

SARS Cluster Mapping and Environmental Implications

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“After SARS: Education and Research Agenda for the Future”

Joint HKU/CUHK/CPU Academic Seminar on July 2, 2003

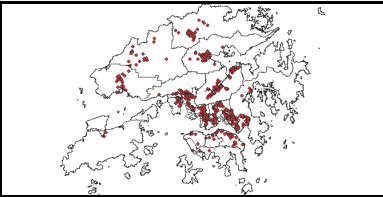
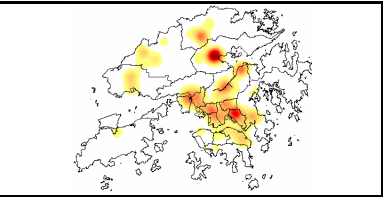
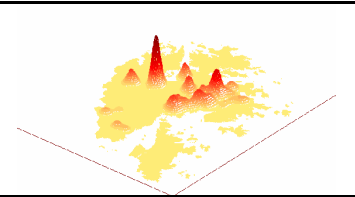
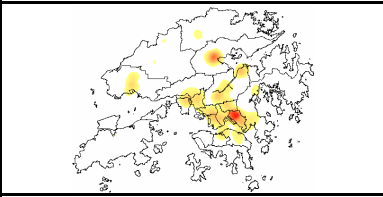
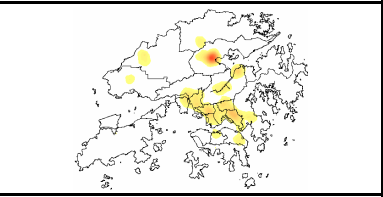
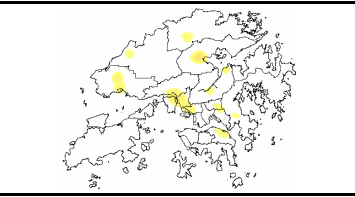
Current work

Investigating clusters through disease mapping is essential to identify the location, pattern and diffusion process of SARS during its outbreak. It helps explore and perhaps confirm the association between disease clusters and environmental attributes. Identification of clusters relies upon the definition of risk population, geographical extent and scale and criteria for judging the existence of clusters, as well as the use of appropriate cartographic models.

Data concerning the infected buildings was released by the Department of Health on a daily basis since April 12, 2003. A few commercial GIS vendors and university have quickly made use of internet map servers in publicizing these data in format of dot maps (a similar map is shown in Fig. 1). In order to locate disease clusters, a kernel estimation model is adopted to extract the density of SARS incidence. Surface model is generated highlighting clusters using Kriging spatial interpolation method. An aggregate model highlights the spatial pattern of the clusters (Fig. 2) whilst a time series of daily surface model helps explain the diffusion process (Fig. 3).

Works in plan

Further works will be conducted to elucidate the environmental conditions that are conducive to the spread of SARS. This will facilitate the development of simulation models and decision support systems for the identification of potential high risk areas for the plausible outbreak and spread of SARS in the future.

		
Fig. 1. Aggregate Dot Map for SARS	Fig. 2a. Aggregate SARS Cluster Map	Fig. 2b. 3D Surface Model
		
Fig.3a. Daily Cluster Map as at April 12	Fig.3b. Daily Cluster Map as at April 25	Fig.3c. Daily Cluster Map as at May 4