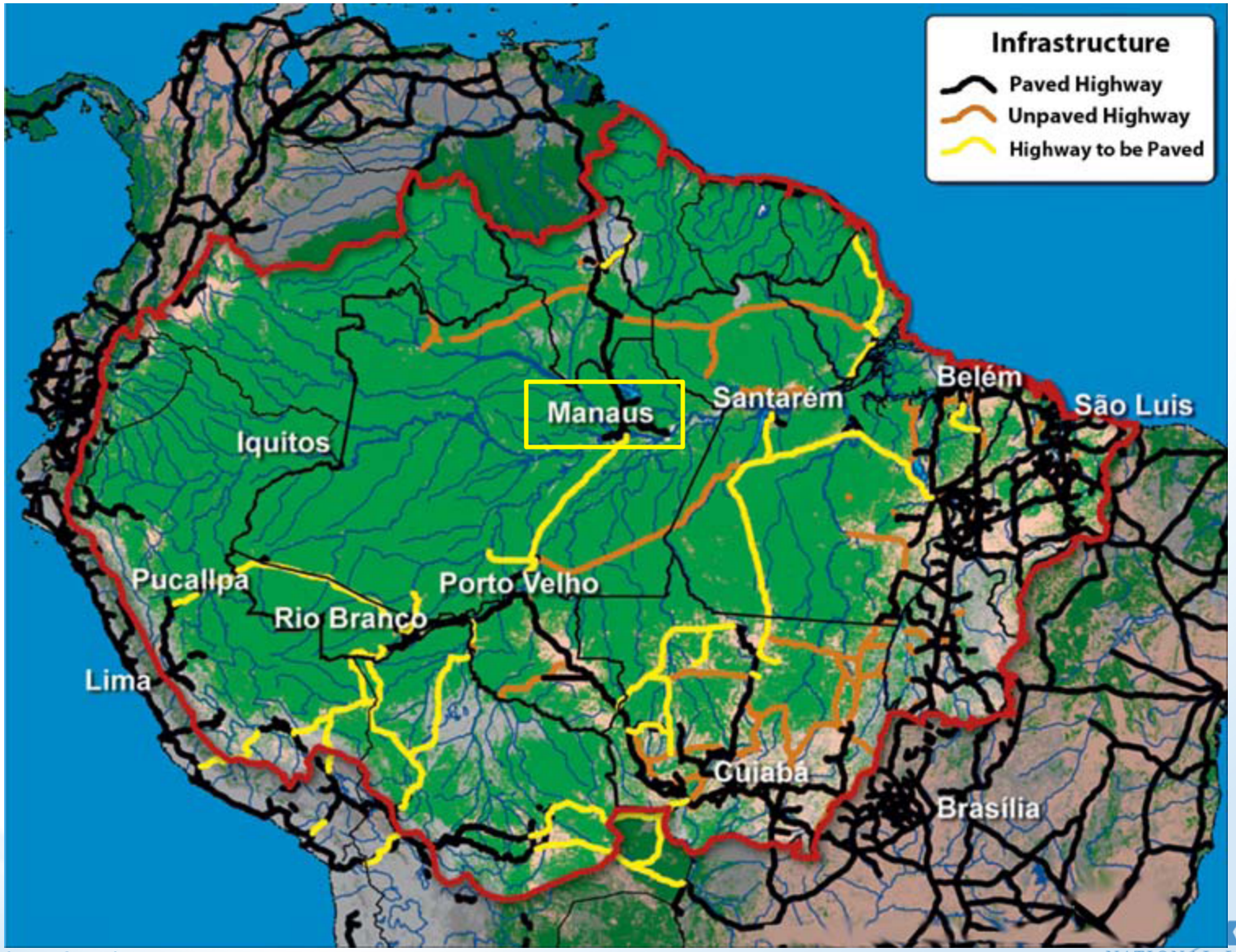
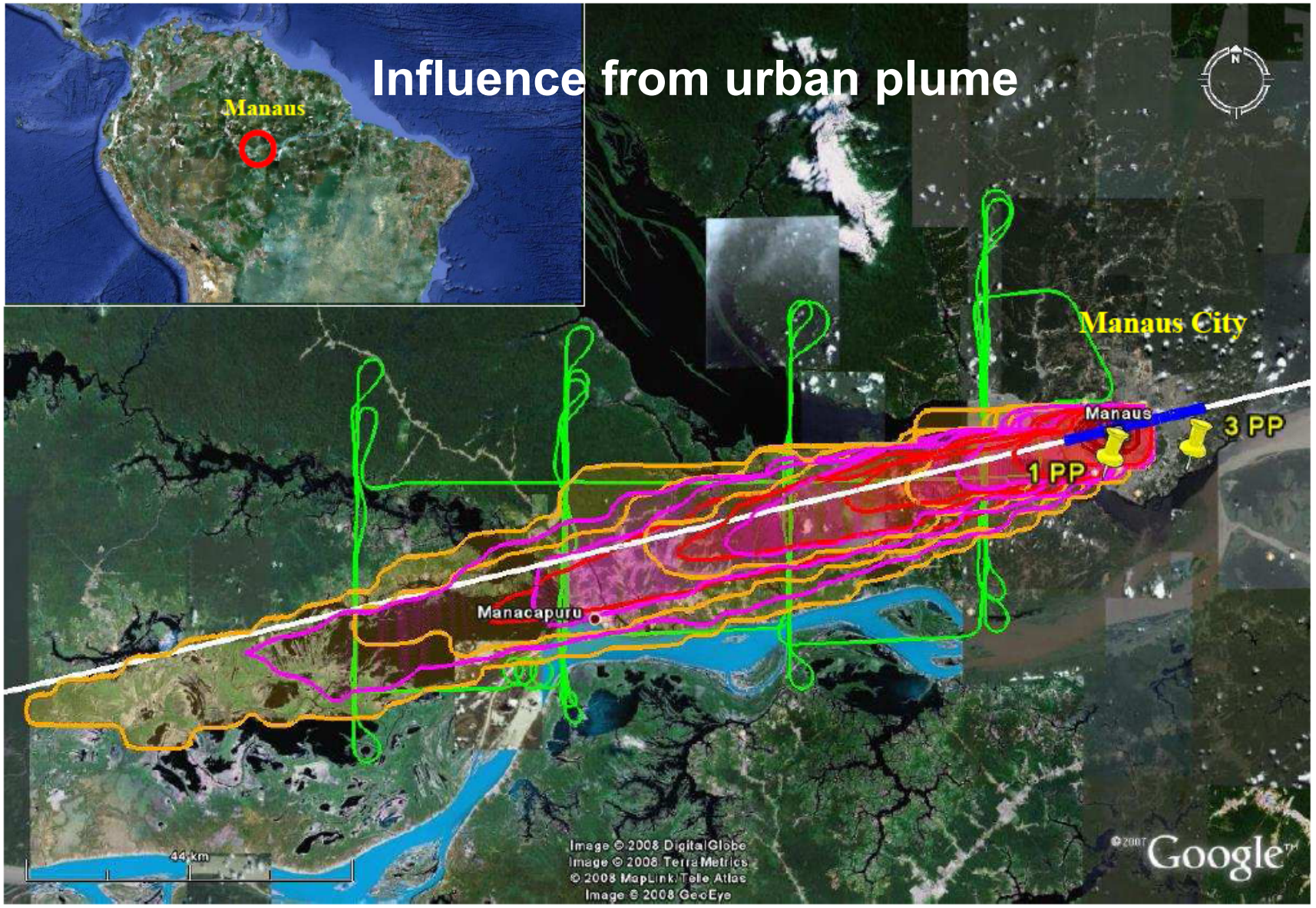
Green Ocean Amazon 2015 (GOAmazon2015)

PI: Scot Martin
With contributions from the
GOAmazon team

Location of the campaign



Influence from urban plume



Reference: Kuhn, U.; Ganzeveld, L.; Thielmann, A.; Dindorf, T.; Welling, M.; Sciare, J.; Roberts, G.; Meixner, F. X.; Kesselmeier, J.; Lelieveld, J.; Ciccioli, P.; Kolle, O.; Lloyd, J.; Trentmann, J.; Artaxo, P.; Andreae, M. O., "Impact of Manaus City on the Amazon Green Ocean atmosphere: Ozone production, precursor sensitivity, and aerosol load," *Atmos. Chem. Phys.* **2010**, *10*, 9251-9282.

Planned sites and sampling strategy

(−3.21328 ,	−60.5987)	DOE ARM ACRF	T3
(−3.16667 ,	−60.1)	TBD	T2
(−3.09722 ,	−59.9867)	INPA/UEA	T1
(−2.14663 ,	−59.005)	ATTO	T0
(−2.60908 ,	−60.2093)	K34	K34
(−2.59458 ,	−60.2093)	AMAZE08	TT34

- 111 by 60.8 km represented by this box.
- Wind speeds at 1 km altitude are typically 10 to 30 kph.
- T2→T3 transit time of 2 to 6 hr.

Planned sites and sampling strategy

Contrast:

- The T3 site is situated such that it experiences the extremes of (1) a pristine atmosphere (2) heavy pollution and the interaction of that pollution with the natural environment.

Quasi-lagrangian sampling:

- When wind is from east-northeast, the evolution of aerosol will be characterized as air parcels are successively intercepted by T1, T2, and T3 sites.

Dates of GoAmazon2015

DOE ARM Mobile Facility Operations (T3 ground site)

- 1 January until 31 December 2015

ARM Aerial Facility Operations (aircraft)

- 40 flight days in period of 15 February until 31 March 2015 (Wet season)
- 40 flight days in period of 1 September until 15 October 2015 (Dry season)

NCAR facilities and timeline

Led by Courtney Schumacher and Susan van den Heever

<u>S-Pol radar</u>

Doppler, polarimetric measurements at

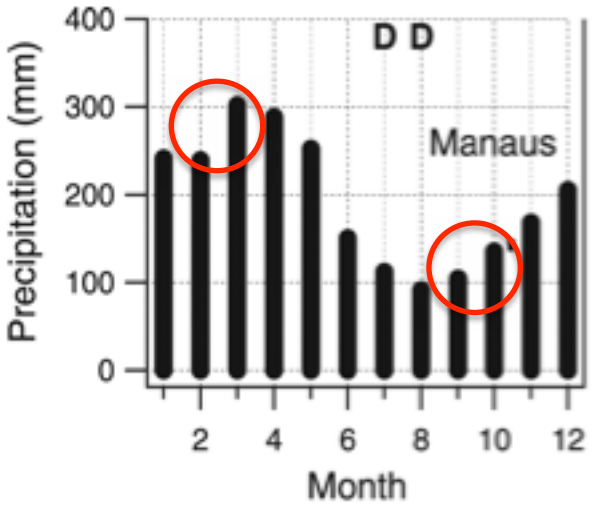
- S-band (10 cm, non-attenuating) and
- K_a-band (0.8 cm, heavily attenuating)

<u>2 Integrated Sounding Systems (ISS)</u>

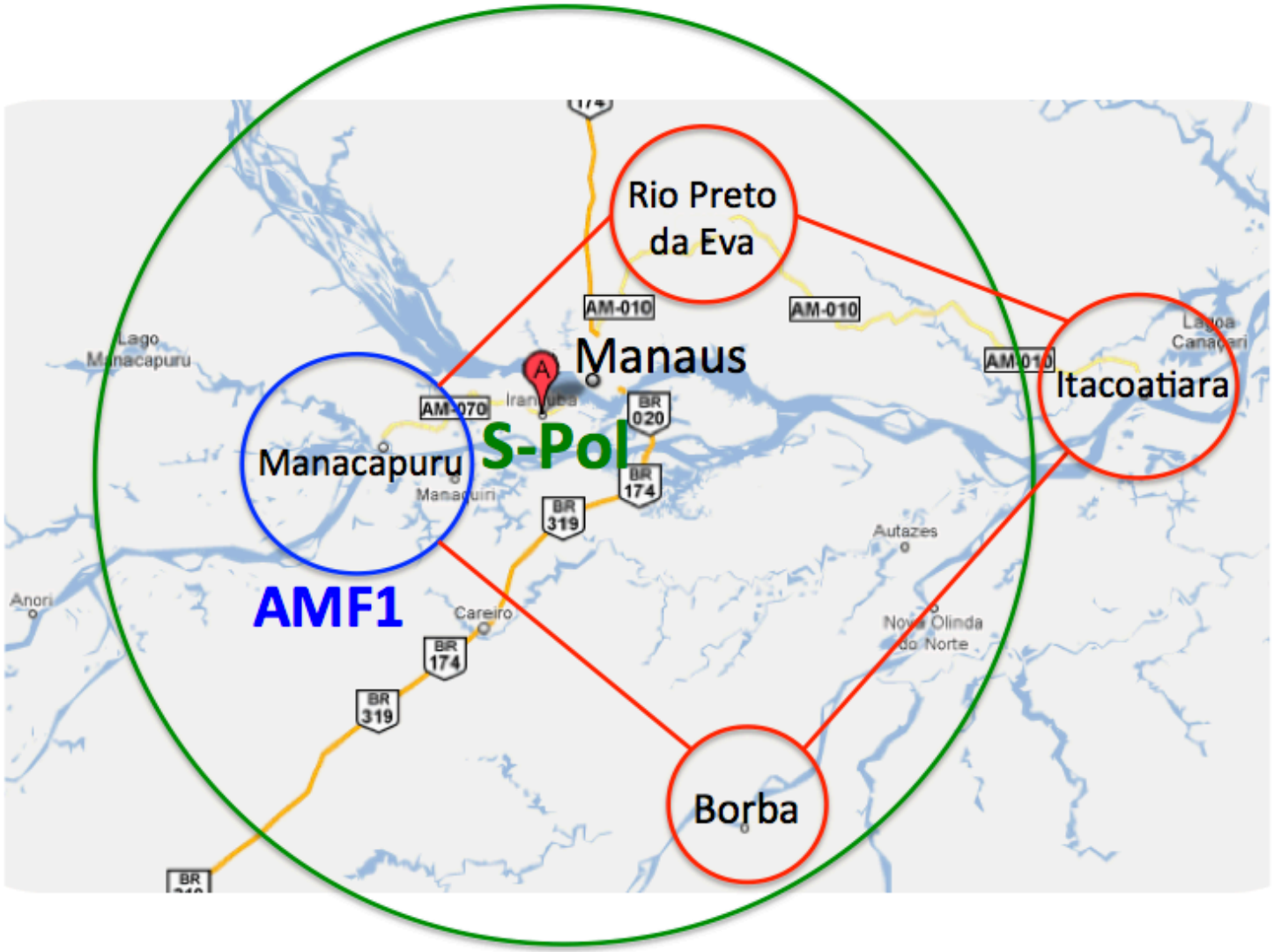
- GAUS radiosonde sounding system
  - 6/day launches
- Wind profiler/RASS
- Surface meteorology

<u>Proposed deployment</u>

- IOP1: Feb/Mar (wet season)
- IOP2: Sep/Oct (transition season)
- Coincides with the G1 deployment



Potential S-Pol and sounding array sites



Comprehensive measurements (one year) of aerosol, cloud, radiation and meteorology, under both pristine and polluted conditions

- ✓ Aerosol life cycle
  - Interaction of Manaus pollution plume with biogenic emissions of volatile organic compounds, especially impact on aerosol formation and evolution
  - Influence of Manaus pollution plume and biomass burning on aerosol microphysical, optical, CCN, and IN properties
- ✓ Convective life cycle
  - Diurnal transition of convection from shallow to deep and the impact of aerosols
  - Evolution of convective intensity from severe storms in dry season to moderate storms in wet season and role of vegetation, aerosols and atmospheric conditions on wet season onset
  - Atmospheric teleconnections between Amazonian convection and the Atlantic with relevance to global model biases in both regions