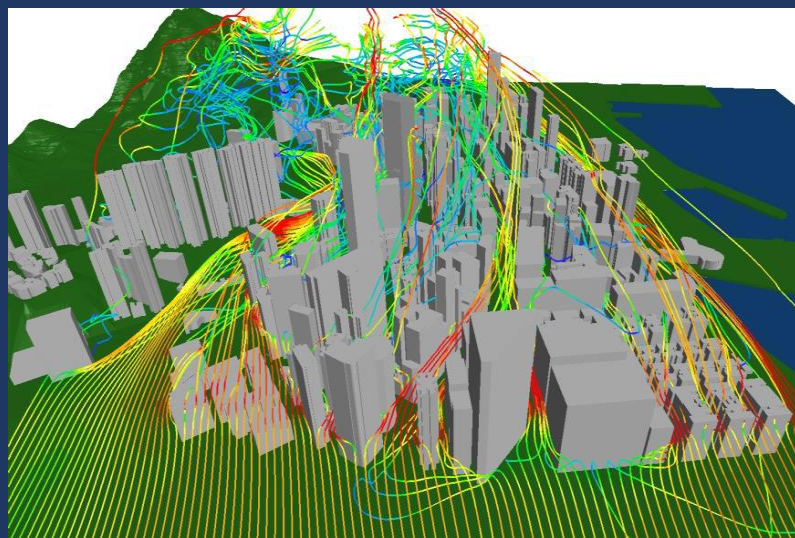
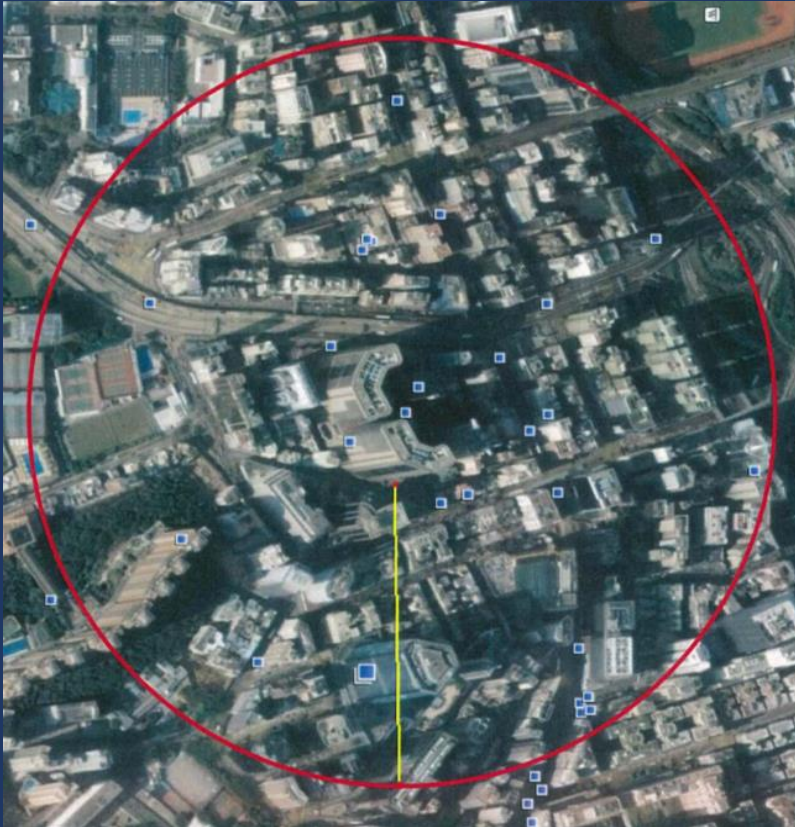


**PHOENICS Case Study: Environmental  
Wind Flow around Urban Buildings in a Hilly Terrain**



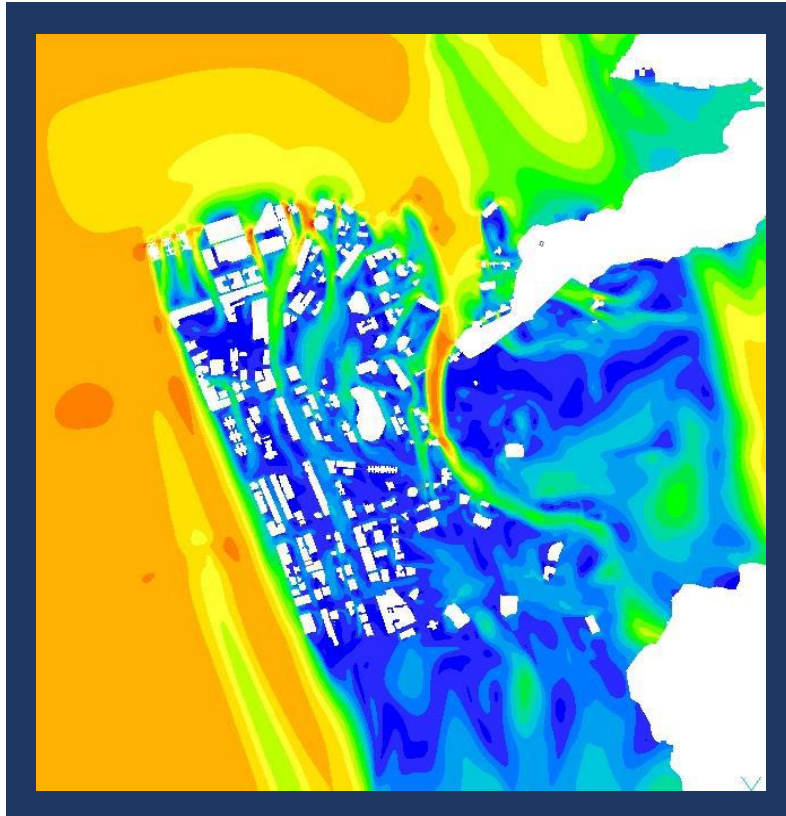
Streamlines @ 20m height, coloured by velocity

Hong Kong-based consultants, Scott Wilson, utilised a 64-bit parallel-processing Windows variant of PHOENICS, together with the FLAIR building services module, to assist with Air Ventilation Assessment (AVA) studies undertaken on behalf of the Hong Kong Planning Department.

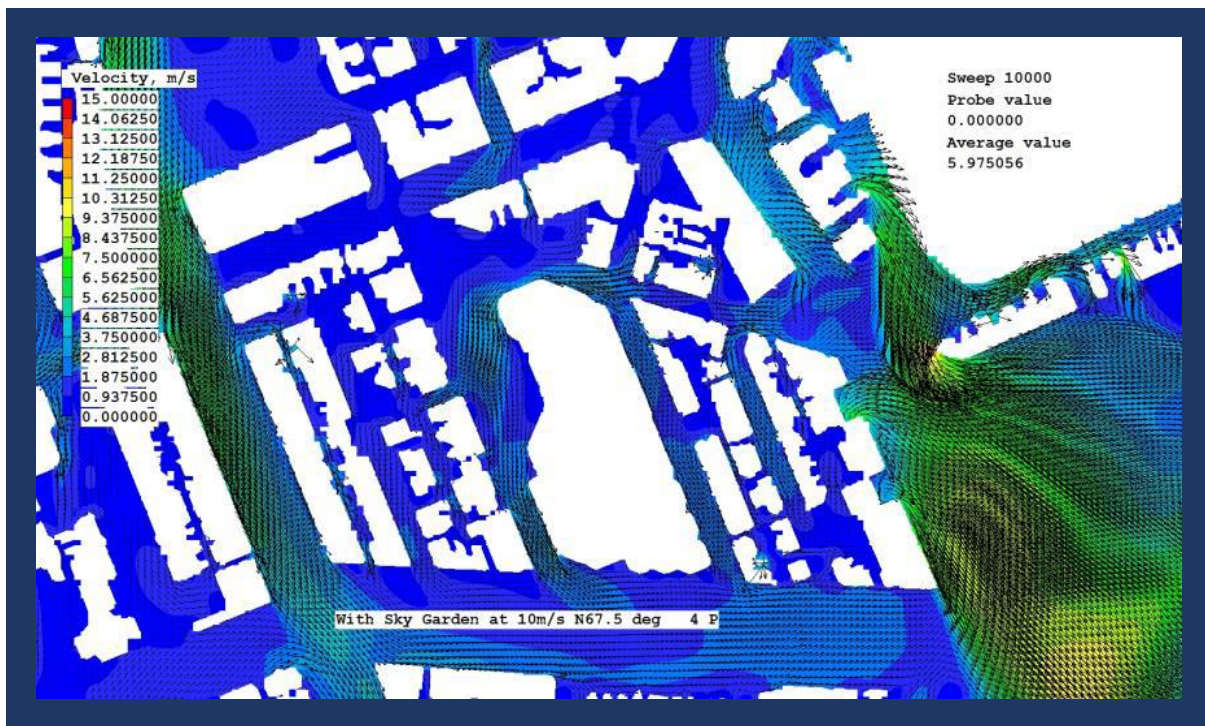
The area of interest involved a conglomeration of high-rise buildings around Hong Kong's Times Square, and the hilly terrain beyond (shown left). The study investigated potential effects of a new building design on conditions prevailing in the square with especial focus on factors that might affect pedestrian comfort and local environmental conditions.

The model was created by importing the building cityscape and terrain as two separate objects from CAD. The FLAIR 'Wind' object was used to specify wind characteristics in terms of direction, strength and profile.

Following analysis of the existing scheme, a third object was added representing the proposed design for a new high-rise complex in Times Square. The case was re-run for comparison under varying wind conditions.



The 12 million cell Cartesian mesh required 7.6 GB of the 8 GB RAM available, and was run as a steady-state calculation for 48 hours to achieve a fully converged solution. The default 'PARSOL' (PARTIAL SOLid) cut-cell facility automatically catered for the non-uniformity of the buildings and terrain.



This baseline study formed the pre-cursor to a series of further investigations of varying wind conditions and alternate building designs.