University of Kentucky
UKnowledge

International Grassland Congress Proceedings

XXI International Grassland Congress / VIII International Rangeland Congress

The Development of Landsat Cover Change Analysis in the Pastoral Grasslands of Western Australia

Philip Thomas
Department of Agriculture and Food Western Australia, Australia

Jeremy Wallace
CSIRO, Australia

Follow this and additional works at: https://uknowledge.uky.edu/igc

 Part of the Plant Sciences Commons, and the Soil Science Commons

This document is available at https://uknowledge.uky.edu/igc/21/5-2/11

The XXI International Grassland Congress / VIII International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

This Event is brought to you for free and open access by the Plant and Soil Sciences at UKnowledge. It has been accepted for inclusion in International Grassland Congress Proceedings by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

The development of Landsat Cover Change Analysis in the pastoral grasslands of western Australia

Philip Thomas[1] *and Jeremy Wallace*[2]
[1] *Department of Agriculture and Food Western Australia, South Perth, WA, Australia, 6151.* [2] *CSIRO, CMIS, Floreat, WA, Australia, 6014*

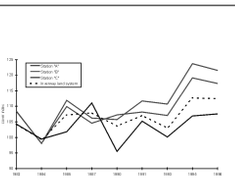
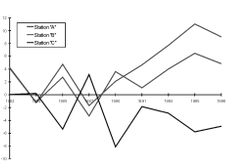
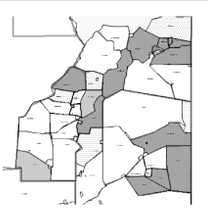
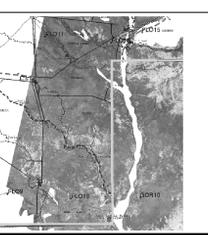
Key words : Landsat Cover Change Analysis, summary products, rangeland management

Introduction This paper outlines the use of cross calibrated multi temporal Landsat data in developing summaries for land managers, land administrators and for the wider community information in reporting on vegetation cover change at various scales.

Materials and methods The research was conducted in the Kimberley and Pilbara grasslands. The vegetation within these areas was stratified into like soil and vegetation communities, for example, in the Kimberley, the black soil plains of approximately 500,000 ha over 10 stations, dominated by Astrebla spp. and Chrysopogon spp. and in the Pilbara, the red soil coastal plains, of approximately 100,000 ha over 3 stations and dominated by Eragrostis spp.

A cover index using Landsat data is derived for the stratified soil type to be analysed. Land system and station infrastructure vectors are incorporated through GIS for analysis, interpretation and presentation.

Results and discussion Summary products were developed for a range of scales and questions by various stakeholders as shown in Table 1.

Scale or question	Regional summary Q. what is the stratified vegetation type doing ?	Station or management unit scale Q. quantify the relative performance of stations within a district or paddocks on a station.	Management unit Q. Identify areas of above or below average response.	Regional- management unit- monitoring site Q. Identify areas of differing trends.
Stakeholder	State of Environment Government administrators. Departmental Advisers.	Government administrators. Pastoralists .Departmental Advisers.	Pastoralists .Departmental Advisers and Inspectors. Government administrators.	Departmental Advisers and Inspectors. Government administrators. Pastoralists .Monitoring.
Product	Uncorrected time trace.	Corrected time trace, relative to the regional trend shown at left.	Recombined stratified paddock summaries.	Trend maps for defined periods.
Example				



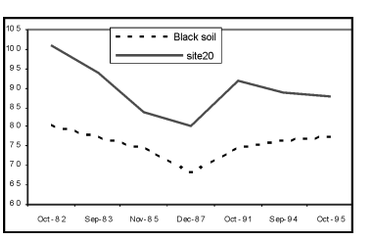


Figure 1 *Example of black soil pasture showing a positive response in cover index (8 units) and monitoring site photograph over an 8 year period, after earlier loss of cover.*

Conclusions Although only developed in relatively small areas at this point, products derived through Landsat Cover Change Analysis have the potential to report on large areas of rangelands at varying scales, depending on the question and stakeholder. The Department of Agriculture and Food Western Australia and Curtin University will be looking at how to further extend this work over the varied vegetation communities in the pastoral rangelands of Western Australia and how best to integrate other ground based datasets from monitoring sites and traversing.