Non-point source pollution research trend over three decades and possible directions

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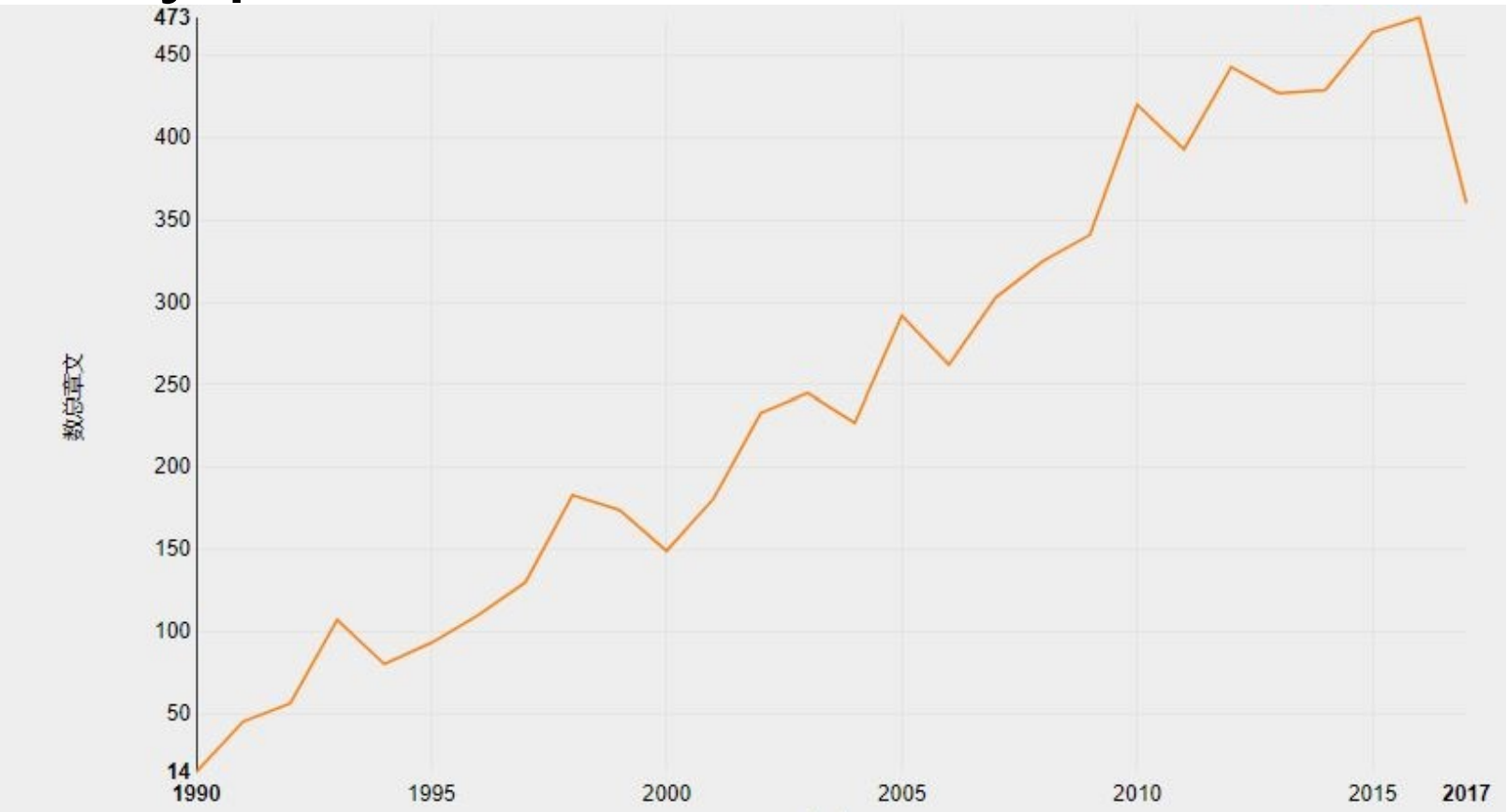
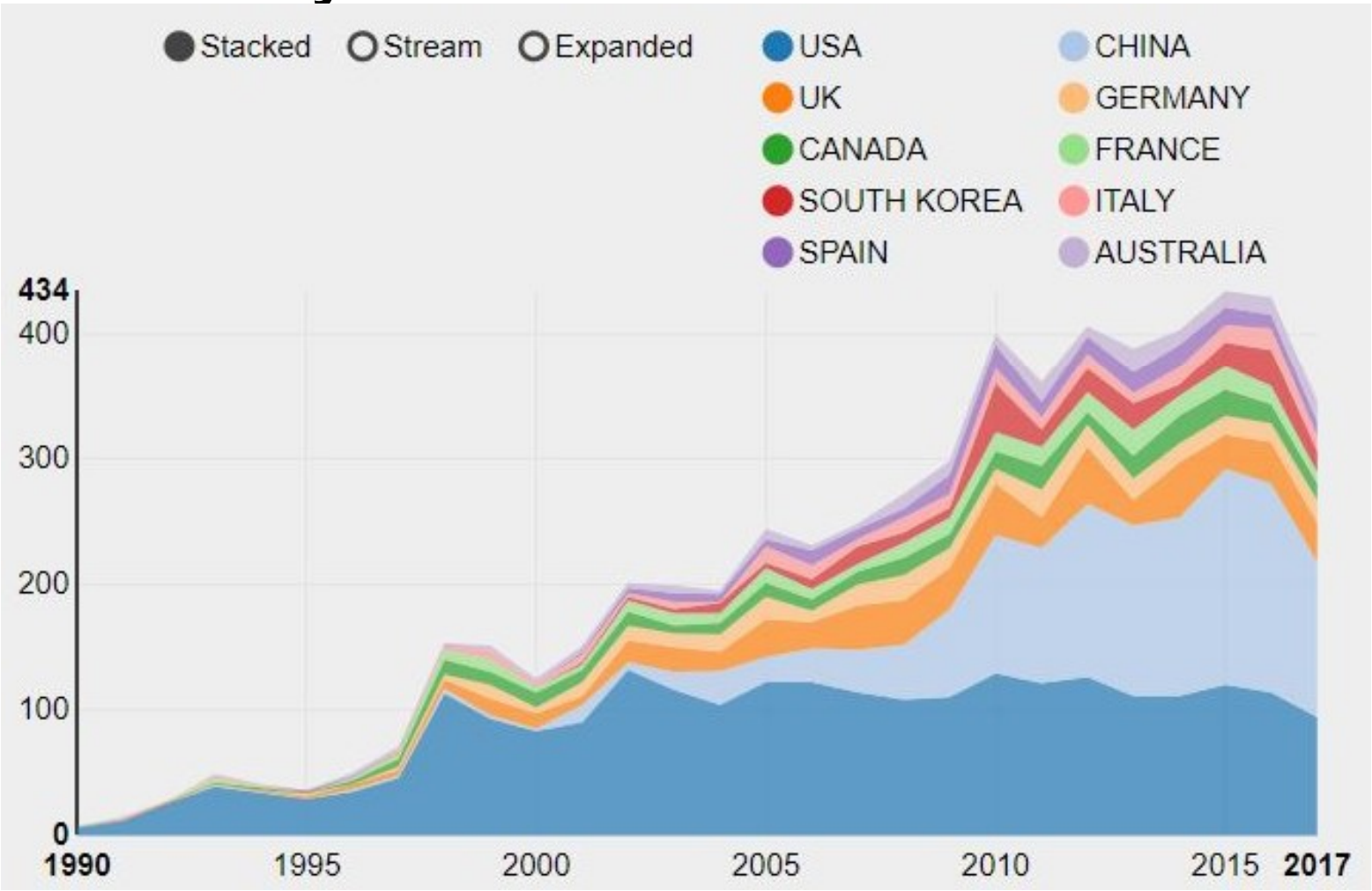
北京師範大學
BEIJING NORMAL UNIVERSITY

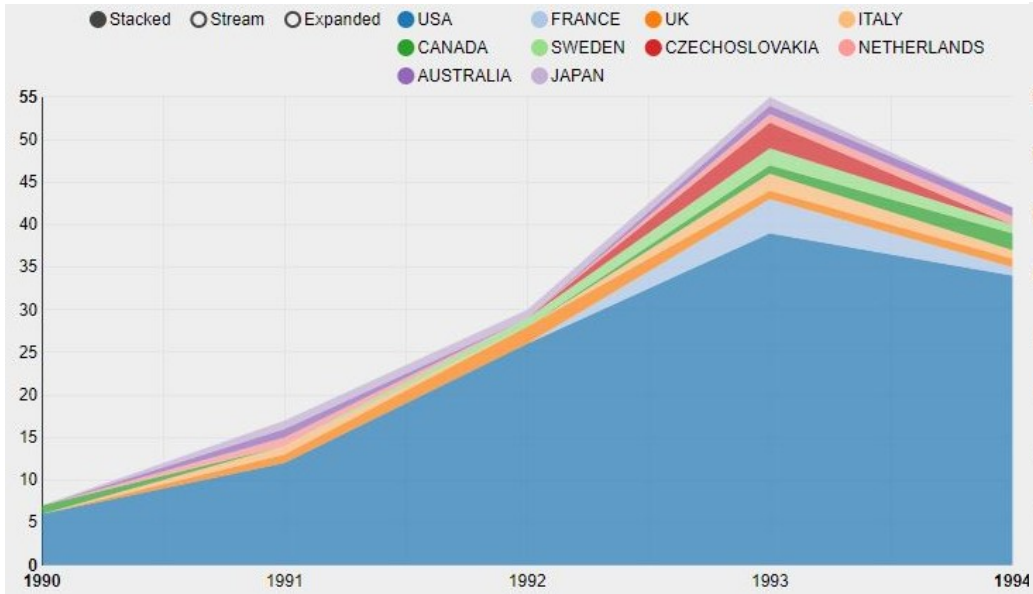
Yearly publications



web of science core database,all languages ,all document types,1990-2017
ts=(((diffuse pollution)or("non point"pollut*)or(nonpoint pollut*))not(air or gas))
Date 10-17-2017，6964。

Publication by countries

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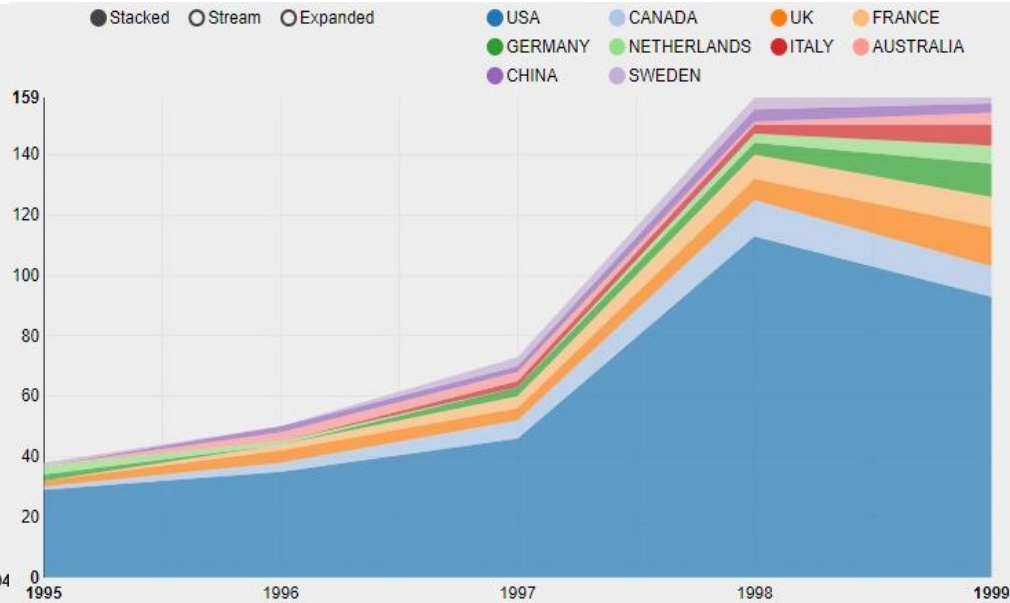
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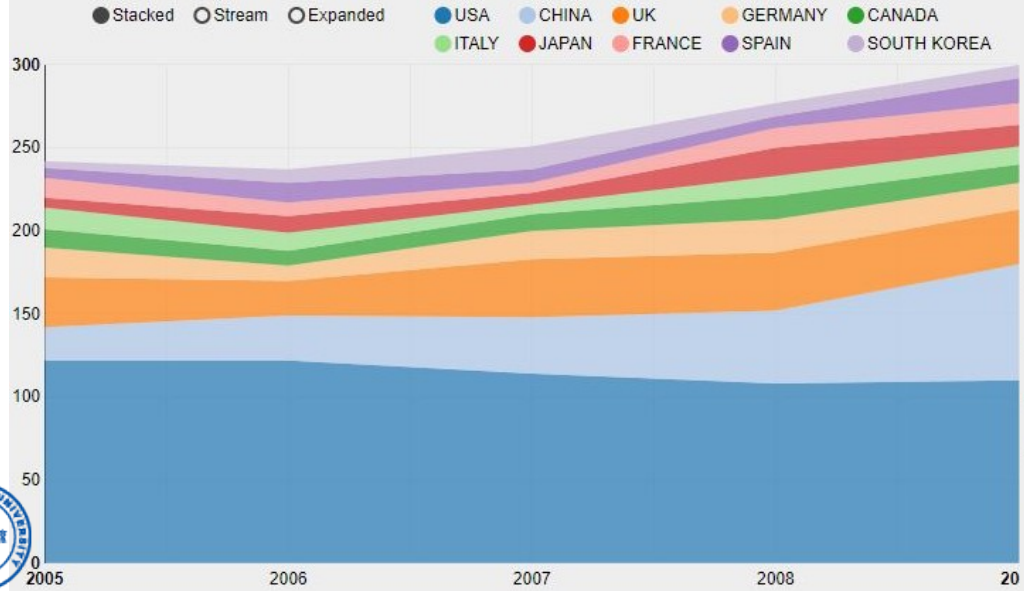
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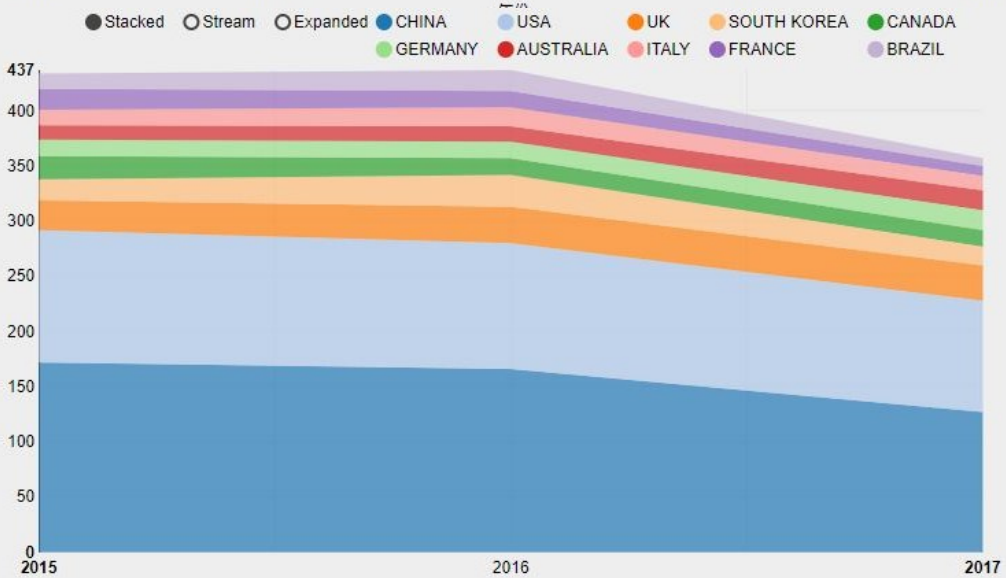
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2015
2016
2017

Top 100 Countries in this Research Area, by Scholarly Output

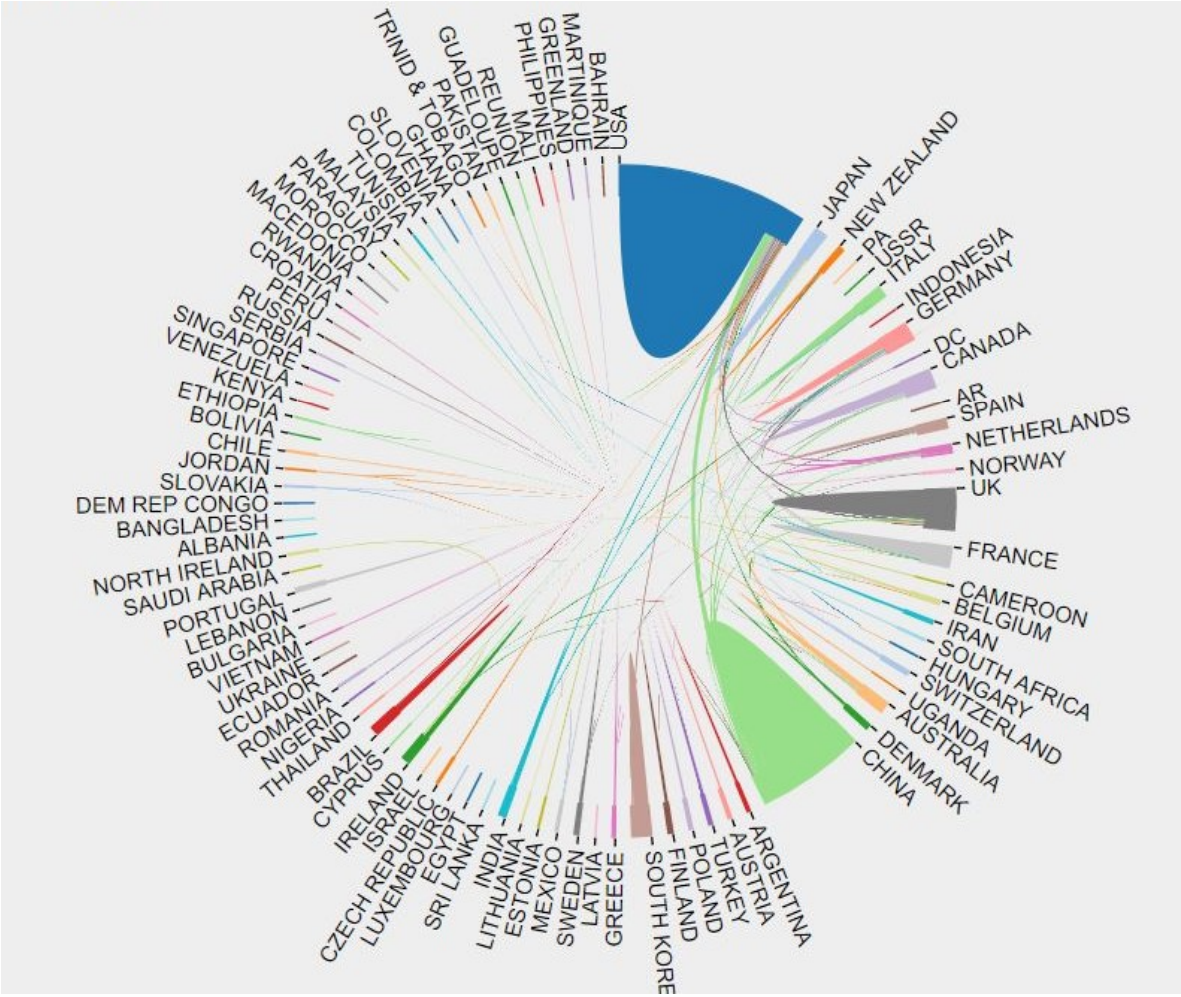
Size: Scholarly Output total value

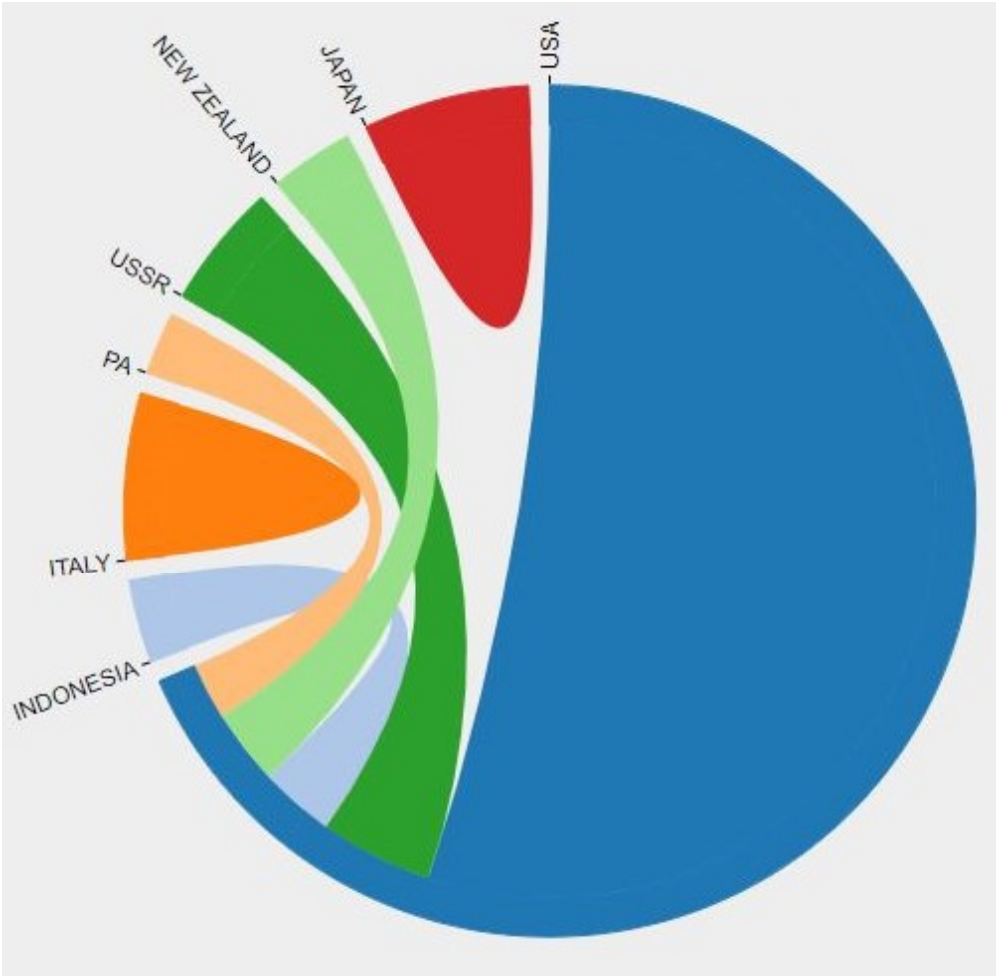
Color: Collaboration total value

Main Source Journals

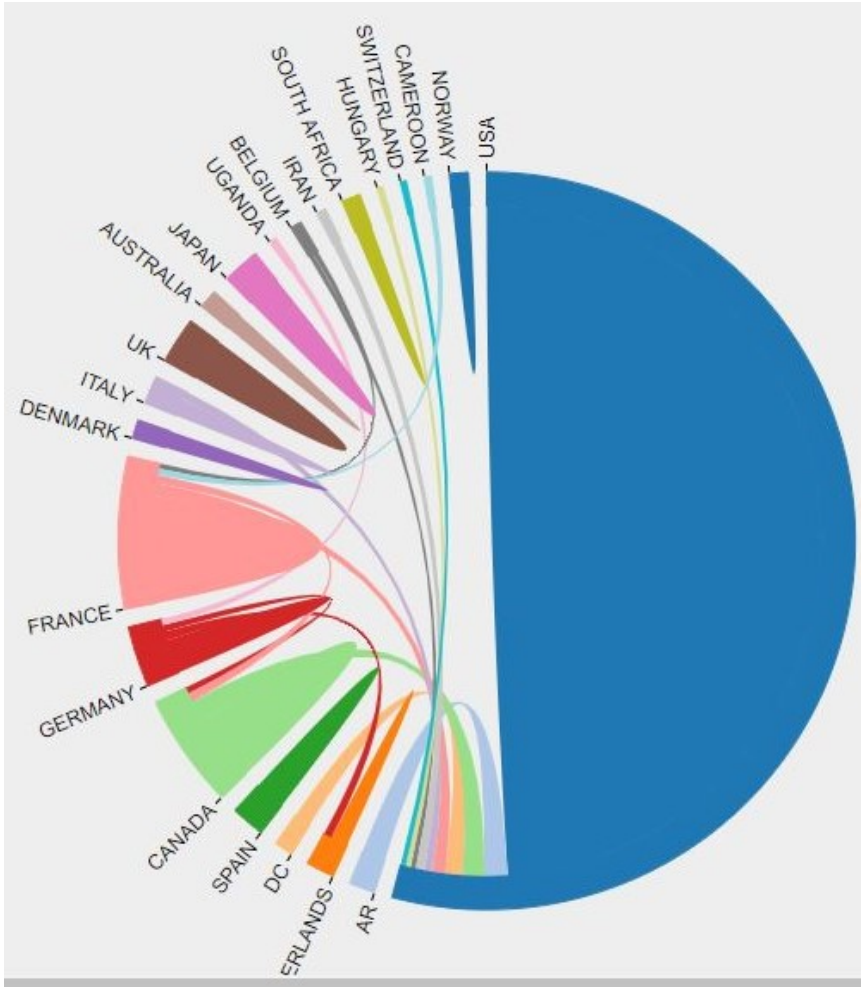
WATER SCIENCE AND TECHNOLOGY	422	6.048 %
JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION	324	4.643 %
SCIENCE OF THE TOTAL ENVIRONMENT	232	3.325 %
ENVIRONMENTAL MONITORING AND ASSESSMENT	156	2.236 %
JOURNAL OF ENVIRONMENTAL QUALITY	145	2.078 %
JOURNAL OF HYDROLOGY	132	1.892 %
JOURNAL OF SOIL AND WATER CONSERVATION	119	1.705 %
JOURNAL OF ENVIRONMENTAL MANAGEMENT	115	1.648 %
WATER RESEARCH	95	1.361 %
ENVIRONMENTAL MANAGEMENT	88	1.261 %
ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH	86	1.232 %
ECOLOGICAL ENGINEERING	80	1.146 %
ENVIRONMENTAL SCIENCE TECHNOLOGY	78	1.118 %
WATER AIR AND SOIL POLLUTION	78	1.118 %
AGRICULTURAL WATER MANAGEMENT	75	1.075 %
AGRICULTURE ECOSYSTEMS ENVIRONMENT	75	1.075 %
WATER RESOURCES BULLETIN	70	1.003 %
ENVIRONMENTAL EARTH SCIENCES	69	0.989 %
HYDROLOGICAL PROCESSES	65	0.931 %
TRANSACTIONS OF THE ASAE	62	0.889 %
TRANSACTIONS OF THE ASABE	61	0.874 %
ADVANCED MATERIALS RESEARCH	58	0.831 %
AMERICAN JOURNAL OF AGRICULTURAL ECONOMICS	58	0.831 %
DESALINATION AND WATER TREATMENT	58	0.831 %
ENVIRONMENTAL POLLUTION	54	0.774 %

International cooperation



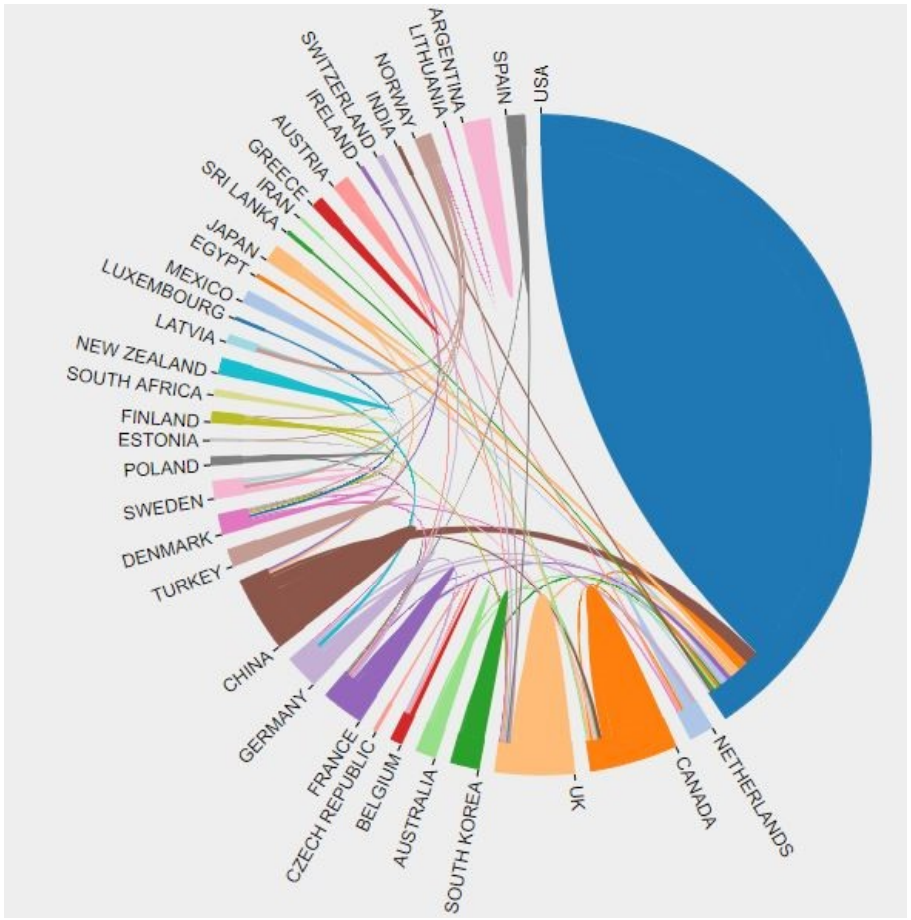


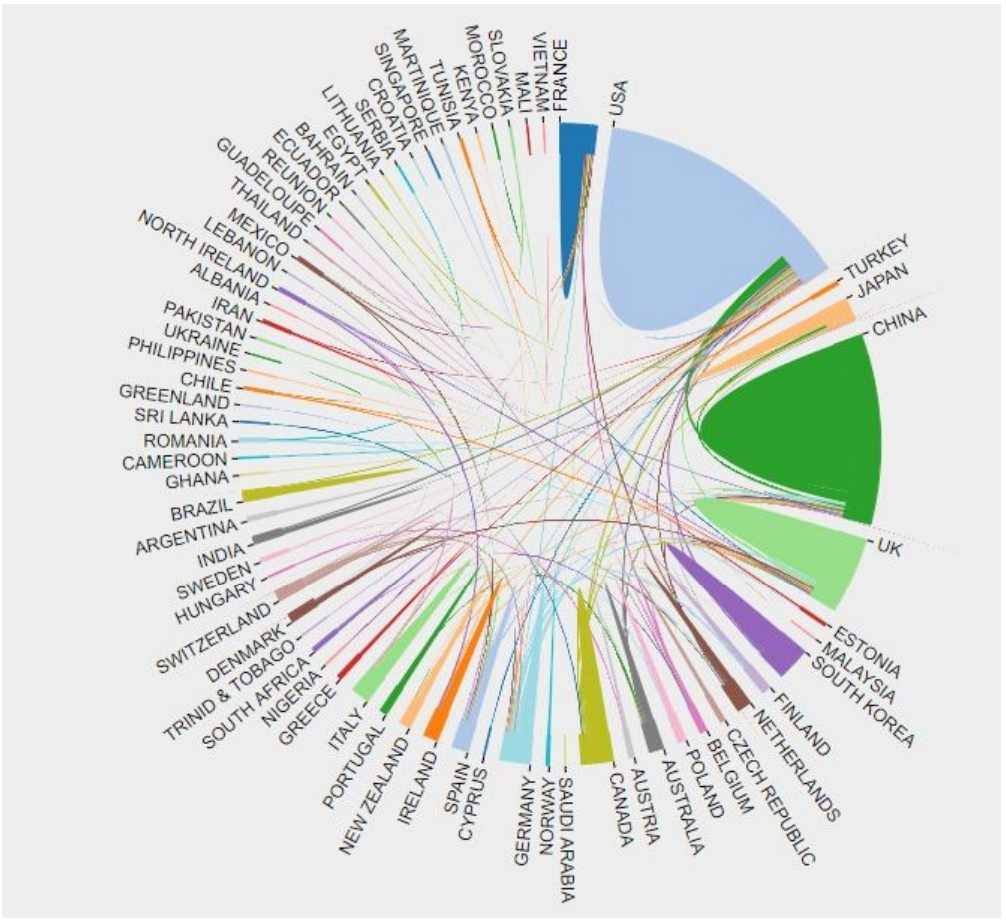
1990-1994



1995-1999

International cooperation

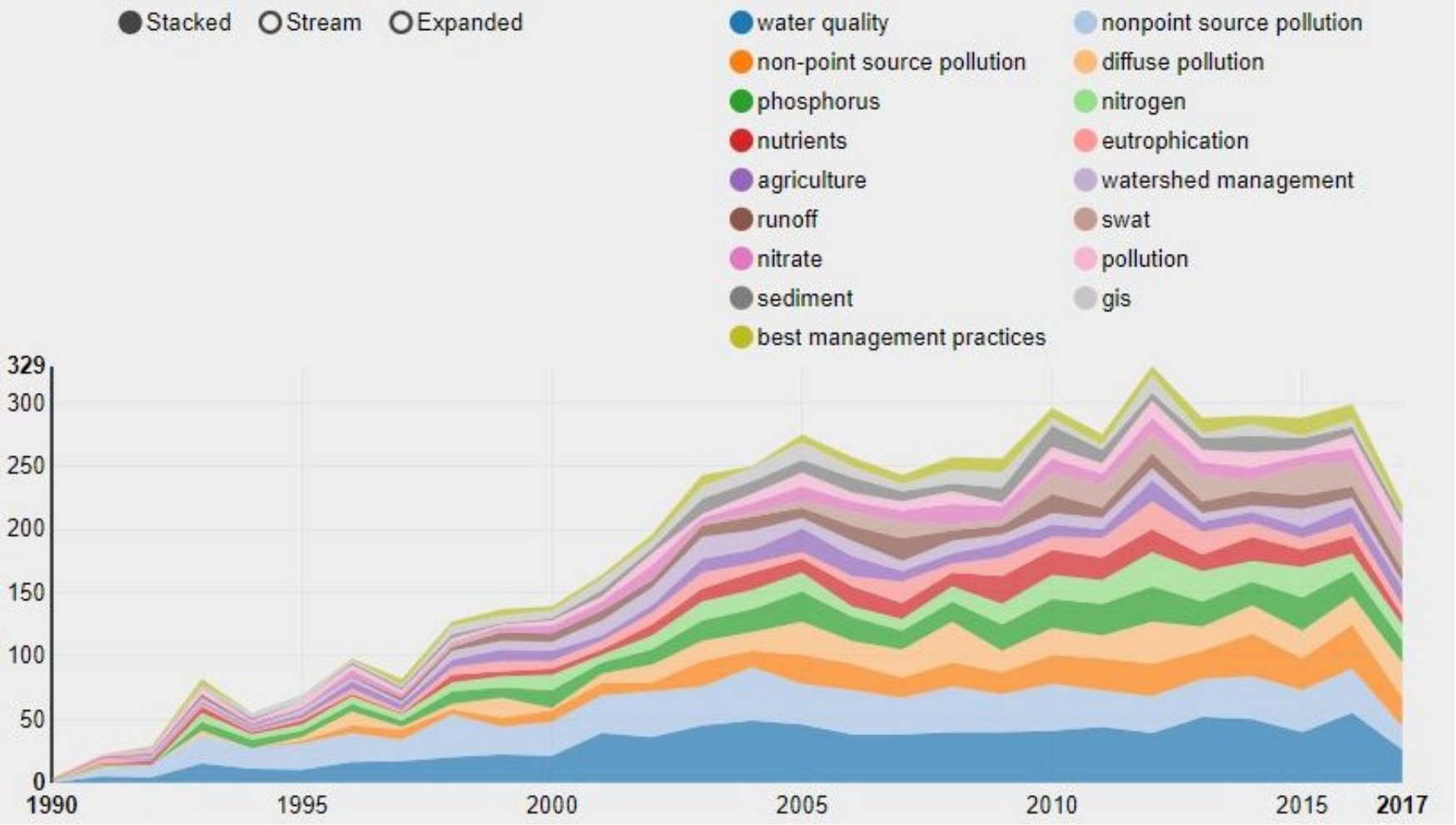




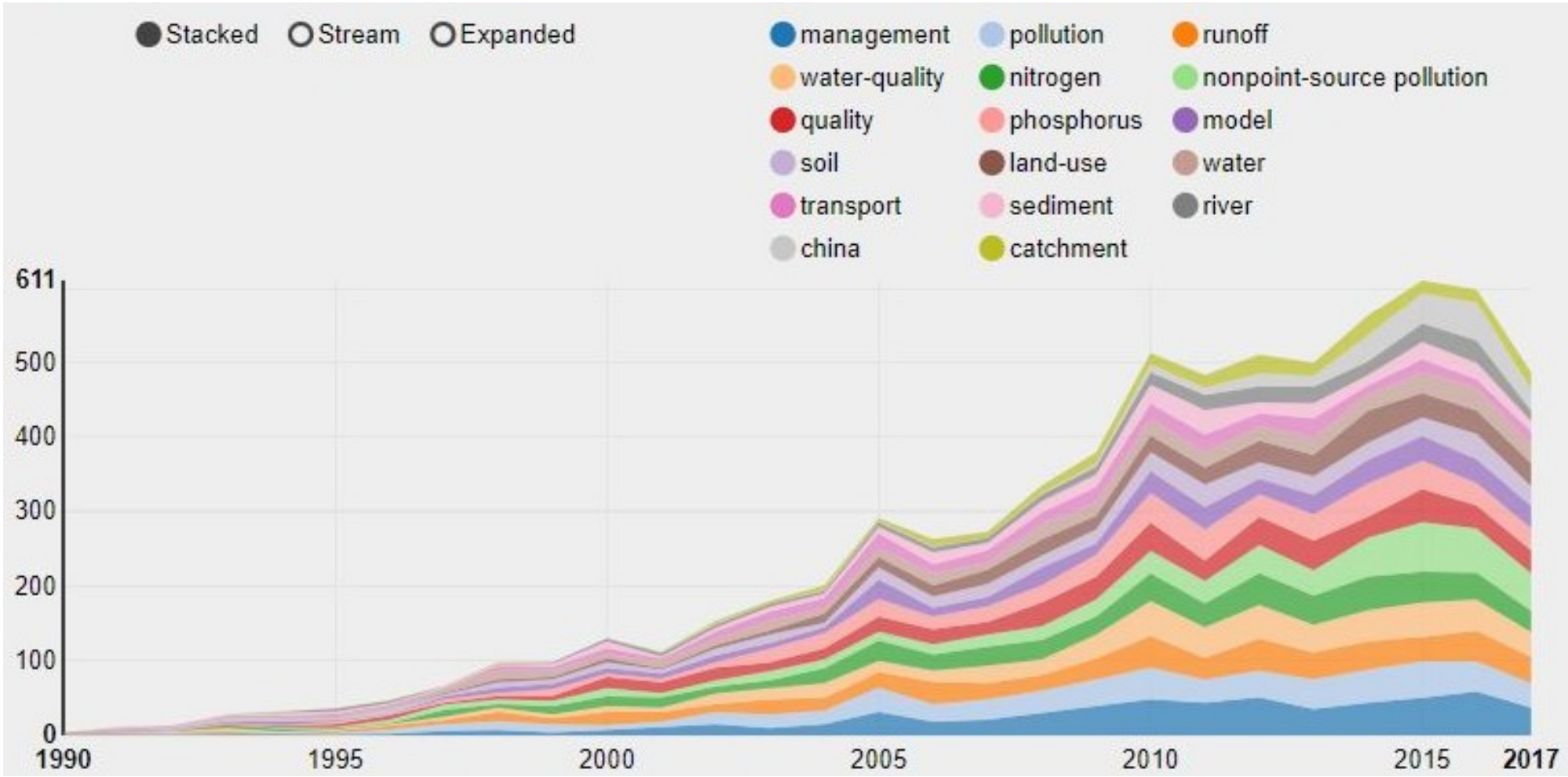
2005-2009 2010-2014

International cooperation

Keywords patterns



Topic words patterns

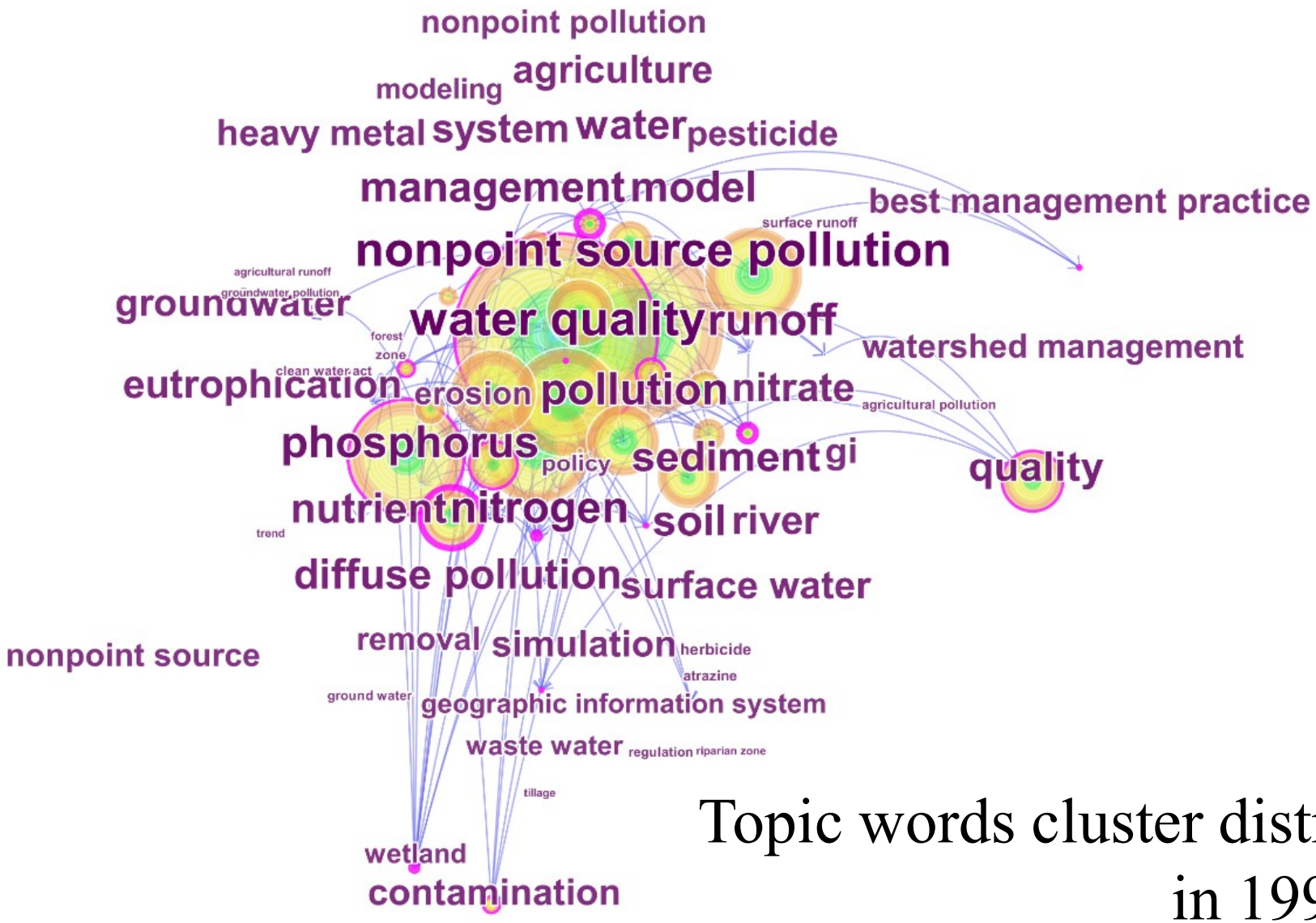


Temporal patterns of keywords

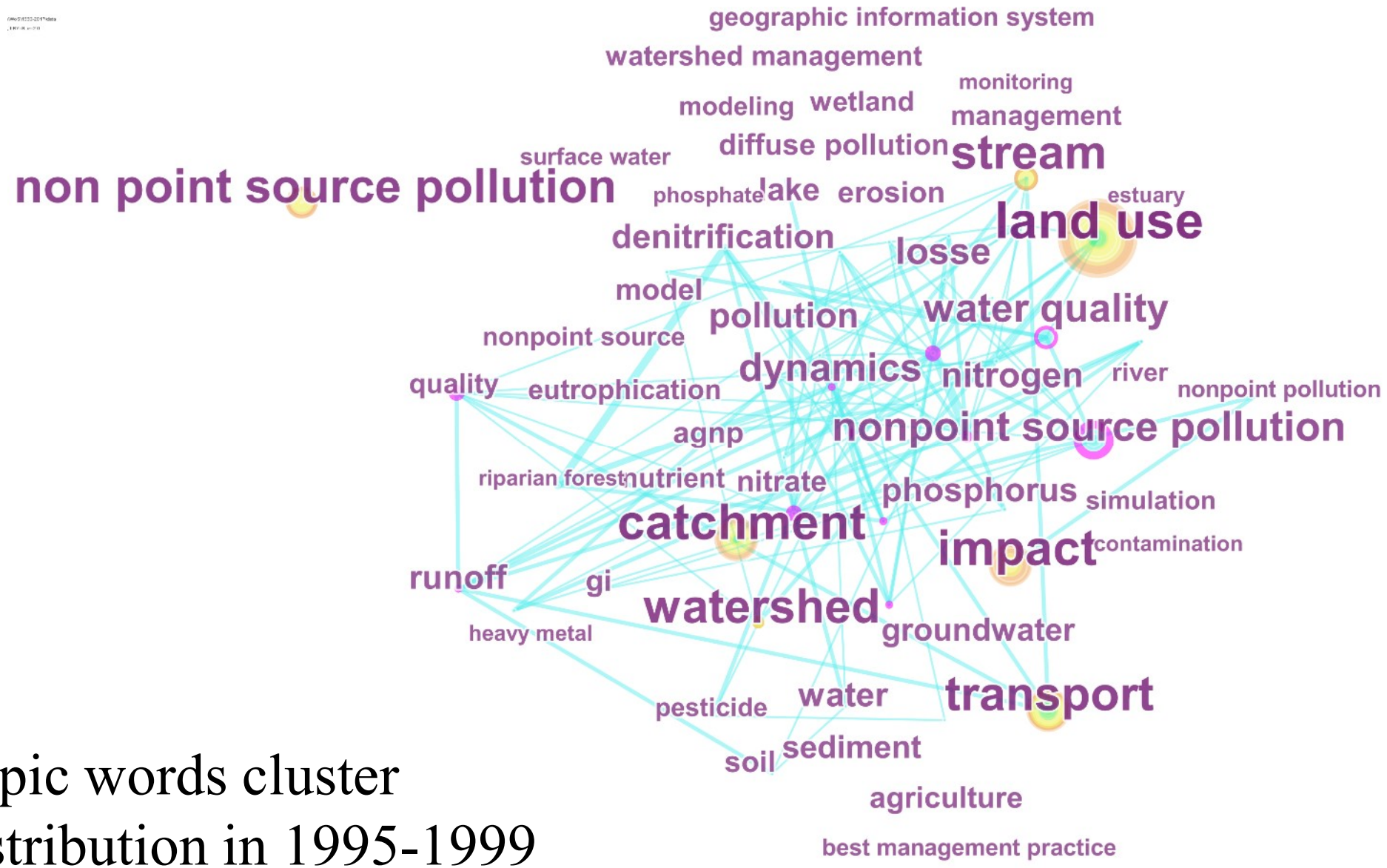
1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	2015-2017
BMPS	Agriculture	Agriculture	Agriculture	Agriculture	Agriculture
Clear water act	BMPS	Diffuse pollution	BMPS	BMPs	BMPs
Erosion	Diffuse pollution	Eutrophication	Diffuse pollution	Diffuse pollution	Diffuse pollution
Eutrophication	Erosion	GIS	Eutrophication	Eutrophication	Eutrophication
Modeling	Eutrophication	Modeling	GIS	Groundwater	Heavy metals
Nitrogen/nitrate	GIS	Nitrogen	Nitrate	Nitrate	Land use
NPS pollution	Groundwater	NPS pollution	Nitrogen	Nitrogen	Nitrate
Nutrients	Modeling	Nutrients	NPS pollution	NPS pollution	Nitrogen
Pesticide	NPS pollution	Phosphorus	Nutrients	Nutrients	NPS pollution
Phosphorus	Nutrients	Pollution	Phosphorus	Phosphorus	Nutrients
Pollution	Phosphorus	Water quality	Pollution	Pollution	Phosphorus
Runoff	Runoff	Watershed	Sediment	Runoff	Pollution
Water quality	Water quality	management	SWAT	Sediment	Runoff
Watershed	Watershed		Water quality	SWAT	SWAT
management	management		Watershed	Water quality	Water quality
			management	Watershed	Watershed
				management	management

Temporal patterns of topic words

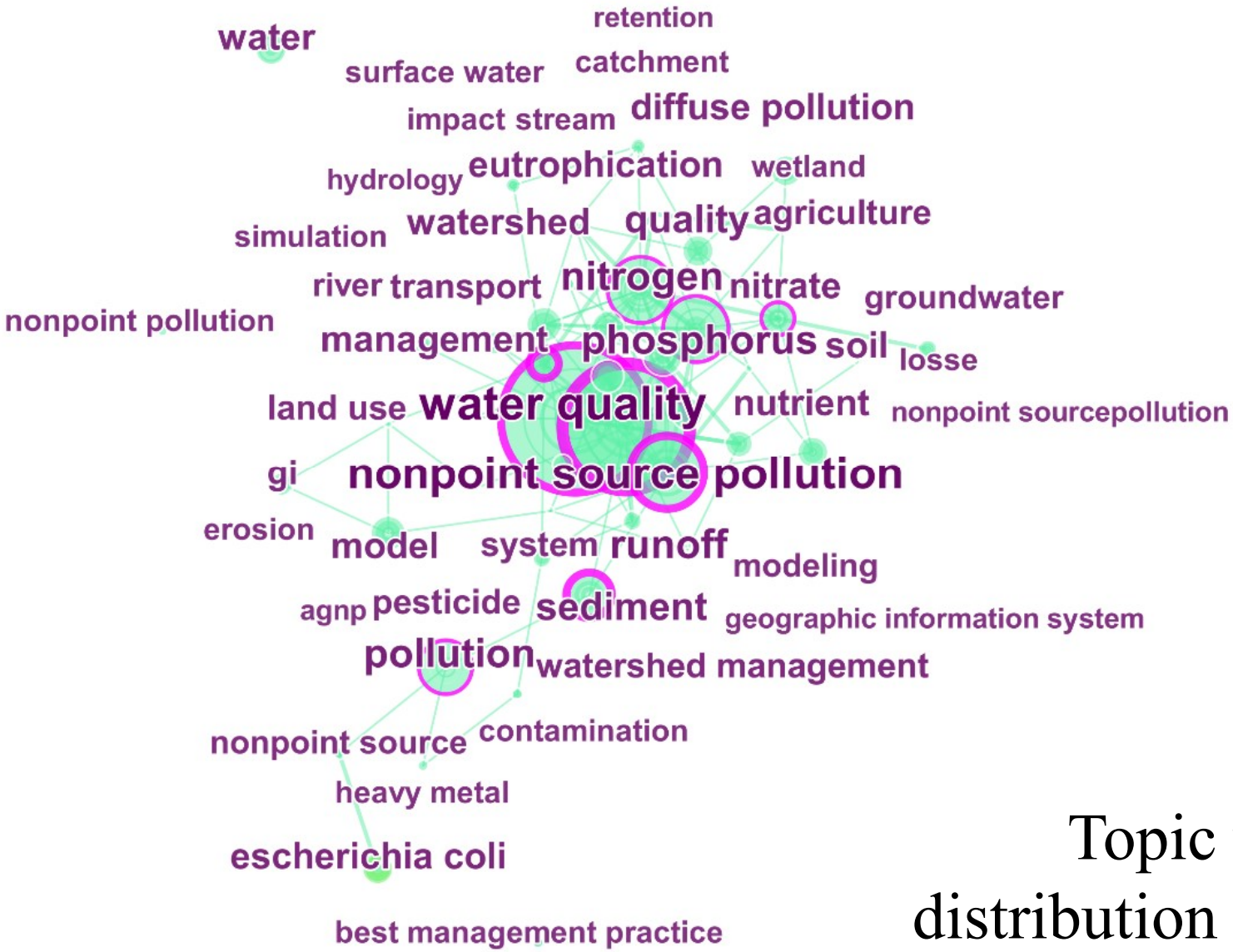
	1990-1994	1995-1999	2000-2004	2005-2009	2010-2014	2015-2017
1	Water	Pollution	Runoff	Pollution	Management	NPS pollution
2	Model	Water	Quality	Management	Water quality	Management
3	Soil	Runoff	Nitrogen	Nitrogen	Nitrogen	Pollution
4	Nitrogen	Nitrogen	Pollution	Runoff	Pollution	China
5	Water quality	NPS pollution	Water quality	Quality	Phosphorus	Water quality
6	Sediment	Quality	Management	Phosphorus	Runoff	Runoff
7	Groundwater	Soil	Phosphorus	Water quality	NPS pollution	Nitrogen
8	Management	Phosphors	NPS pollution	Model	Quality	Quality
9	Runoff	Model	Transport	Land use	Land use	Phosphorus
10	Pollution	Water quality	Water	Transport	Model	Model
11	Erosion	Management	Model	Soil	Soil	Land use
12	Nitrate	Groundwater	Soil	NPS pollution	Water	Soil
13	Nutrient	Transport	Land use	Water	Sediment	Water
14	Phosphorus	Losses	Sediment	Sediment	Catchment	River
15	Atrazine	Erosion	Losses	Contamination	River	River basin
16	System	Dynamics	Nitrate	Catchment	Transport	Sediment
17	Quality	Sediment	Escherichia-coli	Flow	China	Impact



Topic words cluster distribution in 1990-1994

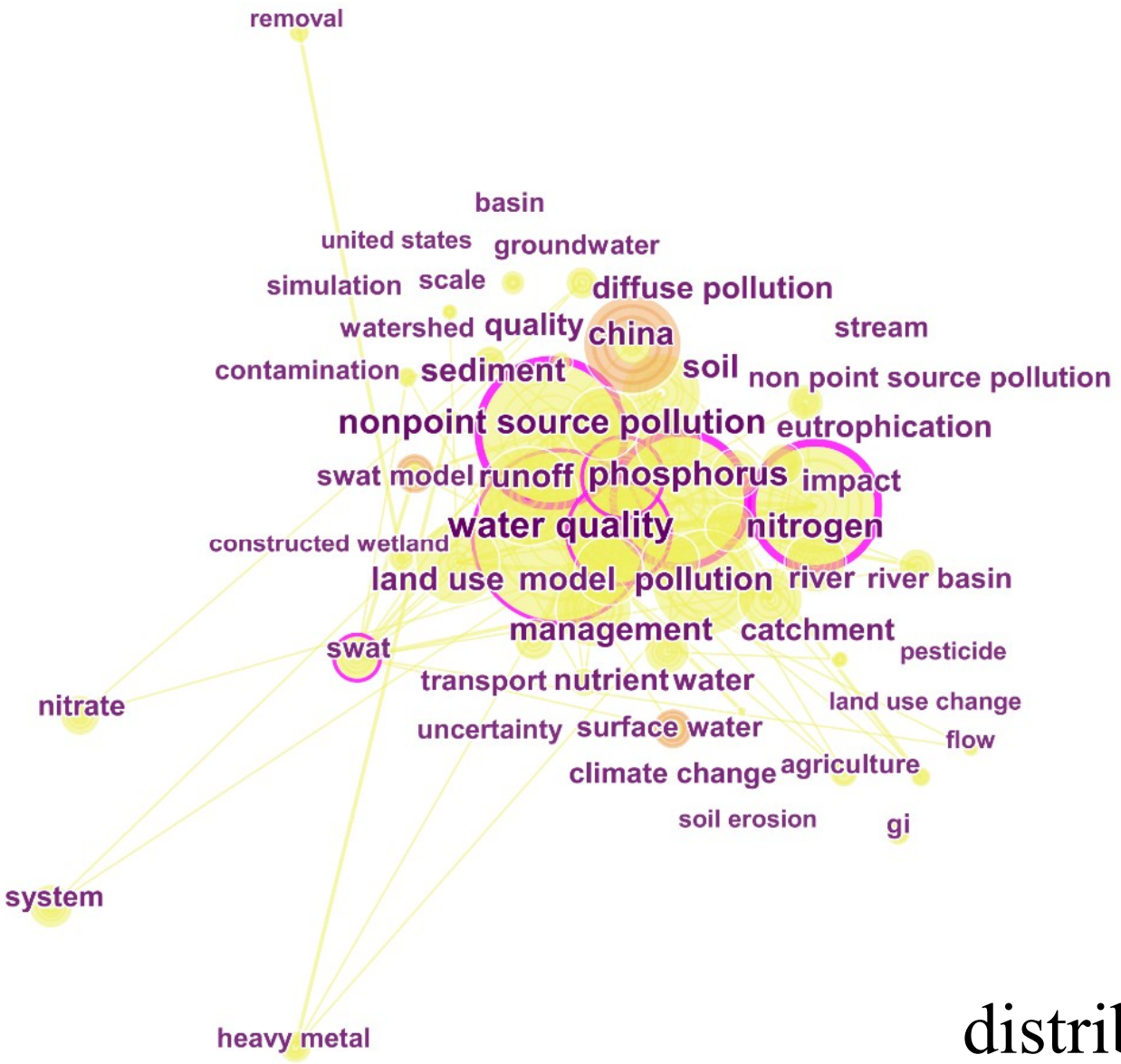


Topic words cluster distribution in 1995-1999

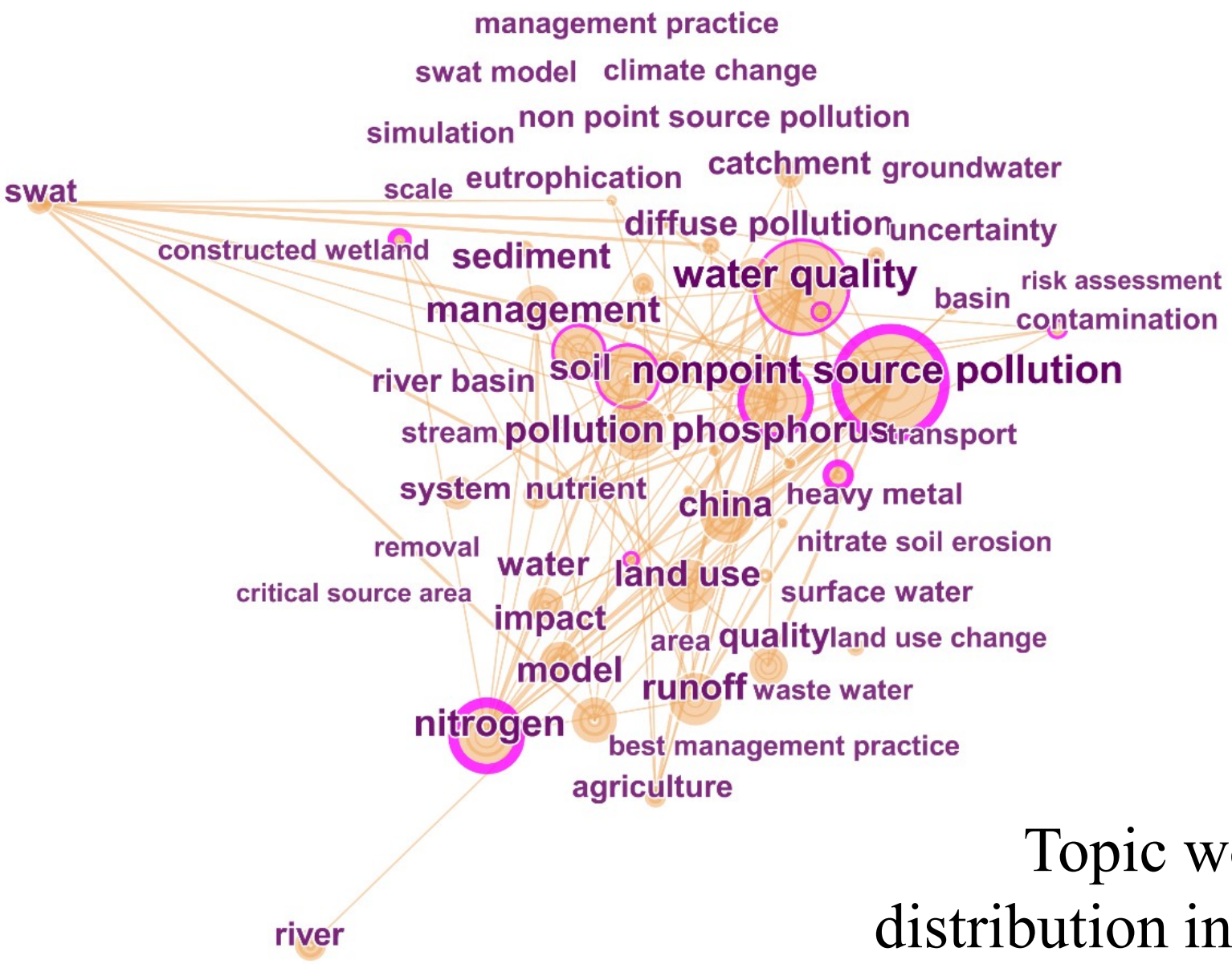


Topic words cluster distribution in 2000-2004

Topic words cluster distribution in 2005-2009



Topic words cluster distribution in 2010-2014



Topic words cluster distribution in 2015-2017

Leading agency--- with citation

机构名	文章总数	总被引用次数	平均被引次数	一作总数	一作被引次数	一作平均被引
USDA ARS	251	2061	8.21	101	803	7.95
Beijing Normal Univ	179	1117	6.24	142	832	5.86
ARS	80	1070	13.38	37	630	17.03
Purdue Univ	120	809	6.74	45	311	6.91
Cornell Univ	75	789	10.52	35	245	7.00
Univ Wisconsin	119	784	6.59	52	500	9.62
Chinese Acad Sci	394	754	1.91	211	365	1.73
Iowa State Univ	112	594	5.30	50	289	5.78
Texas Agr Expt Stn	7	549	78.43	3	123	41.00
Penn State Univ	67	505	7.54	30	204	6.80

Leading agency-—with paper numbers

机构名	文章总数	总被引用次数	平均被引次数	一作总数	一作被引次数	一作平均被引
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Univ Wisconsin	119	784	6.59	52	500	9.62
Iowa State Univ	112	594	5.30	50	289	5.78
US Geol Survey	109	320	2.94	45	123	2.73
US EPA	106	383	3.61	51	143	2.80
Zhejiang Univ	94	419	4.46	45	158	3.51
Univ Calif Davis	85	320	3.76	36	116	3.22

High cited authors

作者名	文章总数	总被引用次数	平均被引次数	一作总数	一作被引次数	一作平均被引	通讯作者数	通讯文章被引
Arnold, JG	33	1099	33.30	4	555	138.75	4	555
Srinivasan, R	33	746	22.61	1	19	19.00	2	30
Williams, JR	12	620	51.67	0	0	0.00	0	0
Shen, ZY	50	479	9.58	17	291	17.12	33	361
Sharpley, AN	22	471	21.41	5	103	20.60	5	82
Muttiah, RS	1	408	408.00	0	0	0.00	0	0
Carpenter, SR	12	369	30.75	4	305	76.25	4	305
Correll, DL	6	369	61.50	0	0	0.00	0	0
Heathwaite, AL	25	336	13.44	5	143	28.60	6	156
Smith, VH	3	325	108.33	1	36	36.00	1	36

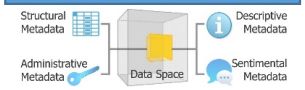
SWAT-N_2O Coupler Tool: An integration tool for soil N_2O emission modeling

Methodological development

Soil N_2O emission model at the global scale

Simple algorithm, exists uncertainty. but still can capture soil N_2O emission

Based-meta analysis model



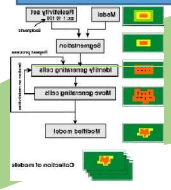
Zhou et al, 2015, EST
Shcherbak et al., 2014

IPCC coefficient method

Soil N_2O emission model at the landscape or watershed scale

Wagena et al., 2017, EMS
Yang et al., 2017

SWAT-GHG,
SWAT coupled with Daycent



Complicated algorithm, need a lot of observed data

CASA, CENTURY, Daycent, DNDC, LandscapeDNDC

HIP concept model

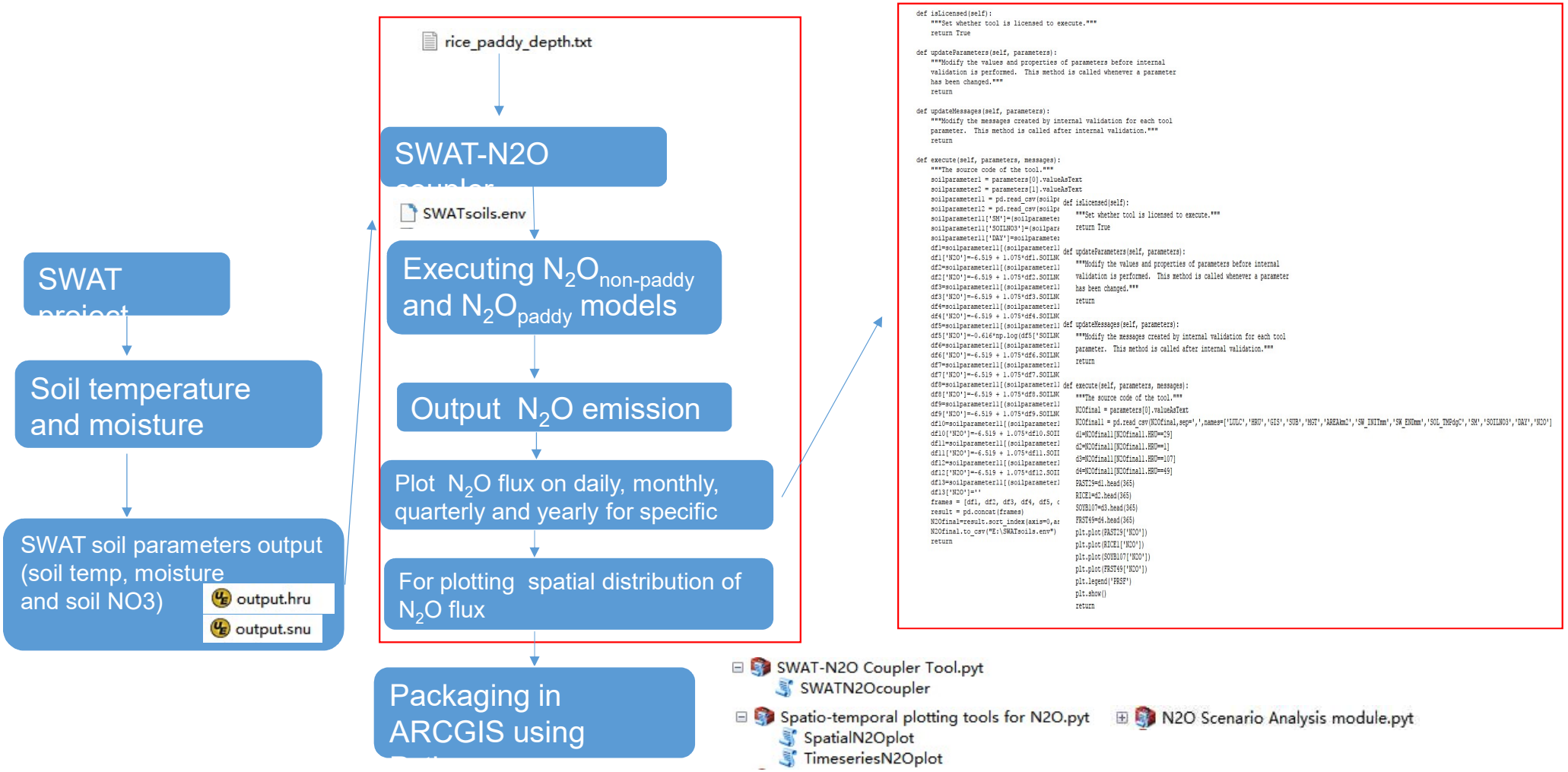
Alternative way?

Based-meta analysis model

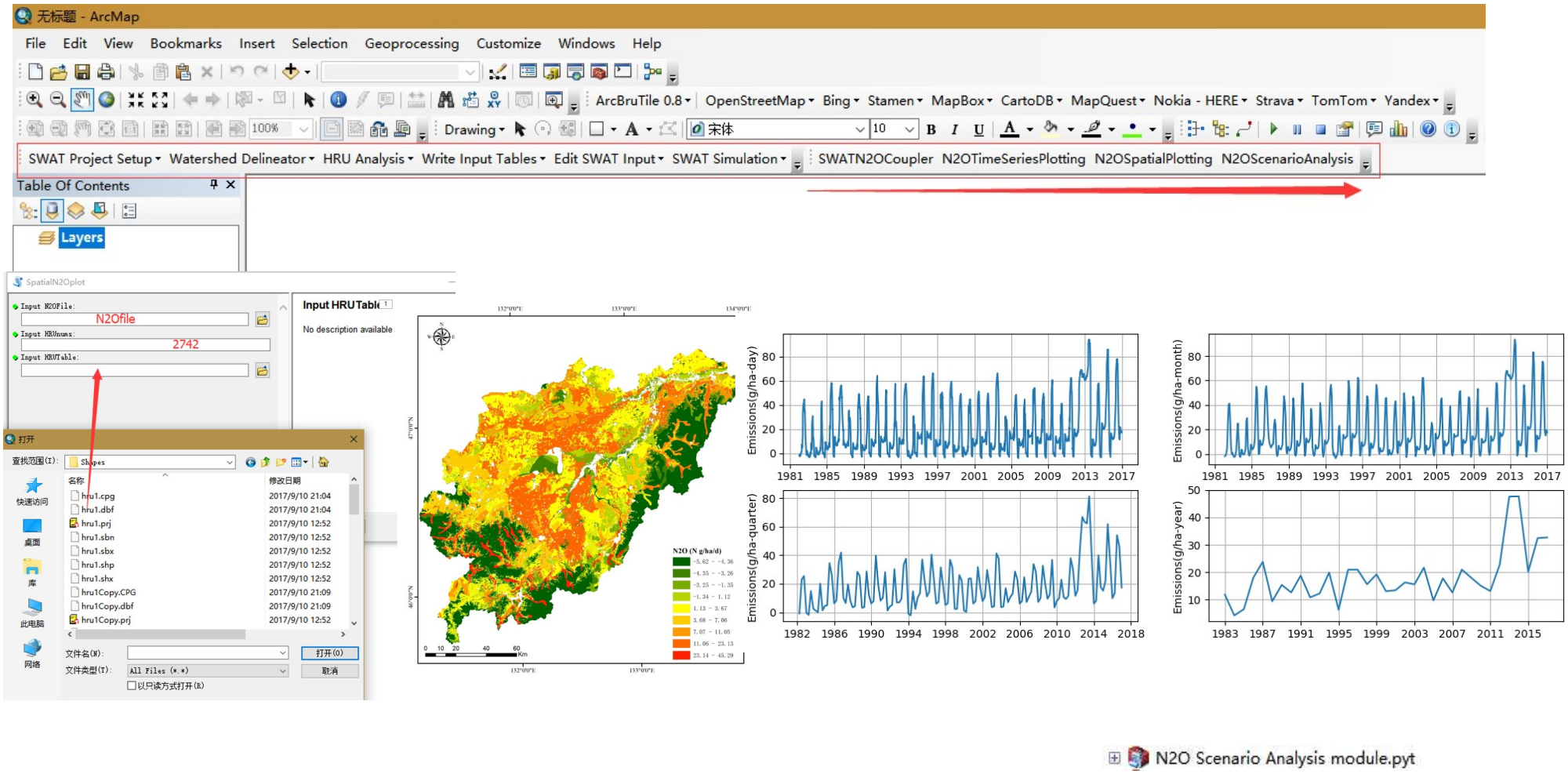
SWAT

An alternative way for simulating soil N_2O emission

Operational structure of the SWAT-N_2O Coupler Toolboxes

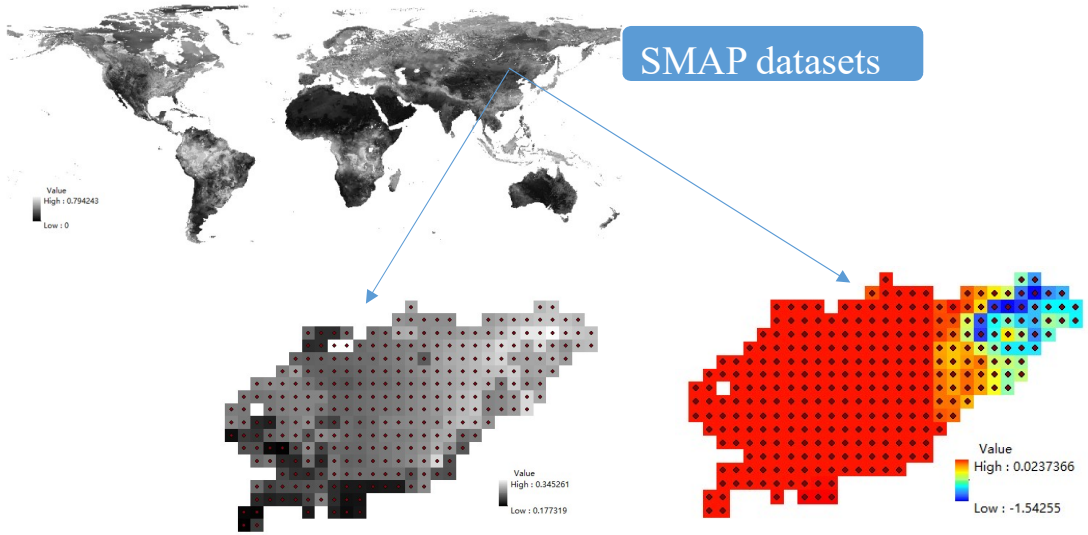


SWAT-N_2O Coupler Tools interface

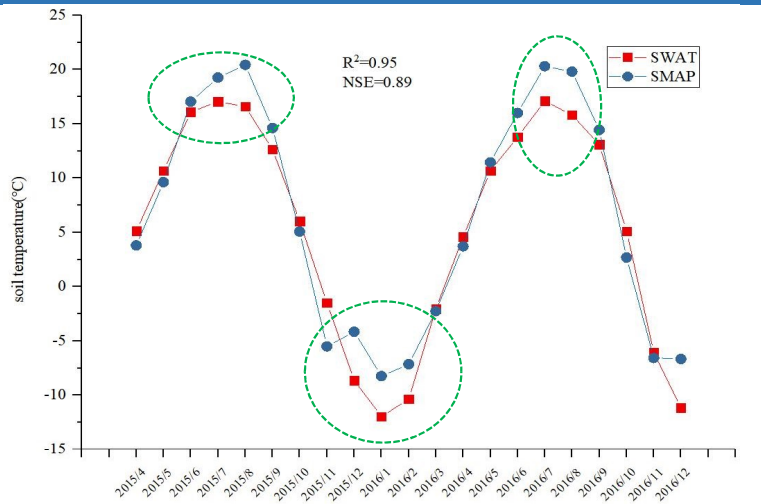


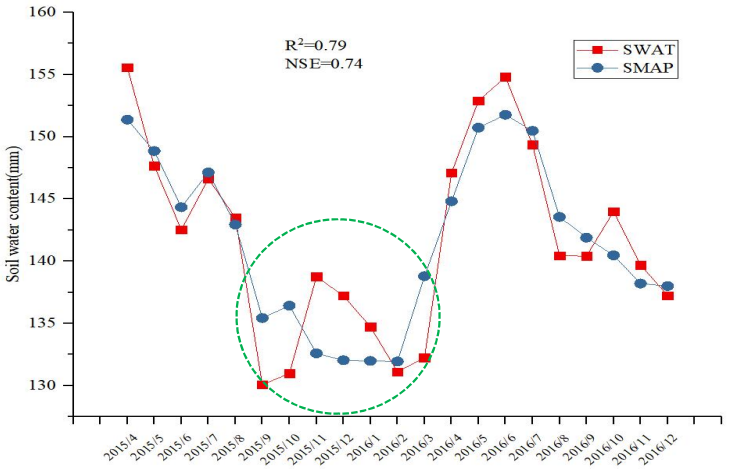
N2O Scenario Analysis module.pyt

Case study: validation for soil temperature, moisture simulated by SWAT

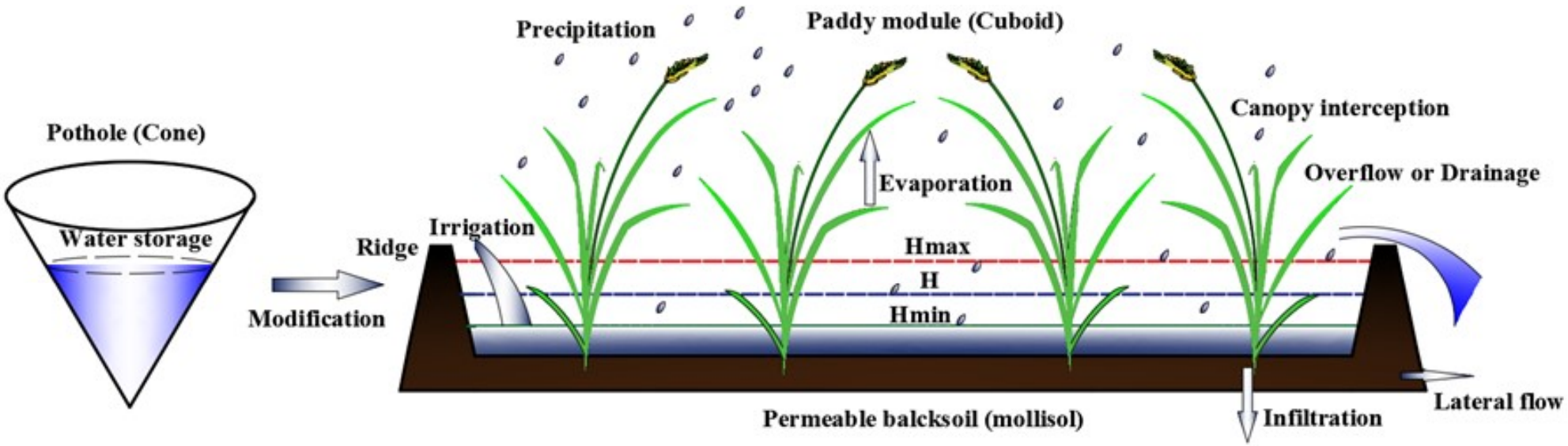


Soil temperature and moisture（9*9 km）



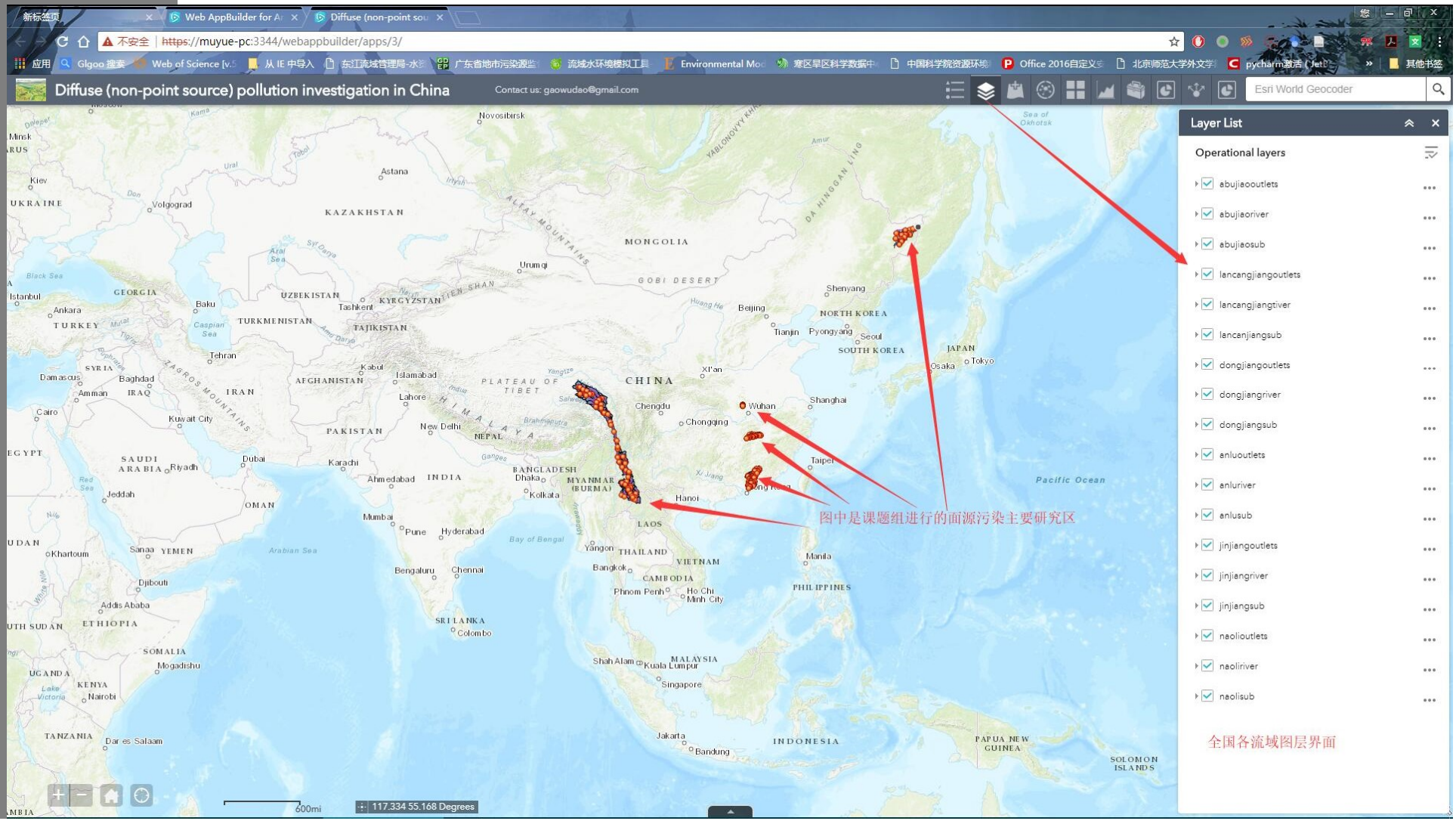


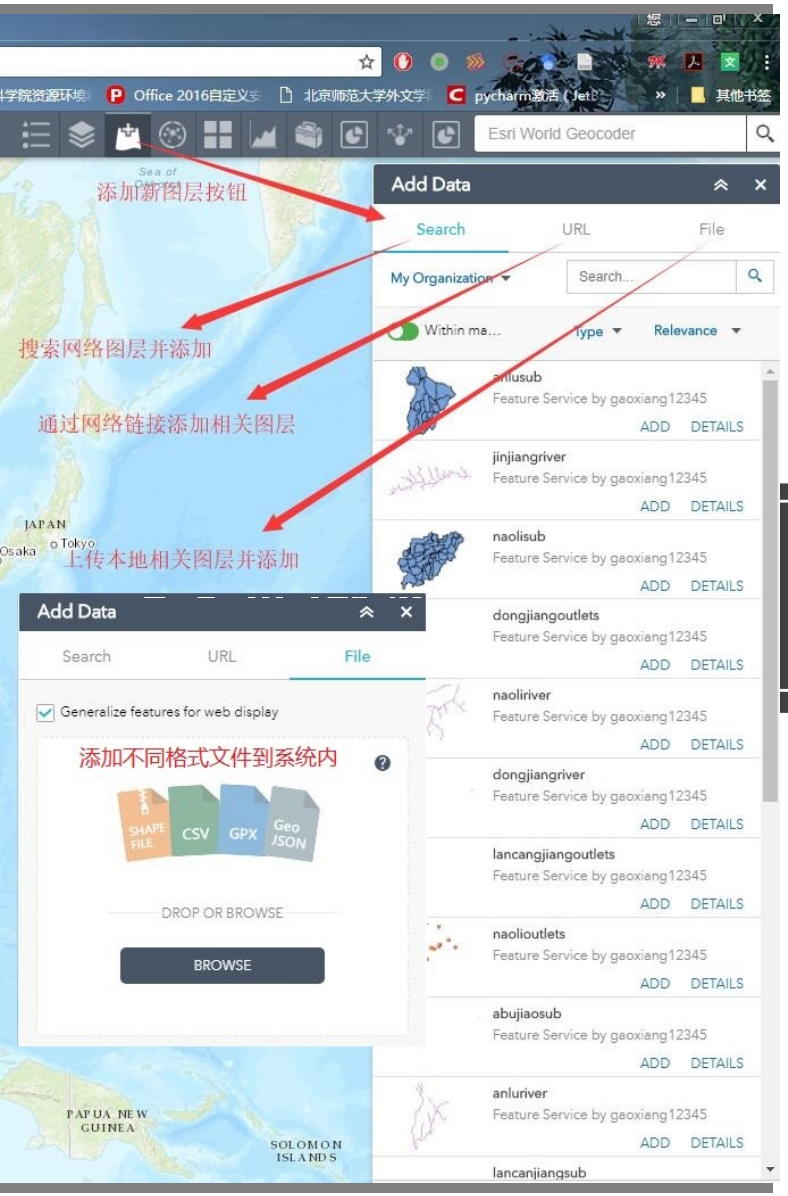
Paddy field eco-hydrological modification

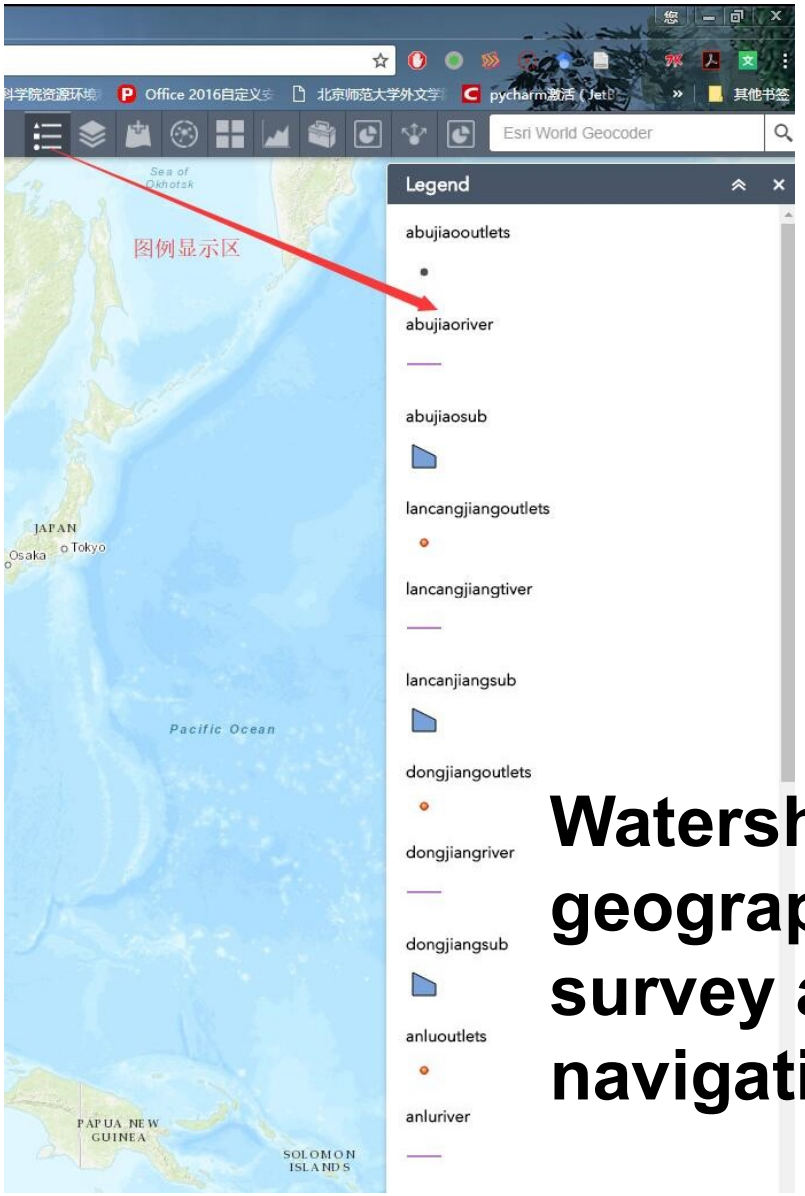


National NPS management tool

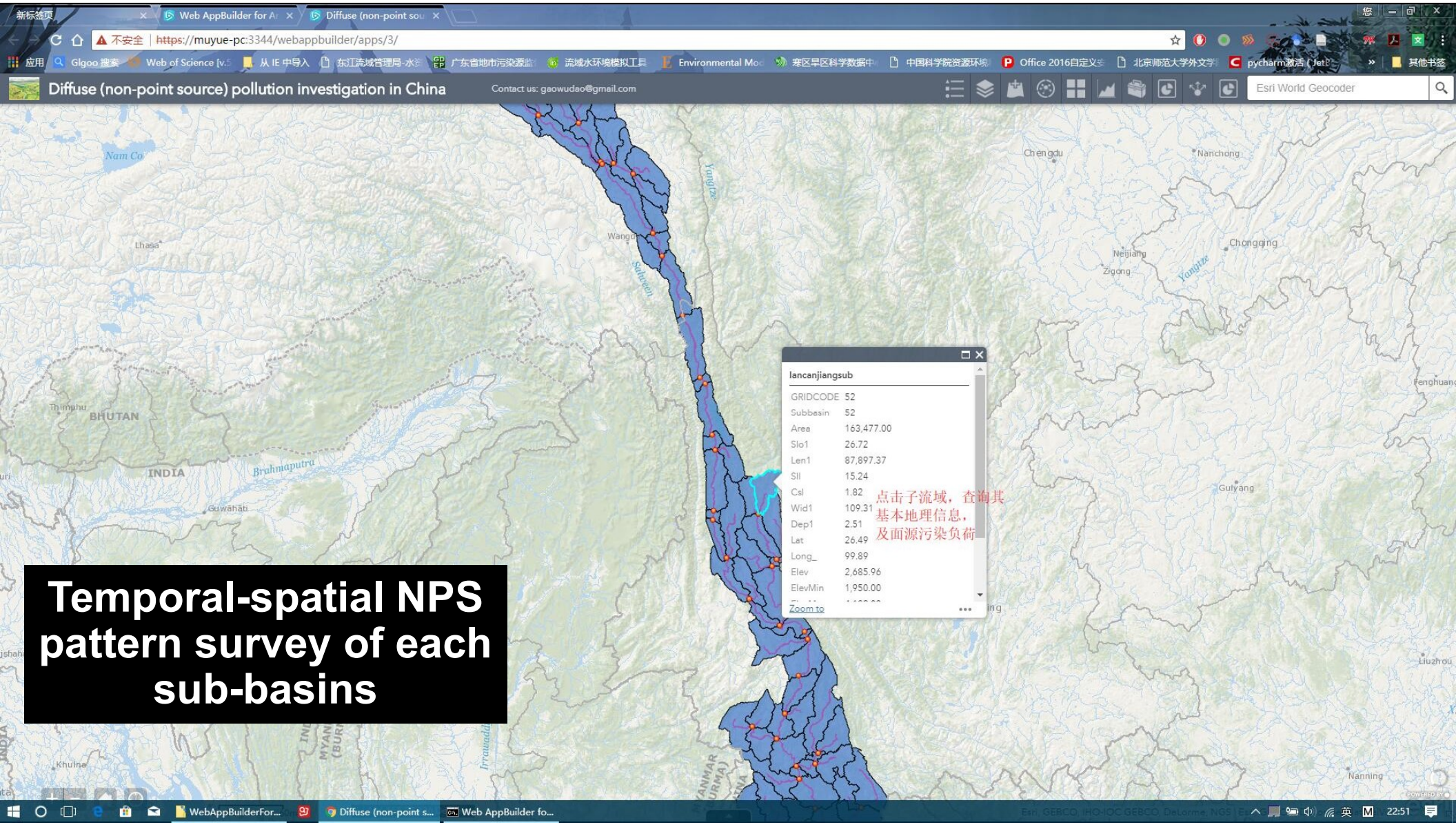
Combined with watershed geographic data

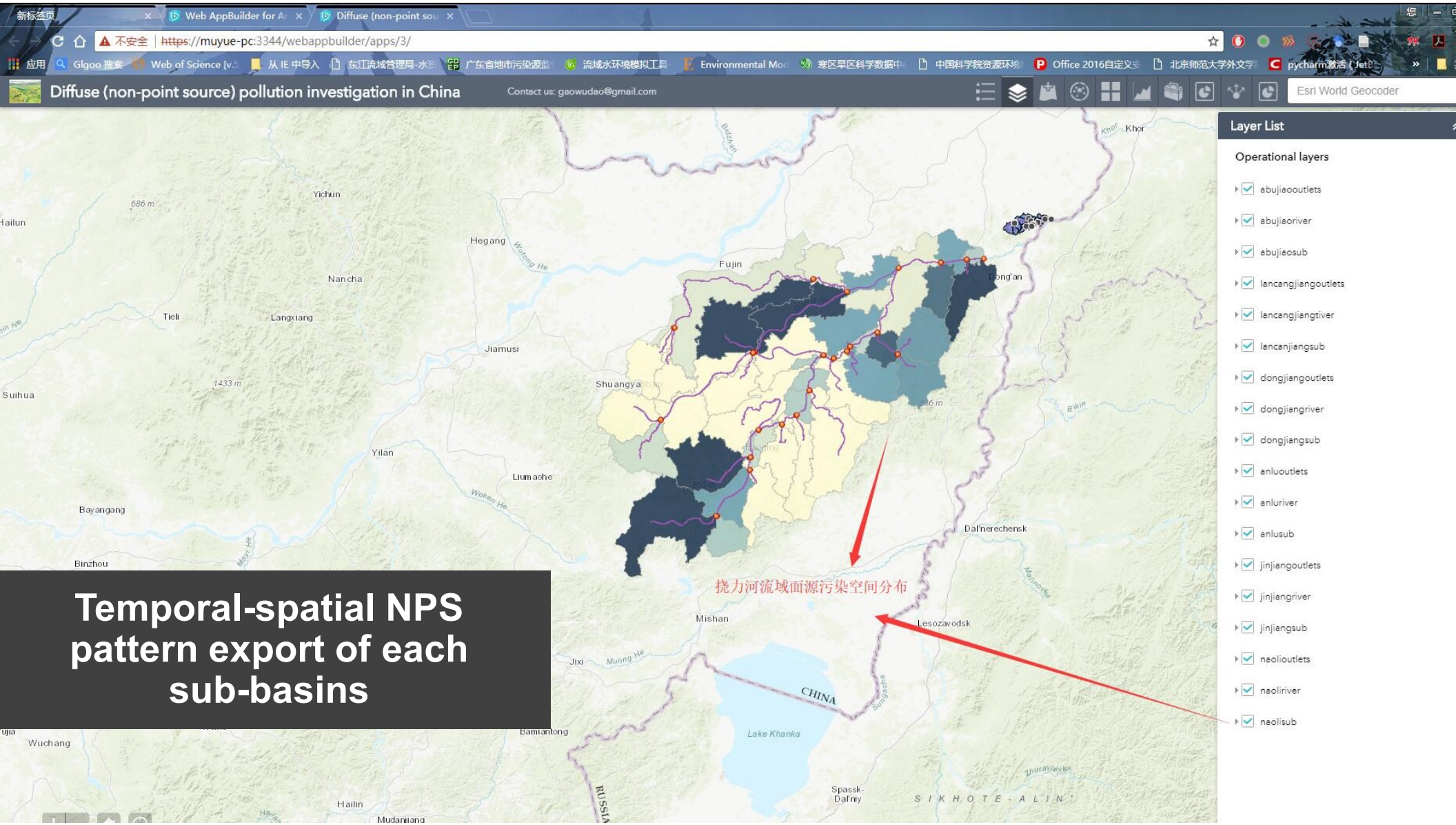






Watershed geographic data survey and navigation


Diffuse (non-point source) pollution investigation in China
Contact us: gaowudao@gmail.com
Esri World Geocoder
lancanjiangsub
GRIDCODE 52
Subbasin 52
Area 163,477.00
Slo1 26.72
Len1 87,897.37
Sll 15.24
Csl 1.82
Wid1 109.31
Dep1 2.51
Lat 26.49
Long_ 99.89
Elev 2,685.96
ElevMin 1,950.00
Zoom to
点击子流域，查询其基本地理信息，及面源污染负荷
Temporal-spatial NPS pattern survey of each sub-basins


Diffuse (non-point source) pollution investigation in China
Contact us: gaowudao@gmail.com
Esri World Geocoder
Layer List
Operational layers
abujieooutlets
abujieoriver
abujieosub
lancangjiangoutlets
lancangjiangtiver
lancanjiangsub
dongjiangoutlets
dongjiangriver
dongjiangsub
anluoutlets
anluriver
anlusub
jinjiangoutlets
jinjiangriver
jinjiangsub
naolioutlets
naoliriver
naolisub
挠力河流域面源污染空间分布
Temporal-spatial NPS pattern export of each sub-basins
Yichun
Hegang
Fujin
Dong'an
Nancha
Tieli
Langxiang
Jiamusi
Shuangya
Suihua
Yilan
Liumaohe
Bayangang
Binzhou
Dal'nerechensk
Mishan
Lesozavodsk
Jixi
CHINA
Lake Khanka
Wuchang
Hailin
Mudanjiang
Spassk-Dal'niy
SIKHOTE-ALIN'

Thanks for your attentions