

# **An Examination of Mesoscale Wind Flows within the Okanagan Airshed**

## **Project Background**

The concentration of an air pollutant at any given location is a combination of the volume of the pollutant released into the airshed, and the subsequent transport and dispersion of the pollutant. Our current ability to predict pollutant concentration is rudimentary at this time. Sophisticated tools are available, but expensive to implement and operate. Tools, which are currently employed, consist of surface wind observations from only 5 locations, a twice-daily radiosonde sounding of the atmosphere in the vertical, and a crude forecast of the dispersion expected in the current afternoon. The latter is called the Ventilation Index (VI) and is comprised only of the forecast mixing height in the airshed, and the average winds within the mixed layer. Further improvements to our ability to forecast receptor concentrations of air pollutants will require much more detailed analysis and prognosis, which in turn will depend on the collection of a much more comprehensive set of data - especially meteorological data.

During 1999, the Mountain Weather Services Office will use a mesoscale model and display software to impart a deeper understanding of the low-level winds through the Okanagan Valley. This knowledge is necessary in order to explain the local transport and diffusion of pollutants in the airshed.

## **Project Description**

A temporary meteorological station has been installed at a location on the East Kelowna Bench. Data from that station is used to validate output from a numerical forecast model being implemented by the Mountain Weather Services Office of Environment Canada. Output from this model includes fine-scale wind flow throughout the airshed at 3 hourly intervals. It is expected that detailed study of these localized (Mesoscale) winds will reveal areas within the valley susceptible to elevated pollution levels.