

**Responses to the questions required by the workshop  
(Related with the case study to be represented)**

**1. What are the key urban remote sensing/urban modeling and forecasting issues that you represent?**

First, the key issues represent here are urban growth modeling for a case study area of Hangzhou and the prediction of the urban land demand at a regional extent. Second, for the region part, the most exciting development in the region is that the scientific and reasonable land use planning begins to take effect on the regional development, thus more spatially explicit simulation on urban growth is necessary. However, rapid urbanization as well as conflicts between farmland conservation and demand of urban land leads to the key challenges in this region. Besides, the loss of the right time of development along the style of saving land industrialization contributes to one of the most important missing opportunities for the region.

**2. What are the key challenges, missing opportunities, and exciting developments in your theme and region?**

As for the theme, we highlight the linkage between the predicted demand of urban area at regional extent and the simulated supply urban land at pixels. Like most of other simulations, the key challenge lies in the uncertainty of the simulation results and it misses the possibility of validation on the simulation results due to the lack of reference.

**3. Why are we not seeing more studies on smaller urban areas?**

With respect to the reason of not seeing more details on smaller urban areas, here are two kinds of explanations. One is that in the large academic context quite a lot of models are macro scale based which facilitates the further study of the larger scale areas. Second but more important is that the more detailed scale one prefers to choose, the more challenges one will confront with as for the controlling of uncertainty. As change of factors in small area is flexible and thus unpredictable, for example, the local government may apply a new policy in the small area just within a short time which results in frequent data gathering. Again endogeneity between factors affecting urban growth comes which makes the accurate simulation unpredictable. What's more, research results of small areas are likely to be inextensible to other large areas.

**4. What platform/data/access limitations do you currently/frequently encounter?**

As we investigate in large-scale area, several limitations will certainly follow. The primary obstacle is that data are unavailable sometimes, and then, even data are there, it comes other issues such as selection and parameterization of the data (or transform them into variables) will be complex and time-consuming. Taking the selection of population for example, as there are

various kinds of population based on different classification criteria, such as total population, age structure of population, labor, migrant population and so on, how to make a good selection of data among these is really difficult. As to access limitation, more Case Based Reasoning(CBR) study is needed to conduct to parameterize the mechanism of urban growth. To be specifically, for example, two land proprietors run different business models on their land, the one who has gained more income maybe imitated by the other one, in this case, at the research of the behavior of the objects(such as the two land proprietors),CBR study should be used.

**5. How do these limitations affect our ability to monitor, model and forecast urban areas?**

And the limitation illustrated above will affect the research by bringing into more uncertainty into the modeling of urban growth.

**6. What do you see as missing in terms of case studies and methods?**

Last but not least is about the missing in terms of case studies and method. Again the validation of the results is the first missing point. Then comes the control of the uncertainty during the simulation process. And the last is missing on the interpretation of the simulation results.