



## New insights into the rainbow. The colours of the natural rainbows at sunset.

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A model of the rainbow has been developed at the CNRM. It is based on the Airy theory. The main entry parameters are the droplet size, the angle of the sun above the horizon, the temperature of the droplets and the wavelength.

For solar heights under  $80^\circ$  (most usual cases), the violet and the blue bands are very vivid. They contribute together to more than 50% of the total intensity. The yellow, orange and red bands are less intense, contributing together to less than 30% of the total intensity. At sunset, that is for solar heights larger than  $85^\circ$ , the red band becomes more and more intense and gradually becomes the dominant colour. The violet and the blue bands become less intense and vanish completely above  $88^\circ$ .

For solar heights under  $80^\circ$ , the supernumerary area shows an alternance between pink/blue bands and green bands. At sunset, the aspect of the supernumerary area changes dramatically in a similar way to the primary bow.