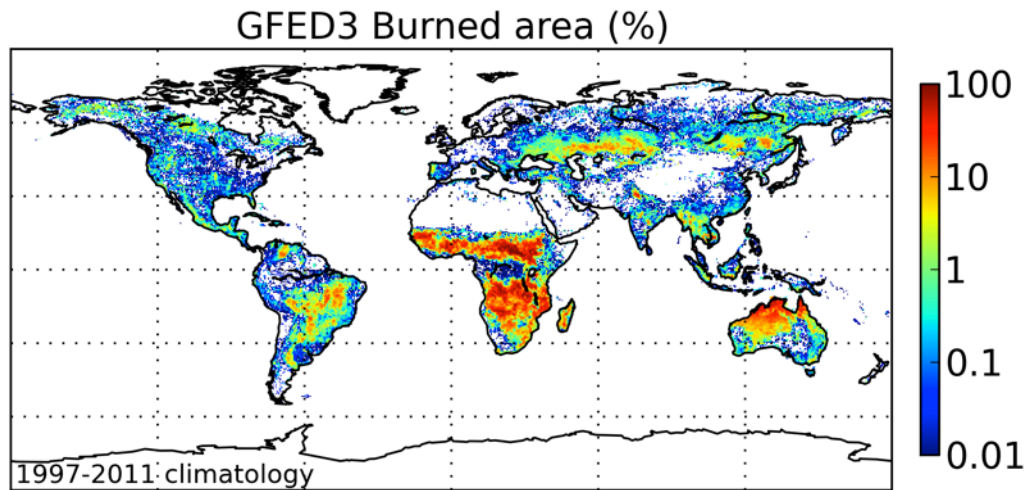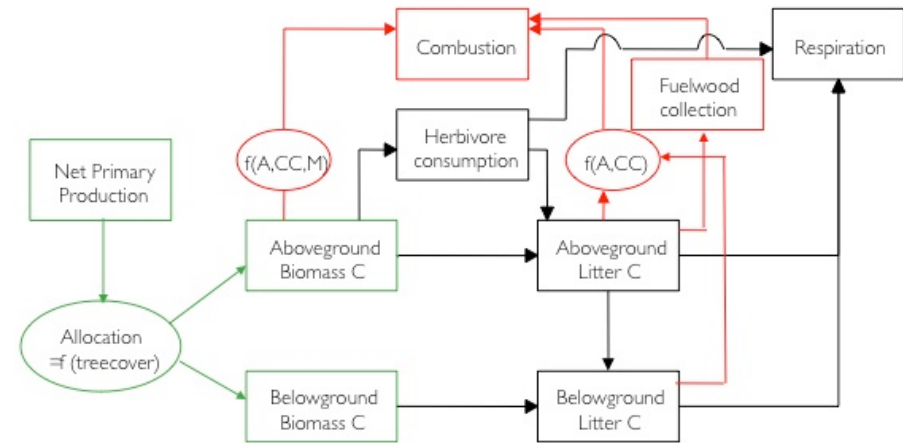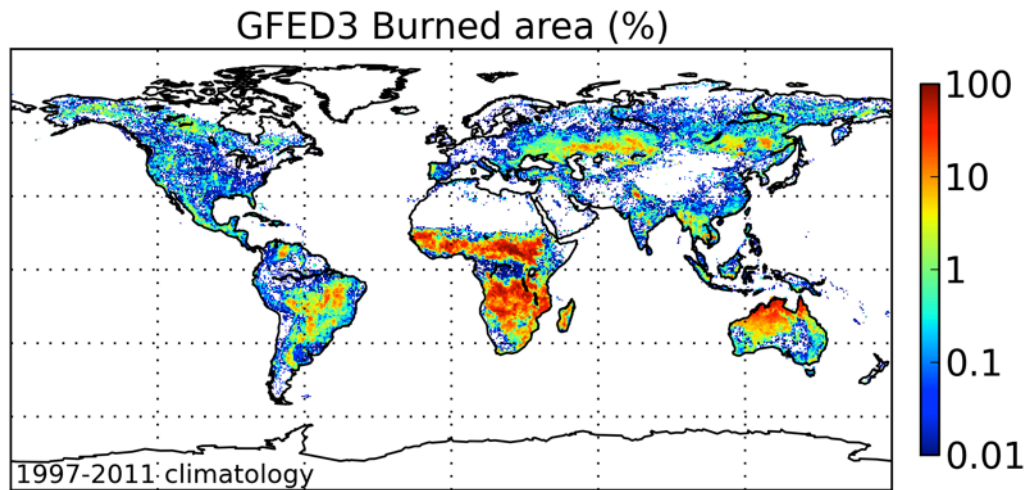# Global fire emissions

- Brief update on GFED status and plans

- Ongoing activities to constrain fuel consumption

- Small fire issue

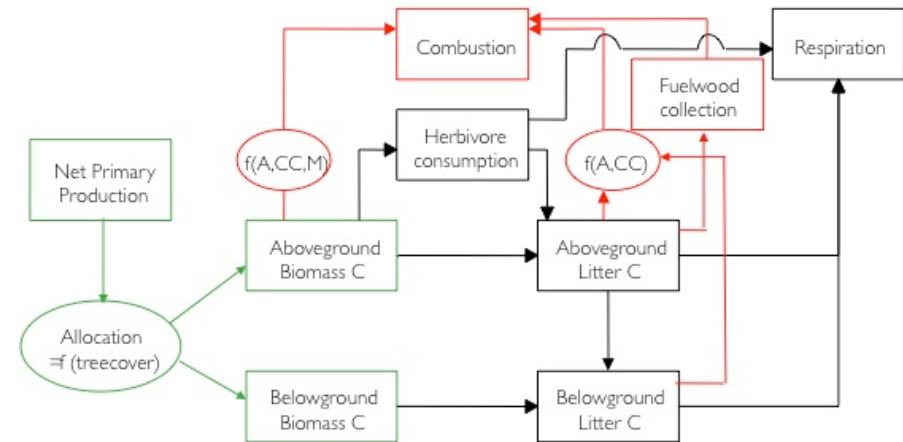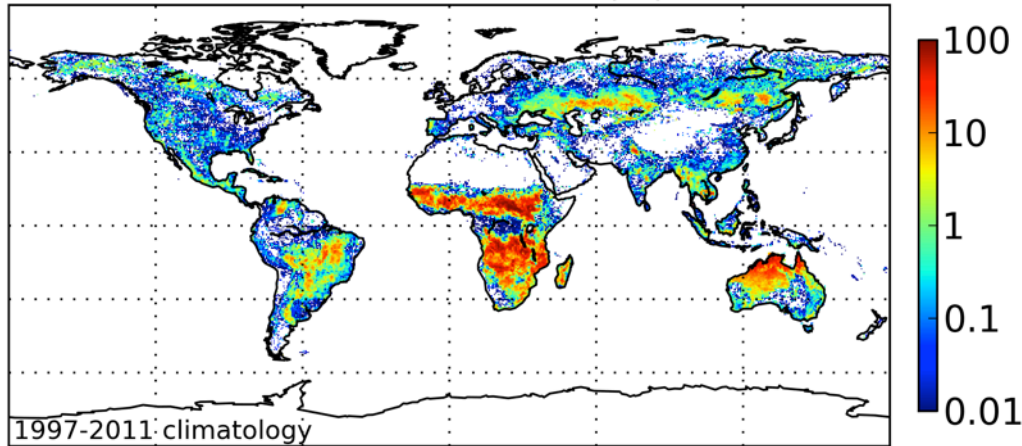# Global Fire Emissions Database (GFED)

GFED3 Burned area (%)

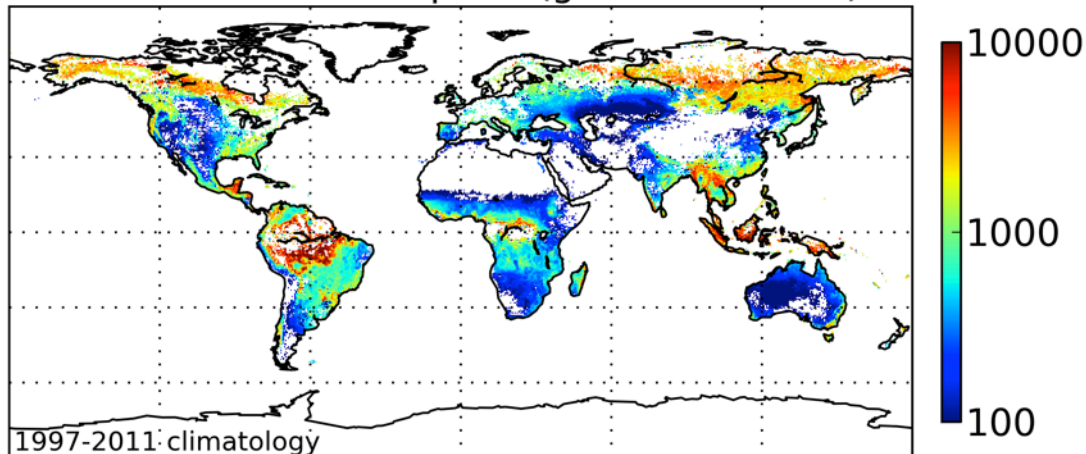1997-2011 climatology

Global Fire Emissions Database (GFED)

GFED3 Burned area (%)

1997-2011 climatology

Global Fire Emissions Database (GFED)

GFED3 Burned area (%)

1997-2011 climatology

GFED3 fuel consumption (g C m^{-2} burned)

1997-2011 climatology

Global Fire Emissions Database (GFED)

Global Fire Emissions Database (GFED)

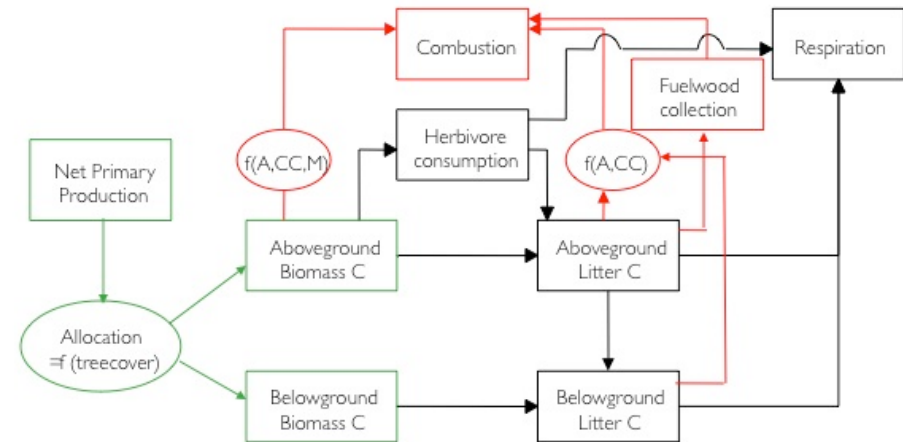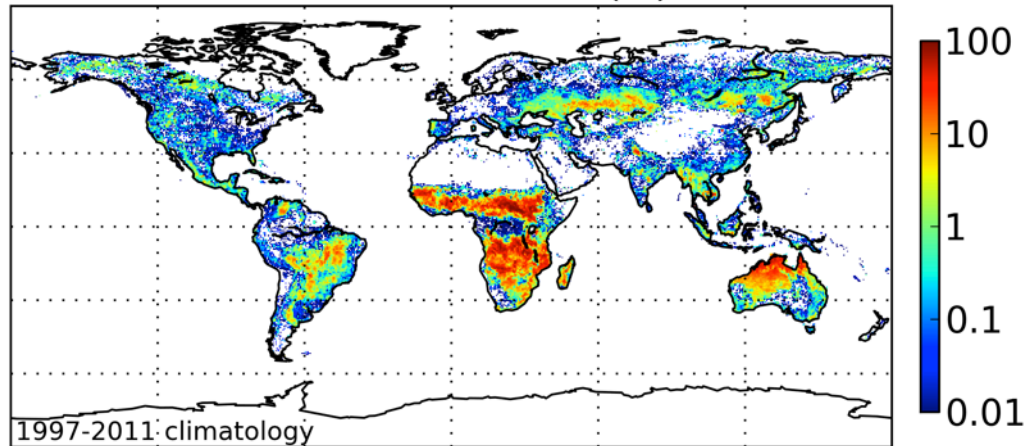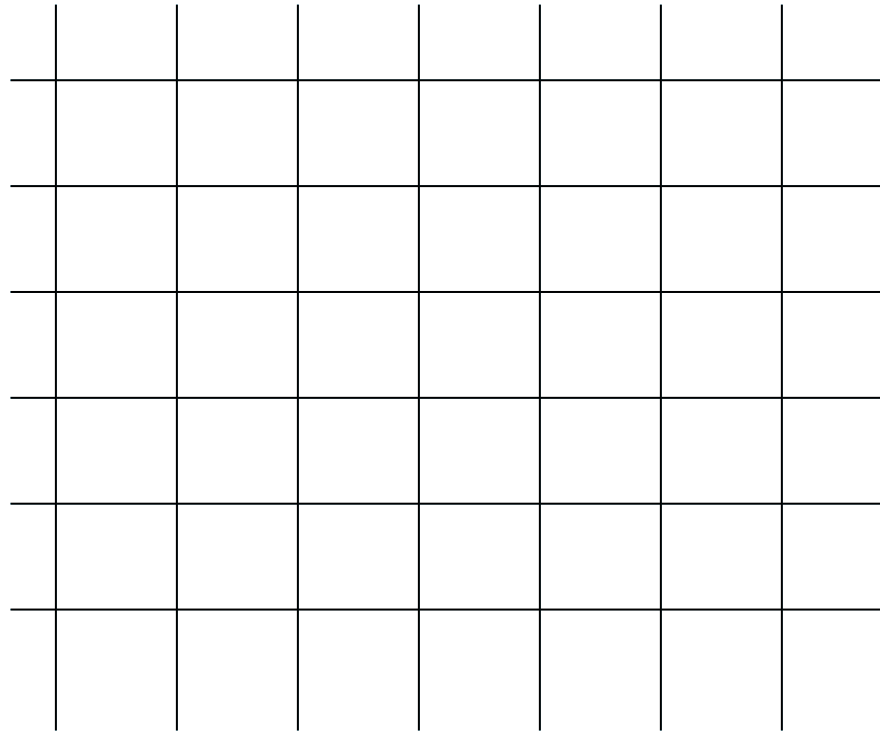- Data available for 1997 – recent time period

- Strong demand mostly from atmospheric community (±200 citations per year)

- Version 3 released in 2010 (0.5 degree, monthly)

- Version 4 burned area finished (Giglio et al., 2013, JGR-B, covering1995-2012)

- Version 4 emissions in progress (0.25 degree, daily)

    - Stronger focus on fire characteristics (overlap with EWS?)

    - More comparisons with fuel consumption measurements
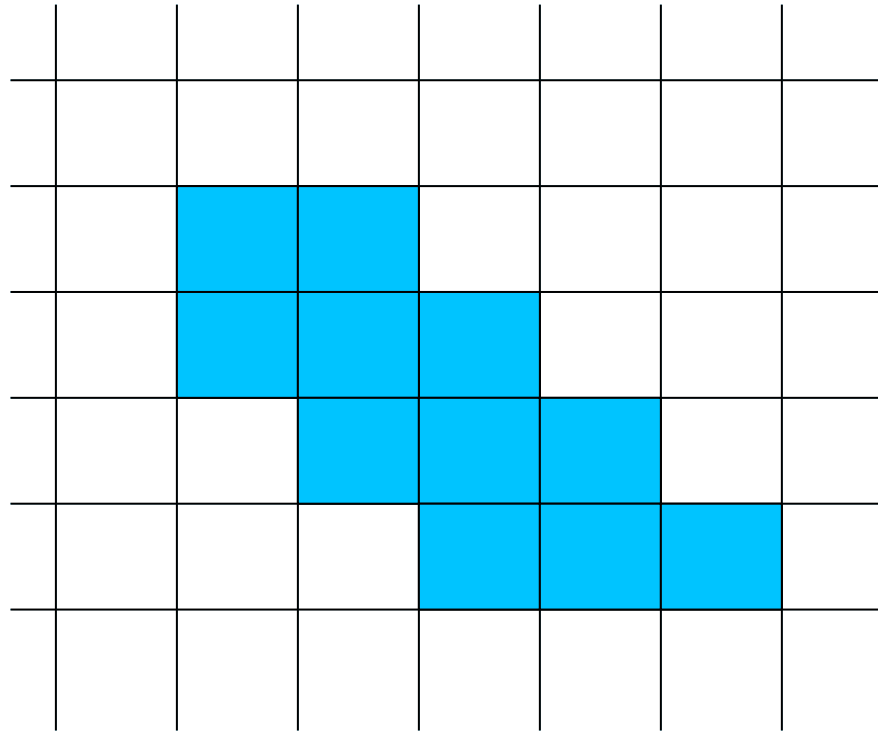
Fuel consumption activities

- Silvia Kloster (MPI) leads fuel consumption intercomparison in collaboration with Claire Granier and Cathy Liousse
  http://www.mpimet.mpg.de/en/science/the-land-in-the-earth-system/fire-in-the-earth-system/fci.html
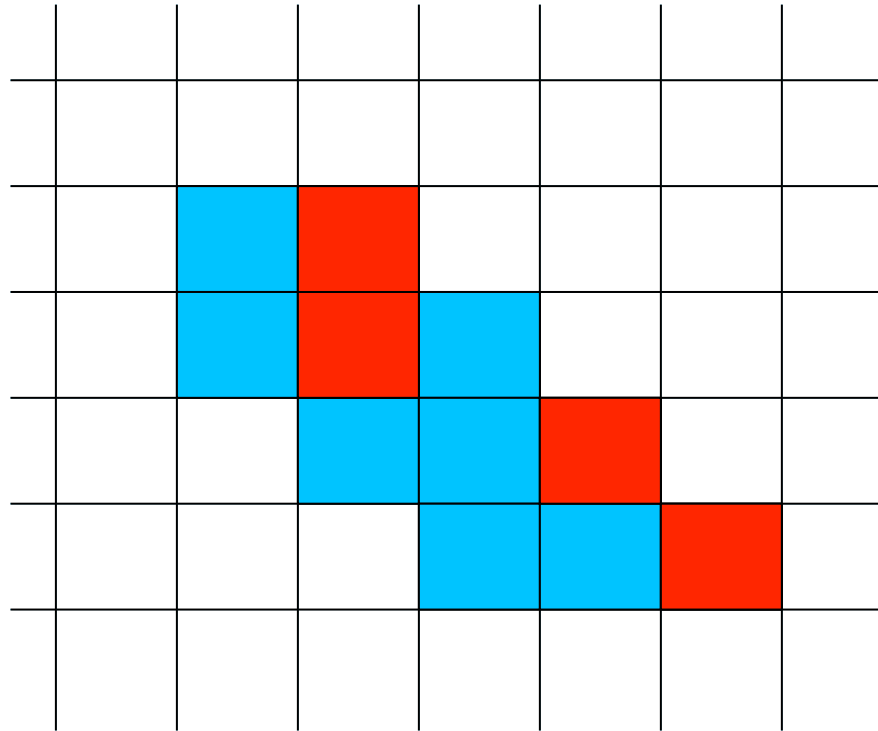
- Workshop South Africa 2011 under GOFC umbrella
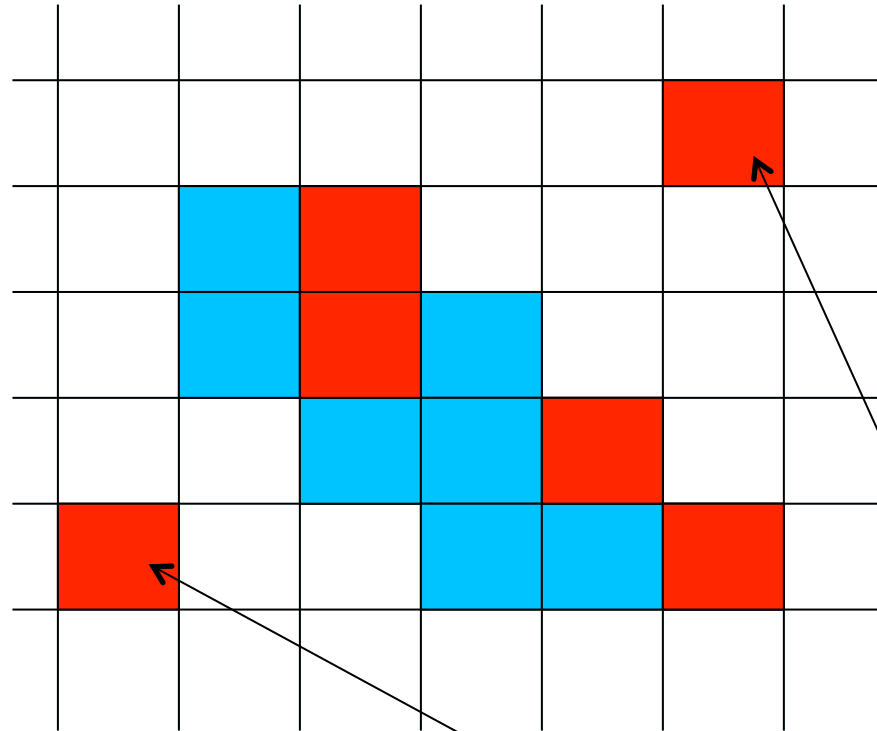
Small fires – the issue

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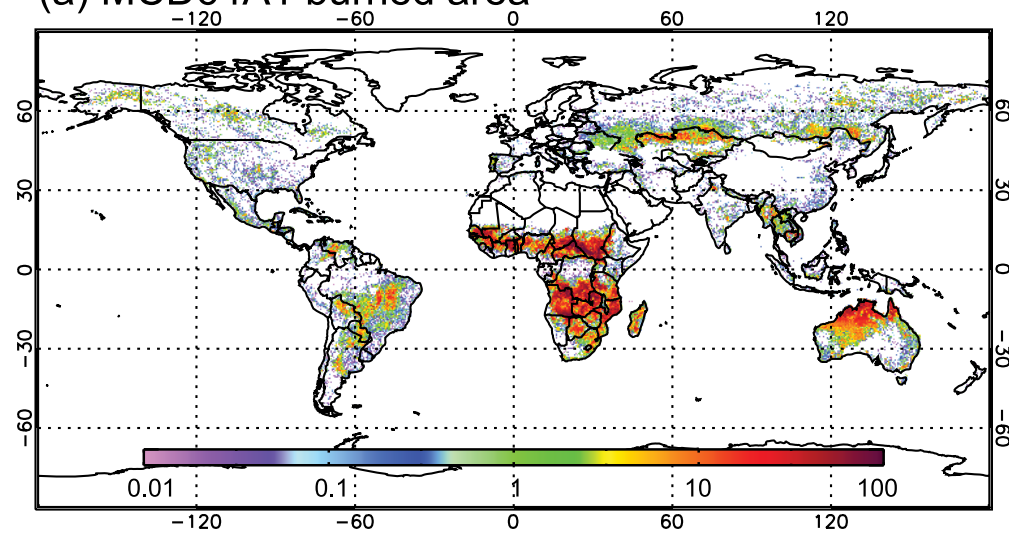
Small fires – the issue
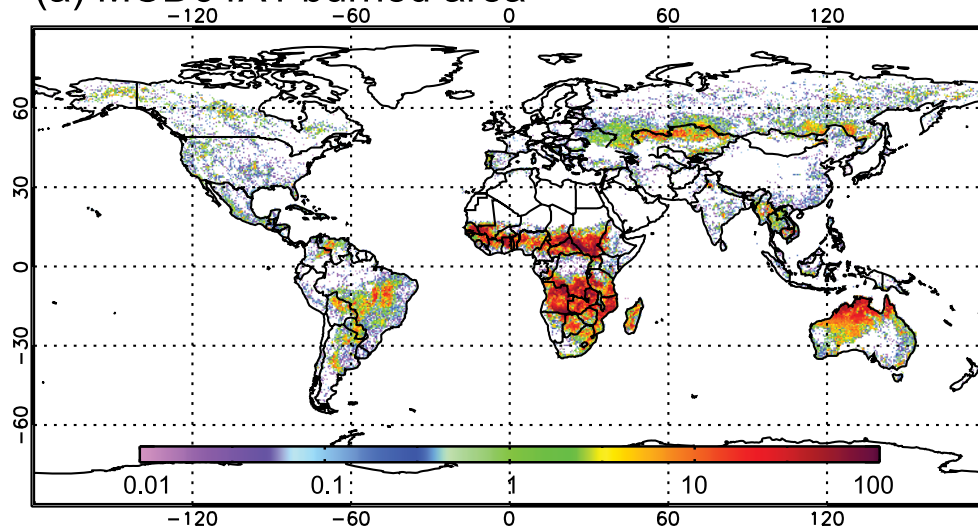
Small fires – the issue

Fires large enough to be detected as hotspots, but not large enough to trigger the burned area algorithm: "small fires"
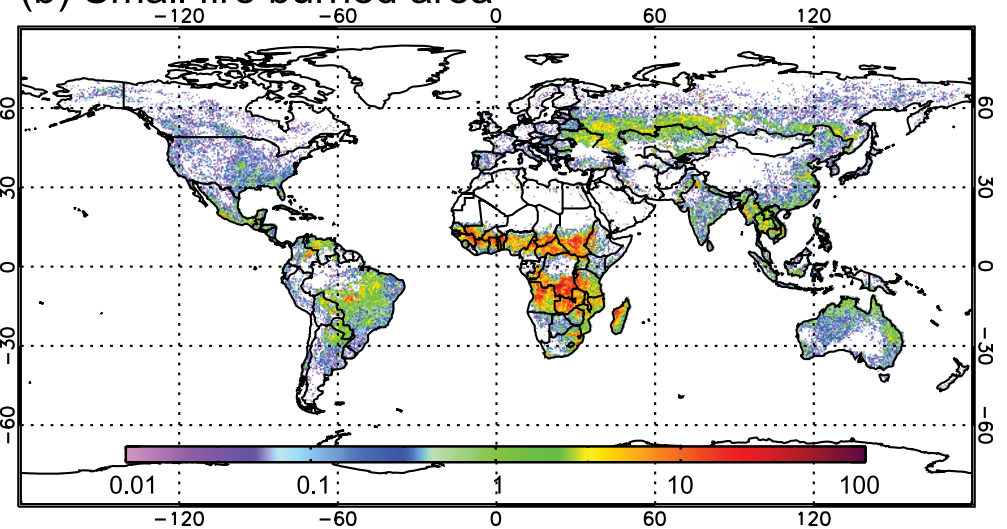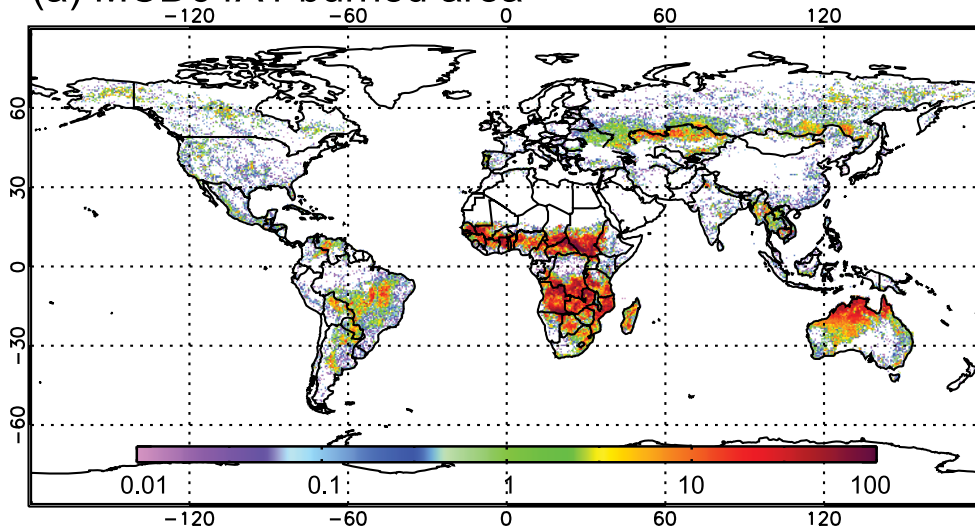
(a) MCD64A1 burned area
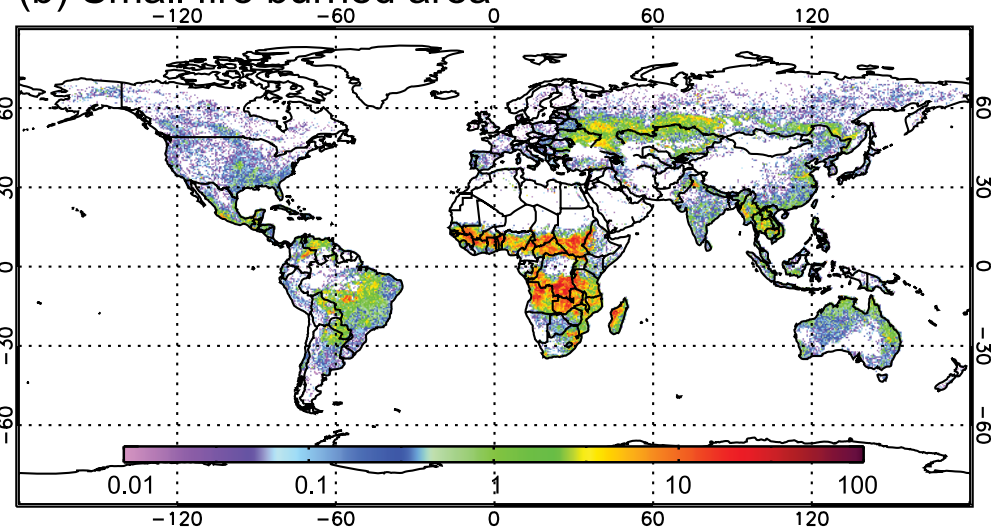
(a) MCD64A1 burned area

(b) Small fire burned area

- Global increase of 120 Mha/yr (1/3!) but with large uncertainty
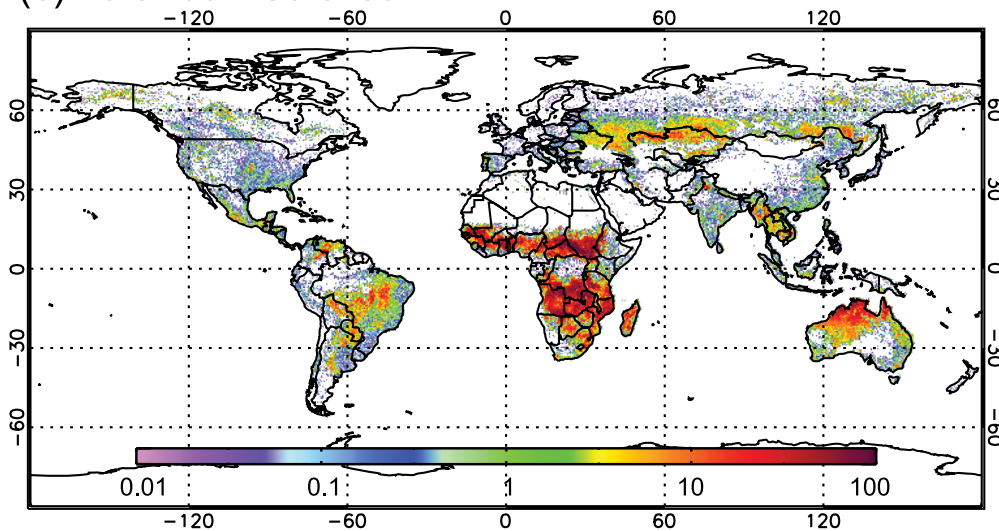- Regionally increase much larger

Randerson et al., 2012 (JGR-B)

(a) MCD64A1 burned area

(b) Small fire burned area

(c) Total burned area

- Global increase of 120 Mha/yr (1/3!) but with large uncertainty
- Regionally increase much larger

Randerson et al., 2012 (JGR-B)

(a) MCD64A1 burned area

(b) Small fire burned area

(c) Total burned area

(d) Small fire fraction of total burned area
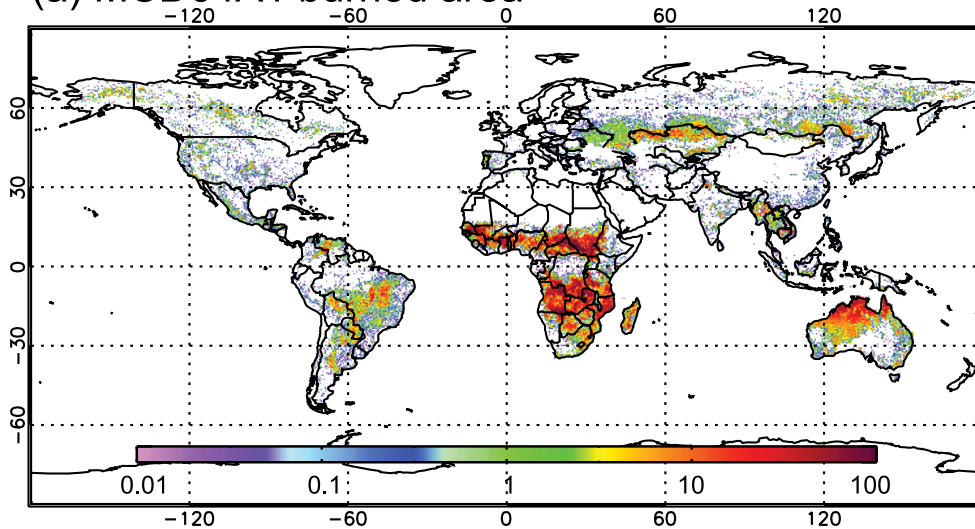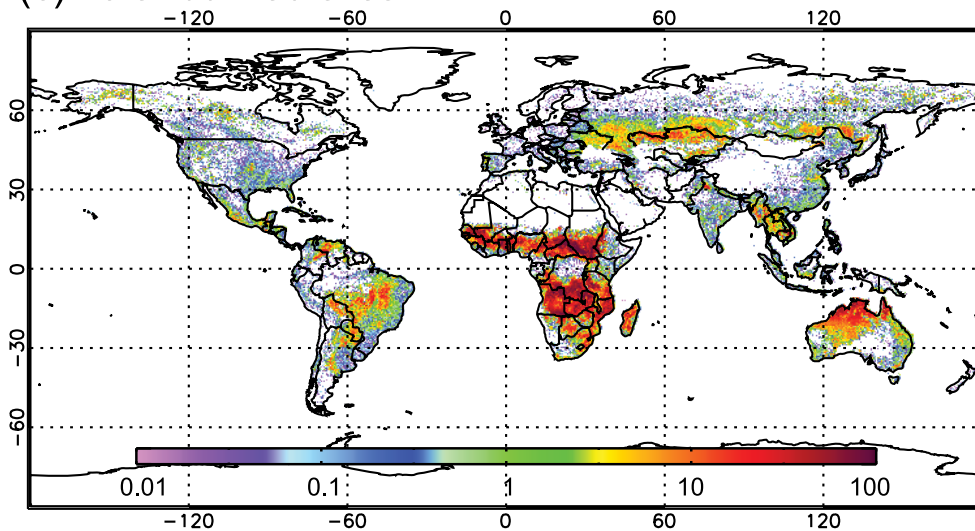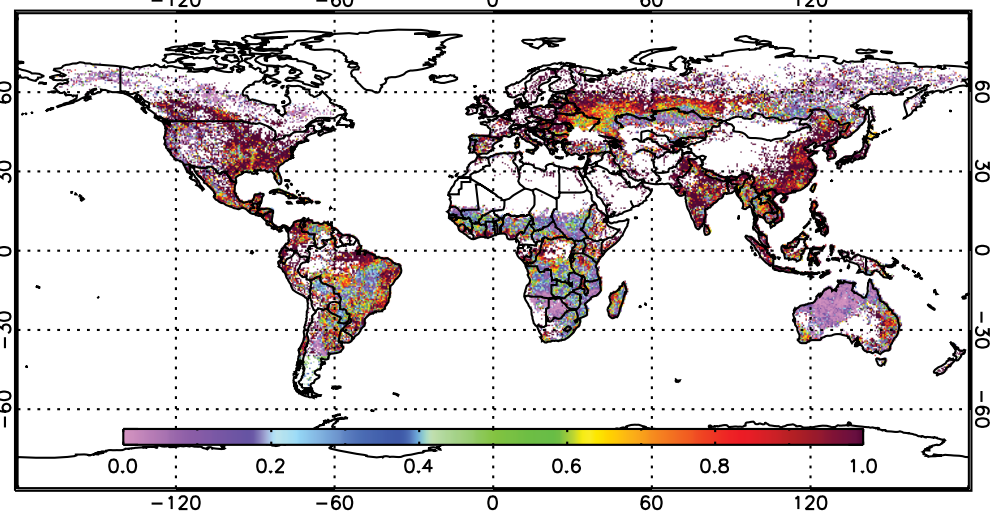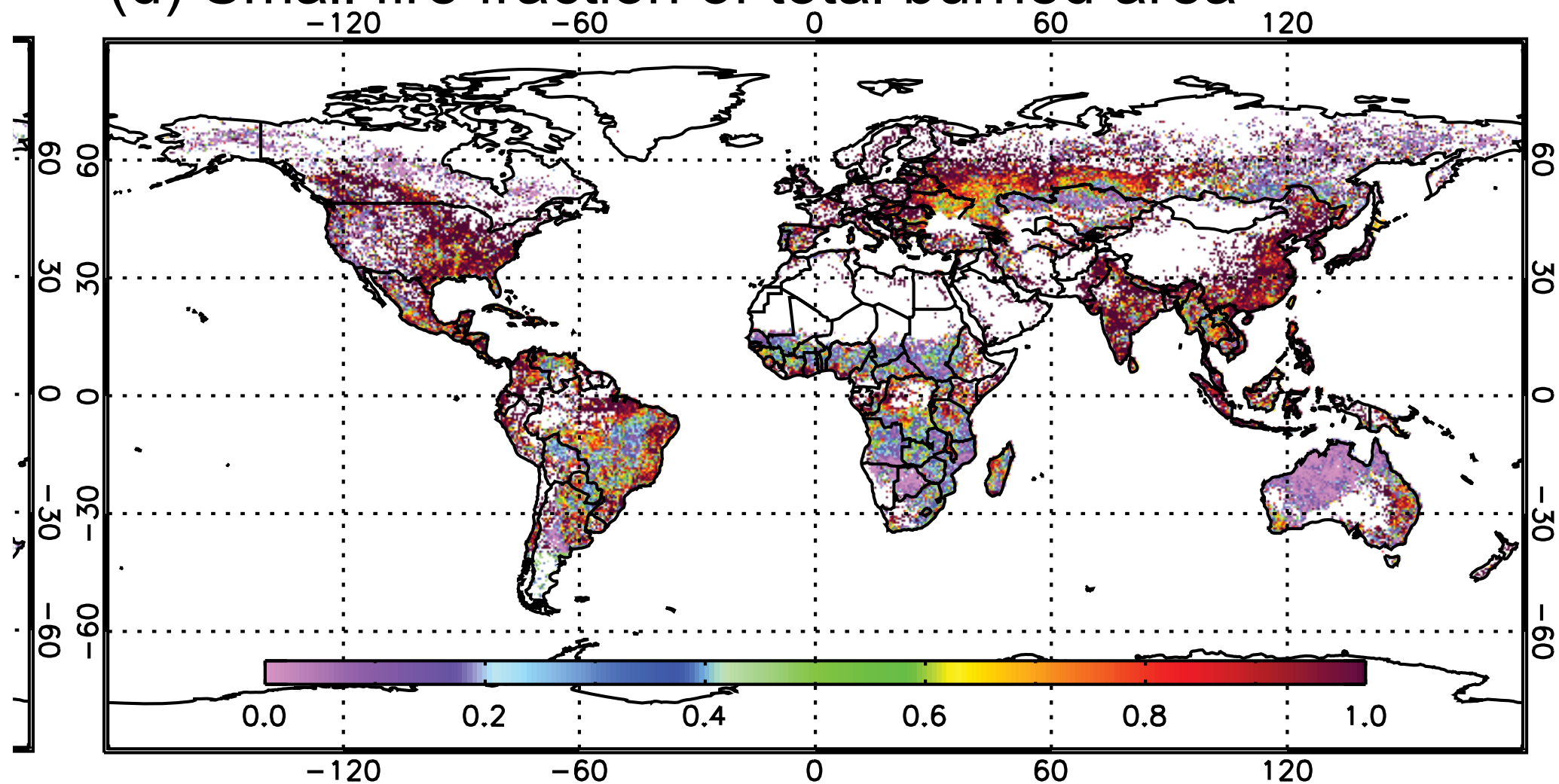
- Global increase of 120 Mha/yr (1/3!) but with large uncertainty
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Randerson et al., 2012 (JGR-B)

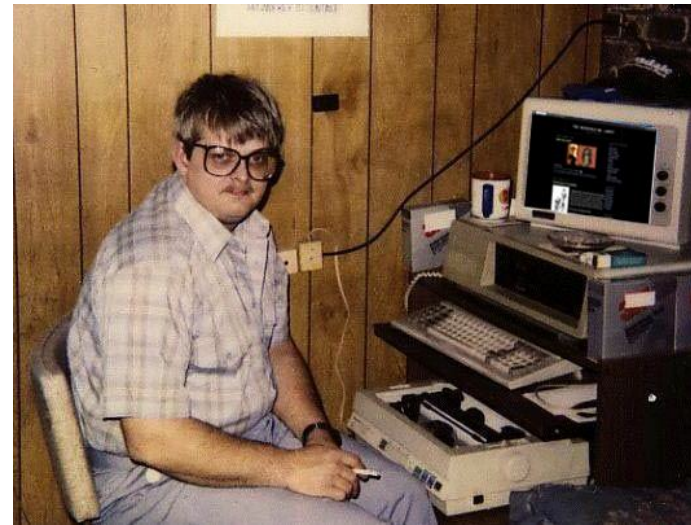(d) Small fire fraction of total burned area

"The clash of civilizations"

Remote sensing crowd

Modellers

No commission errors!

No bias!

Wrap-up

1. Continued improvements of emissions estimates

    1. Higher spatial resolution, moving towards native burned area resolution

    2. Better representation of fire processes to account for variability in emission factors and combustion completeness

2. Increasing amount of feedback from atmospheric community (more species!)

3. Small fire issue requires additional efforts from both remote sensing (range, validation) and modelling communities (validation)