

# Air masses influencing Australian weather

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There are eight major air mass types that affect various parts of Australia.

In weather reports, you won't hear them labelled; more likely they'll just be described as '... a cold, south-west air flow on to the coast', or '... warm, moist, unstable air from the Coral Sea'.

## Major Australian air masses

### Modified polar maritime

This very cold, moist and unstable air mass arises in the Southern Ocean on the margin of the Antarctic (at latitude 55°S). It affects only southern Australia occasionally in winter (during a strong southerly flow after the passage of a vigorous cold front) and is often accompanied by snow and sleet at higher altitudes.

### Southern maritime

Arising in the Southern Ocean (at latitude 35–55°S), this cool air mass is moist and unstable at low levels, but is stable above. It brings cool, moist, cloudy weather and drizzle to southern Australia at any time of the year, but little rain unless it is orographically uplifted (that is, forced to rise as it passes over hills and mountains).

### Tropical maritime Tasman

This warm air mass, sourced in the north Tasman Sea, is unstable and moist. It brings warm, cloudy and showery weather to coastal regions of eastern

Australia, with heavier rain if some means of lifting is available. This air mass is influential along the Brisbane to central NSW coastal regions most of the year, but its influence diminishes further south, especially in winter.

### Tropical maritime Pacific

This air mass is similar to the tropical maritime Tasman air mass, but it is warmer, coming from further north in the Coral Sea and tropical western Pacific Ocean. This air mass affects the Central and North Queensland coast most of the year, and can bring heavy rainfall if associated with tropical cyclones or tropical depressions. It is a normally good source of moisture for eastern Australia generally and the eastern seaboard especially.

### Tropical maritime Indian

This air mass is normally very shallow, bringing warm and humid but normally dry conditions to coastal parts of north-western Australia. It becomes rain-bearing only with the development of a tropical depression or tropical cyclone, but it can bring moisture to central Australia and inland NSW via north-west cloud bands.

### Equatorial

Coming from the ocean area to the north and north-west of Australia, this very warm, moist and unstable air mass affects only north and north-western Australia in summer, in association with the summer monsoon. It brings extremely heavy rainfall and high humidity to this area, but during very active monsoon seasons it can affect areas as far south as 30°S for short periods of time.

### Tropical continental

This air mass arises over Central Australia and is very hot, dry and unstable in summer, but cooler and more stable in winter. Cloud and rainfall are restricted by a lack of moisture in the air mass. The air mass affects north-central Australia for most of



the year, and may bring heatwave conditions to southern Australia in summer under a strong northerly air flow.

### **Subtropical continental**

This is a warm and dry air mass coming from over south-central Australia. It dominates inland southern Australia, especially in winter.

### **Acknowledgments**

Note: The above descriptions apply to typical conditions, but extremes can and do occur, bringing other weather patterns. These are just a guide to what could come from different systems at specific times.

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