ อำเภอหล่มสัก จังหวัดเพชรบูรณ์ กระทำโดยใช้ข้อมูลที่จัดทำและแปลความหมายด้วยระบบสารสนเทศภูมิศาสตร์และข้อมูลจากการสำรวจระยะไกล ข้อมูลจากการสำรวจภาคสนาม และข้อมูลจากการวิเคราะห์ในห้องปฏิบัติการ ข้อมูลดังกล่าวยังใช้เพื่อพิสูจน์หลักฐานพื้นที่ที่มีศักยภาพเป็นแหล่งกำเนิดตะกอน บริเวณที่มีการเคลื่อนตัวของตะกอน และบริเวณที่มีการสะสมตัวของตะกอน รวมทั้งกำหนดเกณฑ์ที่สามารถแสดงศักยภาพของพิบัติภัยจากการเกิดตะกอนไหลถล่มและน้ำปนตะกอนป่า ในบริเวณลุ่มน้ำก้อใหญ่และเนินตะกอนรูปพัด การศึกษาวิจัยยังกระทำเพื่อหาความสัมพันธ์ระหว่างลำดับชั้นของตะกอนและการเกิดตะกอนไหลถล่มและน้ำปนตะกอนป่าในบริเวณพื้นที่เนินตะกอนรูปพัด อีกด้วย

การวิเคราะห์เพื่อประเมินความสัมพันธ์ของปัจจัยที่มีอิทธิพลต่อการเกิดตะกอนไหลถล่มและน้ำปนตะกอนป่า ได้ใช้ข้อมูลร่องรอยการเกิดตะกอนถล่มและน้ำปนตะกอนท่วมและข้อมูลที่เกี่ยวข้อง มาทำการวิเคราะห์ด้วยวิธีของความน่าจะเป็นแบบตัวแปรเดียว และการคำนวณค่าความสัมพันธ์ของปัจจัยที่มีอิทธิพลต่อการเกิดพิบัติภัยจากตะกอนไหลถล่มและน้ำปนตะกอนป่า ผลการวิเคราะห์ได้จัดทำเป็นแผนที่แสดงความสัมพันธ์ของปัจจัยที่มีอิทธิพลต่อการเกิดพิบัติภัยตะกอนไหลถล่มและน้ำปนตะกอนป่าขึ้นในพื้นที่

สำหรับการอธิบายถึงเหตุการณ์ของการเกิดและศักยภาพของตะกอนไหลถล่มและน้ำปนตะกอนป่านั้น สามารถสรุปได้ว่าเหตุการณ์พิบัติภัยดังกล่าวนี้ไม่ได้มีสาเหตุมาจากการทำงานของฝนตกหนักผิดปกติแต่เพียงอย่างเดียวตามที่คาดกันไว้ แต่เป็นการทำงานร่วมกันของปัจจัยที่มีอิทธิพลหลายประการจากลักษณะภูมิประเทศที่มีสิ่งปกคลุมดินเป็นลักษณะเฉพาะ คุณสมบัติทางธรณีเทคนิคของวัสดุรองรับในพื้นที่ และการหน่วงเพื่อการสะสมตัวของซากต้นไม้และตะกอน การประสมประสานของปัจจัยที่มีอิทธิพลดังกล่าวเหล่านี้ได้ทำให้เกิดตะกอนไหลถล่มและน้ำปนตะกอนป่าได้ กระบวนการดังกล่าวนี้ยังทำให้เกิดความรุนแรงมากขึ้นอีกเนื่องจากการเกิดแนวชั่วคราวกั้นการไหลตามธรรมชาติที่ต่อมาได้พังทลายลงจากน้ำหนักของน้ำที่กักเอาไว้

หลังจากการเกิดเหตุการณ์พิบัติภัยครั้งนี้แล้ว สามารถประเมินได้ว่าต้องใช้เวลาอีกระยะหนึ่งก่อนจะเกิดเหตุการณ์ตะกอนไหลถล่มและน้ำปนตะกอนป่าครั้งต่อไปขึ้นอีก เนื่องจากต้องการเวลาสำหรับสะสมซากต้นไม้และตะกอนในลุ่มน้ำให้มีปริมาณมากพอเสียก่อน

ภาควิชา.....ธรณีวิทยา..... ลายมือชื่อนิสิต.....

สาขาวิชา.....ธรณีวิทยา..... ลายมือชื่ออาจารย์ที่ปรึกษา.....

ปีการศึกษา 2548

ลายมือชื่ออาจารย์ที่ปรึกษาร่วม.....

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KEY WORD: POTENTIAL / DEBRIS FLOW AND DEBRIS FLOOD / GIS AND REMOTE SENSING / NAM KO / PHETCHABUN / THAILAND

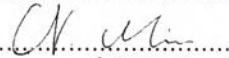
SOMBAT YUMUANG : EVALUATION OF POTENTIAL FOR 2001 DEBRIS FLOOD IN THE VINICITY OF NAMKO AREA, AMPHOE LOM SAK, CHANGWAT PHETCHABUN, CENTRAL THAILAND. THESIS ADVISOR : ASST. PROF. DR. NOPADON MUANGNOICHAROEN, THESIS COADVISOR : ASSOC.PROF. DR. KITTITEP FUENKAJORN, 297 pp. ISBN 974-14-2174-5.

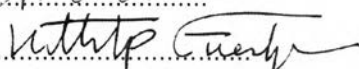
Thematic (GIS and remote sensing) data interpretation, field investigation, and laboratory analysis were carried out to investigate the parameters influencing the debris flow and debris flood (flow-flood) occurrence on 11th August 2001 (8/11) in Nam Ko area, Changwat Phetchabun, central Thailand. The purpose of study was to identify the potential source area, run-out zone, and depositional area, and to determine the evidences of the potential for hazards in Nam Ko Yai sub-catchment and its alluvial fan. The relationship between the sedimentary sequences and debris flow-flood occurrence in the alluvial fan was also defined.

The relationship between debris flow-flood and relevant parameters was analyzed for debris flow-flood susceptibility assessment. In Nam Ko Yai sub-catchment, scar-scouring locations detected from remote sensing interpretation and field surveys were compiled into a GIS database. Various maps were constructed from the flow-flood relevant parameters derived from the database. The parameters, univariant probability method, and calculation of debris flow-flood susceptibility were applied to analyze and produce the susceptibility map of debris flow-flood hazard in the sub-catchment.

From the debris flow-flood event reconstruction and its potential, it was concluded that the disastrous event was not the work of the unusually heavy rainfall alone as previously concluded, but it was the work of combined parameters including the terrain characteristics with specific land cover, underlain-material geotechnical properties, and time-delay for accumulation of plant debris and sediments. Combination of parameters could lead to a debris flow-flood. The process could be worse with a natural temporary landslide dam formed and then the dam was destroyed under the weight of impounded water. After this disastrous event, it should take time for the next debris flow-flood to recur as accumulation of more plant debris and sediments in the sub-catchment would be needed.

Department.....Geology.....Student's signature.....

Field of study.....Geology.....Advisor's signature.....

Academic year 2005 Co-advisor's signature.....

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