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How to predict and avoid fog

Getting caught out by fog is an inevitable right of passage for every yachtsman, but it can be pre-empted and avoided if you know what to look for, explains *Simon Keeling*

Fog. Fog patches. Mist. Haze. All are words we all hear in the Shipping and Inshore Waters forecast, but did you know that each of them carries a strict definition and that any sailor can have a decent attempt at forecasting them? All you need is a little knowledge about why and how they form.

HAZE

So, let's start with haze. This is defined as a reduction in visibility caused by some type of pollutant in the atmosphere. This includes dust, smoke and even salt released from a rough sea. It's a hard one for the sailor to predict, but there are certain situations in which haze is more common. Watch for a flow from the continent, usually on an east or

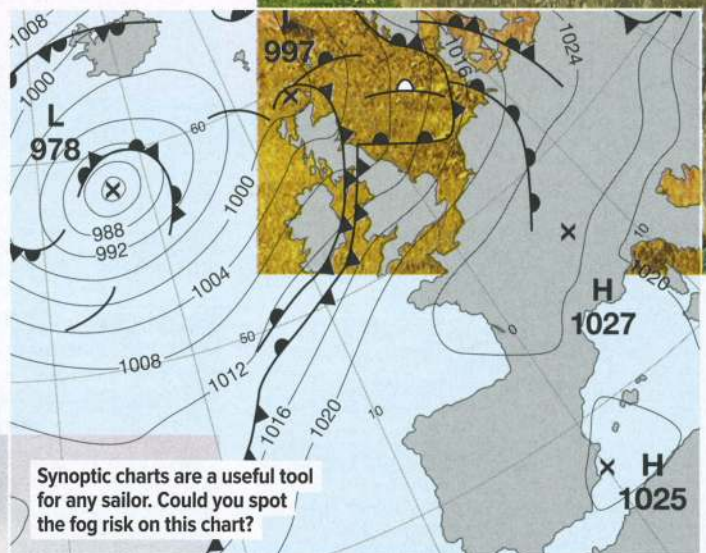
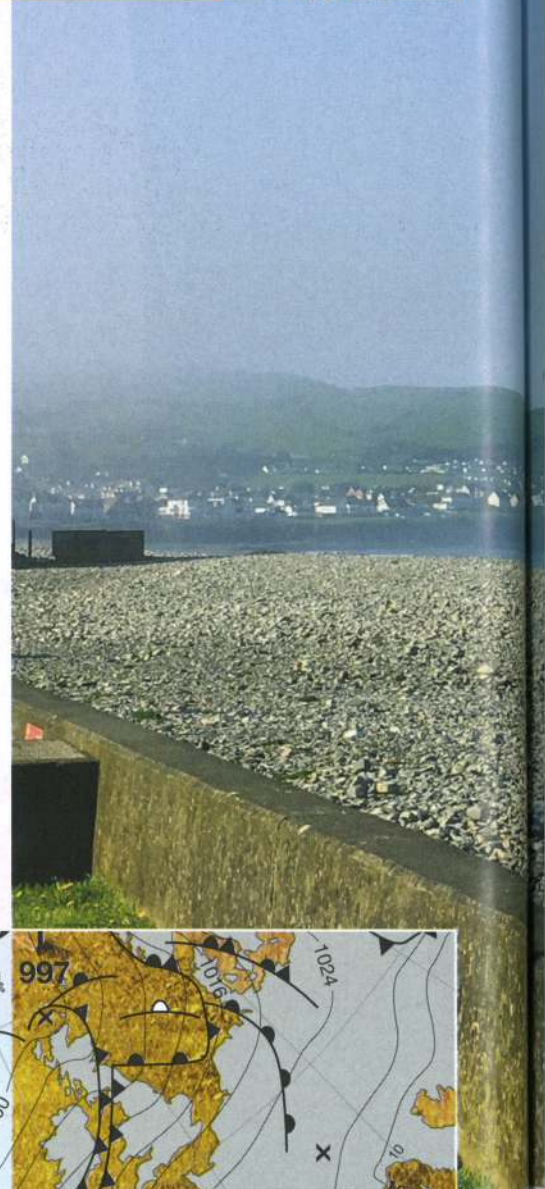
south-east breeze. This imports pollution from the industrial areas of France, the Low Countries and Germany. A steady breeze of say Force 3 or Force 4 is perfect for haze; anything stronger and the turbulence caused tends to disperse the pollution particles, anything less and the particles tend to settle at ground level.

MIST

Next is mist, which is defined as reduction in visibility caused by water droplets. Of course, fog is also caused by water droplets in the



Don't be fooled by good sailing winds. Fog at Forces 4-5 offshore isn't unusual



atmosphere, but the difference between mist and fog is the actual visibility associated with each. In mist the visibility is greater than 1,000 metres and usually less than 5km.

Misty conditions for sailors tend to fall into two categories. Consider the mist that drifts over an inland marina or river inlet. This is usually caused by cold air flowing off the land over warmer water. Condensation occurs as the water vapour which is usually invisible in the atmosphere can no longer hide itself. Winds need to be light in order for mist to form; look for a speed of F2 or less.

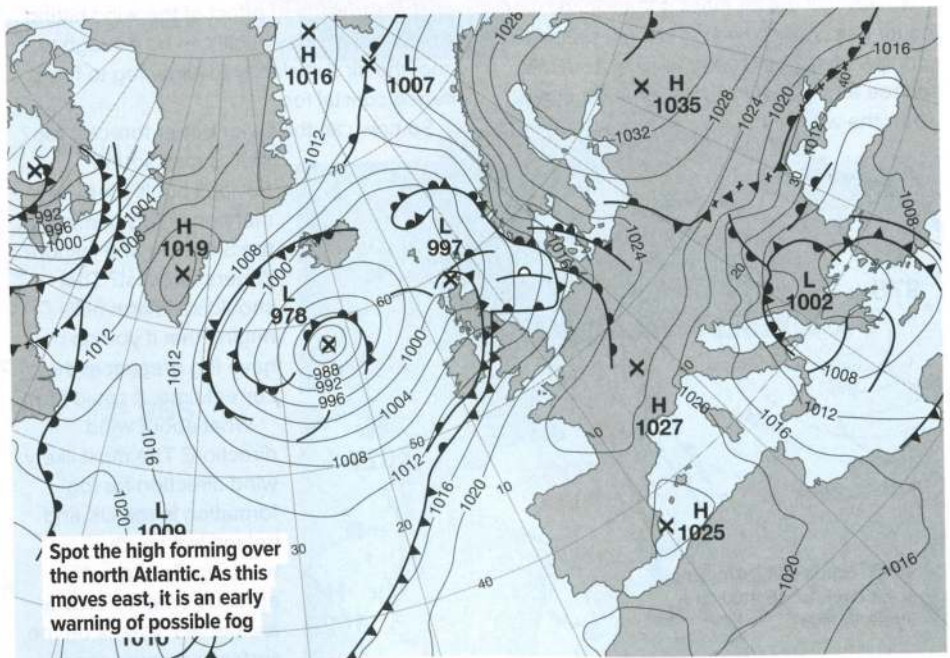


A moist air mass and low winds following a cold night. Perfect conditions for coastal fog

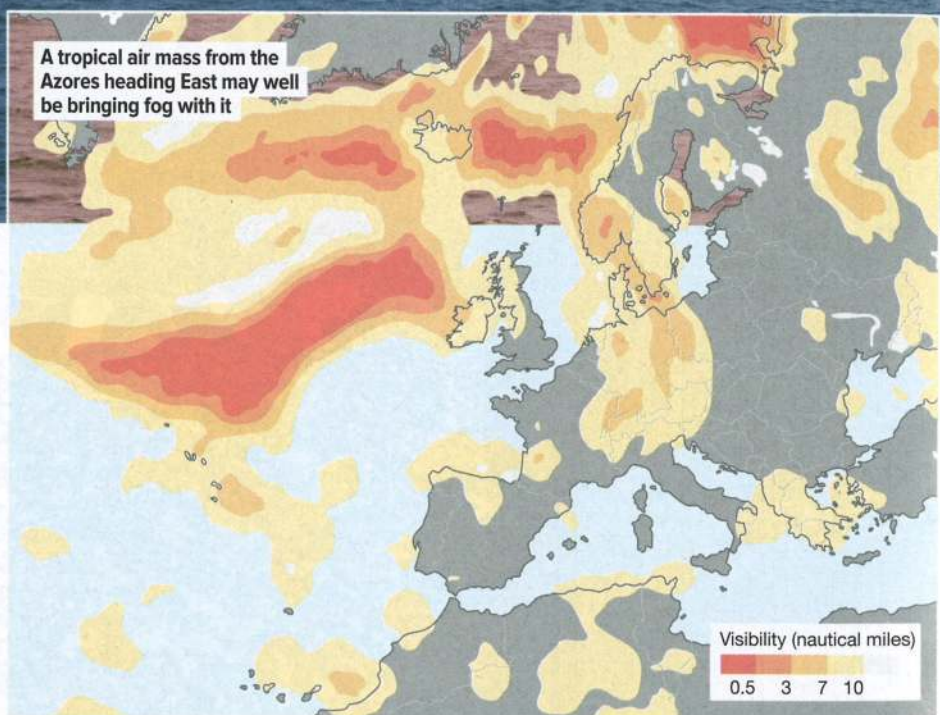
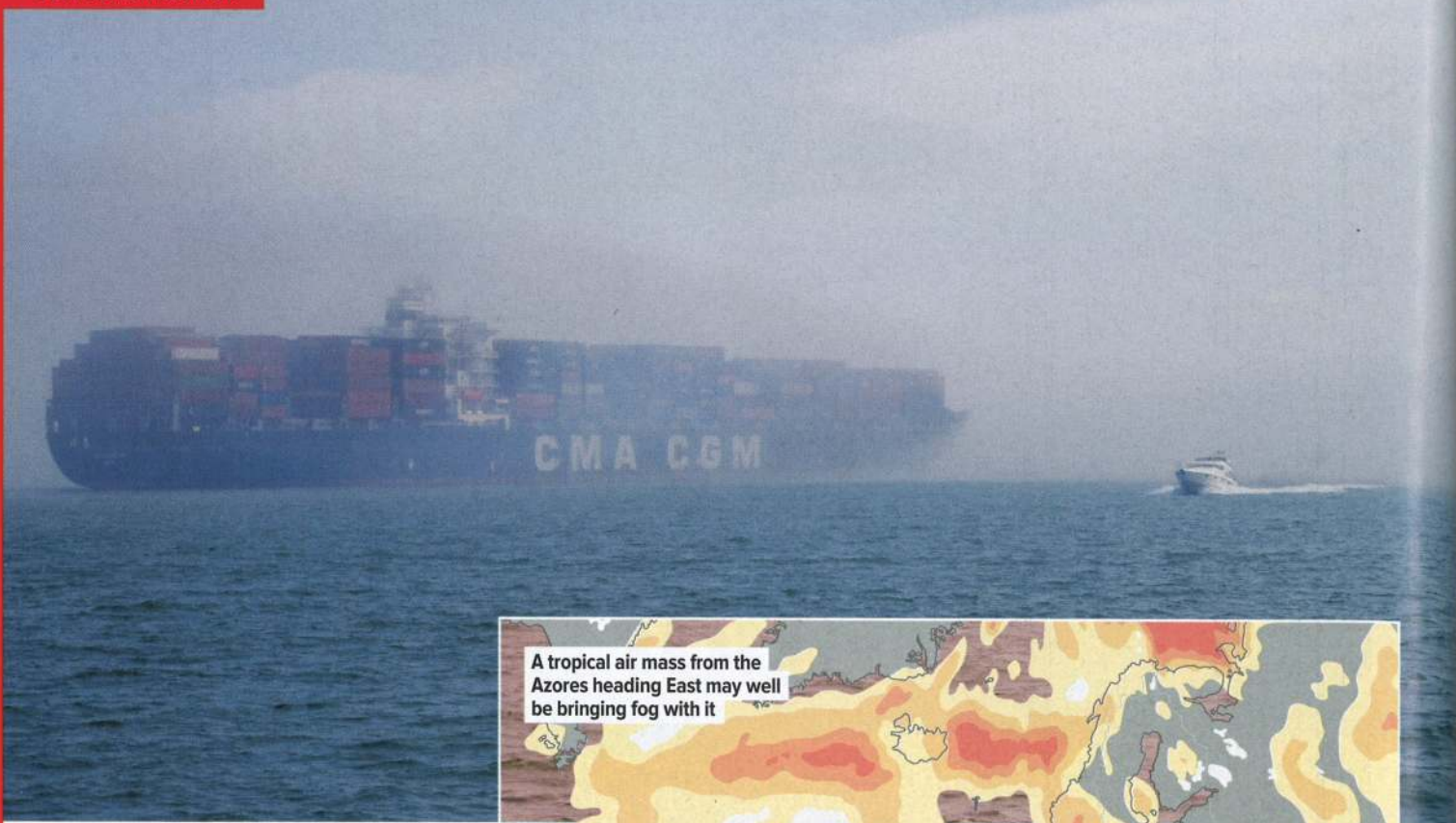
Second is the mist which forms over more open water. This generally occurs when the atmosphere is carrying a fair amount of water vapour. Look out for warm air flowing over a colder sea. A typical wind direction for mist to form in the UK is a southwesterly airflow. Wind speeds for this type of mist formation tend to be around Force 4.

FOG

Now the biggie; fog! Again let's think about two different forms of fog. Firstly, there's the fog forming over the inlets and inland marinas. This is essentially the same as the mist formation but occurs when the air mass is more moist. Watch for a wind speed of around a Force 2 as this provides the perfect conditions for fog formation, especially after a cold night. The wind blowing offshore is also key. Usually this type of fog does not extend far offshore and is usually fairly easy to sail away from.



Spot the high forming over the north Atlantic. As this moves east, it is an early warning of possible fog



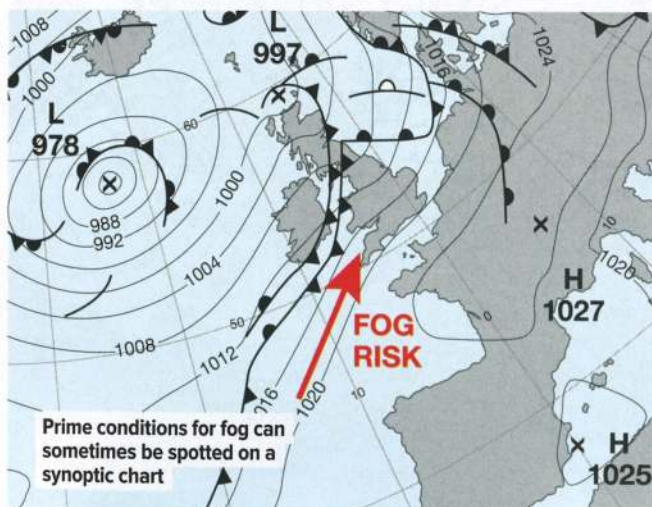
The main type of fog that affects our sailing is that which is caused by a moist, tropical maritime air mass. This is air, which has originated close to the tropics, perhaps in the area of high pressure around the Azores. It gets transported north-eastwards and may well start its life completely free of cloud. That's because at warm temperatures the air can hold plenty of water as an invisible vapour.

As the air gets blown north-eastwards it flows over cooler Atlantic waters. Eventually the temperature of the air mass is such that it can no longer hold the water as an invisible vapour, and so it condenses. Usually, the wind is strong enough and the lower few hundred feet of the atmosphere warm enough to lift the condensed air into cloud.

However, if the air mass is sufficiently wet, the air can come soaked through, similar to a sponge. This enables fog to exist from the surface and is the reason it can exist even when the wind is blowing at gale force.

Remember, too, that if the wind is blowing onshore, the lifting effect of the wind hitting a high cliff or coastal hill can be enough to cool the air sufficiently to allow fog to form; hence coastal fog.

So how can the sailor better forecast fog?



Well, it may sound obvious but is there any mention of fog or mist in the Shipping and Inshore Waters forecast? That should set alarm bells ringing that if you do not have fog present at the current time, it could form.

What about wind direction? The most likely wind direction for fog formation in the UK and Ireland is a south-westerly. Speeds of around Force 4-Force 5 are perfect. Check on the surface pressure chart

and see where the air that is affecting the area you are interested in sailing in has originated — it's easier than you may have thought: remember that winds flow along the isobars; clockwise around high pressure, anticlockwise around areas of low pressure. Follow isobars backwards, against the wind. Is the air coming from anywhere in the subtropics, close to the Azores high? This will likely be warm air, which if it has tracked northwards over cooler water is likely to be fogging out.

It may be that fog is forming in an area of lighter winds. When this type of fog occurs the wind is often very light because the air has originated close to the Azores high, drifted north and then stagnated close to our coasts.

So the key for a sailor when predicting fog is; check the wind direction and speed, look where the air has come from, think about how much moisture there is in the air and listen for the clues in the Shipping and Inshore Waters forecasts.