

第9章

数据显示与地图编制



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主要内容



数据显示与地图编制简介

- 数据显示
- 地图的符号表达
- 定量地图的编制
- 地图的注记
- 地图设计与生产

上机实践

- 练习1：制作一幅等值区域图
- 练习2：地图的符号表达
- 练习3：河流注记

数据显示（数据可视化）

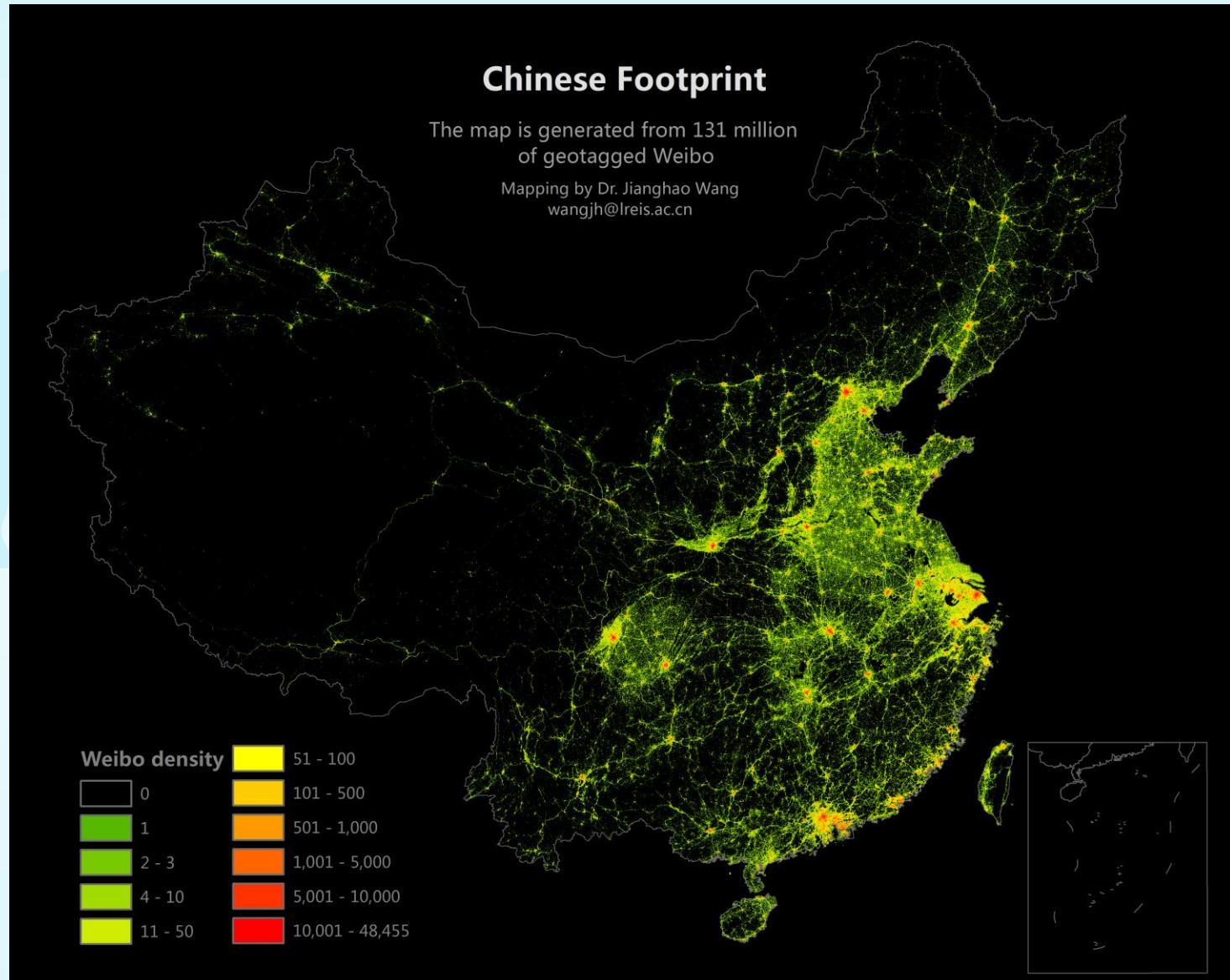


- (时) 空数据可视化



<https://www.facebook.com/notes/facebook-engineering/visualizing-friendships/469716398919>

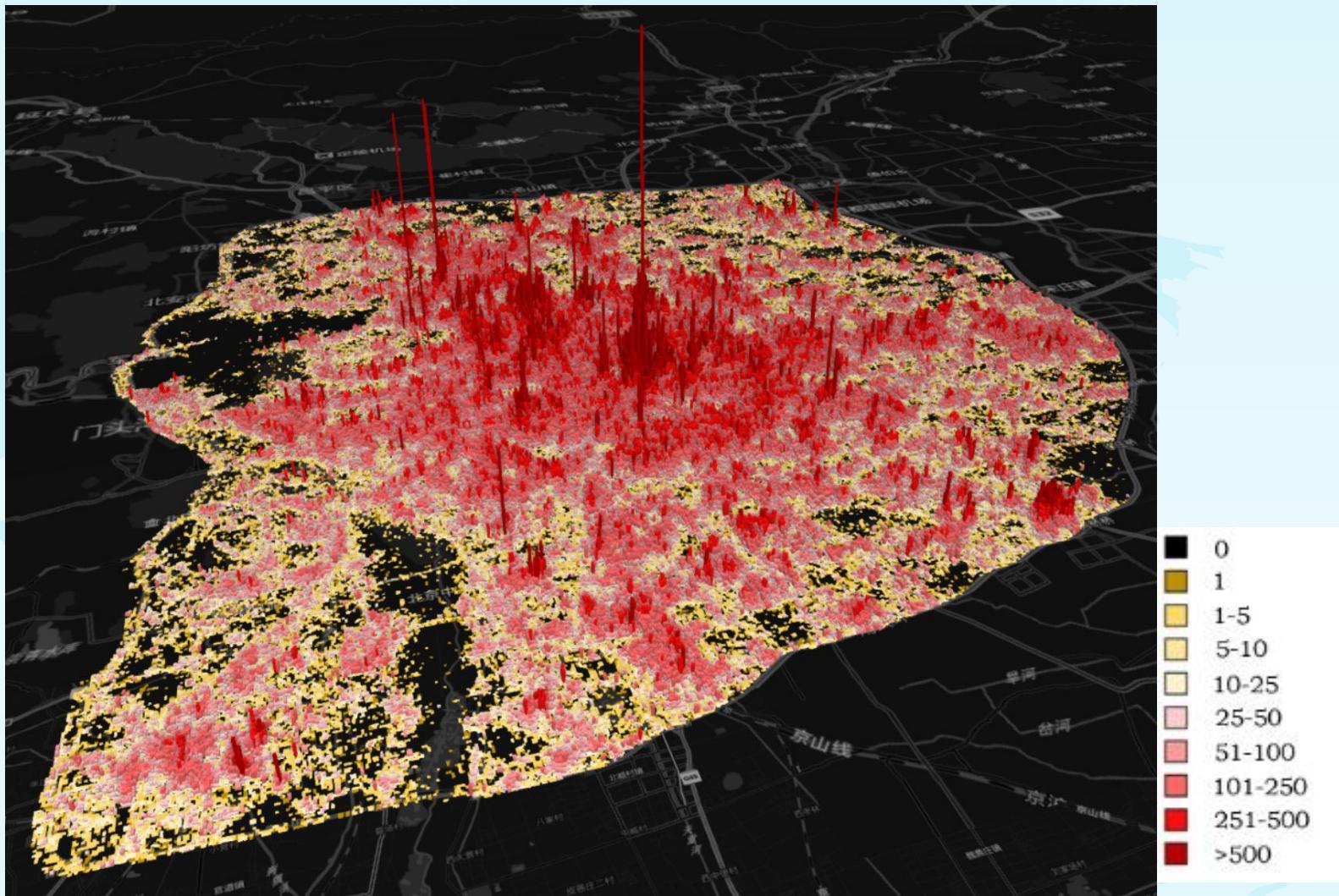
数据显示



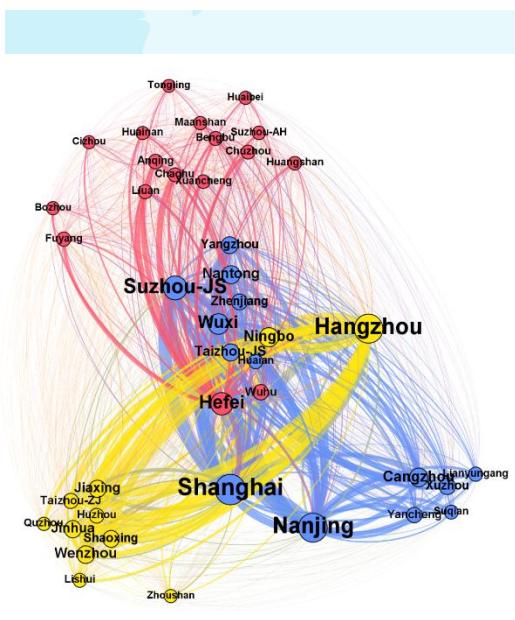
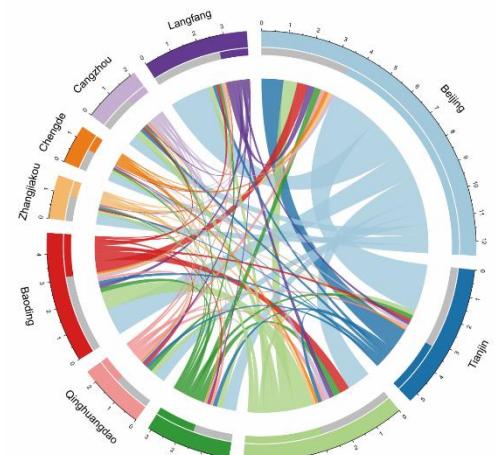
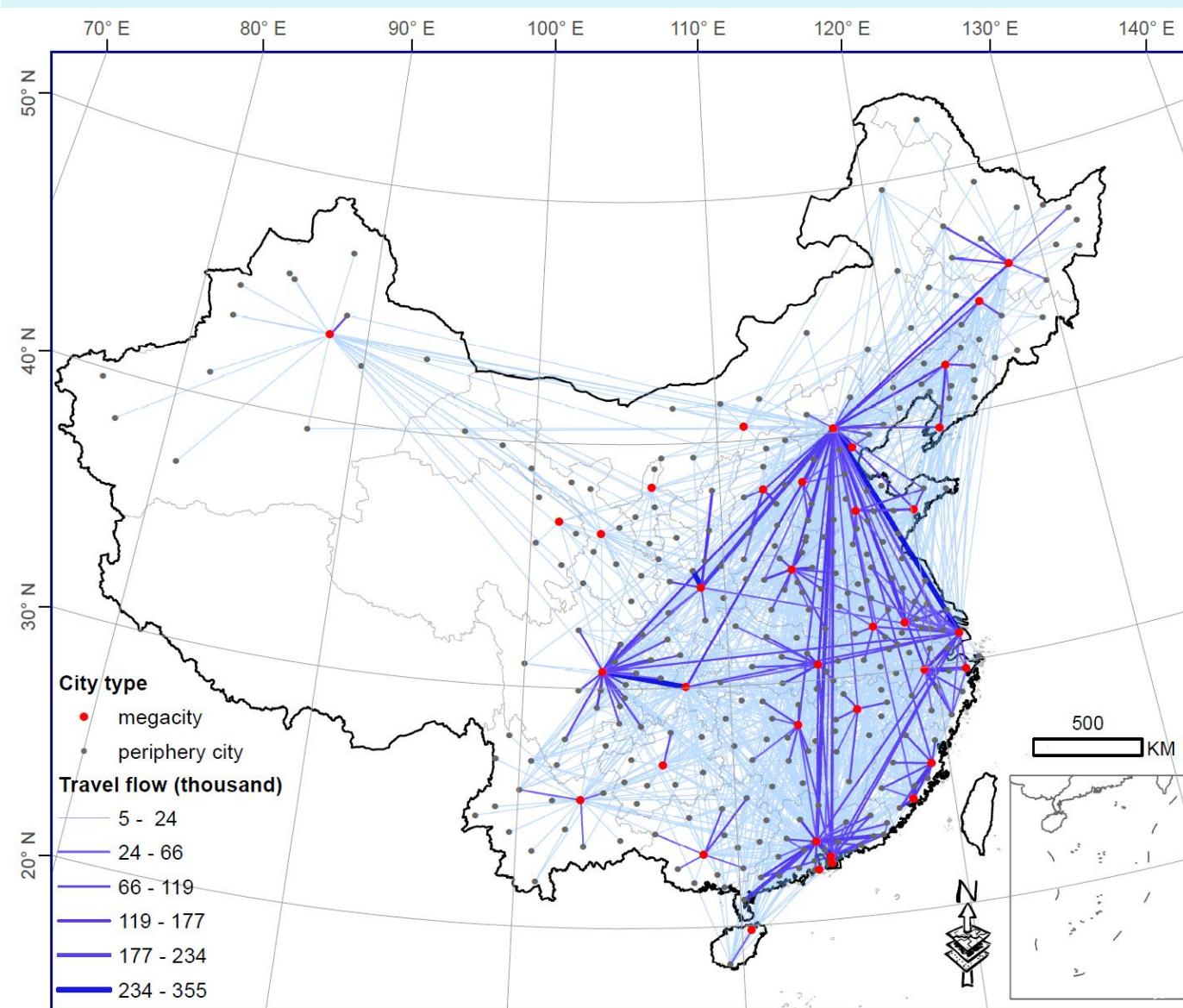
数据可视化(轨迹数据)



数据可视化(三维显示)



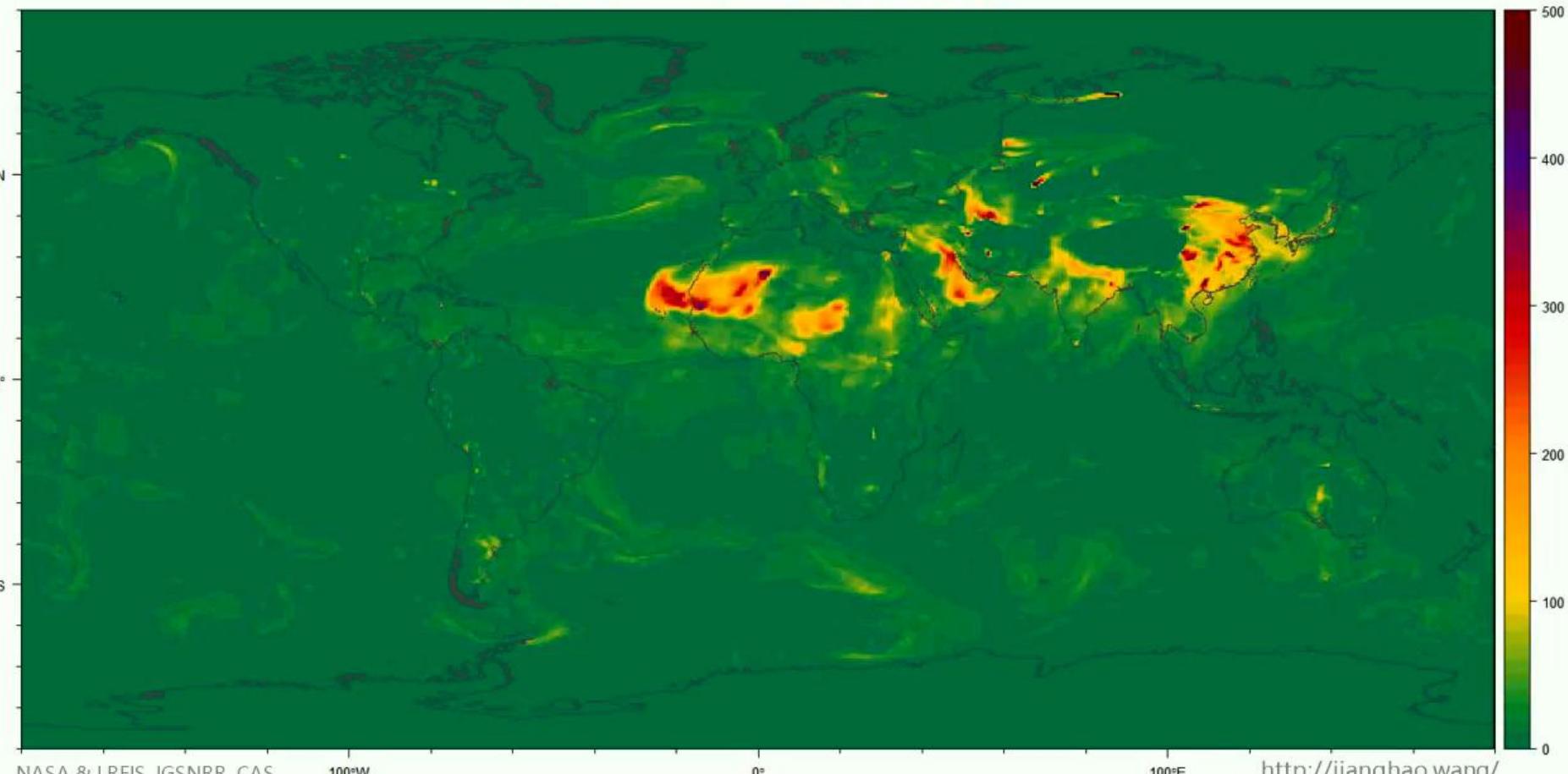
数据可视化(空间交互)



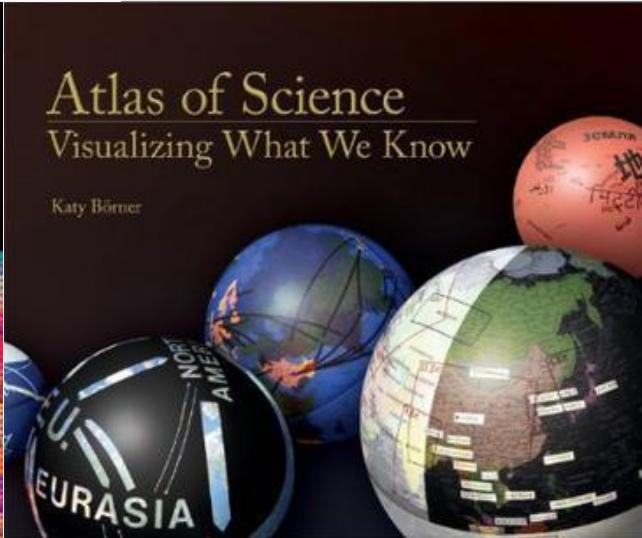
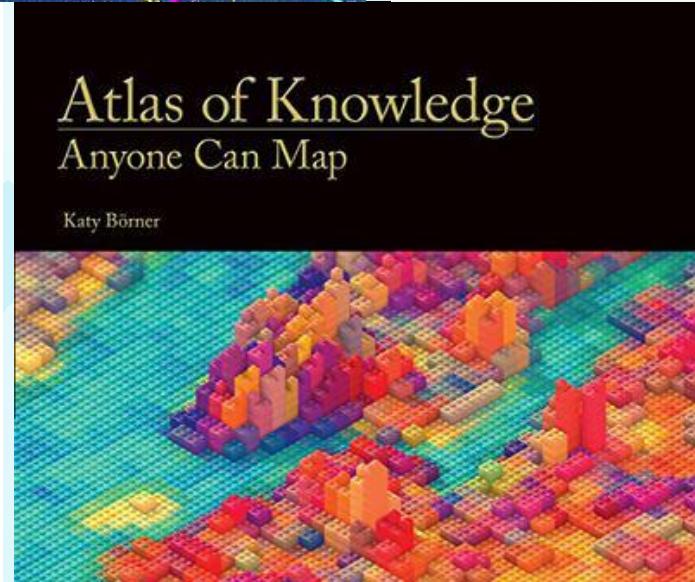
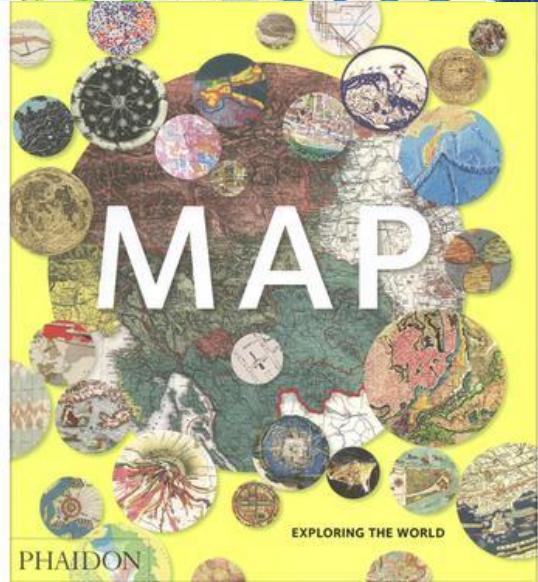
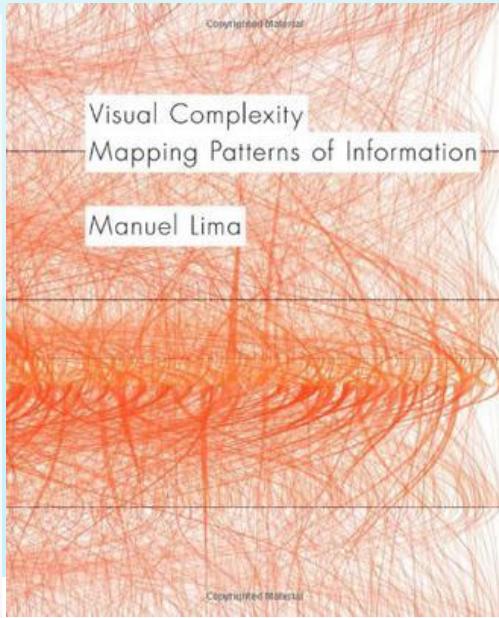
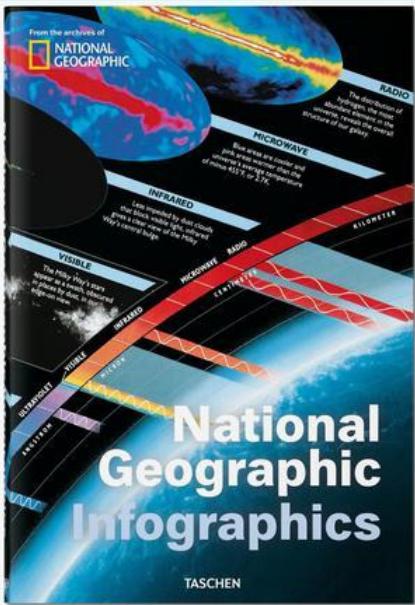
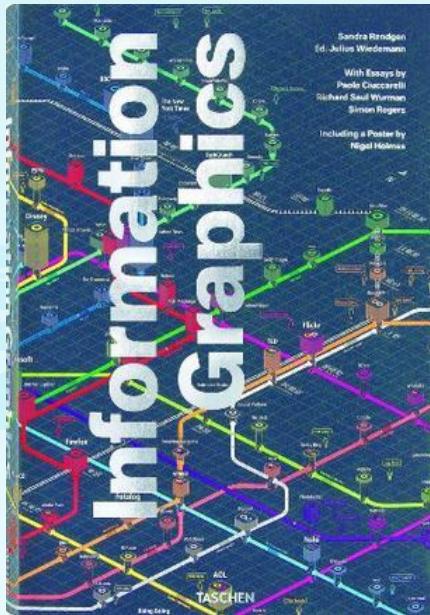
数据可视化（动画）



20140101_0000z : Surface.PM2.5.Mass.Concentration



Books



Website



<http://www.informationisbeautiful.net/>

<https://github.com/d3/d3/wiki/Gallery>

<https://www.mapbox.com/gallery/>

<https://www.mapbox.com/map-design/>

<https://carto.com/gallery/>

<https://uber.github.io/react-map-gl/>

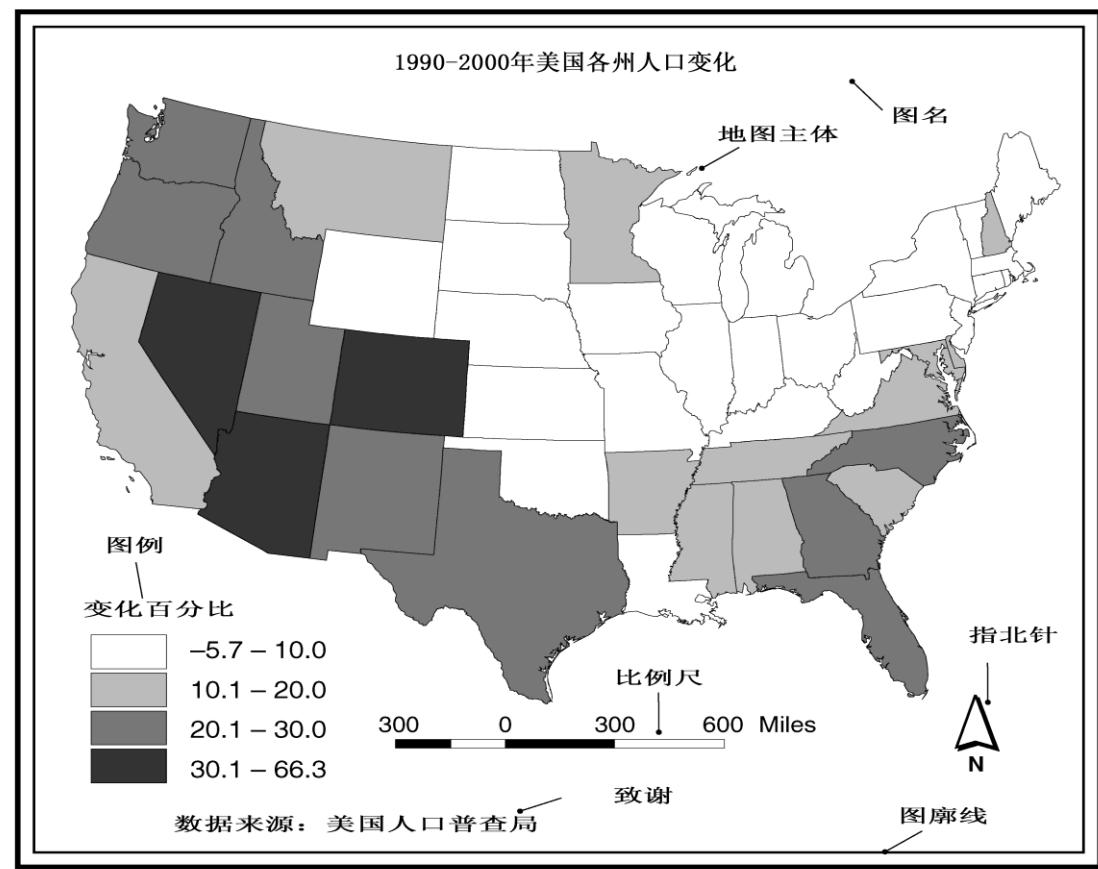
<http://datavizproject.com/>



从数据可视化到地图设计



- 普通的地图元素包括图名、地图主体、图例、指北针、比例尺、文字说明和图廓。
- 其他元素包括格子线或格网、地图投影名称、插图或位置图，以及数据质量信息。



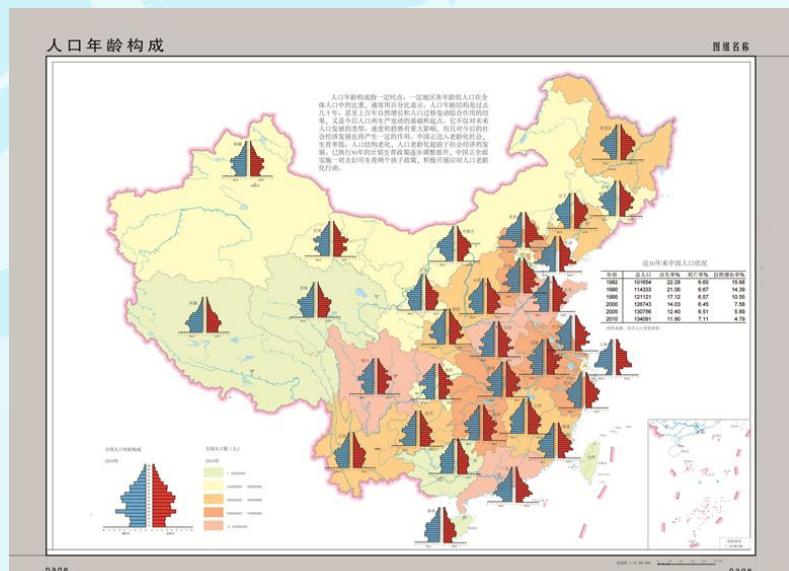
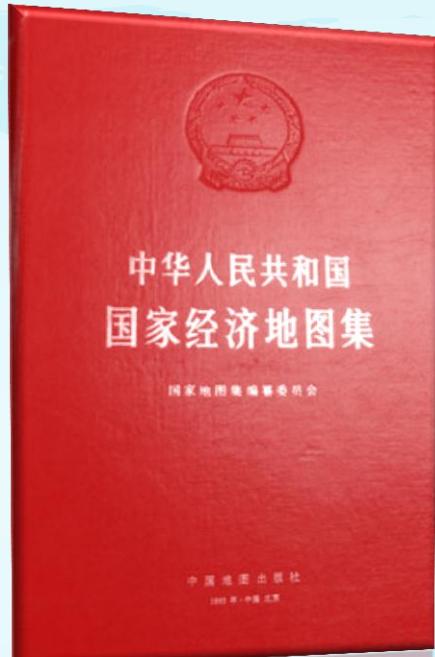
■ 地图学涉及制作和研究地图的所有方面。

■ 地图制图学家把地图分为普通地图或专题地图，定性的地图或定量的地图。

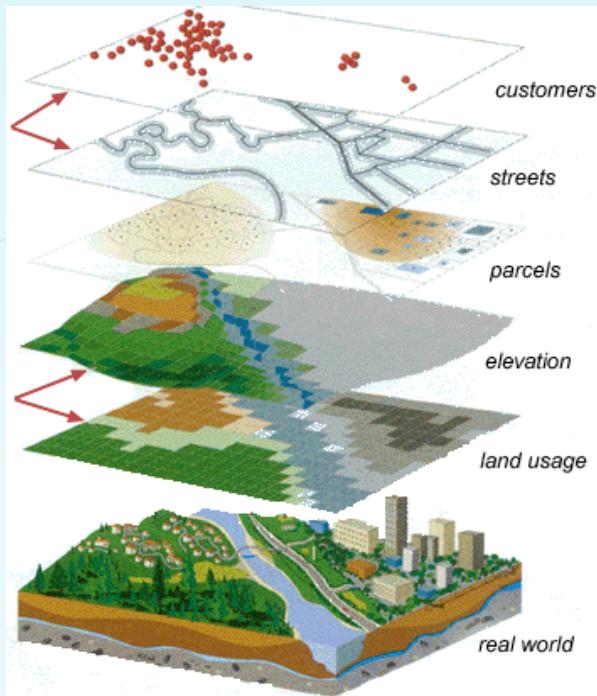
地图(集)的设计与生产



- ❖ 内容的选取和图组设计
- ❖ 幅面和分幅的设计
- ❖ 比例尺的设计
- ❖ 图幅编排次序设计
- ❖ 图面配置设计
- ❖ 表达方法设计
- ❖ 地图投影设计
- ❖ 图式图例设计
- ❖ 地图整饰设计
- ❖ 装帧设计等
- ❖ 图组专题设计书和图幅设计书
- ❖ 图组设计



空间要素与地图符号



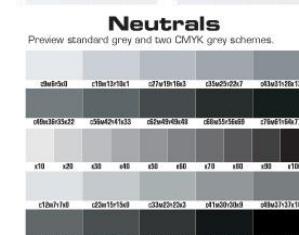
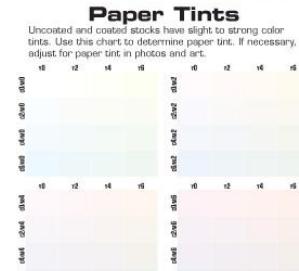
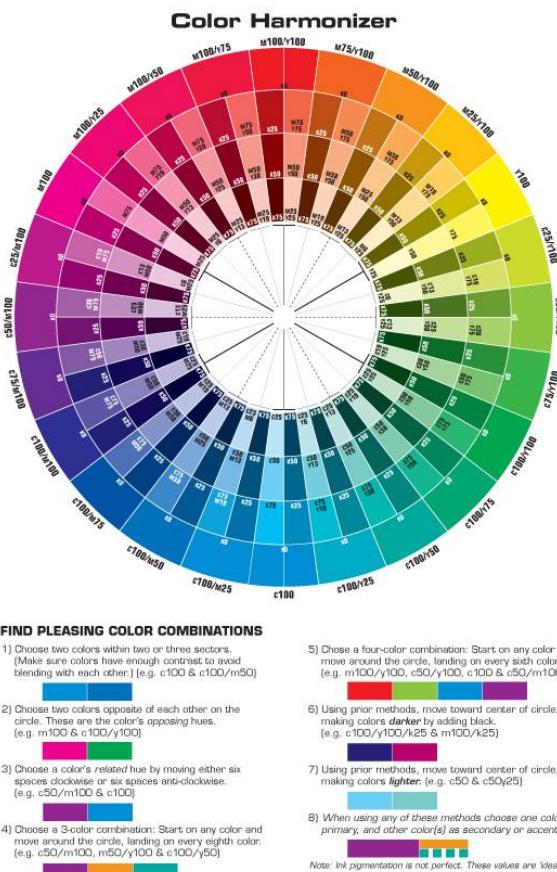
		大小
		明度
红1 1	红2 2	彩度
		纹理
		形状
红	蓝	色调
		图案

色彩的运用



- 色调是一种色彩与另一种色彩区别的性质；
- 明度是一种色彩的亮度或暗度；
- 彩度又称为饱和度或强度。

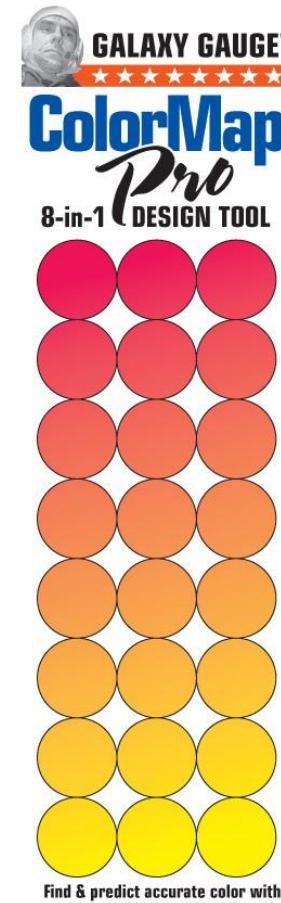
<http://colorbrewer2.org/>



Color Directory

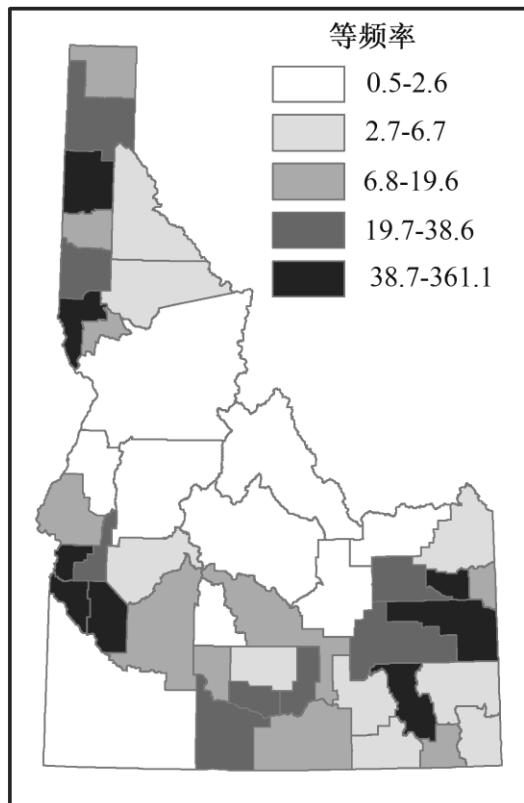
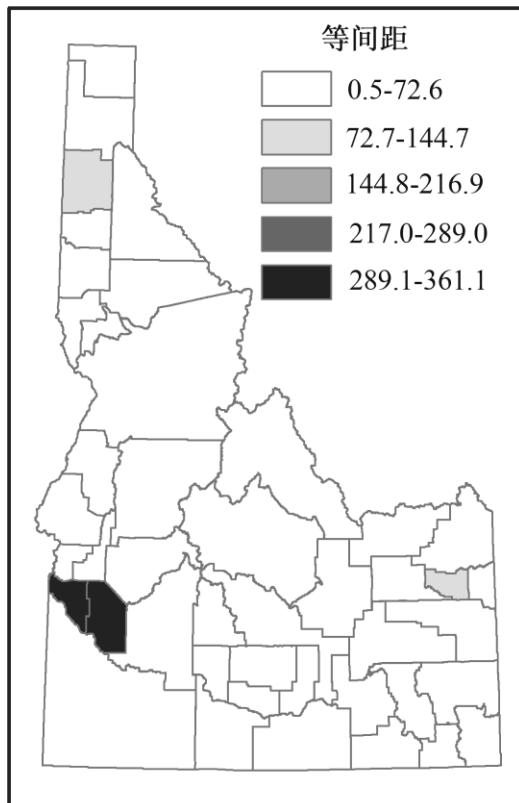
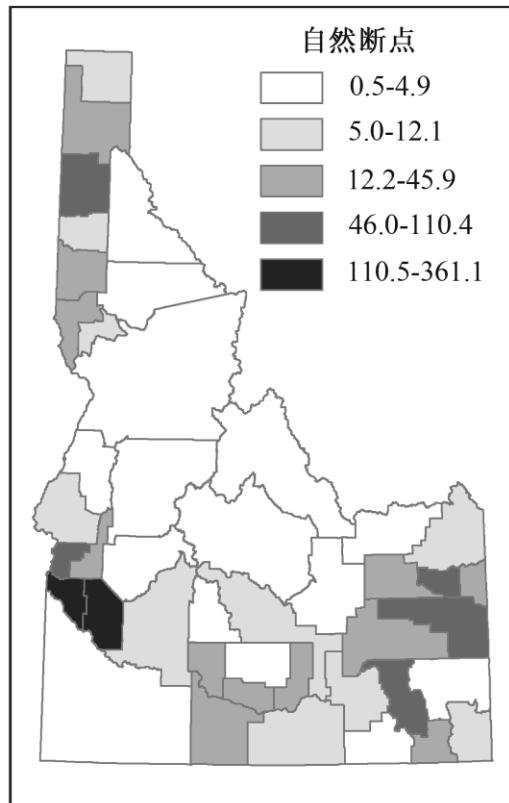
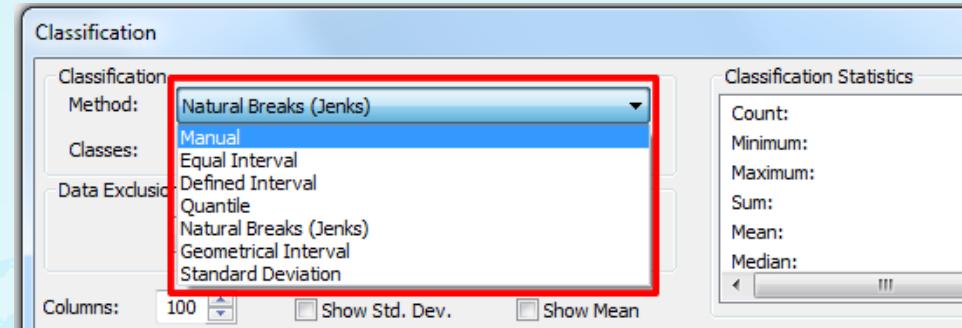
When choosing colors, dark colors are typically serious, light colors fun. Blues and greens are cool and calming, reds and yellows are bright and invigorating.

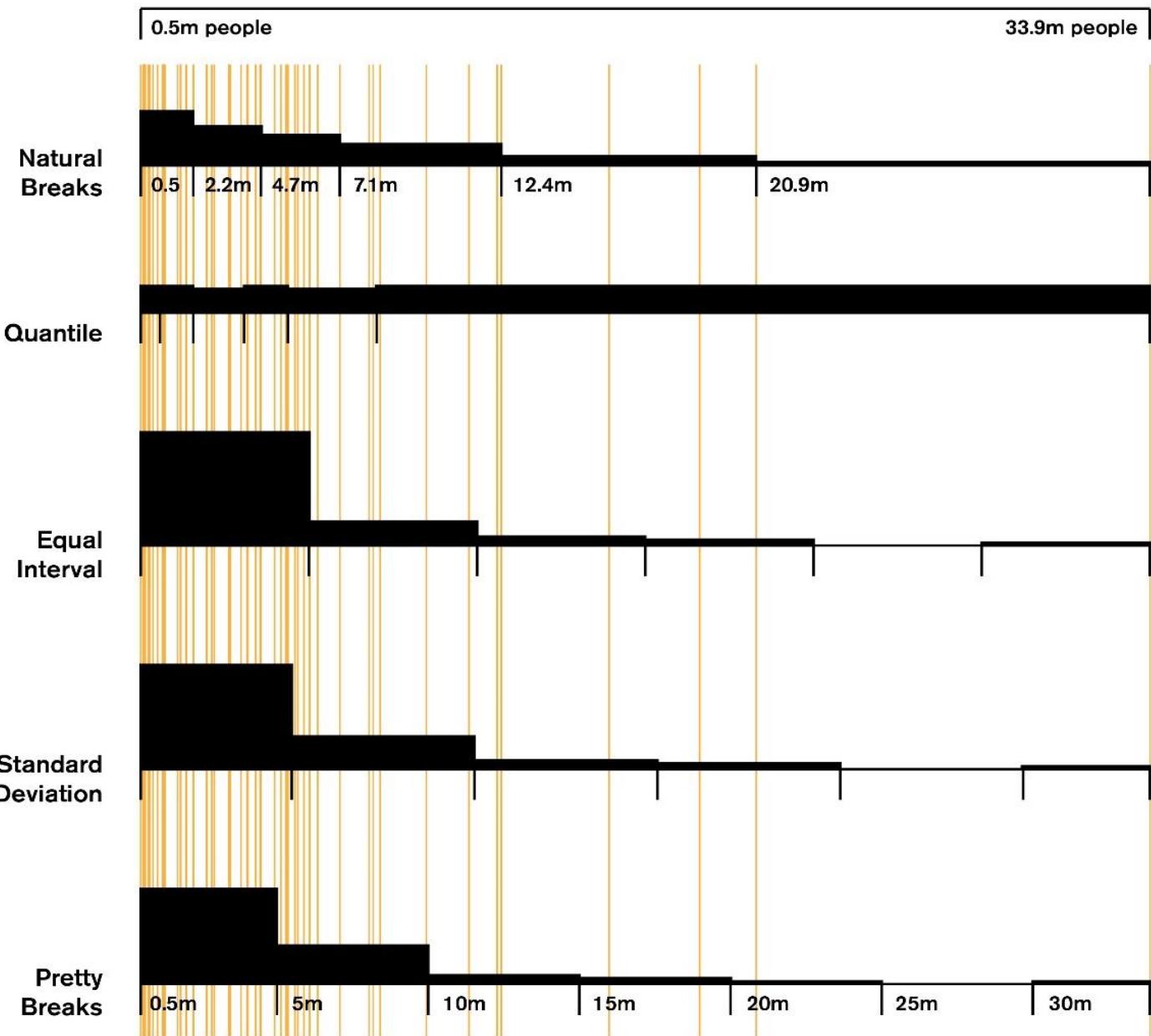
Amber	0/50/90/0
Apple	0/50/75/0
Avocado	10/0/10/0
Azure	100/25/0/30
Banana	5/0/80/0
Blue Green	100/50/70/0
Blue Gray	40/0/50/10
Blue Sky	40/0/70/10
Blueberry	85/5/0/0
Brown	100/50/10/0
Brownie	20/0/50/50
Brownie	20/0/50/50
Carmine	0/5/33/0
Carnation	0/75/3/0
Charcoal Grey	40/30/30/50
Chardonnay	100/0/50/50
Coral	100/60/0/32
Corporate Blue	100/50/0/25
Coral	0/100/0/0
Cream	100/0/0/0
Cream	100/0/0/0
Desert Sand	0/20/30/40
Emerald	100/0/50/25
Foam Green	0/50/100/0
Foam	0/50/0/0
Grapefruit	75/5/100/0
Grass Green	10/0/50/100/0
Green Apple	100/0/0/0
Hibiscus	90/10/20/40
Jade	60/0/100/40
Kelly Green	0/50/100/0
Lime Green	45/0/100/0
Magenta	0/100/0/0
Mauve	25/100/0/0
Midnight Blue	100/70/0/40
Moss	40/0/50/40
Natural	100/0/0/0
Navy Blue	100/40/0/40
Ocean Blue	90/55/28/10
Ocean Green	60/0/40/0
Orange Blue	100/0/0/0
Orange	0/45/100/0
Orange Red	0/70/100/0
Orange Yellow	0/100/100/0
Orchid	20/50/0/0
Peach	0/45/60/0
Perfect Sky	100/25/0/0
Pine	86/20/66/10
Pink	0/100/0/0
Purple	85/100/0/0
Putty	10/0/65/22
Red Orange	0/90/75/0
Red Rose	20/100/100/0
Rhubarb	0/100/0/0
Royal Blue	100/40/0/32
Ruby	0/100/70/15
Rustic Brown	40/70/100/0
Saffron	0/100/0/0
Sapphire	80/100/0/15
Scarlet	0/100/50/5
Simple Green	62/0/100/0
Soviet Red	0/30/80/30
Tangerine	0/82/80/0
Teal	100/0/25/0
Timber	50/60/80/25
Twigs	100/0/15/0
Twilight Blue	70/55/15/0
Ultramarine	100/0/50/0
Vegetable Green	100/0/100/0
Verde	0/100/0/0
Violet	45/50/0/0
Violet Blue	75/50/0/0
Violet Red	25/100/25/0
Viridian	100/0/30/50
Yellow Green	0/100/100/0



数据的分类

6种常用的分类方法：
等间隔、几何间隔、等频率、
标准离差、自然断点和用户自定义





Population in
US-American states

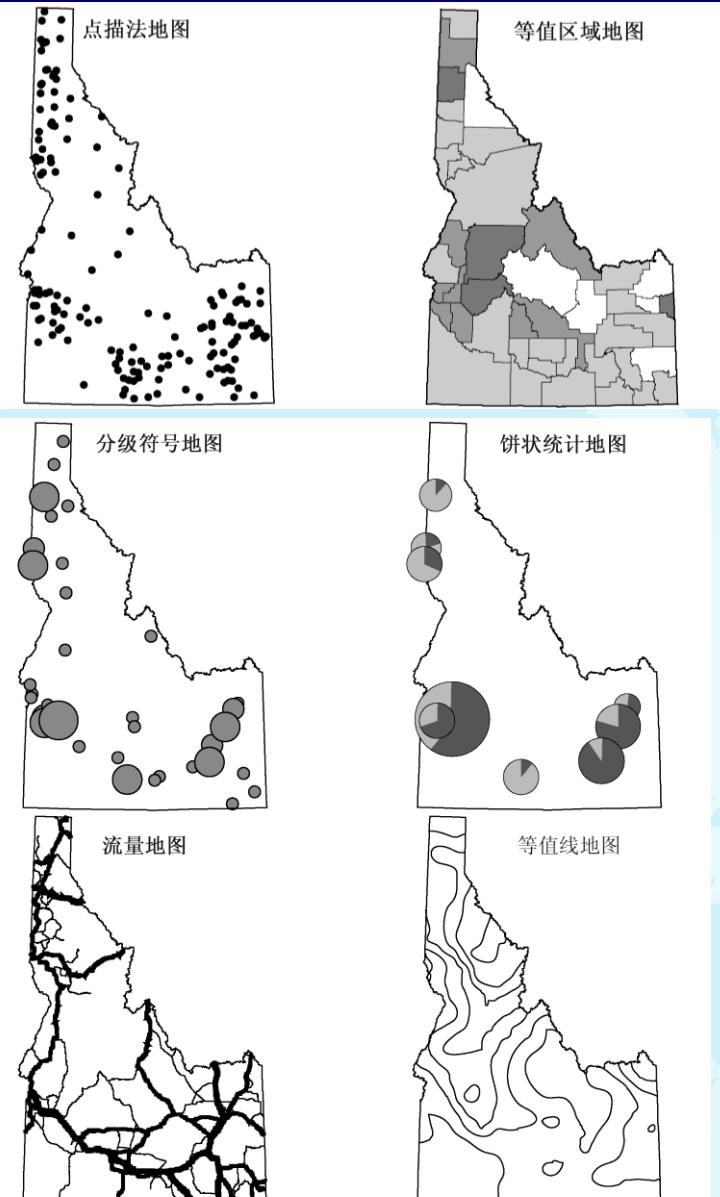


制图综合



定量地图的制作

- ❖ 点描法地图
- ❖ 等值区域地图
- ❖ 分级符号地图
- ❖ 饼状统计地图
- ❖ 流量地图
- ❖ 等值线地图
- ❖



地图的注记



- ❖ 几乎每一种地图要素都需要有注记。制图者把文字当作一种地图符号，因为与点状、线状、面状符号一样，文字也有多种变化类型。

Helvetica Normal

Helvetica Italic

Helvetica Bold

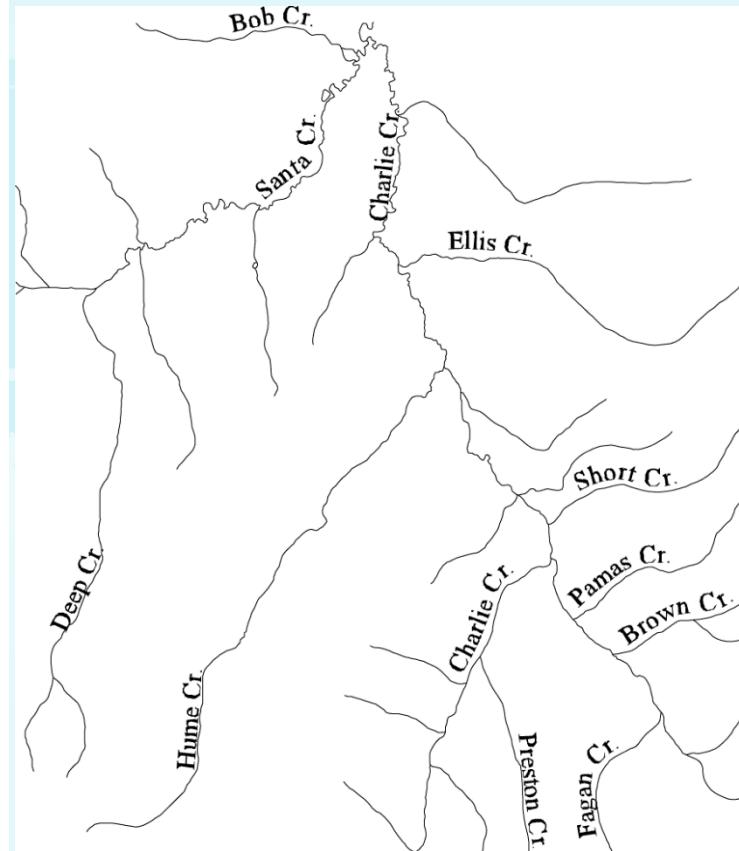
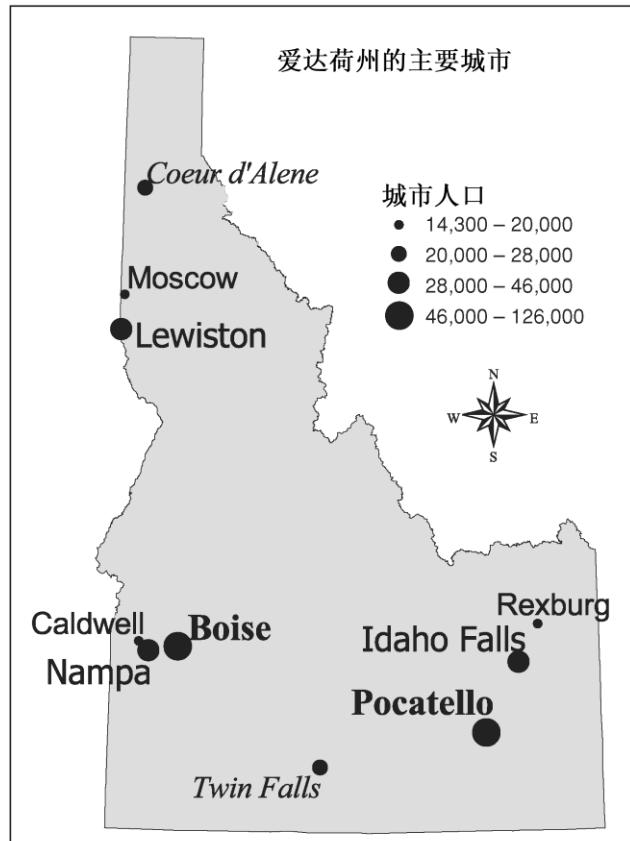
Helvetica Bold-Italic

Times Roman Normal

Times Roman Italic

Times Roman Bold

Times Roman Bold-Italic



地图设计



- 地图设计是一种为达一定目标而进行的视觉设计。

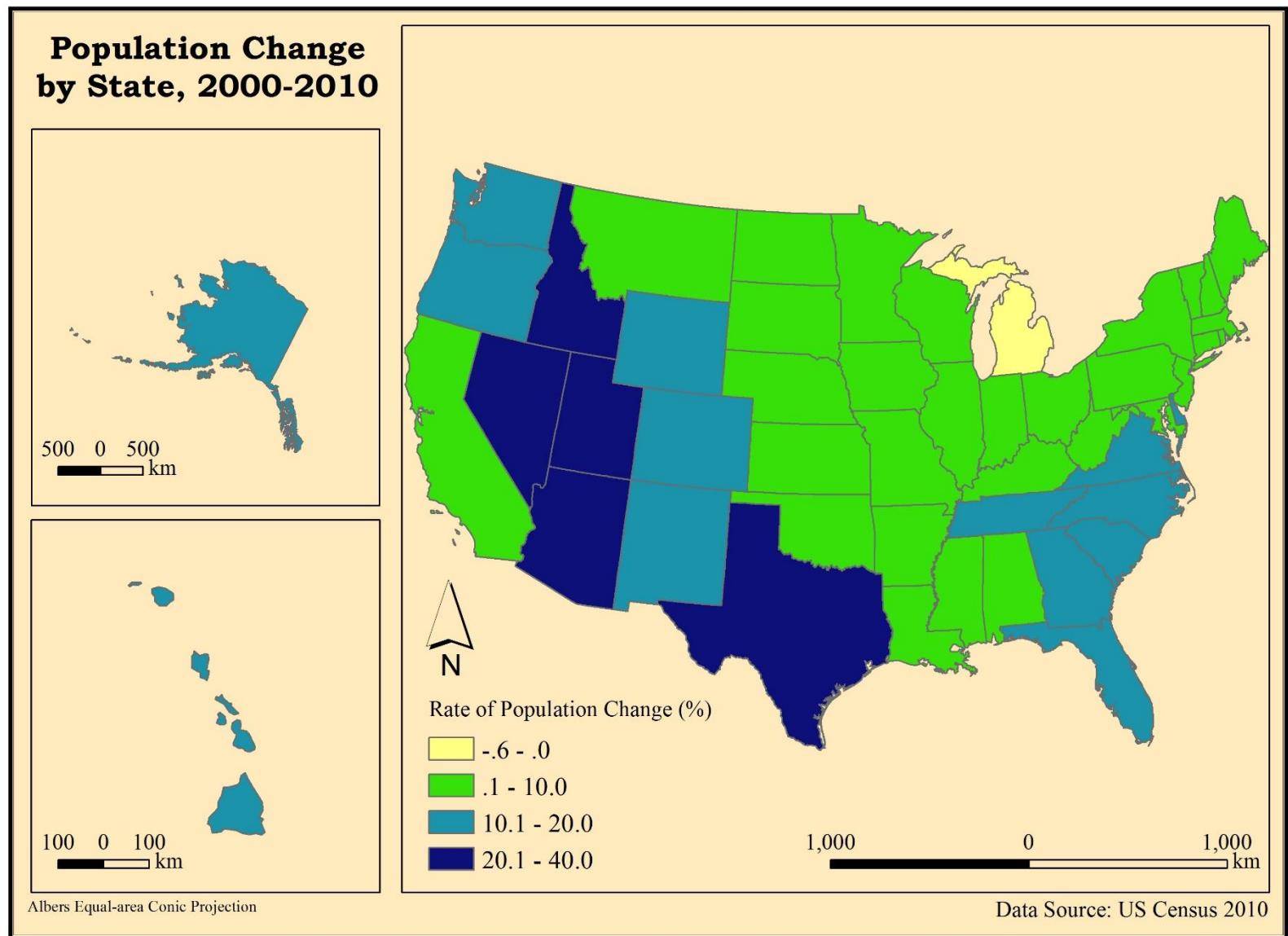
设计良好的地图看起来应该是平衡的、协调的、有序的和悦目的，而设计拙劣的地图则只会令人迷惑和产生误导。

地图设计既是科学，也是艺术。

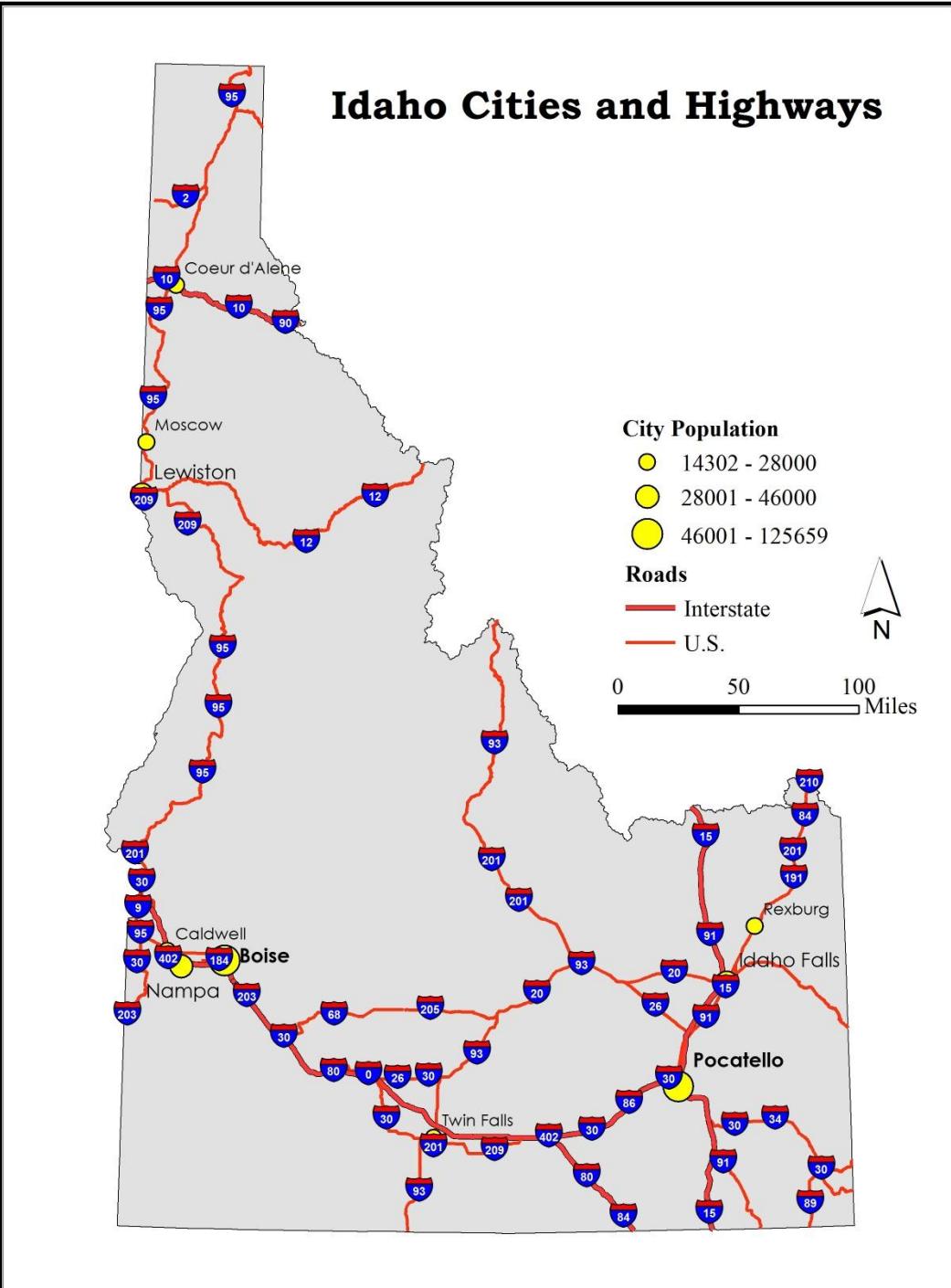
- 制图者通常从**排版**和**视觉层次**的角度来研究地图设计。

- 排版是对地图的不同要素进行排列与组合。排版关注的主要方面包括焦点、顺序和平衡问题。
- 视觉层次（Visual hierarchy）是指将三维效果或深度引入可视平面的开发过程。

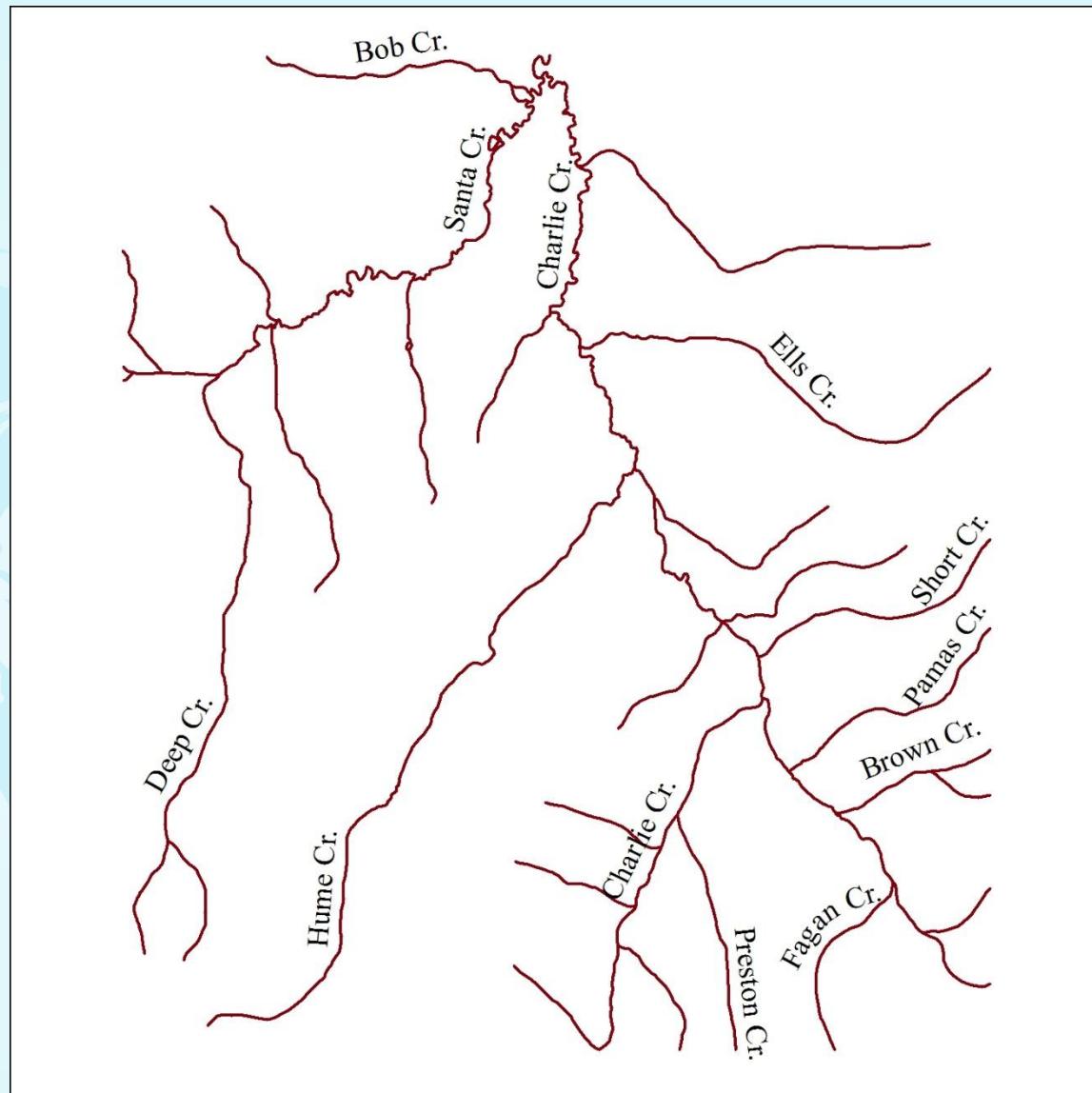
练习1：制作一幅等值区域图



练习2：使用 字符符号



练习3：河流注记



Thanks !

Q & A



王江浩CAS

<http://jianghao.wang>
<http://giser.me>