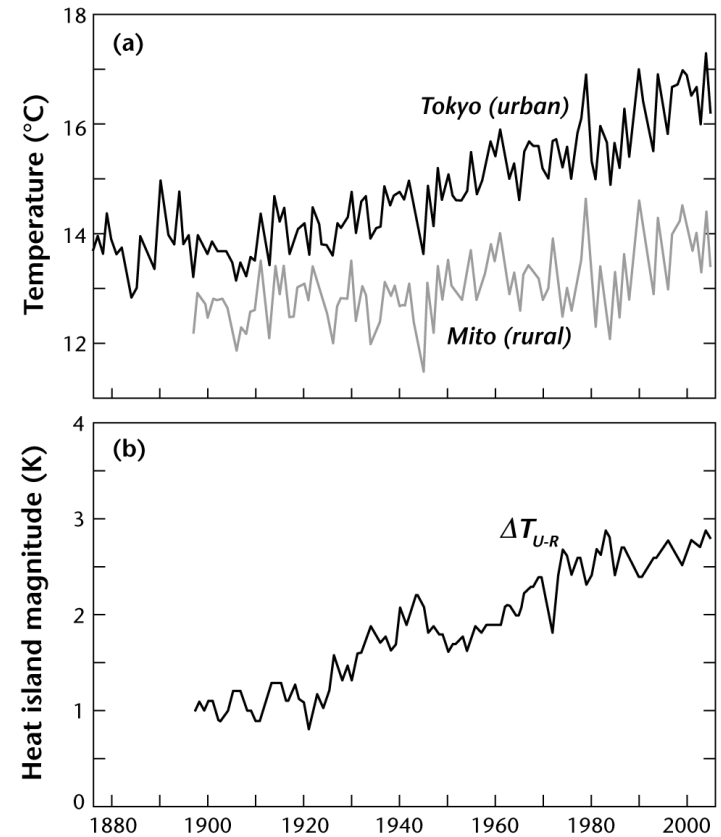


# Are Climate Models Ready for the Urban Scale?

- Defining ‘urban’ – also requires defining ‘rural’; e.g. LCZ (not just UCZ) of Stewart and Oke (2012).
- Characterization of both urban and rural conditions climates (e.g. through routine measurements) is important. Identified in NAS/BASC Urban Meteorology report.
- Rural difficulties in modeling also affect identification of urban climates (Chen et al. 2012)



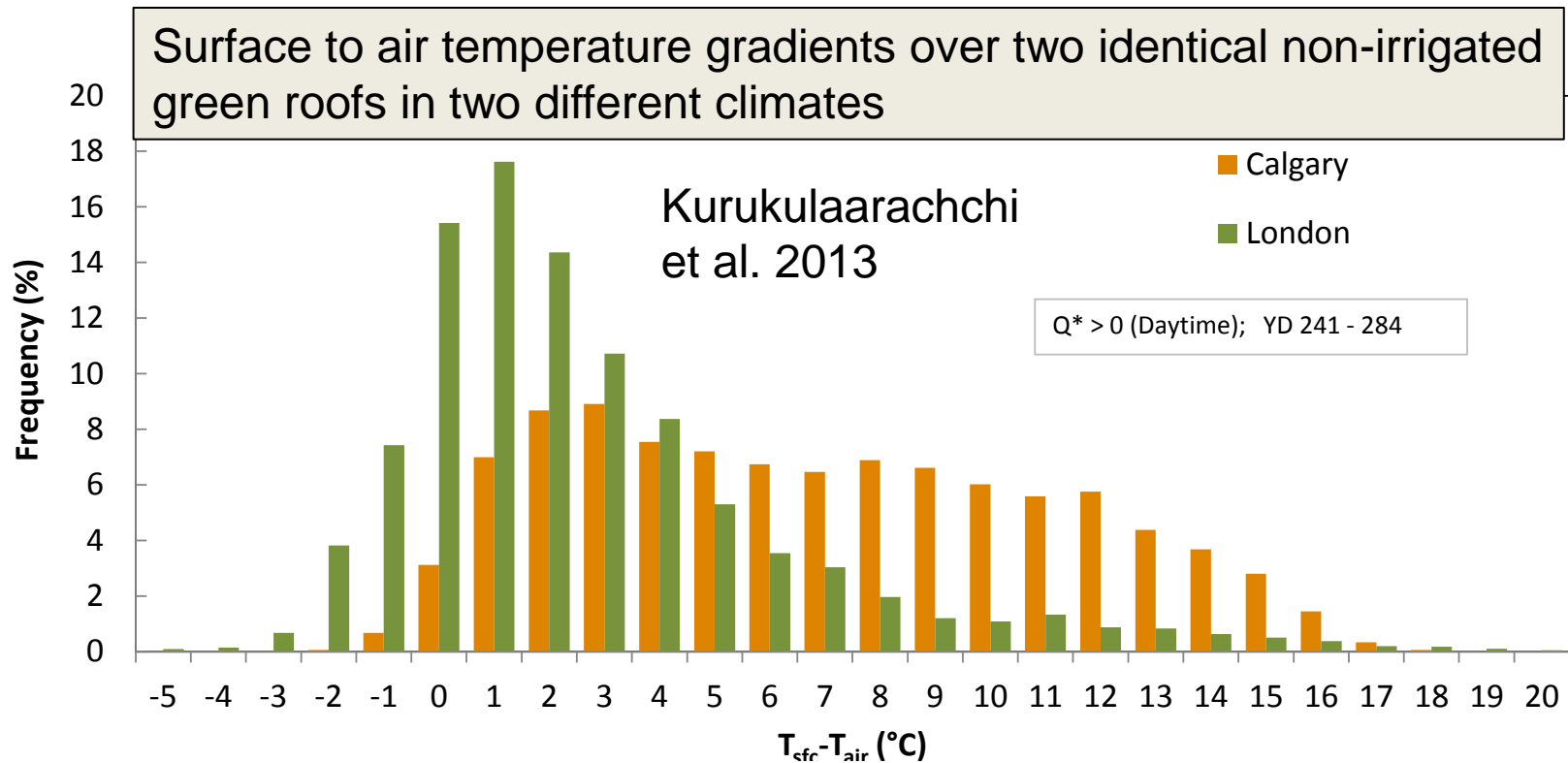
Oke et al. forthcoming from  
Kataoka *et al.*, (2009)

# ***Are Climate Models Ready for the Urban Scale?***

- What mitigation/adaptation measures can models handle well vs what measures might be important that are not well incorporated?
  - Urban vegetation e.g. Krayenhoff et al. 2014 BLM
  - Building scale energy generation/intelligent facades etc. e.g. Masson et 2014 “Solar panels reduce both global warming and urban heat island” *Frontiers in Env. Sci.*
  - Hydrology

# Are Climate Models Ready for the Urban Scale?

- Model databases: do we know / are we correctly applying surface characteristics?



- Moisture influence of green roofs – see Li et al. 2014 ERL

# ***Are Climate Models Ready for the Urban Scale?***

- Modeling for beyond-the-building scale.
  - Neighbourhood design
  - Urban design/planning
  - Incorporation of broader environmental assessment of cities, e.g.
    - Masson et al. 2013 “Grand Paris”: regional landscape change to adapt city to climate warming. *Climatic Change*
    - Hallegatte et al. 2013 VURCA PROJECT: Cities vulnerability to future heat waves & adaptation strategie
- Audience identification

# ***Additional Readings***

- Grimmond et al. 2010 Climate and More Sustainable Cities: Climate Information for Improved Planning and Management of Cities (Producers/Capabilities Perspective) *Procedia Environmental Sciences*
- Mills et al. 2010 Climate Information for Improved Planning and Management of Mega Cities (Needs Perspective), *Procedia Environmental Sciences*
- BASC/NAS 2012: Urban Meteorology: Forecasting, Monitoring, and Meeting Users' Needs
- Ching 2013 A perspective on urban canopy layer modeling for weather, climate and air quality applications. *Urban Climate*
- Chen et al. 2012 Research Priorities in Observing and Modeling Urban Weather and Climate *BAMS*
- Grimmond et al. Model intercomparison papers: JAMC, IJC, BLM
- Kuttler 2013 Climate Change on the Urban Scale – Effects and Counter-Measures in Central Europe <http://dx.doi.org/10.5772/50867>

# ***ICUC-9 & 12<sup>th</sup> Symposium on the Urban Environment***

- Toulouse, France, 20-24 July 2015
- In the year of the 21<sup>st</sup> session of the Conference of the Parties on Climate Change Policy & Practice, the focus of ICUC9 will be put on the recent scientific activities on Climate change mitigation & adaptation in urban environments, as well as on the transfer to institutional stakeholders and urban planners to include urban climate considerations in their practices.



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