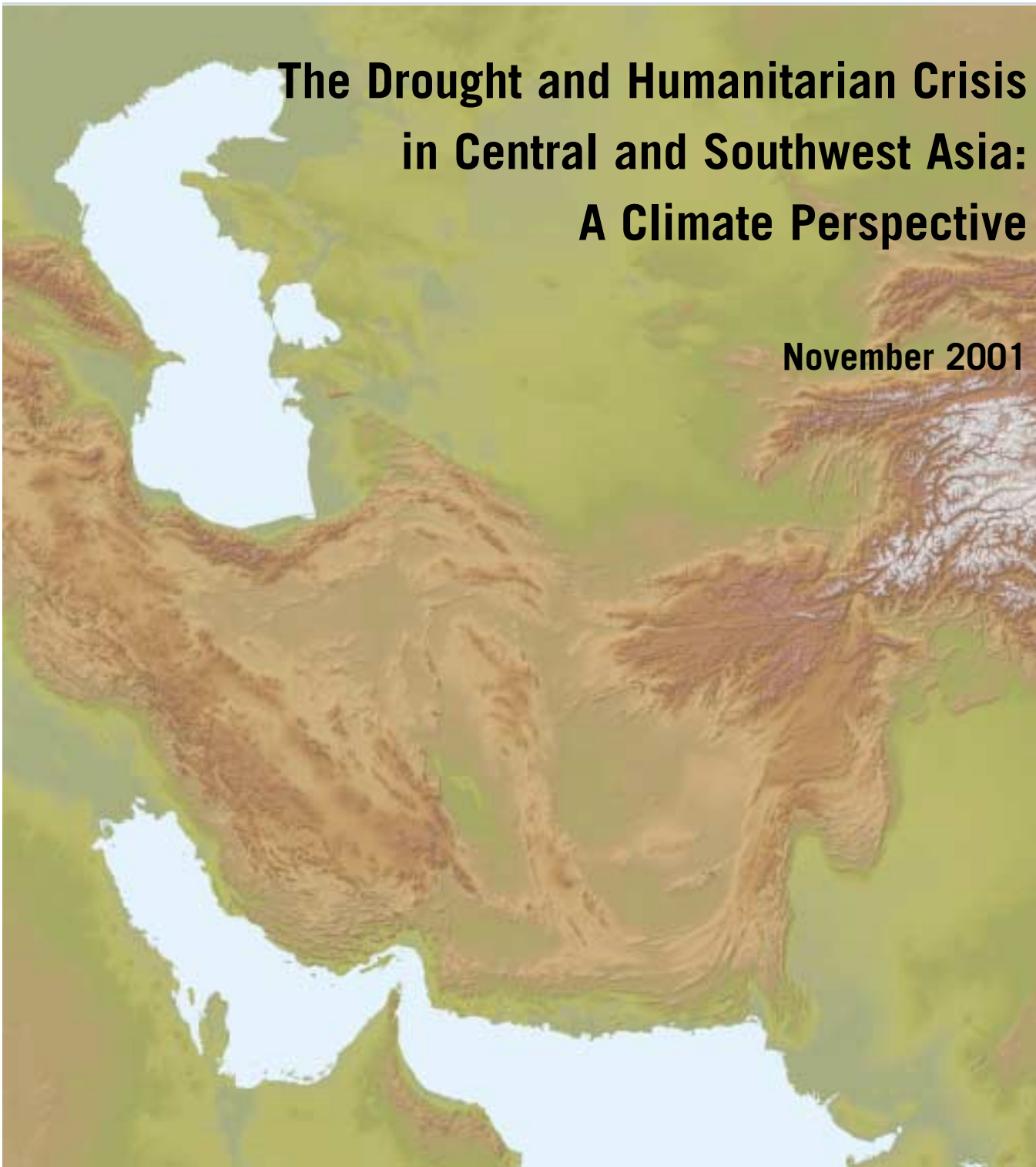


THE INTERNATIONAL RESEARCH INSTITUTE FOR CLIMATE PREDICTION
LINKING SCIENCE TO SOCIETY

IRI SPECIAL REPORT NO. 01-11

A topographic map of Central and Southwest Asia, showing the region's terrain in shades of brown and green. The map is centered on the region, with the Indian Ocean to the south and the Mediterranean Sea to the west. The title and date are overlaid on the map.

The Drought and Humanitarian Crisis in Central and Southwest Asia: A Climate Perspective

November 2001

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The Drought and Humanitarian Crisis in Central and Southwest Asia: A Climate Perspective

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FOREWORD

The vision for the IRI is that of a lively innovative science institution working to accelerate the abilities of societies worldwide to deal with climate fluctuations, especially those that cause devastating impacts on humans and the environment, and thereby reaping the benefit of decades of research on the El Niño Southern Oscillation phenomenon and other variations. IRI experts routinely provide guidance and leadership in training, regional climate outlook forums and numerous other outreach activities around the world to explore how specific regions or sectors might better understand and utilize climate prediction information.

Research on the severity of the drought in Central and Southwest Asia and possible mechanisms for it began at IRI in spring 2000. This Special Report is the product of collaboration between climate modeling, monitoring and impacts experts at the IRI. The target audience for this report includes national, regional and international policymakers, humanitarian relief agencies, members of the research community as well as others with a general interest in Central and Southwest Asia and the causes and consequences of the persistent drought in the region.



Antonio Divino Moura
Director General

Palisades, New York
November 2001

TABLE OF CONTENTS

FOREWORD	3
EXECUTIVE SUMMARY	4
1. OVERVIEW AND SOCIETAL IMPACTS OF THE DROUGHT	5
1.1 Iran	8
1.2 Afghanistan	8
1.3 Pakistan	9
1.4 Tajikistan	10
2. THE CLIMATE PERSPECTIVE	11
2.1 Precipitation Deficits	12
2.2 Relationship with Large Scale Climate Anomalies	13
2.3 Ongoing Research on Drought Mechanism	14
3. IRI SEASONAL CLIMATE FORECASTS FOR WINTER 2001-2002	16
3.1 Precipitation Forecast	16
3.2 Temperature Forecast	17
LOOKING FORWARD	19
References	20

EXECUTIVE SUMMARY

A persistent multi-year drought in Central and Southwest Asia has affected close to 60 million people as of November 2001. Chronic political instability in many parts of this region and the recent military action in Afghanistan have further complicated the situation. This report provides a climatic perspective on the severity and spatial extent of the ongoing drought and its social and economic impacts. The target audience for this report includes national, regional and international policymakers, humanitarian relief agencies, members of the research community as well as others with a general interest in Central and Southwest Asia and the causes and consequences of the persistent drought in the region. The report discusses underlying climatic mechanisms that might explain the causes for the persistent drought, and presents seasonal climate forecasts and their implications for the region.

The principal conclusions of this report are as follows:

- Central and Southwest Asia represents the largest region of persistent drought over the past three years anywhere in the world.
- From a regional perspective, the ongoing drought is the most severe in the past several decades. Significant shortfalls in precipitation have led to widespread social and economic impacts, particularly in Iran, Afghanistan, Western Pakistan, Tajikistan, Uzbekistan and Turkmenistan. Agriculture, animal husbandry, water resources, and public health have been particularly stressed throughout the region.
- Preliminary analysis suggests that the drought is related to large-scale variations in the climate across the Indian and Pacific Oceans, including the recent “La Niña” in the eastern Pacific.
- Current seasonal climate forecasting skill in Central and Southwest Asia is modest. IRI seasonal forecasts for the period November 2001-April 2002 are consequently for climatology or equal likelihood of above-, near-, or below-normal precipitation in the region. While not indicative of any pronounced trends, a climatology forecast is less dire than one indicating enhanced probabilities for below normal precipitation. IRI forecasts are produced monthly and are available at: http://iri.columbia.edu/climate/forecast/net_asmt/.

1. OVERVIEW AND SOCIETAL IMPACTS OF THE DROUGHT

As of November 2001 Central and Southwest Asia has been affected by a persistent multi-year drought. From a global perspective this drought represents the largest region of persistent precipitation deficits over the past three years (Figure 1). Up to 60 million people have been affected throughout the region, with Iran, Afghanistan, Western Pakistan, Tajikistan, Uzbekistan and Turkmenistan experiencing the most severe impacts (Figure 2). The effects of the drought are further exacerbated by political instability and economic isolation. Afghanistan is particularly vulnerable, having witnessed over two decades of civil strife that has been further complicated in recent weeks by the US-led military action against the Taliban.

The severity and persistence of the drought has led to a wide range of impacts across the region. In many areas there is widespread scarcity of potable water as well as depleted supplies for irrigation and sanitation. Agricultural production has been severely impacted, and there has been a significant reduction in livestock populations that are key to subsistence livelihoods. There has also been a rise in respiratory and sanitation-related diseases. Large population movements due to the combination of drought and civil instability have aggravated all these problems. The following summary of impacts in Iran, Afghanistan, Pakistan and Tajikistan is based on reports from national agencies and several international humanitarian and relief

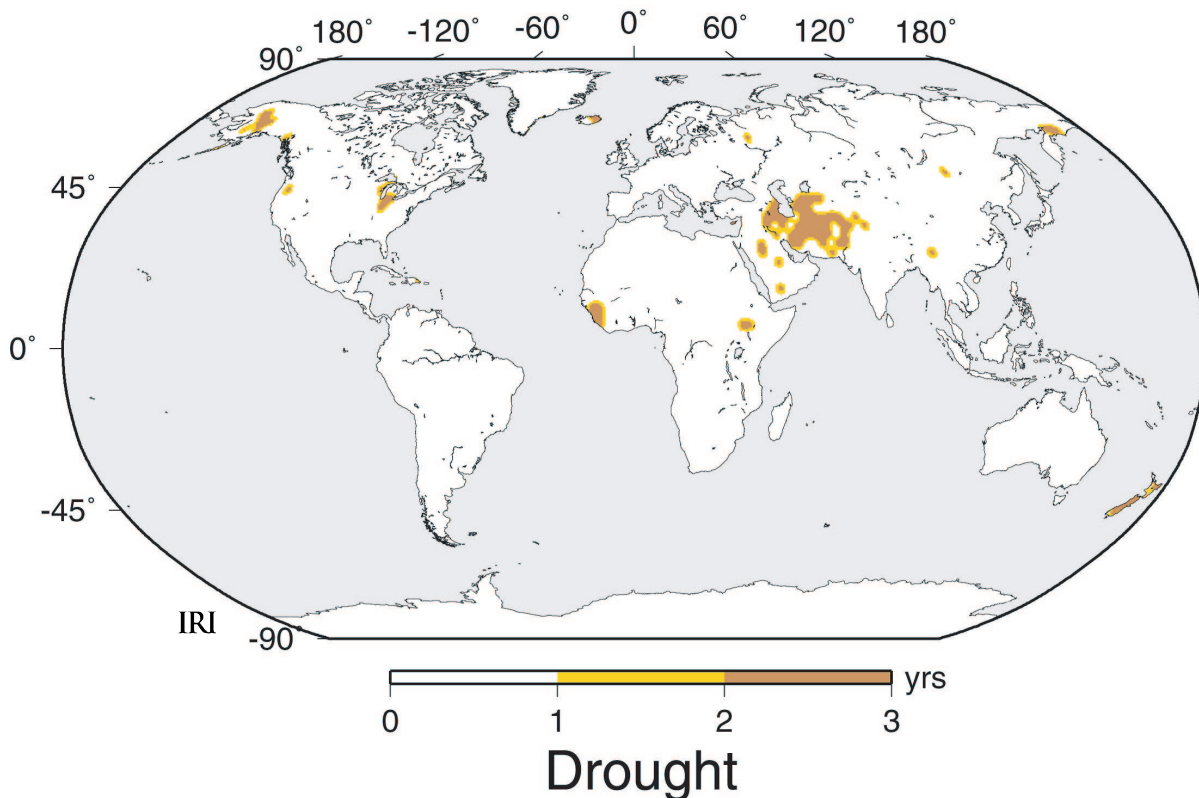


Figure 1. Prolonged Drought: A global perspective of the number of consecutive years (ending in 2001) with precipitation deficits in the lowest fifth of the historical record.

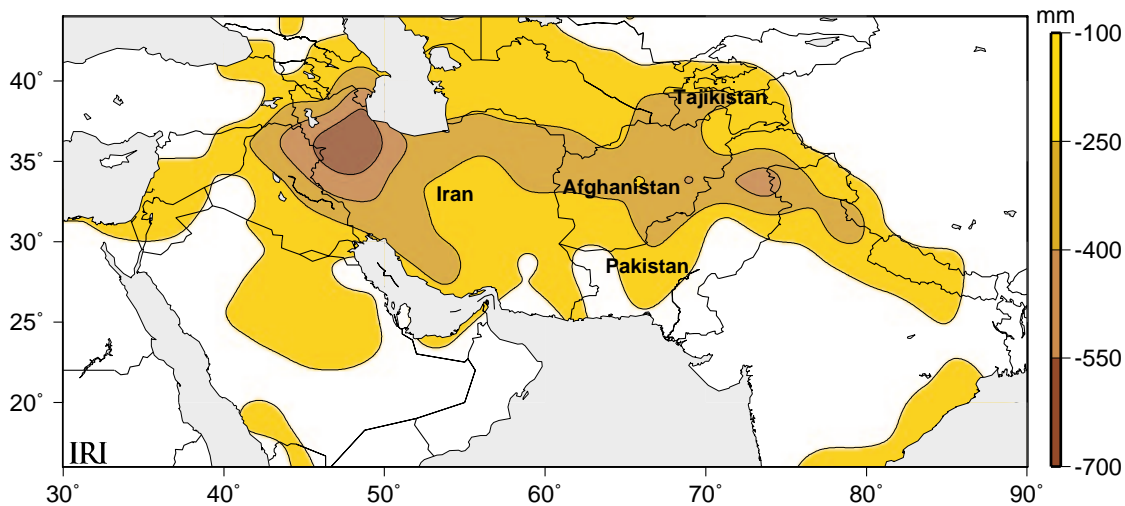


Figure 2. Regional Drought Situation: Deficit in precipitation totaled over 1998-2001.

organizations including Reliefweb/United Nations Office for Coordination of Human Affairs (OCHA), Food and Agricultural Organization (FAO), World Food Program (WFP), Department for International Development (DFID), and the United States Agency for International Development (USAID).

1.1 Iran

In Iran, the three-year drought has severely affected 10 of the country's 28 provinces, leaving an estimated 37 million (over half the country's population) vulnerable to food and water insecurity.¹ Twenty provinces have experienced precipitation shortfalls during winter and spring 2001. The most affected provinces are Fars, Keran, Khorasan and Sistan-va-Baluchistan in the southeast. According to the Ministry of the Interior, water reserves in the country were down by 45% in July 2001.²

In the agricultural sector, Iranian farmers have sold roughly 80% of their livestock, and an estimated 800,000 livestock were lost in 2000 as a result of the drought.³ An estimated 2.6 million hectares of irrigated lands and 4 million hectares of rain-fed agriculture have experienced the drought's impact, along with 1.1 million hectares of orchards growing almonds, apricots, mangoes, and other fruits.

Farmers are expecting 35-75% reductions in wheat and barley produce in 2001. The United Nations estimates the damages to agriculture and livestock at \$2.5 billion in 2001, up from \$1.7 billion in 2000.⁴

The extreme drought conditions have led to widespread migration. Iran must also contend with the swelling number of Afghan refugees who are seeking to escape drought and political instability. The lack of proper sanitation and clean water has contributed to the increased incidence of polio, along with cholera, diphtheria and typhoid. Among the refugee population, tuberculosis is prevalent.

1.2 Afghanistan

Roughly 12 million Afghans are affected by the ongoing drought, of which an estimated five million lack access to food and water.⁵ In particular, the northern provinces of Takplar, Balkh, Jowzjan, Faryab, and Badghis face extreme conditions, along with the western half of the country, including the provinces of Ghowr, Oruzgan, Farah, Nimruz, Ghazni, Paktika, Zabol, and Quandahar. Afghanistan also has close to one million internally displaced persons (IDPs) and several million more refugees (Figure 3).⁶

Adding to the humanitarian crisis, fewer than 25% of Afghans have access to clean water, and only 12% have access to sanitation.⁷ Rain-fed crops failed in 2001, and irrigated agricultural output was reduced due to lack of water and failure of infrastructure.⁸ In 2000, the cereal deficit exceeded 2.3 million tons, doubling the shortfall from previous years. Livestock heads have also been depleted by 40% since 1998⁹ and reports suggest that distress sales of livestock have increased. As of September 25, 2001, World Food Program food reserves were estimated to last just three weeks for the estimated 3.8 million in dire need of food aid.¹⁰ Drought conditions, coupled with the ongoing civil conflict and the US-led military action have driven hundreds of thousands of Afghans towards the borders with Iran, and particularly Pakistan.

1.3 Pakistan

Pakistan's four provinces - Baluchistan, Sindh, Punjab, and the North West Frontier Province -

have all been affected by the drought. An estimated 349,000 people, mostly farmers, pastoralists, and landless rural households have been impacted, mostly in Baluchistan.¹¹ Food insecurity threatens farmers both from shortfalls in agricultural production and from the loss of livestock. Numbers of affected livestock (through barrenness or loss) ranging from 40% to over 60% have been reported in Pakistan's four provinces. Plummeting prices and the need to use remaining livestock for food have all contributed to a bleak situation in parts of the provinces, most significantly in Punjab, where losses are estimated at 5.5 billion rupees¹² (approximately US \$90 million).

The drought situation in Pakistan has been further complicated by the significant influx of Afghan refugees over the last 5 years. Between September 2000 and January 2001 alone, an estimated 68,000 Afghan refugees crossed the border into the Northwest Frontier Province and Baluchistan.¹³ The refugee situation has created

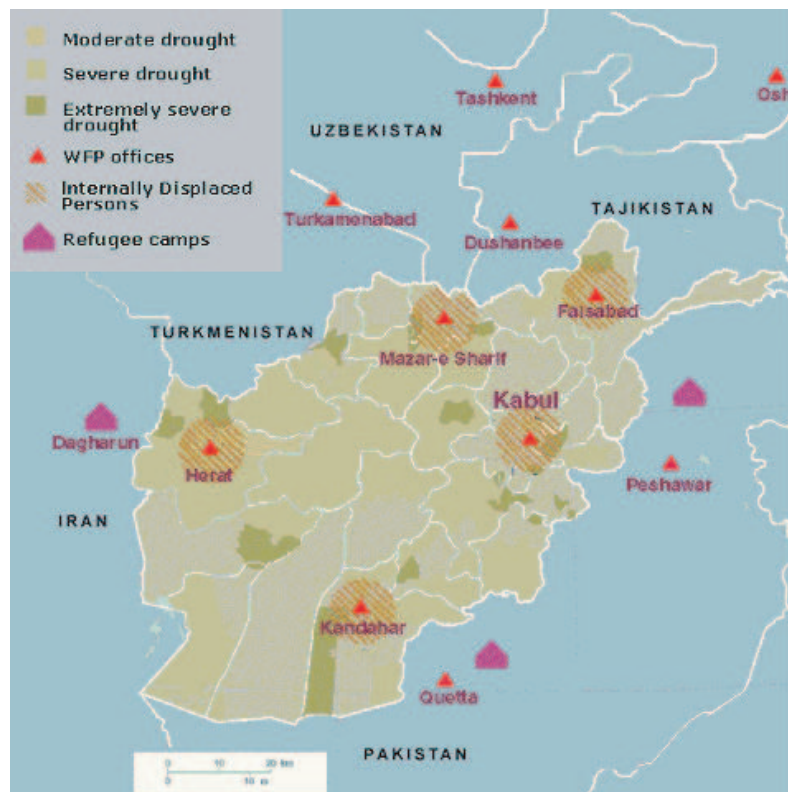


Figure 3. Afghanistan: Drought and Internally Displaced Persons (Source: World Food Program, October 2001).

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