

General Attitude to the Impact of Climate Change on Water Resources Middle East (With Iran)

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Abstract

Close relationship between the hydrological cycle and climate system there. Water resources to reduce Middle East with regard to global climate change will be. Iran country and consequently Middle East in the semi arid region located in arid and water resources are limited. Runoff, river discharge, groundwater, flood and drought are all strongly influenced by rainfall, one of the most important elements are among climate, accommodation. In this paper, relying on staff information (IPCC) and obtaining information from relevant agencies to assess the effects of climate change on water resources, water crises in the Middle East and paid for Analytic Research enmity - are documents, the purpose of research, of climate change in recent years the Middle East and prevent the water crisis in Iran. Also provide part of the results of studies done on temperature and precipitation changes that indicated increased fluctuations in temperature and precipitation is in the country, the possible effects upset balance between the country's climatic and hydrological systems, including increased flooding due to rainfall and temperature, changes in water levels of lakes and above all competition between water needs will be referred.

Keywords: Climate change; Water resources; Middle East; Iran

Introduction

Climate change and wide fluctuations in the overall climate of a region that is now Earth's temperature warming trend as part of climate change are considered. Climate change is one of the biggest environmental challenges facing the world today. Rising world temperatures that weather patterns can change rising sea levels and changing weather on the eve of the consequences of climate change is causing non-uniformity be distributed rainfall affects on water resources. Water Resources of the Middle East issue is no exception and the lack of water supply in future will face consecutive droughts and the growing demand for water as well as the broad challenge of water scarcity in the region, especially Iran focuses on. According to estimates obtained the future of this region will be warmer and more arid and coastal countries like Qatar, Kuwait and exposed to the sun eclipse will be destroyed, World Bank. According to FAO in more than 80 percent of models to estimate climate change, precipitation in the region over 40 mm per year will be reduced [1]. Rain water resources by reducing the risk area will be met. (Figure 1) Location of Middle Eastern countries shows (Ipcc) report [2]. In moderate downside Joey 240 mm per year and this small amount, spatial distribution is very heterogeneous there so that 28 percent of the nationwide annual rainfall of less than 100 is mm. The annual 415 billion cubic descending in Iran, about 70 percent will evaporate. On the other hand, the world's average annual rainfall of 833 mm square, while the amount in some parts reaches to 50 mm.

Methods

A water shortage in the region and given Iran, according to the latitude where the study is important is clear. This study examines climate change and its impact on water resources in this region and Iran deals. Vulnerability of water resources and climate change sensitivity they against such challenges in recent year's scientists have been regarded Arnell [3]. The quantity and quality climate change affects water resources and the need to water industry, agriculture and drinking water affect makes. Due to rising average temperatures on Earth will increase evaporation and irrigation needs will increase. Often it is thought that the region has abundant water resources and has the

perfect climate and the consequences of climate change in this area will not be important or is negligible [4]. Although past water resources in the region into a variety of pressures and withdrawals have been excessive. Any changes in climate patterns that increase temperature and decrease in rainfall will increase existing problems. Changes in precipitation during the wet seasons and months October to April, the models of small changes in average precipitation also showed local areas. While the temperature increases in all seasons. Average summer temperatures have increased the region. Lateral regions of the Mediterranean such as Lebanon, Palestine, Syrian coast had the lowest loss (Figure2).

Results

In the region arid and semi arid areas have the greatest area and has very limited water resources, drought, desertification and lack of permanent water feature of most countries of the region. Changes in water resources and runoff in the future due to climate change is one of the important scenarios, some countries and programs to develop water resources are stored and even water for agricultural use and recycling are renewed again. Some countries than the current runoff and also reduce their water resources are vulnerable. Review of temperature trends in the period 1900 to 2000 statistics, especially rising temperatures in recent years shows that this increase has intensified in the past decade (Figure 3 and 4). Figure 4, shows that in the past decade with increasing temperature, there was a consistent decrease of precipitation.

The effects of climate change on water quantity and quality of Iran

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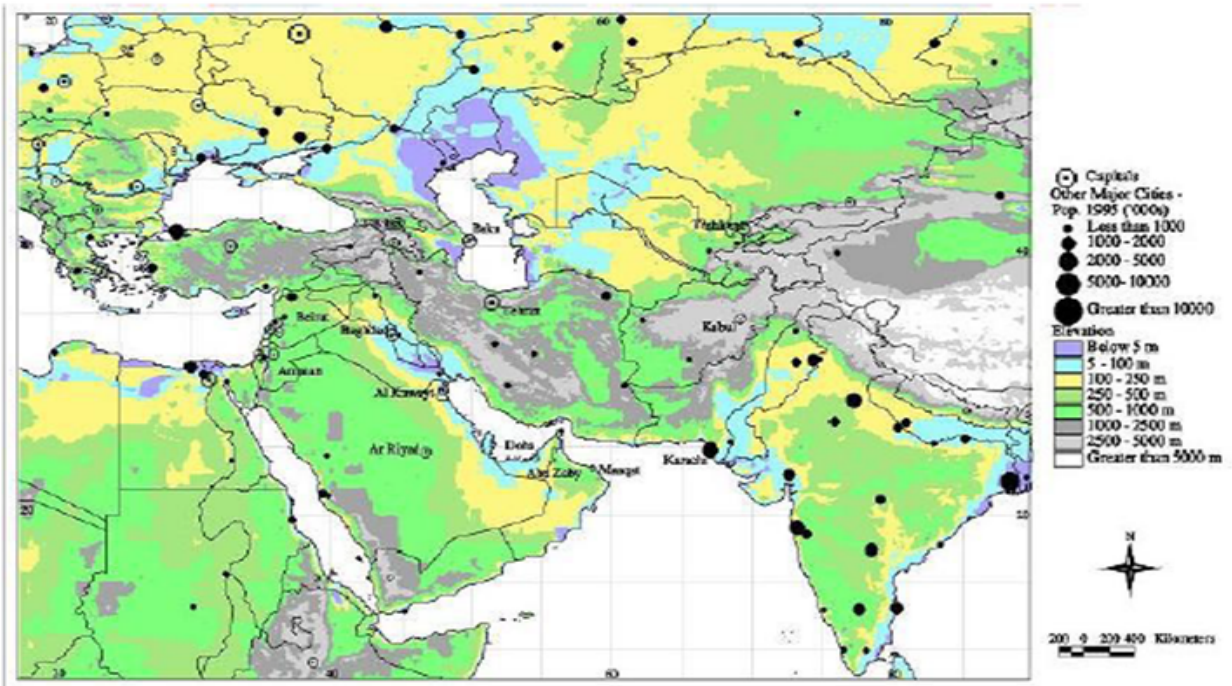


Figure1: Position topographic region.

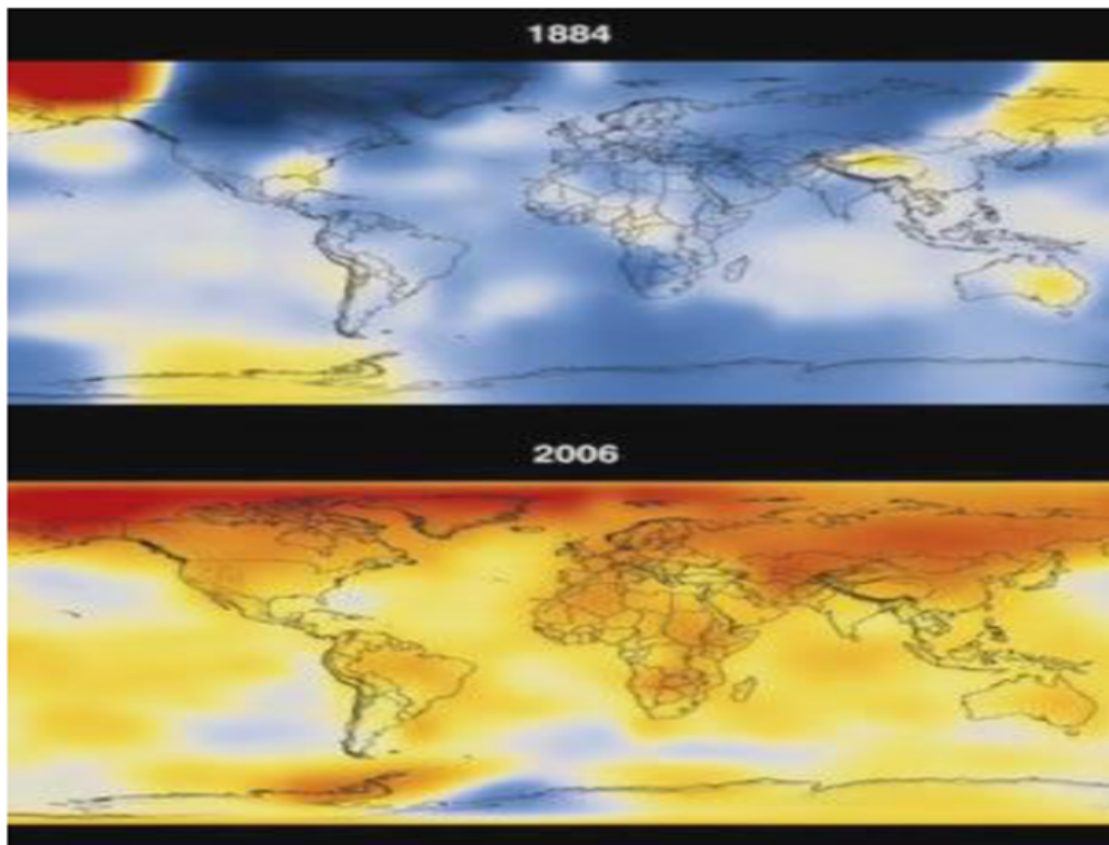


Figure 2: View the process of rising temperatures on Earth during the 22 years 1884 to 2006.

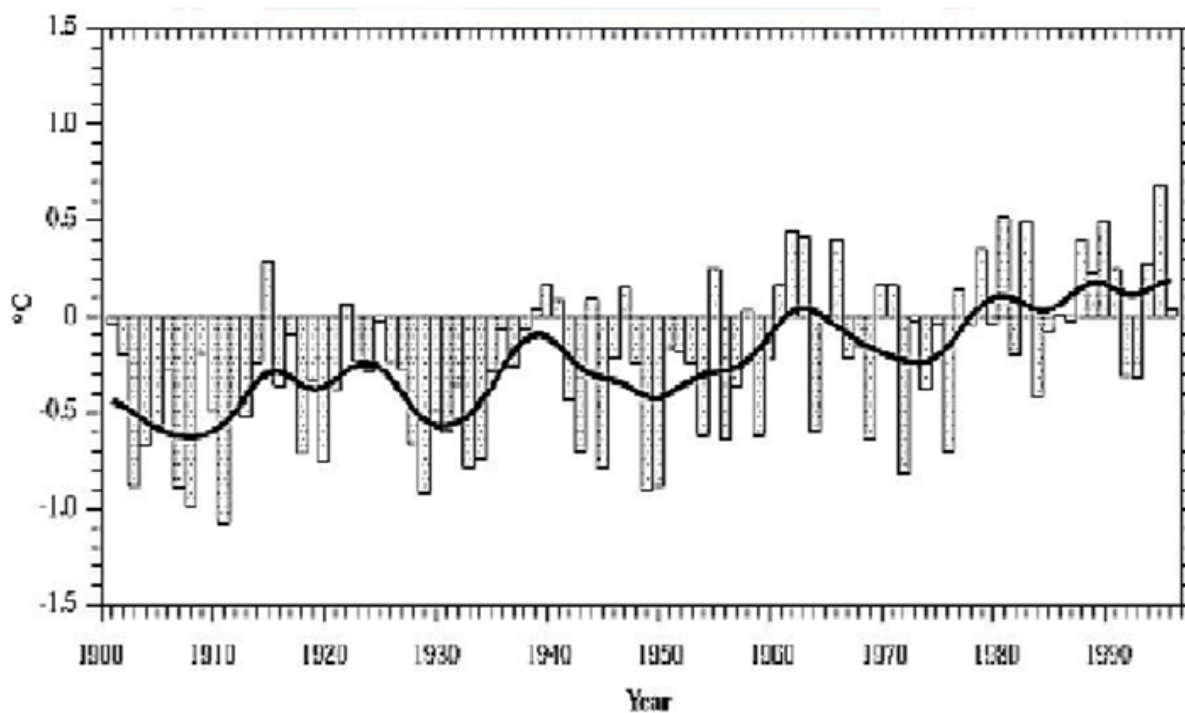


Figure 3: Temperature trends in the middle east (IPCC report, 2002).

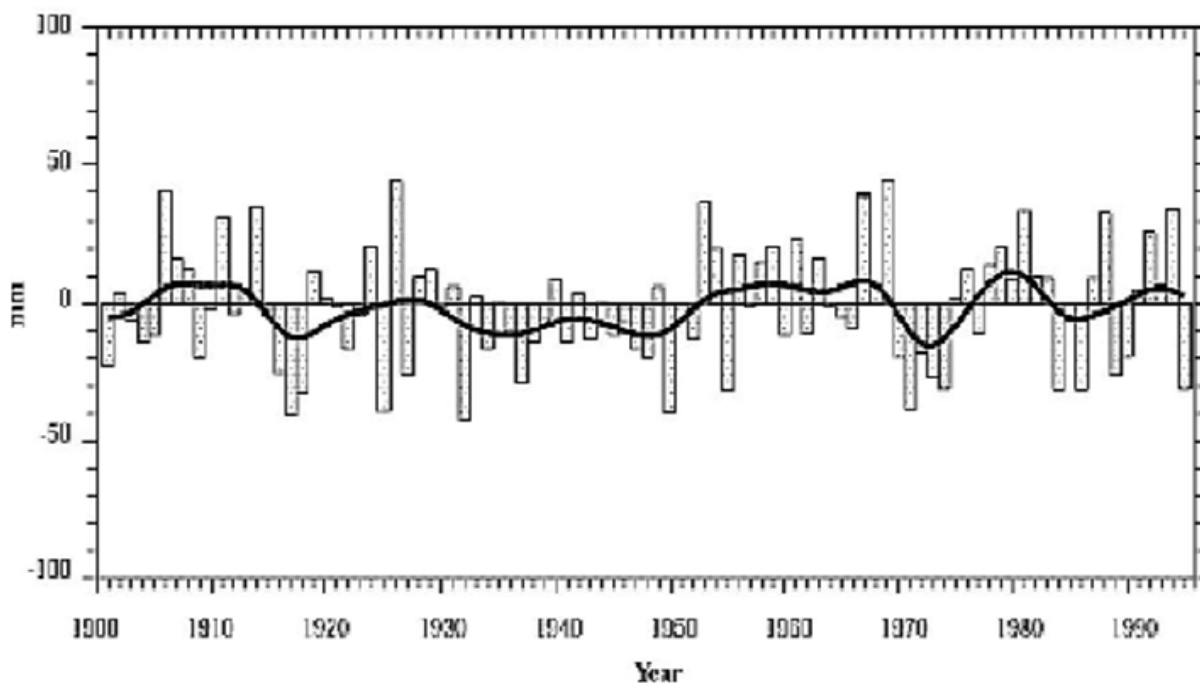


Figure 4: Rainfall trends in the Middle East (IPCC report, 2002).

average rainfall in the 400 billion cubic meters per year is 270 billion cubic meters and the evaporation of 130 billion cubic and transpiration the year as renewable water through surface water and 92 billion cubic ground water 35 billion cubic can be exploited. The average annual

rainfall of about 240 mm in Iran are mainly in the North West and West Country and landing puts much of East and South East countries less precipitation is 100 mm per year. Precipitation leads to the formation of these major rivers area. In Table 1, the average estimated 92 billion

Total	Billion meters	Watershed	Different regions of Iran
39485	39485	Zarine River	North West Country
39545	39544	White River	North Country
	1	Hazar	
285813	41426	Karun	South West and south Country
	39668	Dez	
	6	Karkheh	
	46844	total	
	39485	Zohreh	
	39483	Jarahi	
	39450	India	
	39450	Zayandehrood	
1	kour		
364843	364843	-	Total

Table 1: Geographical distribution of water in.

cubic meters of river around the country 3/47 billion cubic 51 percent in the 12 rivers that country is now 4/28 billion cubic Tuesday that 31 percent of the Karun River, and the dose is Karkheh. Accumulation of surface water in three areas south and south West, North West and North are (latent, 1386:2).

Water resources as one of the main pillars of its nature, always with the other components are in interaction. Driving force resulting from the hydrological cycle in solar energy and water changes forms in different environments, ocean, atmosphere, soil, vegetation, ice and glaciers will be the reports and articles made about the impact on climate change on water resources with hydrological and climate information, which has not been very impressive.

In general, increasing water temperatures require more expected. In addition, with increasing temperature a significant amount of snow and the rain becomes parallel to the time is earlier snowmelt and therefore the flow pattern will change in the winter. This phenomenon led to the temporary imbalances between water needs associated with water resources in some areas. Evapotranspiration can reduce the average flow rate of water which is effective. Using long-term relationship demartonne Statistics Survey evaporation stations has been studied. The results of this review shows, Station 68, climate change in recent decades have had adverse climate changes. The stations have 37% of precipitation in the coldest and warmest decades, based on long-term observations of water and weather in different regions. Data analysis proved that the amount of annual precipitation in the coldest decade of little more than this amount is the warmest decade.

This shows the need to adjust the intensity and pattern of flows by dams and reservoirs in the warmest period considerably increased. Statistics two stations pluviometer statistical history of over one hundred years were studied. The results show that the overall slope of the curve of precipitation down to eat and a five-year moving average shows the trend of reduced rainfall stations are mentioned.

In addition to global warming amounts of available water resources, water quality of rivers and lakes is also effective. Degrade water quality, treatment and healthy price increases making it. Most rivers rise in temperature directly increases the water temperature is. In rivers and lakes changes in temperature and amount of water storage, water quality impacts on the stem will, even if the water supply to reduce domestic consumption is compensated by the control. Qualitative changes water, especially reducing dissolved oxygen concentrations in streams and shallow rivers that even under the influence of climate change have been expected. Most rivers because of its property for

wastewater purification they are exploited. Reduce the flow rate combined with population growth leading to water quality will decline. Why can estimate its upper limit the movements to be discharged pollutants they are very important. Temperature changes in rivers and lakes can directly affect their water quality. Better conditions for growth temperature increased vermin, fungi and parasitic weeds create and consumption of pesticides raises, so that the toxic effect of soil washing into surface water and groundwater is increasing. Along with warming air and water, many species of freshwater fish and destruction set to collapse or possible migration to colder regions. Many of these phenomena will have on human food sources. Climate change causes changes in vegetation, changes albedo, evaporating surface roughness and changes in evaporation and changes in evaporation are and transpiration. Climate change in the form of streams, lakes affected with seasonal warming of surface air temperature rise through and increase wind speed, evaporation causes the surface of the lakes are. Results of studies on river floods show that global warming will lead to increased frequency of their show. The problems that today the world's water resources are faced with more complex, there is climate change. For example, the Middle East water resources in the not too distant future will change.

Conclusion

In the new century, many challenges to sustainable development of water resources is facing humans, most notably include:

1. Population growth increases demand for drinking water, development, food, health and other basic social and economic needs are, while water supplies are scarce.
2. Human activities every day more and more varied and more effective than in the past on the quantity and quality of natural resources pass.
3. water-related natural hazards such as floods and droughts (climate change) that human life is risky. Climate change and possible effects on the distribution of rainfall, runoff and underground water table is fed, so that you cannot assume that the future pattern of hydrological phenomena such as past [3]. A report in Nature that the Global Fund (wvf) published in 2006 F of the entire world wants to save water. The report also states that the rich countries are facing water shortages. Warnings about the water crisis caused by climate change can be said is that: is expected by 2025 over two thirds of the world's population will face water crisis. From the perspective of the World Water Council [5], now 25 countries in the Middle East crisis have water and about 1/5 billion people (about 20 percent of world population) are deprived of the blessings of safe drinking water and 2050 most countries are suffering from water crisis. Global warming has effects in that it can be so described below: climate change in the country because of the different dimensions Update floods, droughts, spread of diseases like malaria and eventually impact on agriculture and national economy may be introduced. Due to the sensitivity of water resources both politically and economically and socially capable, first, and then paid to this sea level rise, malaria, and scrutinize the impact on agriculture has been given. Should be noted that all the consequences of water shortages associated with each other and they cannot be separated, he said. According to available statistics from 1901 to 1997 the situation regarding Iran climate change rainfall

for northern areas, to reduce the rainfall is forecast [6-9]. Regime change in precipitation for the central region of the country's southern slopes of Alborz Persian Gulf to the contour between the eastern slopes of the Zagros to the central regime to the increase in rainfall precipitation is forecast. For two hypothetical strips from north to south countries in East and West changed little precipitation is observed. The lead layer in the region to the north of Azerbaijan and Ardebil provinces of Khorasan and precipitation regime change toward a relative increase in rainfall is forecast. However, review information and data on weather and gauging past decade indicate that a complex process in the climate system over the country on the verge of development, and evaporation rates in some areas, the amount, intensity and type of precipitation, snow melting time so much so that runoff and values has changed noticeably. What the recent atmospheric clarity about the loss occurred is that climate changes in winter and spring happens early in the winter snow melt and reduced spring flows appear to be superficial.

Climate change consequences result in the country can briefly be classified as follows:

1. Climate change, the water quality risks will face serious. Water quality, particularly surface water will be relegated and the amount of clean water can be extracted cassette.
2. Changed rainfall patterns, anomalies like the intensity, duration and amount of precipitation in different regions will produce.
3. Change to the influence of evaporation changes the ratio of surface and groundwater runoff rate of change in different areas are. Changes in the amount of early snow melt and snow resources and loss of snow storage in the reservoir water supply dams major role in determining the country will follow.
4. Change the time and place for distribution of snow and rain because regime change will discharge regions. 5 - Probably the

water level of the Caspian Sea and Persian Gulf will be subject to change.

5. Despite the above phenomena caused migration of people in general economic and social crisis will be.

Global Warming in confronting inside country policies should be adopted. Climate change and fluctuations in water level of the Caspian Sea and the Persian Gulf can be explained like this: Change the Caspian Sea water level has been partly based on evidence from year's 76-1375 coastlines facing the lake retreat. But the impact of global warming on water level fluctuations in the sea and it has not been well studied. The Persian Gulf, except for tidal fluctuations and the annual cycle of reliable information indicating that there is no impact on climate change. So is proposal project with the help of a GIS and global scenarios in mind....., to be done about the possible danger from rising water this area is clear. This project eventually led to a crisis management plan due to the possible risk of exposure to sea water will rise.

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