

An Zhisheng, Institute of Earth Environment, Chinese Academy of Sciences

In his fifty years of cultivation in Earth Science, An Zhisheng broke through the traditional global glacial-interglacial cycle theory by proposing the East Asian monsoon control theory and Asian monsoon evolution dynamics through combined studies of field observation, laboratory analysis and numerical simulation based on the Chinese loess and other bio-geological records. His finding has successfully solved the Asian environmental changes mystery and has been recognized by international scientific community. By pointing out that the current monsoon and arid zones in China are the outcomes of long-term coupling evolution of monsoon-arid environment system, and that ecological rehabilitation should be based on the principle of natural restoration, he has provided with scientific and technological support for the eco-environmental improvement in west China, particularly on Chinese Loess Plateau. He has pioneered the new field of integrated studies of Quaternary geology and global change, and his findings have contributed to the development of Earth System Science and to the policy formulation of the sustainable strategy in China.



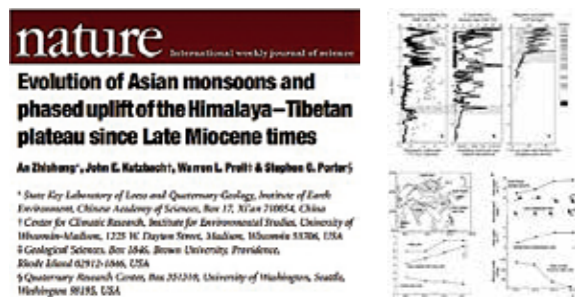
安芷生
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获奖个人所在单位：中国科学院地球环境研究所

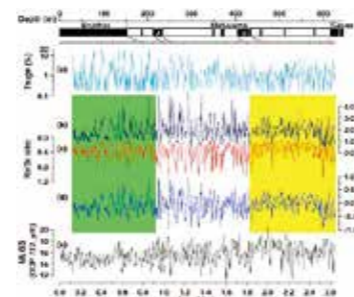
主要科技贡献：

安芷生从事地球科学研究 50 余年，他基于中国黄土和其它生物地质记录的野外观测和大陆环境科学钻探的研究，将野外观测、实验分析和数值模拟相结合，突破经典全球冰期-间冰期理论，提出东亚环境变化的季风控制论和亚洲季风变迁的动力学，解析了亚洲环境变化的机理，得到国际认可。他指出我国季风区和干旱区现今自然环境是亚洲季风-干旱环境系统长期耦合演化的结果，生态环境修复应遵循自然演变的规律，为我国西部，特别是黄土高原生态环境治理提供了科技支撑。上述成就开拓了第四纪地质学与全球变化研究相融合的新领域，为地球系统科学的发展和可持续发展战略的制定做出了贡献。



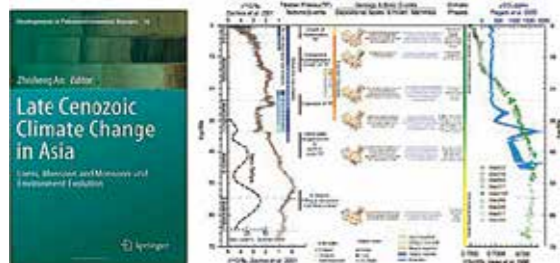
(An et al. 2001, Nature)
对比地质记录和数值模拟结果，揭示晚中新世以来亚洲季风与青藏高原阶段性生长的耦合演化

Coupling evolution of Asian monsoon and uplift of the Tibetan Plateau growth illustrated by comparisons of geological records and digital simulations



(An et al. 2011, Science)
鹤庆湖泊沉积记录的最近260万年印度夏季风的演化历史

Evolution history of Indian summer monsoon during the last 2.6 Ma recorded by Heqing lake deposits

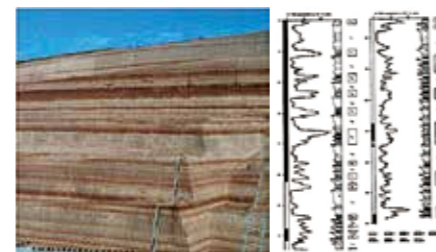


(An et al. 2014)
新生代以来亚洲季风-干旱环境变迁与青藏高原生长和全球环境变化的动力学联系

Dynamic model of Asian monsoon-arid environment variations associated with the Tibetan Plateau growth and global environmental changes



位于西安中科院地球环境所的我国最大的大陆环境科学钻探岩心库
The largest repository of continental environmental scientific drilling cores in China located at Institute of Earth Environment, CAS, Xi'an

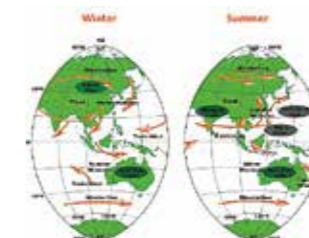


(An et al. 1990, QI)

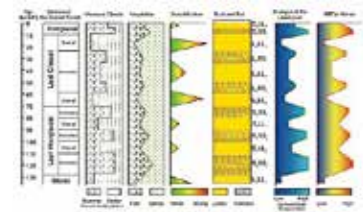
中国黄土高原黄土-古土壤序列记录了最近260万年东亚冬、夏季风变迁的历史
The loess-paleosol sequence on Chinese Loess Plateau records the history of East Asian summer/winter monsoon changes during the last 2.6 Ma



在我国不同环境单元开展的大陆环境科学钻探
Continental environmental scientific drillings on various environmental units in China



(An 2000, QSR)
南北半球气候相互作用示意图
Schematic illustration of interactions between Northern and Southern Hemisphere



(An et al. 1991, Science in China)
季风控制论科学解释了过去13万年东亚环境变化，如湖面波动、沙漠进退、粉尘堆积与土壤发育、植被变迁、海面温度变化等现象
Monsoon Control Theory has been put forward to explain the environmental changes, such as the fluctuations of lake levels, advances and retreats of deserts, dust accumulation and soil development, vegetation successions, and sea surface temperature changes in South China Sea, etc., in East Asia during the last 130 ka



(An et al. 2011, Science)
南北半球冰量变化导致的越赤道气压梯度对冰期-间冰期尺度印度夏季风变迁的影响
Influence of the Northern and Southern Hemisphere ice volume and related crossequatorial pressure gradient on Indian summer monsoon variations at glacial interglacial time scale