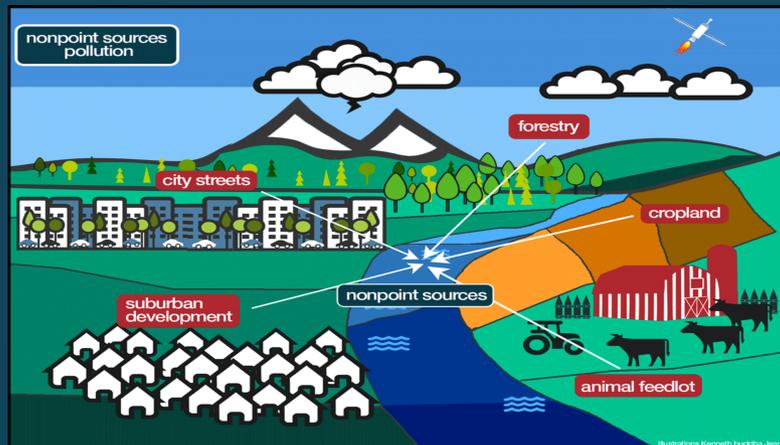


Remote Sensing Applications for Non Point Source Pollution Assessment

Kimberlie Massey
Spring 2017 – GPHY 426

Introduction

Non Point Source Pollution is a growing issue as populations and development increase. Due to the large range of potential pollutant sources and the extent of the pollution, mapping and assessing from the ground is almost impossible, expensive, and generally does not result in complete data. Remote sensing is an extremely valuable resource that provides an efficient and economically feasible tool to assess the sources and extent of pollution over a greater extent of area and at a desired time.



<http://groundswellmi.org/resources/communities-for-clean-water/>

Case Study Applications

1. Watershed analyses of Non point source Pollution Problems (Basnyat 1999)

-Used remote sensing data to classify land use/land cover types to analyze water quality and pollution in a watershed

2. Relating landscape characteristic to non-point source pollution in mine waste-located watershed (Xiao 2007)

- Used classified historical multi-spectral Landsat data to classify land use/land cover along with water quality data to find relationships between landscape characteristics and water quality in order to model mine waste pollution

3. Sediment and nutrient discharge into the Great Barrier Reef lagoon after high intensity precipitation events (Brodie et al. 2010)

- Used remote sensing data to map characteristics of sediment and nutrient plumes such as the spatial extent and intensity of the phytoplankton bloom event over a period of 9 days

4. Modeling the effects of non point source pollution on different water quality parameters for the Velhas river watershed (Maillard 2008)

- Used remote sensing data to create and classify land use/ land cover data in order to assess the validity of the relationship between land use, water quality, and proximity to the stream to see the effects of pollution



A flood plume containing sediments, nutrients and pesticides flowing onto the Great Barrier Reef from Bundaberg. <http://theconversation.com/cloudy-issue-we-need-to-fix-the-barrier-reefs-murky-waters-39380>



Phytoplankton bloom associated with Mackay_Whitsunday river plumes, 28 January 2005 (Landsat 7 image) (

Methods

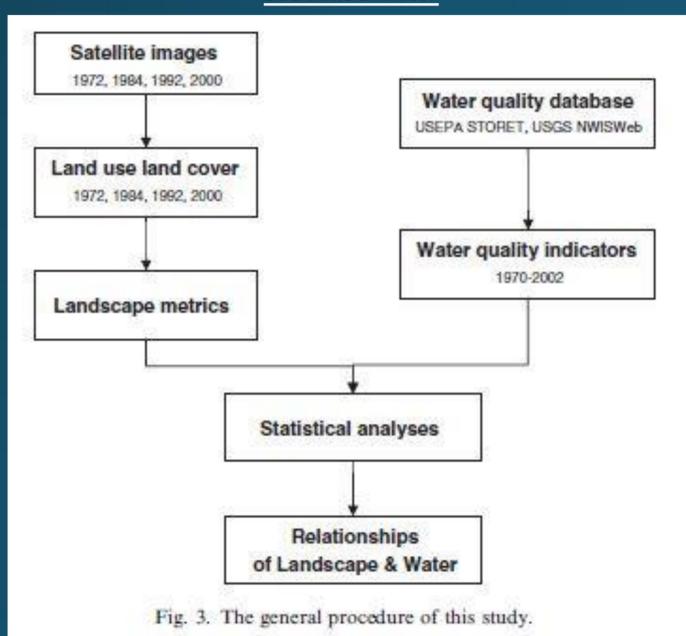


Fig. 3. The general procedure of this study.

(Xiao H., Ji W. (2007))

Citations

Brodie J., et. Al. Dispersal of suspended sediments and nutrients in the Great Barrier reef lagoon during river-discharge events: conclusions from satellite remote sensing and concurrent flood-lume sampling. *Marine and Freshwater Research*. Vol. 61. (2010) 651-664.

Maillard P., Santos N.A.P. A spatial-statistical approach for modeling the effect of non-point source pollution on different water quality parameters in the Velhas river watershed – Brazil. *Journal of Environmental Management*. Vol. 86. (2008) 158-170.

Xiao H., Ji W.. Relating landscape characteristics to non-point source pollution in mine waste-located watersheds using geospatial techniques. *Journal of Environmental Management*. Vol 82 (2007) 111-119.

Basnyat P., Lockaby T.B.B., Flynn K.M.. The use of remote sensing and GIS in watershed level analyses of non-point source pollution problems. *Forest ecology and Management*. (1999)