Natural Hazards
and Earth System
Sciences

Discussions

Interactive comment on "The characteristics of lightning risk and zoning in Beijing simulated by a risk assessment model" *by* H. Hu et al.

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Thanks for the comments which will undoubtedly improve our paper.. Reply to GEN-ERAL COMMENTS: (1)The lighting casualty reports have been said to be underreporting the actual lightning casualties by other article authors, such as Lopez et al. (1997), Curran et al. (2000) and Zhang (2011). On the other hand, this underreporting still exists in China, referencing to the literature of Zhang (2011). On page 4132 line 24, we point the non-correspondent of the model simulation to these casualty reports and draw the conclusion based on the reference (Lopez et al. 1997; Curran et al. 2000; and Zhang 2011). (2) The human behavior, location and activity are meant to be the exact location, human socio-economic activities and related behavior, what are actually diffi-

cult to quantify in the model. However, we still use parameters related to the population and GDP distribution in the model simulation, such as population density and GDP in each gridcell. (3) "Lightning has been recognized as one of the most dangerous natural disasters by the International Decade for Natural Disaster Reduction (IDNDR)" is cited by the literature of Ma et al. (2008). Though the casualties and damages of lightning event are not greater than large impact events, the lightning events are frequently occurred in the world and the losses in per year related to lightning are much greater than that of most natural disasters.

Reply to DETAILED COMMENTS 2. DETAILED COMMENTS page 4116 line 17: (1)what is "indirect lightning"? Reply : It should be replaced by "induced lightning".

(2)page 4117 line 25-26: "the CG flash...density": ...as a consequence, the lightning risk relates to the CG flash/stroke density? Reply : We think it is the major factor of lightning risk.

(3)page 4118 line 10: error in a reference: Sonia and Gerard are only the first name of the authors Reply : Sorry, we are not familiar with the name and surname of the author and make mistake in abbreviating.

(4)page 4121 line 8: I fail to find the definition of GDP in the paper Reply : We think the GDP is commonly used and don't give full spelling.

(5)page 4122 (and in other place in the paper) N_x, according formula (2) is number of events per year and not not number of event per km2 and per year. Reply : formula(2) belongs to concept formula and N_x is number of events per year, that is differed to N_g

(6)page 4122 line 4: N_g is the average annual CG stroke density? Reply : Yes, it is.

(7)page 4125: casualty probability is related to building Lightning Protection Level, and physical damage probability is related to Lighting Protection System: please justify the difference between the two risks. Reply : According to the IEC62305, casualty probability is "values of probability that a flash to a structure will cause shock to living beings

due to dangerous touch and step voltages", which is defined in Table B.1, and physical damage probability is "Values of probability depending on the protection measures to reduce physical damage" in Table B.2.