SILAM training session outcome

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with help of

Mikhail Sofiev, Rostislav Kouznetsov

Goals of the session

- To get acquainted with the SILAM model as a prominent example of CTM

- To install, configure and run SILAM for:
  - artificial toy-salt case of sea salt emission
  - artificial toy-case of point-source emission
  - real-life AQ hindcasting in Kenia
  - real-life AQ hindcasting for own country (specific setup for each trainee)

- To visualise and analyse the results of the simulations
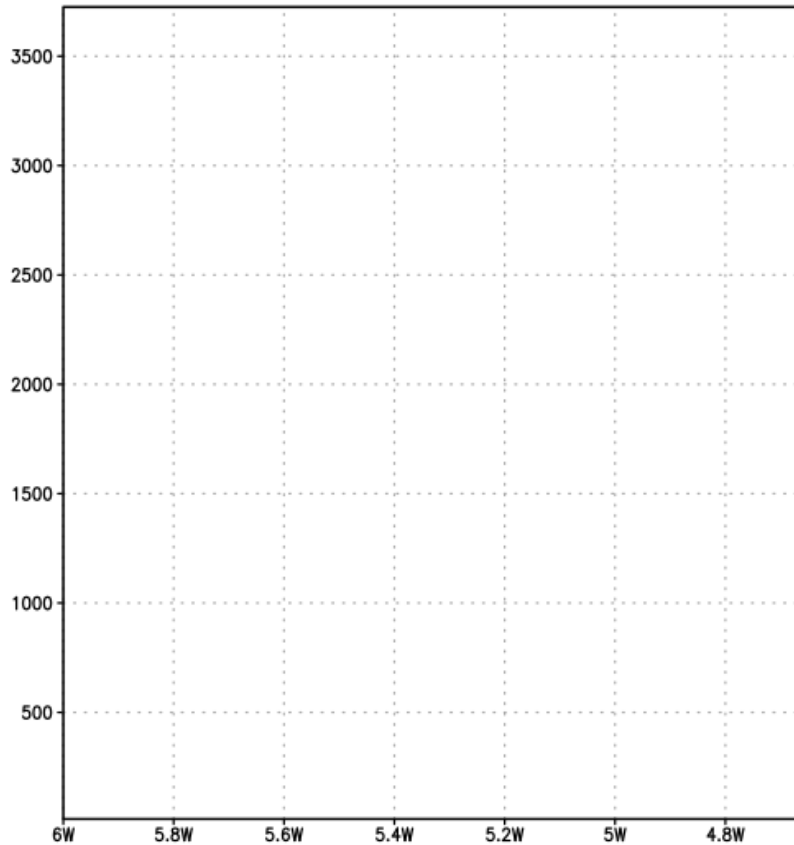
Toy-salt test case

- Author:
  Emmanuel Nyuyki
  Bongkiyung

- Setup:
  SILAM.v.5.6
  toy-sea-salt emission
  domain: middle of
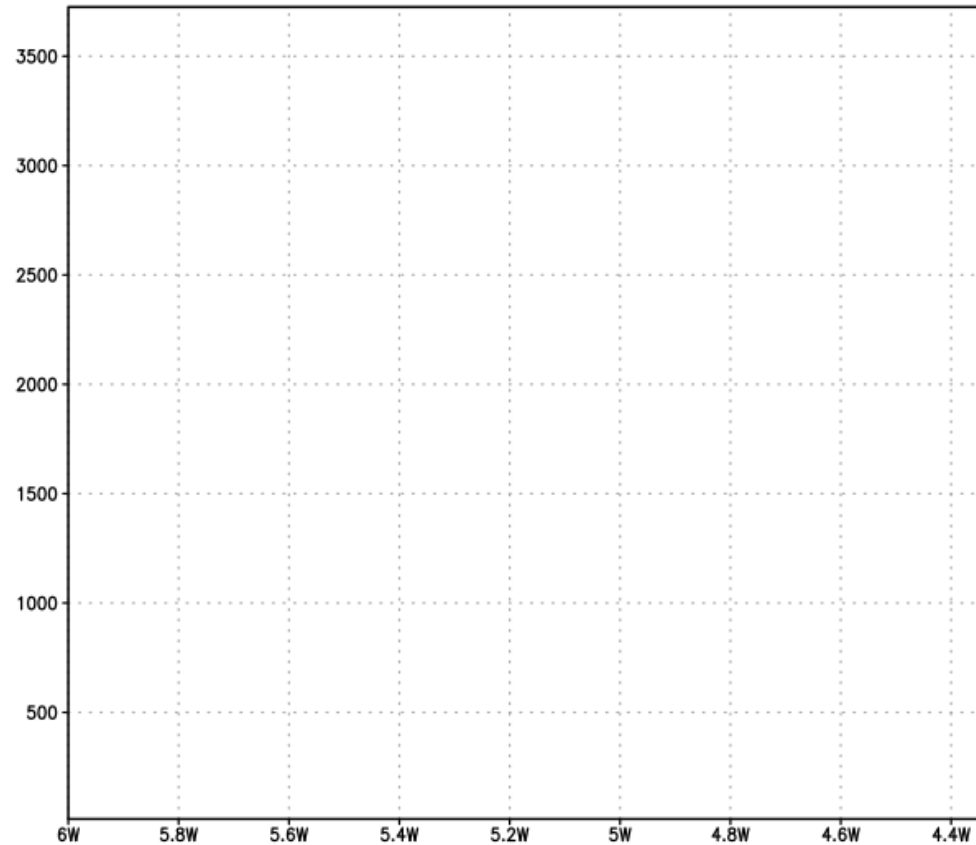 north-Atlantic

- runtime: 10 sec

sea salt 12:00, 22JUL2015
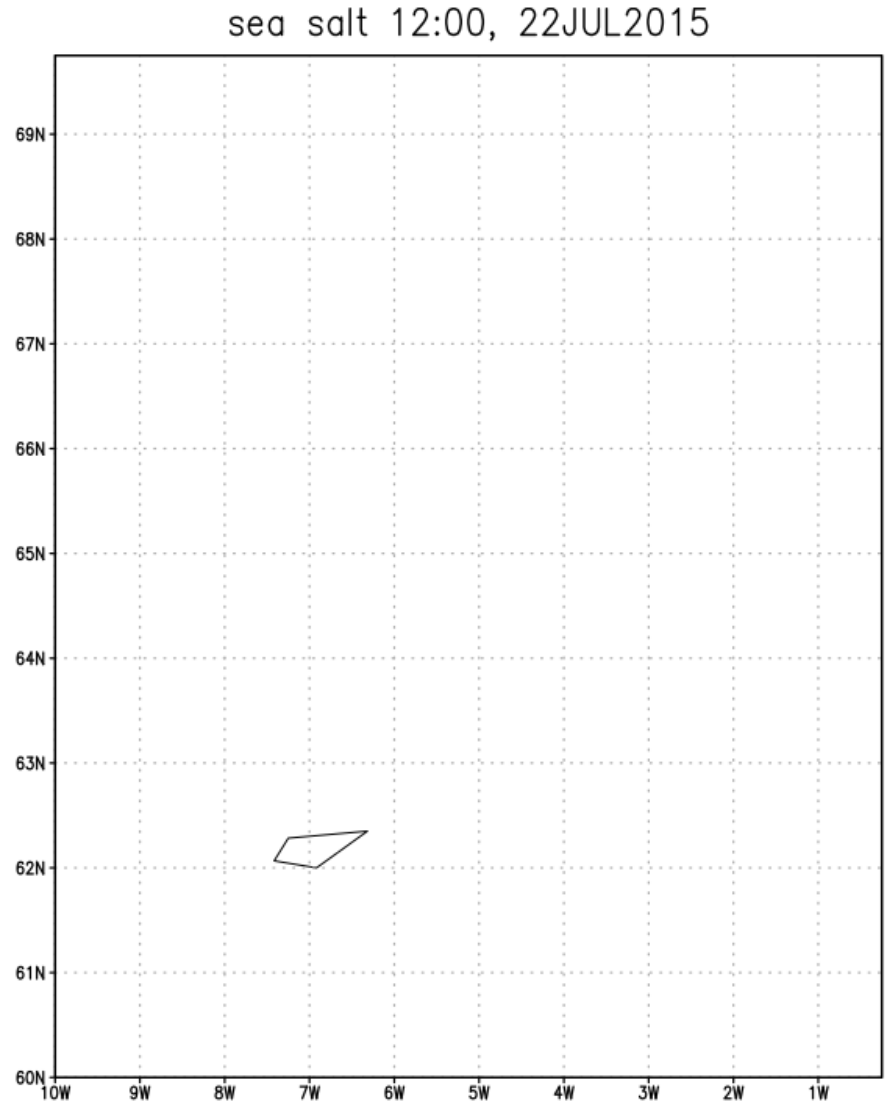
Toy-salt and toy-point test cases

- Author: Emmanuel Nyuyki Bongkiyung
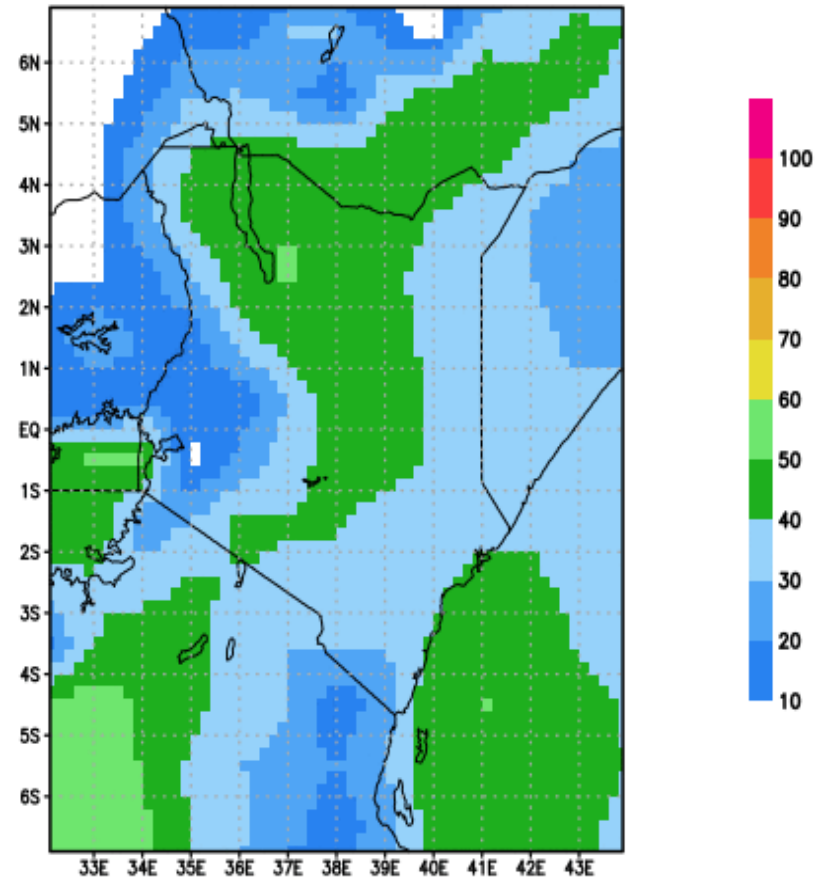
Kenya: template case

- Base for PREFIA training case
    - Smaller (i.e country-scale) domain that can be run on a PC
    - 10-km CAMS_GLOB emissions allow for further downscaling
    - 1-deg archived BC

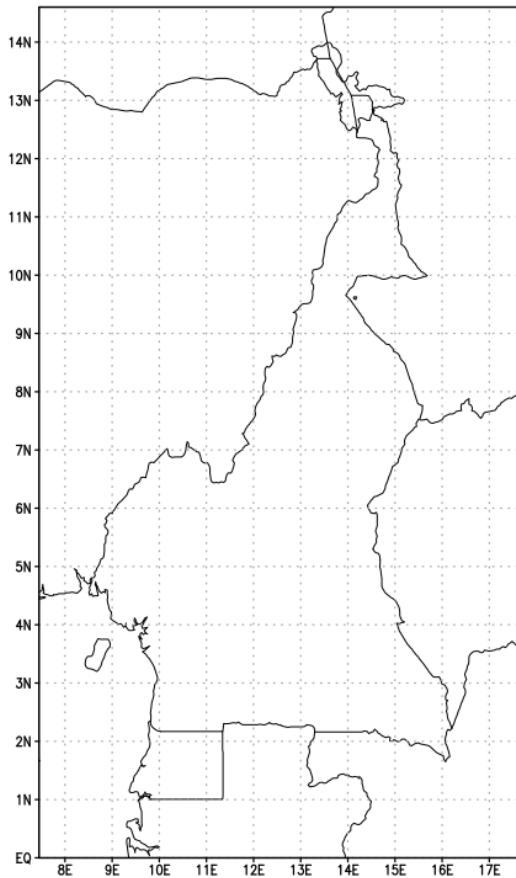cnc_O3_gas, ug/m3 00:00, 02OCT2017
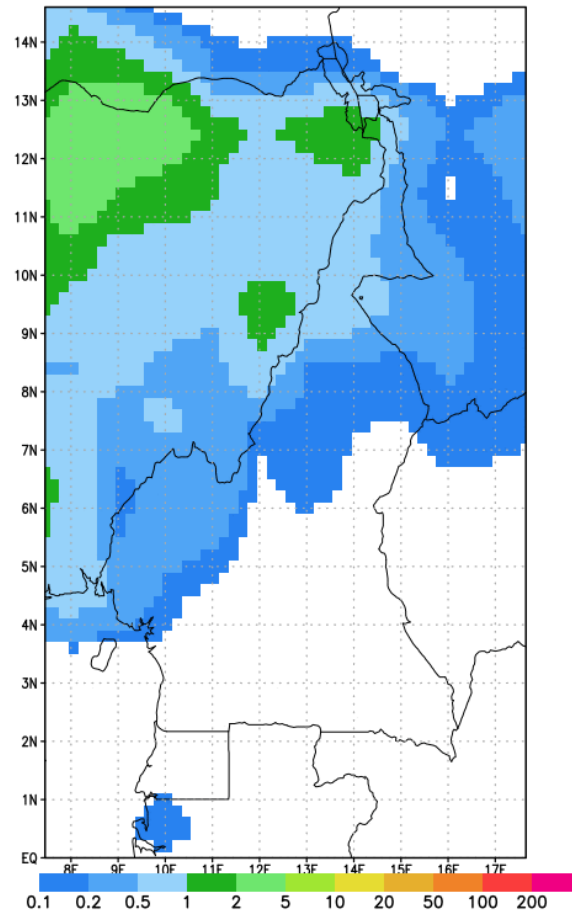
AQ in Cameroon real-life case

- Author: Emmanuel Nyuyki Bongkiyung

- Setup:
  - SILAM v.5.6
  - emission: CAMS-Global + GEIA lightning + MEGAN BVOC + SILAM seasalt + SILAM dust + IS4FIRES fires
  - chemistry: CBM4 + VBS + DMAT sulphur
  - domain: Cameroon, 0.2°, 3 days
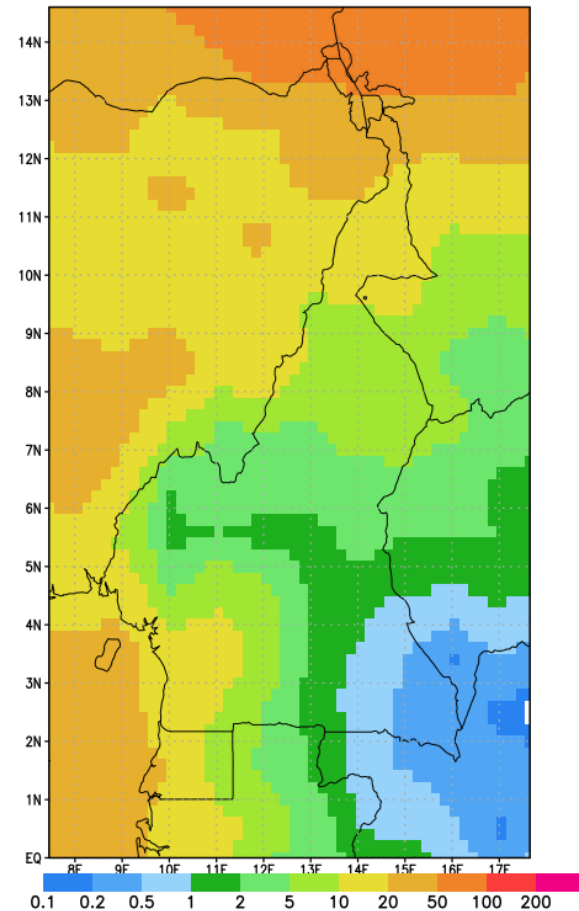
- Runtime: 5 min

Cameroon, 2-4.10.2017

NOx emission mole/sec 00:00, 02OCT20

NOX ugN/m3 00:00, 02OCT2017
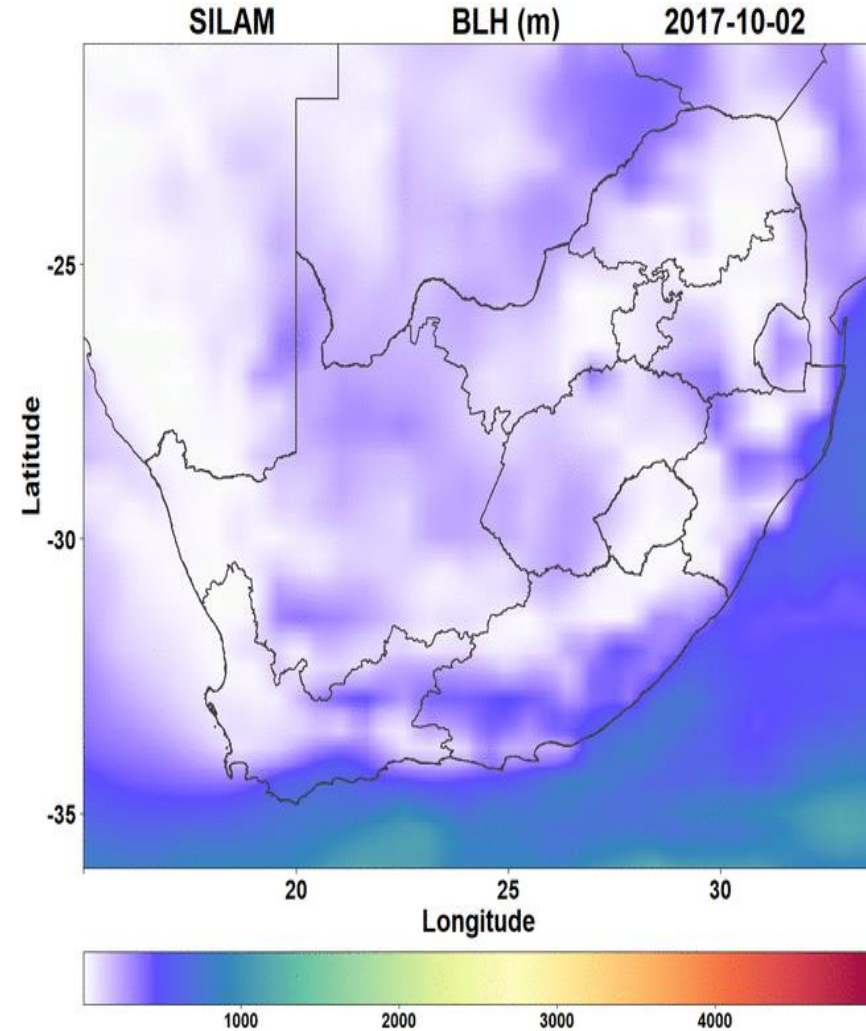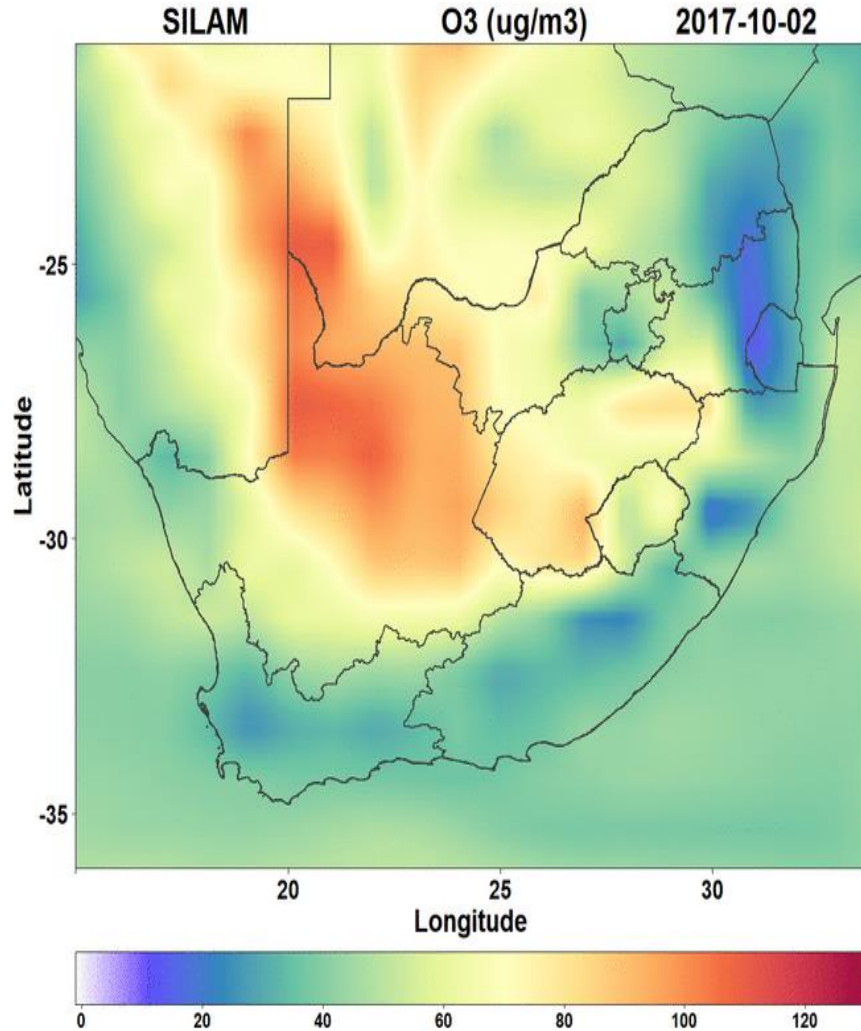
O3 ug/3 00:00, 02OCT2017
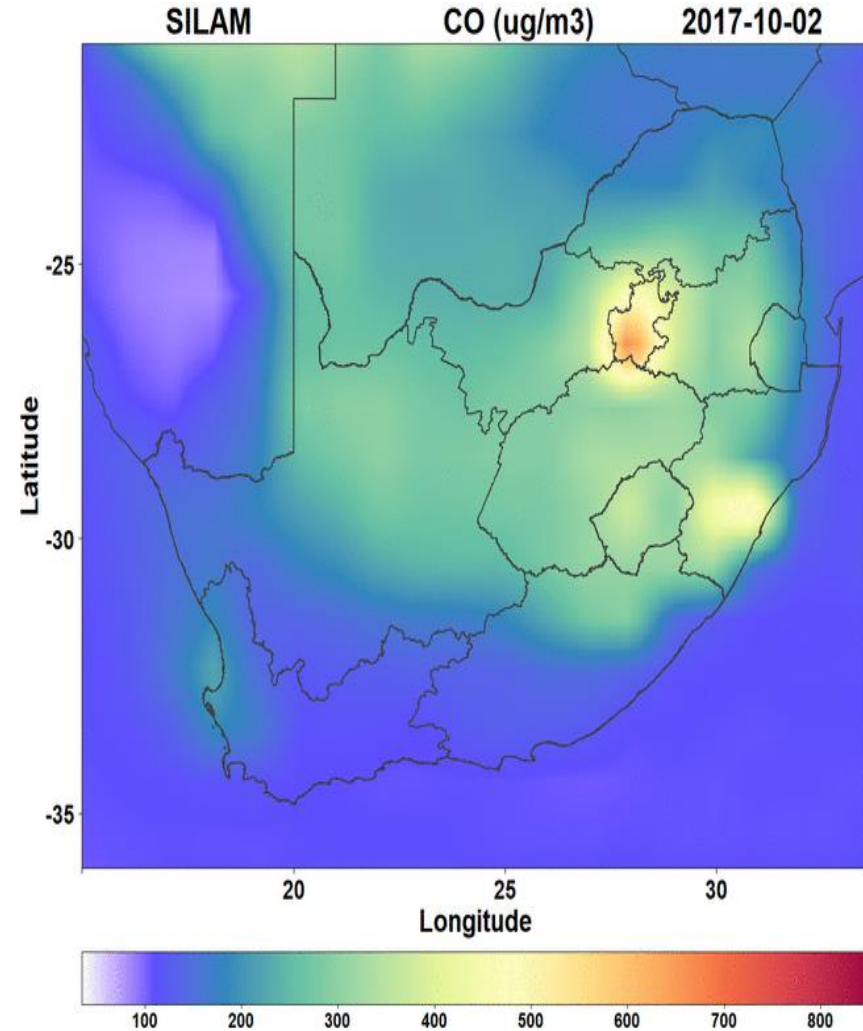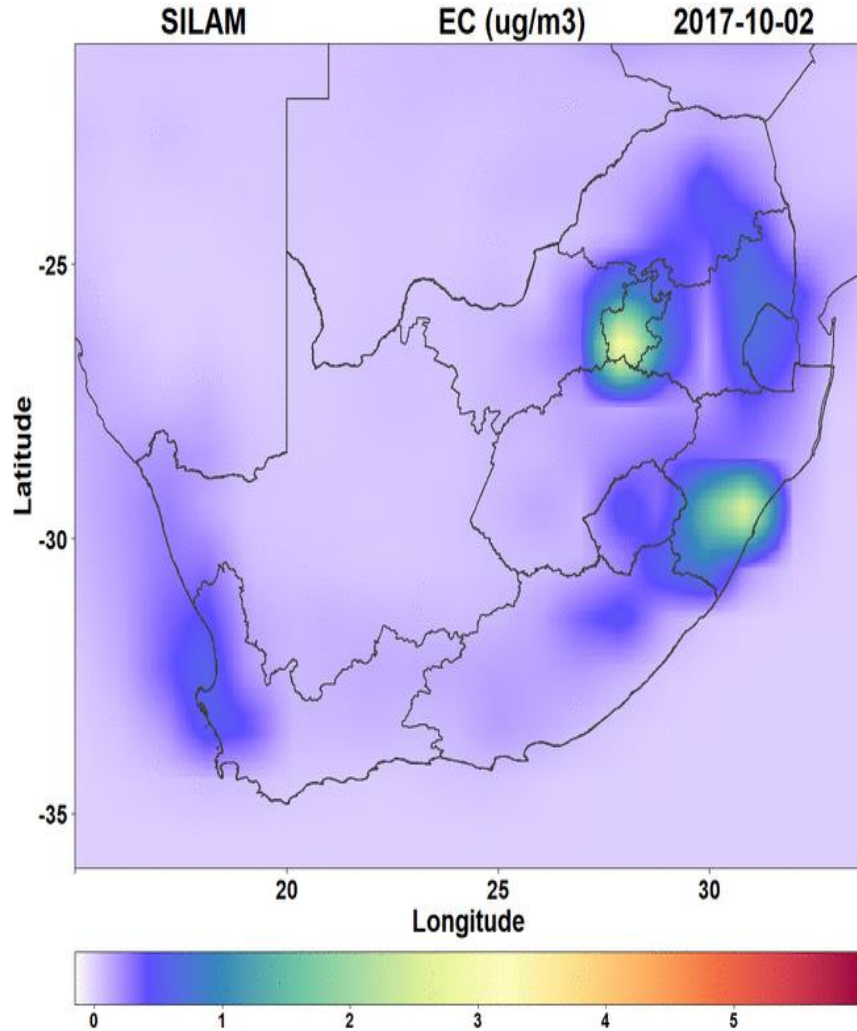
AQ in South Africa, real-life case

- Author: Melaku Testfaye Yigleyu

- Setup:
  - SILAM v.5.6
  - emission: CAMS-Global + GEIA lightning + MEGAN BVOC + SILAM seasalt + SILAM dust + IS4FIRES fires
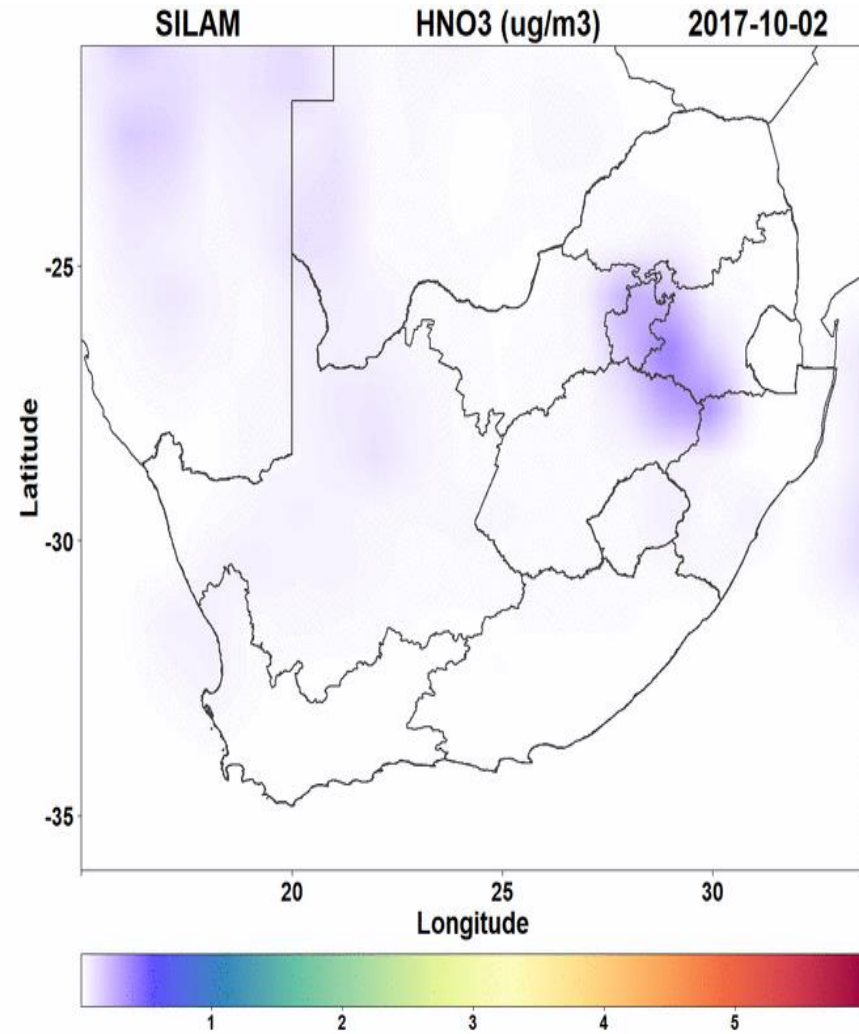 - chemistry: CBM4 + VBS + DMAT sulphur
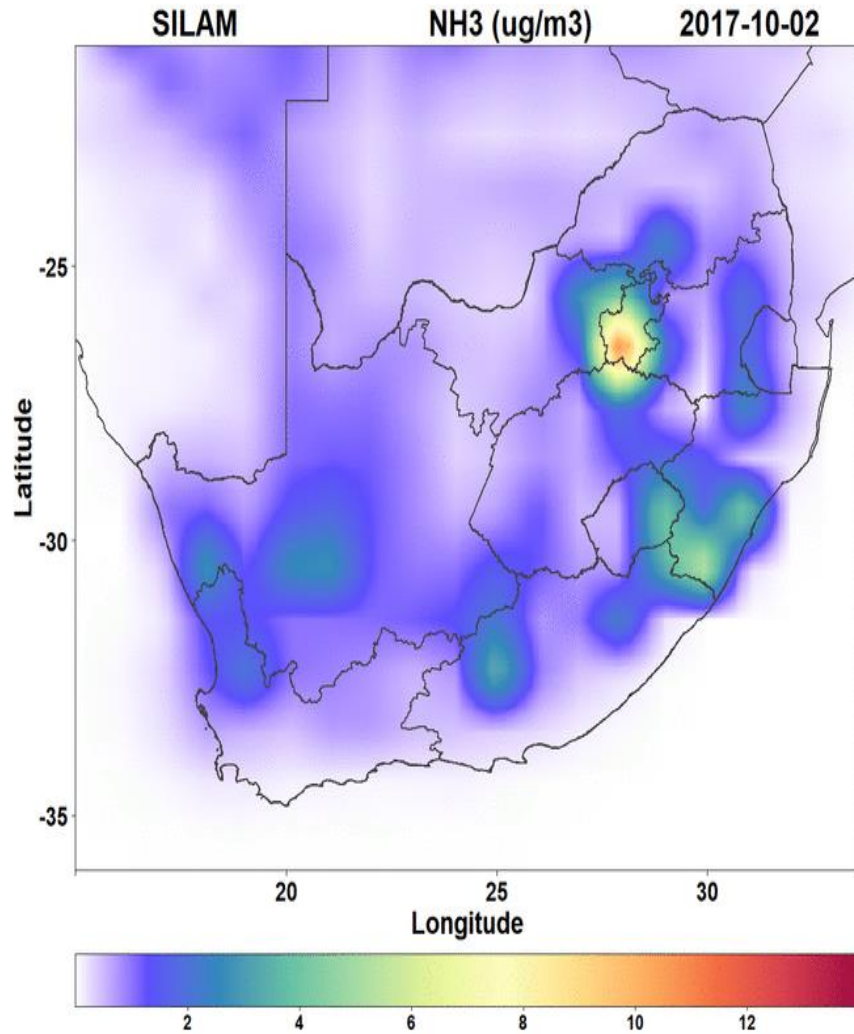 - domain: South Africa
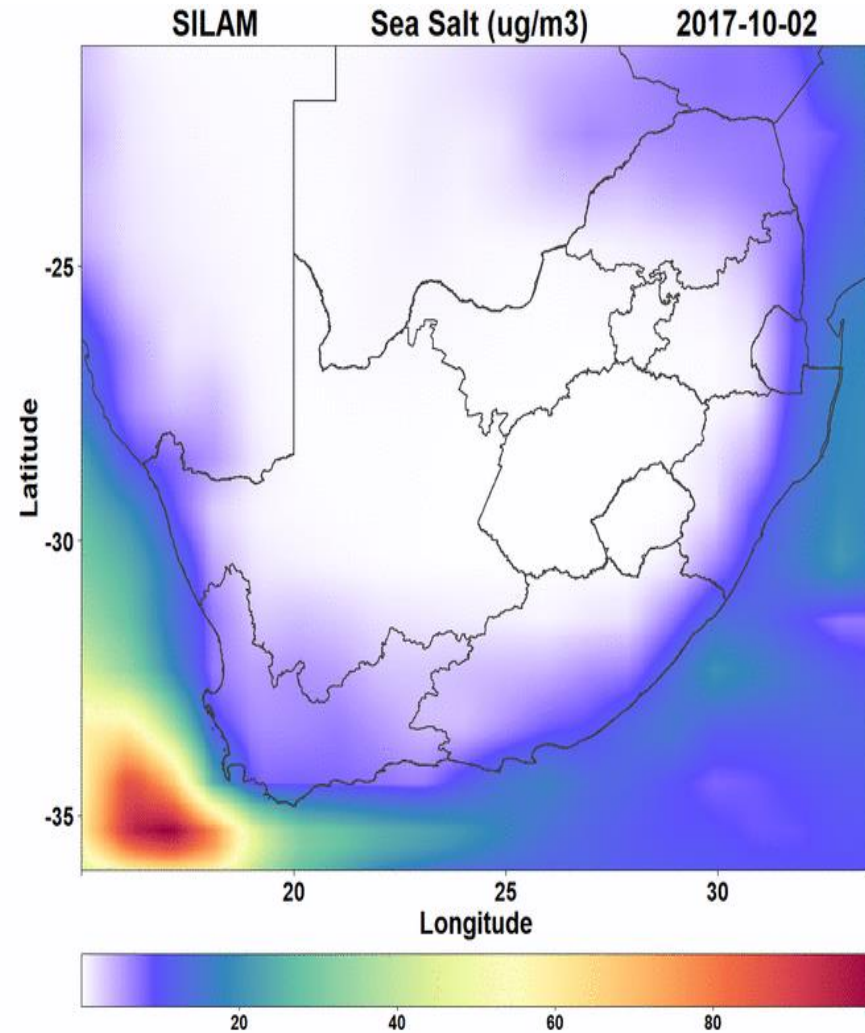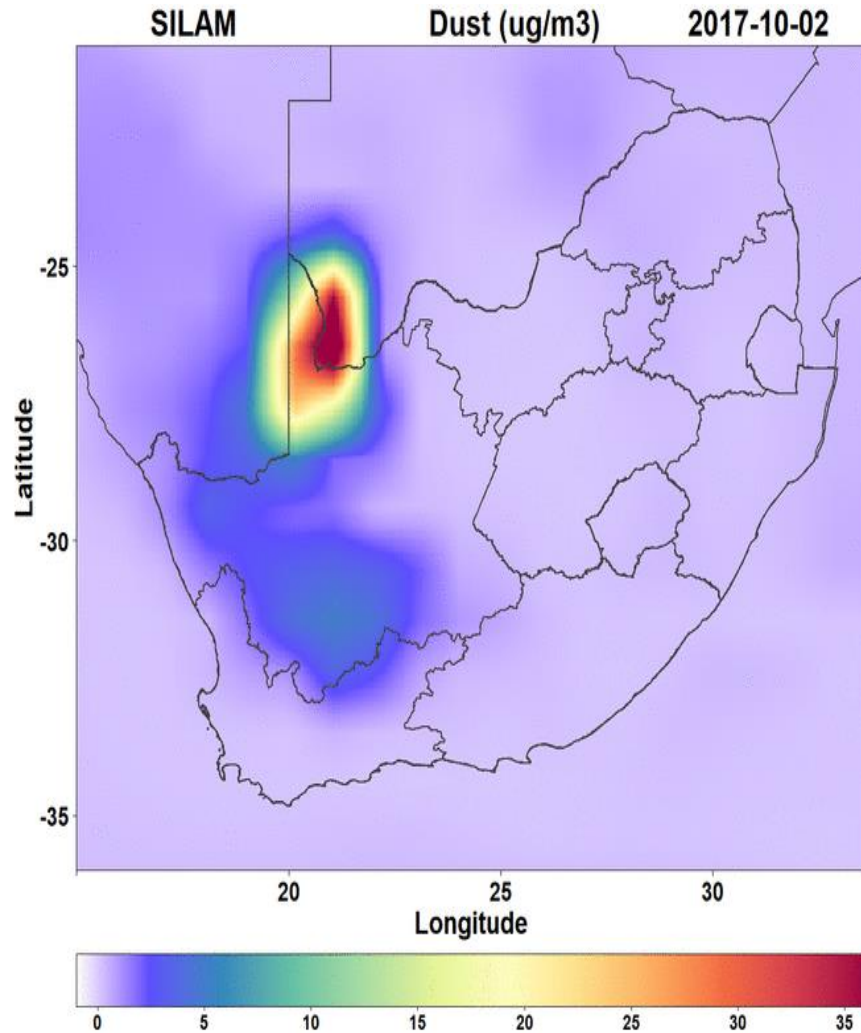
SILAM: South Africa

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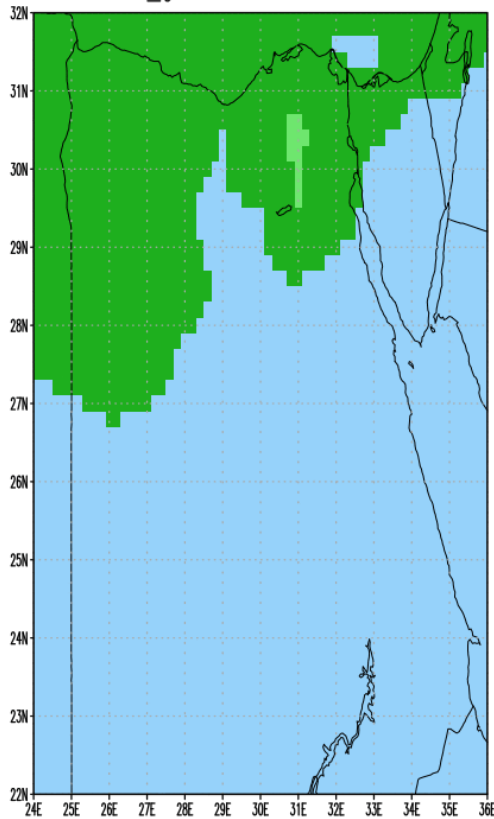# SILAM: South Africa

SILAM: South Africa

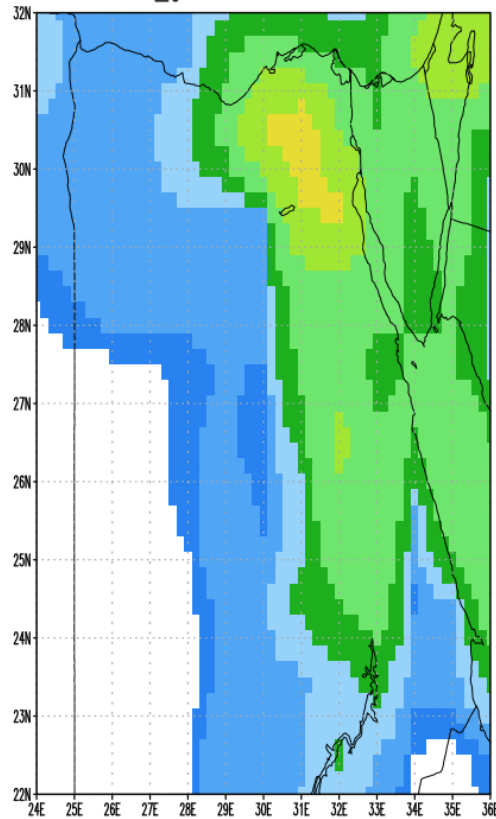# AQ in Egypt, real-life case

- Author: Ashraf Saber Zakey
- Setup:
  - SILAM v.5.6
  - emission: CAMS-Global + GEIA lightning + MEGAN BVOC + SILAM seasalt + SILAM dust + IS4FIRES fires
  - chemistry: CBM4 + VBS + DMAT sulphur
  - domain: Egypt, 0.2°, one day
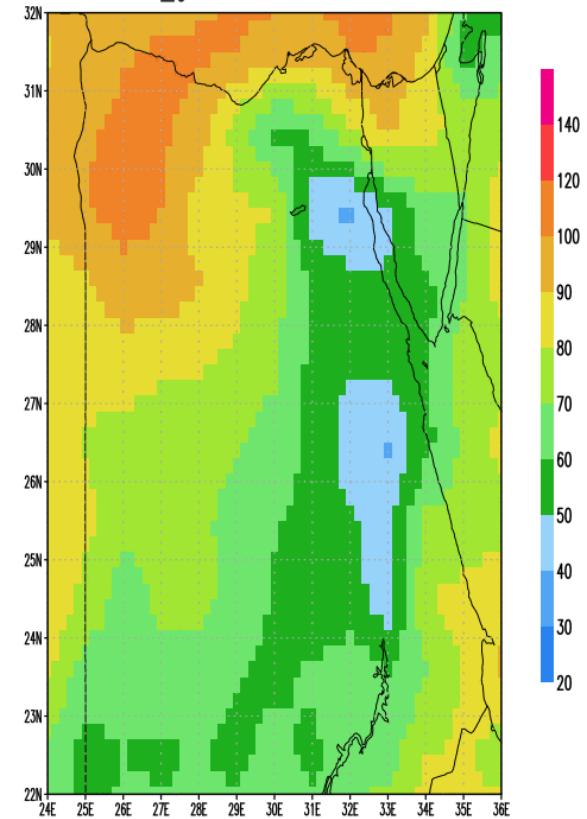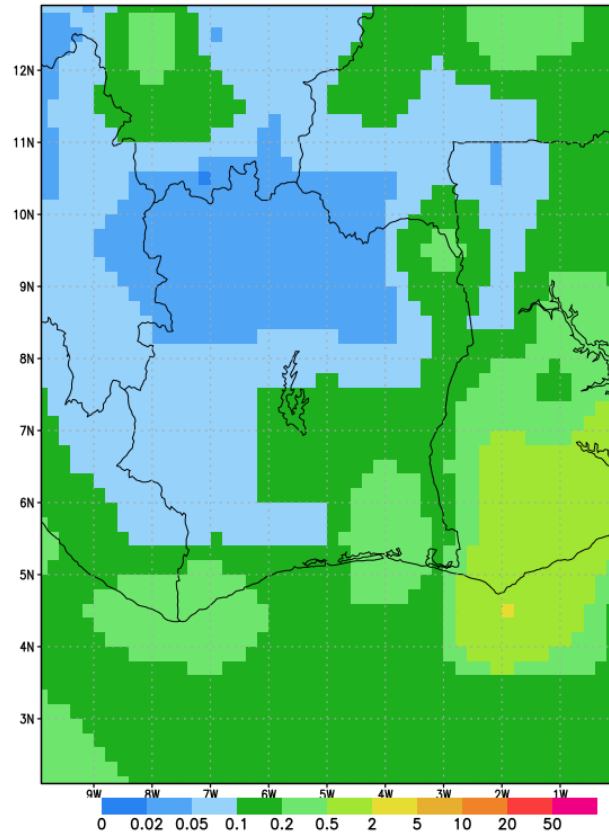- Runtime: 3 min

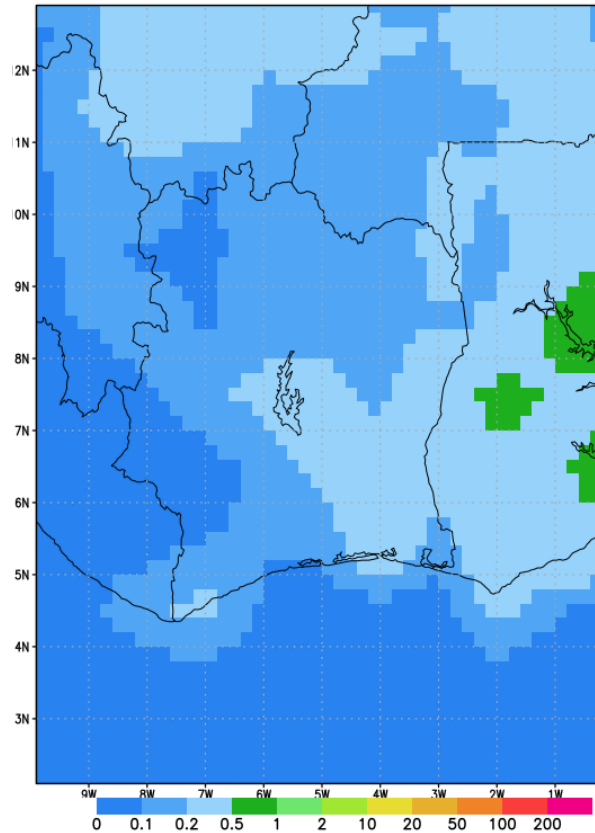# Egypt, 2.10.2017

AQ in Cote-d-Ivoire, real-life case

- Author: Kouakou Firmin Ya
- Setup:
  - SILAM v.5.6
  - emission: CAMS-Global + GEIA lightning + MEGAN BVOC + SILAM seasalt + SILAM dust + IS4FIRES fires
  - chemistry: CBM4 + VBS + DMAT sulphur
  - domain: Cote d'Ivoire, 0.2°, 3 days
- Runtime: 6 min
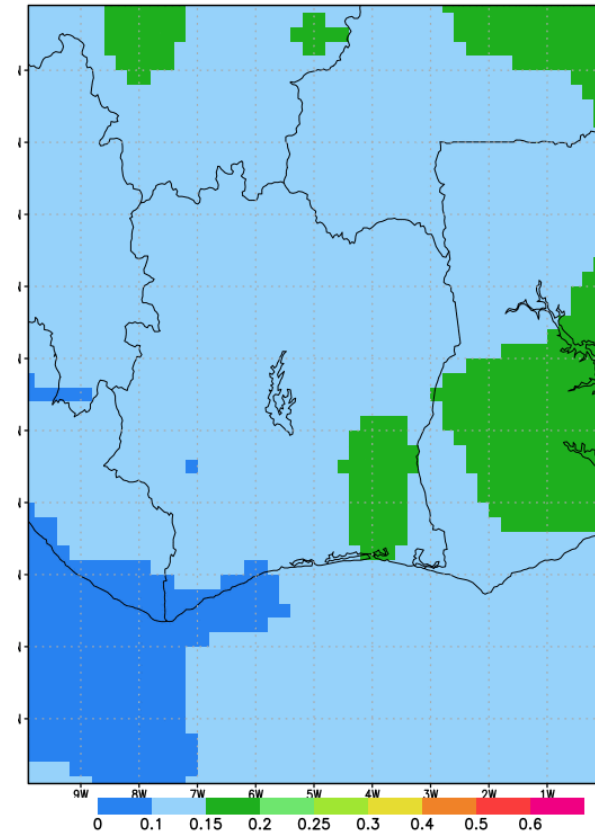
Cote d'Ivoire, 2-4.10.2017

Lessons learned

- Windows runs succeeded at 1 out of 4 participant's laptops due to minimum requirements (memory of 8 GB)

- Unusual setup of individual countries helped to improve the model: a SILAM bug was identified and corrected

- Missing emission was identified: several >1 mln inhabitants cities are not in the CAMS-Glob dataset

FInal remarks

- All objectives of the session have been reached. All participants passed the whole path of the model usage:
  - configuration of Ubuntu system for SILAM
  - installation and compilation of SILAM
  - performing test runs
  - reconfiguration of the model domain to their countries
  - visualization of the obtained results
- The created working configurations of SILAM have been downloaded from the training computers and provided to the session participants