

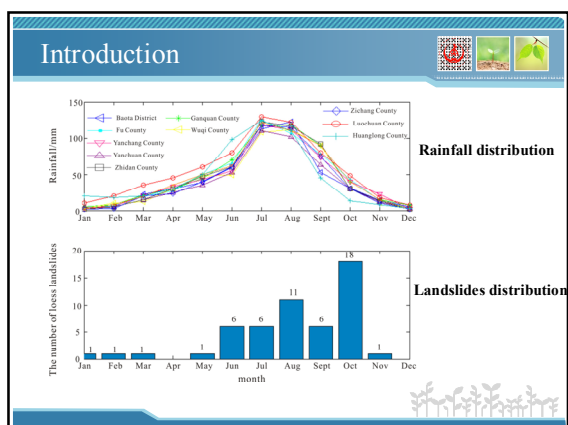

长安大学
 CHANG'AN UNIVERSITY

In-situ Observation on Rainfall Infiltration in Loess

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 October, 2012

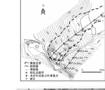
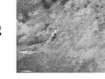
The main parts

1. Introduction
2. Introduction of monitoring area
3. Monitoring site and instrument arrangement
4. Analysis of the monitoring results
5. Problem discussion



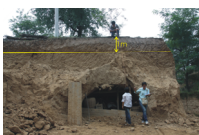
Introduction

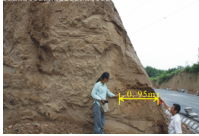
The natural and artificial rainfall tests to determine the depth of rainfall infiltration previously

 X.B.TU 2-3 m	 Zhan liangtong 2 m
 A.G.Li 4 m	 Li weichao, Dai fuchu 2 m
 Liu haisong 2.7 m	 Ding yong, Wang jiading 4 m

Introduction

The depth of rainfall infiltration in upright loess profile

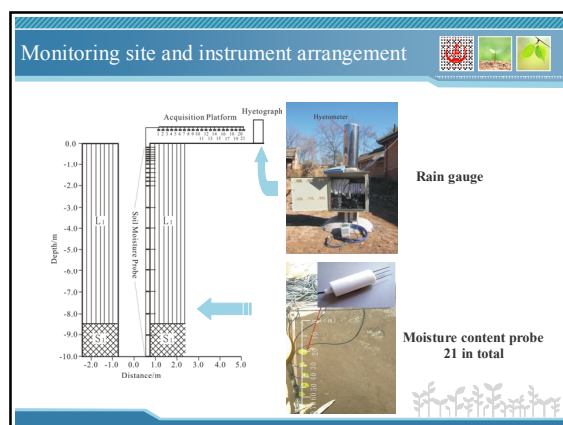
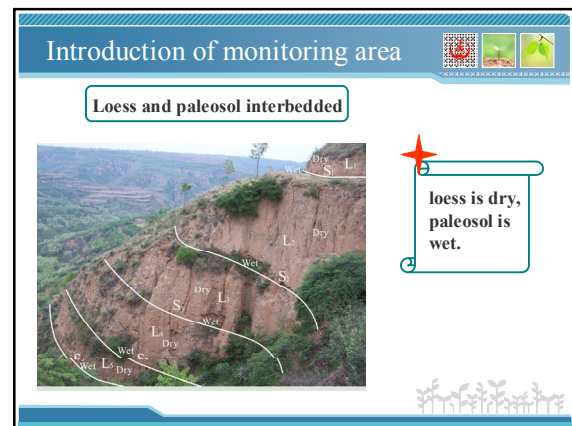
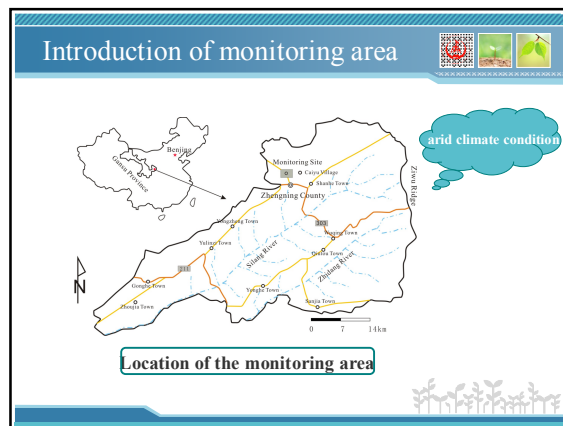

 Ganquan county, Shaanxi province
 The vertical depth of rainfall infiltration is about 1 m we observed


 Ganquan county, Shaanxi province
 The horizontal depth of rainfall infiltration is about 0.95 m we observed

Introduction

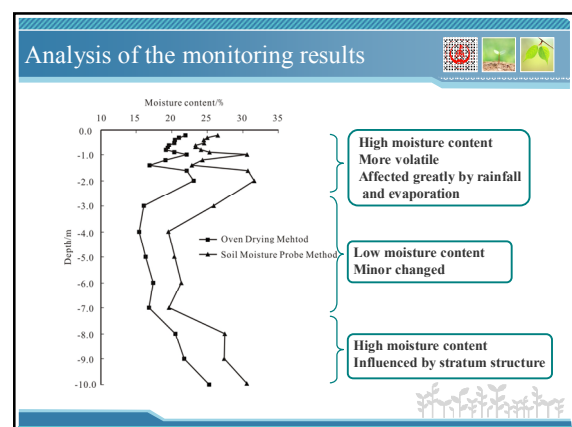
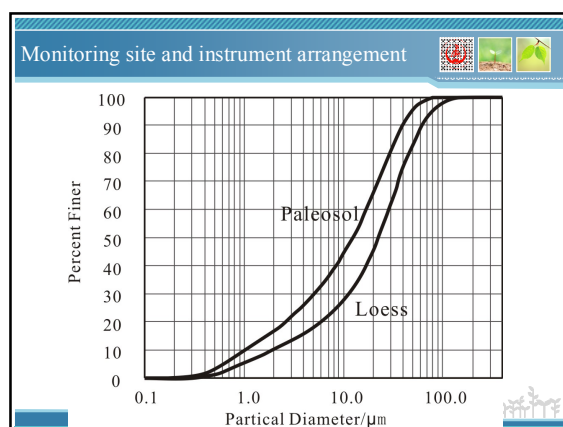

 ⇒ sinkhole
 These water paths only occur in unloading area which always in the edge of loess tableland, but rare in the center

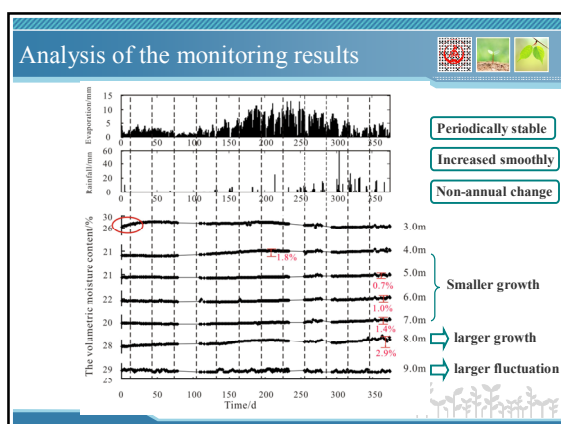
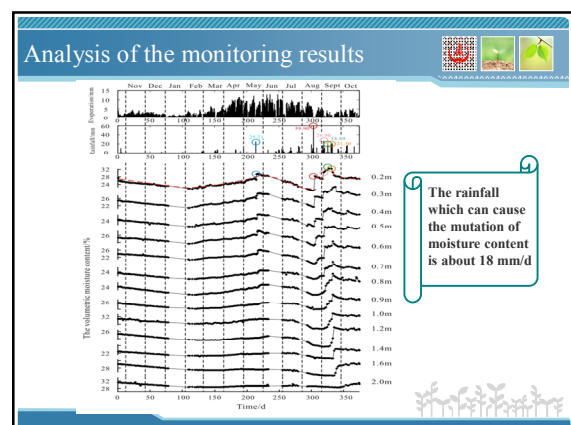
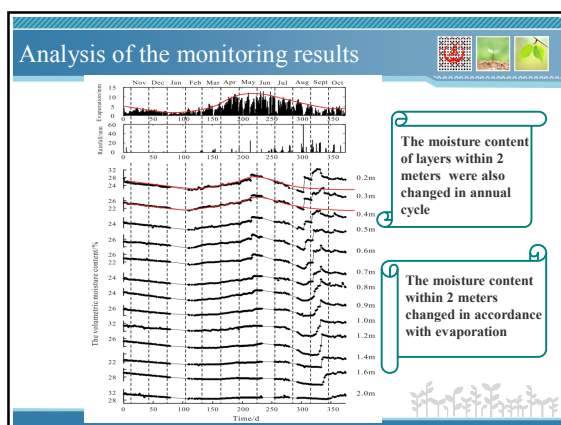
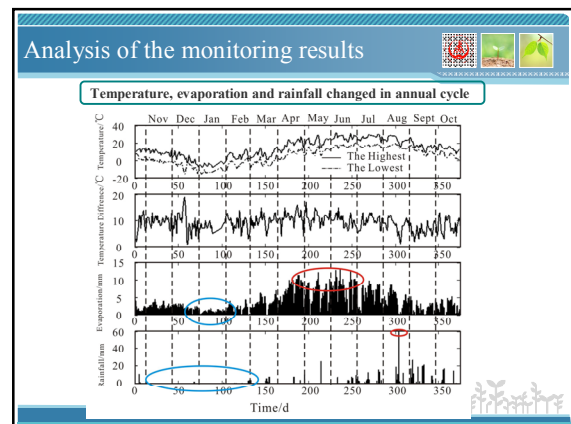
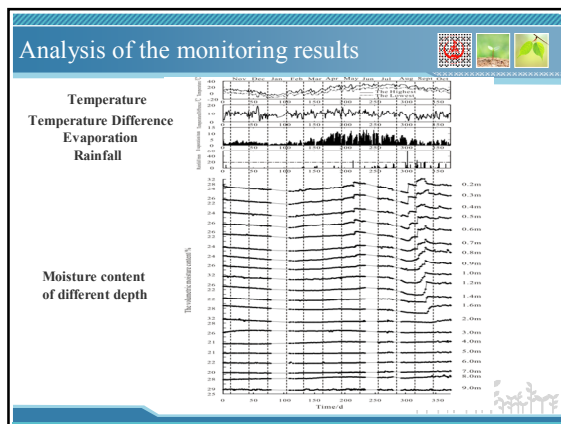

 ⇒ interconnected crack



Monitoring site and instrument arrangement

Physical and mechanical indexes	Loess	Paleosol
Bulk density(g/cm ³)	1.44	1.64
Dry density(g/cm ³)	1.24	1.35
Moisture content(%)	16.3	21.9
Saturated moisture content (%)	43.6	37.2
Specific gravity	2.70	2.71
Void ratio	1.177	1.007
Plastic limit(%)	21.7	21.3
Liquid limit(%)	29.4	31.6
Compressibility coefficient(MPa-1)	0.82	0.62
Coefficient of collapsibility	0.079	0.043
Vertical coefficient of permeability (m/s)	2.55×10^{-6}	5.36×10^{-8}
Horizontal coefficient of permeability (m/s)	1.72×10^{-6}	2.12×10^{-8}
Clay content($\leq 2 \mu m$; %)	17.9	29.6





Problem discussion

What is the main factor that affect the annual variation of the background value of moisture content ?

How far can the moisture migrate in unsaturated zone in loess tableland which groundwater level is often very deep? Whether it can reach the groundwater level and become the main part to supplement groundwater?