

专论与综述

## 荒漠区植被对地下水埋深响应研究进展

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**摘要** 荒漠区植被包括以旱生植物为主的荒漠植被和以中生植物为主的荒漠河岸林。综述了荒漠区植被对地下水埋深在个体、种群、群落以及斑块尺度上响应的研究成果, 指出: 荒漠区植物对地下水埋深的响应并不是简单的线性关系, 而是植物适应气候、土壤、地下水等环境因素综合作用的结果, 应在地下水与植被达到平衡态的基础上充分考虑生境土壤异质性、植被可塑性并采用长期定位和控制试验相结合的方法进行综合研究。强调在今后的研究中, 加强同位素示踪技术和高光谱遥感技术的应用, 开展植物水力提升及其机理研究; 加强荒漠区植被对地下水响应机理研究特别是微观尺度(分子水平)和响应过程长期定位研究; 重视植被响应地下水位波动和水质变化的研究; 强化在景观尺度和生态系统尺度集成研究, 以便为管理包括地下水在内的荒漠生态系统提供依据。

**关键词** [荒漠区植被](#); [地下水埋深](#); [尺度](#); [响应](#)

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## Recent advances in desert vegetation response to groundwater table changes

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**Abstract** The aim of this paper is to review studies to evaluate how desert vegetation (including xerophytes growing in dry habitats and mesophytes constituting desert riparian forest) response to groundwater table changes at different scales (i.e. individual scale, population scale, community scale and patch scale). Results collected in this study show that desert vegetation response to groundwater table changes in a significant nonlinear way as a result of plant adaptation to the environmental factors such as climate, soil, and groundwater. Based on the review, it is pointed out that: soil heterogeneity and plant plasticity on the basis of the balance between groundwater and plant, and the combination of long-term monitoring with controlled experiments should be taken into consideration in the future researches; applications of isotopic trace technology and Hyperspectral-Remote-sensing technology should be enhanced to promote related researches in the future; plant hydraulic lift at the individual, community and ecosystem level, phenotypic plasticity and adaptive value of plant responding to the changing water quality as well as to the groundwater table fluctuations deserve more scientific attention; the responses of desert vegetation to groundwater table at a microcosmic scale (molecule scale) and mechanisms provoking this kind of responses should be further studied; and integrated research at landscape scale and ecosystem scale, which served to provide basis for inland river basin management, also should be furthered.

**Key words** [desert](#) [vegetation](#) [groundwater](#) [table](#) [scale](#) [responses](#)

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