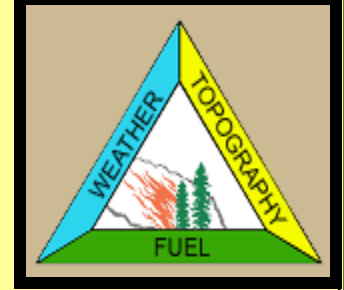




TOPIC 23
**HEAT TRANSFER
- CONVECTION**



CONVECTION is heat transferred by the movement of hot air. As it moves, usually upwards, this hot air heats objects that it surrounds as well as other air masses it mixes with. The smoke column rising above a fire is a good example of convection. A fast rising smoke or convection column indicates that a fire is burning intensely. As this warm air rises it is replaced with air from the surrounding area and the firefighters can feel additional air flowing into the fire at ground level. This inward flow of air, felt as a gentle breeze or light wind, is a strong indication of erratic and unpredictable fire behaviour may occur. At this point, a fire is often said to create its own weather. The colour of smoke produced by a fire can be a rough indication of the burning conditions. The appearance of copper or bronze colour in the convection column indicates very high to severe fire intensity.

Fuels can be pre-heated by free convection (the naturally vertical column development on a steep slope), or by forced convection, when the vertical column is “forced” or tilted closer to the fuels by strong winds. These are the primary causes of torching and crown fire development. A strong convection column can carry hot embers aloft and deposit them in advance of the existing fire and cause spot fires.

