

Interactive comment on “Anthropogenic effects on subsurface temperature in Bangkok” by M. Taniguchi

Anonymous Referee #2

Received and published: 28 September 2006

Referee Comments on CPD-2006-0043

1. General comments In this paper, the magnitude of surface warming was estimated based on the subsurface temperatures (actually groundwater temperatures) in Bangkok and extent of thermal effect due to urbanization (heat island effect) was also calculated. Theme of this paper is of value for international readership and rationale of the paper is clear and sound. But the authors should answer some important questions and issues (see specific comments) and they should improve English of the paper prior to final publication.

2. Specific comments 1) Page 834, lines 8-10: The author said “the logged boreholes are cased and thus the water temperatures in boreholes represent the temperature of

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper

groundwater surrounding the boreholes.” The referee does not understand it. Because the boreholes were cased (nearly fully or partly??), the water temperatures cannot represent those of ambient groundwaters. At least to the depth of the first open interval (top of well screen or top of uncased interval), the groundwaters in the boreholes would be stagnant. Thus the water temperatures within this interval may be significantly and directly affected by the outdoor air temperature. To clearly address this problem, the author should add some more explanations on borehole completions (well depth, casing interval, screen interval, groundwater use or not use for any purpose) and hydrogeologic conditions (water levels, geology, hydraulic conductivity).

2) Page 835, lines 26-29: What is your reasoning in selecting 0.1oC, not 0.2 oC, 0.3 oC or else?

3) Page 836, lines 22-23: The referee also thinks that the population density may not represent the additional urban heat. Is there any study result supporting your statement that the change in population can be used as a first order factor of the heat island effect? Is the population density for dwellers (residents) or daytime workers? In metropolitan cities, the two populations are very different.

4) Page 842, Fig. 3: The referee thinks that so called “global warming” will affect air temperatures in suburban areas as well as in urban areas. However, according to your figure, there was practically no increasing trend of the air temperatures in the suburban area (B), which is 120 km north of the city center. Thus increase of the air temperature at A may be entirely attributed to urban effect (not combined effect of global warming and urbanization).

5) Page 844, Fig. 5: The fitting curve appeared seemingly reasonable and the determination coefficient is rather high. But there are no data points at distances 50-120 km. Only single value was used for remote area. For more reliable estimation, values for intermediate distances are essentially required.

3. Technical corrections 1) Page 832, line 10: depending on->with 2) Page 832,

line 11: insert “thermal” between “the” and “expansion” 3) Page 833, line 2: 1948,->1948;, 1986,->1986;, 1993,->1993;, 1995,->1995;, 1998,->1998;, 2000,->2000; 4) Page 834, line 23: 1999,->1999; delete “and” 5) Page 836, line 12: whichv->which v 6) Page 838, line 3: expansion->thermal effect 7) Page 839, line 14: Climate->climate 8) Page 839, lines 17-18: Change->change, Record->record, Subsurface->subsurface, Temperature->temperature, Global->global, Perspective->perspective

Interactive comment on Clim. Past Discuss., 2, 831, 2006.

CPD

2, S418–S420, 2006

Interactive
Comment

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper