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Further Researches on DEMs DEM的进一步研究

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ISWC DEM Team (*Zhang CX, Shi WJ & Deng SH*)
Yanling; October 2005





Further Researches on DEMs

DEM的进一步研究



- 1、 More DEMs with ANUDEM
- 2、 Re-scaling coarser reso slope map
- 3、 Link DEM parameters to eco-process models



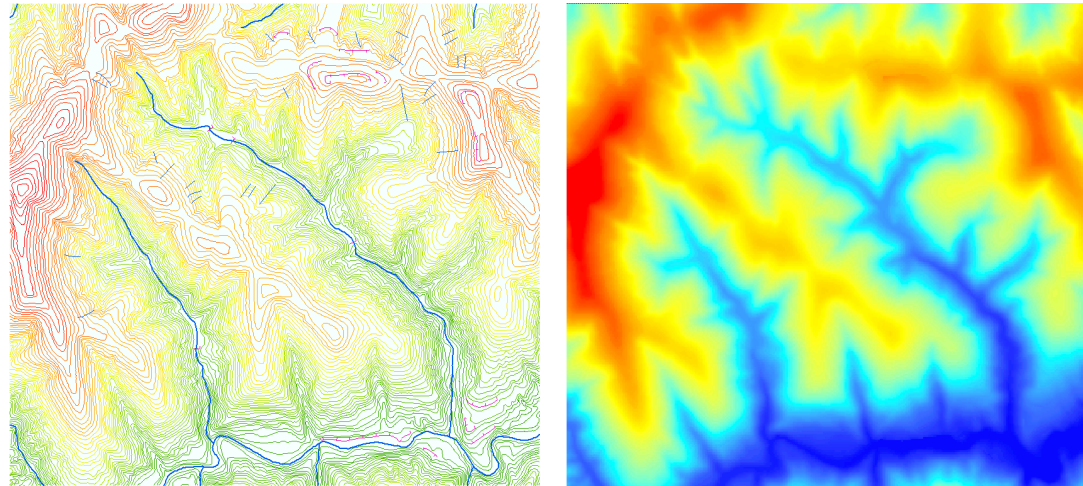
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1、 More DEMs with ANUDEM

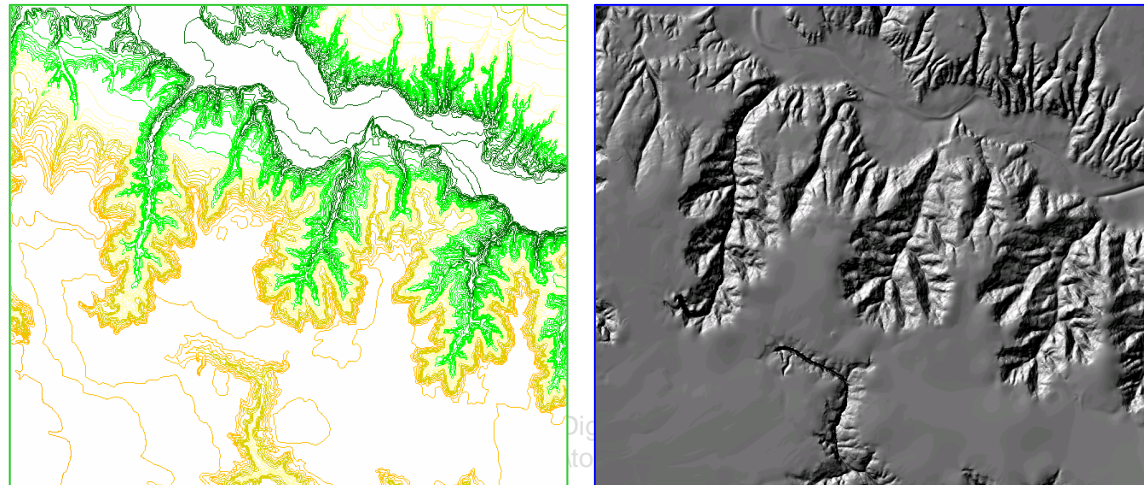
Loess hills: 1:10k (XNG), 1:50k (Yan'an)



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Tableland: flatter (highland) + very steep (gully)





DEMs for different landscapes, China



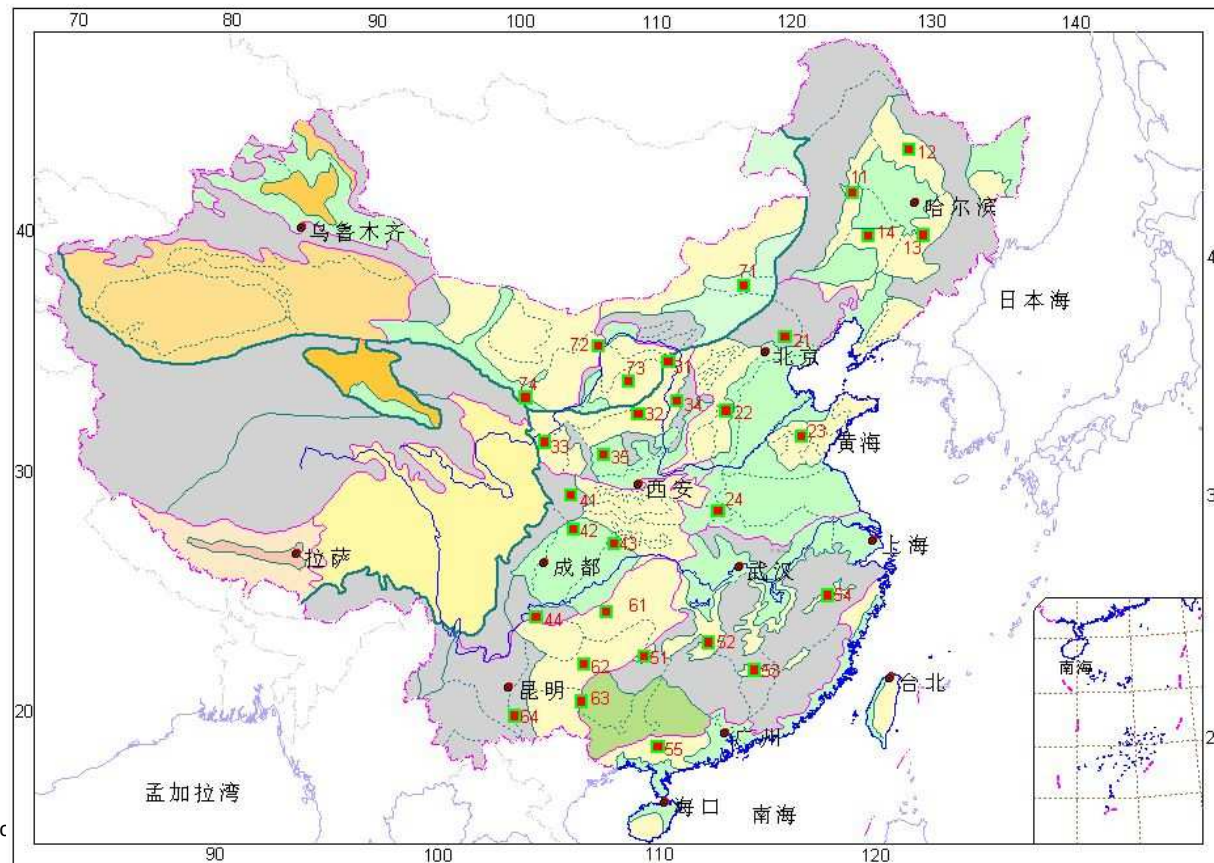
In a CAS/MWR project, 30 sampling areas has been identified, for mapping soil erosion changes. In each site, 1:10k DEM should be created to extract terrain parameters



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ACIAR Final Project





Have to study on



strategy for optimizing resolution (varied scales, regions)
comparing with TIN approach
quality assessment
effects of resolution on terrain parameters and analysis





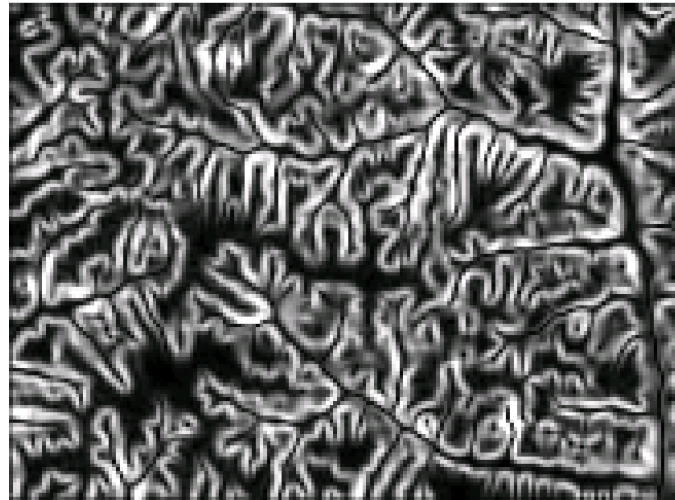
250k topomap based DEMs with **TIN** and **ANUDEM**



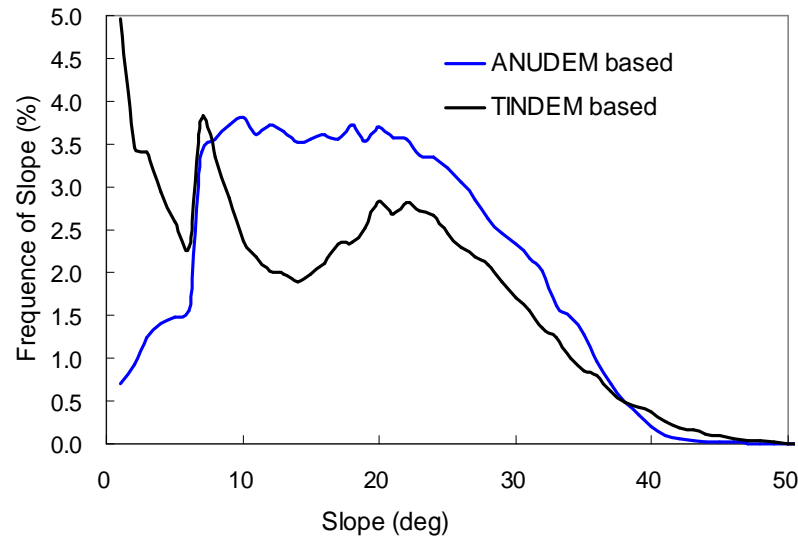
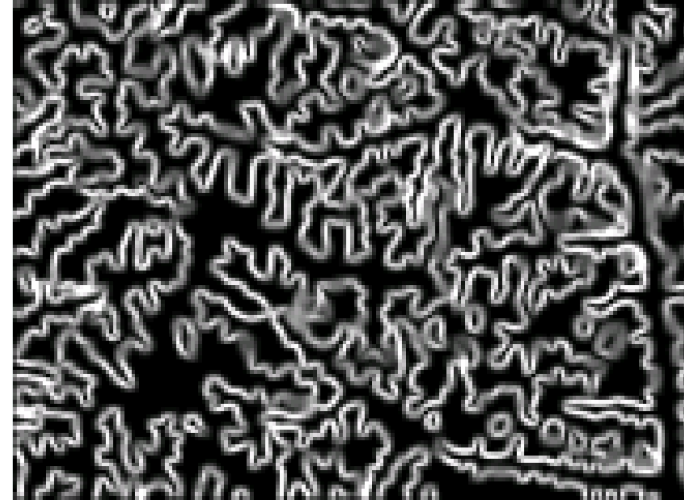
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slope-- ANUDEM



slope-- TINDEM



ele, slope, aspect, rivers,...



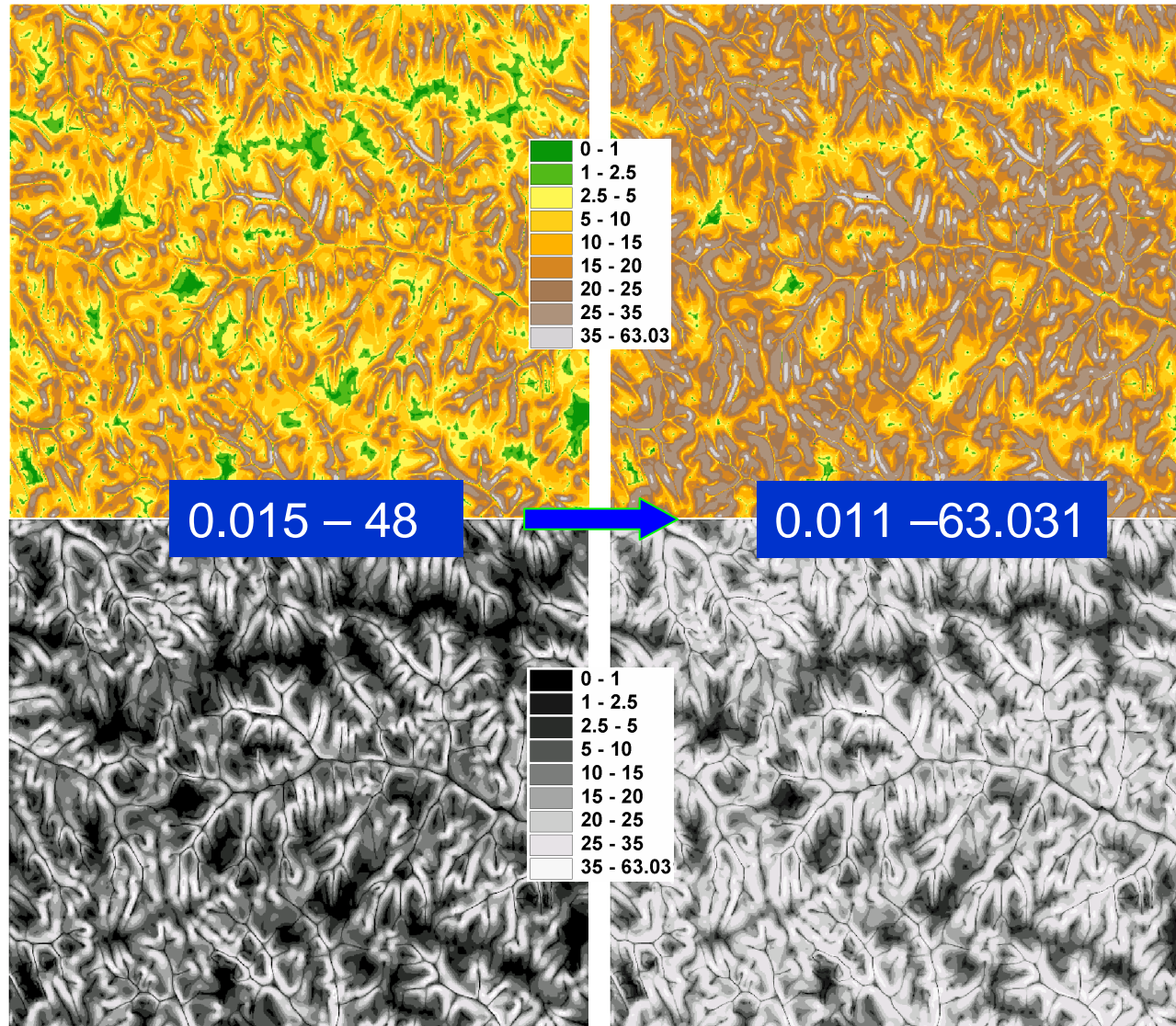
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2、 Re-scaling slope from coarser DEM to finer

before

after





3 、 Link DEM parameters to eco-process models



DEM --- primary parameters ---- compound parameters ---- models



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compound parameters

wetness

$$TWI = \ln(A_s / \tan \beta)$$

Stream power
index

$$SPI = \ln(A_s * \tan \beta)$$

Stream transform
capacity

$$STC = (A_s / 22.13)^{0.6} * (\sin \beta / 0.0896)^{1.3}$$

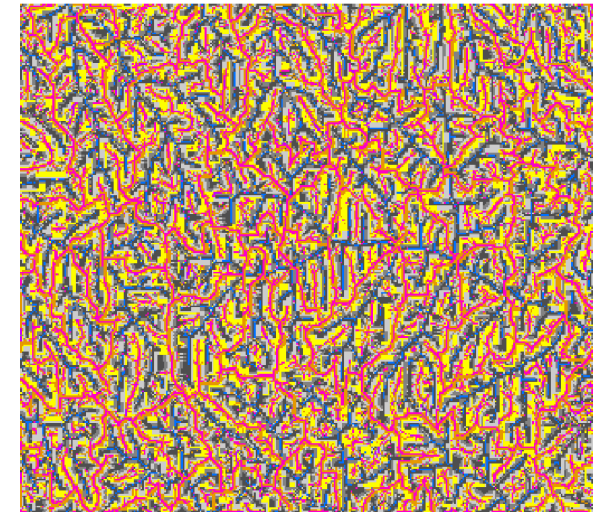
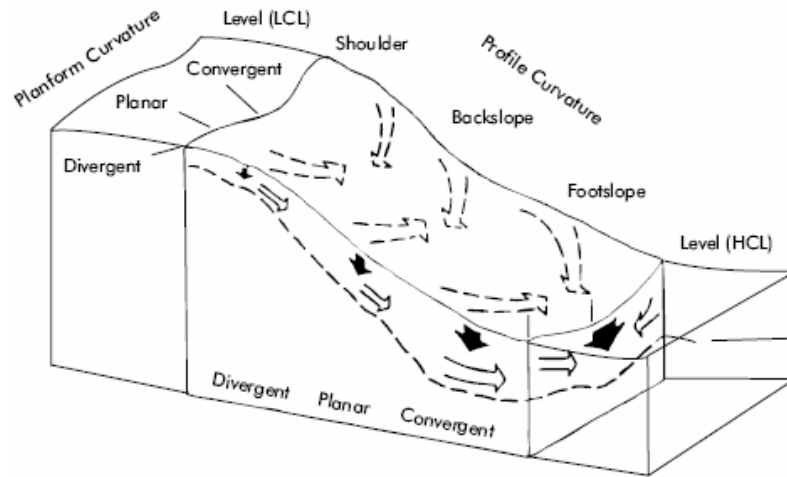




Landform mapping based on DEM



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spatio- temporarily modelling of soil organic carbon (SOC)
soil conservation practice location
soil erosion, runoff modelling
Etc, etc, etc



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谢谢 Thank You

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