In the lead up to, during and after a volcanic eruption, a number of critical emergency management decision-making challenges arise. Many of the critical emergency management response tasks are undertaken within local, regional and national Emergency Operations Centres (EOCs). Successful decision-making during these events is fundamentally dependent upon the situational awareness of the emergency management officers (EMOs), both as individuals and as a team. This is their assessment and understanding of the available information, the definition of the problem at hand, and the time and risk pressures. Developing this initial and ongoing situational awareness is critically dependent upon the information and advice from science advisors and observatories, and the quality of shared mental models developed in training. Thus, the quality of dialogue and information provision depends upon participants’ mutual understanding of the needs, responsibilities, demands, and roles of each party, and their capacity to anticipate demands and decisions needs. Several recent emergencies and national exercises in NZ have identified the existence of limited understanding of how this information is effectively used during the decision-making process in multi-disciplinary EMOs, particularly with regard to using non-routine scientific data. We present planned investigations in our EOC lab to explore how the presentation style of the scientific information, and the methodology for forming a scientific consensus, affects the individual and team situational awareness and the decision-making effectiveness of EMOs during theoretical volcanic crisis exercises.