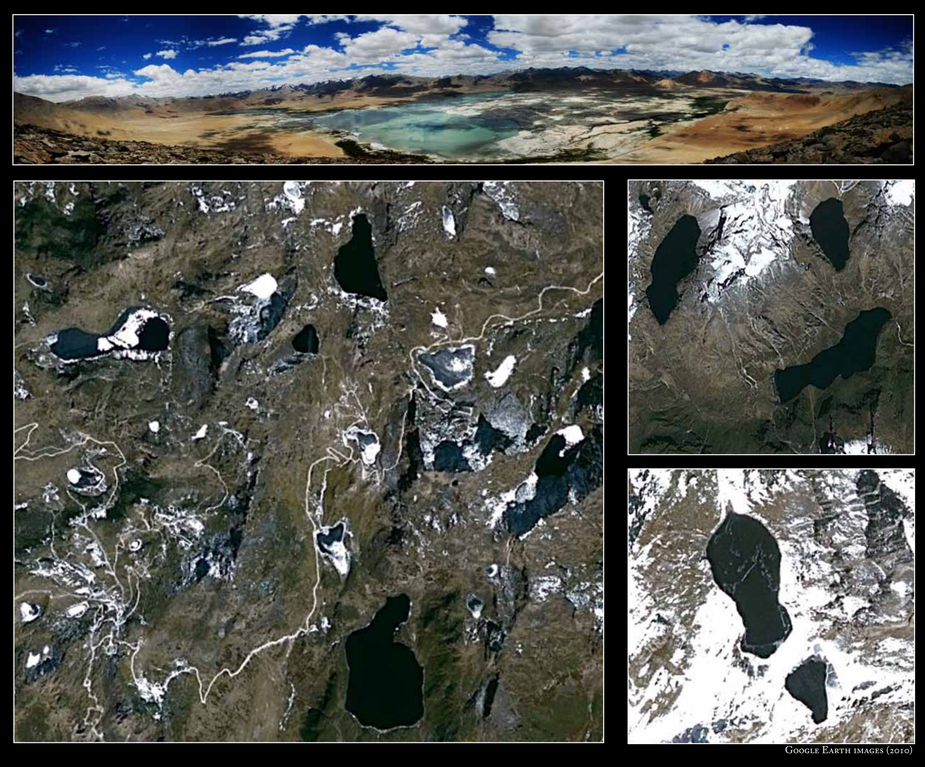
High Altitude Wetland Protected Areas in Western Arunachal Pradesh

Identification and Demarcation using GIS

Introduction

Wetlands are terrestrial environments where water plays a significant role in ecosystem functioning. High altitude wetlands are found above elevations of 3000m, and are fed by glaciers and snow melt from the surrounding mountains. In India, they are found in the Himalayas and provide a number of unique ecosystem services.



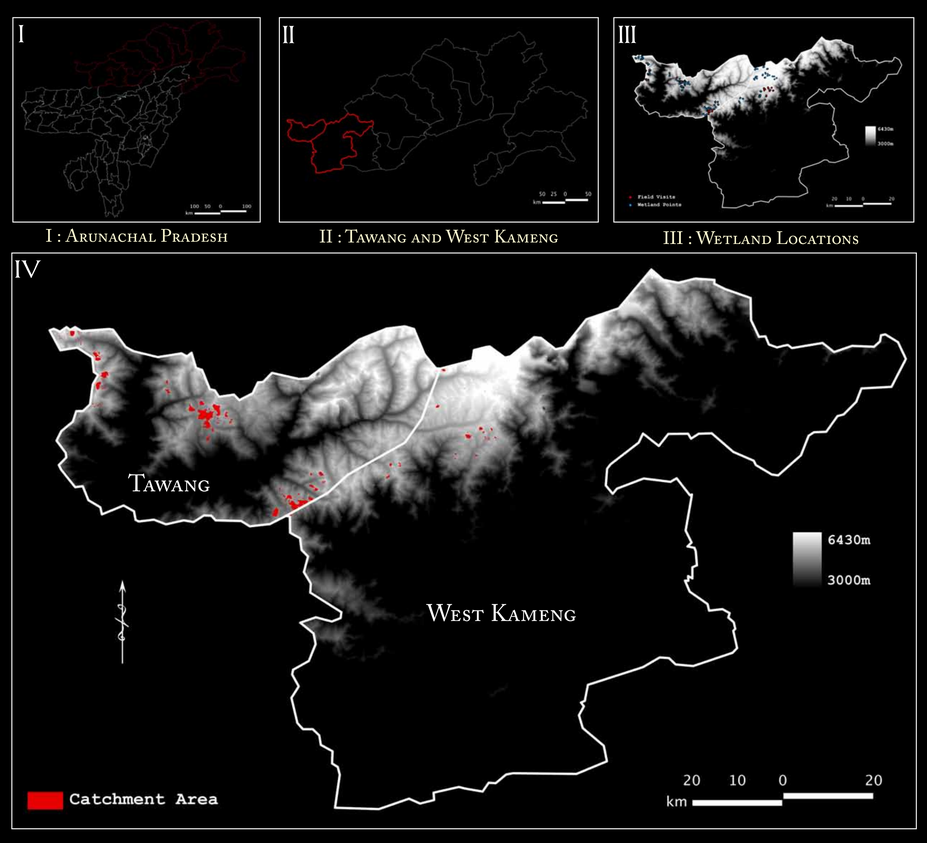
Google Earth images (2010)

High Altitude Wetlands in Indian Territory

Purpose

I suggest a method of demarcating Wetland Protected Areas with a combination of field visits, Google Earth imagery, Digital Elevation Models and hydrological Geographic Information System (GIS) tools, using high altitude wetlands in the West Kameng and Tawang districts of Arunachal Pradesh as case studies.

Methods and Results



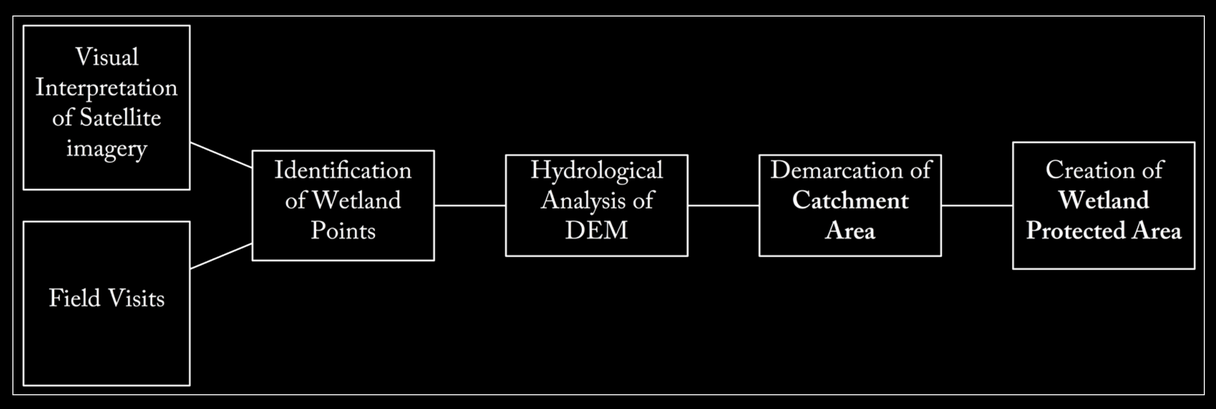
I : Arunachal Pradesh | II : Tawang and West Kameng | III : Wetland Locations

IV : Wetland Catchment Areas

Field visits were used to identify High Altitude Wetlands in Tawang and West Kameng districts of Arunachal Pradesh.

Google Earth imagery was visually interpreted to create wetland water feature boundaries.

Hydrological analysis of Digital Elevation Model data was used to calculate the catchment area for each wetland.



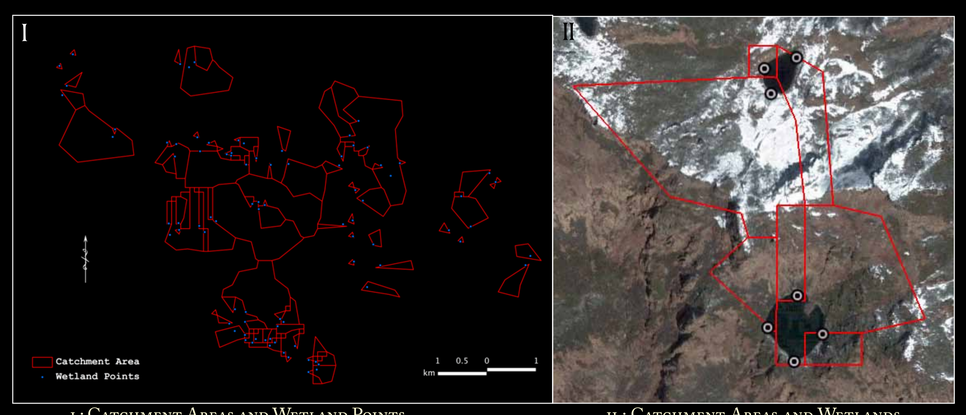
Process Flowchart

Discussion

High altitude wetlands are threatened by the changing climate and by pressure from human activities. Any human activities that occur within the catchment area of a High Altitude Wetland may affect it.

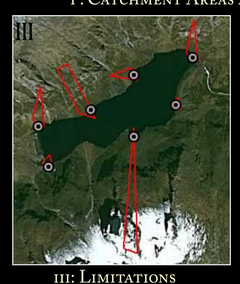
The Convention on Wetlands (Ramsar, Iran, 1971) recognises the need to regulate activity within these areas, as does the Government of India in the draft Wetland Rules, 2010.

Identifying wetland catchment areas and implementing management strategies to ensure their conservation is one of the primary components of any wetland conservation program.



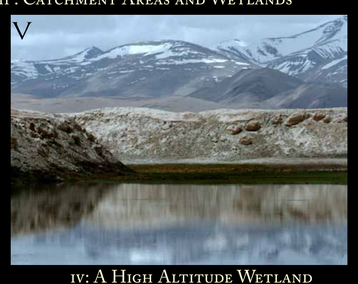
I : Catchment Areas and Wetland Points

II : Catchment Areas and Wetlands



III: Limitations

IV: Grazing in Wetlands



IV: A High Altitude Wetland

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References

a) Jarvis, A., H.I. Reuter, A. Nelson, E. Guevara, 2008, Hole-filled SRTM for the globe Version 4, CGIAR-CSI SRTM 90m Database
b) Ramsar Information Sheets, Ramsar Wise Use of Wetlands Sheets, Ramsar Wetland Ecosystem Services Sheets (www.ramsar.org)

Applications ESRI ArcGIS 9.3, Garmin Basecamp, Google Earth, Microsoft Excel 2007, Adobe InDesign CS5, Adobe Photoshop CS5

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