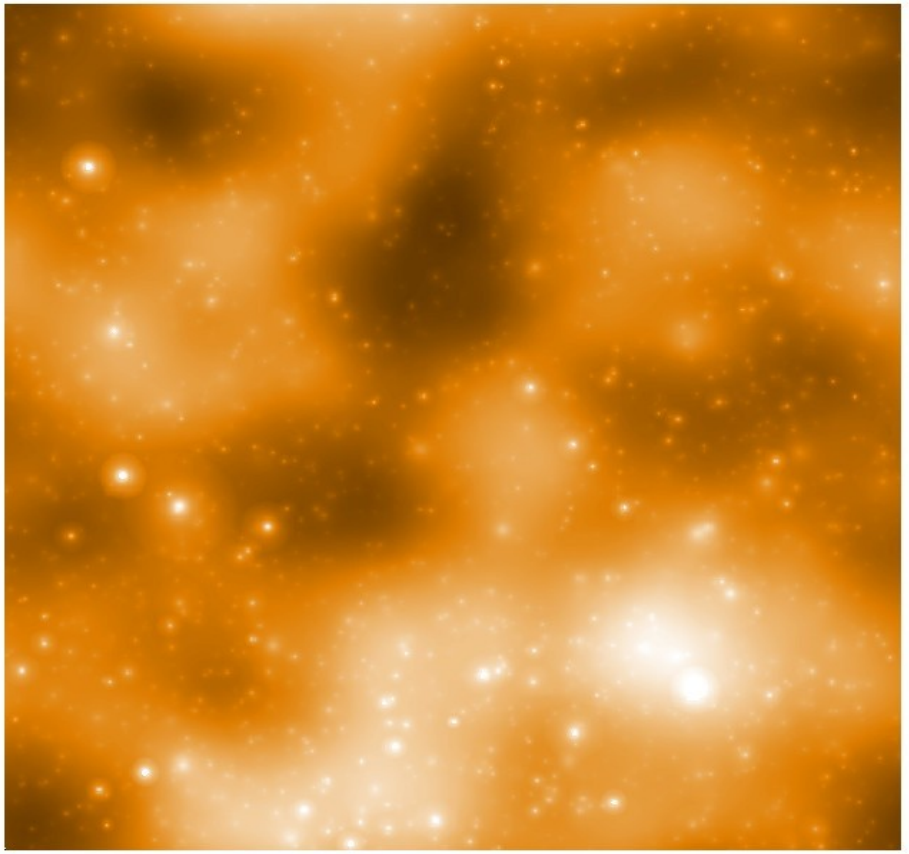
End-to-end Simulations of OCRA

- Requires:
  - Virtual Sky model
  - Atmosphere simulator
  - Receiver simulator
  - Telescope simulator
  - Data reduction software

Virtual Sky Model



- CMB
- SZ effect
- Point sources

See Peel, Battye & Kay (2009) for details

Atmospheric simulator

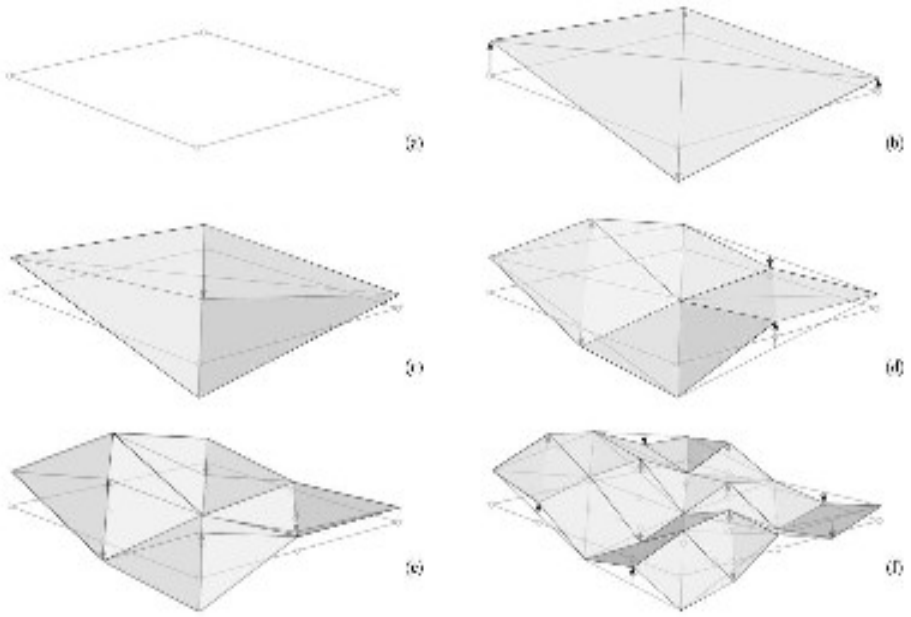
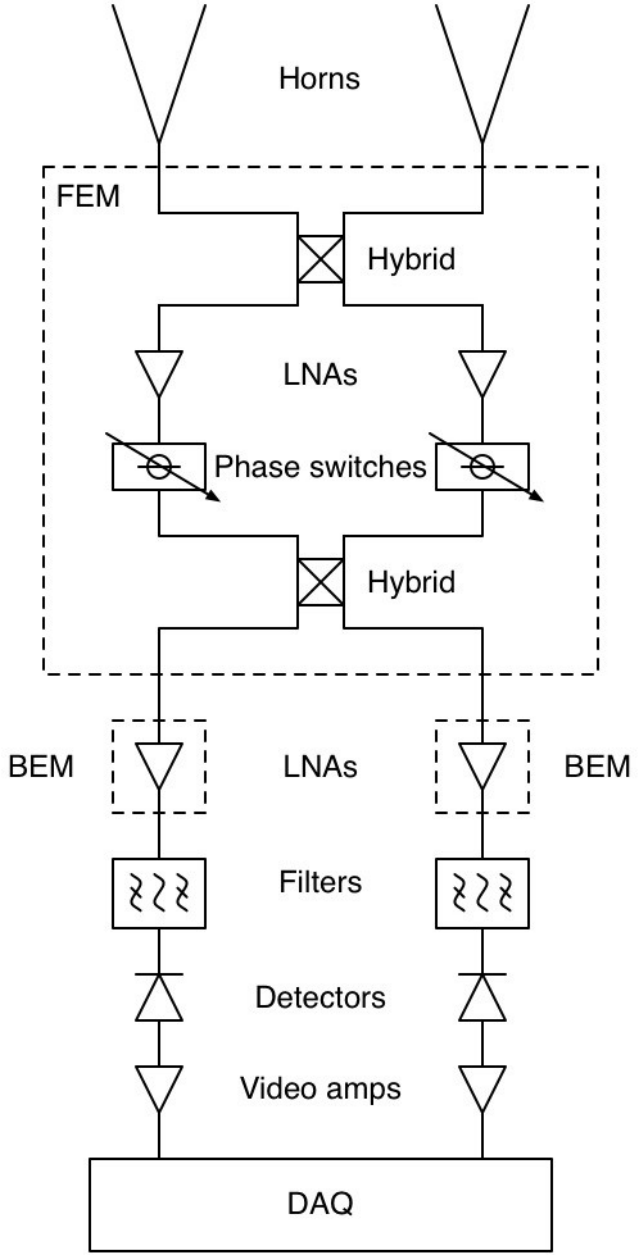


Figure 5.8: This figure illustrates a method that generates a two dimensional fractal. The values at each point (x,y) will be used later as optical depths. For a full description of the method see the text.

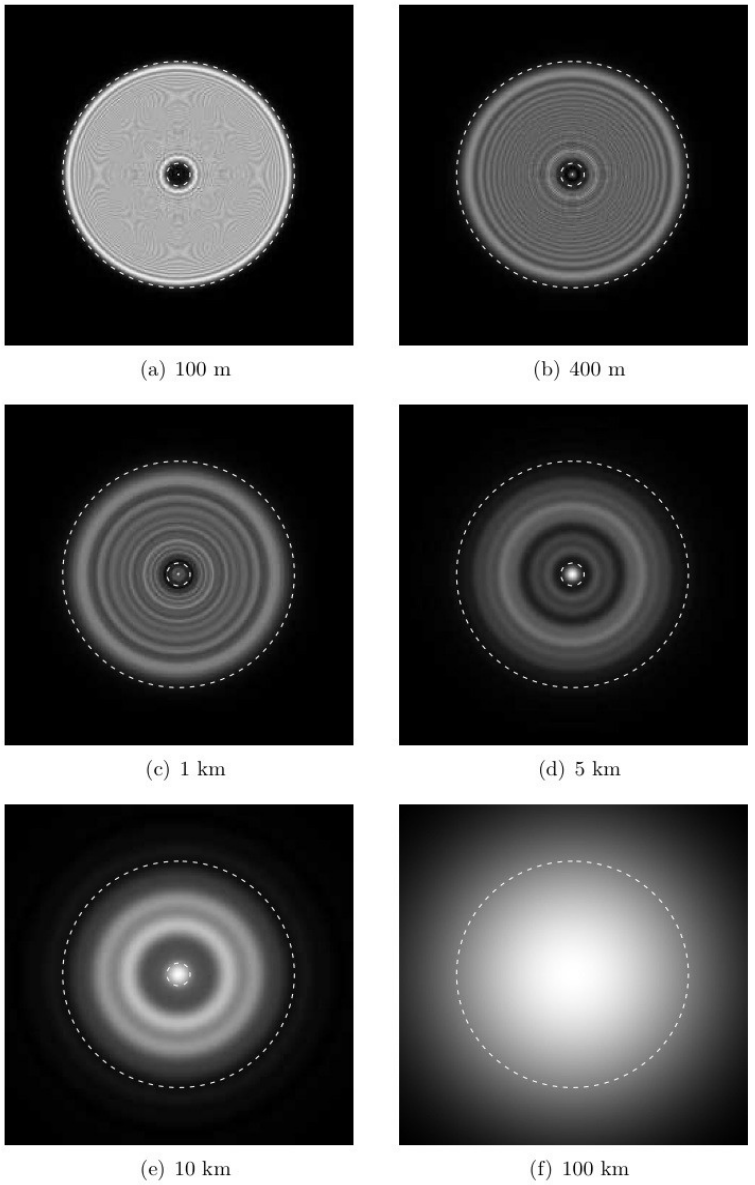
- Simulated in 'real space'
- Fractal atmosphere layer
- Calculation of beam + convolution
- Written by S. Lowe (2007) [PhD thesis]

Receiver simulator



- C++ class-based, modular code
- Simulate OCRA-like receiver in time domain
- Output same data format as actual receiver
- Written by S. Lowe (2007) [PhD thesis]

Telescope simulator



(a) 100 m (b) 400 m

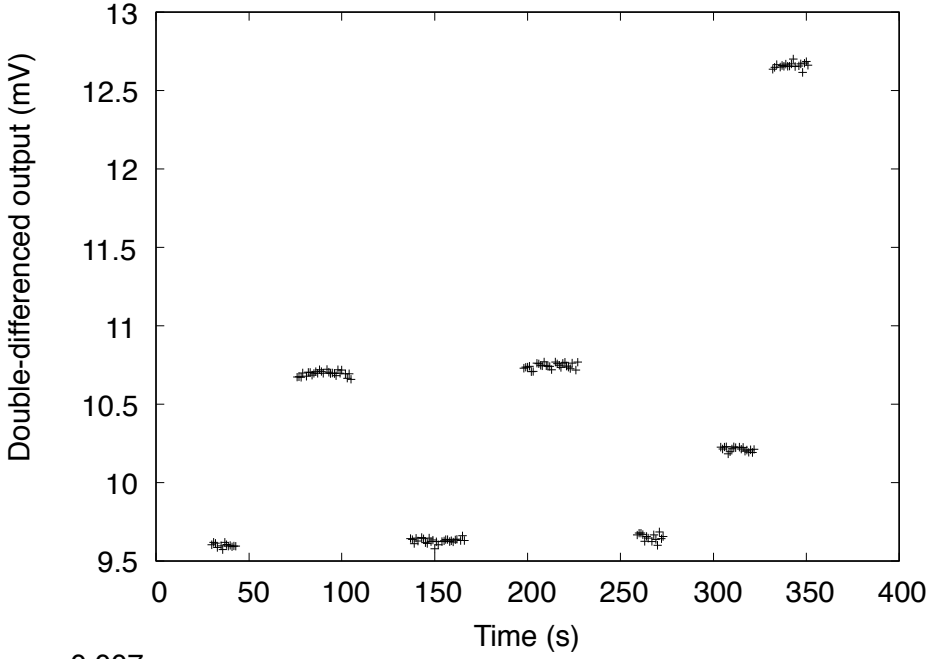
(c) 1 km (d) 5 km

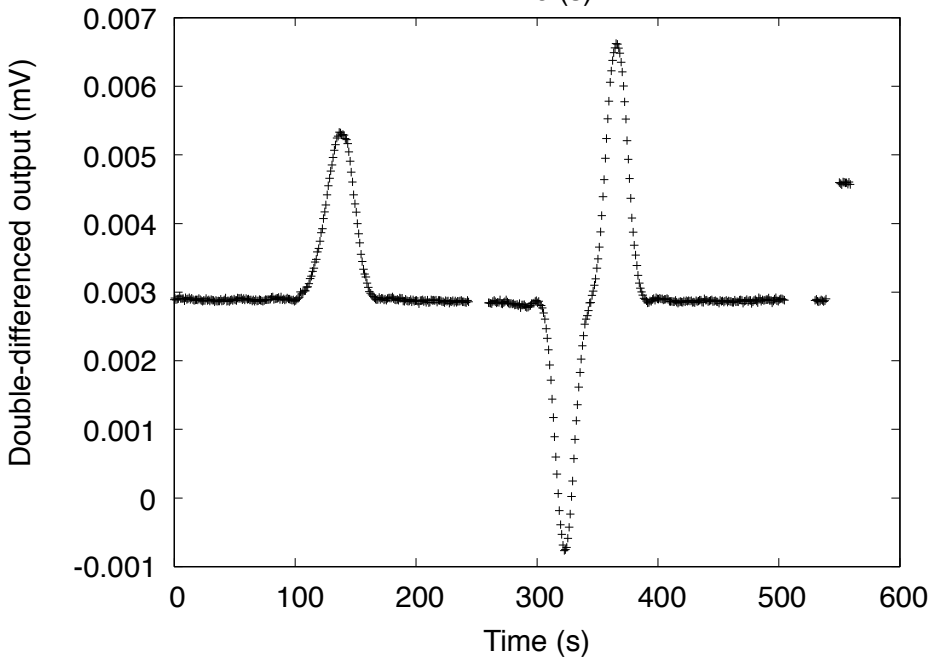
(e) 10 km (f) 100 km

- Full treatment of beam (for conv. with atmosphere)
- Otherwise, v. simple

Written by S. Lowe (2007) [PhD thesis]

Data reduction





- Bespoke for OCRA
- Automated pipeline
- Currently just qscans, on-offs – mapping coming
- Used for both observations + simulations
- Peel (2009?) [PhD thesis]