Nested Model Working Group

Co-chairs:

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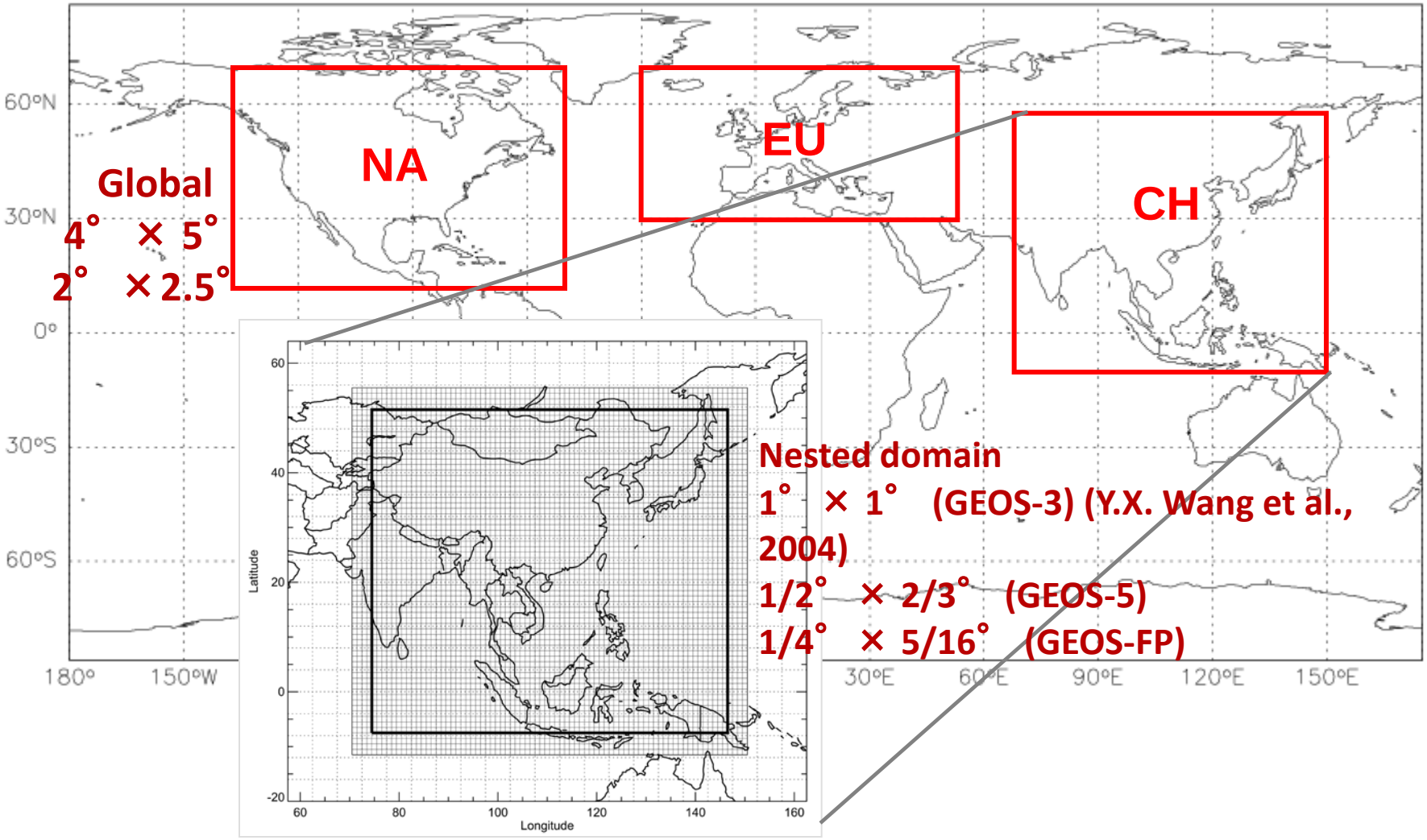
U. of Nebraska-Lincoln

Lin Zhang
Peking U.

The 7th International GEOS-Chem User's Meeting
4 May 2015

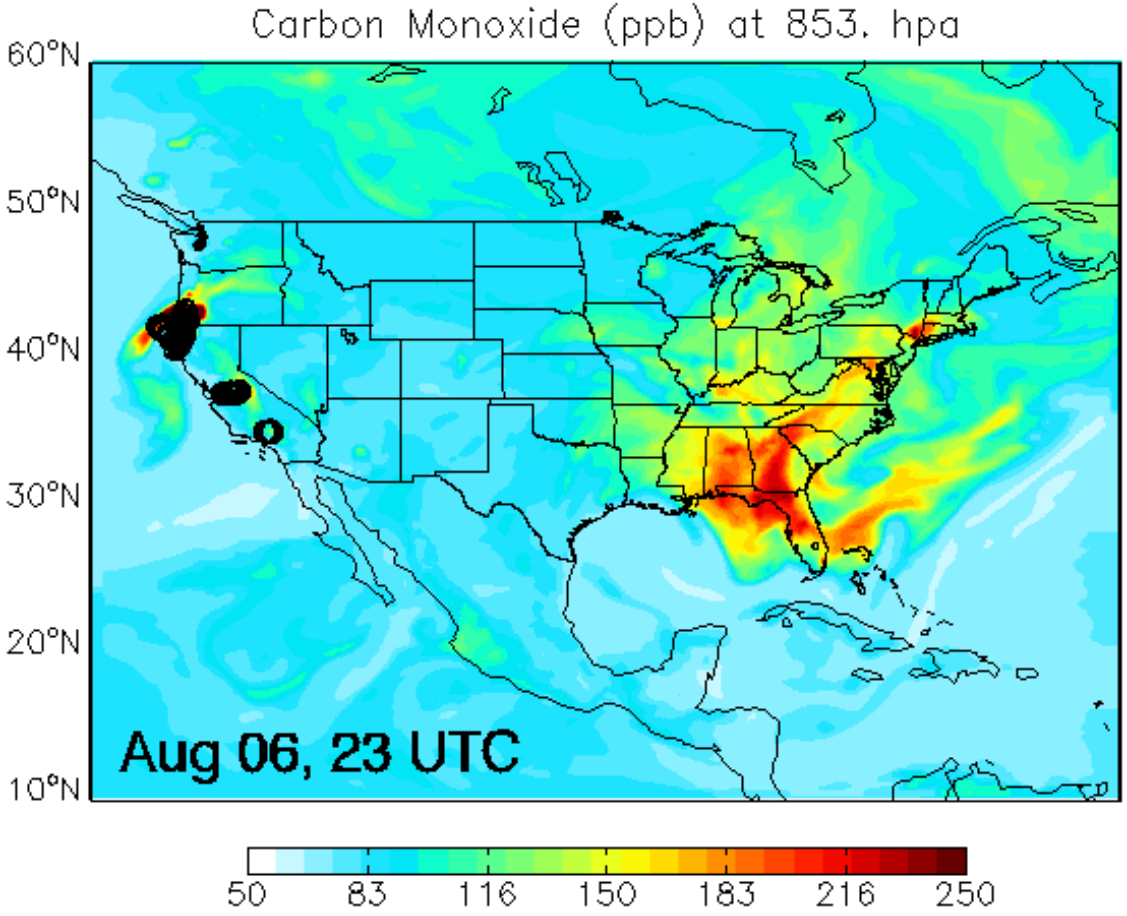
The nested-grid GEOS-Chem

Running GEOS-Chem at the native GEOS grid resolution over nested domains

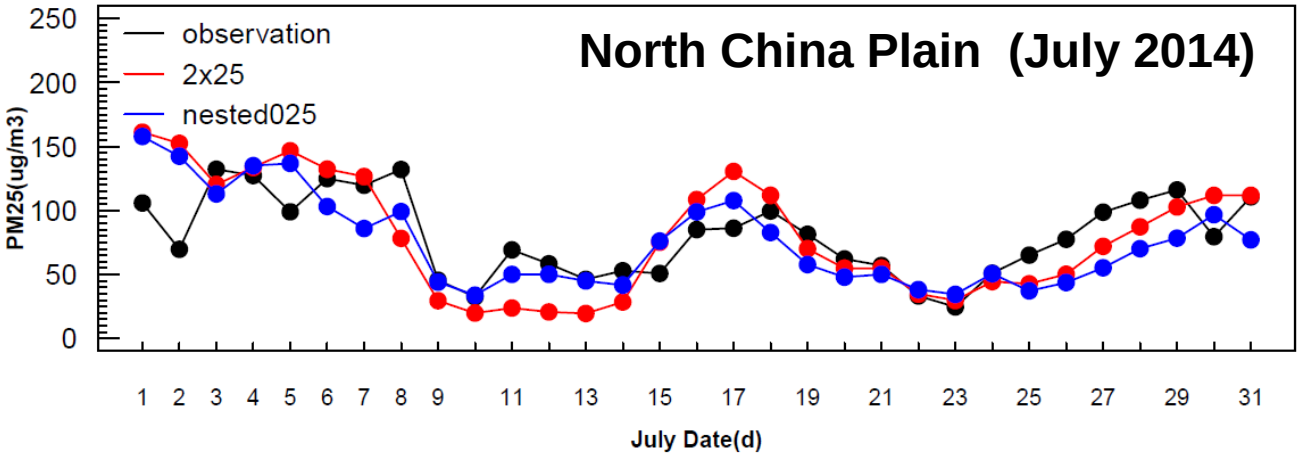


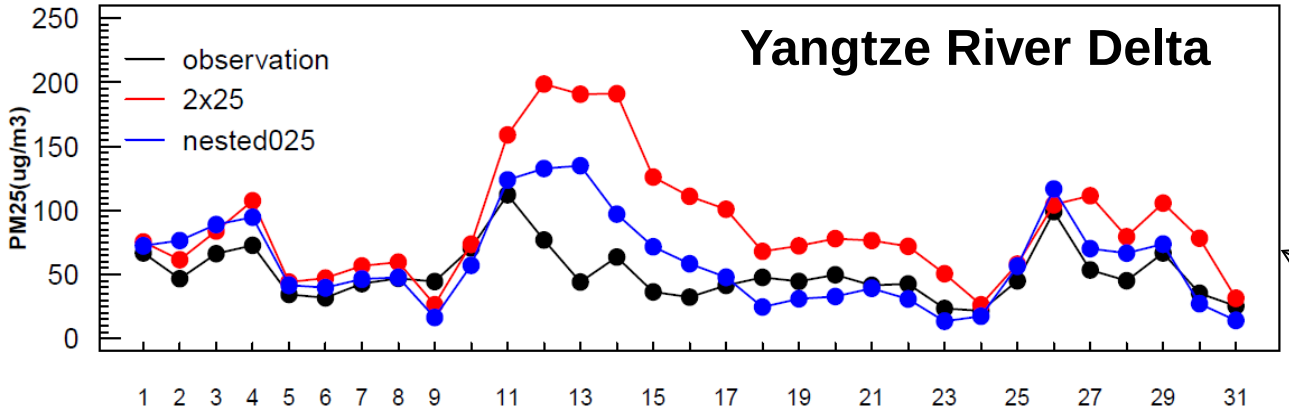
1/4° ×5/16° nested model: A major development since IGC6

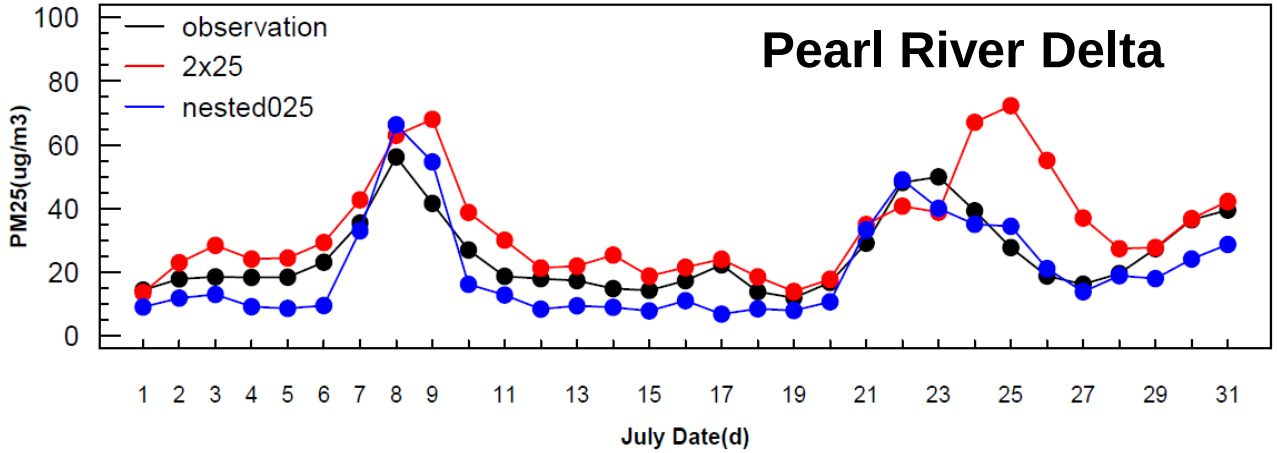
- Joint work by Harvard, Dalhousie, Tsinghua, Peking, Wollongong;
- Provided near-real-time data analyses of the SEAC^{4}RS campaign;
- Better represents the heterogeneity in topography, emission, and small-scale transport.



Karen Yu, Harvard







1/4° ×5/16° nested model over China

- Led by Y.X. Wang, Tsinghua U..

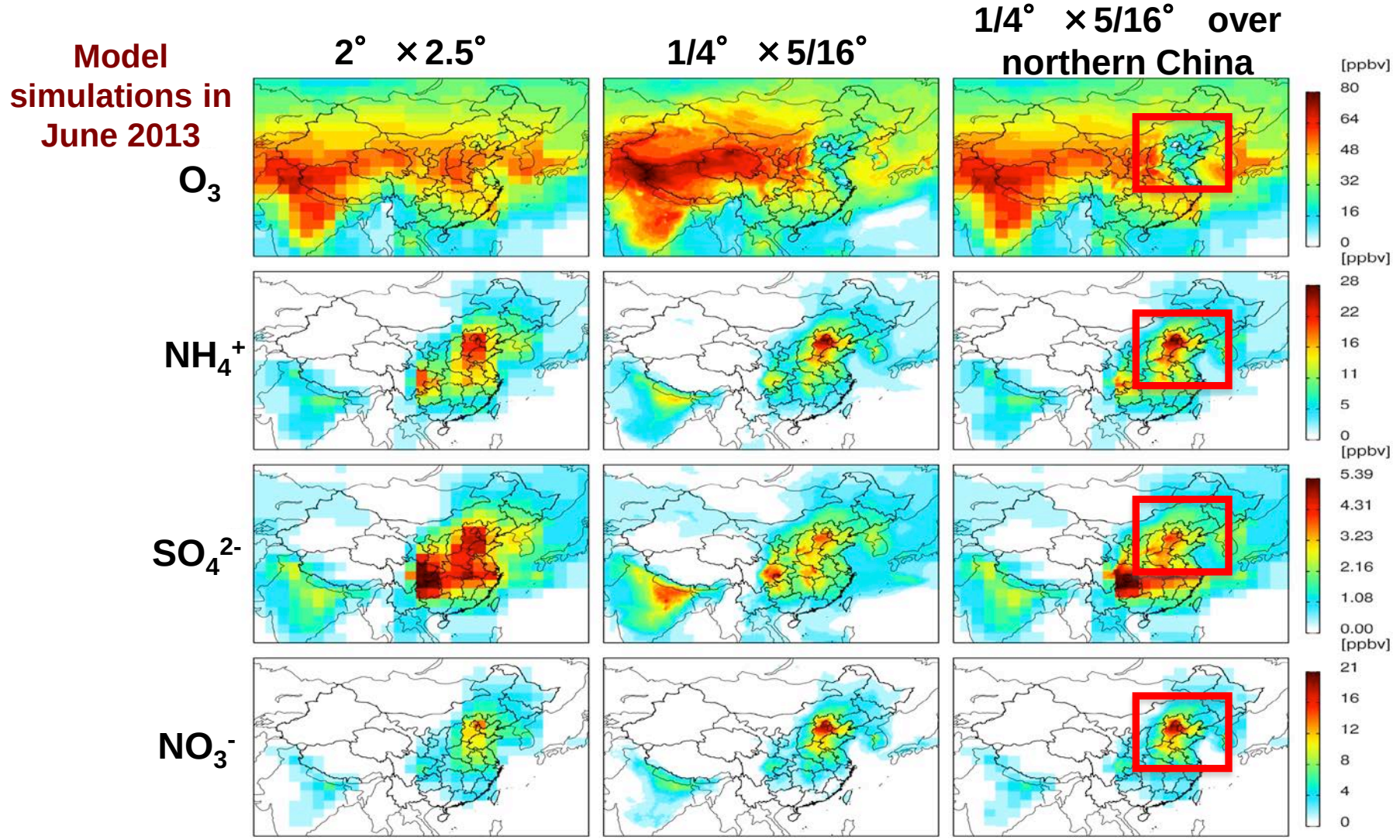
The 1/4° nested-grid model has lower biases and higher correlation in simulating summertime $PM_{2.5}$ in China.

Bias reduction is largest over coastal regions.

(poster by Y. Yao et al., Tsinghua U)

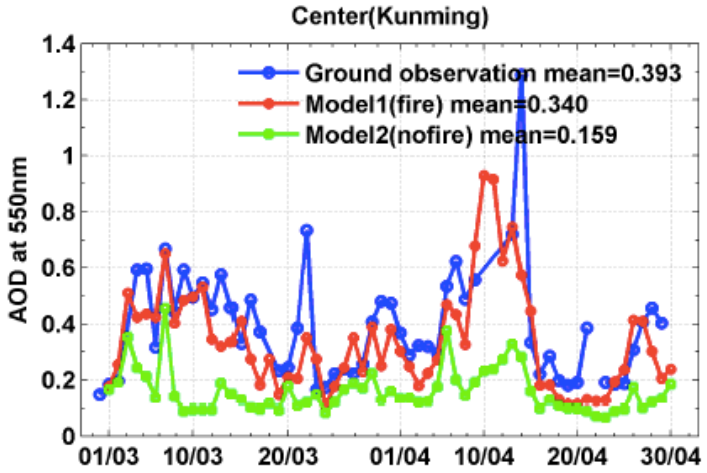
Sub-domain within the nested-grid domain

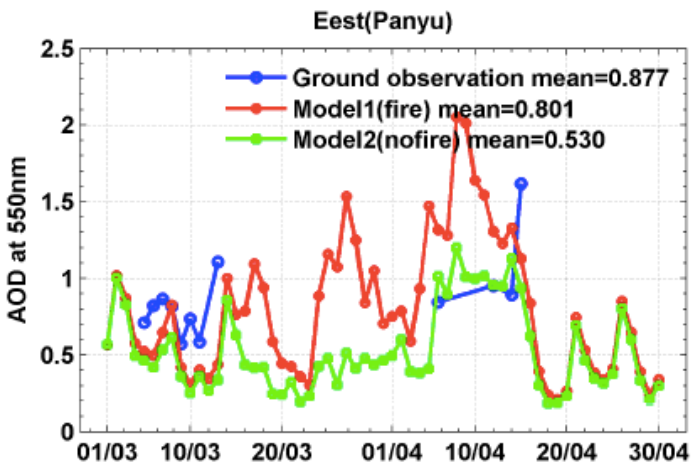
- Add a flexible buffer zone to run 1/4° simulation over a smaller domain for saving computational time;
- Led by L. Zhang, Peking U..

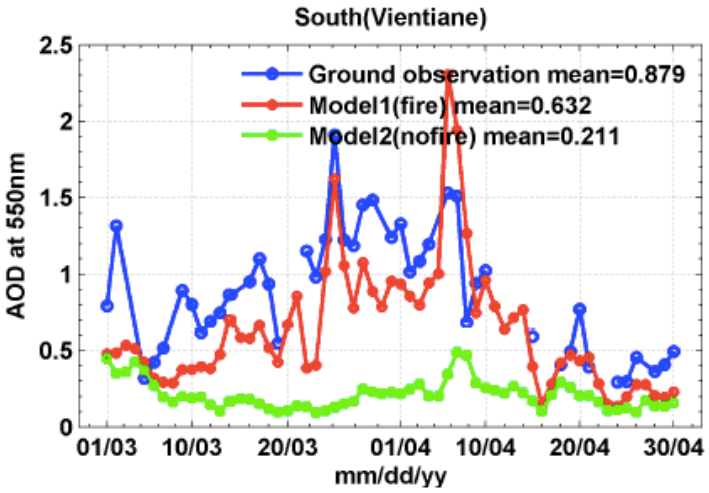


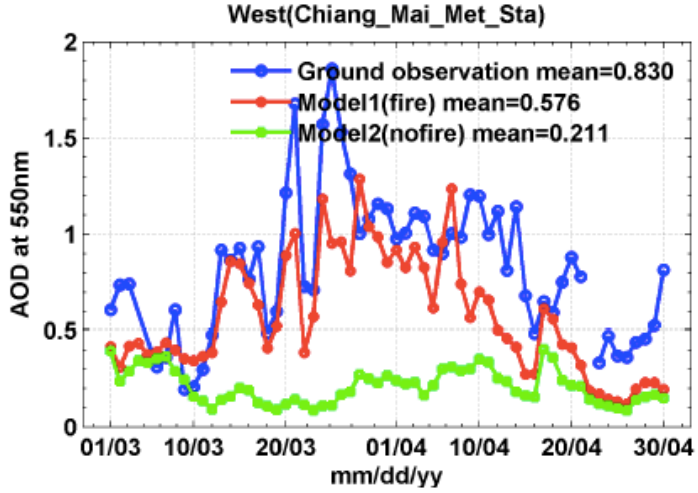
Implementing the FINN fire emissions

- FINN (Fire INventory from NCAR): Daily, 1 km resolution open burning emissions for regional and global chemical transport models;
- Led by J. Wang, U. of Nebraska-Lincoln;
- Have processed the whole FINN emissions (2002-2014).



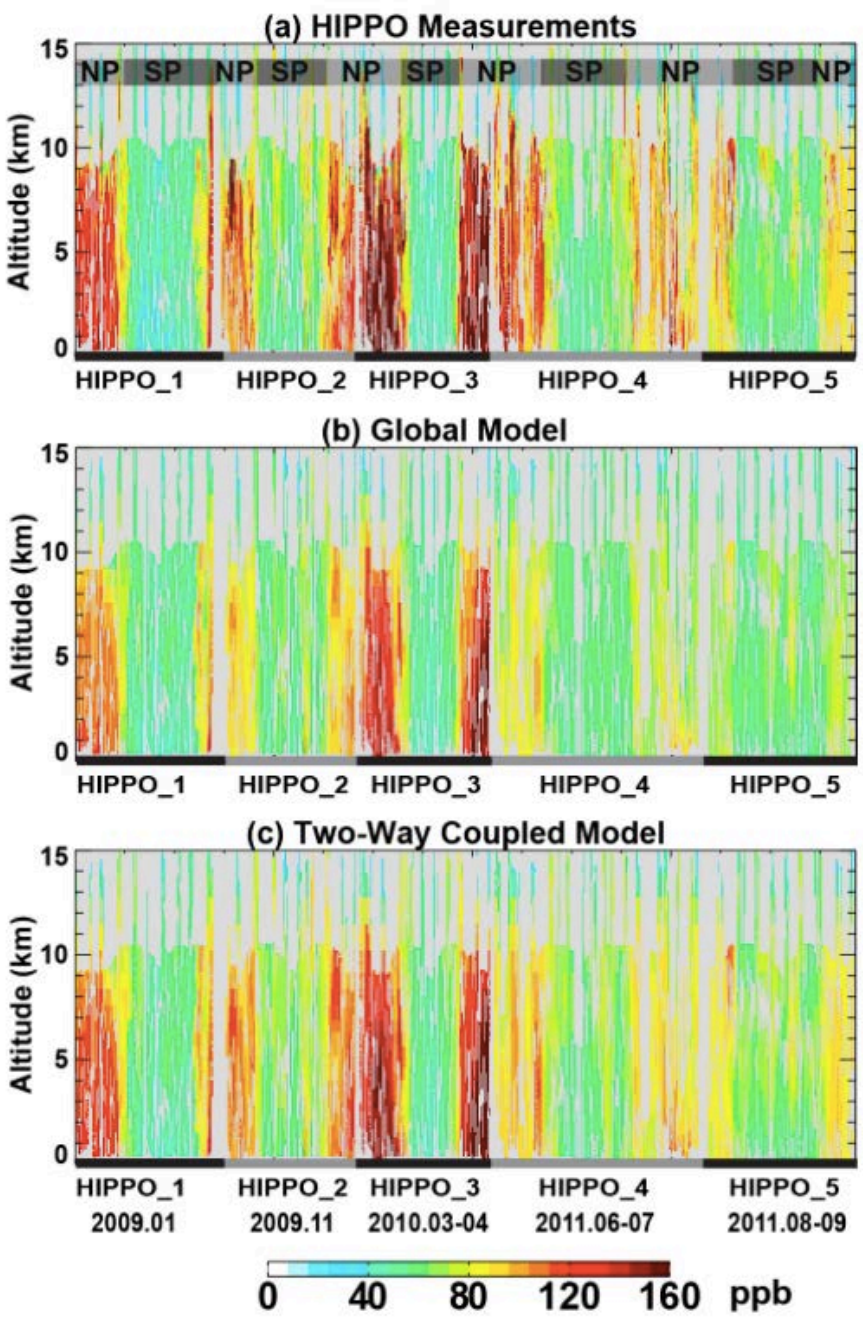


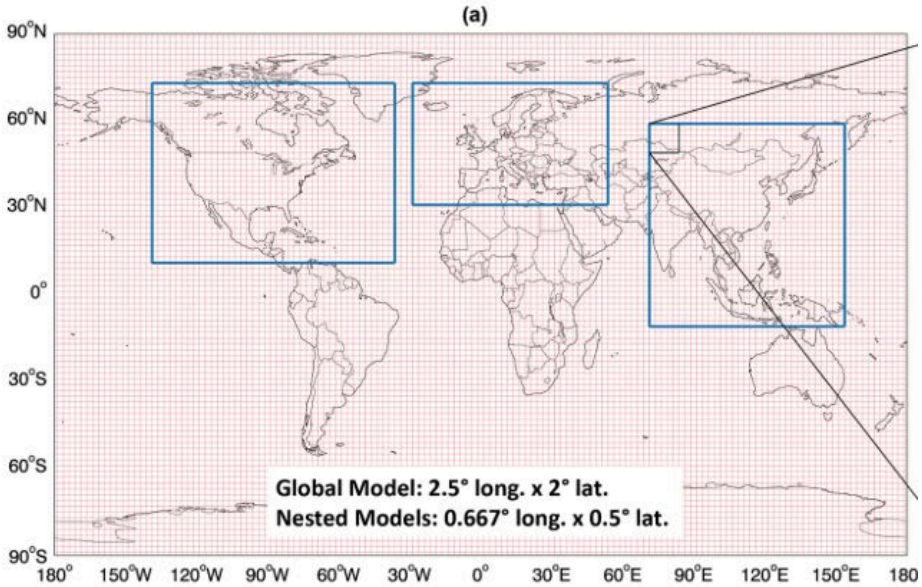




(poster by J. Zhu et al., U. of Nebraska-Lincoln)

Two-way nesting model development





- Global 2° ×2.5° coupled with three nested-grid domains at 1/2° × 2/3° resolution (Y.Y. Yan, ACP 2014);
- Developed by J.T. Lin's group, Peking U.; Presentation by Y.Y. Yan et al.

Ongoing nested-grid model developments

- Benchmark of the NA nested-grid simulations (led by J. Wang, U. of Nebraska–Lincoln);
- Nested-grid model with GEOS-FP at 1/2° × 5/8° resolution (joint development by Tsinghua, Nebraska–Lincoln, Peking, and Dalhousie);
- Nested-grid model over Africa (ongoing work by E. Marais, Harvard and M. Evans, York)
- ...

Nested Model WG: Day 2, 4:30-5:50 pm, Pierce 100F

To join email list send email to:
geos-chem-regional-join@seas.harvard.edu

Nested model talks and posters at IGC7

Day 1, 3:20pm: Isoprene nitrate chemistry in the Southeast US: Constraints from GEOS-Chem & SEAC^{4}RS (Jenny Fisher, U. Wollongong)

Day 2, 9:00am: Drought effects on ozone and $PM_{2.5}$ (Yuxuan Wang, Texas A&M and Tsinghua)

Day 2, 2:10pm: Estimating global and North American methane emissions using GOSAT (Alexander Turner, Harvard)

Day 3 11:10am: 'APEC Blue' in North China simulated with the high resolution nested GEOS-Chem model (Yixuan Gu, Chinese Academy of Sciences)

Day 4, 9:00am: Impact of grid resolution on tropospheric chemistry simulation constrained by observations from the SEAC^{4}RS aircraft campaign (Karen Yu, Harvard)

A.8: Summer particulate matter simulation in China with high resolution nested GEOS-Chem model (Yu Yao, Tsinghua)

A.21: Inter-regional transport of ozone pollution over China (Jingyuan Shao, Peking U.)

And more…