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AAINews

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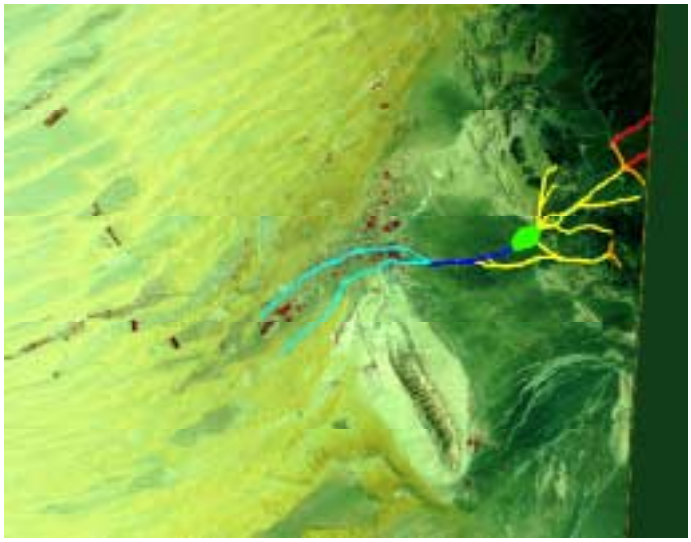
How wadis in Al Ain are formed



Many bridges can be seen in Al Ain, an inland city of the United Arab Emirates. There is no permanent flow under the bridges, just barren land comparatively well-endowed with plant life. Only after heavy rainfalls does water fill these dry river beds, which are known by local people as "wadi". Wadis are mainly seen in and around mountain areas, because it is in the mountains that heavy rainfalls create flash floods that rush downhill scouring out watercourses. No matter how much rain falls in the middle of large deserts, all water is swiftly and steadily absorbed into the sands. No flash floods occur here to wipe away the dunes. So, why are there bridges, some as long as 70 m, in Al Ain? After all, Al Ain is some 40 km away from the nearest mountain areas.

Broadly speaking wadis fall into two categories - there are the wadis that occur in mountain areas and then in downstream areas there are the wadis that occur in alluvial fans. In mountain areas, if there is a large amount of rainfall, even in a very small area, wadis are very prone to flash floods (refer to the red lines in the picture). In many cases, the water flowing in mountain wadis is absorbed into the wadi beds before reaching alluvial fans, and, comparatively speaking, it is rare for wadis in alluvial fans to bear any water. However, if a certain amount of rainfall prevails over large areas, by the time the wadi beds in the alluvial fans become waterlogged, the rainwater that fell in the mountains races down through the alluvial fans (see orange line in the picture). Reaching the alluvial fans, some wadis join together and water flow increases until it reaches the top of alluvial fans (see yellow line). There are various water sources for the wadis that run through Al Ain but all flows join at a point some 20 km away from the town , where a lake is swiftly formed (green patch on picture). From the lake, the muddy water flows, at speed, into Al Ain (light blue line on picture). In the case of the flash flood that occurred on March 11, 1996, for example, the rainfall that started some time that day had already filled the wadis indicated by the red, orange and yellow lines in the picture by 8am. By 12am, the green patch in the picture was already inundated. Furthermore, by 3pm, the flow reached the entrance of Al Ain (as shown in joining point of the blue and light blue lines). The water flow continued until next morning, and the total length of the flow from sources in the mountains to the point where the water finally disappeared into the dunes amounted to roughly 70km.

The annual rainfall of Al Ain averages between 50 and 100mm. This winter, however, precipitation reached levels of 180mm. Although there is no accurate data on the amount of rainfall in mountain areas since these areas fall under the jurisdiction of the neighbouring state of Oman, it is estimated that rainfall in these areas may have approached 400mm. Because of the year's rainfall, the underground water table of Al Ain continued to rise until August. The last time the wadis of Al Ain carried water was in 1988. Such an event apparently occurs once in a decade. For people living in the area, rain is perceived as a blessing from the heavens. Despite the dramatic transformation of local peoples lives that has occurred as a result of oil money this feeling has not changed. However, foreign residents, who account for a large percentage of the population in this country, seem to be less impressed with the blessings of the heavens and more concerned about the paralysis of metropolitan functions that such blessings cause. (Reported by Abe in UAE)