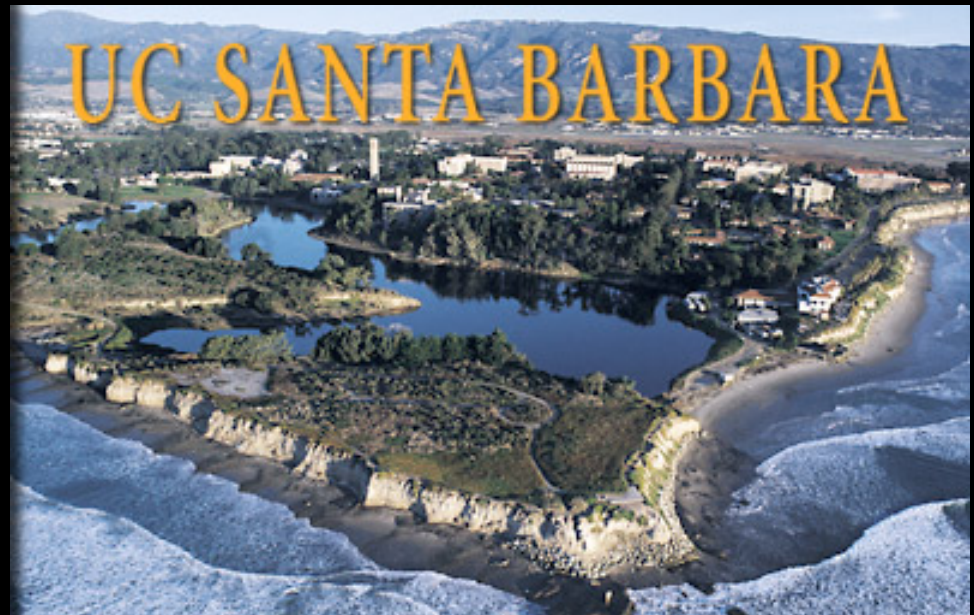


Daoist Grotto-heavens

A GIS Reconstruction

Introduction

- Justin O'Jack
- Department of Religious Studies
University of California



In honor of Su Shi (1037-1101)

- 橫看成嶺側成峰，
- 到處看山了不同。
- 不識廬山真面目，
- 只緣身在此山中。
- Looking from the side it forms a range, from the end it forms a peak;
- From everywhere looking at the mountain, it's never the same.
- I do not know Mount Lu's true face and eyes,
- And this is simply because I am in the very midst of the mountain itself.
- Translation by James M. Hargett
何瞻

Topic of discussion

- Another face of a mountain revealed through GIS
- Spatial analysis and scientific visualization of sacred sites on Chinese mountains
- GIS allows empirical patterns and spatial relationships evident in the data to emerge in ways simple textual analysis can not

Background of project

- Pacific Rim Research Grant
- Professor William Powell, UCSB
- “The Cultural Production of Space in China:

A Spatial Analysis of Religious Sites, Routes and Boundaries”

Project objective

- Relationship between Chinese religious geography and the social and political structures of Chinese society
- Understanding of regional and trans-regional constructions of space.

The purpose

- Through spatial analysis and scientific visualization
 - ◆ Identify a spatial correspondence between
 - ★ Chinese religious geography
 - ★ Administrative boundaries
 - ★ Topography & watersheds

**The project consists of two
integral components:**

1. Data collection in several regions of China:

- Mapping location of sacred sites
 - ◆ Temples and other cultural features
- Documenting architectural and natural features with digital photography
- Collection and digitization of local gazetteers and scholarship

2. Collaborative use and analysis of field data

- Develop understandings of sacred geography and its relationship to:
 - ◆ Social and political institutions
 - ◆ Natural landscape
- Generalize about systems of Chinese spatial logic across regional and sectarian boundaries?

Documented sites

- Jiuhua shan Anhui
- Emei shan Sichuan
- Qingcheng shan Sichuan

Some proposed sites

- Wutai shan Shanxi
- Putuo shan Zhejiang
- Hua shan Shaanxi
- Wudang shan Hubei
- Wuyi shan Fujian
- Luofu shan Guangdong
- Tai shan Shandong
- 24 Dioceses Sichuan

GIS reconstruction of four networks of site complexes

- 4 Buddhist Mountains 四大佛教名山
- 5 Marchmounts 五嶽
- 10 Greater Grotto-heavens 十大洞天
- 36 Lesser Grotto-heavens 三十六小洞天

Grotto-heavens

- Produced in consultation with Professor Franciscus Verellen
- Localizations listed in Appendix :
“The Beyond Within: Grotto-heavens (dongtian 洞天) in Taoist Ritual and Cosmology.” *Cahiers d’Extreme-Asie* 8 (1995): 265-90.
- Geocoded using Alexandria Digital Library Gazetteer Server

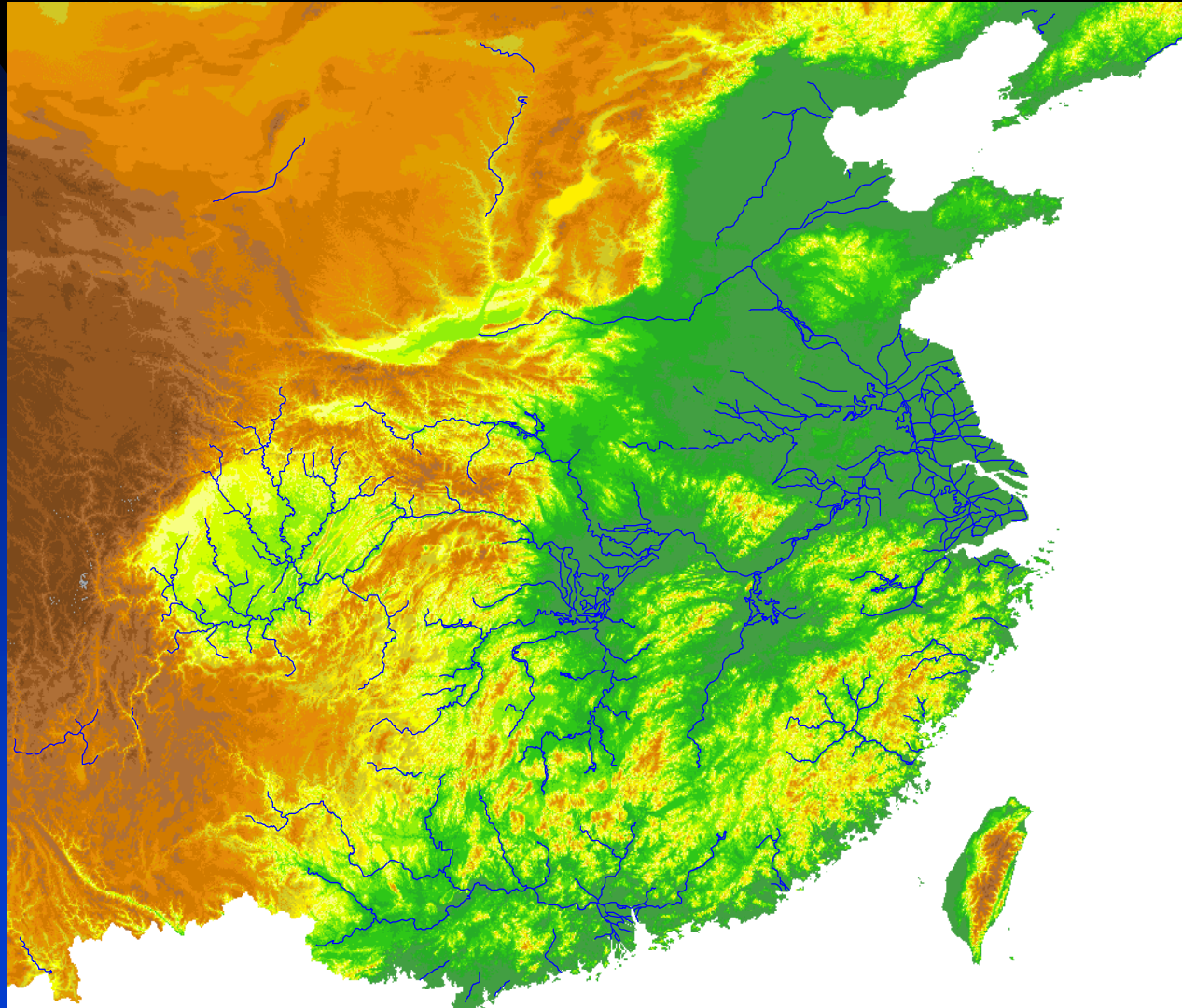
Small-scale China GIS Data

Vector and DEM data produced
under the direction of:

Lawrence W. Crissman

The Australian Centre of the
Asian Spatial Information and
Analysis Network (ACASIAN)
Griffith University

Sacred sites networks and navigable waterways



The purpose

- Demonstrate spatial relationship of trans-regional religious networks to:
 - ◆ Tang administrative boundaries
 - ◆ navigable waterways
 - ★ Sources of water
 - ★ Routes
 - ★ Barriers
 - ★ Boundaries

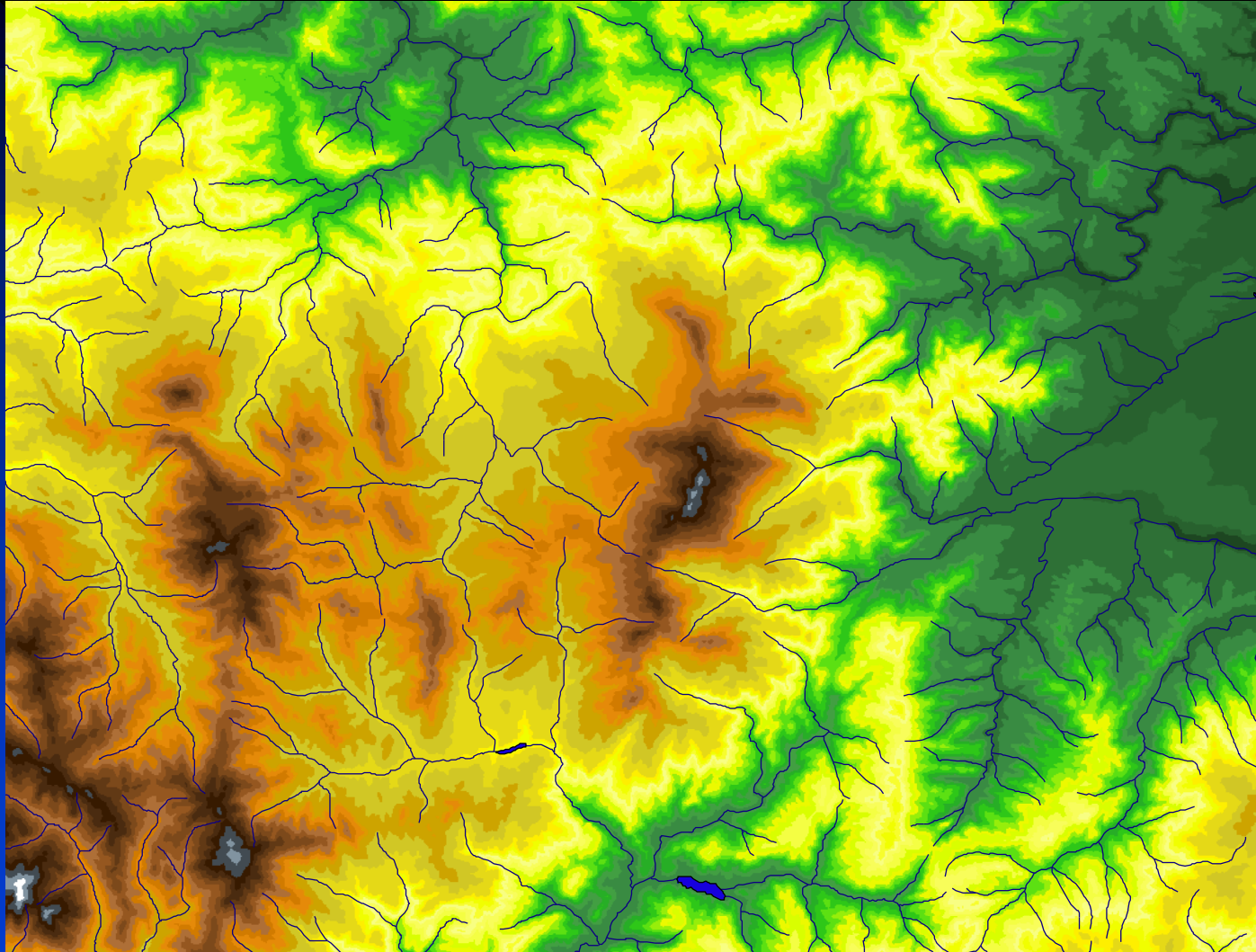
GIS reconstruction of an example site complex

- Emei shan 峨眉山
(7th Lesser Grotto-heaven) 第七小洞天

Large-scale China GIS data

- Russian Military Maps (1:100,000)
- Digitized by East View Cartographic
- Purchased by the Map & Imagery Library, UCSB

Sacred site complex and watersheds



The purpose

- Demonstrate a spatial relationship between individual sites within the example complex to:
 - ◆ Pilgrimage routes
 - ◆ Watersheds
 - ◆ Topography

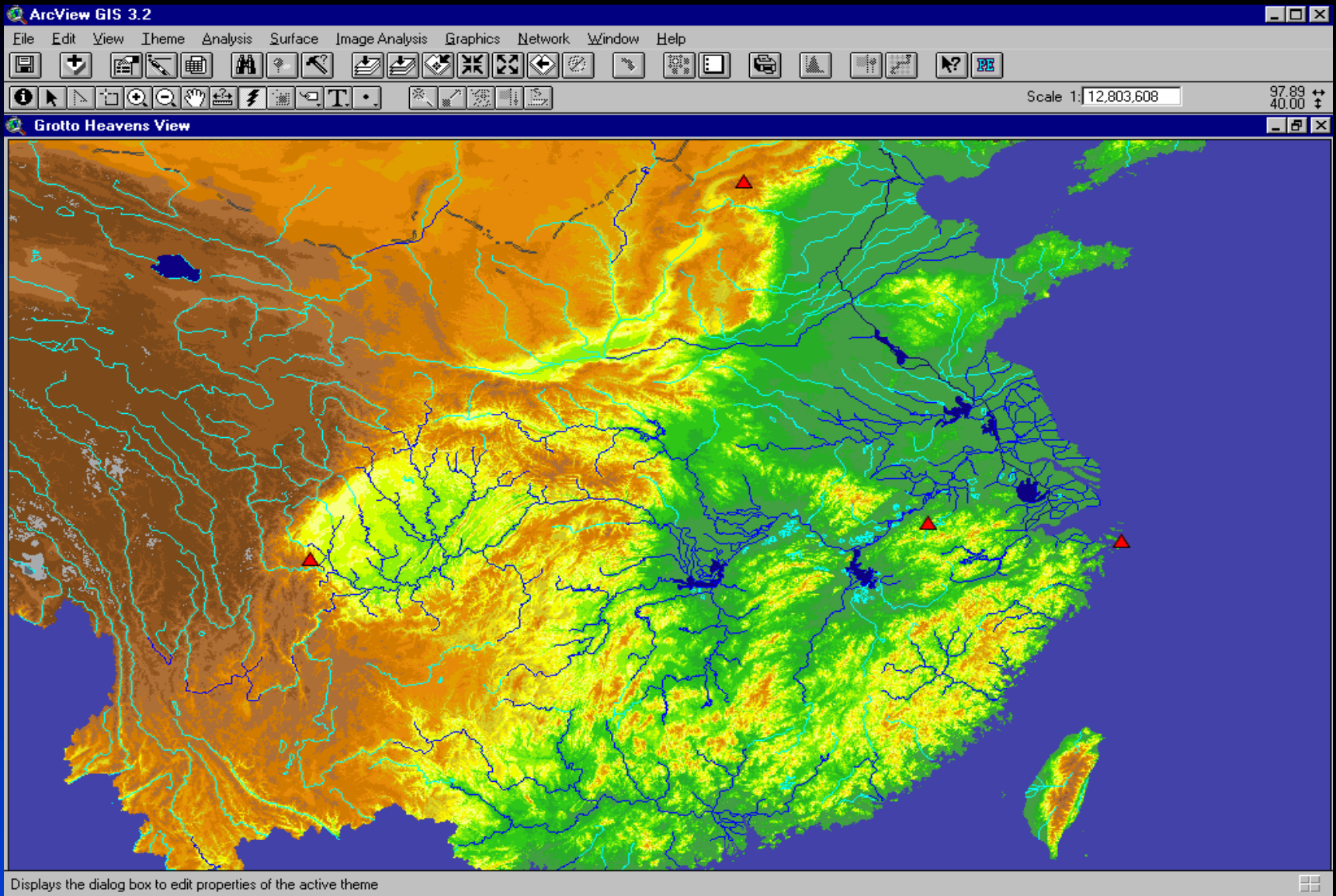
Sacred Sites Reconstructed

Representative Screenshots
from Shanghai Demonstration

Small-scale maps

- Four sacred site networks

4 Buddhist Mountains



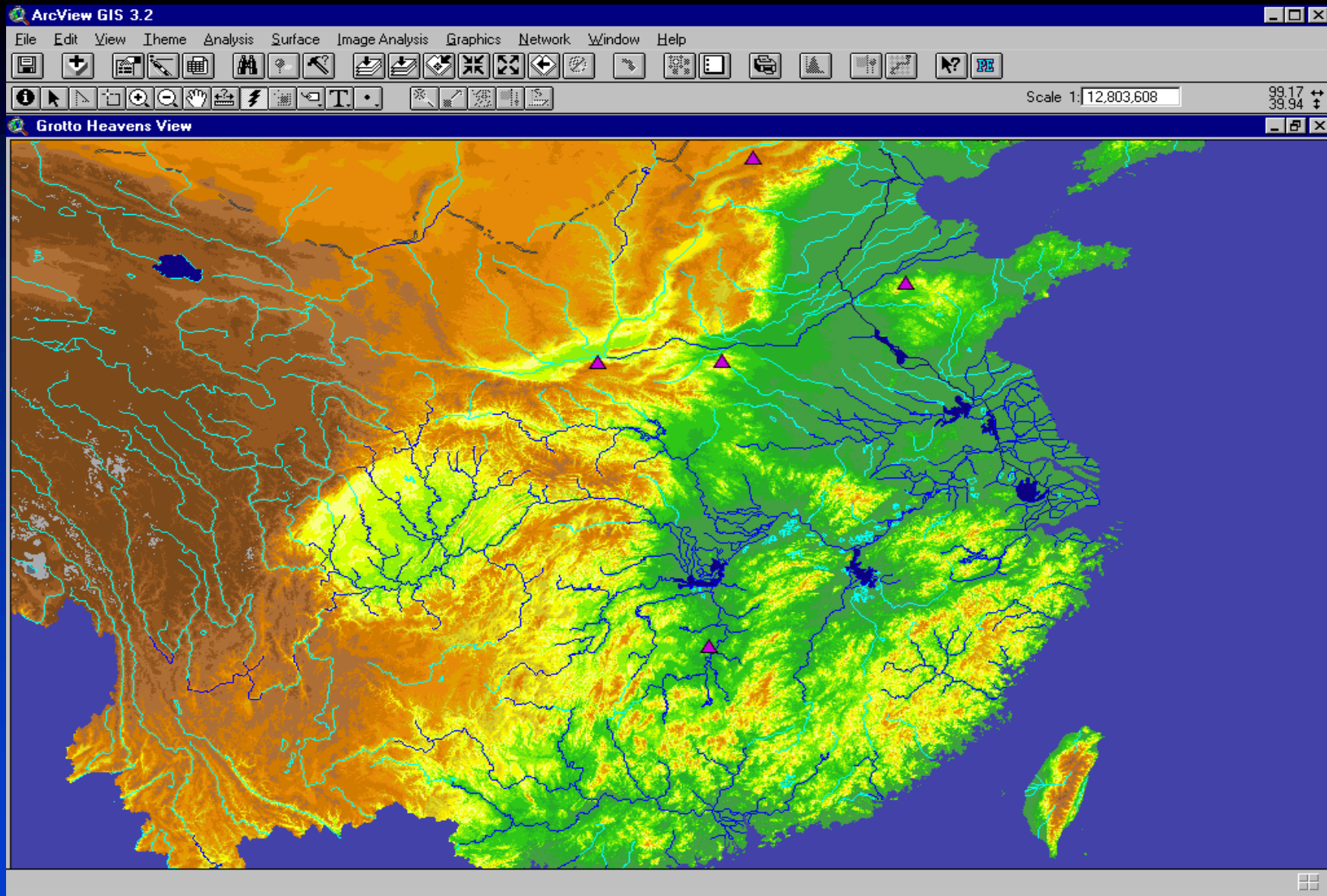
Hotlink to pilgrimage maps

The image displays a screenshot of the ArcView GIS 3.2 interface. The main window, titled "Grotto Heavens View", shows a topographic map of a coastal region, likely Putuo Shan, with elevation indicated by a color gradient from brown (high) to green (low). A red triangle marker is visible on the map. The interface includes a menu bar (File, Edit, View, Theme, Analysis, Surface, Image Analysis, Graphics, Network, Window, Help), a toolbar with various GIS tools, and a scale bar set to 1:12,803,608. The status bar shows coordinates 97.89 and 40.00.

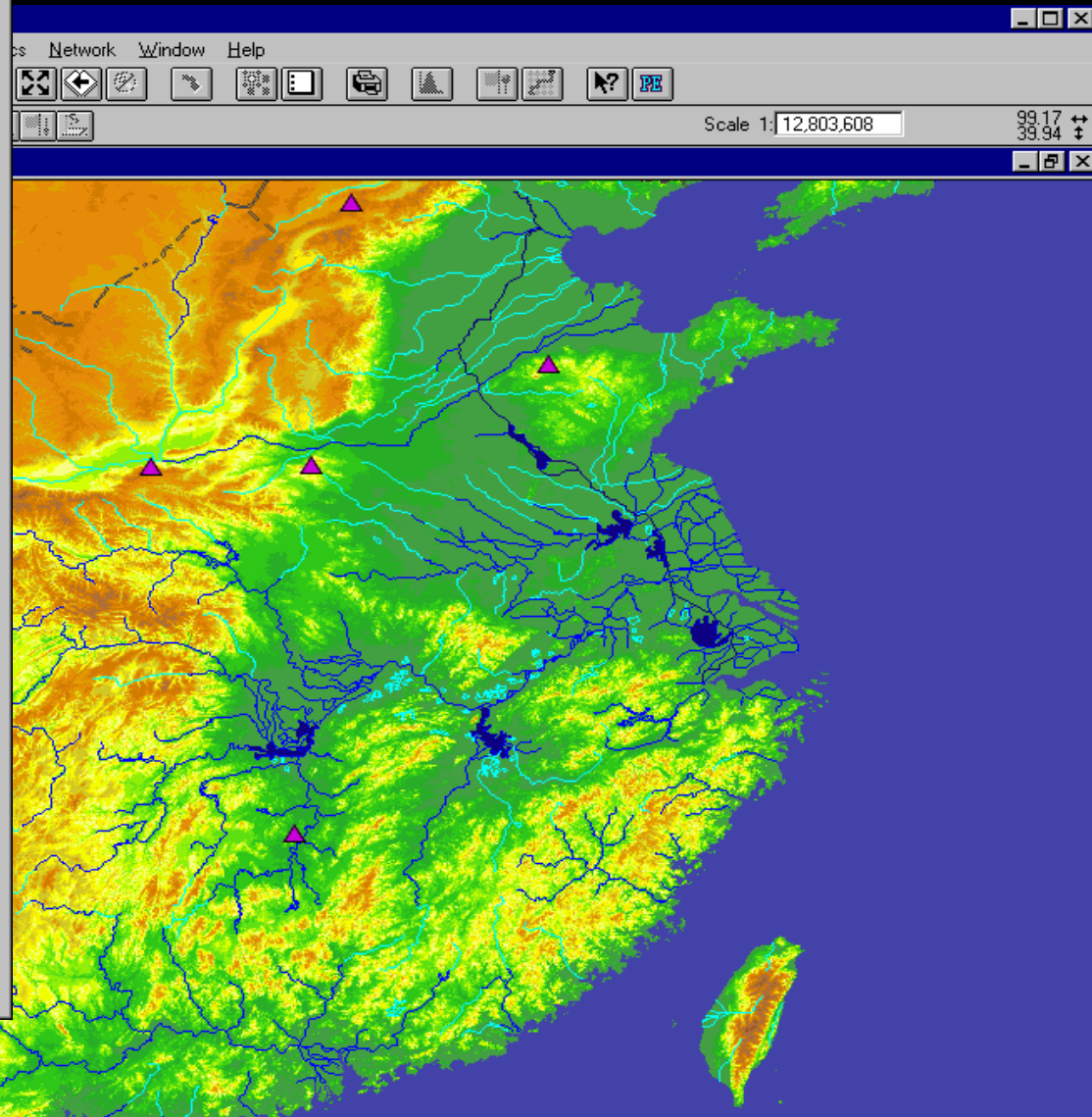
An inset window in the bottom-left corner displays a historical map titled "普陀山勝境全圖" (Complete Map of Putuo Shan's Sacred Sites). The map is a detailed black and white woodblock print showing the mountainous terrain, a large body of water, and various structures. The title is written in large Chinese characters. Below the title, there is a column of smaller text, likely a legend or descriptive text. The map is framed by a decorative border.

The inset window's title bar shows the file path: `C:\justin\GISdatasets_use\Digital_images\SacredSites_general\putuo_map.tif`. A "Scale Image" checkbox is checked at the bottom left of the inset window.

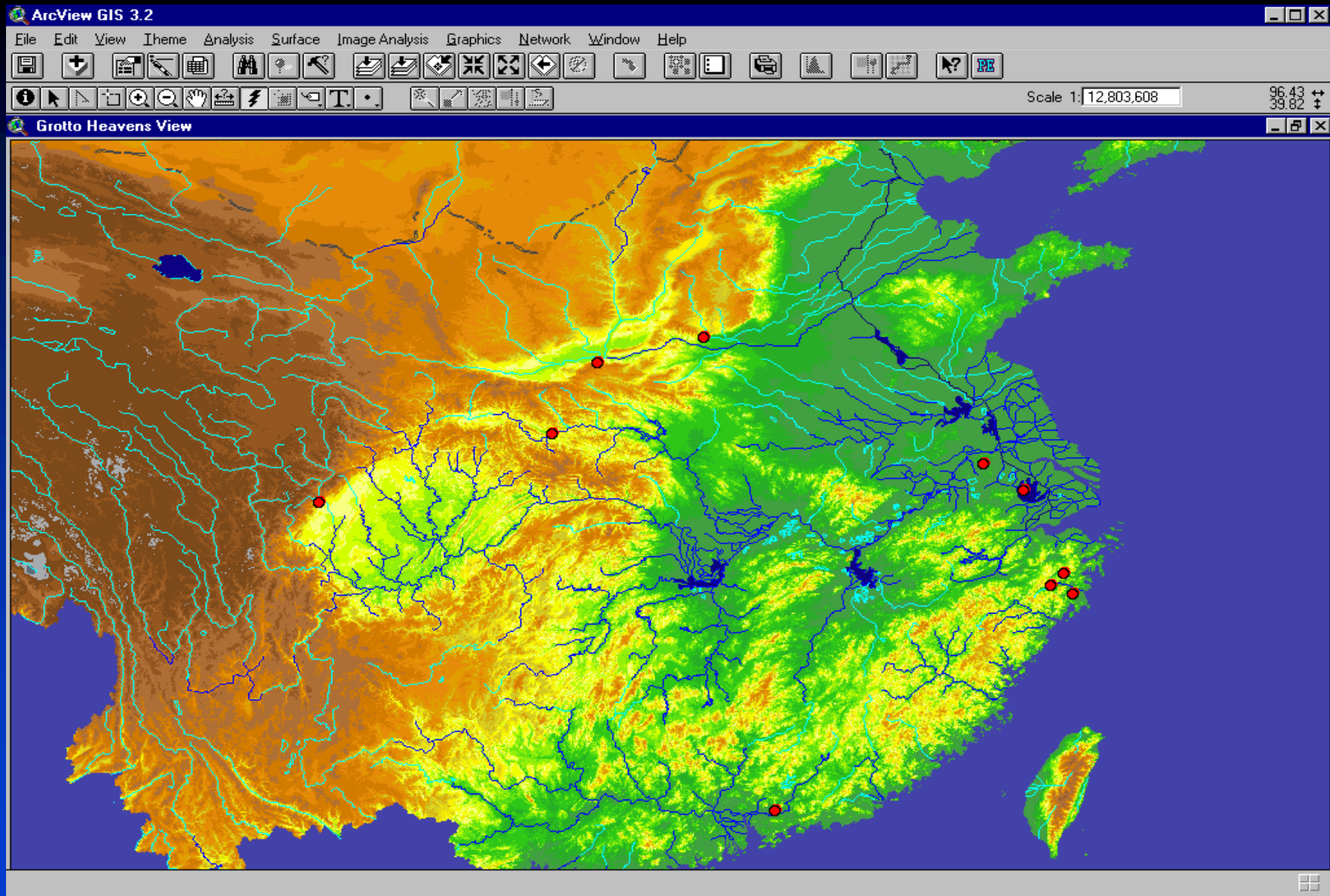
5 Imperial Marchmounts



Hotlink to idealized maps

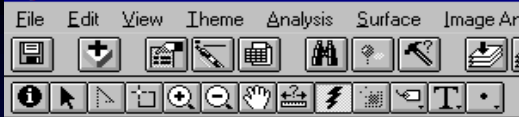


10 Greater Grotto-heavens

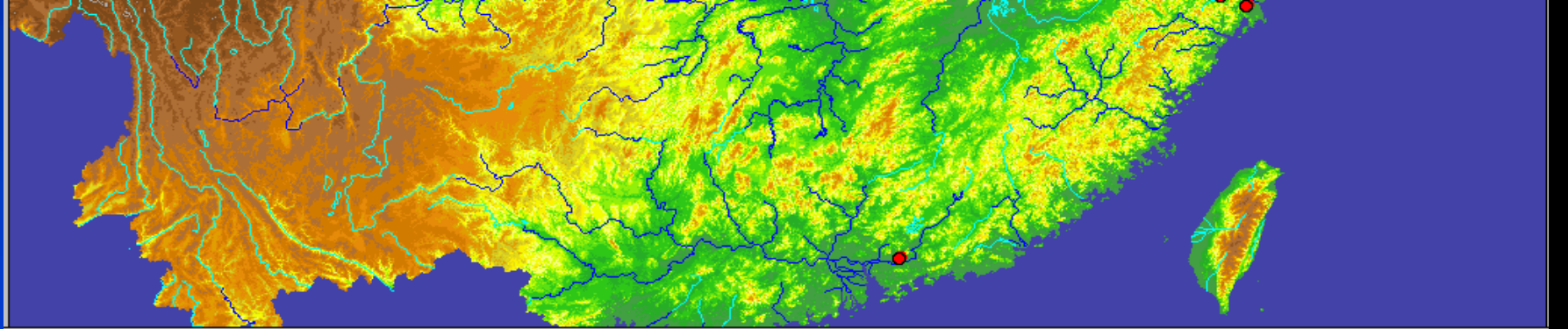
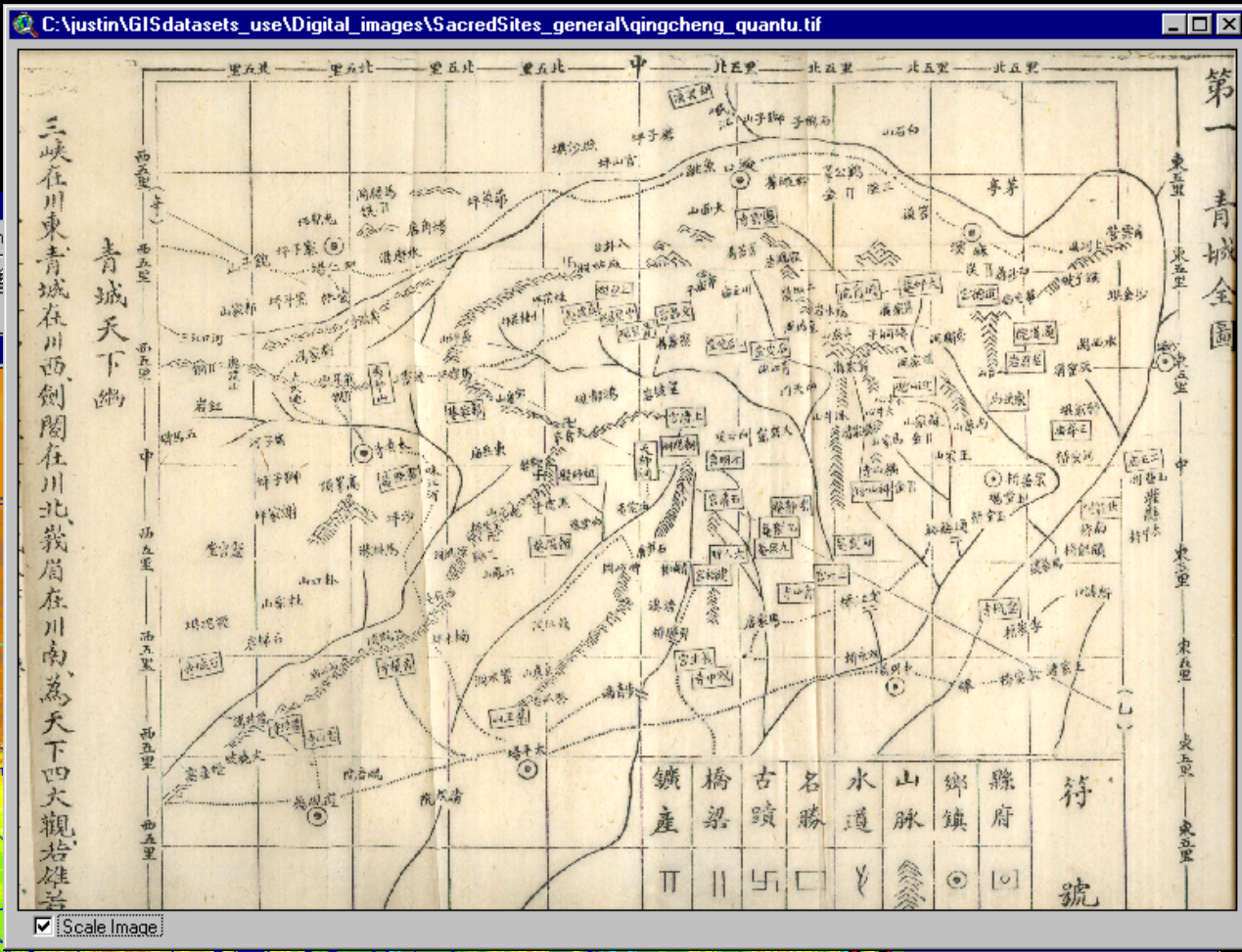
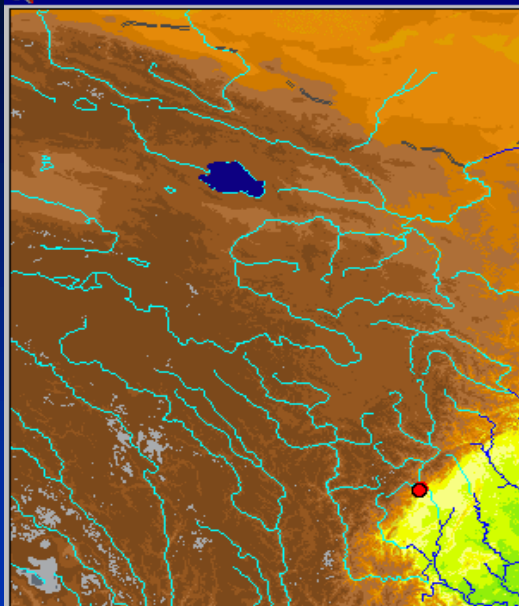


Hotlink to historical maps

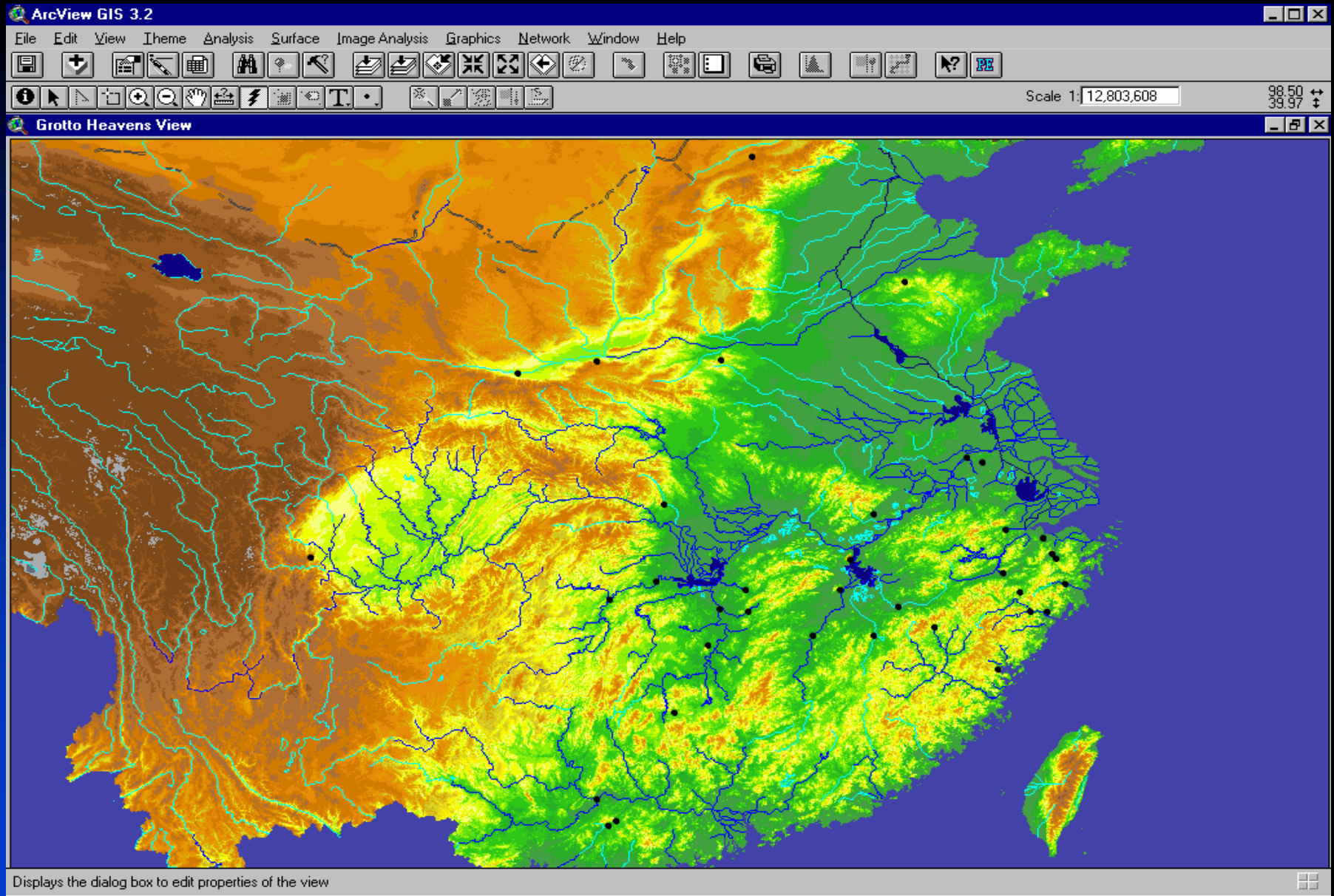
ArcView GIS 3.2



Grotto Heavens View



36 Lesser Grotto-heavens



Buffer Analysis: 30 km buffers with 10 km rings

The screenshot shows the ArcView GIS 3.2 interface. The 'Theme' menu is open, displaying the following options:

- Properties...
- Start Editing
- Save Edits
- Save Edits As...
- Convert to Shapefile...
- Export to Table...
- Convert to 3D Shapefile...
- Convert Grid to TIN...
- Convert to Grid...
- Save Data Set...
- Save Image
- Save Image As...
- Edit Legend...
- Hide/Show Legend
- Re-match Addresses...
- Auto-label... (Ctrl+L)
- Remove Labels (Ctrl+R)
- Remove Overlapping Labels
- Convert Overlapping Labels (Ctrl+O)
- Table...
- Create a Report...
- Query... (Ctrl+Q)
- Select By Theme...
- Create Buffers...**
- Clear Selected Features
- Edit Theme Expression...

The map displays a topographic background with a network of blue lines and several purple circular buffers of varying sizes overlaid on the terrain. The status bar at the bottom left reads "Creates buffers around features".

10 Greater Grotto-heavens: Select By Theme Analysis

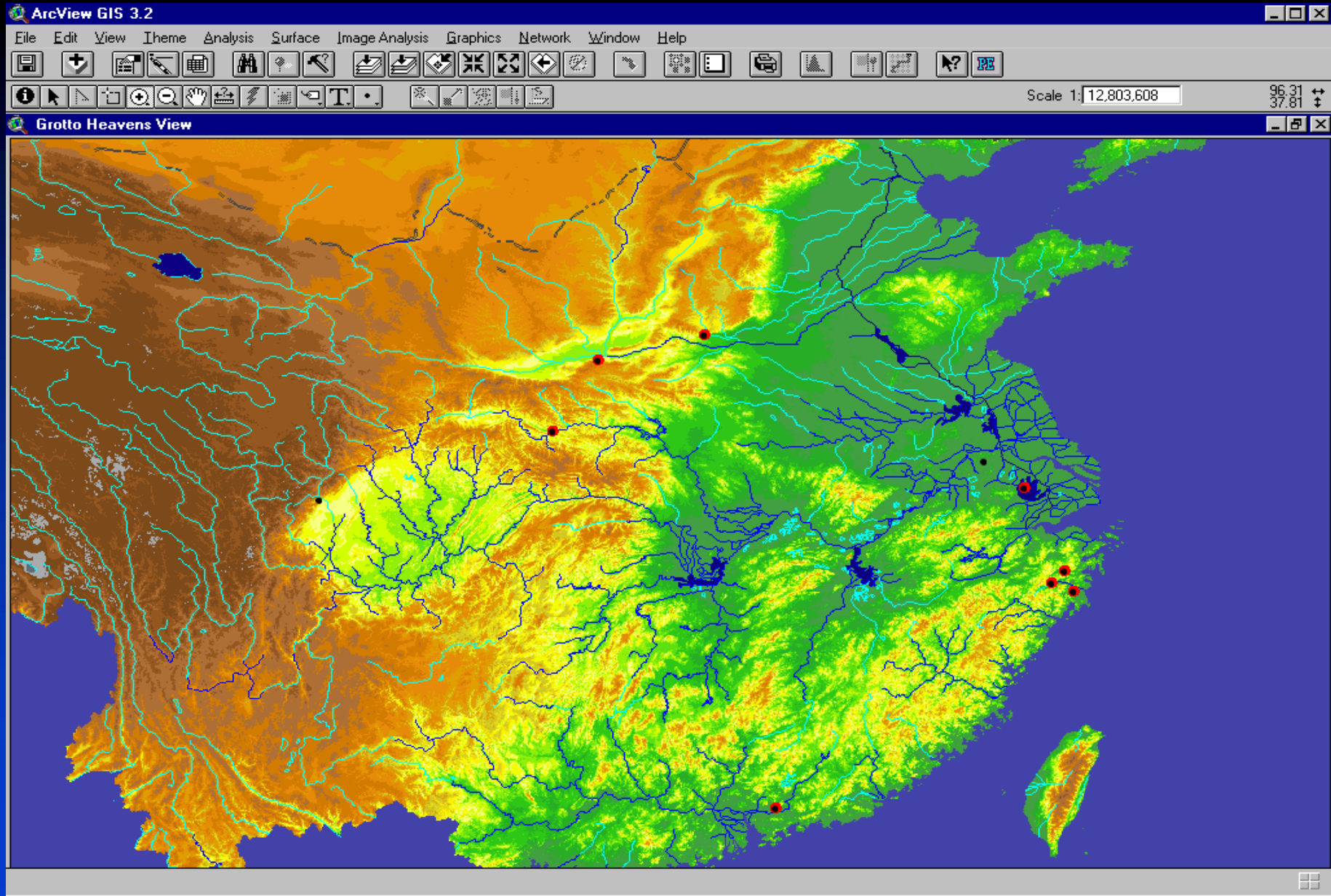
The image shows the ArcView GIS 3.2 interface. The 'Theme' menu is open, and the 'Select By Theme...' option is highlighted. The menu items are:

- Properties...
- Start Editing
- Save Edits
- Save Edits As...
- Convert to Shapefile...
- Export to Table...
- Convert to 3D Shapefile...
- Convert Grid to TIN...
- Convert to Grid...
- Save Data Set...
- Save Image
- Save Image As...
- Edit Legend...
- Hide/Show Legend
- Re-match Addresses...
- Auto-label... Ctrl+L
- Remove Labels Ctrl+R
- Remove Overlapping Labels
- Convert Overlapping Labels Ctrl+O
- Table...
- Create a Report...
- Query... Ctrl+Q
- Select By Theme...**
- Create Buffers...
- Clear Selected Features
- Edit Theme Expression...

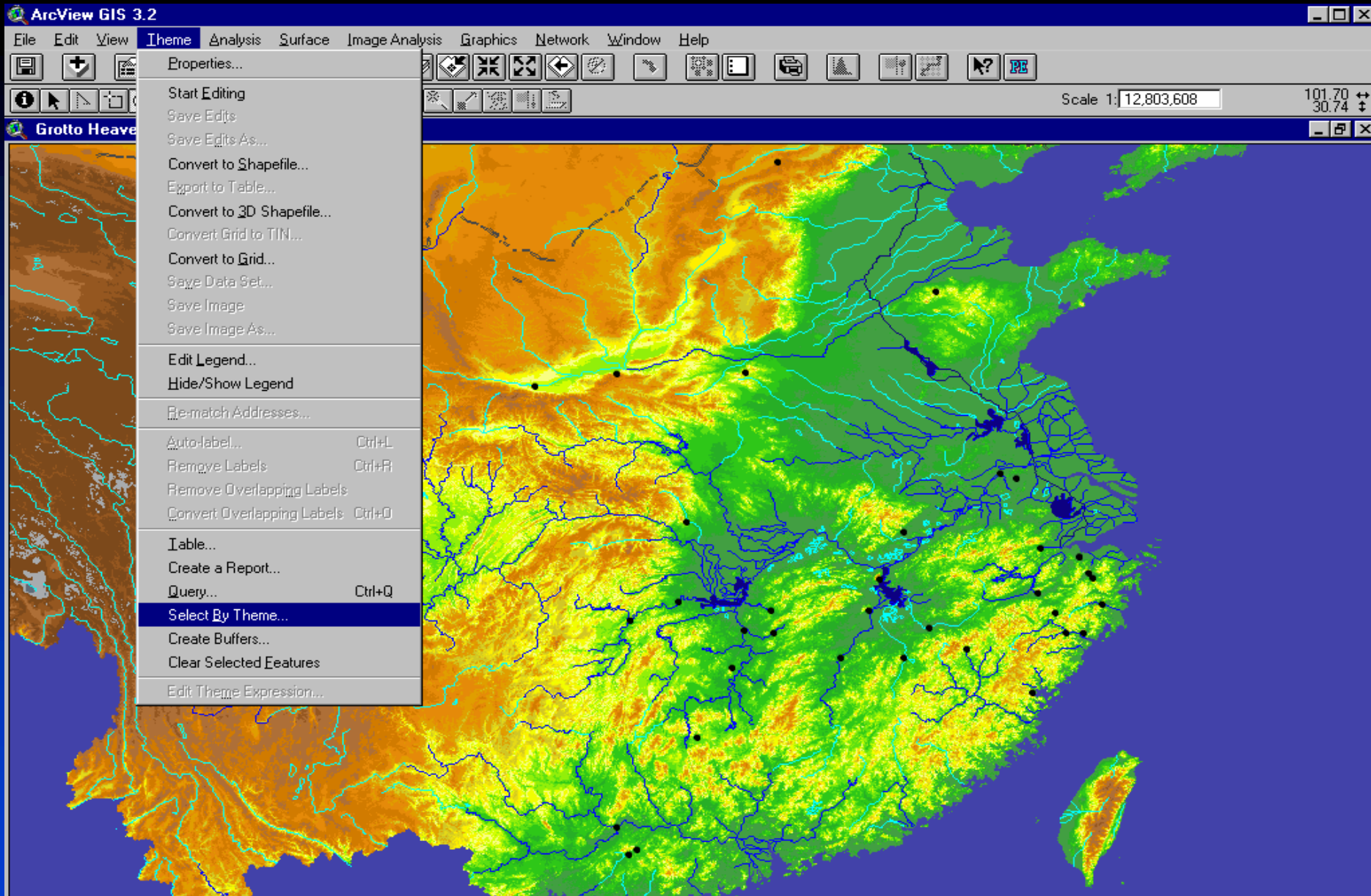
The background map shows a topographic view of the Greater Grotto-heavens region, with a scale of 1:12,803,608. The map displays terrain elevation in shades of green and yellow, with blue lines representing rivers and streams. The interface includes a menu bar (File, Edit, View, Theme, Analysis, Surface, Image Analysis, Graphics, Network, Window, Help), a toolbar, and a status bar at the bottom.

Selects features in the active themes using another theme's features

30 km within distance of navigable river

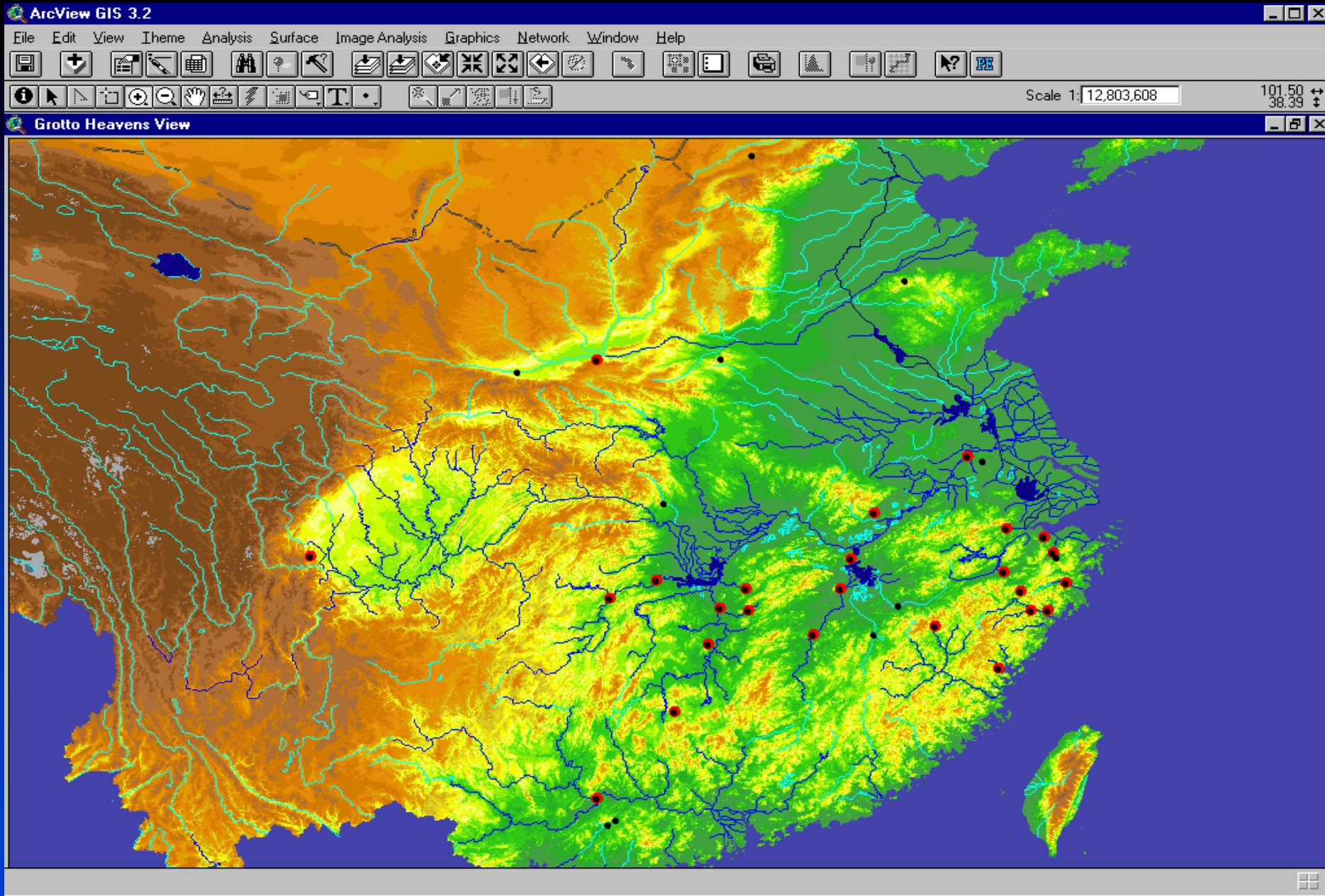


36 Greater Grotto-heavens: Select By Theme

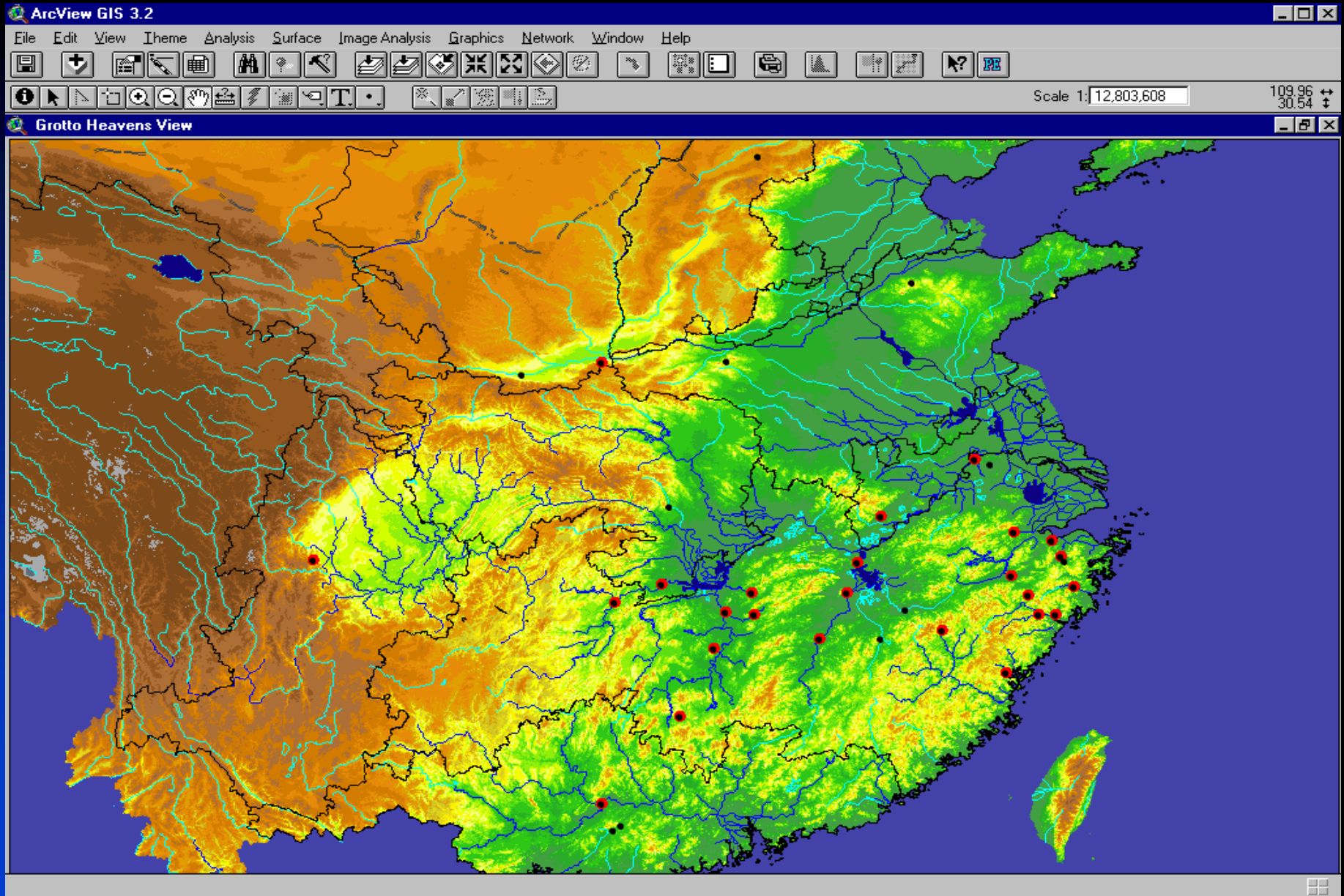


Selects features in the active themes using another theme's features

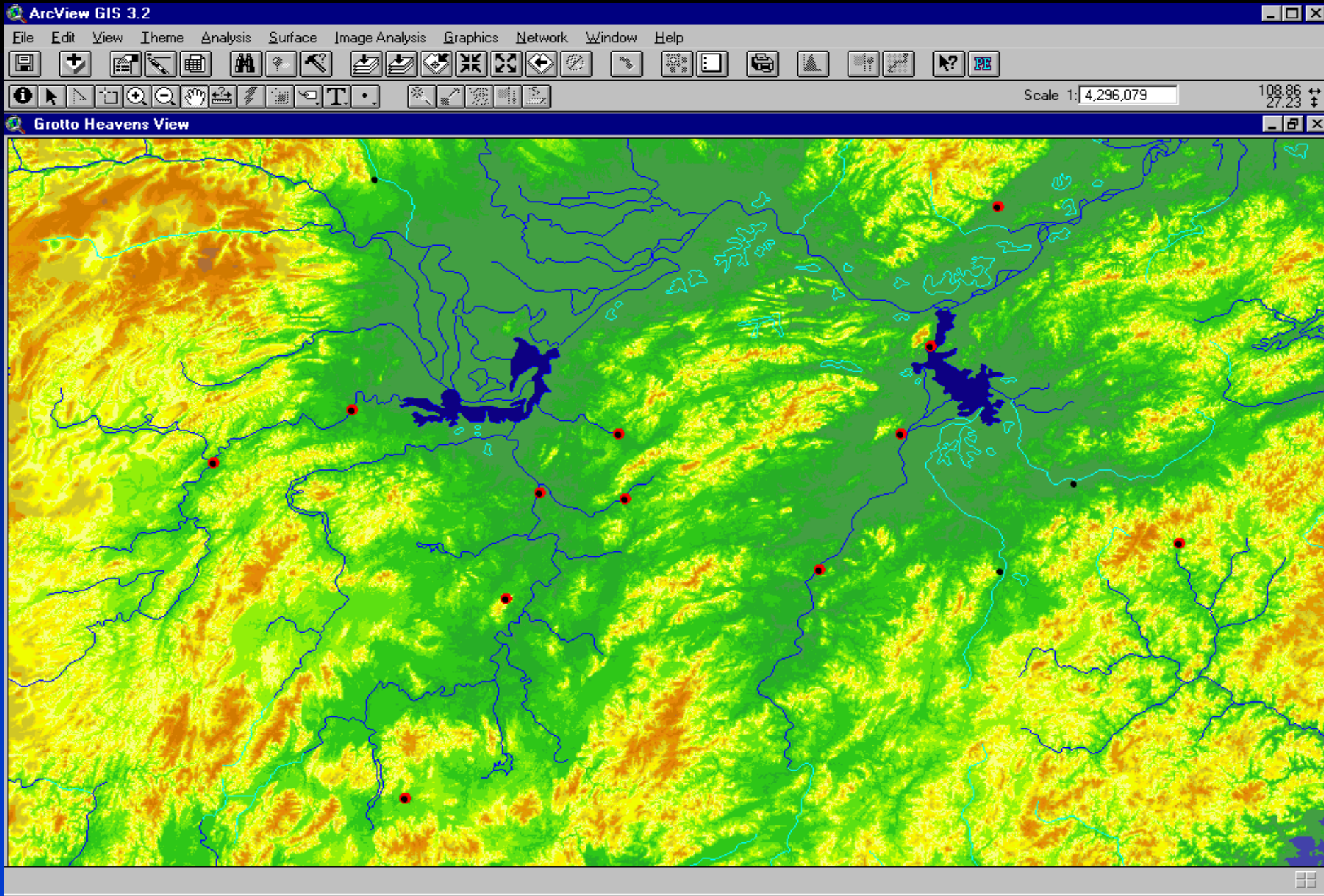
30 km within distance of navigable river



Administrative boundaries: Tang (741) dao



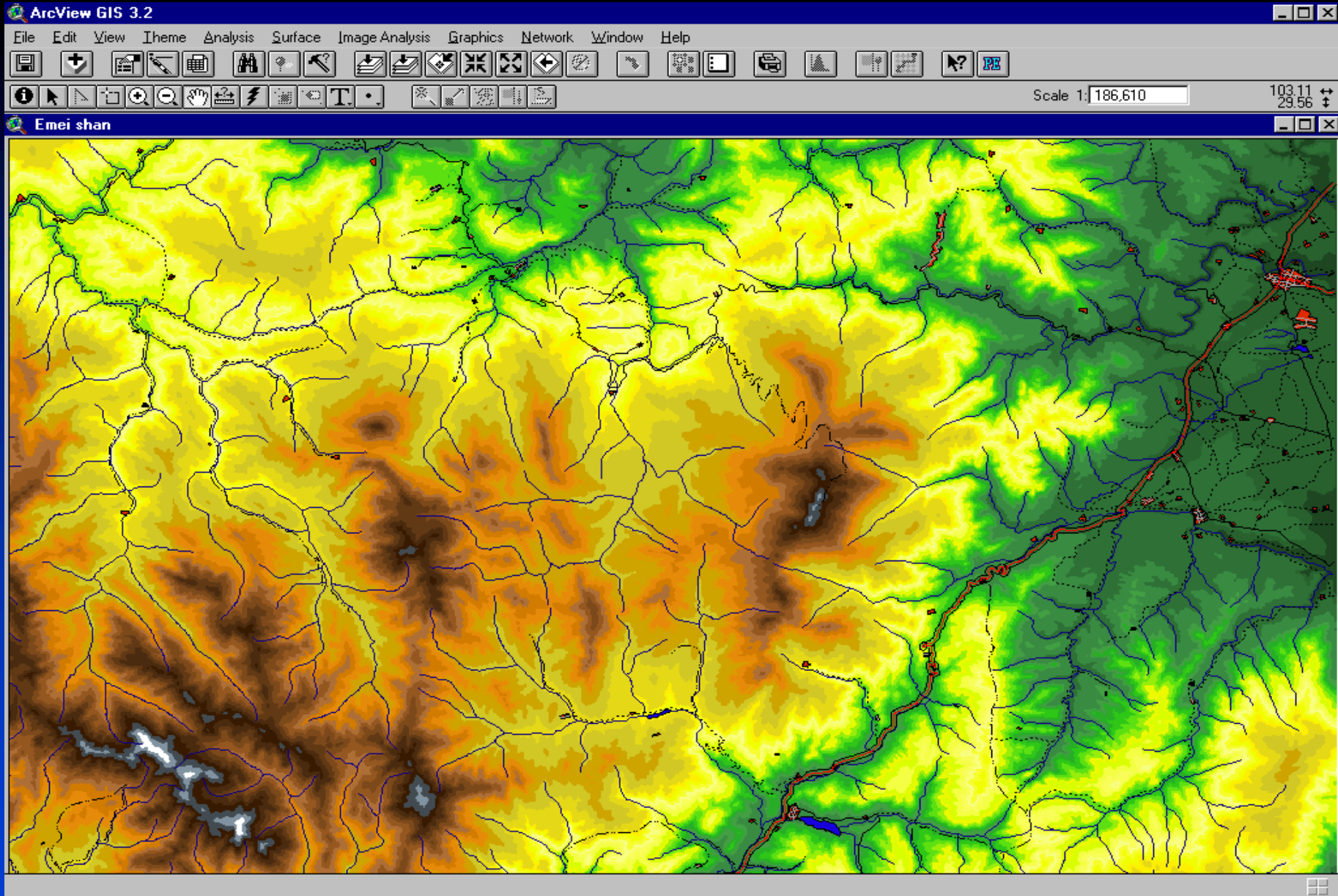
Close-up



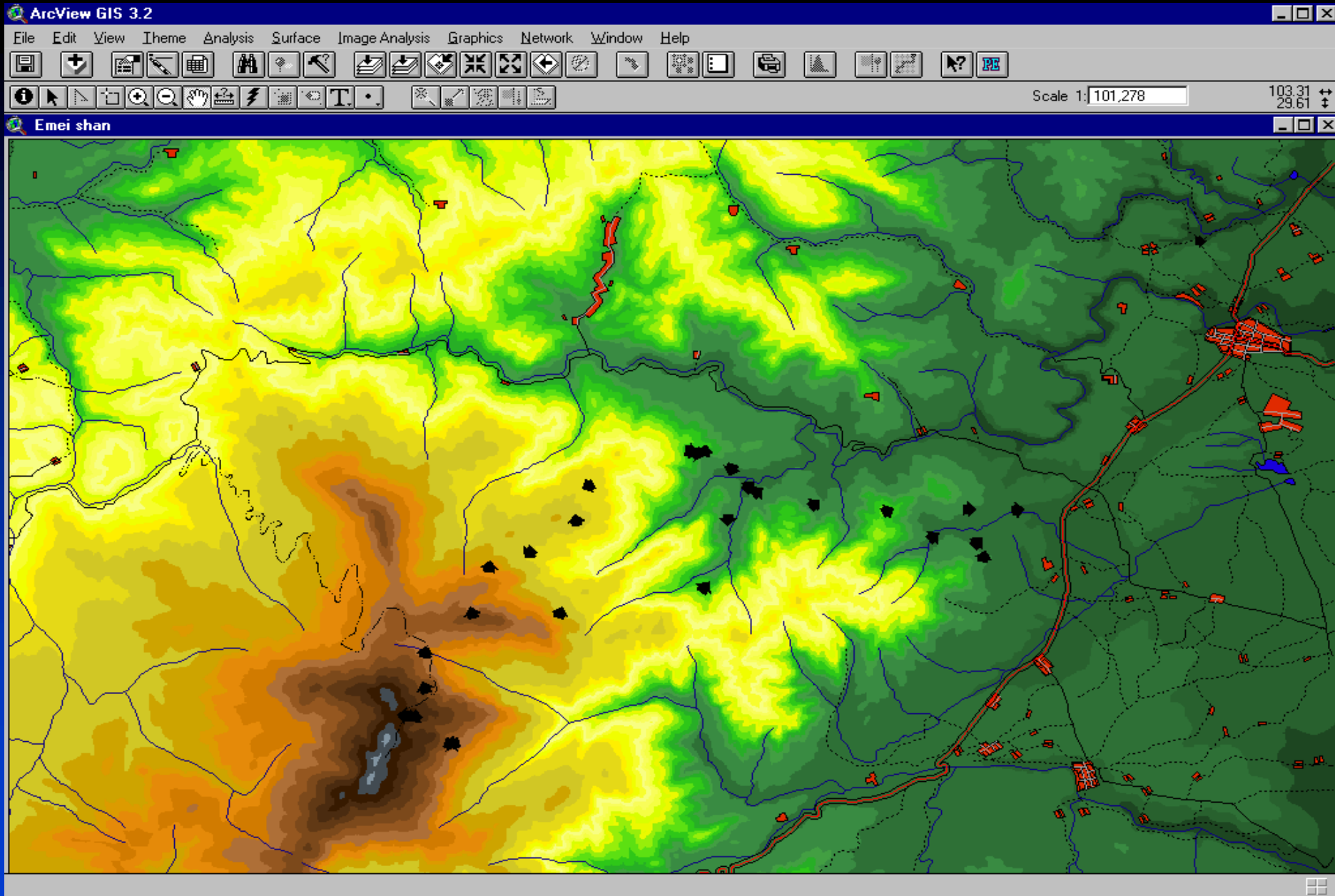
Large-scale maps

- Mt. Emei (Emei shan 峨眉山):
Seventh Lesser Grotto-heaven

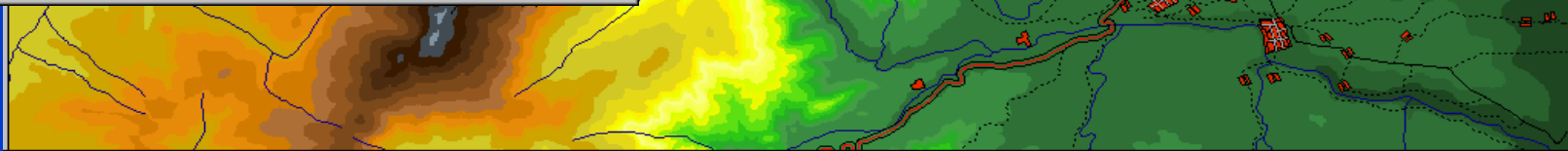
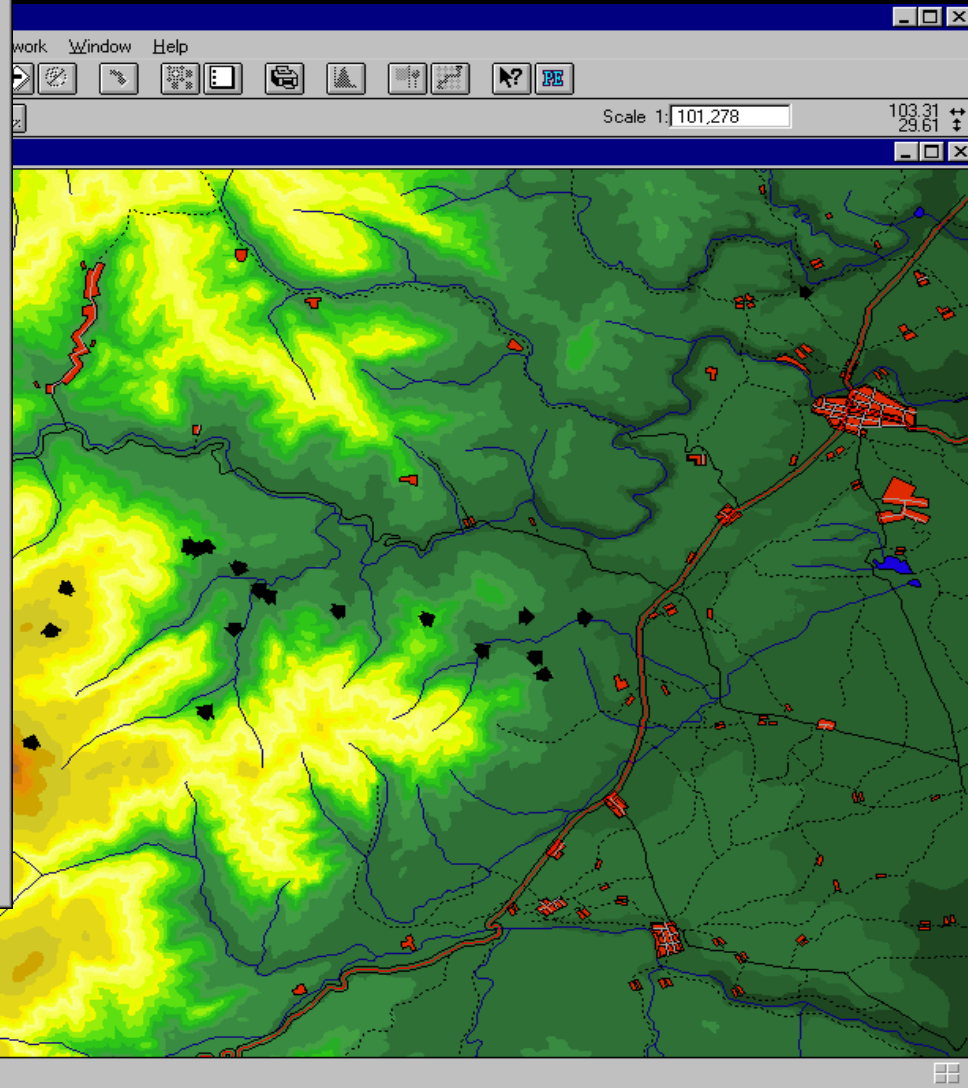
1:100,000 DEM of Mt. Emei



Close-up with temples



Hotlink to digital photos



C:\justin\GISdatasets_use\Digital_texts\Wuchuanlu_eng.txt

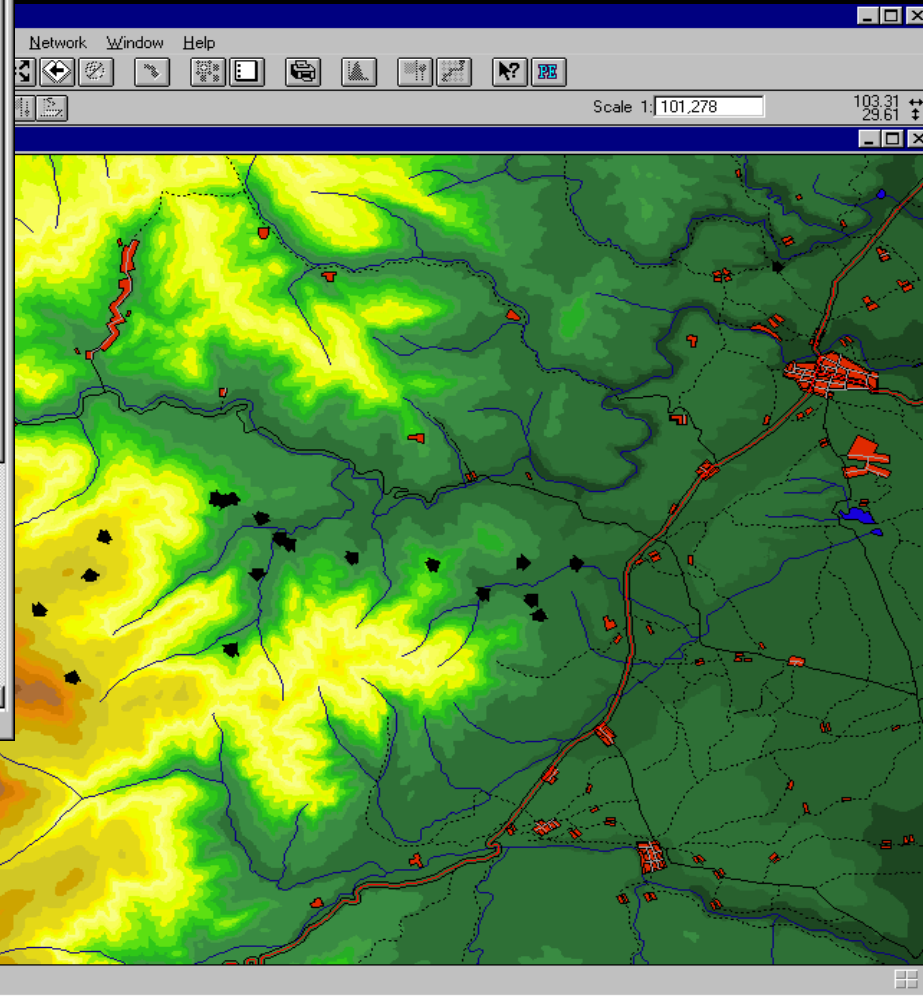
Strassberg, Richard E. *Inscribed Landscapes: Travel Writing from Imperial China*. Berkeley and Los Angeles: University of California Press, 1994. 217-218.

A while passed, then I braved the cold and went up over the Bridge of the Celestial Transcendent to Brilliance Cliff, where I lit some incense. The chapel there is covered with a roofing of bark. The Vice-Grand Councilor Wang Zhanshu once had the roof tiled, but snow and frost seeped in and within a year the tiles had all cracked. Later it was reroofed with bark that at least lasts for two to three years. Someone said to me, "Buddha's Halo always appears at the hours of wu [11:00 A.M.-1:00 P.M.]. Now it is past shen [3:00-5:00 P.M.]. We had better return to our lodgings and come again tomorrow." While we were hesitating, suddenly clouds arose below the cliff from a valley to the side, just where Thunder Cave Mountain is located. The clouds paraded by vigorously like an honor guard. When they encountered the cliff, they paused for a short while. From the top of the clouds, a grand halo appeared containing several rings of various colors. I stood exactly opposite it and saw an inky shadow in its center, like a Transcendent or a sage astride an elephant. In the time it would take to drink a cup of tea the halo vanished, while beside it appeared another halo just like the one before. It, too, vanished after a while. From the clouds there then appeared two rays of golden light, which extended along the waist of the cliff. People call it the "Lesser Manifestation." By sunset, the clouds had all dispersed, and the surrounding mountains became quite tranquil. By the second night watch [9:00-11:00 P.M.], lights appeared all over below the cliff. When viewed from a distance, they seemed to number in the many hundreds, perhaps even a thousand. At night, the cold was intense; I could not stand outside for long.

The next day, ping shen [July 25], I again ascended Brilliance Cliff for the view. Behind the cliff were the many layers of the Mount Min range. Slightly to the north was Tiled House Mountain, located in Ya Prefecture. A bit to the south was Greater Tiled House Mountain, close to the area of Nan zhao. Its shape looked just like a one-room house with a tiled roof. There was also a halo at Lesser Tiled Roof Mountain, known as the "Manifestation of Self-Enlightenment." Behind these mountains are the Snowy Mountains of the Western Region. Lofty, rugged, carved, sliced; scores, perhaps a hundred peaks in all. When the rising sun first illuminates them, the snow glistens like shiny silver, shimmering in the light of the dawn. From antiquity to the present, this snow has never melted. These mountains extend all way to the land of India and to tributary kingdoms along the border for a distance of I don't know how many thousands of li. It looks like it is spread out on a table before one. This spectacular, unique, unsurpassable view was truly the crowning one of my entire life.

I returned to the chapel on the cliff to offer up a prayer. Soon, a dense mist arose on all sides, blending everything into a single whiteness. A monk said to me, "This is the 'Silvery World.'" After a while, a heavy rain fell and the mist dispersed. The monk said, "This is the 'Rain That Cleanses the Cliff.'" "Buddha's Halo" is about to appear." Flossy clouds once again spread out below the cliff, billowing upward until they reached only several tens of feet below the top. The clouds smoothed themselves out like a floor of jade. There was a sudden rain, and droplets flew about. I looked down at the middle of the cliff; there was a large halo lying on top of the smooth clouds. Encircling it were three rings, each containing blue, yellow, red, and green colors. The center of the halo was empty, bright, dense, and clear. Each observer could see his form appear in the empty, bright area without the slightest degree of obscurity, just like a mirror. When one raised one's hands and moved one's legs, the reflection indicated this without showing anyone else's form. The monk said, "This is the 'Halo That Captures the Body.'" When this halo vanished, winds arose from the mountains in front and the clouds quickly drifted away. From the midst of the wind and clouds appeared yet another large halo. It stretched across several mountains and contained many unusual hues, all gathered together in a multicolored light. Peaks, plants, and trees were so fresh, gorgeous, brilliant, and glittering that I couldn't look at them directly. When the clouds and mist dispersed, this halo remained to shine alone. People call it the "Pure

Hotlink to secondary textual sources



C:\justin\GISdatasets_use\Digital_texts\Emeishan_zhi_utf8.txt

印光大师修订

四大名山志 第三册

佛教出版社 敬印

大方广佛华严经普贤菩萨行愿品节要
 普贤菩萨告善财言，善男子，如来功德，假使十方一切诸佛，经不可说不可说佛刹
 极微尘劫劫，相续演说，不可穷尽。若欲成就此功德门，应修十种广大行愿。何等为
 十，一者礼敬诸佛，二者称??如来，三者广修供养，四者忏悔业障，五者随喜功德，六
 者请转法轮，七者请佛住世，八者常随佛学，九者恒顺众生，十者普皆宝向。若诸菩
 萨，于此大愿，随顺趣入，则能成熟一切众生，则能随顺阿耨多罗三藐三菩提，则能
 成满普贤菩萨诸行愿海。是故若人诵此愿者，行于世间，无有障碍，如空中月，出于
 云翳。诸佛菩萨之所称??，一切人天皆应礼敬，一切众生悉应供养。又复是人临命
 终时，最后刹那，一切诸根，悉皆散坏，一切亲属，悉皆??离，一切威势，悉皆退失。辅相
 大臣，宫城内外，象马车乘，珍宝伏藏，如是一切，无复相随。唯此愿王，不相??离，于
 一切时，引导其前，一刹那中，即得往生极乐世界。

峨眉山志卷首 流通序 (一) (1)

重修峨眉山志流通序
 普贤菩萨，道证一真，德圆两足，住寂光而兴慈运悲，辅善逝而带果行因，具遮那之
 全体，示居补处，结华严之大义，指归西方，虽尽十方法界，无非所住真境，而此大光
 明山，实为应化道场。溯其立名之意，盖以佛光显现，圣迹夜来，巨古今而无或隐灭，
 尽来际以启儒??生。由是之故，致此峨眉宝山，亦称大光明焉。一以形势立名，一以
 圣迹取号，固无别种因缘也。而一旌不知菩萨德相者，欲借经言以见重，援引华严
 经普贤住处品??，西南方有处，名光明山，从昔已来，诸菩萨众，于中止住。现有菩萨
 ，名曰贤胜，与其眷属诸菩萨众三千人俱，常在其中，而演说法。夫如来在天竺之中，
 摩竭提国，成等正觉，说华严经，凡历七处，而有九会。初会，即在菩提场说，二会，七会
 ，八会，皆在普光明殿说，此殿亦在菩提场中。普贤住处品，乃第七会所说之一品。先
 说东南西北之四方，次说东北东南西南西北之四峰，方位次第，井然不乱。彼见有
 光明山三字，遂谓此西南方，指震旦国之峨眉，在中国之西南，于现有菩萨，名曰贤

峨眉山志卷首 流通序 (一) (2)

胜，妄加??曰，即普贤也。普贤亦名??吉，未见又名贤胜也。援经而深悼于经，是欲令
 人生信，而反致人起疑也。不知普贤之德相，以如来智慧，穷劫莫宣，华严经八十一
 卷，其发挥普贤菩萨神通智慧，道德功业者，有十余卷经，若稍加研究，则何肯谬引。
 譬如轮王住处，即是王都，光明到处，了无黑暗。由是今志，特立普贤圣迹一门，于中
 分为六章，一释名，略释普贤名义，二修证，节录悲华，楞严，二经，以明普贤因地修证
 工夫。然据如来不思议境界经，则普贤久已成佛，其本地非佛莫知也。三德相，略引
 华严经，称??普贤不可思议神通道力，四法要，略明普贤所说法要，而普贤行愿品，
 以十大愿王，导归极乐，普劝善财，及华藏海众，一致进行，宝向往生西方极乐世界，
 以期圆满佛果，而为华严一经之归宿。是知此一卷经，大开??土法门，实为十方三
 世一切诸佛，上成佛道，下化众生，成始成终之总持法门。三根普被，圣凡齐摄，末世
 行人，皆当依止。故录其全文，以期同登莲邦焉。五利行，节录法华经，观普贤菩萨行
 法经，略明普贤卫护行人之事。六应化，明普贤证穷法界，故于十方法界，随类现身，

峨眉山志卷首 流通序 (一) (3)

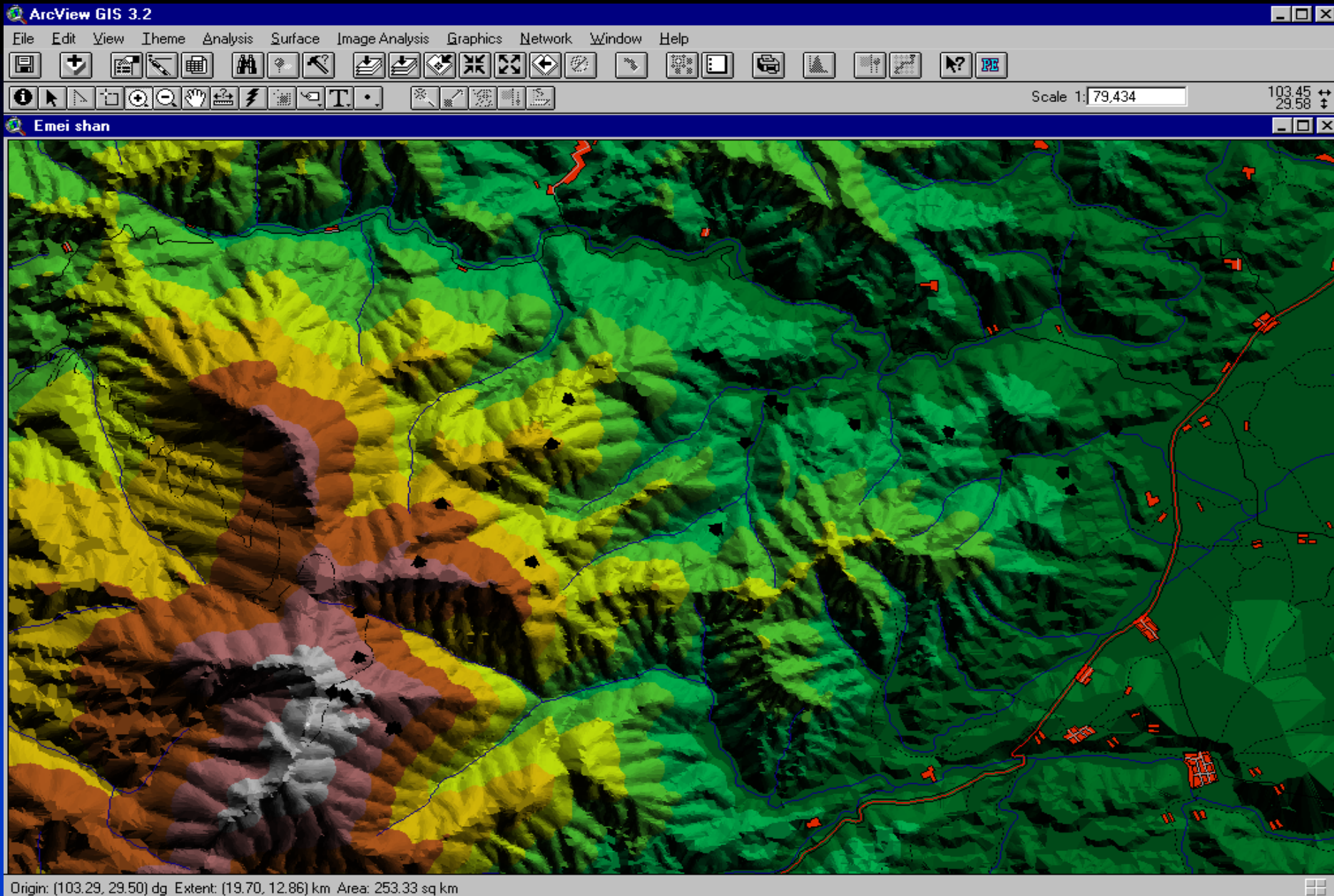
何以何身得度者，即现何身而为说法。故上之计用，能可作普贤道经，故知合其机。

Hotlink to primary Chinese sources: (digitized in Unicode)

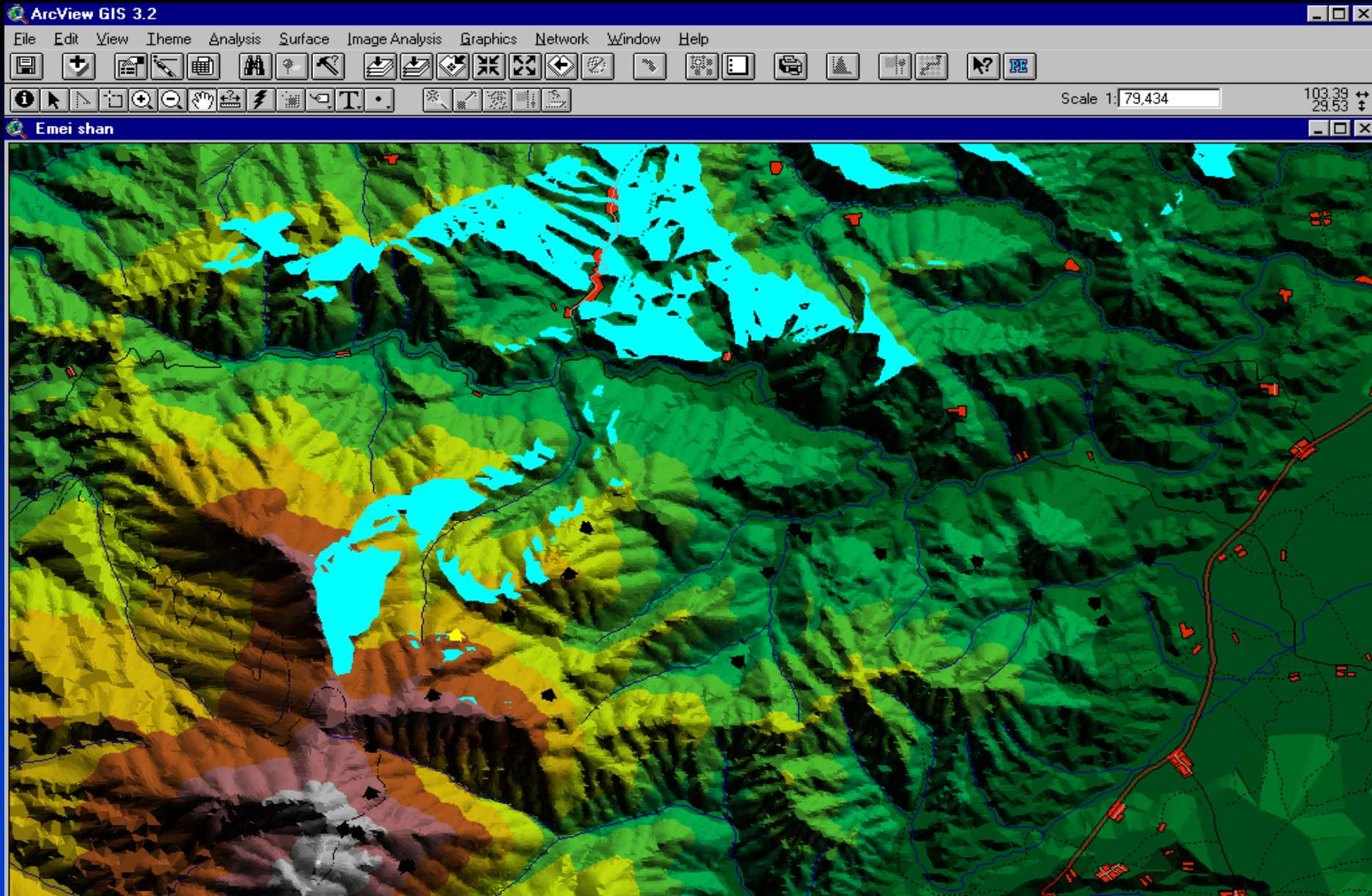
Work Window Help

Scale 1: 101,278 103.31 29.61

TIN of Mt. Emei



Viewshed analysis of a temple on Mt. Emei



Institutional credits



- University of California
Pacific Rim Research Grant
- ACASIAN and Griffith University
- East View Cartographic, Inc.
Minneapolis, Minnesota
- Alexandria Digital Library Project
and the Map & Imagery Library at
UCSB





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