NATIONAL UNIVERSITY OF MONGOLIA

"NUM-ITC-UNESCO"
REMOTE SENSING AND GIS LABORATORY

HUMAN IMPACT ANALYSIS ON LAND-COVER IN CENTRAL REGION OF MONGOLIA

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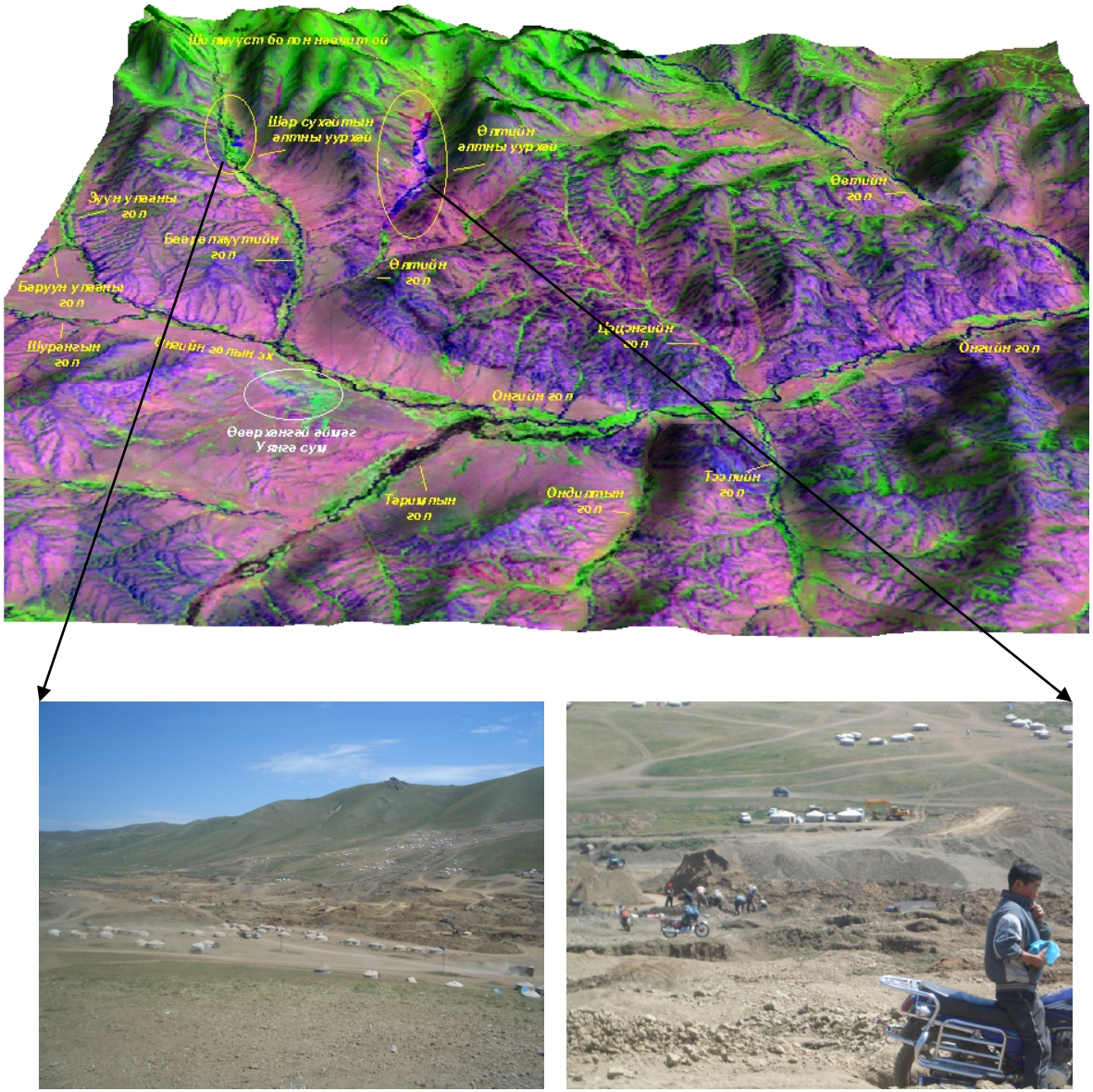
Objectives

To monitor land degradation in mining area using Remote Sensing and GIS

To analyze contribution factors to land degradation in the study area



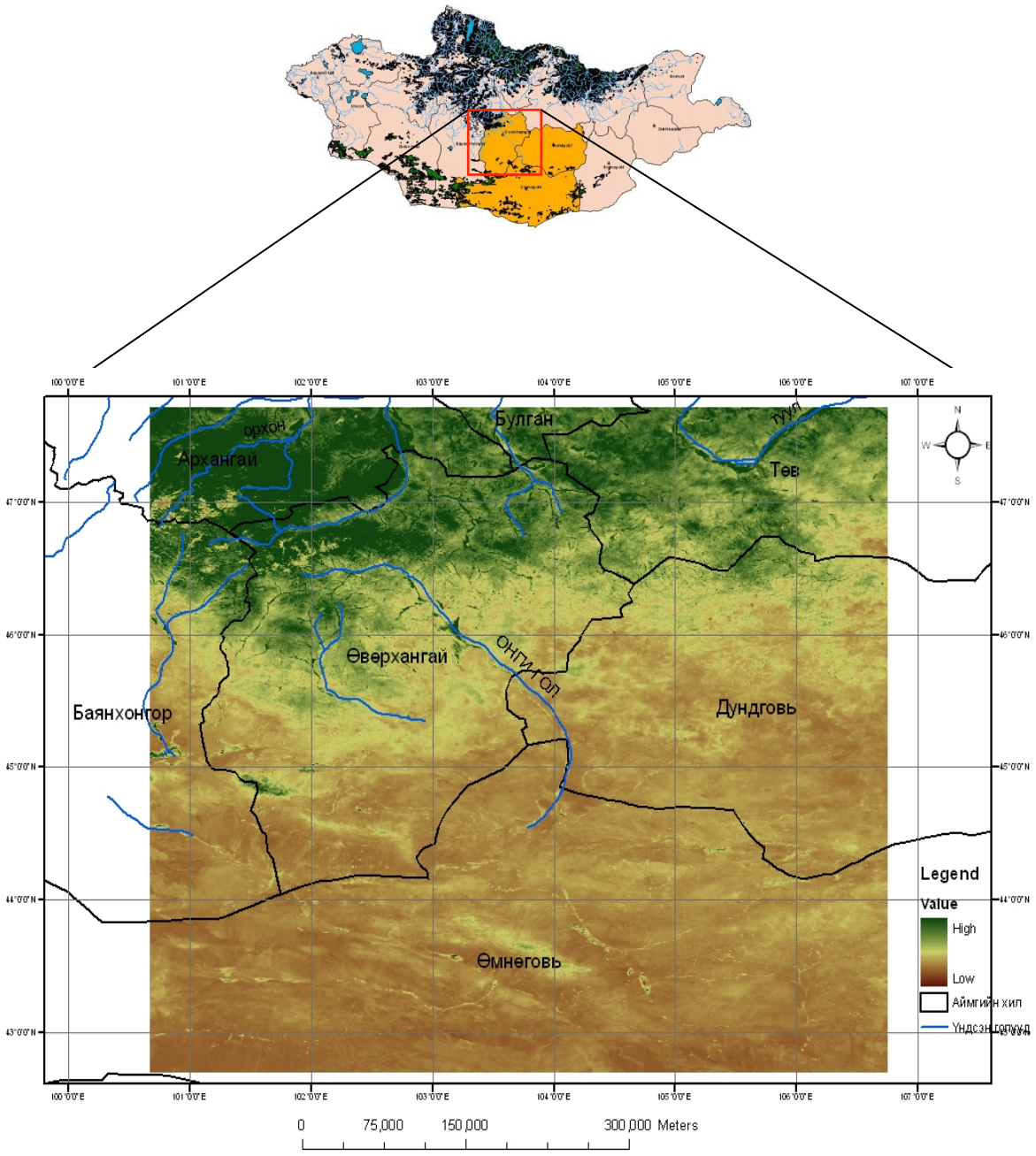
Mining activity (Ongi River Basin)

Study area

•It is one of the important rivers in the area for the livestock breeding for the local people.

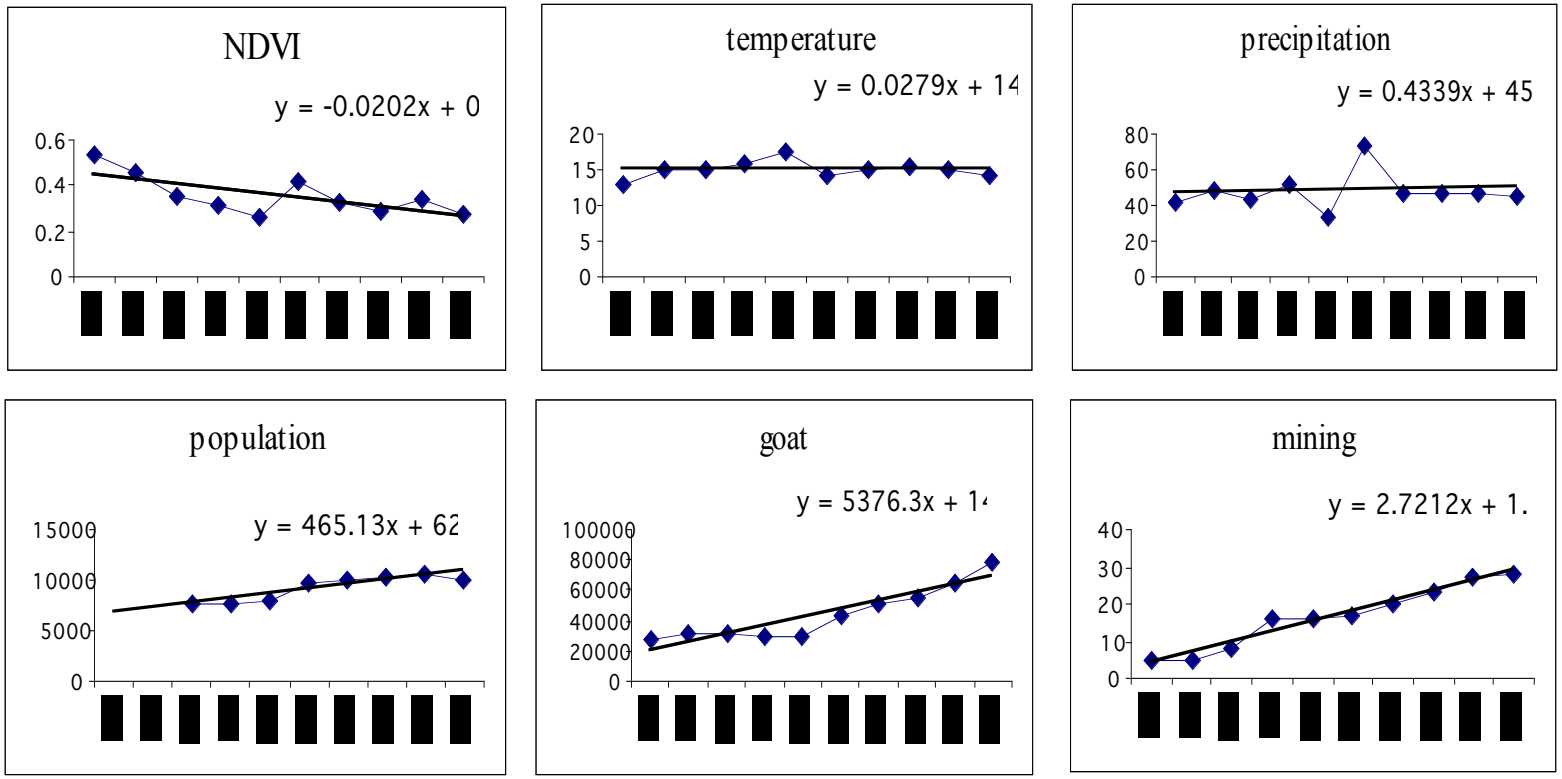
•Main environment concern is the river is drying up and starting to interrupt since 1998.

Location
E101^{0}44’24”- E104^{0}30’00”
N44^{0}22’48” - N46^{0}41’24”



Data

1. SPOT VEGETATION 4 1km data from June to August 1998-2007.
2. Statistical data for socio-economic, climate data and ground truth data were used for GIS analysis.



Factors in land degradation

Methodology

Remote Sensing analysis

Huete (1998) suggested a new vegetation index, which was designed to minimize the effect of the soil background, which he called the soil-adjusted vegetation index (SAVI) developed of an iterated version of this vegetation, which is called MSAVI2

$$MSAVI2 = \left[2NIR + 1 - \sqrt{(2NIR + 1)^2 - 8(NIR - RED)}\right]/2$$

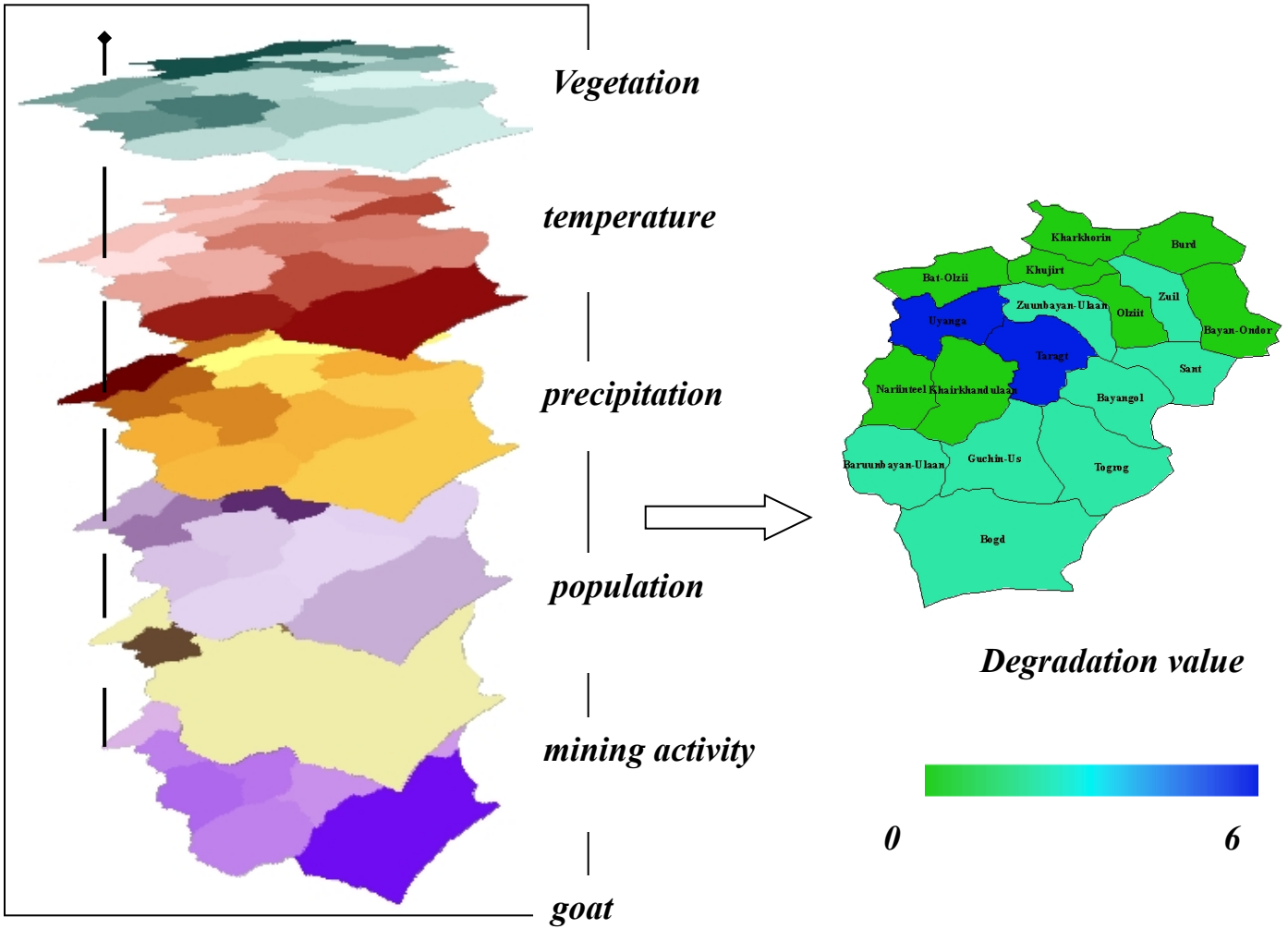
Map Algebra Con function

I. con ([goat] > 20000, con ([msavi] < 0.35, 1, 0) ,0)

II. con ([population] > 6500, con ([mining activities] > 1, 2, 0) ,0)

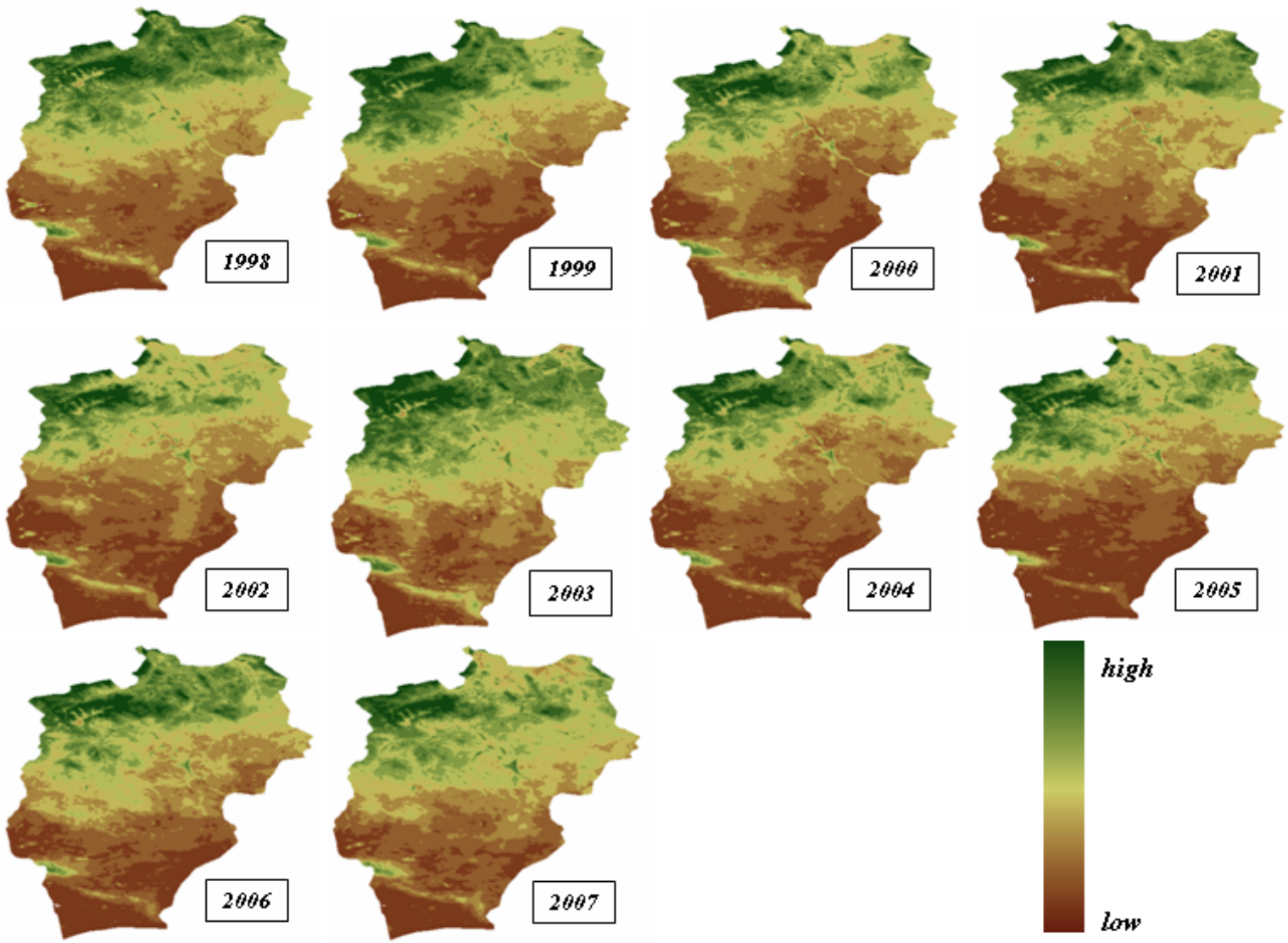
III. con ([temperature > 16, con ([precipitation] < 10, 3, 0) ,0)

Data analyze



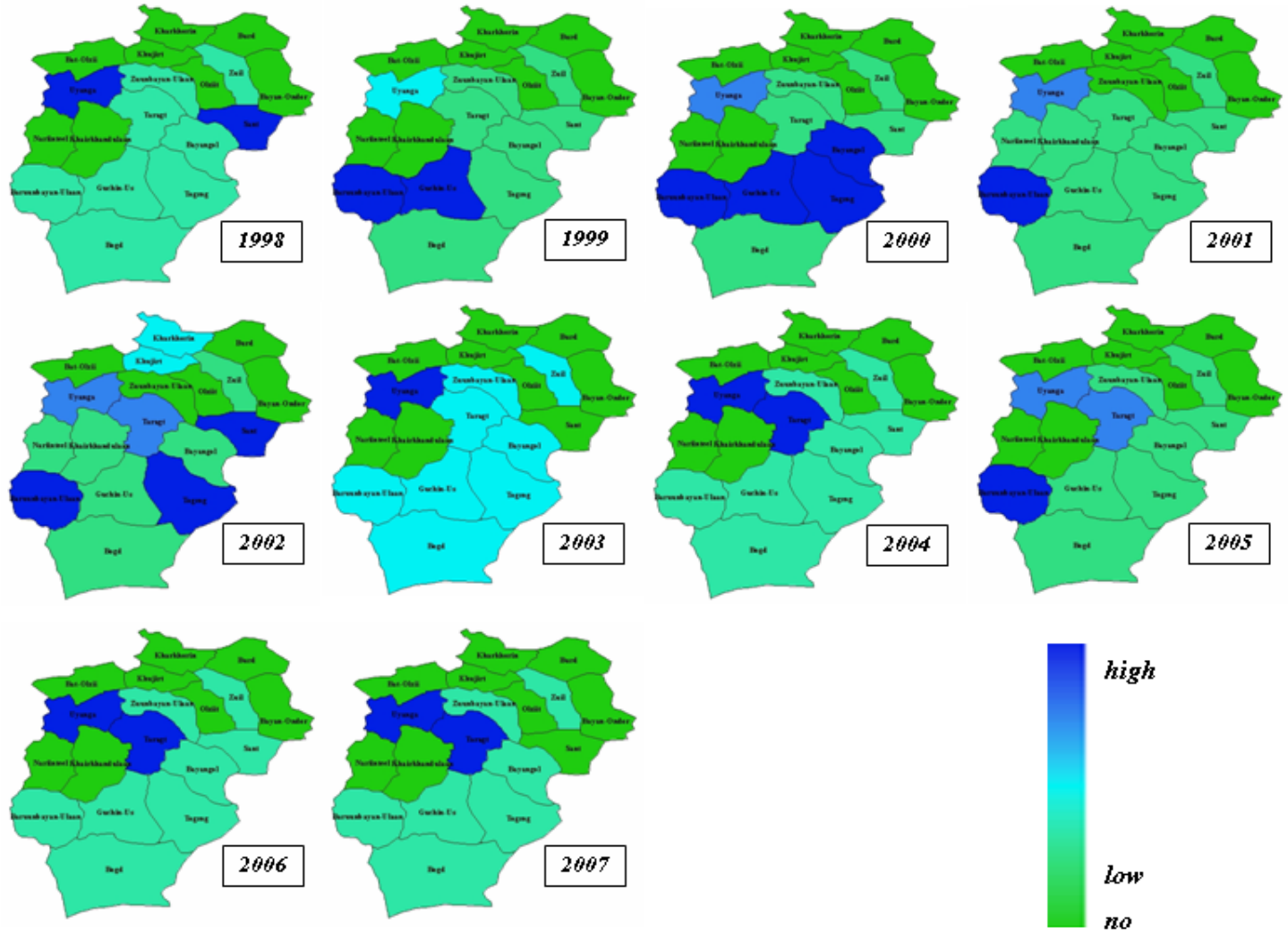
Output raster data set of the condition map

Data analyze



Change of vegetation using MSAVI2 index between years 1998-2007 in the study area

Results



Land degradation conditional statement maps


THANK YOU FOR YOUR ATTENTION