

# Greenhouse Gas Related Research in NIM

**National Institute of Metrology, China**

Liang Zhang, Xiaomeng Liu, Heming Hu,

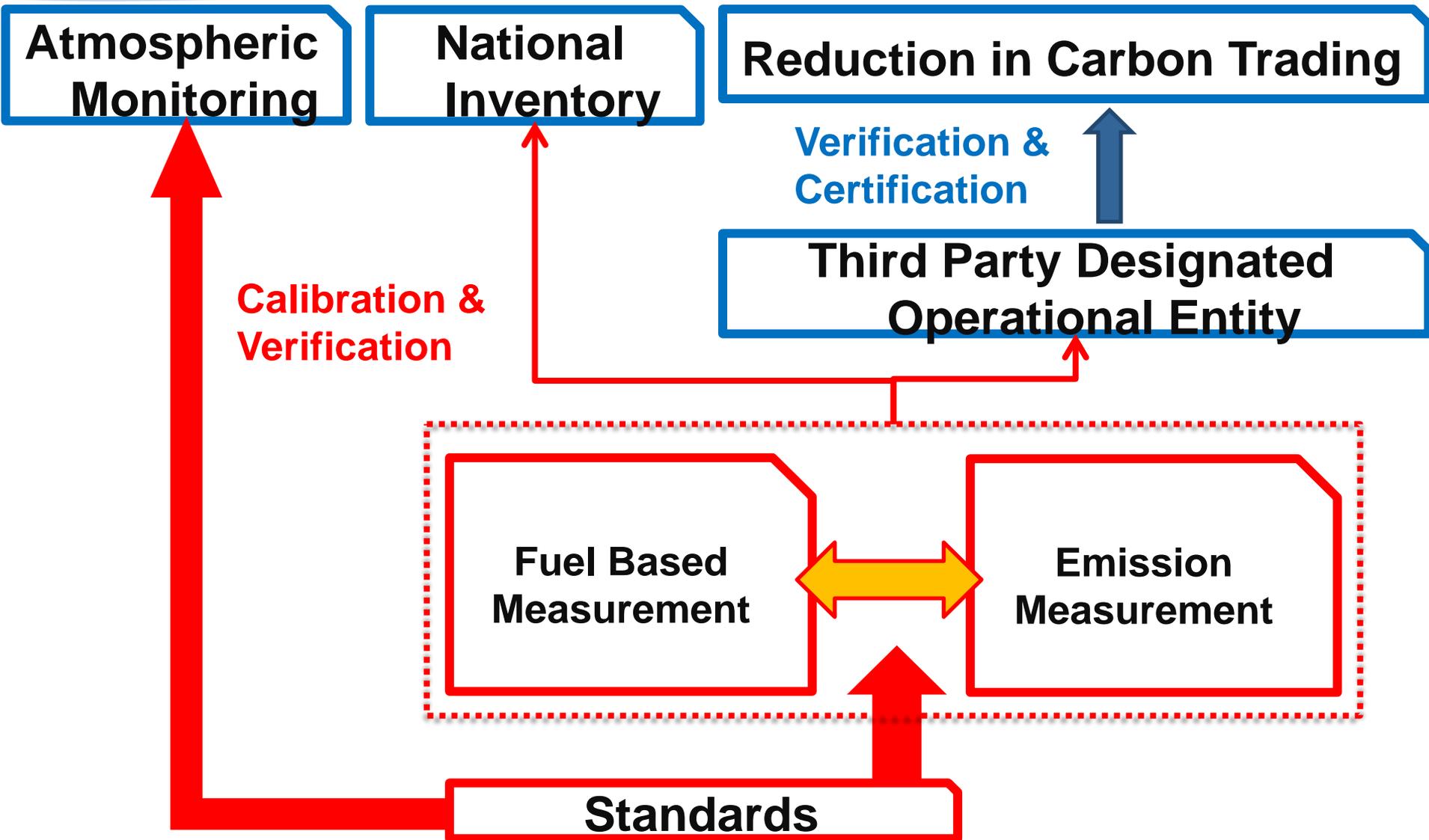
Zefa Wang, Hai Wu



# GHG Reduction & Carbon Trading

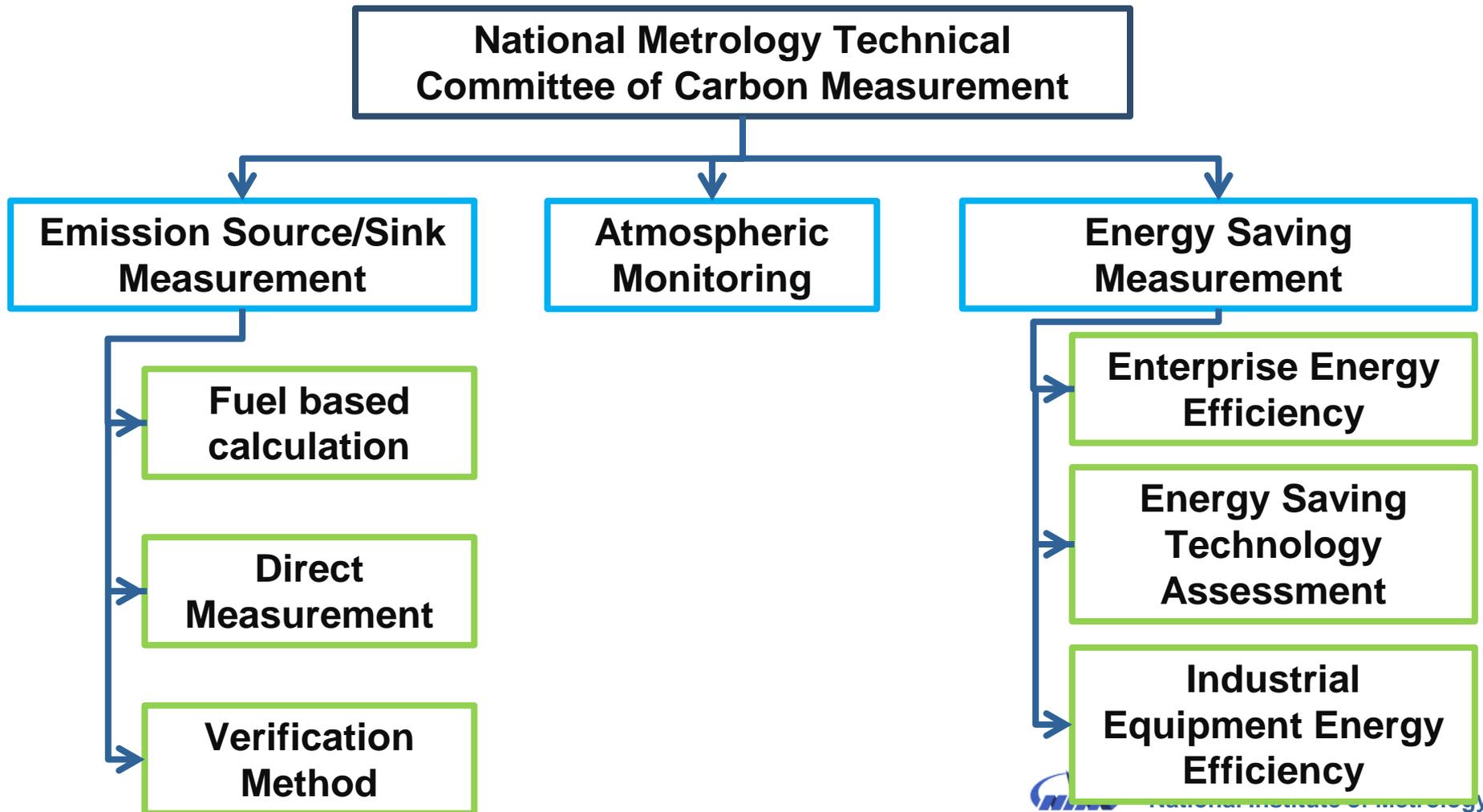
- **China's GHG emissions ranking 1<sup>st</sup> in the world.**
- **Reduction Targets**
  - **In 2009, China committed to reduce 40%-45% CO<sub>2</sub> emissions per unit of GDP by 2020**
  - **Recently, China plans to invest \$6.8 trillion to reduce GHG emissions. GHG emission in China will reach max value in 2030.**
- **Carbon Trading**
  - **In 2013, seven cities in China started carbon trading pilot**
  - **In 2016, national carbon trading market will be established.**
  - **NDRC predicts China will become the world's largest carbon trading market**

# Metrology in GHG Emission & Carbon Trading



# National Metrology Verification Regulation

- National Metrology Technical Committee of Carbon Measurement was established in 2013



# Main Research Interests of NIM

## □ Atmospheric Monitoring

Standard Gas

Cavity Ring Down Spectroscopy

## □ Carbon Emission & Reduction

Direct Emission Measurement

**Point Source:**

Direct Emission Measurement

**Distributed Source:**

LADAR and its Calibration

**Cities and Provinces:**

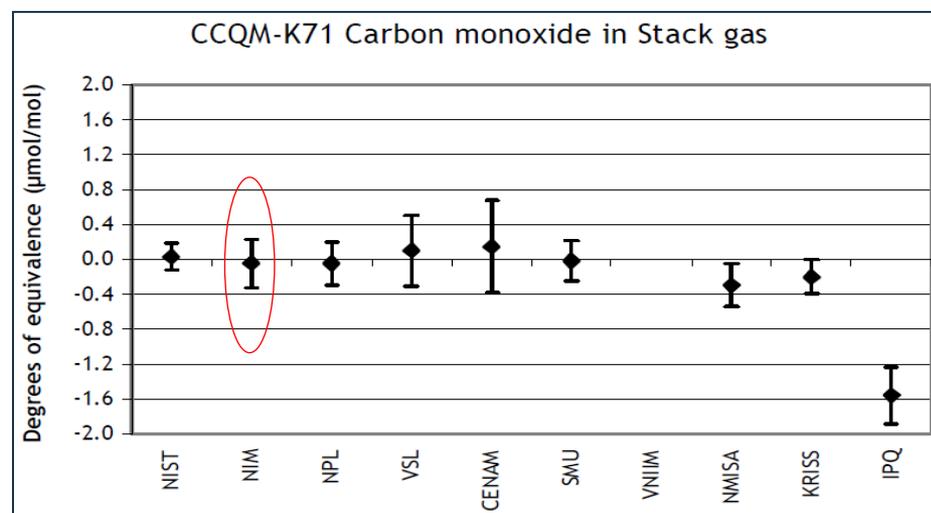
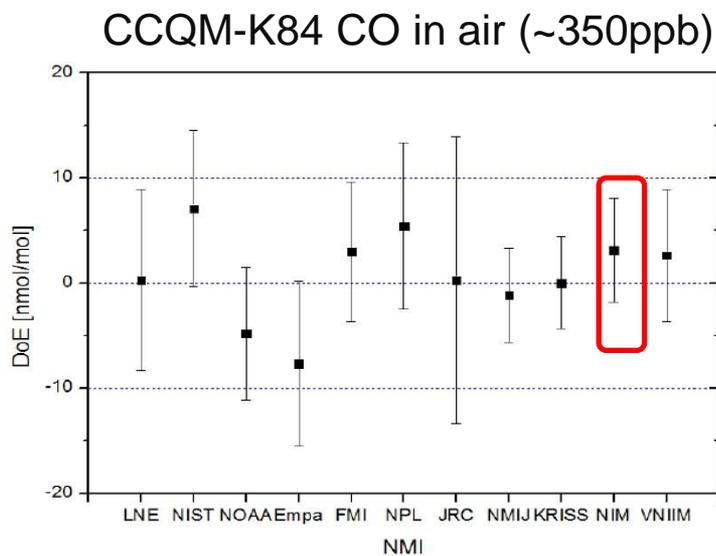
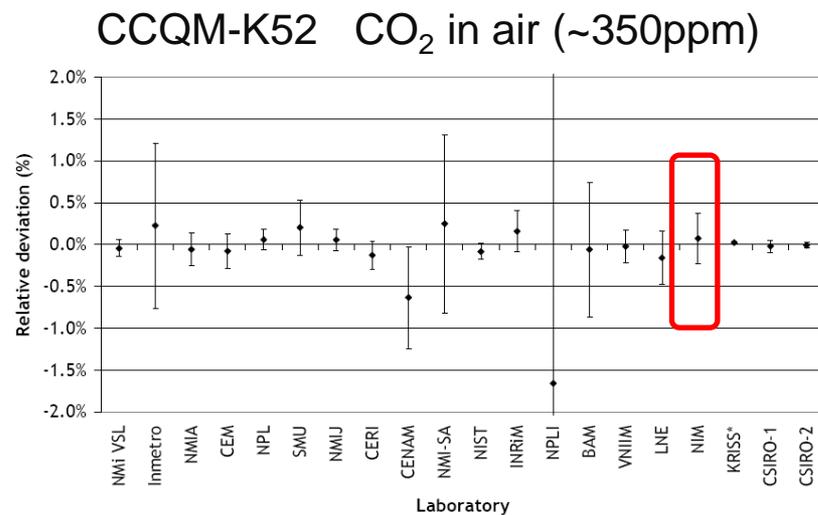
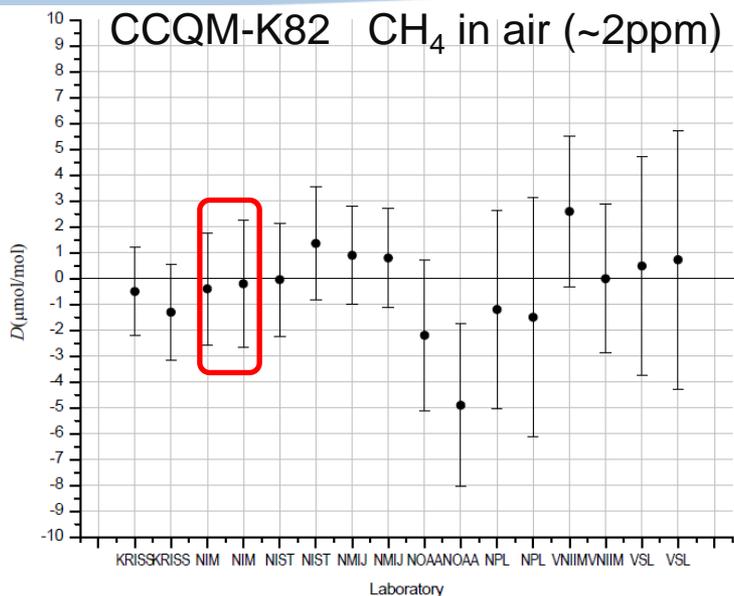
GHG Observation & Inversion Model



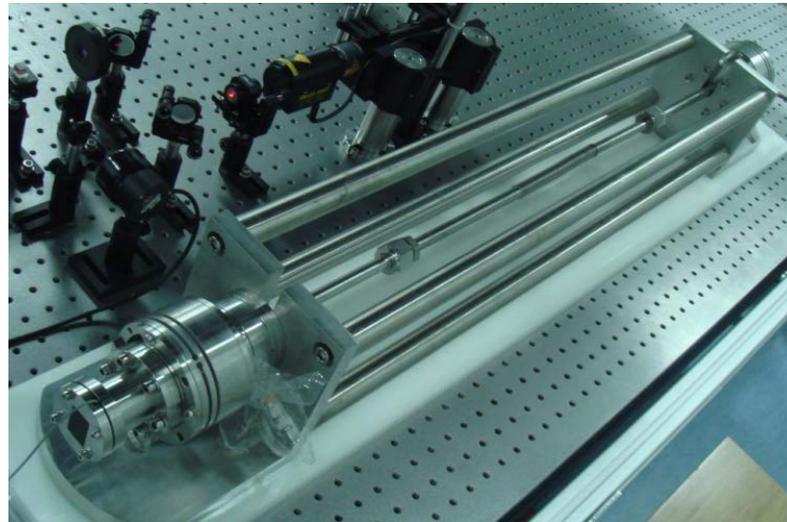
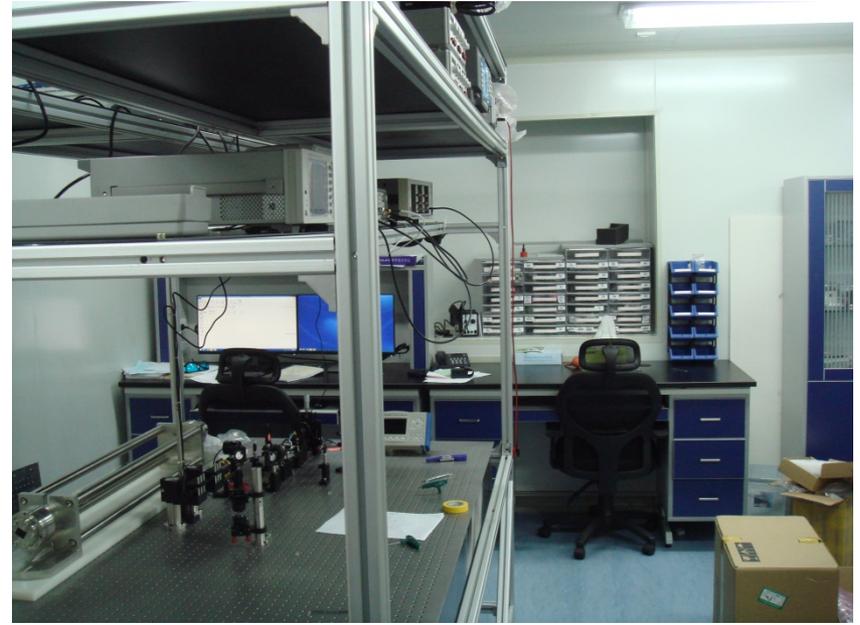
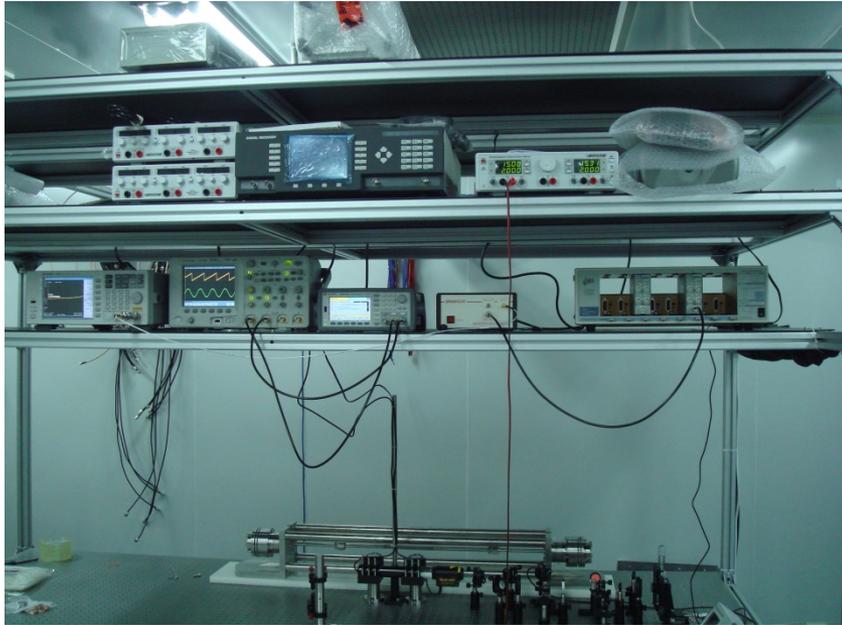
Precise Fuel Based  
Measurement

Verification

# Standard Gas Key Comparison



# Cavity Ring Down Spectroscopy





**Thank you for your attention!**

