



## *The Meteorological Effects of the Kuwait Oil Fires*

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### Abstract

Smoke from the Kuwait Oil Fires dominated the synoptic weather pattern throughout the Persian Gulf and surrounding region during 1991. The lower atmospheric wind flow parameters advected smoke along the eastern half of the Arabian Peninsula, and cities like Dhahran, Riyadh and Bahrain experienced days with smoke filled skies and carbon fallout. Atmospheric conditions for Dhahran Air Base and Riyadh Air Base, Kingdom of Saudi Arabia and Bahrain International Airport, Bahrain were examined from 1991 through 1994 to determine lasting meteorological effects. Over 105,000 surface weather observations were compiled into monthly summaries, graphed and statistically analyzed. The 1991 monthly summaries were compared against recorded climatology and data from 1992 through 1994. Differential smoke advection at all three sites led to significant temperature variations. Smoke from the Kuwait oil fires lowered mean maximum and mean temperatures at Dhahran and Riyadh during 1991. Cooler Persian Gulf temperatures caused by the oil spill into the gulf and oil fire smoke lowered mean maximum, mean and mean minimum at Bahrain during 1991. Although lower temperatures were recorded in 1991, Kuwait oil fires had no lasting meteorological impacts at any of the locations examined, and there has been no change to the seasonal synoptic weather patterns throughout the Persian Gulf Region.