

**AIM/LOCAL Model System
&
Emission inventory in 2000 in China**

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Content

AIM/Local for steel industry and power generation

SO₂ inventory



AIM-Local 2001 Model System



Control parameters

Parameters used in computation

Region Database

- Regional Classification 1
- Regional Classification 2
- Allocation Index Type
- Large Point Source

Sector Database

Sector Classification

Energy Database

- Energy Classification
- Energy Data by year

Service Database

- Service Classification
- Service Demand(LPS)
- Service Demand(Area)

Technology Database

- Energy Device Classification
- Improvement of Energy Device
- Removal Process
- Combination of Removal Process
- Energy Device -Removal Process

Stock Database

- Stock (LPS)
- Stock (Area)

Share Database

- Maximum Share(LPS)
- Maximum Share(Area)

Performance Database

Operating Rate (LPS)

Countermeasure Database

- Countermeasure Menu at Use Stage
- Action of Countermeasure
- Group on measure Classification
- Group on measure
- Tax / Regulation
- Subsidy (Recruited / Operation)
- Subsidy (Removal Process)

Simulation

Export data to GAMS Directory: e:\aimlocal021\data
File: steel

AIM-Local GAMS on GAMSIDE AIM-Local GAMS on MS-DOS

Import data from GAMS Display Simulation Result Export result to DB for IDRIS2

LPS&Area source

LPS

Steel industry: 70

Power generation: 251(64 under construction and planning), more than 600 units

Area source

30 provinces

Data Collected

- Input the energy classification are fuel coal , heavy oil , electricity , natural gas , coking coal , coke , gasoline , diesel oil and coal equivalent.
- Energy price by energy type and by year (2000, 2010, 2020 and 2030)
- CO₂, NO₂ and SO₂ Emission factors by energy type and by year (2000, 2010, 2020 and 2030).

Technologies: steel industry

Open-hearth for steel-making (OPEN)

Converter for steel-making (CON)

Electric furnace steel-making (ARC)

Pot metal deoxidize1 (DIOS)

Pot metal deoxidize2 (COREX)

Improvement of energy device: steel industry

Coke Dry Quenching (CDQ)

Pulverized Coal Injection (PCI)

Top-Pressure Recovery Turbine (TRT)

Coal Moisture Control (CMC)

High Temperature Air Combustion(HTAC)

BF gas turbine、CCPP

Converter Gas Recovery(CGR)

Electric furnace with ultra capacity

Gravity furnace

Refining outside furnace

Centralizing heating

Removal process : steel industry

Coal Washing (PRCW)

Coking by Brigute (PRCBB)

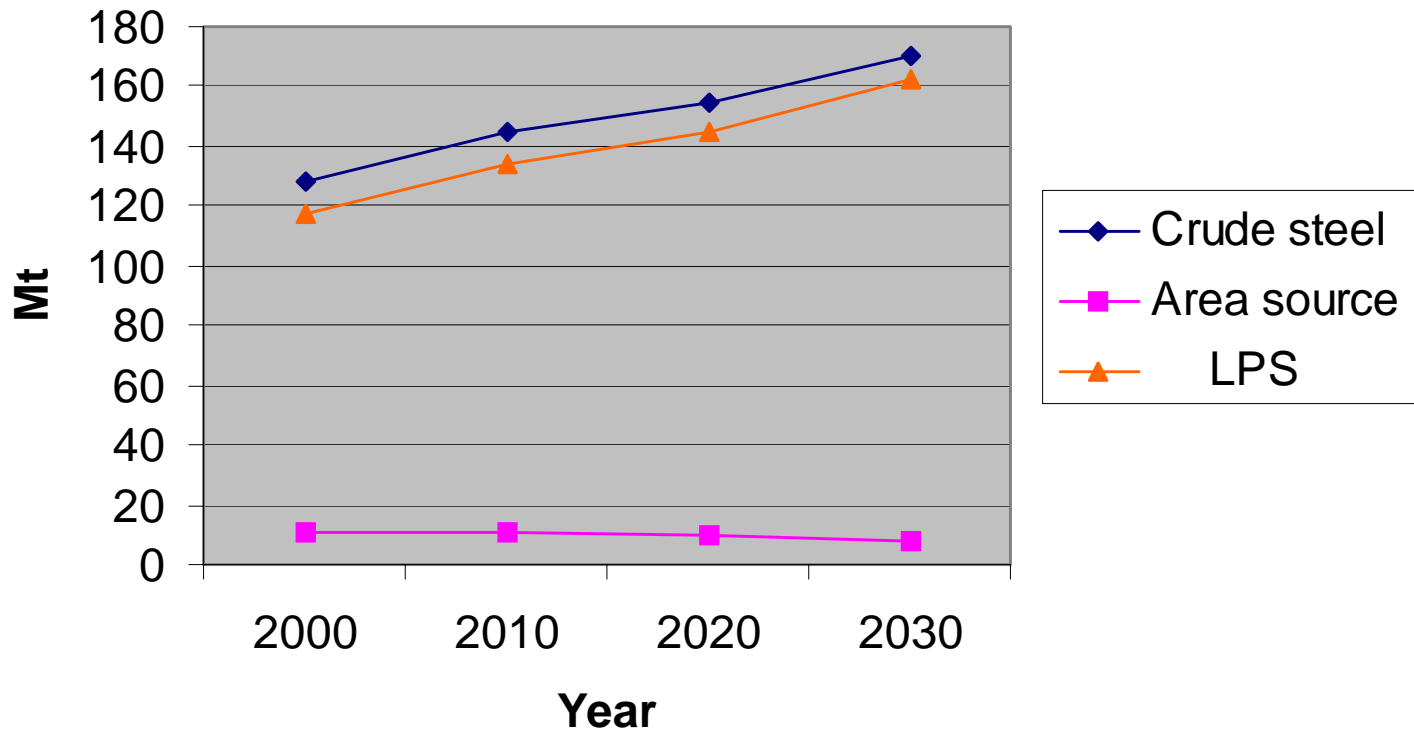
Dry Flue Gas Desulfurization (PODFGD)

Wet Flue Gas Desulfurization (POWFGD)

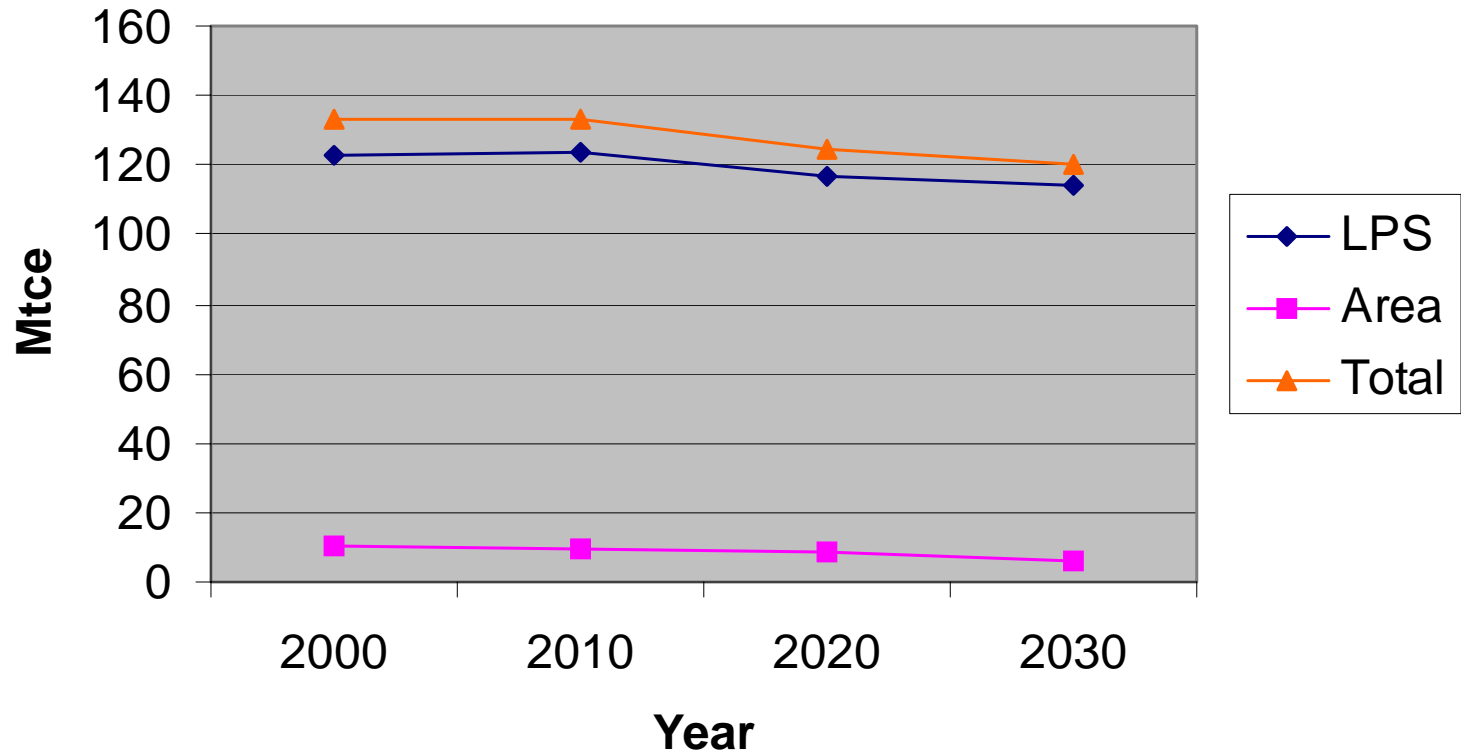
Dry Ammonia Selective Desulfurization(PODASD)

Low Nitrogen Combustor(INLNC)

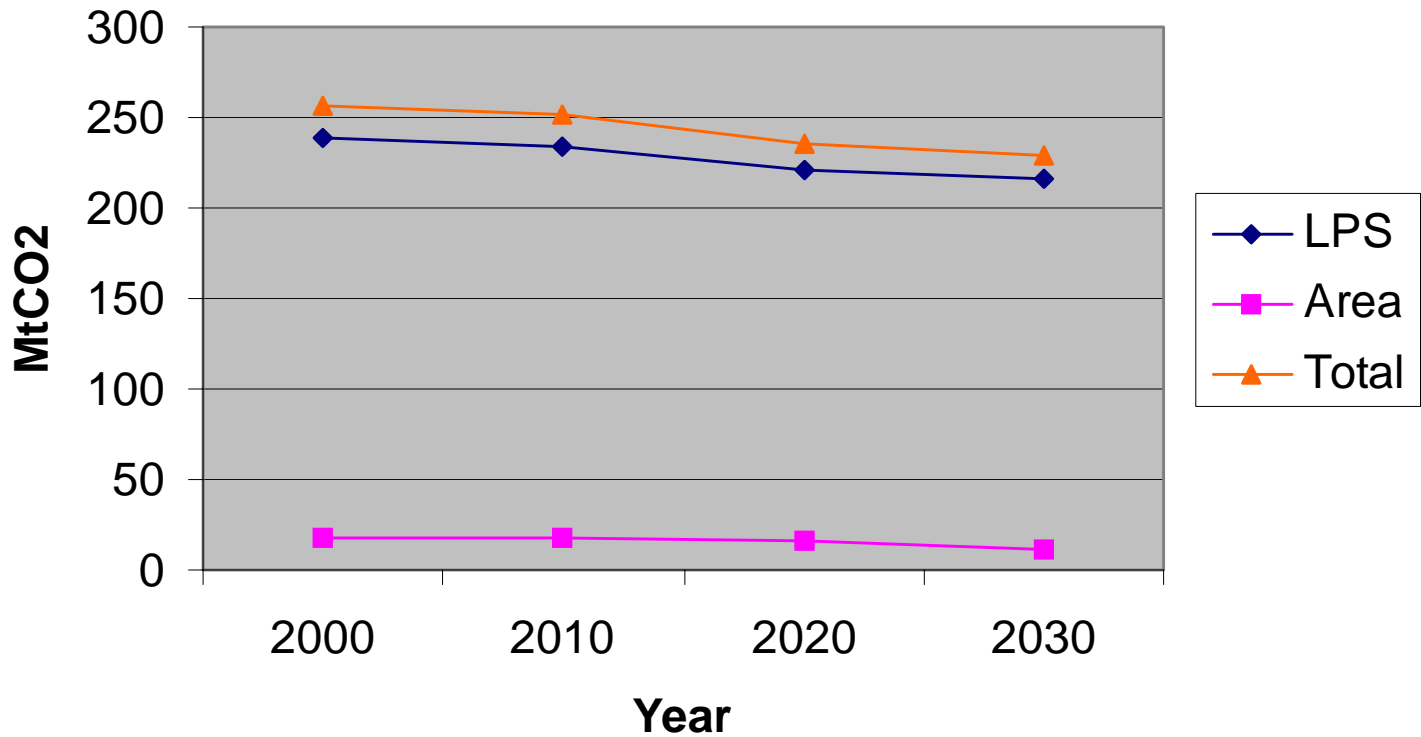
Service demand: Steel



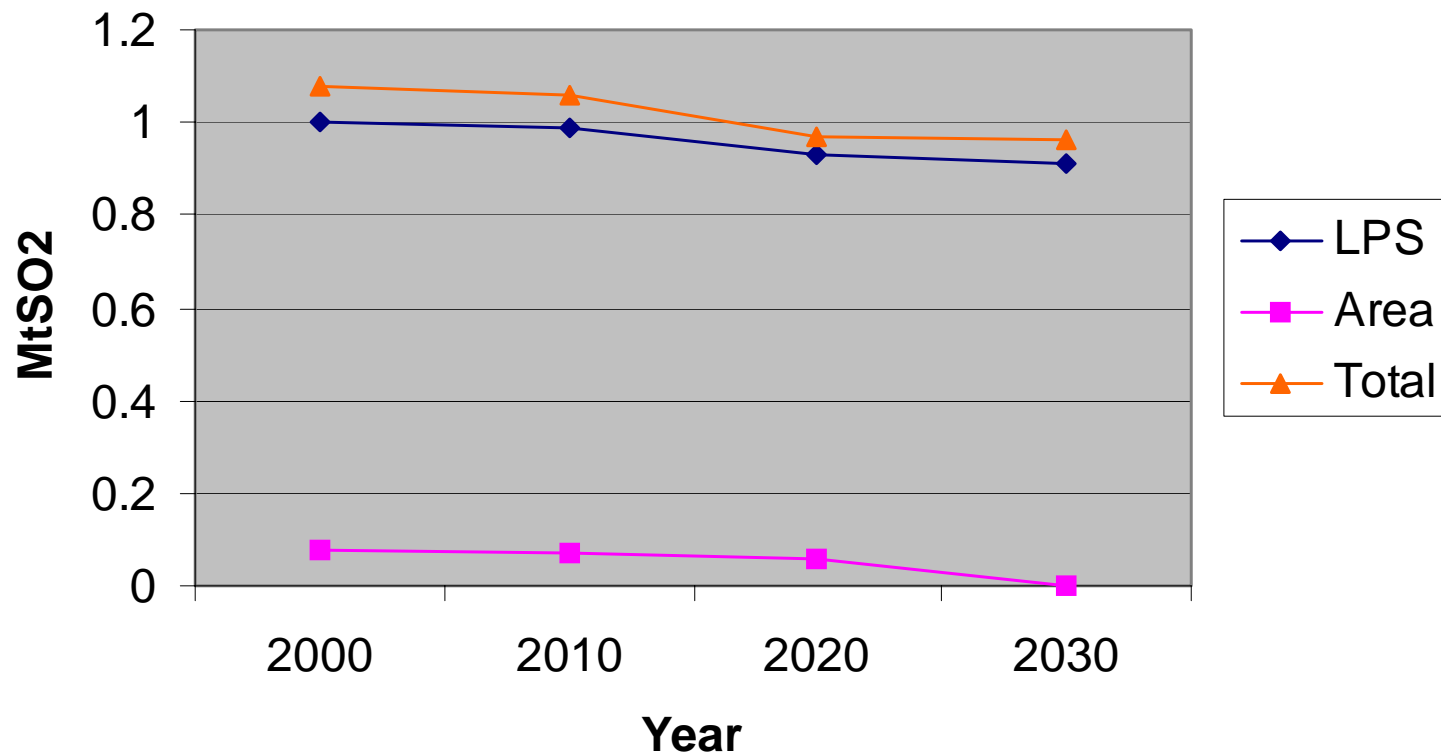
Energy demand: Steel



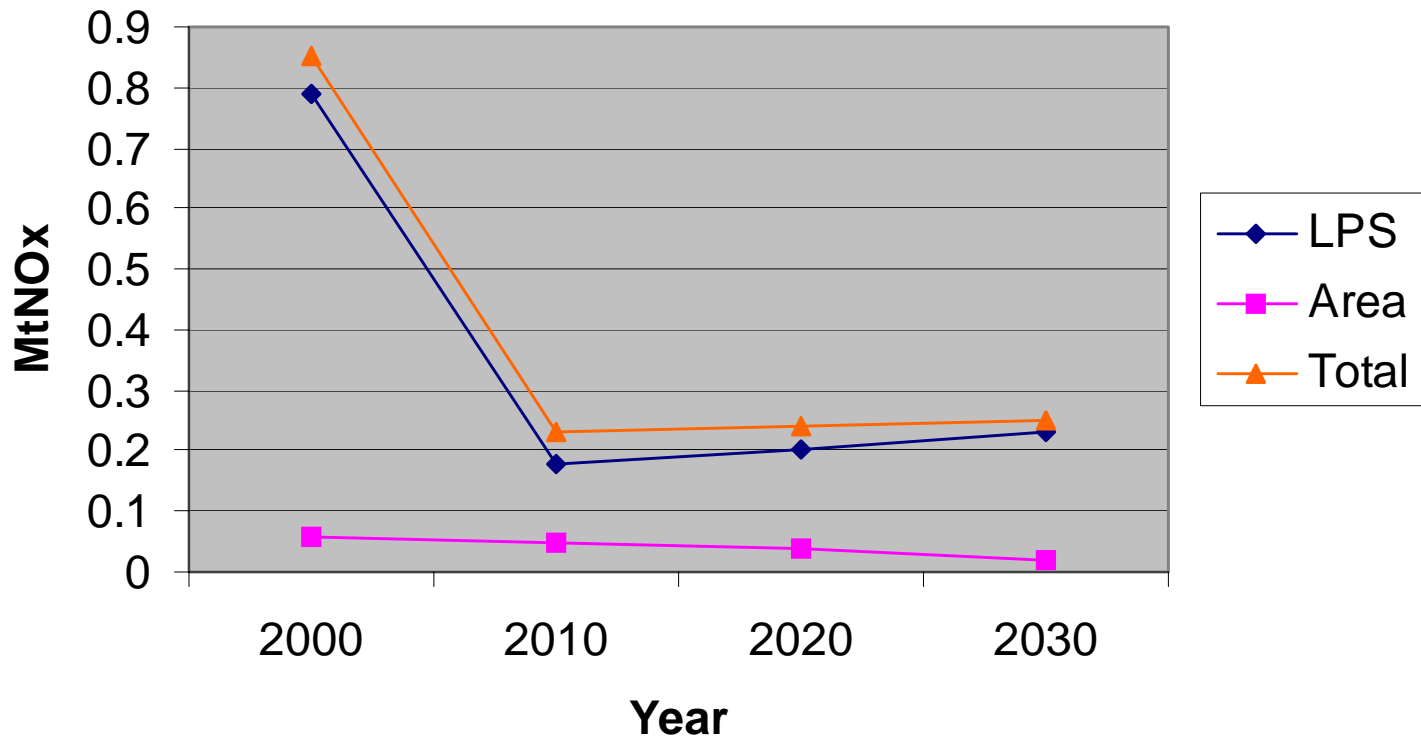
CO2 emission: Steel










SO2 emission: Steel



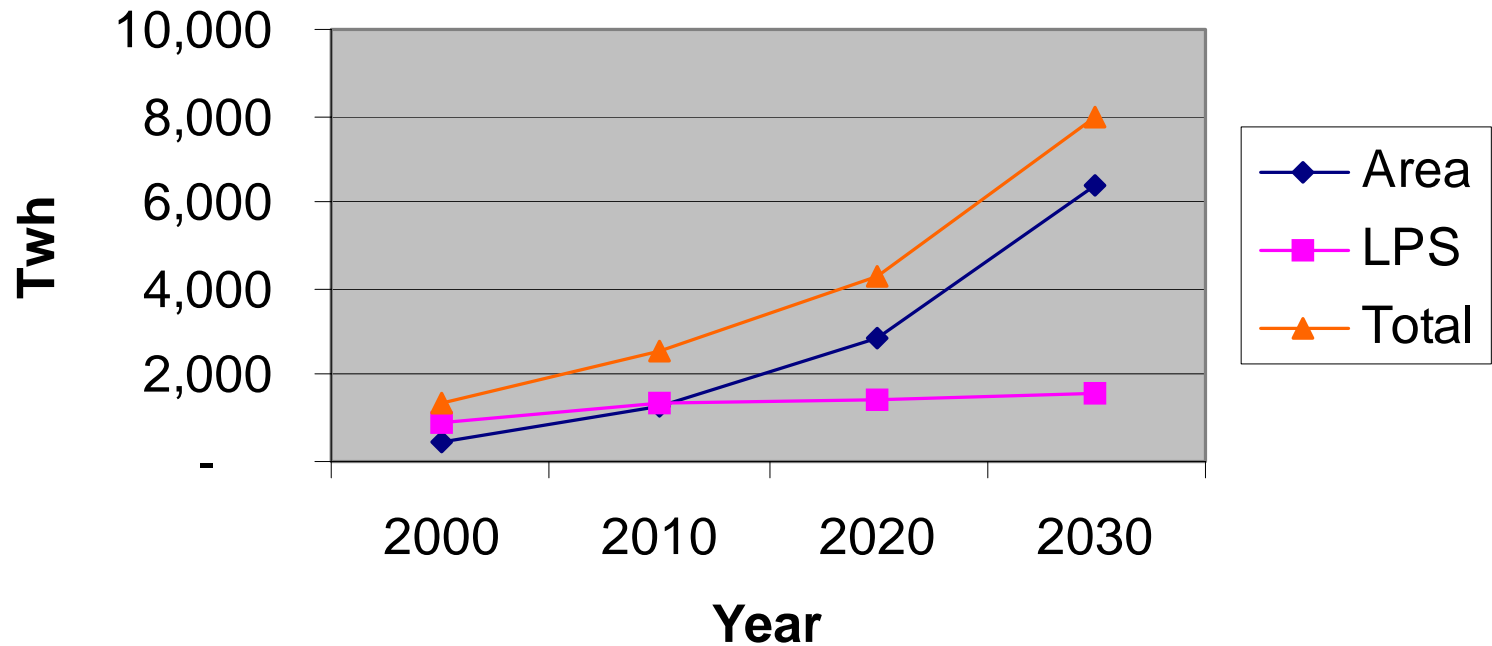
NOx emission: Steel



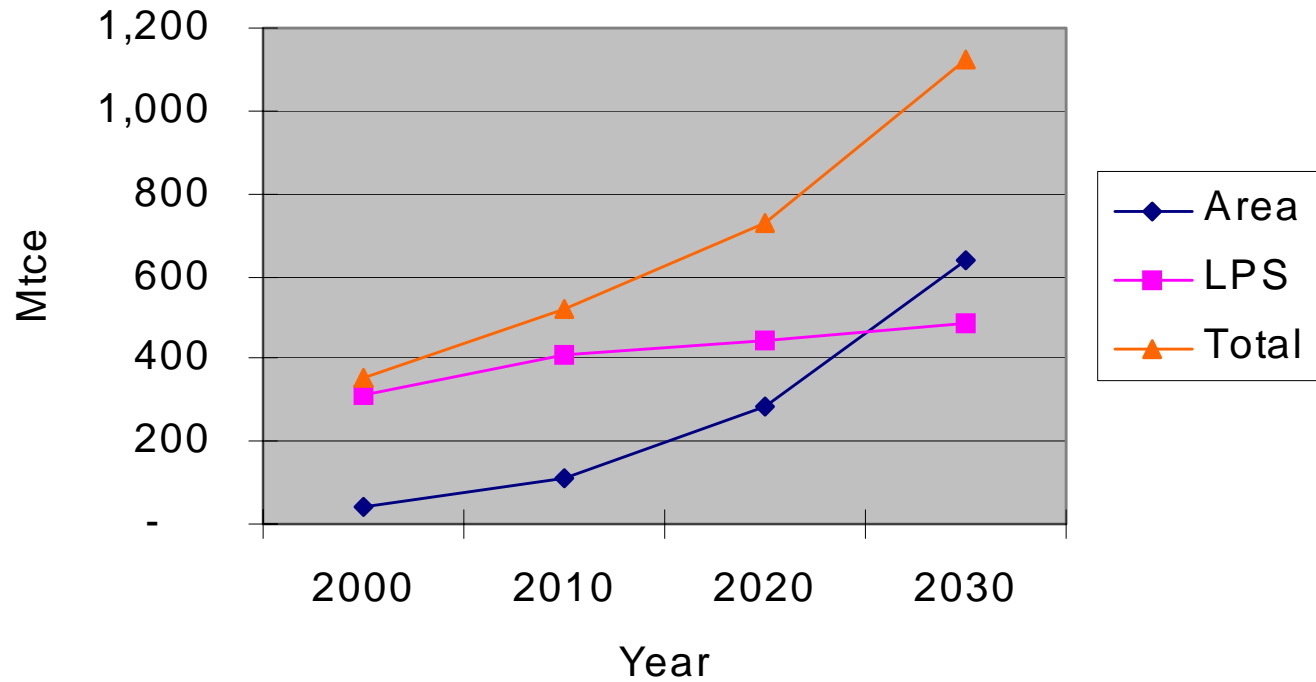
Technology: power generation

-  Low parameter unit
-  Super Critical Pressure Unit
-  Oil Fired Unit
-  Natural Gas Unit
-  Natural Gas Combined Cycle
-  HydroPower
-  Nuclear
-  IGCC
-  Renewable energy/wind

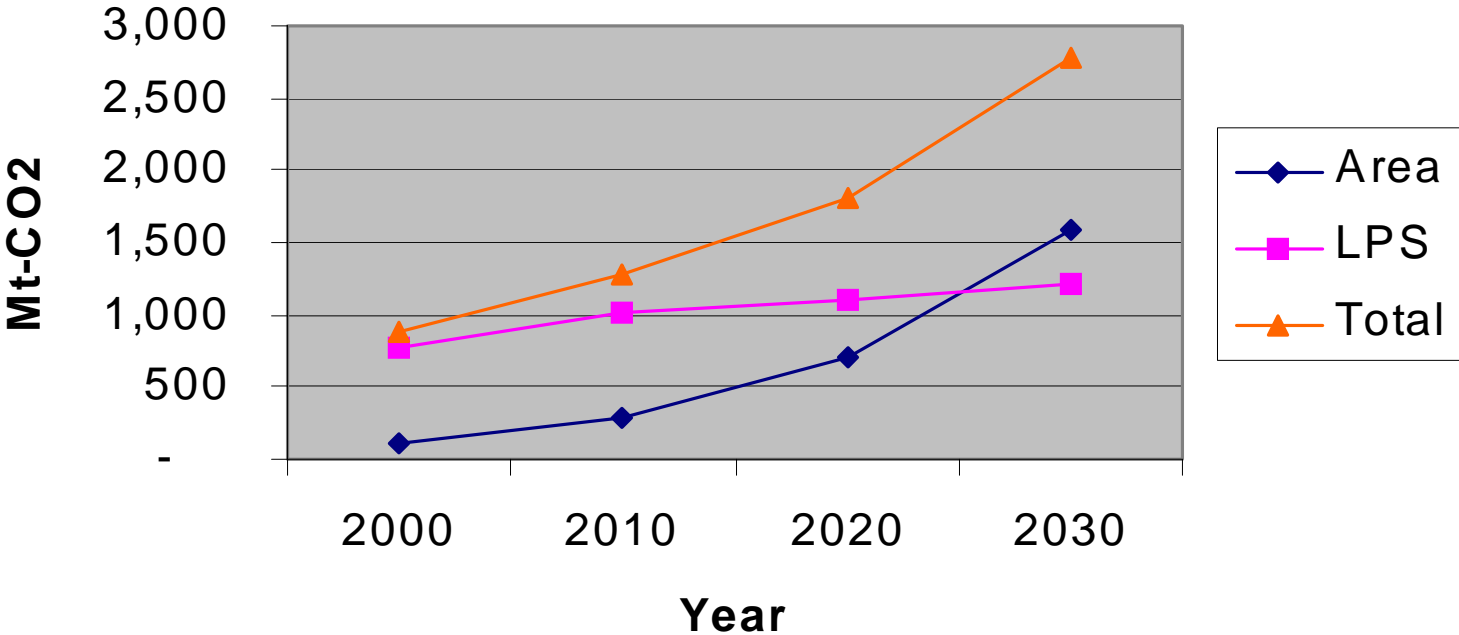
Electricity Demand



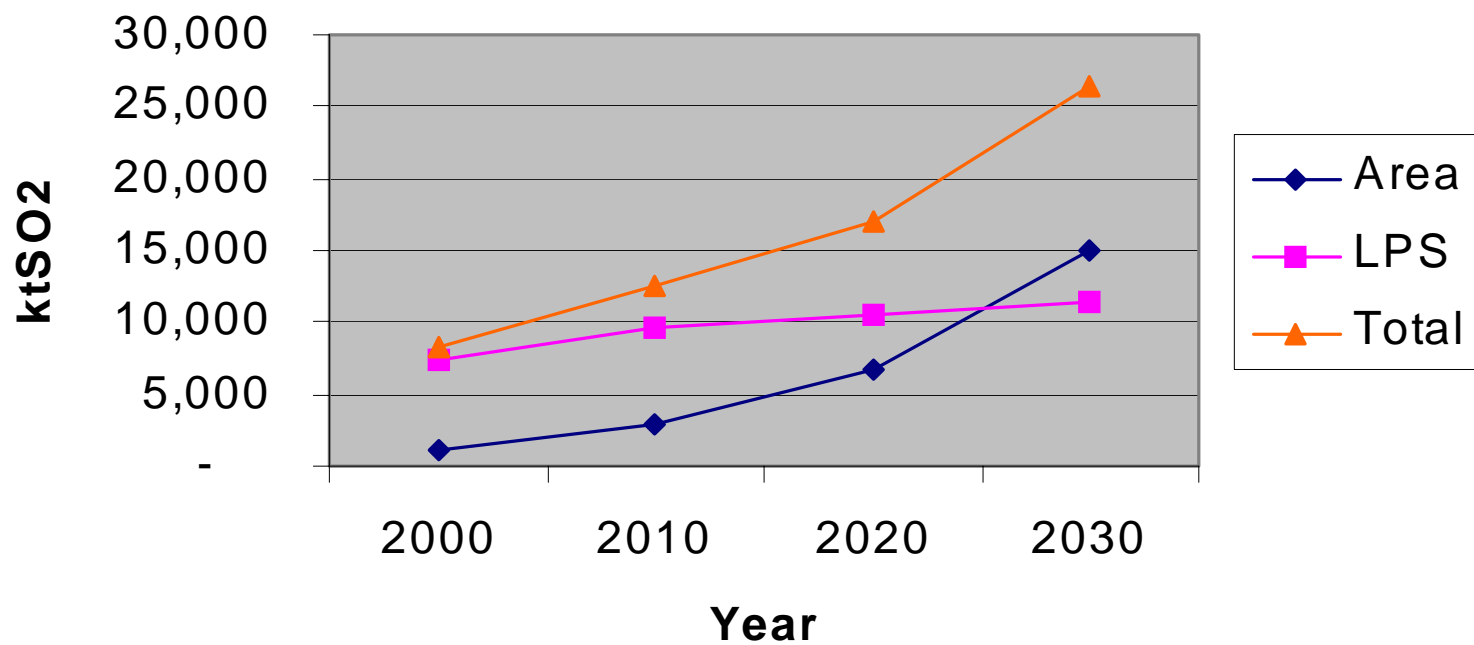
Energy Use for Power Generation



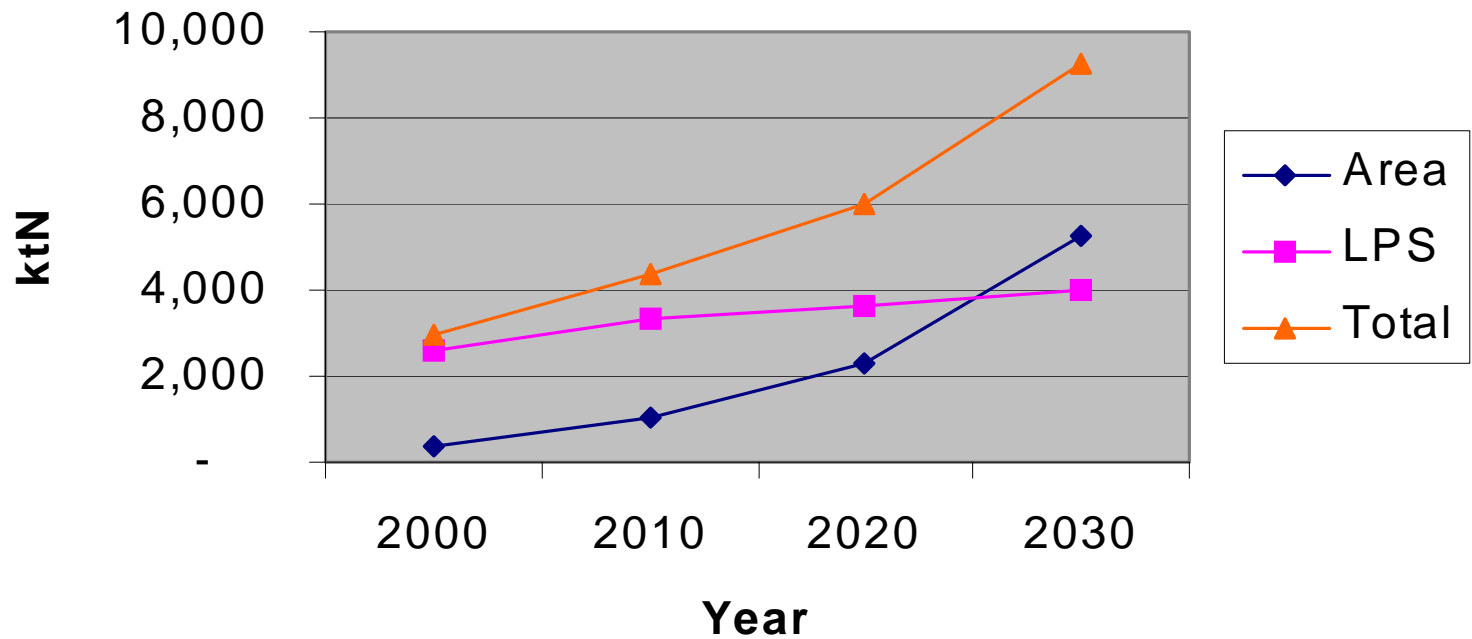
CO2 Emission







SO2 Emission



NOx Emission



Next Step

-  Data improvement of steel sector and power sector and try to get more reasonable output and give more detailed analysis;
-  Create of policy scenarios other than base case and analyze GHGs and harmful emission and mitigation cost in these scenarios.
-  Expand AIM/LOCAL system to other sectors, such as cement, nonferrous metallurgy, and also to area source, such as commercial, residential and transportation sector.
-  Prepare for establishment of AIM/LCOAL-country system.

SO2 inventory: 2000

Steel making sector: from AIM/local

Power generation sector: from AIM/local

Cement production sector: based on sector data

Nonferrous: based on sector data

SO₂ inventory 2000: data collection

- Name and location of LPSs;
- City code of cities and latitude and longitude of LPSs;
- Production of LPSs and population and GDP of cities in 2000;
- Energy consumption by fuels of LPS in 2000;
- SO₂ emission by key cities in 2000 and SO₂ emission by China in 2000; (yearbook)
- SO₂ emission factors of LPSs by fuels, or by process, or by LPSs.

SO2 inventory 2000: data collection

LPS: 282

In which

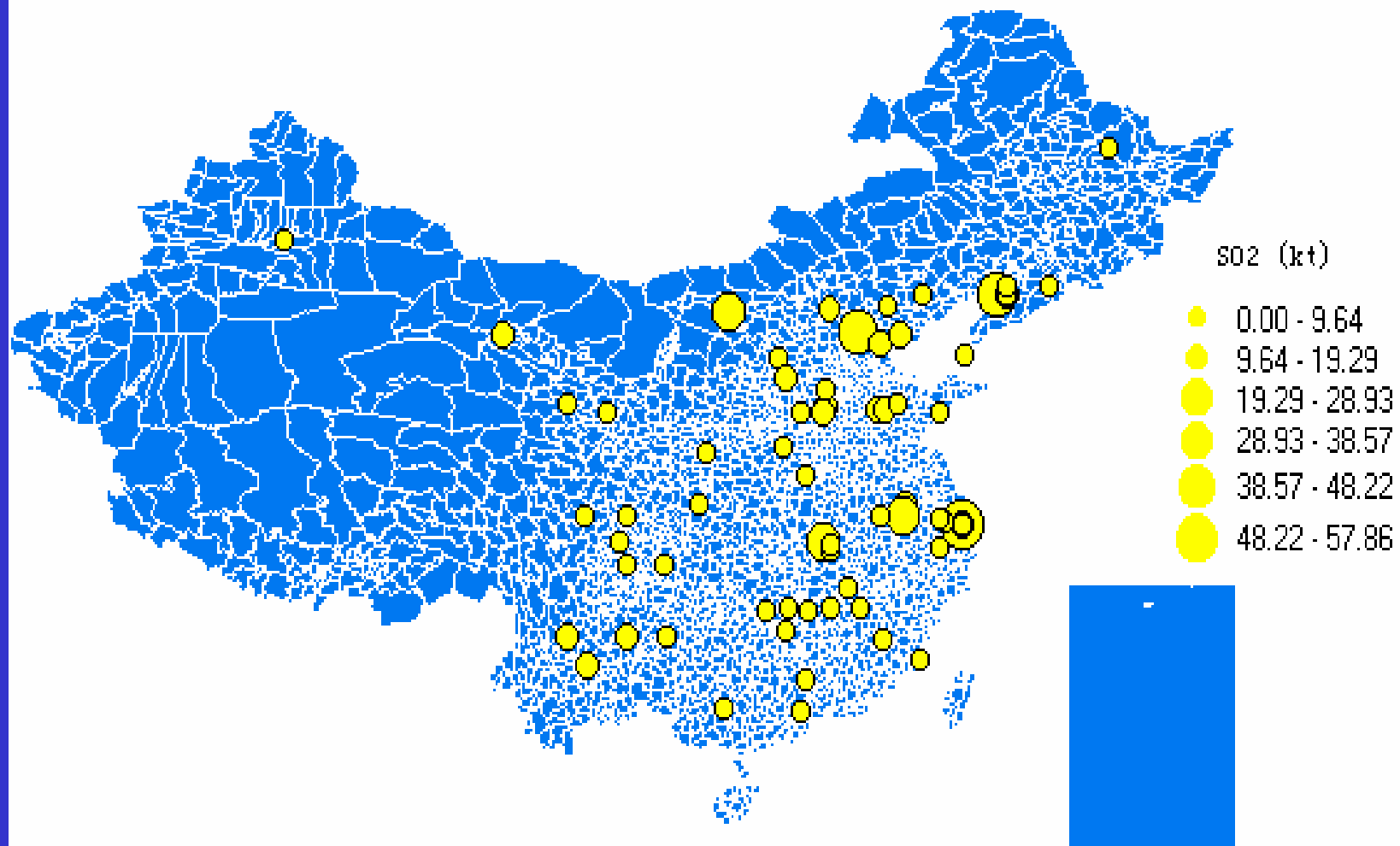
70 for steel making sector

127 for power generation

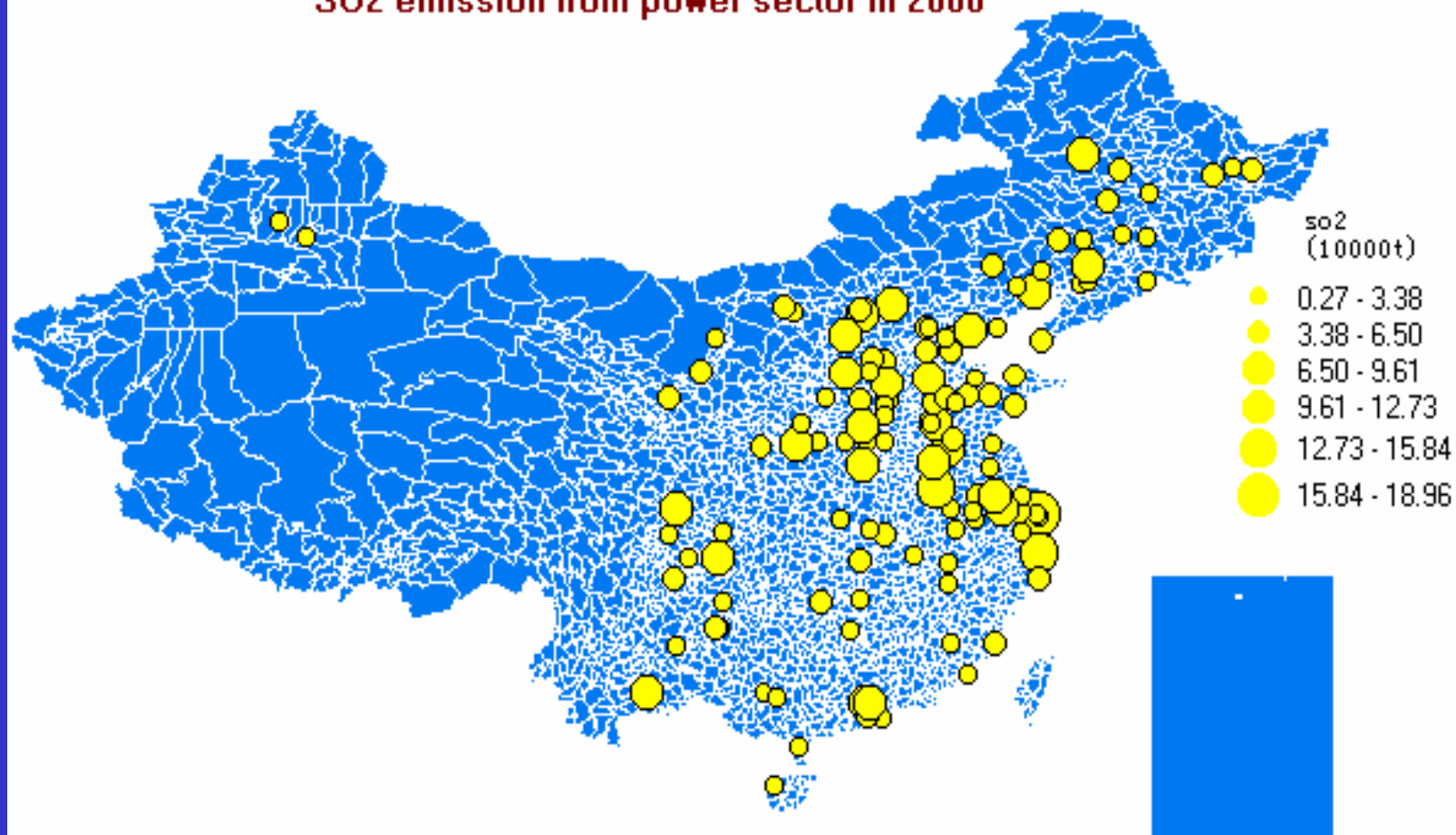
73 for cement

12 for nonferrous

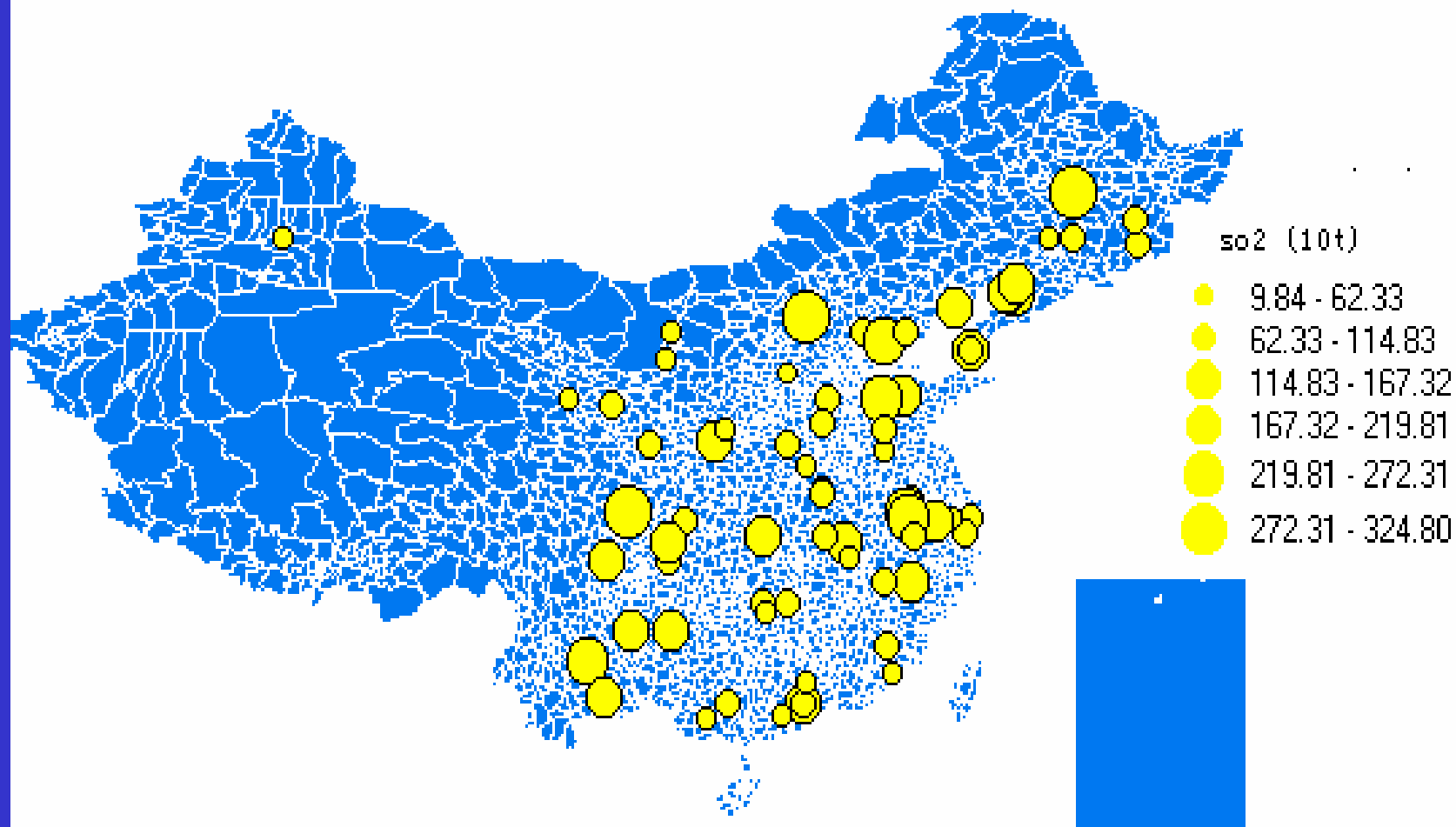
SO2 emission from steel sector in 2000



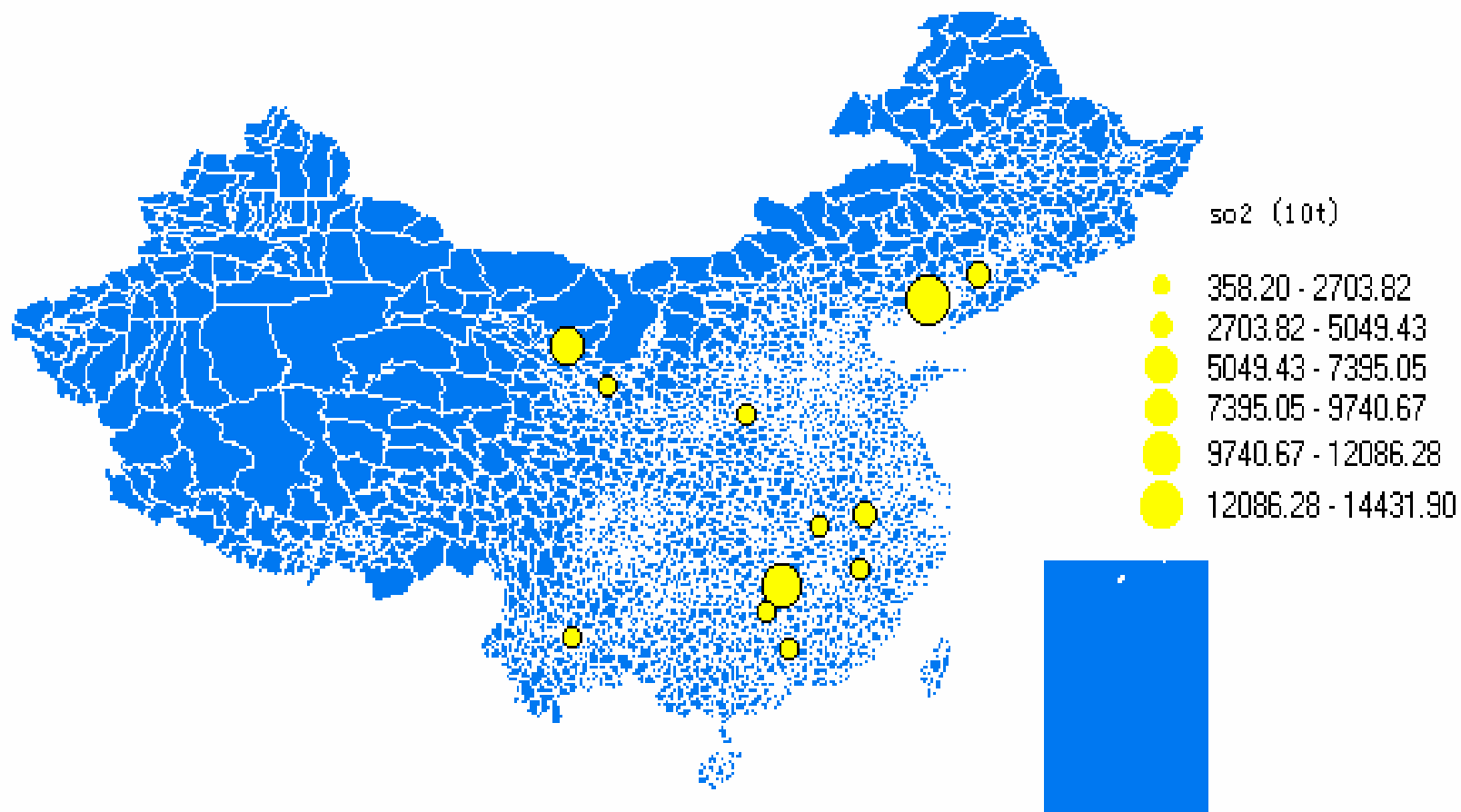
SO2 emission from power sector in 2000



SO2 emission from cement factories in 2000



SO2 emission from nonferrous metallurgy in 2000



SO2 emission in 2000

