Changes in the area of Lake Urmia based on Landsat Image

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Short Report

Keywords: Lake Urmia, area, Landsat, Urmia Lake area

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Changes in the area of Lake Urmia based on Landsat Image

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Abstract:

Lake Urmia is an area with dimensions of 130 by 40 km and is one of the salt lakes in the world. This basin is a prominent example of a closed inland basin. Unfortunately, the water level of Lake Urmia has dropped significantly in recent years and has been widely increased in saline lands around. In this research, the study of changes in the area of Lake Urmia based on Landsat image has been studied. The time series of changing the area of Lake Urmia from 1984 to 2016 has a downward trend with a reduction rate of 727 km². Of course, after 2014, it has increased by several tens of kilometers.

Keywords: Lake Urmia, area, Landsat, Urmia Lake area

Introduction

Lake Urmia is a 130 by 40 km area and one of the saltiest lakes in the world. Lake Urmia is facing a serious threat of drought and unfortunately the water level of Lake Urmia has decreased significantly in recent years and significantly extensive saline lands around Lake Urmia have been added. The fauna and flora of the region are in danger and many of its islands and satellite wetlands are being destroyed [1-2].

In this research, the study of changes in the area of Lake Urmia based on Landsat image has been studied.

Results

If we look at the images of the Landsat satellite during 1984, the changes in the filled area also have a decreasing value over 32 years. According to these results, the beginning of the downward trend began around the year 2000 and before that it has

an almost constant area. Figure 1 shows a 1984 Landsat image of Lake Urmia. The estimated area for Lake Urmia is 24,994 km in 1984.

Figure 1 Lake Urmia Landsat satellite image of in 1984

Figure 2 shows the 2016 Landsat satellite image of Lake Urmia. The estimated area for Lake Urmia is 22894 km in 2016.

Figure 2 Lake Urmia Landsat satellite image in 2016

If we look at the time series of changing the area of Lake Urmia in 32 years in Figure 3, it has a downward trend with a reduction rate of 727 km². Of course, after 2014, it has an increase of several tens of kilometers, which is revealed in the chart.

Figure 3 Time series of changing the area of Lake Urmia in 32 years

Conclusion

Lake Urmia, as one of the largest lakes in Iran, is of great economic, social and environmental importance in the western provinces of the country. There are many freshwater and brackish satellite wetlands around it, many of which are of global importance for biodiversity. However, in recent years the lake has experienced severe water levels and gradual drying up, which has posed problems for the region, both nationally and internationally. The time series of changing the area of Lake Urmia from 1984 to 2016 has a downward trend with a reduction rate of 727 km². With deep learning, the area of the lake can be estimated [3-11].

Competing interests:

The authors declare no competing interests.

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Figures

Figure 1

Lake Urmia Landsat satellite image of in 1984

Figure 2

Lake Urmia Landsat satellite image in 2016

Figure 3

Time series of changing the area of Lake Urmia in 32 years