Science communication with analysis by stakeholder themselves: Impact of Visualization / Figures

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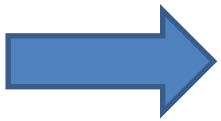
Science communication

Communication between scientists and stakeholders

- Not a major topic in science community in Japan, so far.
- Most of scientists do not care ex. the BSE problem, L'Aquila earthquake as the scientific problems.
  - They know the topics as a social problem.
- Recently after "The Great East Japan Earthquake in 2011" and its related "NCP accident", stakeholders concern that the scientists statements are true or not. The trust for scientists is gone.

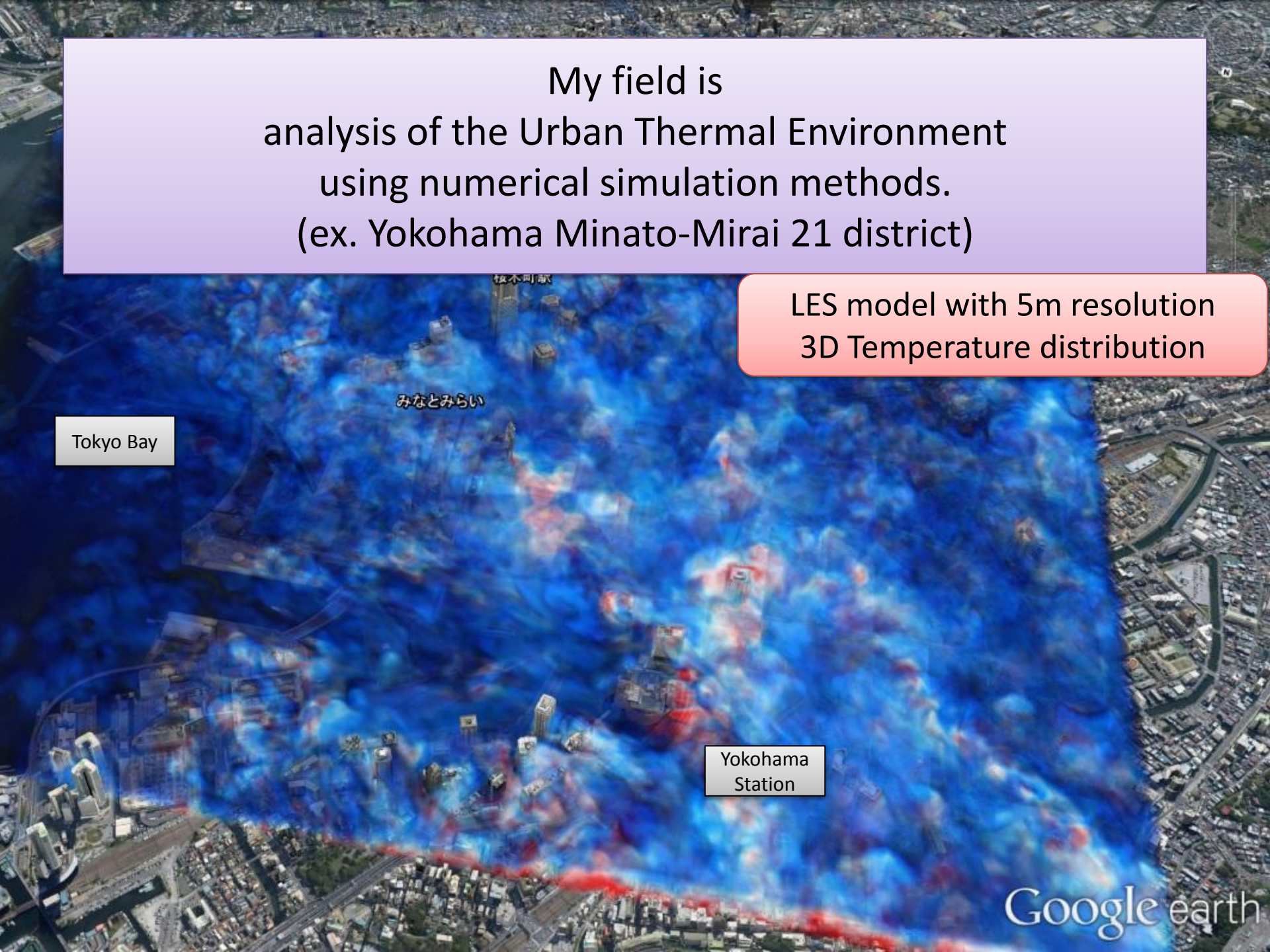


The scientists must kick into actions to recover the scientific trust.

- Here, we discuss the action in the view point of "presentation or visualization" and introduce applications.

My field is
analysis of the Urban Thermal Environment
using numerical simulation methods.
(ex. Yokohama Minato-Mirai 21 district)

LES model with 5m resolution
3D Temperature distribution



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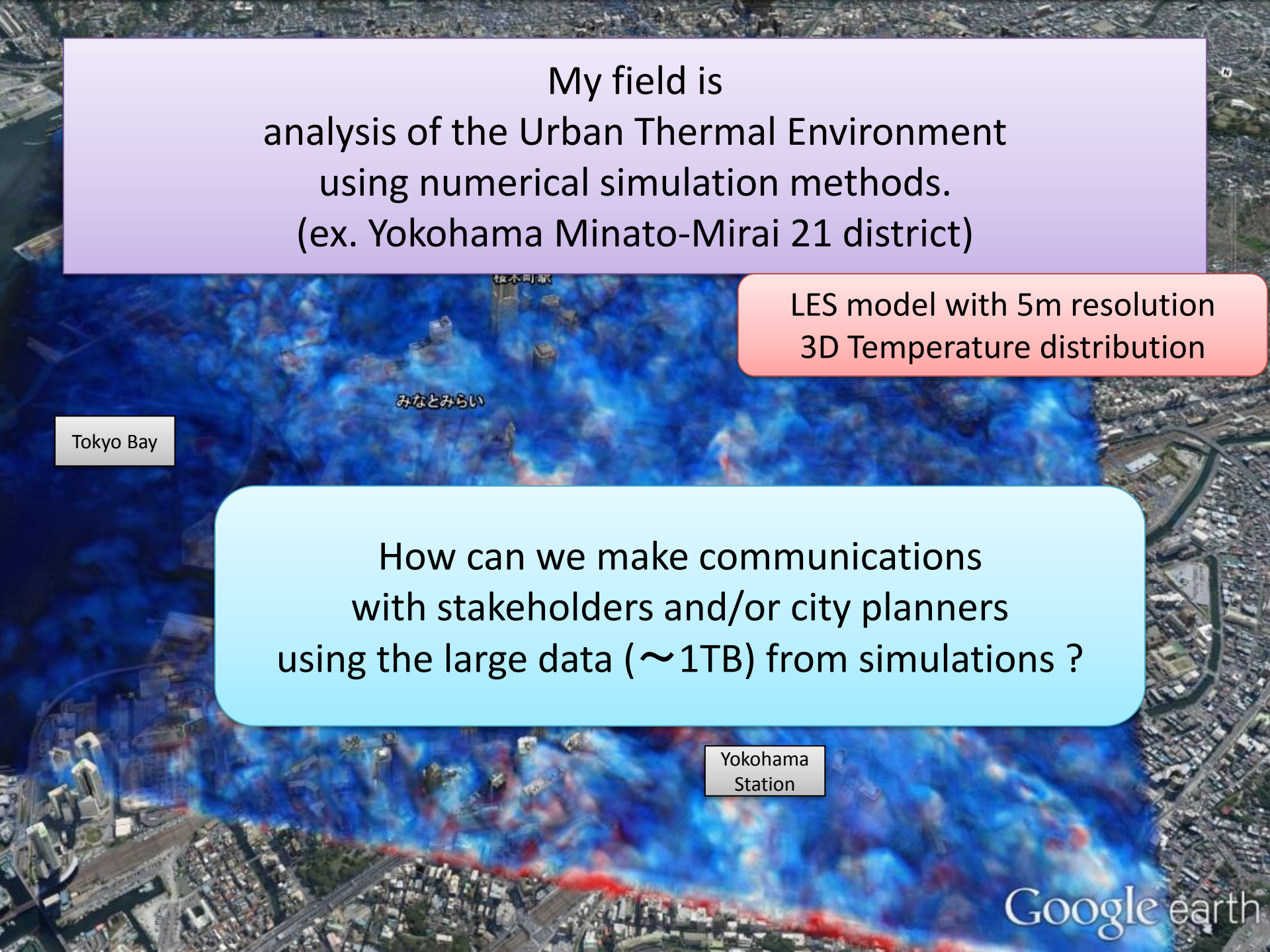
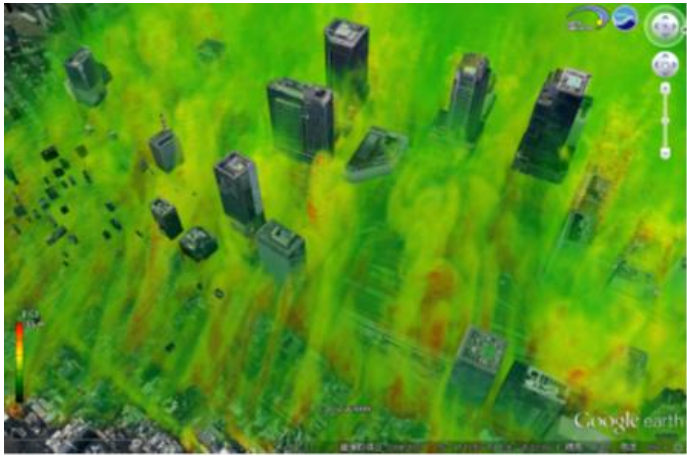


How can we make communications
with stakeholders and/or city planners
using the large data (～1TB) from simulations ?

Two groups in communication

- Presenters
  - From full data set (knowledge), the presenters extract the data (topics) with some special *emphasis.*
  - There exists *bias*.



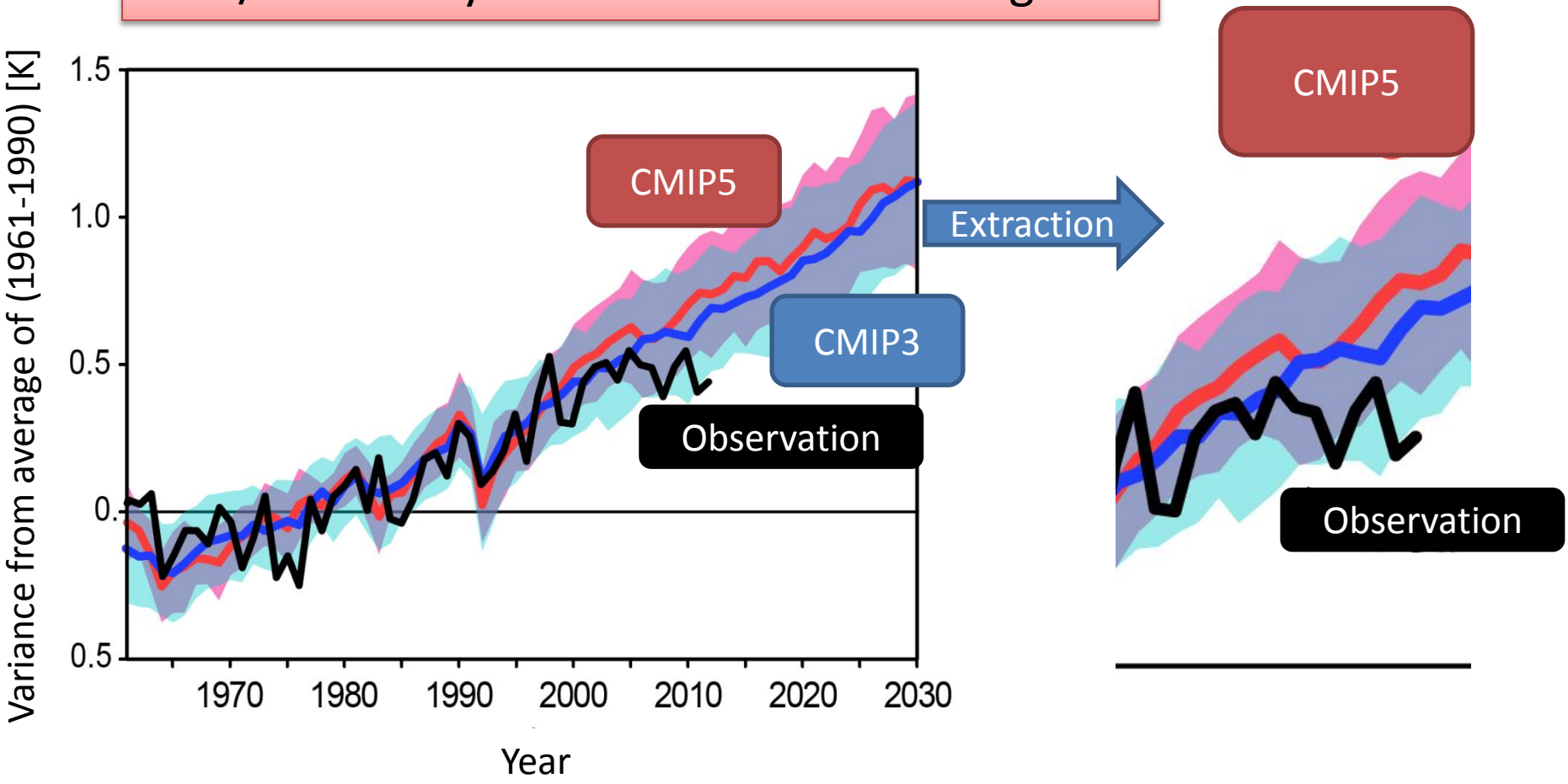
- Receivers
  - They can see the extracted data only.
  - They would doubt that *inconvenient data are not opened*.

ex. Extraction
Here seems to be
a nature conservation area.

illegal dumping site

Global warming seems to be stopped, in the extracted figure.

How/What do you think the extracted figure?



Ref. : The Atmosphere and Ocean Research Institute (AORI)

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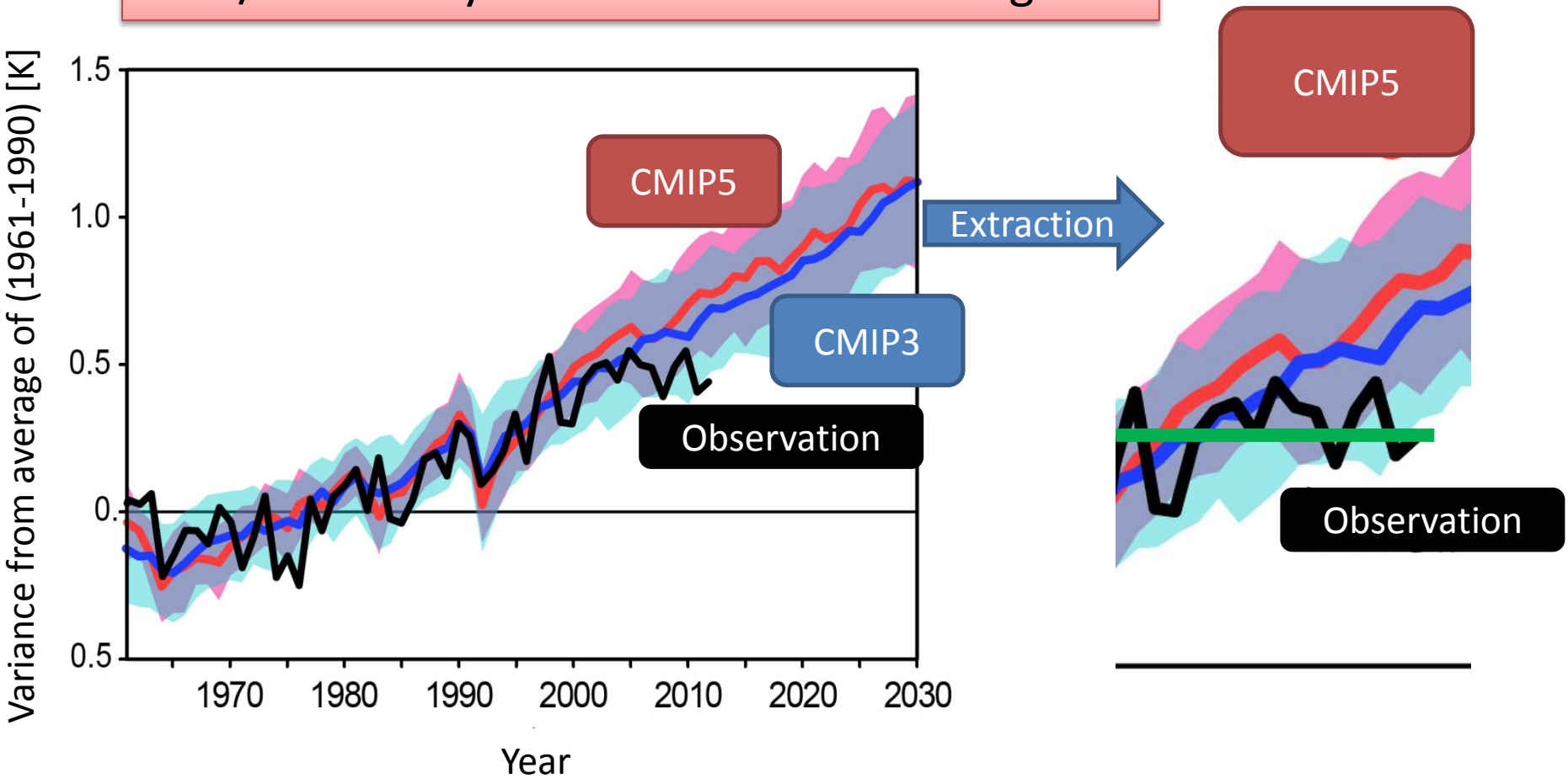

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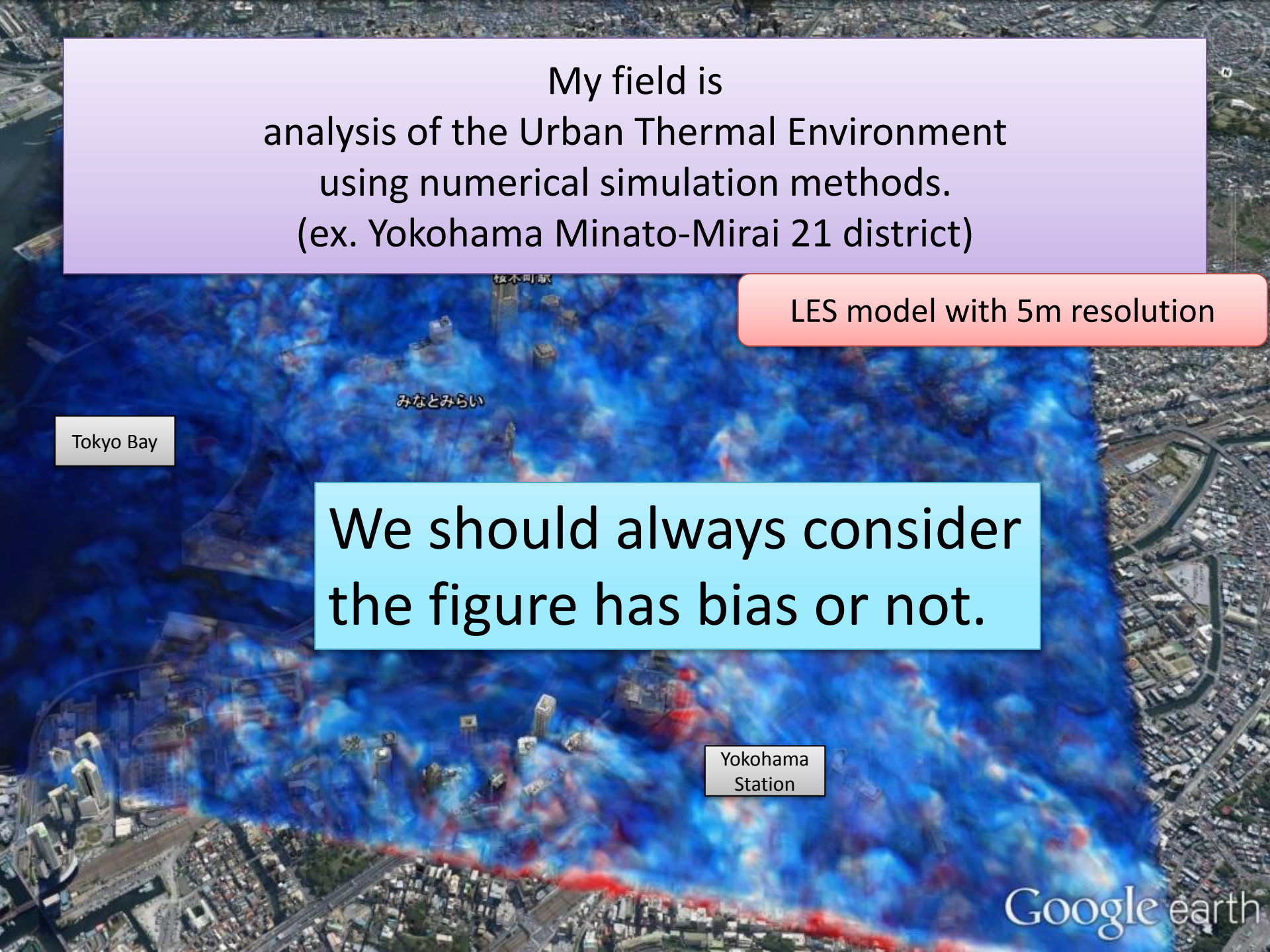


We should always consider the figure has bias or not.

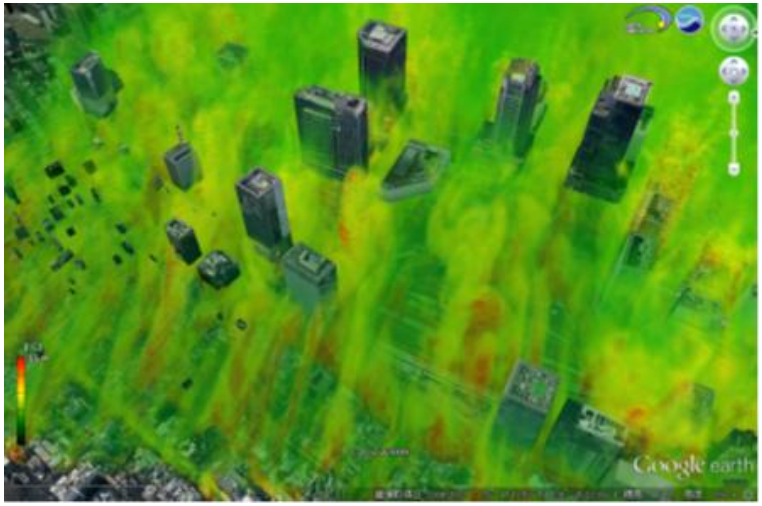
Can we exclude the intention or bias ?

- Generally, it is impossible.
  - We can only reduce the ”bias”, “subjectivity” and so on.
- To reduce them, the receiver becomes the presenter.
  - The receiver can see the extraction processes.
- We introduce two applications. By using the applications,
  - The stakeholder becomes an analyst / a city planner

We have developed easy tool for visualization in order to become a analyst.

- Transformation from “Binary Data” to “KML”
  - “google earth” is well known tool.
  - View points and Time steps can be interactively changed.
  - Data size is reduced (TB-> MB).

If only one shot is provided,
the receiver doubts that the presenter
do not show inconvenient data.



To be a City / Town Planner

WEB application

industrial rural dense residential

http://www.jamstec.go.jp/j/kids/cool_city/

Summary

to recover the trust for science/scientist in stakeholder's mind

- Who is/are responsible for the science?
  - Both scientists and stakeholders
  - Scientists should pay more attentions to SC.
- We should realize the bias in Visualization.
  - Scientists should pay more attentions to figures.
- Because, figures are the contact point between stakeholders and scientists.
- We've introduced two useful applications to reduce the bias and subjectivity.