catchment is the upper limit for forecasts based on current rainfall data. The time of concentration is longer for larger, flatter catchments and also depends on soil types and land use. Typical values would range from several hours to a few days.

The forecast period can only be extended beyond the time of concentration if some estimate of future rainfall, a so-called quantitative precipitation forecast (QPF), is available. QPF methods are being developed using data from radar and satellite observations which can be analysed using a limited area meteorological model, which gives more detailed coverage of the limited area than the general weather forecasting models. These QPF methods are starting to enter operational service, but as they are very advanced techniques it will be some time before they are in general use throughout the world. In the absence of QPF the hydrological forecaster can only imagine some future rainfall scenarios and calculate model results based on these. Typically the forecaster might calculate the future flows if the rain were to stop, which gives a lower limit to future flows, or if it were to continue at the same rate for the next few hours. The skill and experience of the forecaster become important in these circumstances.

Any forecast should be compared with later readings of river levels to check its accuracy. The internal model parameters can then be adjusted to correct the forecast. This procedure, termed model updating, is increasingly being used to keep the model on track in its simulation of the behaviour of the catchment. Early forecasting systems, including manual systems that predated the use of computers, were run on an event basis, that is to say only during floods, and gave forecasts for one or two critical points in the river system. Modern systems are capable of providing forecasts at a large number of points and are run continuously and are thus useful for other water resource management functions. The forecast system might be run once a day to keep the model updated during normal flow periods and more frequently once an emergency occurs.

Once the forecast is made it must be put into terms that the layman can appreciate and then disseminated to those that need it and can act upon it, including the civil authorities, the police, the media and the general public. The diagram show the forecast dissemination network of flood forecasts on the Rhine at Mainz, figure 5.2 and the Australian meteorological hydrological forecasting system, figure 5.3. Note in both cases, the great emphasis placed on

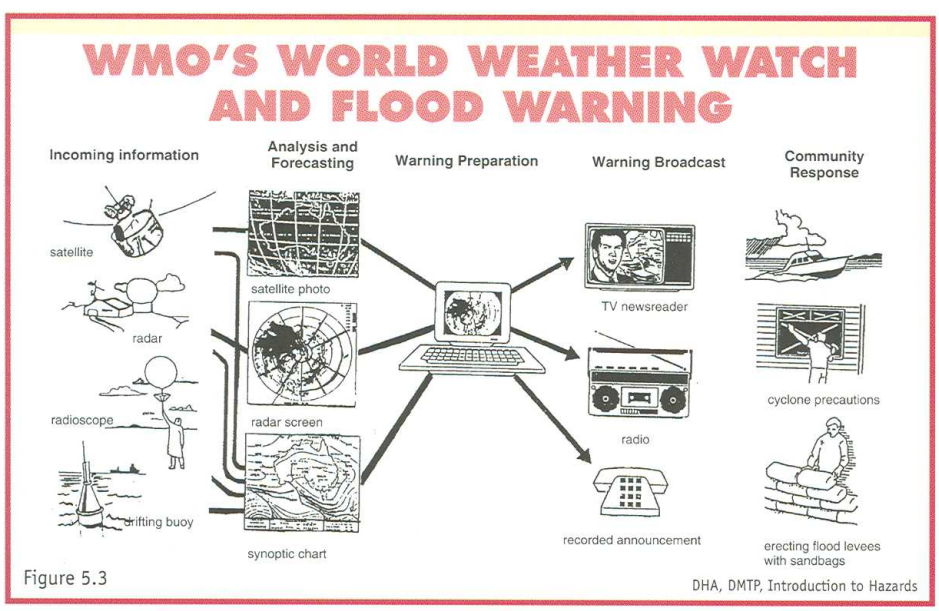

Figure 5.3