

**EXAMINATION****SGO1910 Geographical Information System (GIS)****November 29<sup>th</sup> 2010  
(3 hours)**

Results will be posted on the StudentWeb December 20<sup>th</sup> at 2.00 p.m., and will be available to the candidate from approximately 3.00 p.m.

The results are considered official on publication in StudentWeb and students are responsible for checking their result at this time. If you want an explanation for grade, you must apply **within one week** after the result is published. If you want to complain on the grade, the complaint must be lodged within three weeks after the grades are published in StudentWeb.

This examination paper consists of **2 pages**, including this page.

The candidate must submit both the original and the copy of their examination answers.

NB! Make sure the copy is legible.

Remember to write down your candidate number for later use.

**NB: Make sure the copy is legible!**

**Part I: Short Answers (this part is worth 25%)**

Describe **five** out of the following six GIS concepts or terms in no more than 3 or 4 sentences.

1. Spatial sampling
2. Wikifikation of GIS
3. Secondary geographic data
4. Negative spatial autocorrelation
5. Attributes
6. Universal Transverse Mercator (UTM) projection

**Part II: Essay Question. In answering these questions, you are expected to draw from lectures, readings, and lab exercises (this part is worth 75%, with each of the three parts worth 25%)**

The Norwegian government has contributed a significant amount of money to **Reducing Environmental Degradation and Deforestation (REDD)**, in an effort to limit greenhouse gas emissions from tropical forests. The initiative has received both praise and criticism, particularly in relation to its impacts on the Amazon rainforest of Brazil. One criticism is that the land rights of indigenous people and traditional users of forests are being ignored, in the name of reducing climate change.

You are leading the Norwegian office of a large environmental group called “**Green International Students**” (G.I.S. for short). Your first big initiative is to convince the Norwegian government that much of the Amazon forest is actually managed by local populations, and that the needs and rights of indigenous people need to be recognized in REDD projects.

Since most of your members have taken SGO1910, you have decided to use a geographic information system to demonstrate that many of the new “climate conservation areas” coincide with existing land claims. You have found a website called “Amazon GIS”, which has many different types of geographic information on the Amazon basin. Coverages include administrative boundaries, urbanized areas, human settlements, rivers, lakes and hydrological features, existing parks and protected areas, potential REDD sites for “climate conservation areas”, forest types, soils, and monuments.

1. A land conflict may occur if a potential REDD site for a “climate conservation area” overlaps with existing land claims. Conflicts could also occur if the land within 1 km of major rivers is protected, since the rivers are used for fishing, transport, and other economic activities. Describe how you would go about identifying potential areas of conflict in the Amazon, given the coverages described above. In other words, which coverages would you use, and what type of

spatial analyses could be carried out to identify areas of potential conflict? If you feel that you are lacking some type of geographic information that would help in the analysis, describe why it is important.

2. You recognize that the map that you created does not represent the voices of the people living in the Amazon. You ask the Brazilian members of G.I.S. to visit locations in the Amazon and acquire information on livelihoods, land use management, conservation, and opinions about climate change, then upload it to your web site. To what extent does this represent participatory or bottom-up GIS? Discuss the advantages and disadvantages of this approach.
3. You are ready to present your project to the Norwegian Foreign Minister. Write a cover letter describing what GIS is and why it is an important tool that can help in analyses of spatial problems. Be sure to be honest and mention to him the some of the uncertainties and limitations associated with GIS analyses.

**Good luck!**

**Background information for SGO 1910 Exam**

**(Note: this is only to provide the wider political context for the problem – the exam question can be answered without reading this information)**

**The Government of Norway's International Climate and Forest Initiative**

Measures to reduce deforestation and forest degradation in developing countries will be essential to achieve the target of limiting the temperature rise to 2°C. However, it should be emphasized that efforts to reduce these emissions must be additional to and not a replacement for efforts by more developed economies to reduce their emissions.

Reducing deforestation and forest degradation will have substantial benefits in addition to the reduction of greenhouse gas emissions. These include positive impacts on biodiversity and on sustainable development, including poverty reduction and indigenous peoples' rights. Thus, reducing deforestation and forest degradation can produce a triple dividend – gains for the climate, for biodiversity and for sustainable development.

It was against this background that Prime Minister Jens Stoltenberg launched Norway's International Climate and Forest Initiative during the climate change negotiations at Bali in December 2007, and announced that Norway is prepared to allocate up to NOK three billion a year to efforts to reduce greenhouse gas emissions from deforestation in developing countries. The initiative applies to all types of tropical forests.

It is a major challenge to find ways of ensuring that local communities, including indigenous peoples, can continue to harvest sustainably from the forests, or that alternative livelihoods or paths of economic development are open to them. Indigenous peoples and other local communities are dependent on the species diversity and ecosystem services of natural forests to maintain their way of life, and they also play a crucial role in sustainable use and conservation of forests. It is therefore essential to protect biodiversity and safeguard the interests and rights of indigenous peoples and other local communities.

## PRAISE FOR NORWAY...

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### Obama sings its praises, but what is the Amazon Fund?

Ecologist

14th December, 2009

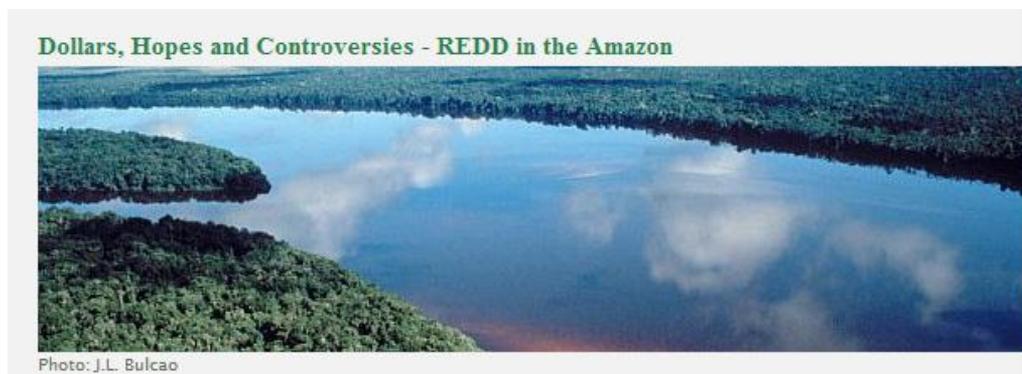
#### Partnership between Brazil and Norway to prevent deforestation in the Amazon praised by US President Barack Obama

In accepting his Nobel Peace Prize in Oslo, Norway last week, Barack Obama heaped praise on the [Amazon Fund](#).

'I am very impressed with the model that has been built between Norway and Brazil that allows for effective monitoring and ensures that we are making progress in avoiding deforestation of the Amazon,' he said.

Norway has already donated \$110m to the Fund and promises a further \$125m in 2010.

## ... AND CRITICISM



"Without securing the rights of indigenous people and traditional users, REDD is a risky undertaking. In Brazil, even though the rights of indigenous people in the Amazon are largely protected, ownership titles are unclear or disputed in many parts of the Amazon region. How is REDD supposed to work given these conditions? The first responses to REDD thus stressed the need to clarify the issue of land ownership in the Amazon. This is, however, a drawn-out process. The pace at which the "Readiness for REDD" is currently being worked on is not consistent with the complex processes and decisions that a new climate-forest system would involve."

