

论文

巴丹吉林沙漠高大沙山区沙层含水量与水分来源探讨

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摘要:

为了查明巴丹吉林沙漠高大沙山区沙层含水量、水分来源等问题,于2009年5月大沙山区进行了15个5 m深钻孔的采样研究。结果表明,巴丹吉林沙漠高大沙山区干沙层分布深度比降水较多地区干沙层分布深度大,湿沙层含水量比降水多的地区低,指示该区的湿沙层含水量一般小于2%是当地气候条件下的正常现象。该区沙层水分主要以薄膜水的形式存在,并具有向下运移的特点,表明完全有可能成为湖水和地下水的来源之一。高大沙山区沙层含水量空间差异明显,洼地含水量最高与平地含水量较高,是大气降水向地下入渗的渠道。高大沙山区厚度小的干沙层的存在表明该区沙层水分受蒸发作用影响深度小,这能够有力促进大气降水通过入渗转化为地下水,这是在极端干旱气候条件下大气降水有可能入渗到达地下水位并成为湖水来源的主要原因。该区水分具有正平衡的显示,这是沙层水分入渗快和受蒸发作用影响深度小造成的,属于沙层水理性质决定的水分正平衡。

关键词: 巴丹吉林高大沙山 沙层含水量 水分来源 水分运移 水分存在形式 水分平衡

Moisture Content of Sand Layer and Its Origin in a Mega-dune Area in the Badain Jaran Desert

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Abstract:

In order to identify sand moisture of the mega-dune area and water sources in the mega-dune formation in Badain Jaran Desert, a sampling study on 15 boreholes with a depth of 5 m belonging to a 1610 m mega-dune located in the east of Nuotetu with the largest height difference was conducted in May 2009. The results showed that, the depth of distribution of dry sand layer of mega-dune area in Badain Jaran Desert is deeper than that of the distribution of dry sand layer depth of the precipitation areas. Moisture of wet sand layer is lower than that of the area with more precipitation, which indicates that it is a normal phenomenon in the area that the moisture content of wet sand layer under the local climate conditions is less than 2%. Sand layer of water in Nuotetu mainly exists in the form of thin film of water. With the thin film of water down the process of infiltration, some gravity water appears changed by thin film of water. This shows that moisture in mega-dune area may be one of the sources of the lake and groundwater. Spatial differences of sand moisture in mega-dune area are significant. The high moisture is in low-lying land and flat, which is beneficial to the precipitation infiltration. Especially the existence of thin dry sand layers showed that the effect depth of evaporation on sand moisture was very small, and can effectively promote the atmospheric precipitation transforming into groundwater through infiltration, which is the reason for infiltration of precipitation to reach groundwater level and become the import source of lake water in extreme drought conditions. Moisture in the area has a positive balance of the display, which is caused by a quick sand moisture infiltration and the effect depth of evaporation was very small. This phenomenon belongs to the positive equilibrium of moisture which is decided by the attribute conditions of sand moisture.

Keywords: mega-dune in the Badain Jaran Desert sand layer moisture content water source moisture migration existent forms of moisture moisture balance

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