

Application of the Distributed Object Method to the Analysis of Urban Heat Island Problems

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Because the urban heat island problems are caused by many complicated factors, it is necessary to analyze simultaneously those factors, which are interacted each other. To this end a multi-functional program is required, however, it is difficult to build up such a complicated and gigantic program. A prototype of a multi-functional platform to support the execution of a complicated program with many scientists collaboration is proposed and evaluated.

A connection of the models of mesoscale meteorological model and urban canopy model was tried with the distributed object method. The platform with distributed object method can be said as a powerful tool for the analysis of urban heat island problems and other environmental problems.

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As a tool to analyze the urban heat island problems, a connection of the models of mesoscale meteorological model and urban canopy model was tried with the distributed object method. The performance of the execution is even better for the direct nesting than distributed object method because of its inefficient data transfer in the latter method. However, it usually takes much more time to make the nested model, the bad performance in the execution may be covered. Since the calculation in fluid dynamics generally takes much time in the calculation, the inefficiency in data transfer may become negligible. It is also possible to use high performance machine to execute a time consumable part and share the computational load. The platform with distributed object method can be said as a powerful tool for the analysis of urban heat island problems and other environmental problems.