Geog 696
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Article Discussion Debrief (week 4- Feb. 12, 2011)
February 21, 2011

Article: Coulter, Lloyd L., and Stow, Douglas A. 2009. **Monitoring habitat preserves in south-
ern California using high spatial resolution multispectral imagery**. *Environment-
al Monitoring and Assessment* 152, 1-4: 343-356.

Debriefing

This article is straight forward and well-structured. Every step of processes in this article has
comprehensive and elaborate explanations such as introduction, background and methods. Also the
author well explained what the limitations of applications are. However, in the whole article, there is no
research question and no identification of how the data were collected. Therefore, I assume this article
was made by government's needs, so I would rather say instead of calling 'article' this is a technically
well-written report or instruction manual to answer for a particular question made by a public
organization, likely managers from the Natural Community Conservation Plan (NCCP).

Structure of the Article

Introduction
Background
    Southern California Habitat reserves
    Monitoring habitat reserves
    Image pre-processing and change detection
Study Site
Data
Methods
    Anisotropic reflection correction
    Multidate spatial co-registration
    Multidate relative radiometric normalization
    Change detection
Results and Discussion
    Habitat change features
    Operational habitat monitoring
Conclusions

Key Points

I. Purpose Statements (344p, 354p)

As the author mentioned at the end of the article, "As the primary goals of the research presented
here were to specify robust change detection methods and to identify the types of land-cover
changes that could be detected, this expanded analysis was beyond the scope of the study," the
purpose of the article is about specific methods and detected change from them. Also, as he
mentioned that "to monitor habitat quality, these habitat managers have indicated that the
following changes should be identified," the purpose of the article is about answering to the habitat
managers.

II. Study Justification (343p)

Carin said that justification of this study is that preserving wildlife habitat is a critical to humans.
Preserve systems rely on the ability to monitor habitat quality and ground-based sampling is limited.

Remote sensing offers temporally frequent and spatially complete sampling of habitat conditions at reduced costs relative to field-based approaches.

At reduced costs – the class agreed that there is a problematic issue in terms of justification of cost. The author is right about that monitoring with remote sensing is cost-effective relative to field jobs. In this article, however, he used ADAR 5500 system which is conducted by customized mission, so it is very expensive processing. Carin questioned how cost-effective this is and Dr. Rodrigue said that if he leaves it out, it would better study justification.

III. Research Question

There is no research question.

IV. Data used (346p)

Images from 1998, 1999, 2001, and 2005 using an Airborne Data Acquisition and Registration (ADAR) 5500 multispectral system. This system has four separate Kodak DCS 420 digital cameras, each capturing four different wavelength range, blue (450-540 nm), green (520-600 nm), red (610-690 nm), and NIR (780-1,000 nm).

IV. Data Collection

Author does not mention how he collects the data.

V. Analysis Methods (348 – 350p)

Carin asked that in this article, there is much about method rather than results, is this usual? Dr. Rodrigue mentioned that a lot of remote sensing articles are about replication, so people who read this kind of articles should replicate the process and that is how article can be proved.

In the article, used methods are anisotropic reflectance correction, multidate spatial co-registration, multidate relative radiometric normalization, change detection which is comparison of image classification products produces independently using each date of multitemporal image data and direct interpretation of classification of multitemporal spectral or transformed image data.

VI. Results (350 – 354p)

The results are six change classes which are brightness increase, brightness decrease, vegetation cover increase, vegetation cover decrease, vegetation greenness increase, vegetation greenness decrease.

VII. How convincing & clear

The explanation of the article is well-explained, accurate and clear. In terms of cost-effective, it is not convincing, other than that, it is convincing.

Discussion Topics

1. Issues that discussed in the class

Classification

Briton said that, it is hard to make a classification with 1 m resolution imagery because there is a lot of classification.

Rectification for airborne imagery

Dr. Rodrigue and Briton talked about how hard to rectify imagery from airborne because flights cannot fly straight forward, so imagery looks like zigzagged line not straight line. Briton gave an example of AVIRIS imagery and then Dr. Rodrigue gave an example of blimp about hart to rectify.

Stats

Dr. Rodrigue asked why GCP points are 30, Briton answered that because of statistically correlated.

Color of the article

Linda has a question about hard to understand the changed pixel, but it was because she printed the article as black and white. Dr. Rodrigue said that a long time ago, it was prohibited

to make a colorful thesis, but these days it is allowed, expensive though. Molan said that most of remote sensing article made with color, otherwise, hard to understand whole concept.

"Beyond the scope of the study"

This sentence is part of the purpose of the article, and Dr. Rodrigue said that it is important to say the limitations in students' thesis.

Not efficient to get data

Carin was questioning how much this image is, is it downloadable? Dr. Rodrigue said that the author said that easy to use something like this, but it is not. She also mentioned that the author made a big assumption here.   Carin mentioned that people blame sometimes human geography is not scientific, but technical article which is supposed to be scientific has also big mistake here.

Not cost-effective

As I mentioned earlier in this report, this method is not cost-effective.

Pre-processing

Pre-processing is very difficult process and it is hard to be accurate, but the author made it look easy.

Feasibility of satellite imagery

Janice asked about feasibility of satellite imagery and Dr. Rodrigue said that people can replicate according to remote sensing articles.

No altitude data?

Carin asked there is no altitude data of airplane, I missed the point that I should have answered, but for digital image processing the data of altitude is already in the software that you use. Also, if you use some kind of customized mission imagery, you already have whole package of mission information from the date flights fly to the weather on that day, so you also have altitude data from that package report. (I am sorry about that.)

2. Advantage of the article

Linda said that even though there are a few errors, the idea and technique in this article is good and important.

Well-written limitations of applications

Technically well-explained pre-processing and methods

3. Disadvantage of the article

Carin – In this article, there is much about methods and interpretation but there is no number for how much the data is and how cost justified is.   Even though this kind of article uses remote sensing method or quantitative method, which we call it more or most scientific, there is error like this.

As Carin asked method is ok, methods itself is fine but hard to get this kind of customized imagery, so I doubt the methods are useful for most remote sensing researchers.

4. Who find this approach useful

Briton and Molan prefer digital image processing method, so they look like interested in or at least there is something to talk about but Janice and Linda do not seem like finding this article useful to them. Carin found some errors of the article.