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**The effect of passive measures on thermal comfort and energy conservation.****A case study of the Hot Summer and Cold Winter climate in the Yangtze River region**

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**Abstract**

The energy consumption for heating and cooling of buildings in the cities located within the boundaries of the Hot Summer and Cold Winter (HSCW) zone in China is rapidly increasing due to the increased comfort expectations from well-resourced occupants. Guidance on how and to what extent it is possible to improve energy efficiency of buildings is thus required by policy makers as well as designers and building managers. The aim of this study is to demonstrate how the use of climate-sensitive passive design solutions can help the improvement of indoor thermal conditions while reducing the energy needs and ultimately carbon emissions. An extensive parametric analysis of several passive strategies such as building orientation, thermal insulation, glazing area, shading devices, air tightness and natural ventilation, is carried out for a typical apartment block located in the cities of Chongqing, Changsha and Shanghai, which lays respectively in the upper, middle and downstream of the Yangtze River. Detailed hourly dynamic simulations show how it is possible to extend the *non-heating/cooling period* and *reduce the peak loads*, highlighting the potentialities of each strategy according to different climate constraints. The recommended

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