



Loess, Loess Plateau & Yellow River

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Institute of Soil and Water Conservation

World map of loess



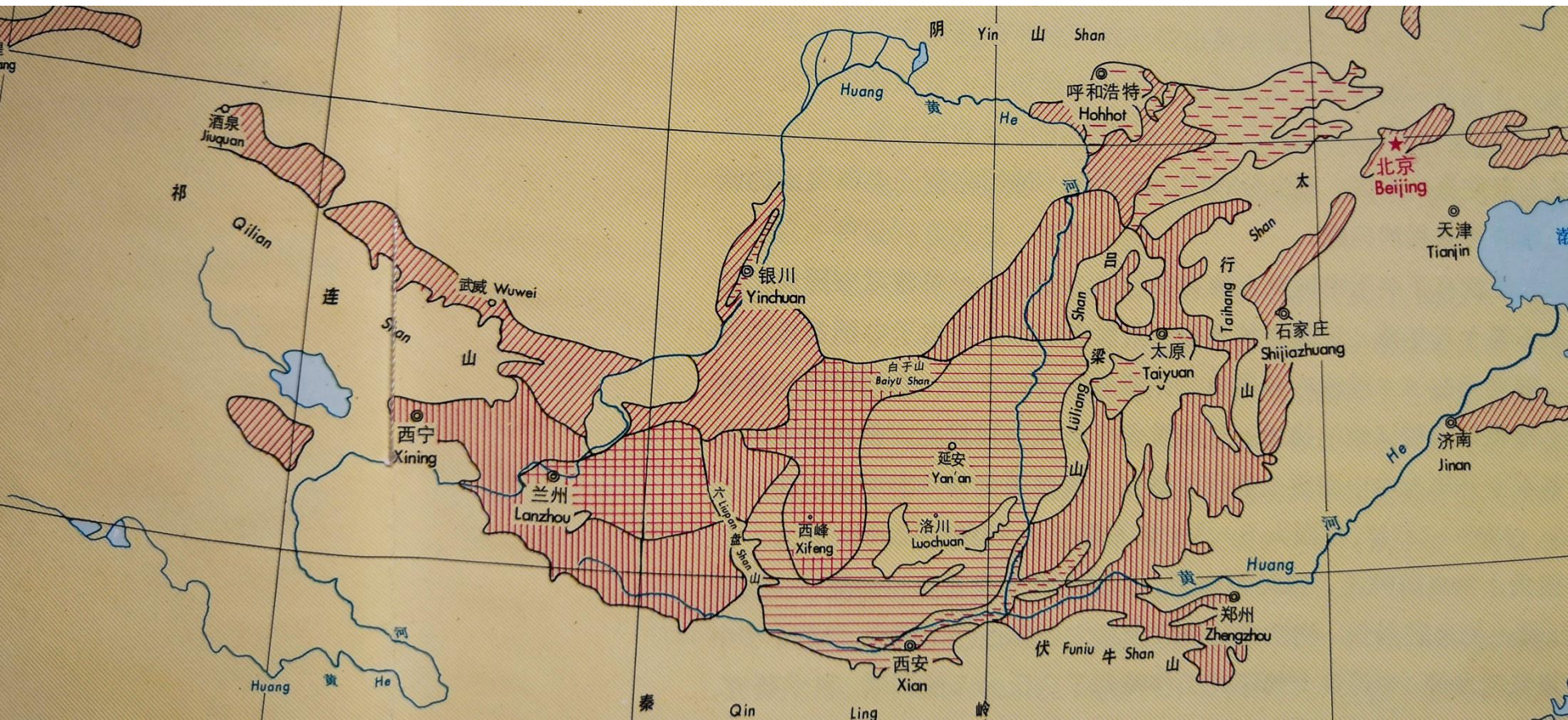
Loess in China

中国岩漠、砾漠、沙漠及黄土分布与主风向关系图

MAP OF RELATIONSHIPS BETWEEN DISTRIBUTION OF ROCK DESERT, GRAVEL DESERT, SAND DESERT, LOESS AND MAIN WIND DIRECTION IN CHINA



Loess in the middle reach of the Yellow River



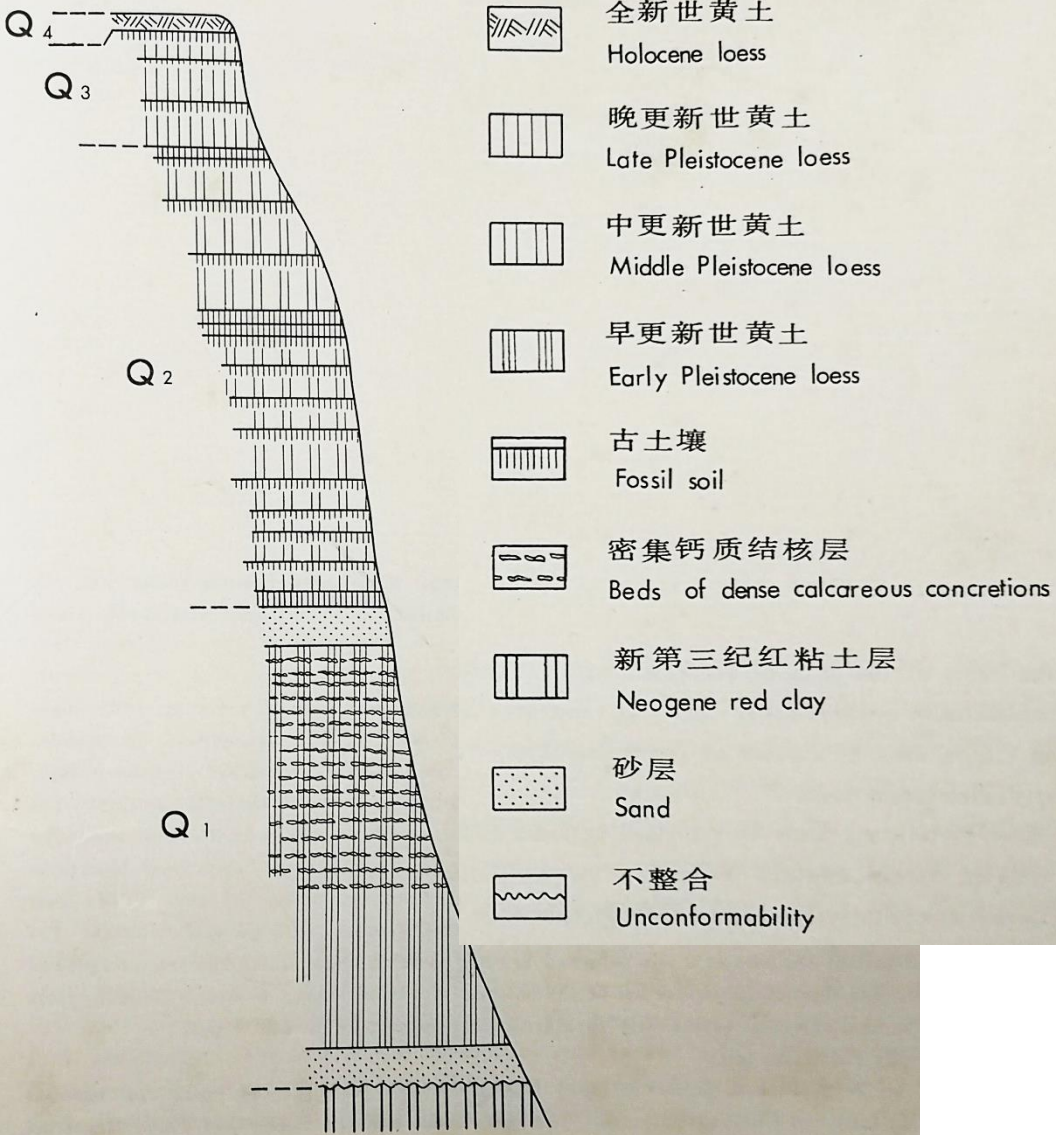
Super-thick

On average: 50 m – 100 m
Deepest: > 300 m



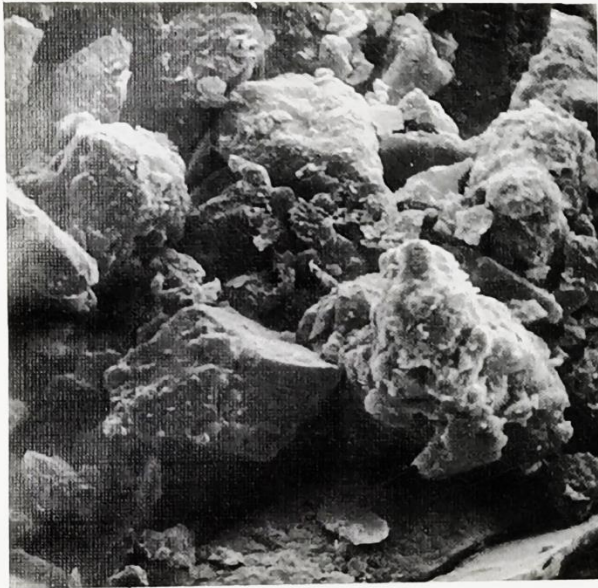
Deep loess profile as geo-record

中国黄土剖面示意图
Sketch profile of loess in China



Loose structure – mosaic & edge supporting

Magnified by 900 times



棱边支架接触

Q₃黄土, 甘肃永登, ×900

Edge supporting contact between coarse minerals.

Late Pleistocene loess.

Yongdeng, Gansu.

×900

Magnified by 850 times



支架接触

Q₃黄土, 甘肃靖远, ×850

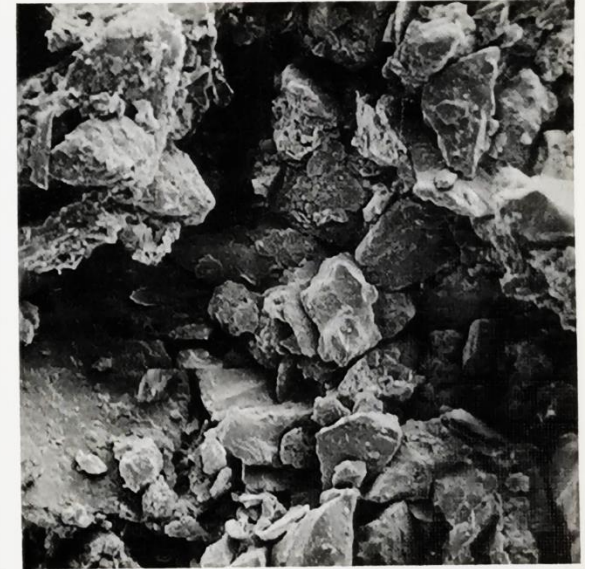
Supporting contact between coarse minerals.

Late Pleistocene loess.

Jingyuan, Gansu.

×850

Magnified by 420 times



镶嵌接触

Q₃黄土, 甘肃靖远, ×420

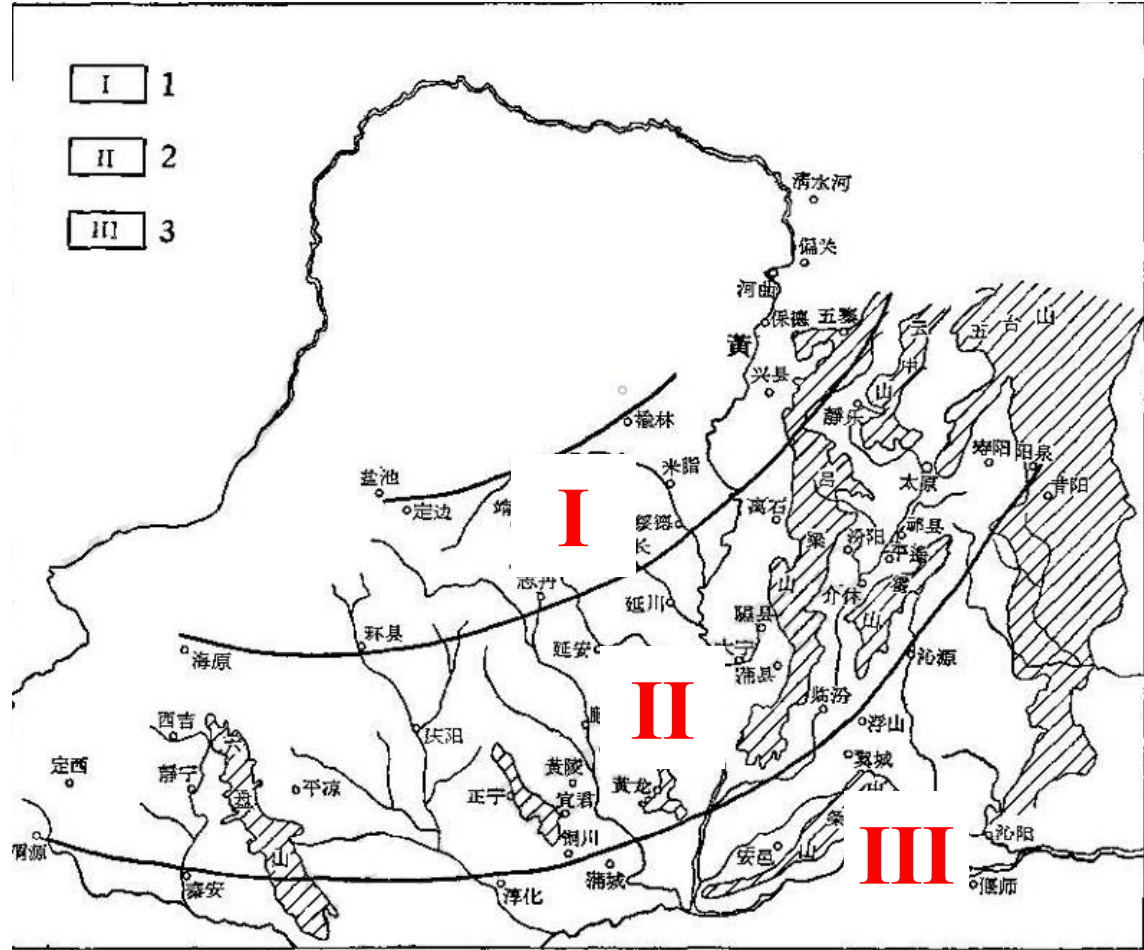
Mosaic contact between coarse minerals.

Late Pleistocene loess.

Jingyuan, Gansu.

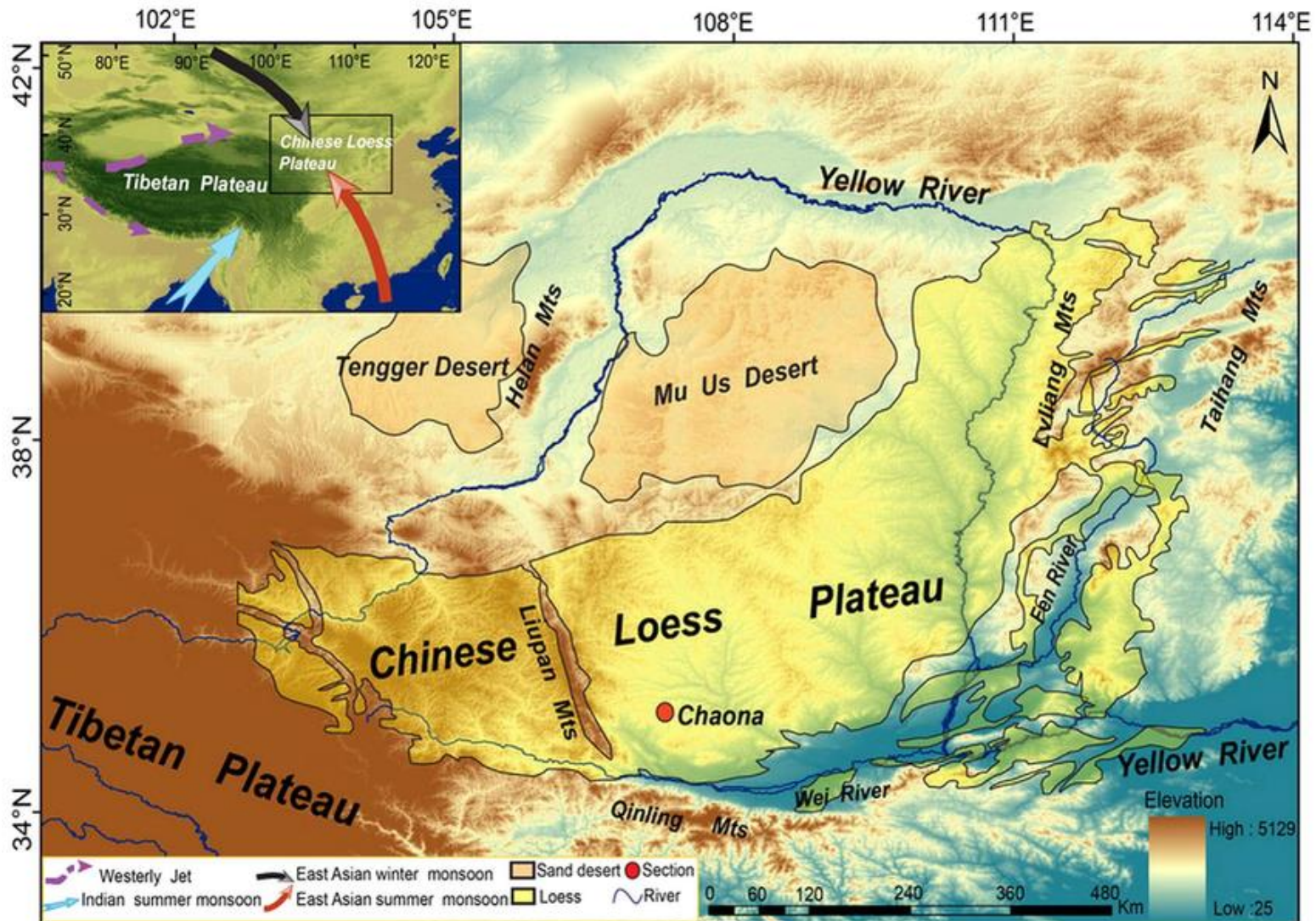
×420

Grain size distribution of loess



	Sand	Silt	Clay
I	23.6-72.4%	37.2% 70%	7.0-20.7%
II	11.1-31.5%		8.1-30.4%
III	11.4-21.9%		18-27.8%

Map of the Loess Plateau



Zhang et al. (2016), Scientific Reports

Geomorphologic features

--- Tableland (*Yuán*)



Geomorphologic features --- Prolonged hills (*Liáng*)



Geomorphologic features --- Round hills (*Măo*)

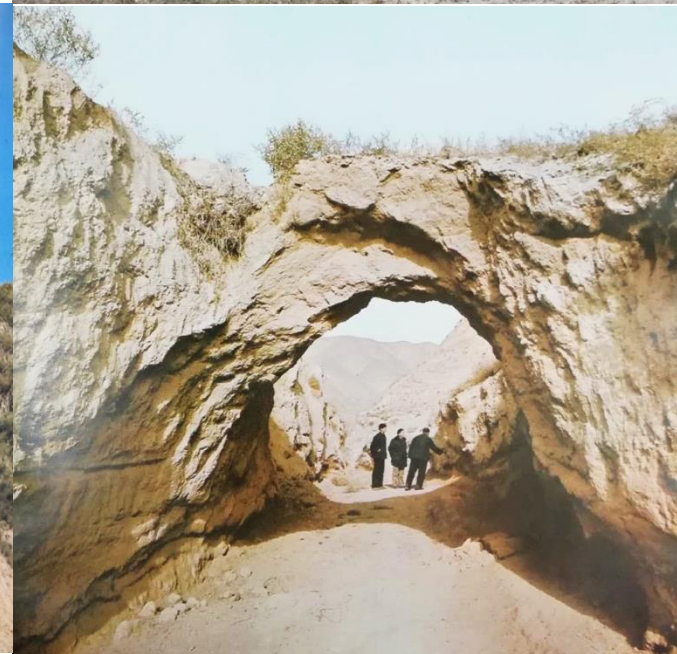
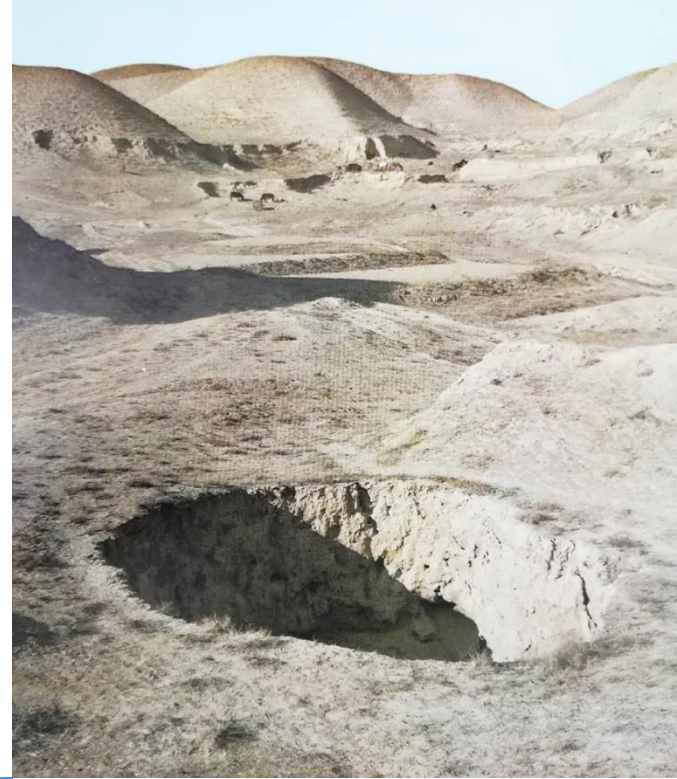


Geomorphologic features

--- Gullies

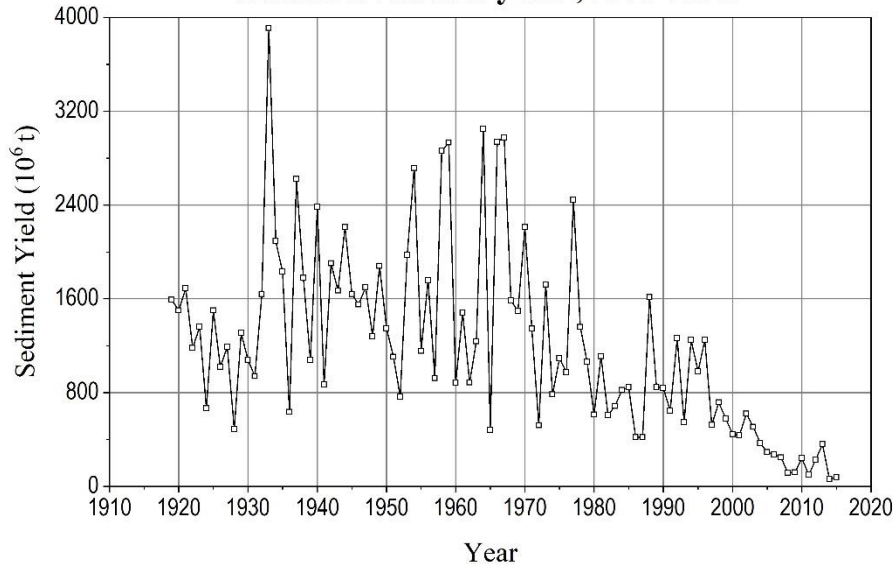


Unique features

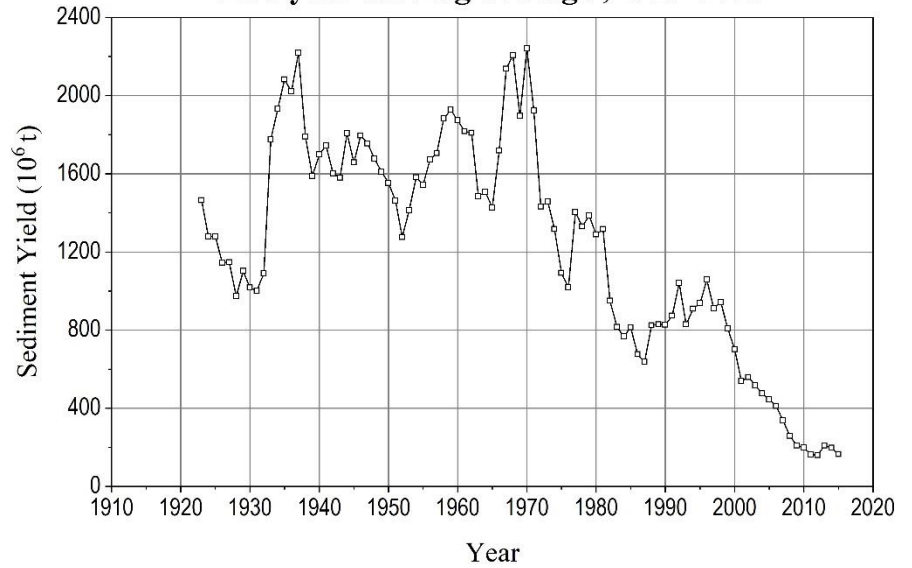


Soil Erosion Rate on the Loess Plateau

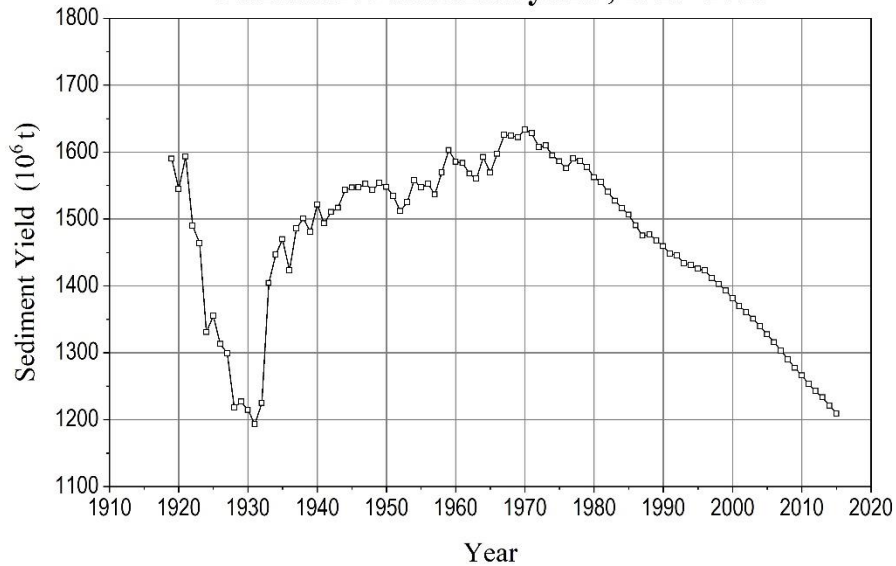
Annual sediment yield , 1919-2015



Five year moving average , 1919-2015



Cumulative sediment yield , 1919-2015



Ten year moving average , 1919-2015



Please note the different Y-axis scales

Soil and Water Conservation Measures

--- Terraced fields



Soil and Water Conservation Measures

--- Check-dam



Soil and Water Conservation Measures

--- Rehabilitation



Soil and Water Conservation Measures

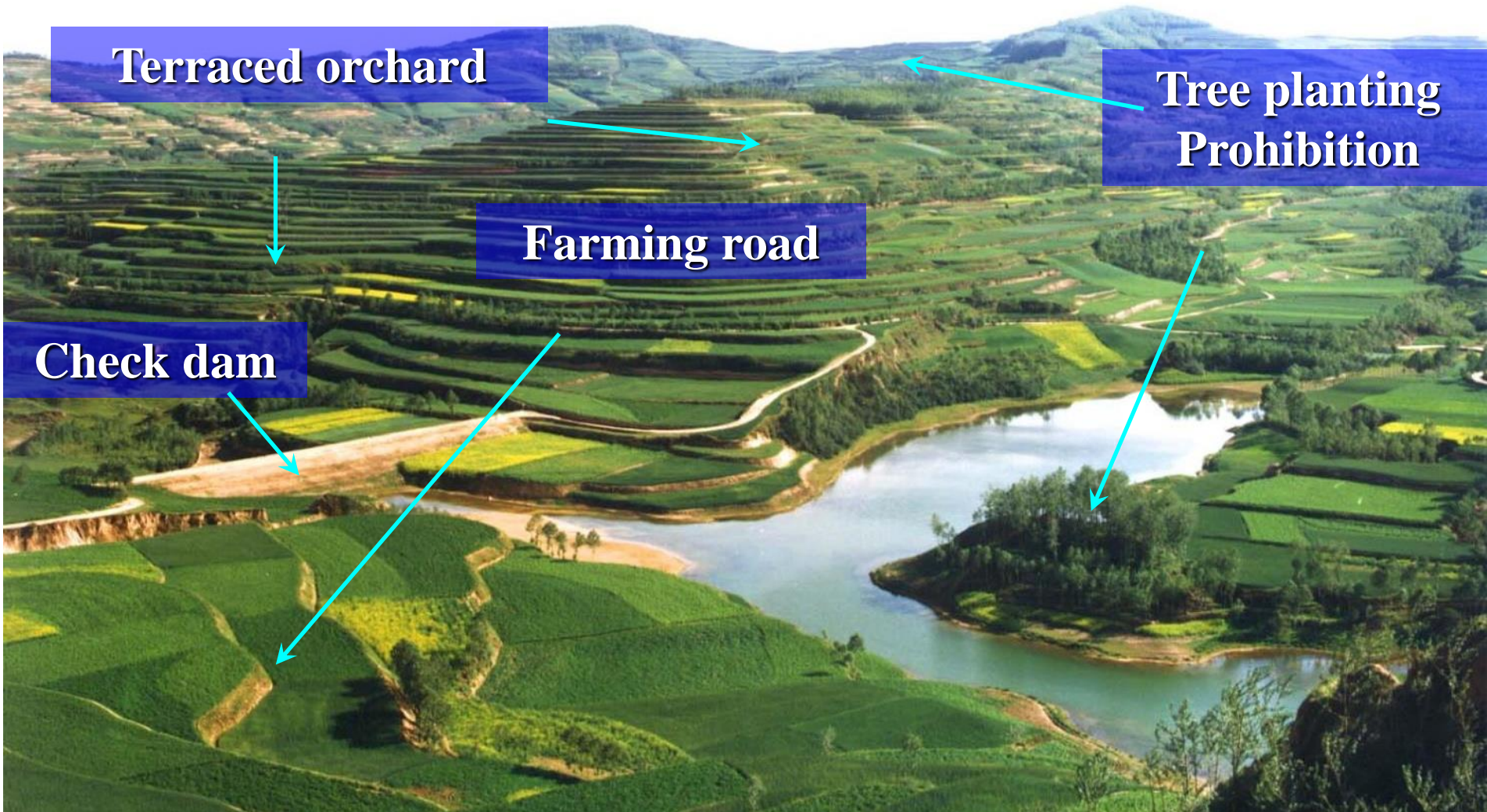
--- Integrated control

Terraced orchard

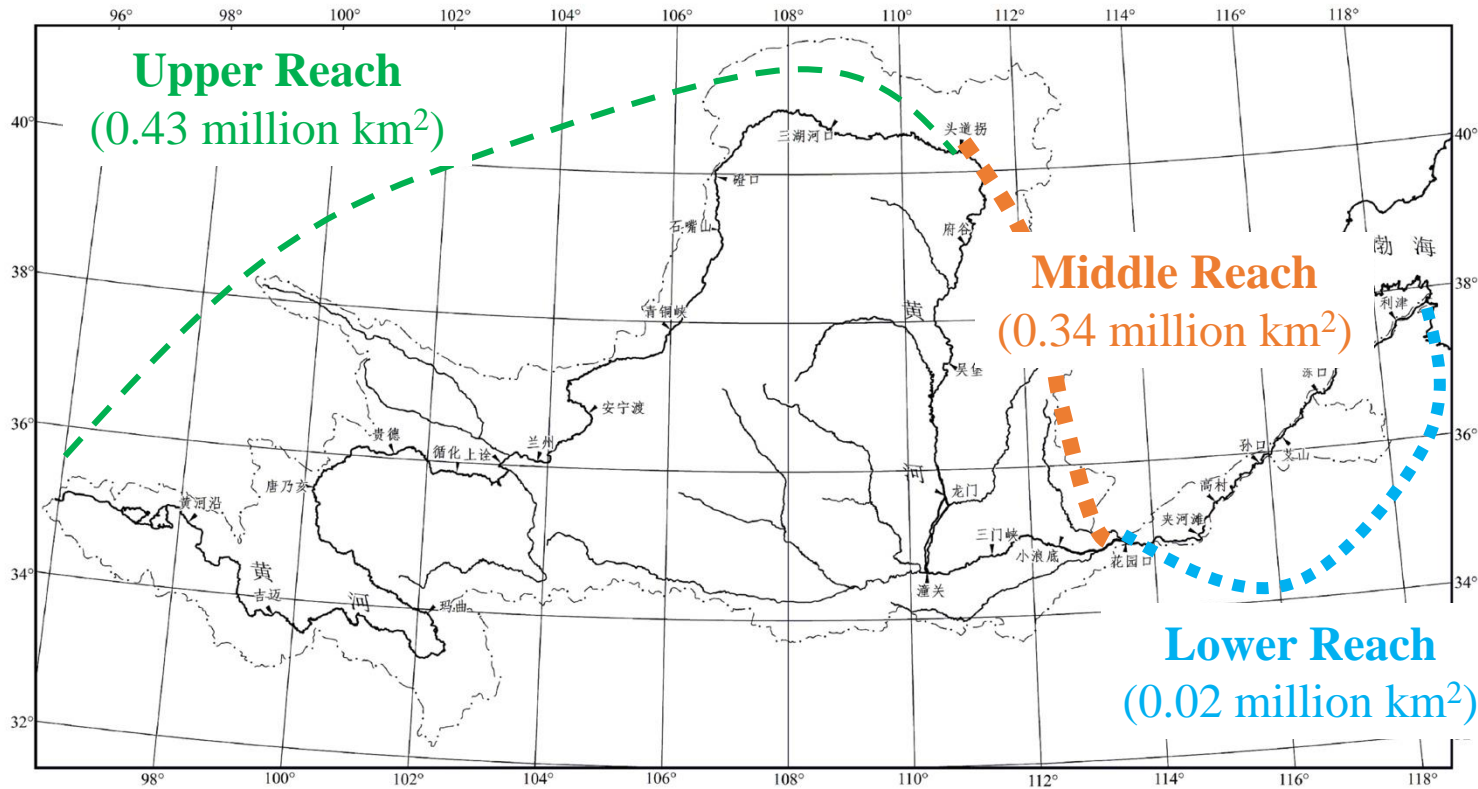
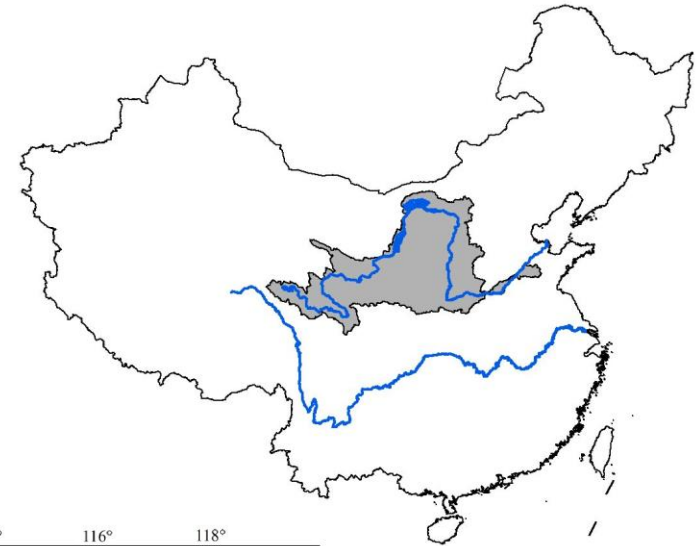
**Tree planting
Prohibition**

Farming road

Check dam



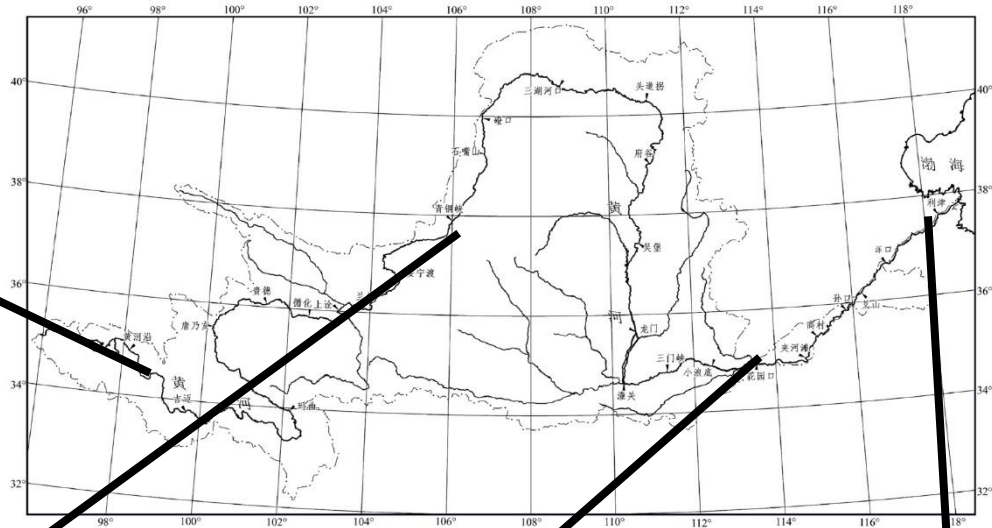
Yellow River



Diverse scenes along the Yellow River



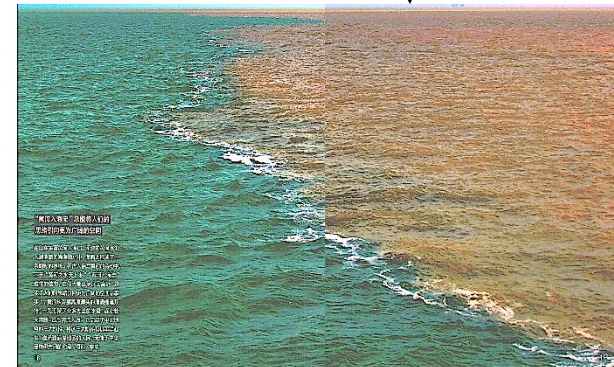
Wandering river in the upper reach



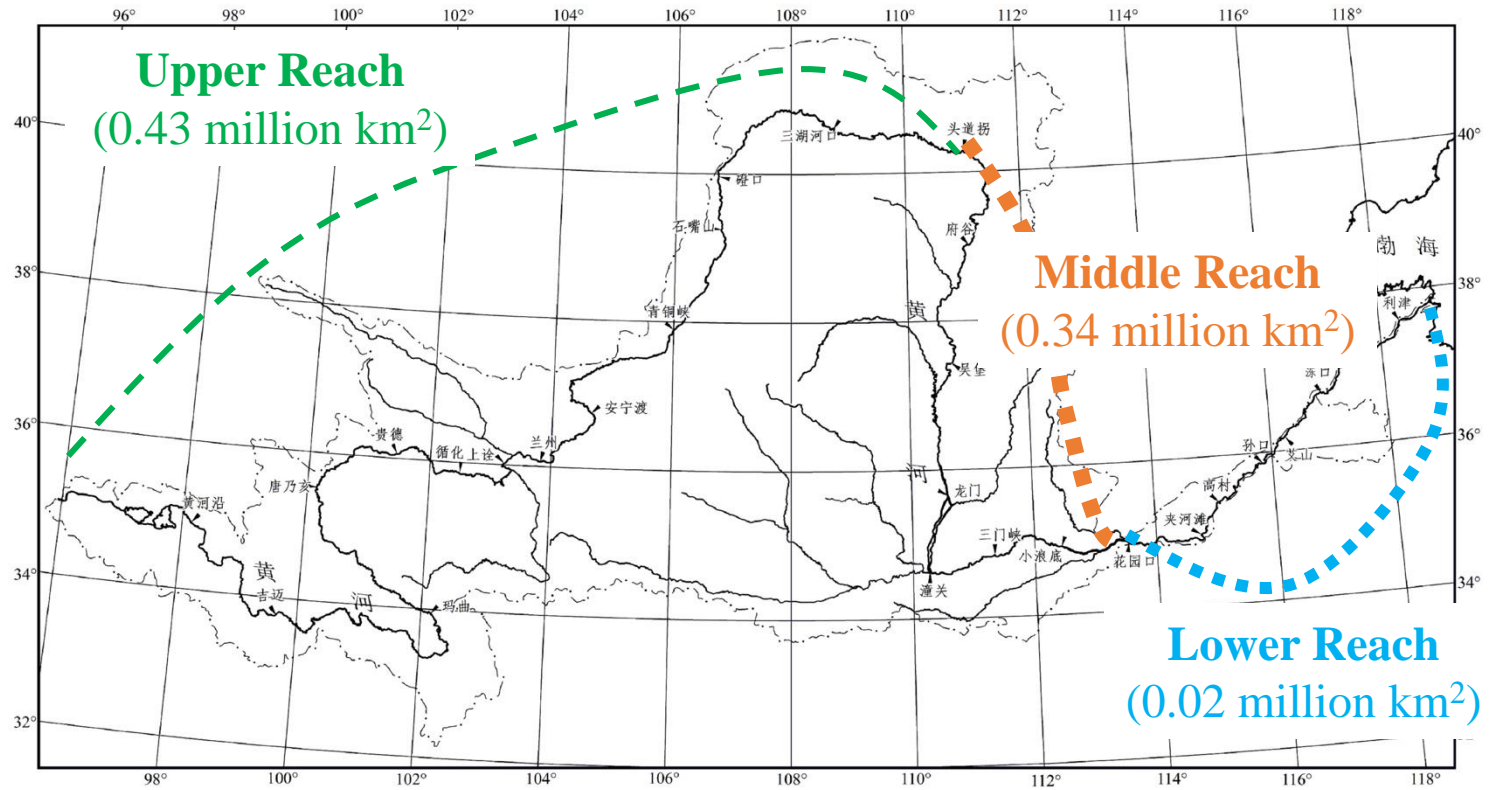
Waterfall with heavy sediment



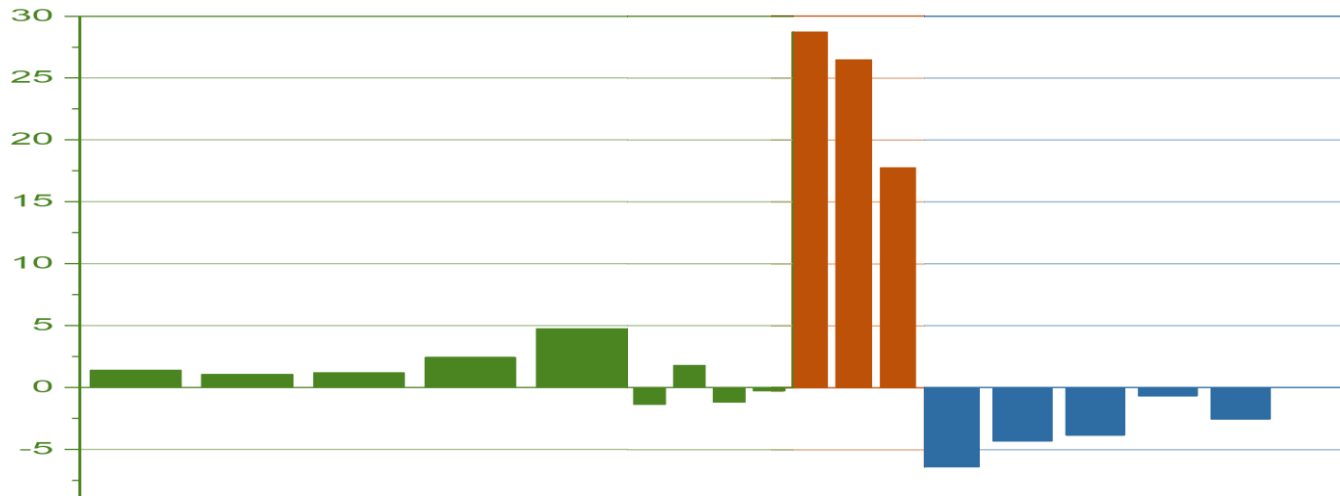
Elevated river
“suspended” river



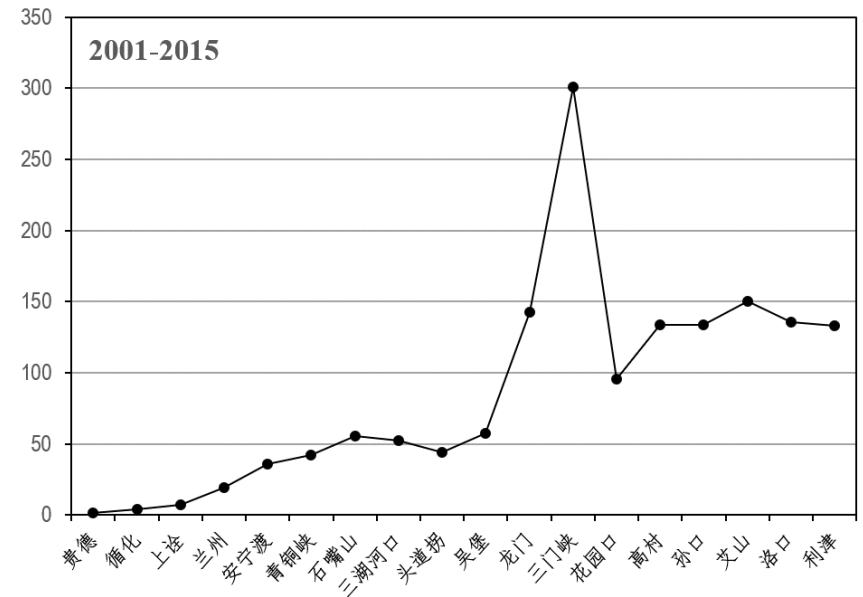
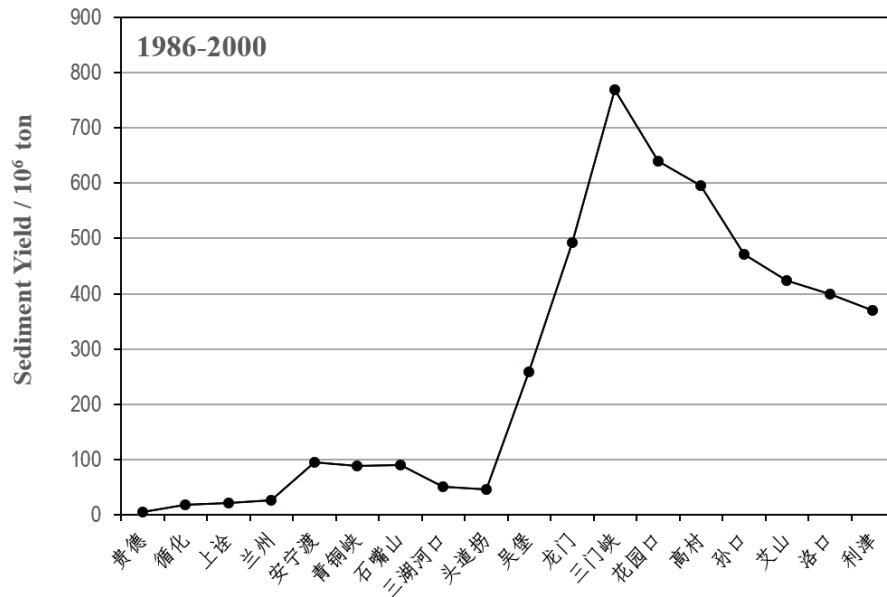
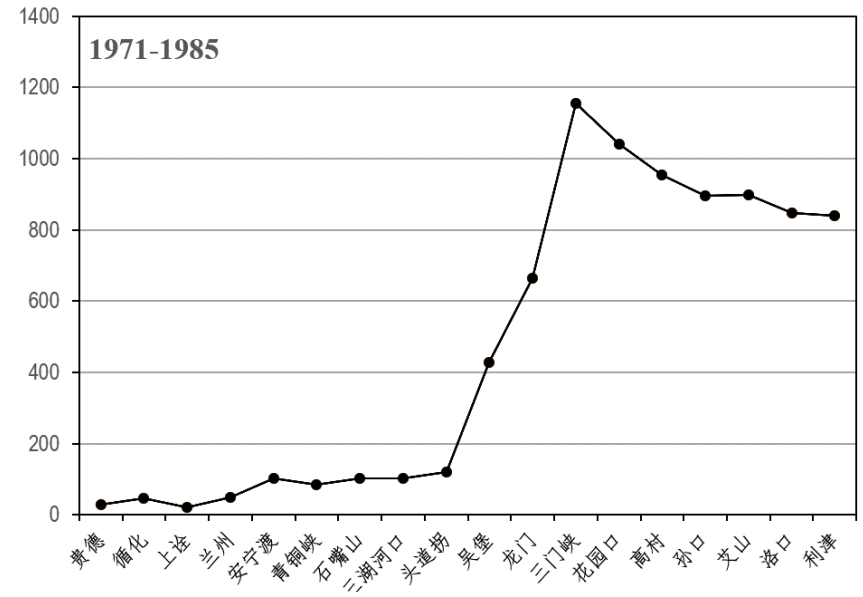
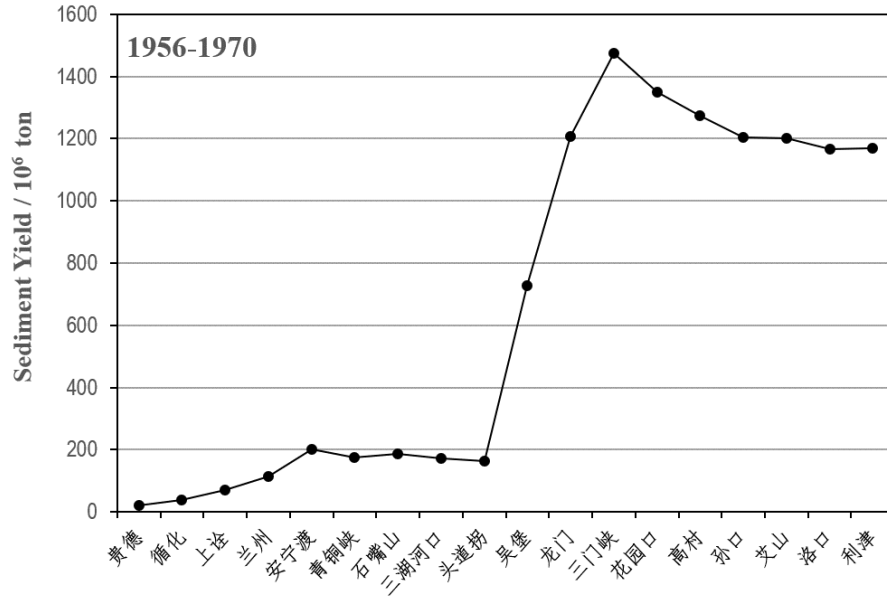
Yellow River meets the sea
at estuary



Sediment Yield (%)

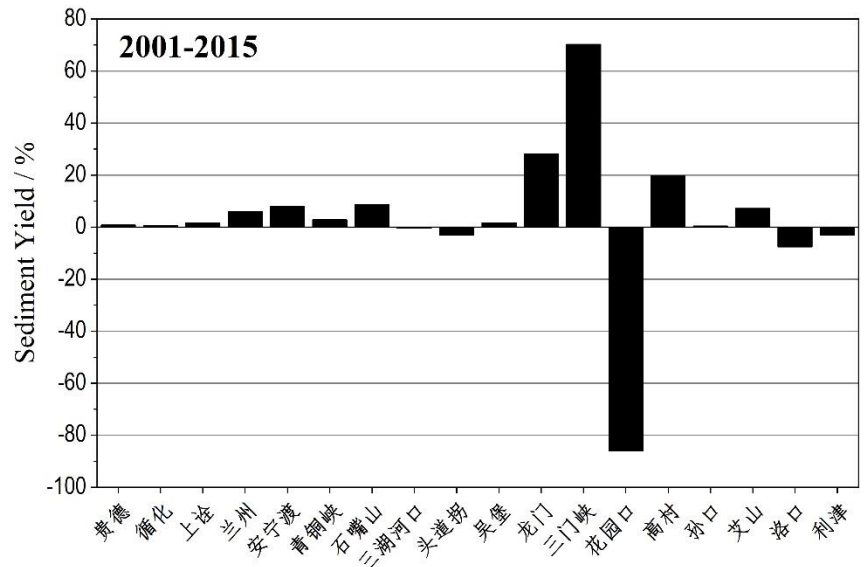
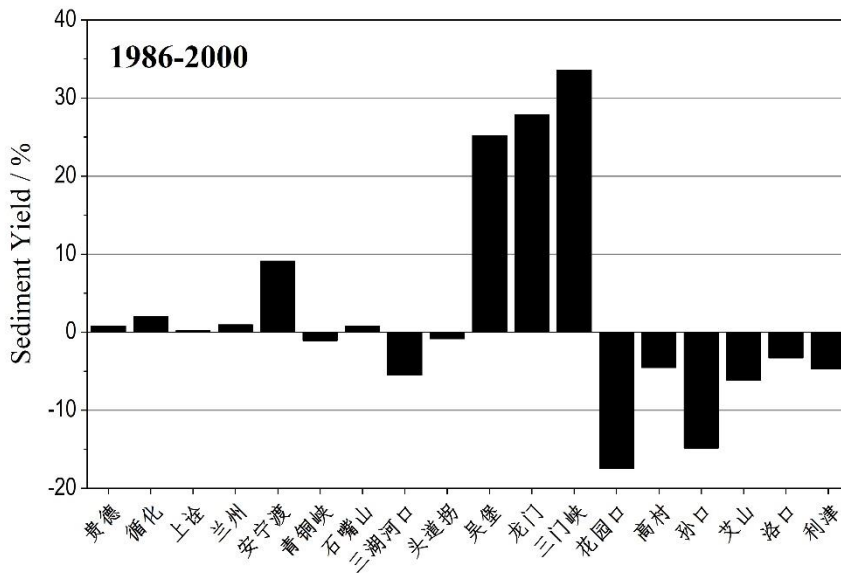
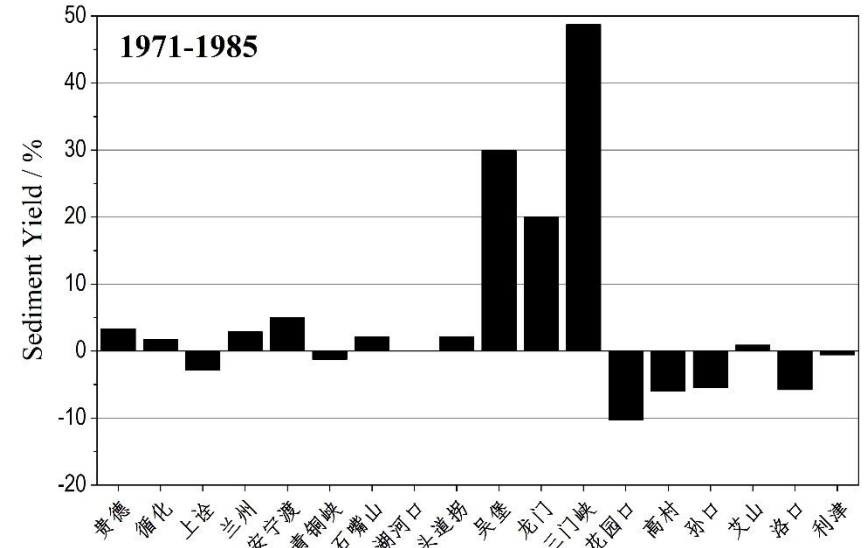
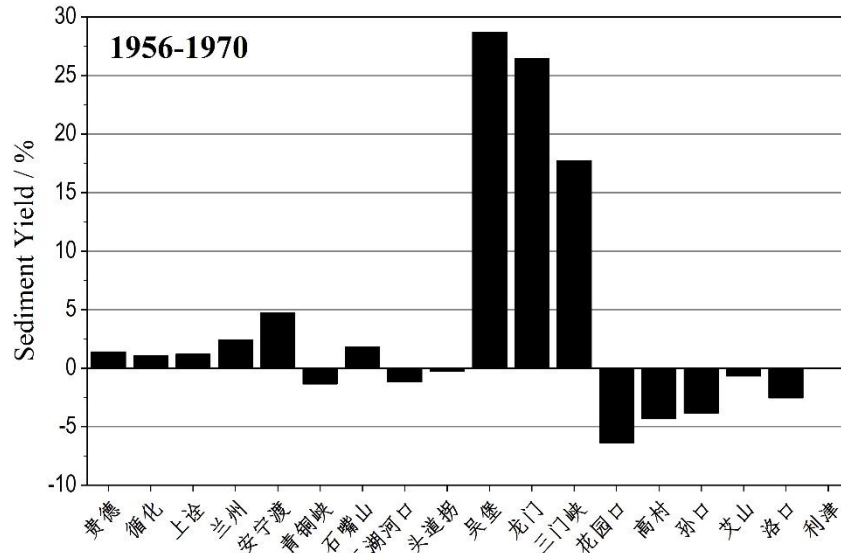


Cumulative sediment delivery station by station from upper to lower reaches



Please note the different Y-axis scales

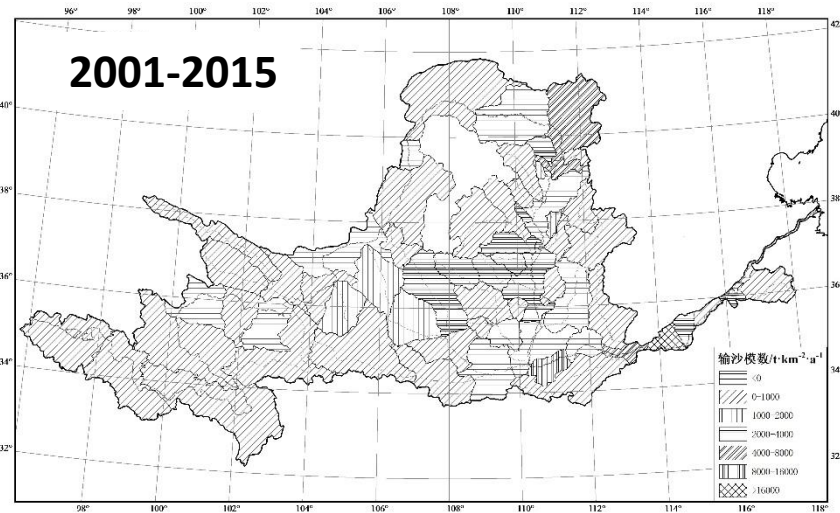
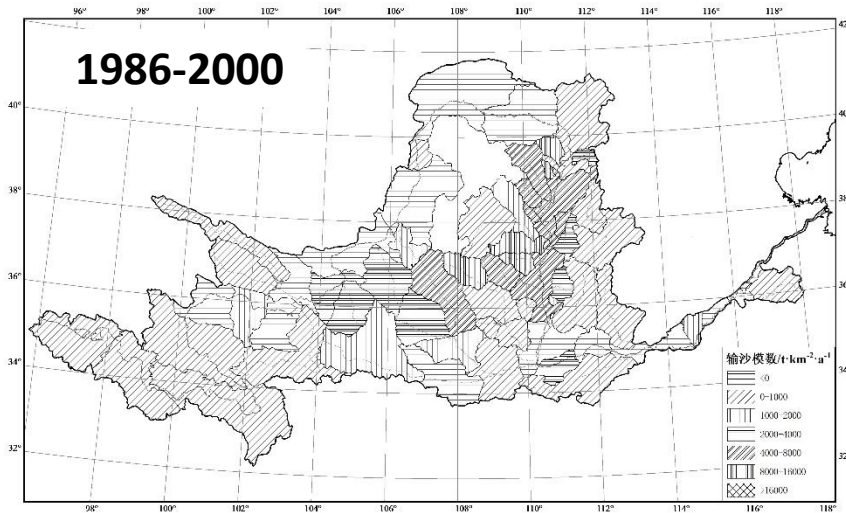
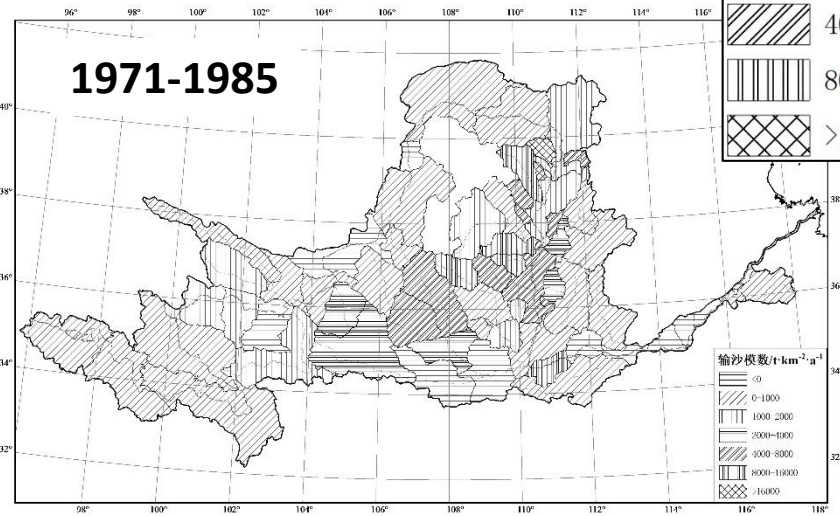
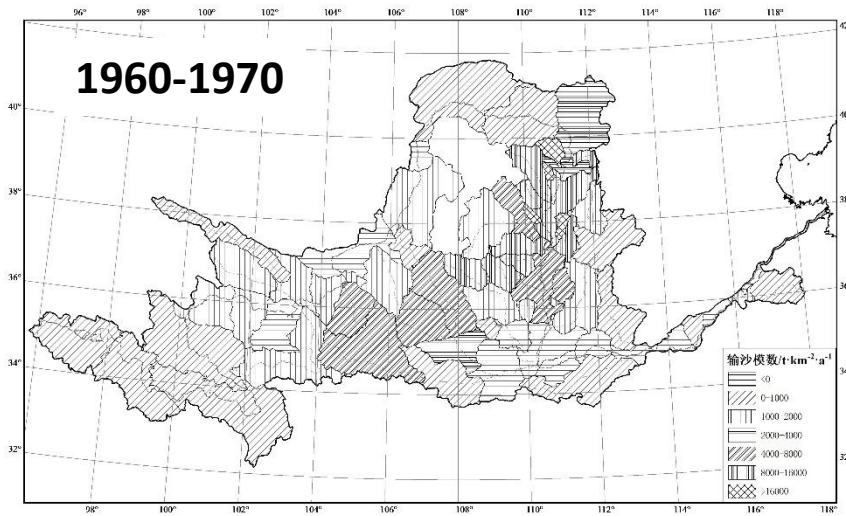
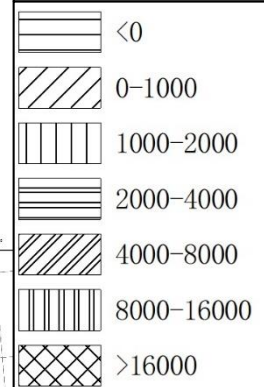
Changes of erosion/deposition over time



Please note the different Y-axis scales

Temporal changes of regional sediment yield

**Erosion rate
(ton/km²/year)**



Changes of population size on the Loess Plateau over time

