

Measurements and Documentation of Buddhist Stone Inscriptions
 in China, Shandong

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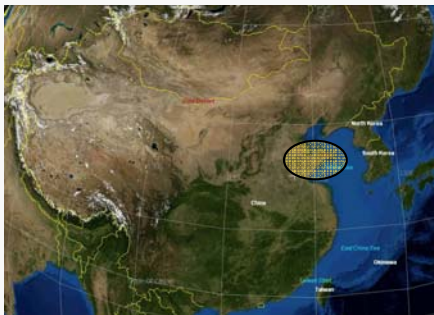
summary

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Stone Inscription
 Logo of the project

1. Introduction



[NASA world wind]
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1. Introduction



Calligrapher
 Sengan daoyi



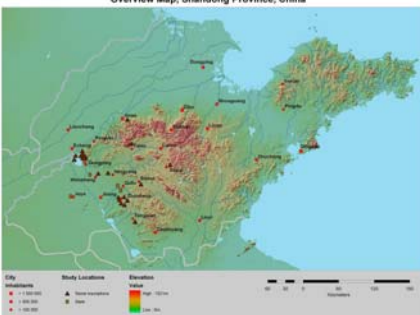
Inscription at
 Tieshan by night



Stone Inscription
 Logo of the project

1. Introduction

Overview Map, Shandong Province, China



2. Measurements and Data organization

- different types of inscription sites



- different types of measurement methods



2.1. Different types of inscription location

Top or slope of mountain



Silishan



Top of Taishan

2.1. Different types of inscription location

A valley



Hondingshan valley



Southern slope of Hondingshan valley

Inscription of southern slope



2.1. Different types of inscription location

An inscription on a plane surface or on a stele



Diamond Sutra at Taishan



Stele

Inscription on Stele character size 2 cm



2.2. Measuring methods



GPS at Hondingshan

- traditional GPS and Total station measurements for topography



Total Station at northern slope of Hondingshan

2.2. Measuring methods



Analog photogrammetry at Hondingshan

- near range photogrammetry in some extreme situation



Digital photogrammetry at Tianchishan



Digital photogrammetry at Taishan

3. Data processing and –modeling

- Structure of processing and modeling of data is important for the further analysis
- We divide data processing into a horizontal and vertical hierarchy
- vertical -> different levels of detail
- horizontal -> different methods of 2D or 3D processing

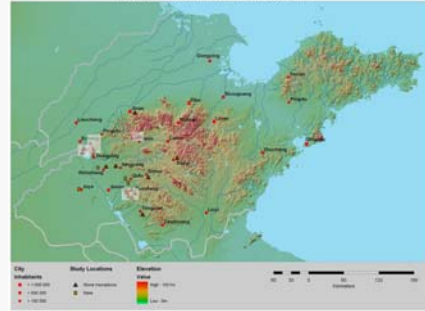
3.1. Levels of detail

The horizontal documentation level:

- the whole province of Shandong (level 1)
- the regions or political districts of the province, like Dongying or Zoucheng (level 2)
- the inscription site, like a valley or a mountain (level 3)
- the inscription itself that could be a Buddha name, a sutra text or a commentary (level 4)
- each character of the inscription (level 5)

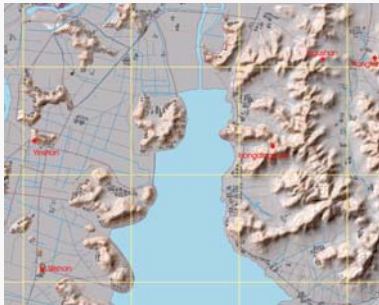
3.2. Maps and Plans

Overview Map, Shandong Province, China



- Level 1 Map of all of Shandong province with highlighted level 2 maps

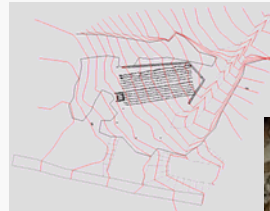
3.2. Maps and Plans



- Level 2 Map of the regional level. Here the inscription sites are highlighted

Map of district Dongying

3.2. Maps and Plans



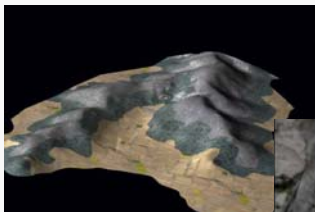
- Level 3 CAD Plan of the inscription site Geshan. The area where the inscription is located is highlighted with points

CAD plan of Inscription site Geshan



Aerial photo of Inscription site Geshan

3.3. 3D models



- Level 3 3D Model of the valley Hundingshan inscriptions are highlighted with rubbings

Overview of the valley

Part of the northern slope



3.4. Orthofotos and "Orthorubbings"



Original photo of inscription at Geshan

- Level 4: Orthofoto is a „digital image in scale“ – like a topographical map

Orthofoto of inscription at Geshan



3.4. Orthofotos and "Orthorubbings"

- Level 4: Rubbing and "Orthorubbings"



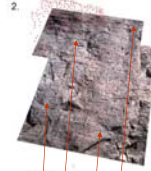
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3.4. Orthofotos and "Orthorubbings"

- production of an „Orthorubbing“



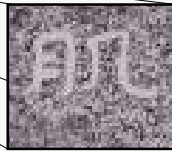
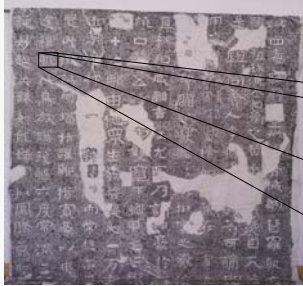
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3.4. Orthofotos and "Orthorubbings"

- Level 5: Single character with exact location



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3.4. Orthofotos and "Orthorubbings"

- 297 Characters Ming documented within this project



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4. Database and GIS

- database is an xml based open source database

- graphical part of the database is based on google map viewer



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4. Database and GIS

- documentation of inscription sizes and orientation in the database



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- Transcription
- Translation
- Rubbings
- Stones
- secondary literature etc
- location

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- Until now we have used photogrammetry because preciseness is more than sufficient
- in future we would like to try Laser scanning or other optical scanners, for example for the survey of stelae
- precise global coordinates of each inscription contained in the database allows for location based queries

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Thank you very much for your attention

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