

Teerawate Limgomonvilas 2014: Integrated Geoinformatics Models for Land-use Management in Lamtakong Watershed, Nakhon Ratchasima Province. Doctor of Philosophy (Sustainable Land Use and Natural Resources Management), Major Field: Sustainable Land Use and Natural Resources Management, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Chongrak Wachrinrat, Ph.D. 142 pages.

The main objective of this study is to identify and predict changes in land use in the Lumtakong watershed. Satellite data was used to classify land use in 1991, 2002 and 2013, and predicted the land use in 2024 by integrated the models. GIS and Supervised Classification Analysis, CA-Markov, AHP, USLE and Multi-Criteria Analysis were analyzed for land use planning to reduce the impact of natural disasters including drought, soil erosion, landslides and flooding.

The results of the study showed that residential areas in 2013 trended to increase dramatically about four times from 1991. In addition, forest and water areas are likely to increase approximately 16 and 80 percent, respectively. In contrast, agricultural areas were decreased approximately 9 percent. Land use in 2024, residential area (322.24 km^2), forest (829.14 km^2), agricultural area ($2,020.88 \text{ km}^2$), water (75.49 km^2) and miscellaneous (70.42 km^2) were predicted by using CA-Markov model. Soil loss in 1991, 2002, 2013 and 2024 has decreased at 4.59, 4.33, 4.23 and $3.53 \text{ tons}^{-1} \text{ rai}^{-1} \text{ year}^{-1}$, respectively. Drought risk was decreased as the same trend as soil loss due to the influence of the Land use changed from agricultural area to residential area. Landslide is very high risk in the south of Khao Yai. High risk of flooded areas are in the city of Nakhon Ratchasima. Furthermore, high risk areas in 2024 can be effectively reduced by using intergrated models.

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Thesis Advisor's signature

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