Beijing City Lab and its effort on understanding the Chinese environment pollution

Ying Long

School of Architecture, Tsinghua University

Beijing City Lab

The Beijing City Lab (BCL) is a research network, dedicated to studying, but not limited to, China's capital Beijing. The Lab focuses on employing interdisciplinary methods to quantify urban dynamics, generating new insights for urban planning and governance, and ultimately producing the science of cities required for sustainable urban development. The lab's current mix of planners, architects, geographers, economists, and policy analysts lends unique research strength.

The Beijing Map in 1750 乾隆北京图

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© OpenStreetMap contributors © CartoDB, CartoDB attribution

Map created by bcl

We geocoded and digitalized the famous Beijing Map in 1750 乾隆北京图. Our interactive map exhibits the lot details of the original map, which also includes buildings information. For more information for the original map, click HERE.
背景是现代的北京城，由于底图是火星坐标，经纬度配准的乾隆北京图稍有位置偏差，日后换成OSM底图有望解决这一问题。

www.beijingcitylab.com

Beijing City Lab, BCL

- **Organizing framework**
  - Executive directors (×8)
  - Honorary directors (×14)
  - Research fellows (×26)
  - Junior/student members (×43)
  - Followers from social medias（10,000+）
- **Our profile**
  - A research network for quantitative urban studies
  - Open platform for sharing working papers, research data, slides and city rankings
  - Visualization for the public (received dozens of media coverage)
  - Based at Beijing and perspective on the whole China

Honorary directors

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Research fellows

Roles: to contribute research working papers, publications, and data (volunteer work).

All research fellow list

Junior/student members

Roles: Involve in academic collaboration with BCL research fellows.

Junior researchers and graduate students are warmly welcomed to join BCL by sending your CV to Dr Ying Long (BeijingCityLab(at)gmail(dot)com)
Note that this is a non-paid work, not recruiting staffs of Beijing Institute of City Planning, and has no relationship with any affiliation of research fellows. Your join is expected to conduct quantitative urban studies for Beijing with the BCL research fellows.

All junior/student members list

Contributors

Contributors are those who generously contributed data or working papers to BCL.

All contributors list

73 working papers

66 Evaluating Liang-Chen scenario using counterfactual analysis

LONG Ying, ZHOU Yin

The Liang-Chen scenario for Beijing Urban Planning, though failed to put into practice, is an important milestone in the history of urban planning in China. However, planners hold different views on this scenario: Some think that, if the scenario had been adopted, the development pattern of single center would not appear; while some others point out that this scenario is just another form of single- center-spreading. These arguments are derived from perceptual knowledge, but not rational analysis. Based on constrained cellular automatic and the theory of

10 city rankings

Ranking navigation:

10 Road intersection density in China

LONG Ying, 2014

Road intersection density of each prefectural or above city in China defined as the ratio between the road intersection count within the urban built-up area of a city and the urban built-up area in square kilometer of the city. Road intersections are derived from the BCL data "21 Road junction density of China in 2011", and the urban built-up area of each city is interpreted from remote sensing images (2010).

Road intersection density in China (2011)
Produced by Beijing City Lab (www.beijingcitylab.com)
Mapped by Dr LONG Ying
Data by Dr Dr LI Dong

31 data released

This channel would release Beijing, or the whole China, micro-data and maps (e.g. road networks, parcels, human mobility, historical city maps) for the BCL research fellows and external researchers. There are three levels of data access, free download, email request, and shared among research fellows / student members.

Our released datasets are stored in DropBox. We would like to recommend you setup DropBox for downloading the datasets to your account. This is helpful when the download is temporally unavailable due to too many requests.

How to cite:
Beijing City Lab, Year, Data ID, Data Name, http://www.beijingcitylab.com
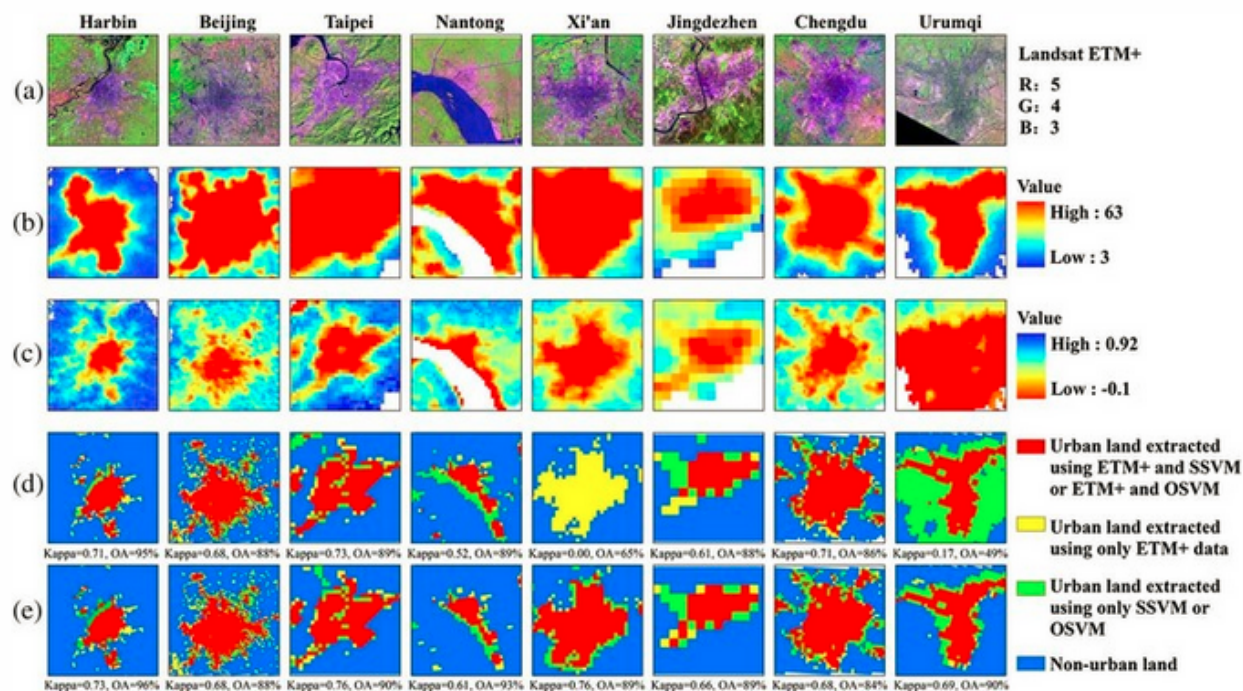E.g. Beiing City Lab, 2013, Data 8, Housing price in Beijing, http://www.beijingcitylab.com
(For the dataset from external source other than BCL, we would recommend you to cite the original source)

Free external data plase click here>>

28 DMSP/OLS interpreted urban areas of China in 1992-2007

2015

Landsat ETM+
R: 5
G: 4
B: 3

Value
High : 63
Low : 3

Value
High : 0.92
Low : -0.1

Urban land extracted using ETM+ and SSVM or ETM+ and OSVM

Urban land extracted using only ETM+ data

Urban land extracted using only SSVM or OSVM

Non-urban land

68 slides

How to cite:
Author(s), Year, Title, Slides at Beijing City Lab, http://www.beijingcitylab.com
E.g. Long Y, 2014, Automated identification and characterization of parcels (AICP) with OpenStreetMap and Points of Interest, Slides at Beijing City Lab, http://www.beijingcitylab.com

65 Large-scale and Dynamic Traffic Simulation and Optimization: Opportunity and Challenge in China Applications

ZHOU Xuesong, 2015

大规模城市和区域动态交通模拟和优化：

在中国的机遇和挑战

Xuesong Zhou (周学松)

xzhou74@asu.edu; xzhou99@gmail.com

Arizona State University 美国亚利桑那州立大学副教授

北京交通大学 海外学者讲席教授

2015年6月6日，北京城市实验室 BCL2015 年会，北京交通大学

In Chinese
SLides65Zhou.pdf
Adobe Acrobat Document [2.6 MB]
Download

Email: longying1980@gmail.com
Website: www.beijingcitylab.COM

Comments from Prof Michael Batty @ CASA, University College London

"China rising: Beijing City Lab, interesting virtual lab that is exploring many scientific issues in Chinese cities" http://blogs.casa.ucl.ac.uk/author/michael/

清华大学新闻网

头条新闻　综合新闻　百年校庆　媒体清华　清华人物　教学科研　招生就业　国际合作　校园写意　校友动态
领导讲话　紫荆论坛　清华史苑　高教视点　社会服务　专题新闻　图片新闻　视频新闻　清华展览　信息预告

首页 ＞ 综合新闻 ＞ 内容

最新新闻列表

城市模型学术报告会暨2014年北京城市实验室年会在清华大学举办

清华新闻网6月12日电（通讯员　袁晓辉）6月11日，"城市模型学术报告会暨2014年北京城市实验室年会"在清华大学建筑学院举办。

图为报告会现场。

本次报告会由清华大学人居环境实验室（TSHSI Lab）和北京城市实验室（Beijing City Lab，BCL）共同组织，来自中国科学院、清华大学、北京大学、北京交通大学、北京建筑大学、北京联合大学、北京航空航天大学、首都经贸大学、北京测绘设计研究院、清华同衡城市规划设计研究院、北京城市规划设计研究院、中国城市规划设计研究院、武汉大学、河海大学、中山大学、美国爱荷华州立大学、美国北卡大学、美国佐治亚大学等30多个单位的150多人参加了此次学术报告会。

新数据环境下的城市规划与研究
北京城市实验室2015年会

北京交通大学、北京城市实验室：主办
2015年6月6日下午1:00–6:30：时间
（主会场）北京交通大学机械楼二层多功能厅：地点
（直播厅）一层大会议室
中文：语言

媒体支持：国匠城、果说、市政厅、一览众山小、城市数据派

BCL Beijing City Lab

Session 1
1:10–3:25 pm

李栋
中国城市规划设计研究院
城市光谱：用数据理解空间
（Urban Spectrum: Understanding Space by Data）

周江评
澳大利亚昆士兰大学
基于大数据的系统优化与政策评估：以北京公交通勤为例
（Using Big Data for Optimization and Policy Evaluation: A Case Study of Beijing's Bus Commuting）

龙瀛
北京市城市规划设计研究院
新数据环境下的城市规划实施评价
（Evaluation of Urban Planning Implementation in New Data Environment）

姜鹏
中国城市和小城镇改革发展中心规划院
文化与城市：基于互联网下的思考
（Culture and City in the Era of Internet）

茅明睿
北京市城市规划设计研究院
"互联网+"规划公众参与
（Internet Plus Public Participation for Planning）

刘渊
中国城市规划设计研究院上海分院
C-IMAGE: 基于地理信息照片的城市感知地图
（C-IMAGE: City Cognitive Mapping Through Geotagged Photos）

王江浩
中国科学院地理科学与资源研究所
社交媒体地理：分析框架与应用
（The Geography of Geotagged Social Media: Framework and Applications）

盛强
北京交通大学
超链接机制：对重庆地铁的空间句法分析
（Mechanism of Hyperlink: A Space Syntax Analysis on the Use of Metro System in Chongqing）

张纯
北京交通大学
城市形态对空气质量的影响：基于中国地级市和县级市尺度的分析
（Impact of Urban Form on Air Quality: Evidence from Analysis on Prefectural and County Levels of Chinese Cities）

Session 2
3:45–5:45 pm

王静远
北京航空航天大学
城市数据画像
（Urban Data View）

赵延峰
中国城市和小城镇改革发展中心综合交通规划院
从"大数据"迈向"精准数据"——来自"精准医学"的借鉴与思考
（From Big Data to Precise Data: A Thought Inspired by the Precision Medicine Initiative）

王鹏
北京清华同衡规划设计研究院有限公司
乡村规划4.0
（Rural Planning 4.0）

郑晓伟
西安建筑科技大学
城市规划与设计变革实践中的DAD技术响应初探
（Case studies of Data Augmented Design in Urban Planning & Design）

王伟
中央财经大学
解构与重构：后50%中国城镇化的空间研究与规划
（Deconstruction and Reconstruction: Spatial Studies and Planning in the Era of Post 50% Urbanization in China）

周学松
美国亚利桑那州立大学
大规模动态交通模拟和优化：在中国应用的机遇和挑战
（Large-scale and Dynamic Traffic Simulation and Optimization: Opportunity and Challenge in China Applications）

吴海山
百度研究院大数据实验室
从中国动力学洞察动态中国
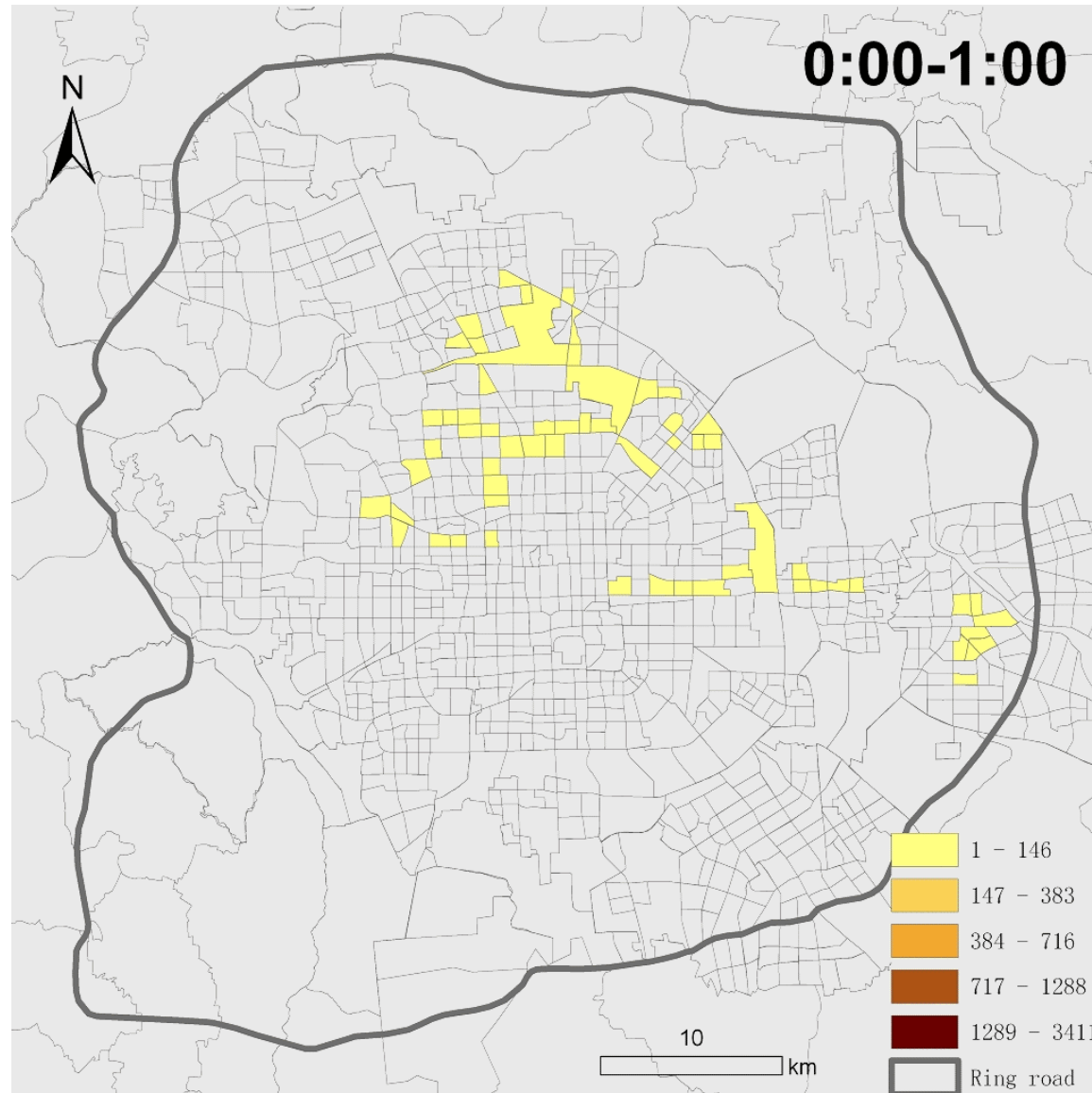（Revealing Dynamic China from China Dynamics）

许旺土
厦门大学
在2020年我们如何通过轨道旅行？基于真实数据而不是大数据的分析
（How Could We Travel by Rail Across China in 2020: The Analysis with the Real Data, Rather Than Big Data）

Various projects conducted by BCL

BCL
Beijing City Lab

Projects
0 Historical Beijing
1 BUDEM
2 Urban Growth Boundaries
3 Bus Landscapes
4 Population China
5 Planning Support Systems
6 Urban Form
7 Population Synthesis
8 Social Network Mining
9 Big Model
10 Beijing Parking
11 Urban Network Analysis
12 AM10:00
13 PM2.5
14 SinoGrids
15 Shrinking Cities
16 Participatory Urban Sensin
17 Data Augmented Design
18 Digital Desert
19 New Data Environment
20 NIMBY
21 Urban Model Course

0:00-1:00

1 – 146
147 – 383
384 – 716
717 – 1288
1289 – 3411
Ring road

Urban dynamics revealed by smart card records of Beijing

12

13 PM2.5

Polluted months

- 0-1
- 1-2
- 2-3
- 3-4
- 4-5
- 5-6
- 6-7
- 7-8
- 8-9
- 9-10
- Water bodies

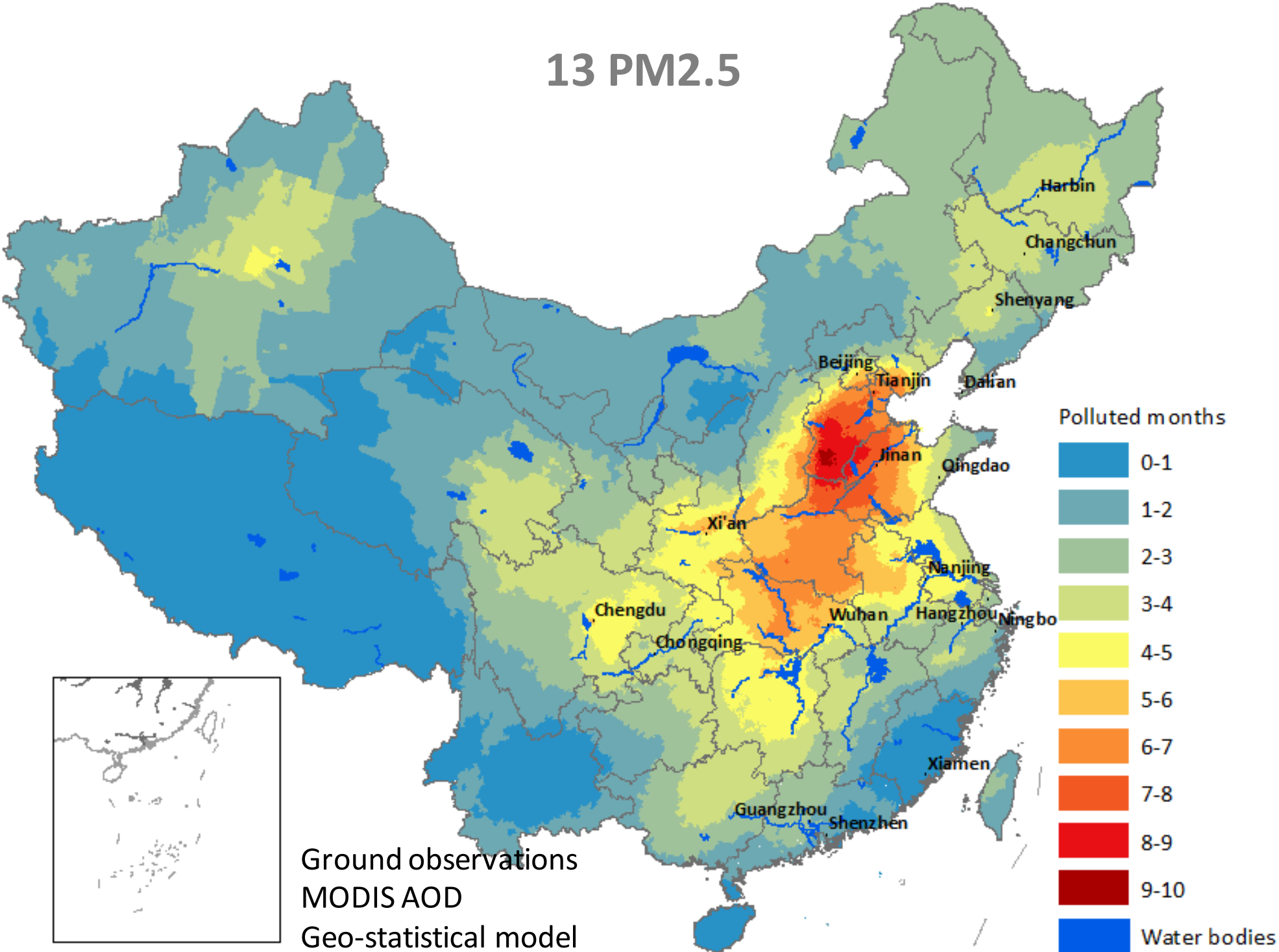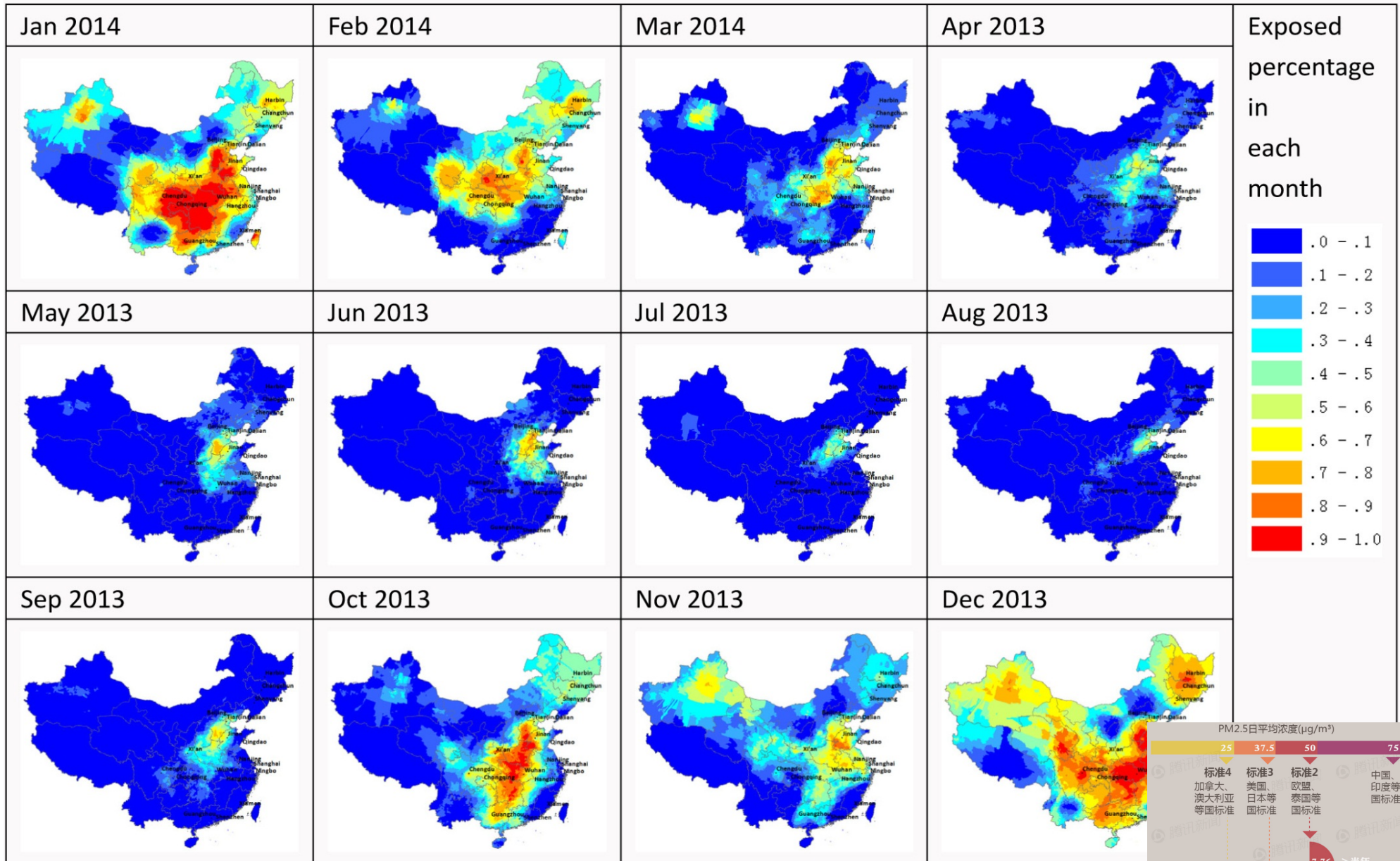Ground observations
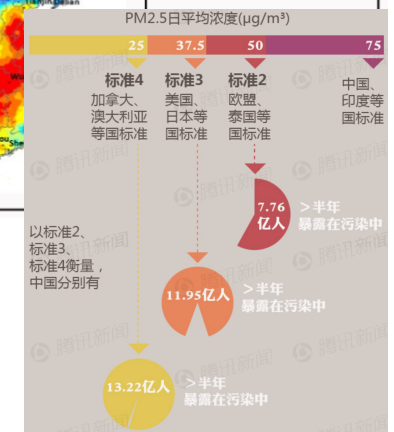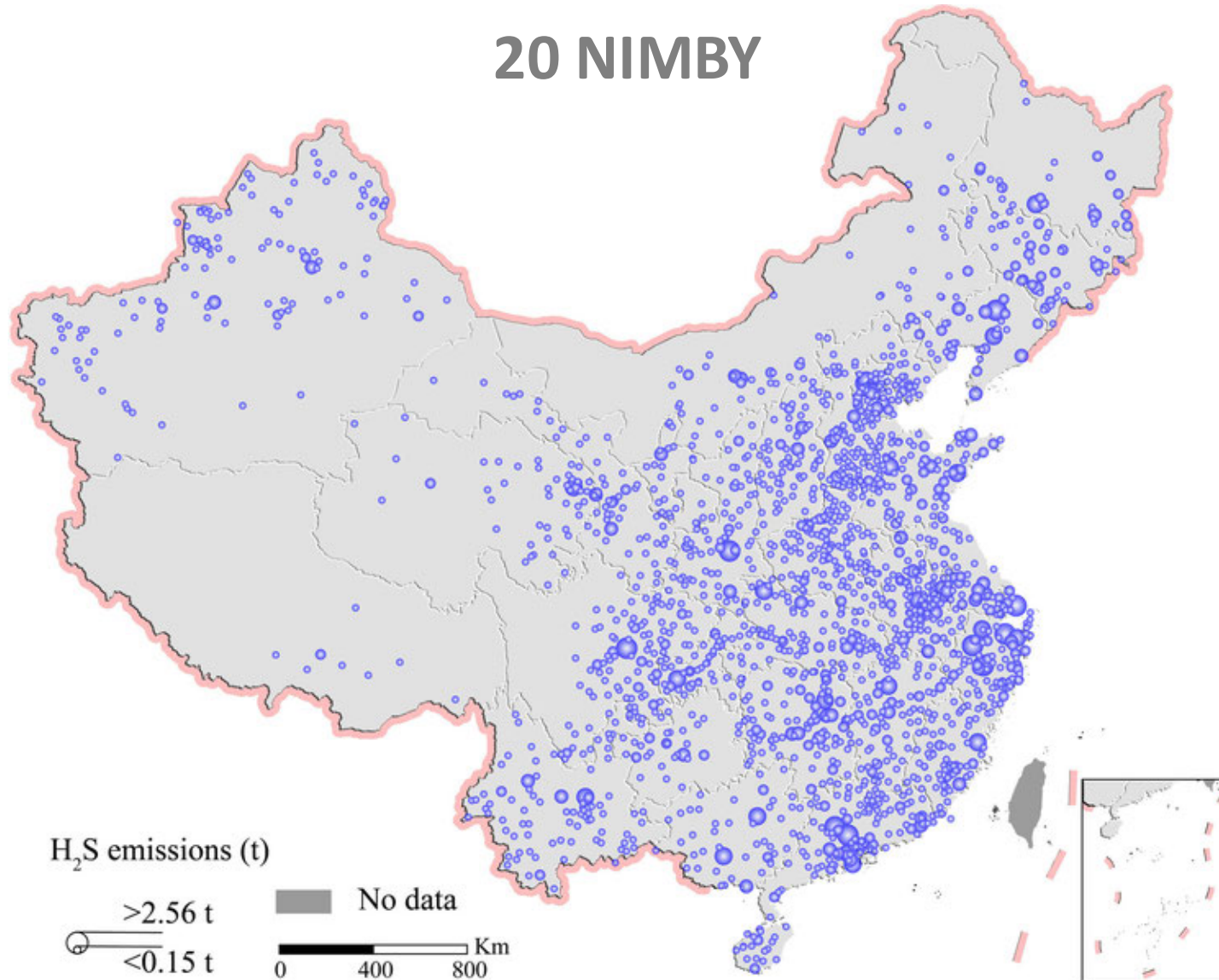MODIS AOD
Geo-statistical model

Table 1 Exposed days in each month for each sub-district

- **223 million people exposed more than six months in a year**

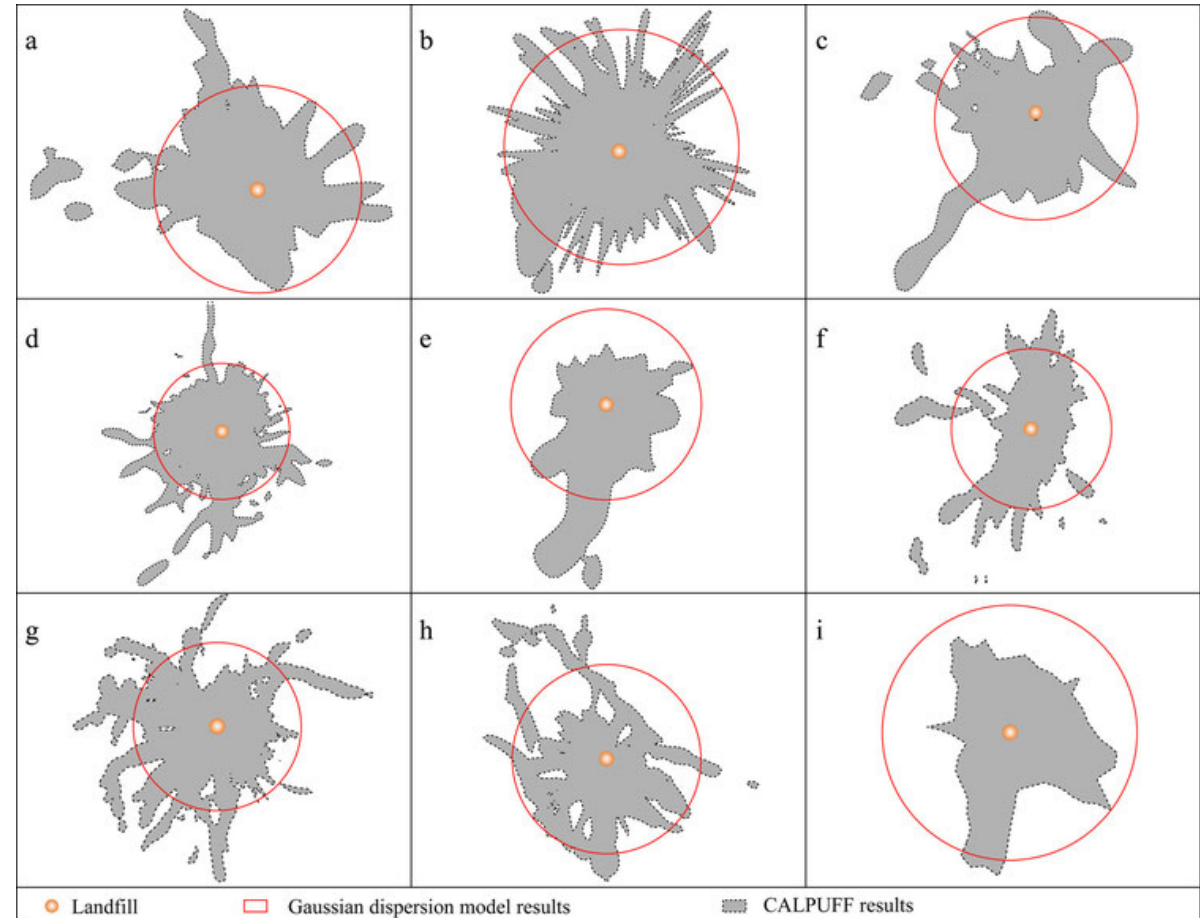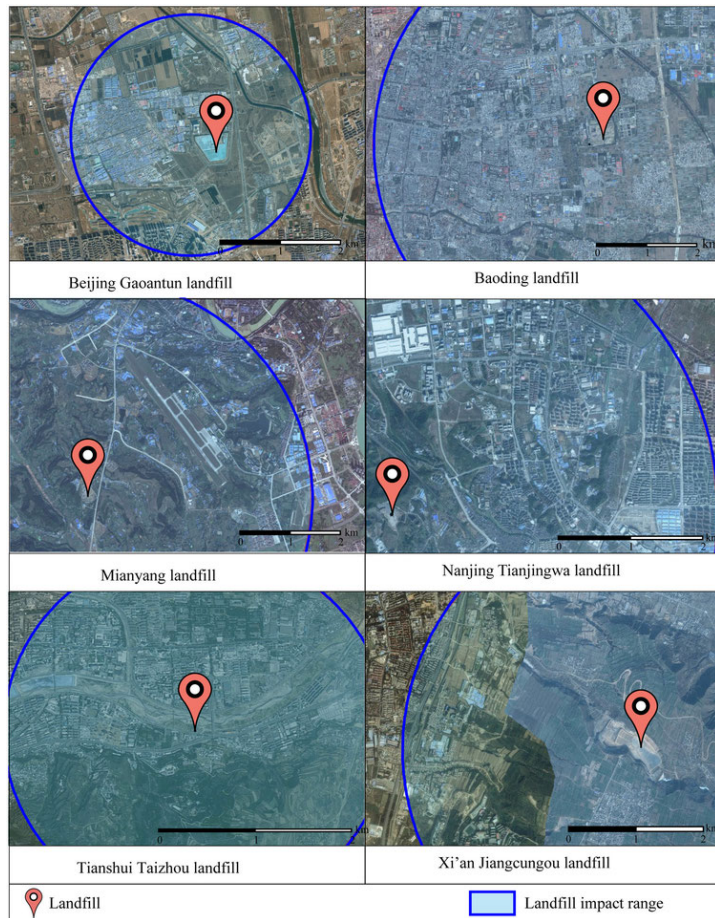H₂S emissions (t)

>2.56 t

<0.15 t

No data

Km
0   400   800

- **Evaluating the impact of odors from the 1,955 landfills in China using a bottom-up approach**
- **We proposed a methodology to estimate the odors impact on landfills' surrounding residents using landfill information and population data. Our bottom-up method can ensure the accuracy of calculation as well as the full coverage of China. We collected and processed data from 1,955 landfills in China, including both sanitary landfill and open dump.**

Beijing Gaoantun landfill · Baoding landfill · Mianyang landfill · Nanjing Tianjingwa landfill · Tianshui Taizhou landfill · Xi'an Jiangcungou landfill

Landfill | Landfill impact range

Landfill | Gaussian dispersion model results | CALPUFF results

- **The total impacted population has reached to 12.28 million, accounting for 0.90% of total population in China.**
- **7818 sensitive facilities affected (schools and hospitals)**
- **Media coverage**
  - The Paper (http://www.thepaper.cn/newsDetail_forward_1397281)
  - http://news.sohu.com/20151116/n426655613.shtml

Sensing polluted rivers with the Baidu online sensor

BCL Beijing City Lab

Bai百度

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北京通惠河现白沫污染严重 夏天散发恶臭味(图)-中新网
2014年5月26日 - 北京通惠河现白沫污染严重夏天散发恶臭味(图)昨天,有市民向本报反映,朝阳区通惠河庆丰公园西园段的河面上漂起了大量的白沫,而且自西向东漂流,看...
www.chinanews.com/sh/2... ▾ V3 - 百度快照

北京通惠河每天万吨污水入河--社会--人民网
2015年4月2日 - 通惠河西起东便门,向东经朝阳区,最终在通州区汇入北运河,全长20公里,其中污染最为严重的河段是高碑店闸至普济闸约8公里。 近日,记者来到通惠河高碑...
society.people.com.cn/... ▾ V3 - 百度快照

北京通惠河22个排污口9月底完成封堵- 北京本地宝
2015年5月7日 - 4月2日以《通惠河每天万吨污水入河》报道了通惠河仍有22个直排污水口...更多关于 北京通惠河排污口 北京通惠河封堵 北京通惠河污染 的信息...
bj.bendibao.com/news/2... ▾ - 百度快照 - 70%好评

北京通惠河双桥段污染严重_天涯杂谈_天涯论坛
2012年7月6日 - 北京通惠河双桥段污染严重 北京的通惠河自高碑店上游河段经过前几年治理,水岸清新,环境宜人。可是往东不到一公里的双桥河段,景致就完全不同了。各种口...
bbs.tianya.cn/post-fre... ▾ - 百度快照 - 74%好评

通惠河污染的研究性报告_百度知道
1个回答 - 提问时间: 2013年08月01日
能被微生物分解的材料,埋在土里经久不烂,长此下去会破坏土壤肥效,污染地下水...2014-05-28
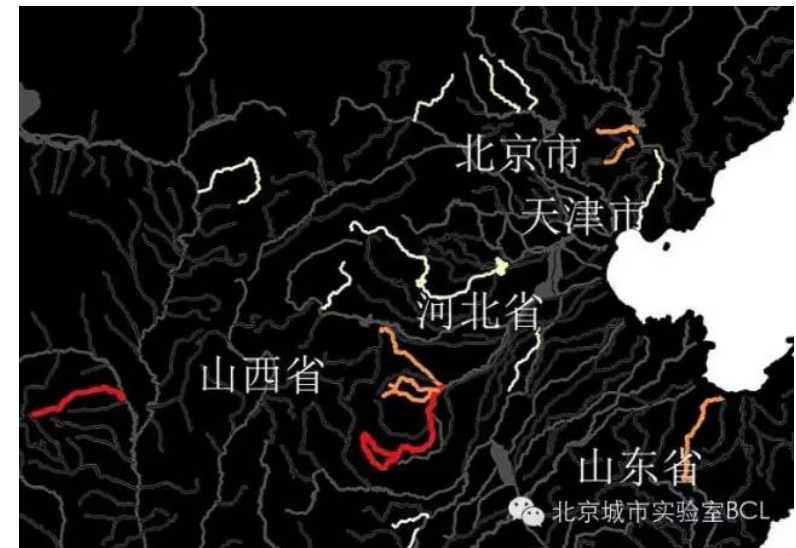北京通惠河北路让货车通行吗 更多关于通惠河的问题>> 知道...
更多关于通惠河 北京 污染的问题>>
zhidao.baidu.com/link?... ▾ - 百度快照 - 80%好评

北京通惠河现白沫污染严重夏天散发恶臭味_网易新闻中心
2014年5月26日 - 25日,有市民向本报反映,朝阳区通惠河庆丰公园西园段的河面上漂起了大量的白沫,而且自西向东漂流,看上去非常恶心。记者走访发现,"白沫子"是受污染...
news.163.com/14/0526/1... ▾ V3 - 百度快照 - 84%好评

北京市　天津市　河北省　山西省　山东省

北京城市实验室BCL

Sensing polluted rivers with the Baidu online sensor

| 名称	关注度	省份
龙江	740000	广西自治区
永安溪	656000	浙江省
长宁河	644000	四川省
大理河	358000	陕西省
武义江	304000	浙江省
湘江	238000	湖南省
晋江	208000	福建省
独水河	188000	广东省
蒲江	156000	四川省
龙川江	136000	云南省
浏阳河	105000	湖南省
茨淮新河	100000	安徽省
北流江	83700	广西自治区
滹沱河	46100	河北省
大沽河	45400	山东省
北淝河	41400	安徽省
府河	39900	湖北省
涟水	34800	湖南省
望虞河	28100	江苏省
漕河	27400	河北省

图2 各县(市)区的水污染问题受关注程度

Sensing polluted rivers with the Baidu online sensor

基于互联网大数据技术的重污染水体识别研究

2015-11-11 石峰、龙瀛 北京城市实验室BCL
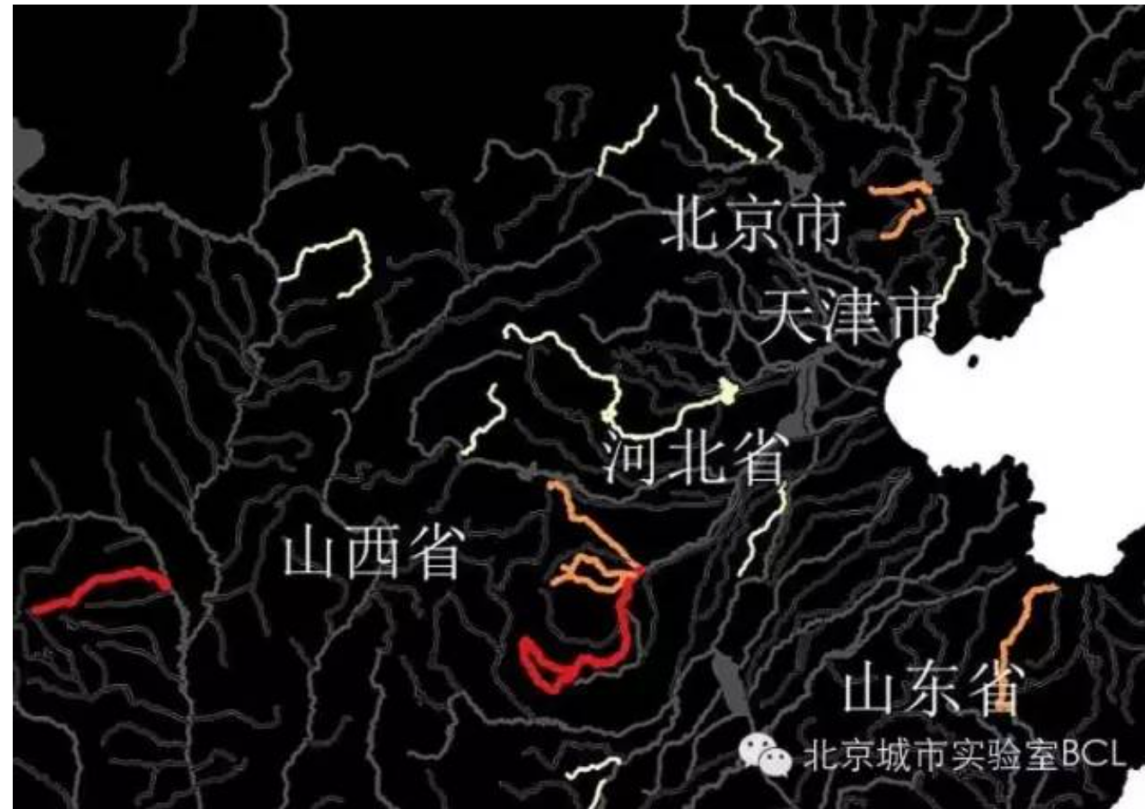
国务院近期颁布的《水污染防治行动计划》对重污染水体和黑臭水体治理提出了明确的要求。然而在实际工作中，由于对重污染水体和黑臭水体的判别缺乏明确标准和识别手段，调查制定重污染水体清单成为"水十条"实施过程中的第一项重要任务。目前各地普遍采用以监测数据为基础进行统计的识别判断办法，而水质监测系统存在着监测能力不足、点位覆盖不够、监测指标与老百姓切身感受不一致等诸多实际问题，在当前的环保工作模式下，准确高效识别"污染最严重、群众反响最强烈、媒体最关心"的重污染水体具有很大工作难度。

BCL
PM$_{2.5}$
NIMBY
Polluted rivers

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