# ASSESSMENT OF THE SOIL CHARACTERISTICS USING LANDSAT 8 DATA IN HORQIN SANDY LAND

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## Introduction

Desertification is one of the main global environmental problem and also the most urgent ecological problem in arid and semi-arid region. As the developing country, in north and northwest China, over 508 counties, 18 provinces are affected by desertification. In water limited environment such as Horqin Sandy Land located in the northern China soil degradation was identified as one of the main desertification process. However, the identification of these soil characteristics serves as a useful input for understanding the desertification process and land degradation as a whole.

## Objectives

The objectives of this study are:

① Mapping desertification map for study area;

② Classifying different soil properties for desertification;

a. Mapping new land cover map for study area;
b. Find relationship between different soil properties;

## Dataset Description

**Remote Sensing Data:**

Landsat 8 product include Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) data observed in August 15, 2015

**Ancillary Data:**

SRTM with 30m data

**Reference Data:**

①The land use datasets of Inner Mongolia in 1995 and 2000;

② Desert distribution dataset of China;

③Chnia Soil map Based Harmonized World Soil Database(v1.1);

④Soil moisture data of 2011.

## Methodology

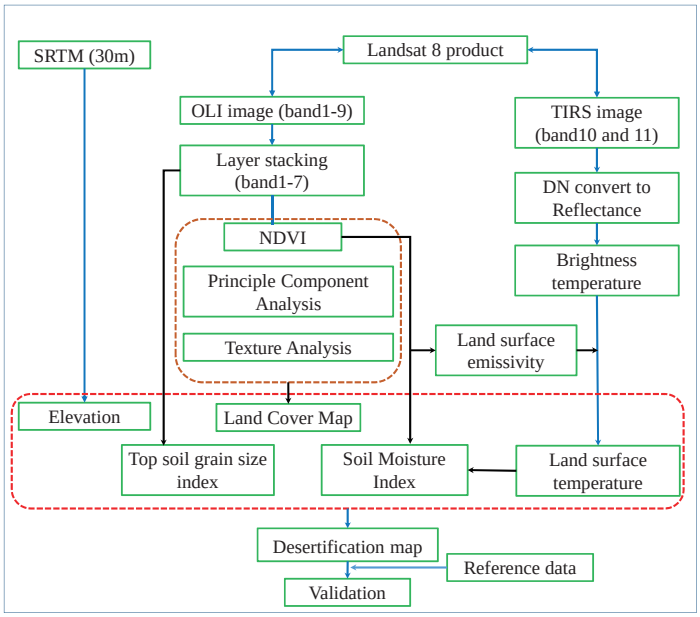


Fig.2 Flowchart of the Soil Properties Analysis related to Desertification

## Result

Grain size of topsoil used as a tool for desertification process assessment, and coarsen of the topsoil represent the soil degradation turning serious. The higher top soil grain size value distributed at the sandy land, degraded grassland, and desert steppe.

The soil moisture among different land uses was decreased from grassland, cropland, inter-dunes and shrub land.

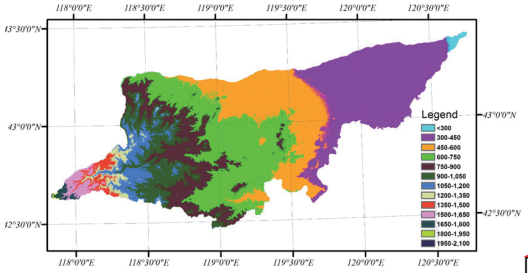


Fig.3 Elevation of Study Area

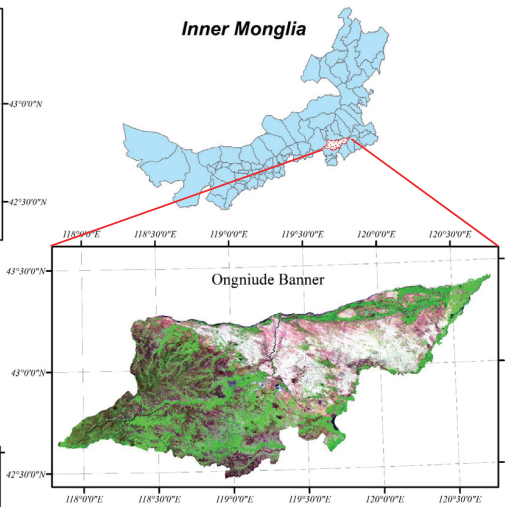


Fig.1 Location of Study Area

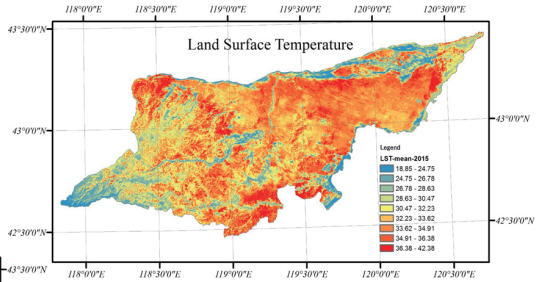


Fig.4 Land Surface Temperature of Study Area

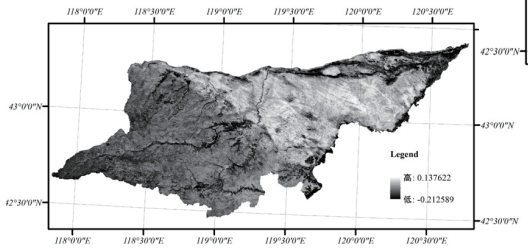


Fig.5 Top Soil Grain Size of Study Area

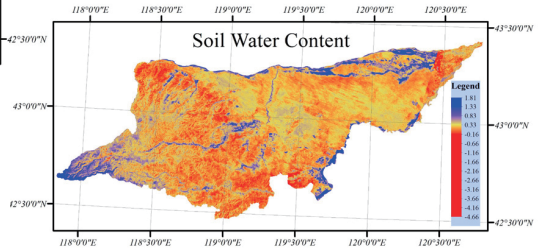


Fig.6 Soil Moisture of Study Area

## Conclusion

After comparing, the result shows that desertification positively correlated with the topsoil grain size, land surface temperature, on the contrary, negatively correlated with the surface soil moisture.