

孙晓旭,陈建生,史公勋,谭红兵,刘晓艳,苏治国.蒸发与降水入渗过程中不同水体氢氧同位素变化规律[J].农业工程学报,2012,28(4):100-105

### 蒸发与降水入渗过程中不同水体氢氧同位素变化规律

## Hydrogen and oxygen isotopic variations of different water bodies in evaporation and rainfall infiltration processes

投稿时间: 2011-05-05 最后修改时间: 2011-10-17

中文关键词: [同位素](#), [土壤水](#), [蒸发](#), [入渗](#), [氢](#), [氧](#), [瑞利分馏](#)

英文关键词: [isotopes](#) [soil moisture](#) [evaporation](#) [infiltration](#) [hydrogen](#) [oxygen](#) [Rayleigh fractionation](#)

基金项目:国家自然科学基金资助项目(项目编号50809024, 41073034)

作者	单位
<a href="#">孙晓旭</a>	<a href="#">1. 河海大学水利水电学院, 南京 210098</a>
<a href="#">陈建生</a>	<a href="#">2. 河海大学地球科学与工程学院, 南京 210098</a>
<a href="#">史公勋</a>	<a href="#">3. 中建八局第三建设有限公司, 210046</a>
<a href="#">谭红兵</a>	<a href="#">2. 河海大学地球科学与工程学院, 南京 210098</a>
<a href="#">刘晓艳</a>	<a href="#">2. 河海大学地球科学与工程学院, 南京 210098</a>
<a href="#">苏治国</a>	<a href="#">2. 河海大学地球科学与工程学院, 南京 210098</a>

摘要点击次数: **260**

全文下载次数: **112**

中文摘要:

为了研究土壤水蒸发与降水入渗非饱和和带过程中不同水体氢氧同位素的变化规律, 该文选用2种不同性质的土壤-砂土和黄土, 设计了土壤水蒸发和降水入渗室内试验。结果表明: 对于砂土, 土壤水蒸发过程中剩余水体氢氧同位素分馏遵从瑞利模式; 对于黄土, 随着蒸发时间的延长, 剩余土壤水氢氧同位素值越来越远离瑞利分馏关系线; 在降水入渗非饱和和带的初期, 相对于风干砂土, 风干的黄土颗粒对土柱出流水的氢氧同位素值产生了影响, 并且出流水的氢氧同位素亦受到土壤原水同位素值的影响, 只有入渗的降水达到了一定数量, 土柱出流水才能与降水的同位素值相同。该研究可为运用氢氧同位素研究降水能否通过非饱和和带补给地下水提供数据分析的依据。

英文摘要:

In order to study the isotopic variations of different water bodies in soil water evaporation and rainfall infiltration processes, two different soils-sand and loess were chosen and two indoor experiments were designed. The analysis of and values showed that the isotope fractionation of soil water obeyed the Rayleigh model in the process of water evaporation for sand. But for the loess, the isotopic compositions of the residual soil water were away from the Rayleigh line along with the increasing of evaporation time. In the early stage of rainfall infiltration, the isotopes of outflows were affected by the air dry loess grain, which was different from the air dry sand. And the values of outflows were also affected by isotopes of the initial soil water. Only when the infiltration amount reached a certain one, the outflow could represent the isotopic composition of rainfall. The results of this study can provide data analysis basis of relationship between local rainfall and groundwater based on isotopic variations.

[查看全文](#) [下载PDF阅读器](#)

关闭

您是第**5184090**位访问者

主办单位: 单位地址: 北京朝阳区麦子店街41号

服务热线: 010-65929451 传真: 010-65929451 邮编: 100125 Email: [tcsae@tcsae.org](mailto:tcsae@tcsae.org)  
本系统由北京勤云科技发展有限公司设计