

Barcelona

Winds at Barcelona in the summer six months of the year follow a pattern typical of places:

- On a relatively straight coast.
- Where an adjacent large land mass becomes hot in the afternoon (but not in the tropics).
- Where gradient winds are normally light.

Morning Gradient < 2 Or 3 Knots (Any Direction)

The morning starts calm and the air aloft is just drifting around. Heating of the land causes the pressure to fall overland and an along-shore gradient sets in by midday. Typical features of the wind on the water are as follows:

- It starts before mid-morning as a pure sea breeze at right angles to the coast (from 140 degrees at Barcelona), which swings to the right and increases for a while.
- The thermally-produced gradient parallel to the coast then takes over, pulling the direction round to 15 degrees from the shoreline by early afternoon (195 degrees at Barcelona), with a slight bend inshore near to the shore.
- At the same time the speed increases to around 10 knots over a coastal zone about 5 to 8 kilometres wide.
- Swings in direction between 195 and 220 degrees arise from interactions with the wind produced beyond a bend in the coast upwind.

Gradient Wind – Quadrant 3

It often happens that the morning starts with a remnant of the southerly wind of the previous day, in which case the final direction and the swings are the same as above but the speed is 5 knots or so higher. South-easterly winds also swing right but not so far, and with only 2 or 3 knots increase in speed.

Westerly Gradient – Quadrant 1

A Quadrant 1 gradient wind is relatively infrequent and is most likely following the passage of a cold front, usually a weak front and barely recognisable as a front except for a change to much clearer air. A sea breeze sets in early, extends seawards, swings to about 210 degrees and increases to 20 to 25 knots



Barcelona Quadrant 1 sea breeze

near the shore. The direction fluctuates between 210 and 225 degrees because of interaction with the breeze around the corner upwind. (See above.)

East To North-East Gradient – Quadrant 4

A morning wind over the water between about 020 and 100 degrees is usually killed by the opposing thermal vector. But if it is less than about 5 or 6 knots it ends up (either pulled round or stopped and started again) at about 160 to 180 degrees, with probably a small increase in speed.

Northerly Gradient – Quadrant 2

This is rarely, if ever, found in summer at Barcelona, because of the Pyrenees.