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Urmia Lakes, affected with the water level vacillations and critical increase the salt deserts, expectant of aid for again birth

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Urmia Lakes lies northwest of Iran and between the estern and the western azarbaijan province Urmia Lakes lies northwest of Iran and between the estern and the western azarbaijan province and the largest internal lake and to take into account the second salt water lake of world. Urmia Lakes indebted its formation to ancient faults revenue.Tectonic agent cause former formation lakes with gradual revenue in location of lake border mountains.This basin is one of value centers of agriculture and animal activities in Iran.National park of Urmia Lakes is the most value natural enviroment of animales after Anzaly lagoons in Iran.This province has semi–arid climate and its mean rainfall state is about 250 mm annually.Continuous and lengthy droughts in last years decreased the water level of Urmia Lake and cause saltiness of around agricultural land wells that treated for agricultural activities and natural enviroment of emigrant birds.In this research have been distinguished by using satellite images(ETM$^+$) , GIS and coastal geomorphology that Urmia lake has retreated in south of lake until 10 km to be extent that remains from 5700 km^2 area of lake only 2700km^2. The synoptic patterns show that most of the wind direction in the study region is south and south west so wind will carry out salts to the adjacent regions from the dried surface of lake. Urmia Lake drought causes the agricultural, social and health problems in the region.

Keywords: Urmia Lakes ; salt deserts; retreated; synoptic patterns

1.Introduction

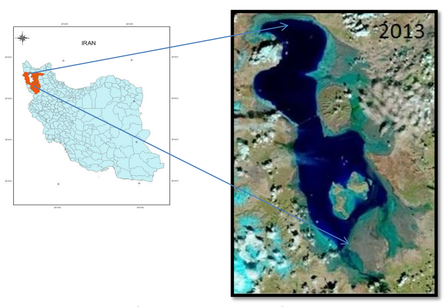
Uremia Lake is located in the northwest of Iran and it is the largest internal lake in Iran and the second salt lake in the world. It is located in 52-42 to 13-44 west longitude and 39-35 to 30-38 north latitude between East Azerbaijan and West Azerbaijan. In the past 15 years; it has been encountered with reduction of the precipitation and unplanned utilization of the surface and underground waters. Concerning to this fact by drying of the Uremia Lake islands the habitants of the some birds like pelican and flamenco will be jeopardized so that the number of immigrant birds will be reduced significantly. The average annual precipitation of this province is 250mm and it is considered as a semi arid area and since agricultural activities are done by dry farming in two third part of this province, so it depends on precipitation and the agriculture sector will be damaged in case of reduction of precipitation. Regression of Uremia Lake has led to salinity of the surrounding area wells and springs and it is considered as a thread for agriculture.Salt winds, local climate change and sever effects of these events influence on the agriculture and living of the area. These winds resulted from regression are serious problems for the province agriculture .In the recent years by severity of the effects of the regression in this lake, comprehensive and principle planning has been begun in all agricultural organization research and administrative sectors and different practical results have been gained .It can be referred to optimal utilization of water, leaving surplus water to the lake and prevention of agricultural activities in border of the lake that these conducts have been recommend by the authorities.

2.Morphology of Urmia lake

This Lake is tectonic lake from geology perspective .Urmia was formed due to old fault activities in the early of Quaternary period .The West-East fault in the south slope of Mishoodaq played an important role in this regard. This lake has been formed as a geological settled area due to Tabriz fault formation in the east and Urmia fault in west. Mishoodaq south slope morphology in the Quaternary period is result of these two factors and these factors have affected concurrently on this area. The first and important factor is tectonic that it has been caused to formation of Urmia Lake by gradual process in the location of the margin slopes. The second factor is the lake level oscillation as a result of climatic changes in glacier and inters glacier periods.

3.Drainage of Urmia Lakes

Urmia Lake Basin area is 51876 km2 involves %3 of the country total area(figure1). The length of the lake is 130-140 km and its width ranges between 15-58 km(between Zanbil mountain and Jazireh Isalmi). By covering plains such as Tabriz, Maragheh, Mahabad, Uremia, Miandoab, Nagadeh, Salmas, Piranshahr, Azarshahr and Oshnavieyeh, this basin is one of the valuable areas for agriculture and animal husbandry in Iran. Rivers Zarinehroud, Siminehroud, Talkheroud, Godar, Barandouz, Shahrchei, Nazluo and Zolachei are ended into Uremia (figure2). Urmia Lake basin is a closed mountainous basin without drainage to outside.The surface and underground flows of this basin are ended into this lake. Volcanic summits of Sabalan in the Northwest of the lake and Sahand in the east by maximum height of 4811 and 3707 meter from sea level are the highest points in this lake. Approximately, %65 of the basin area is mountainous and %42 is plain and %11 is lake.



Figuer1: map of iran and drainage of Urmia lakes

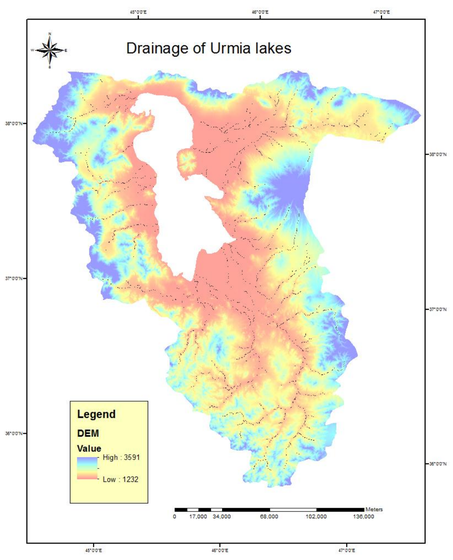


Figure 2: Drainage of Urmia Lakes

4.Causes of the Declines

Most experts refer to uncontrolled flows of surface waters in the catchment of the lake over the past decade as a major cause of life-threatening in the Uremia Lake. In recent years, it has been cleared that most dams have been built downstream in the area and have influenced most notable areas such as Uremia Lake. According to announcement of the Uremia Lake Zistboom Tabriz management with collaboration of World Bank it has been planned to initiate 29 reservoir dams ,11 deflection dams and 16 hydraulic and electricity projects conducted until end of 2020. The experts of the EPA suggest human made factors like unplanned construction of the dams construction of the dams as effective factors in drying of the lake and they believe that construction of the dams has controlled the flood flow and water flow is prevented into Urmia Lake.In 2010, the biggest regression was seen so that of 5700 m2 only 2700 m2 has been remained.(f.3)

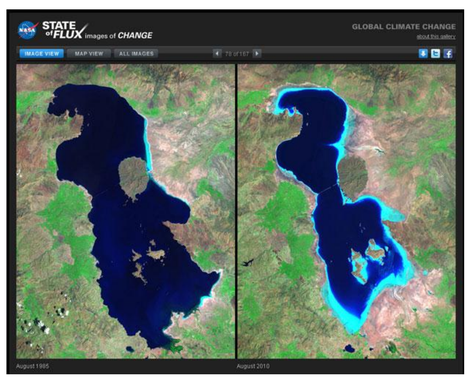


figure 3. Reduce the water level; especially in the southern and eastern areas that associated with formation the salt marsh areas(1985-2010).

5. Synoptic studies

To check the weather systems in the region 500 and 850 hPa synoptic maps were aligned .Analysis of synoptic maps (10 year timeframe) shows the low pressure systems associated with the intensive Mediterranean and Black Sea, the Azores and Siberian precipitation, lightning and wind. Deflation in the season is due to temperature change (changeof season) and the pressure gradient is increased(F. 4 - a) Most of the summer rainfall takes place in North West of Black Sea by low pressure. Black Sea and the Azores range between high pressures to low pressure when the air is stabled in the region where it is associated to the Siberian high pressure. Due to the temperature difference between the system and the wind there is often less severe wind (4 - b) .In the fall and winter low pressure wind is flow from Mediterranean and Black Sea, the Azores and Siberian followed by rain and snow (4 - c and d).

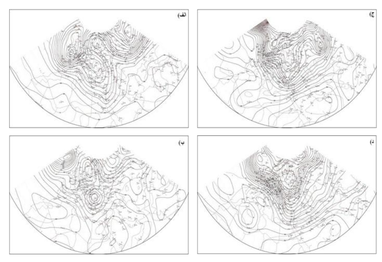


Figure 4: Map of geo-potential height level of 500 kPa Hk season) the Spring (17/04/2008) b) summer (26/07/2008 A) fall (11/09/2008) d) winter (03 / 3/2008)

6. The prevailing wind direction in the area

The dominant wind orientation zoning in Uremia Lake in the spring shows that in the west and south of the lake the wind direction is southwest and in north and east it is south and southwest, in summer, wind direction in the western and southern areas is the south to southwest and wind direction in the eastern regions is the east-southeast (Figure 5).Zoning of the prevailing wind in the fall shows the wind direction around the lake is the south and south west and it is south and southeast in Tabriz, Maragheh and Sahand. In the winter in areas of and west the wind direction is north and south to southwest and in and east and south east of the Lake it is east and southeast(F. 5).

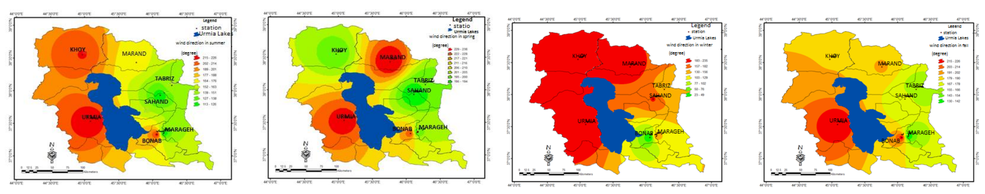


Figure5: The dominant wind orientation zoning in Urmia Lake in the spring, summer,fall and winter

7. Results

According to this fact that in Uremia Lake Basin and most of the rivers ended to this lake several dams have been constructed and some of them are under construction so the salinity of this lake has been increased and the experts believe that this level jeopardizes the lake and also the deserts resulted from the regression of the lake are dangerous that influence on the native life and other consequences. Regression of the lake water has increased salinity of the surrounding agricultural land and agricultural activities in its territory have been threatened. According to increase of the salt level most of the birds like flamingo has encountered with peril by sitting on the surface of the water.Reservoir dams instead of regulating the water level have led to difficulty due to utilization of the water in agricultural lands in the mountainous areas (Zarineroud,Hassanlou,Zayndehroud and Shahrchaei and etc) that indicate the problem. The results showed that the climatic variations of precipitation in the region are dominated by the drought. Long term and continuous doughtiness have led to reduction of the water level and salinity of the salt particularly in south and east parts. According to this fact that most of the climatic fronts are from west, so wind zoning maps indicate that in the Uremia Lake basin except the eastern basin of the east area (Sahand, Tabriz) the prevailing wind direction is southwest and south.

References

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