# CASPIAN SEA JET STREAM CLOUDS

SSgt Walter D. Wilkerson (1)
United States Air Force
Air Force Global Weather Central
Contingency Support Branch

*ABSTRACT*

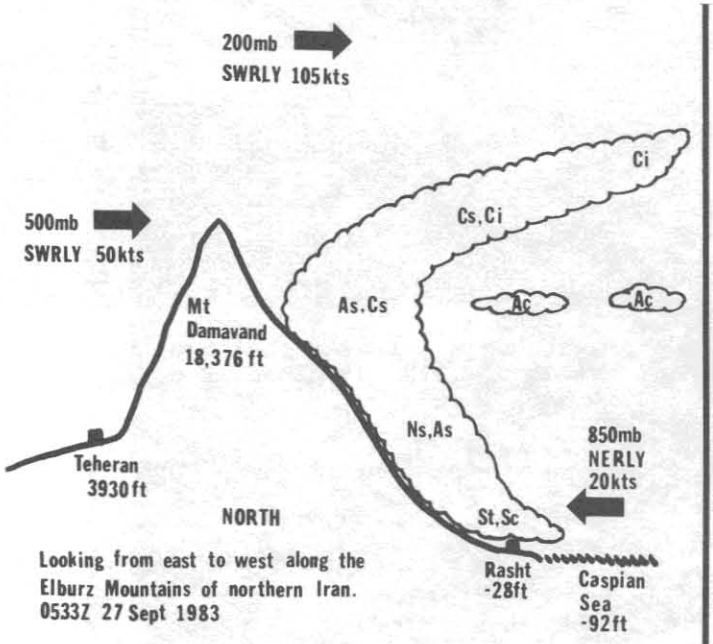
*Orographic lifting and adiabatic cooling can exhibit extreme capabilities in the development of clouds under proper synoptic conditions.*

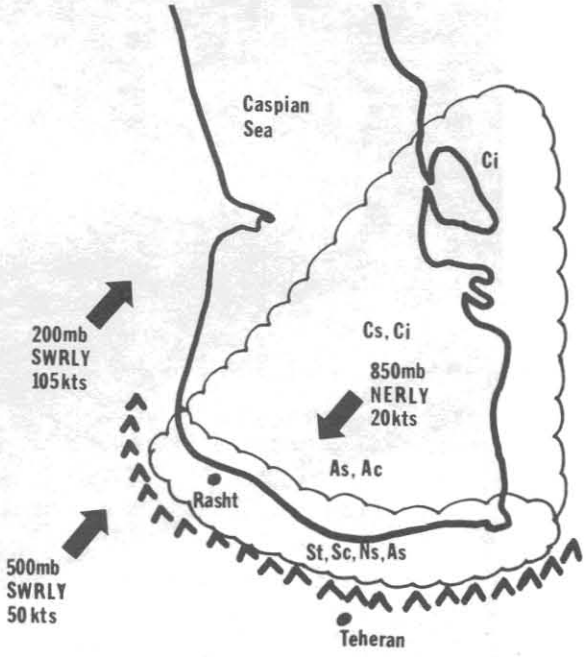
Across the northwestern portion of the United States, orographic lifting of maritime air masses along the western slopes of the Cascade Mountains results in a sharp contrast in precipitation amounts between Seattle and Spokane. The higher cloudiness associated with the weather systems usually will continue to move east, unrestricted by the mountains.

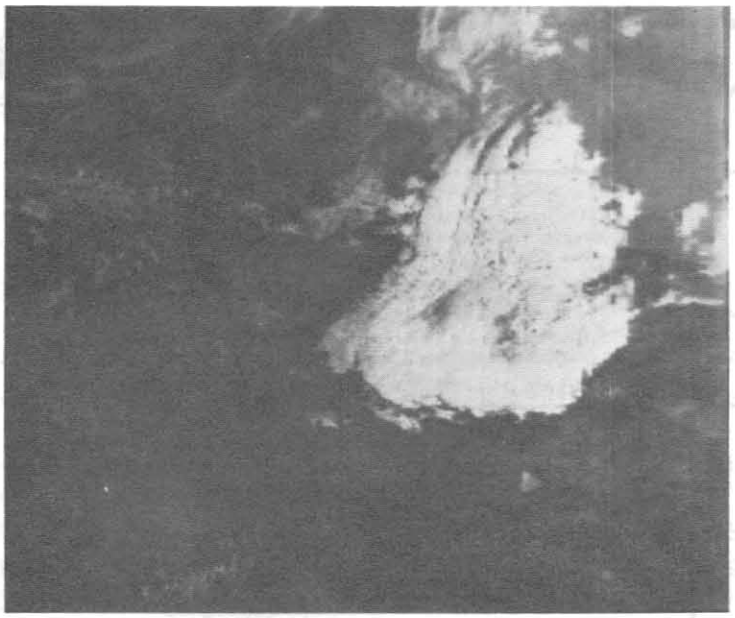
A similar situation occurs over the Elburz Mountains of Northern Iran. The cool, stable continental air flows across the water of the Caspian Sea, increasing the air mass' moisture content. As the moisture laden air moves on shore into Iran, an immediate increase in elevation results in the formation of a deck of low clouds, predominantly stratus (ST) and stratocumulus (SC). As the northeasterly flow at 850mb (5000 feet) continues, the moist air continues to rise, causing an area of nimbostratus (not cumulonimbus since the air is stable) with continuous light rain, drizzle or snow.

On September 27, 1983, a strong southwesterly jet maximum moving across the Elburz Mountains continued the lifting, as the jet max moved from a hot, dry continental climate. The moisture continued to rise along this pseudo-cold front and the jet stream advected the moisture toward the north east as a band of jet stream high clouds (cirrus or cirrostratus).

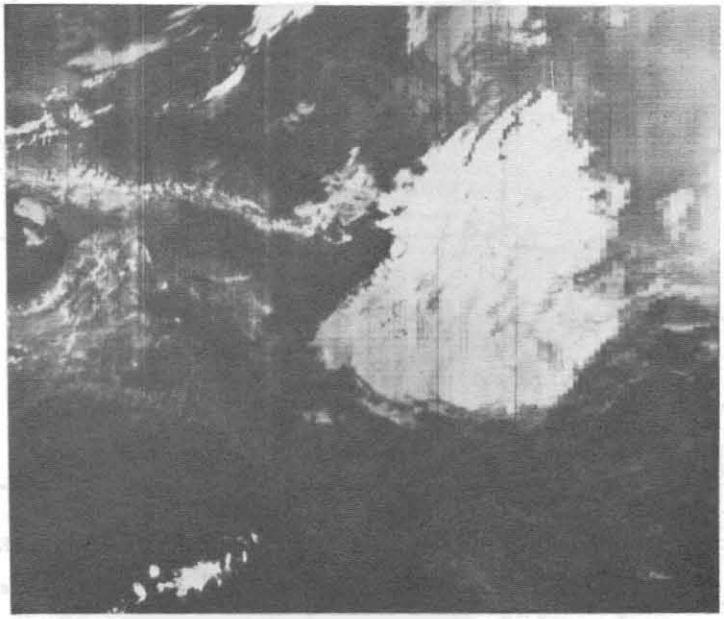
Thus, surface moisture from the Caspian Sea has been lifted about four miles with the help of the mountains, to become jet stream cirrus.





NOAA8 Descending visual photograph Rev 2595 R+5 27 Sep 1983 0522Z Nodal crossing 33.02E Channel 2



NOAA8 Descending infrared photograph Rev 2595 R+5 27 Sep 1983 0522Z Nodal crossing 33.02E Channel 4

*FOOTNOTES*

*1. SSgt. Walter D. Wilkerson joined the Air Force in August 1973. He has observed the weather in New Mexico and in England. He worked as a tropical forecaster from 1980-1981, using satellite data to obtain Dvorak tropical storm fixes. He became a Contingency Support Forecaster in December 1981, providing worldwide weather support. SSgt. Wilkerson is a senior at the University of Nebraska, Omaha, working for a degree in Geography.*