

Amazon rivers of the skies drench Britain

Scientists have identified invisible ribbons of moisture up to 2,000 miles long as the cause of recent floods, writes **Jonathan Leake**

SCIENTISTS have discovered the real cause of Britain's recent floods and wet summers — giant ribbons of moisture-laden air that flow north from the tropics carrying the equivalent of the content of the Amazon river in rain.

The "atmospheric rivers", each carrying 1,000 times more water than the Thames, have emerged as a key factor in recent floods. Researchers believe they were the cause of Britain's 10 worst winter floods since 1970, including those which devastated Cumbria in November 2009 and Cornwall in November 2010.

The summer floods that struck northern Britain in June and possibly others, including the Tewkesbury disaster of

allowing Atlantic depressions that would normally have passed to the north to hit the British Isles. While this is true, something further is needed to explain how so much extra water accumulates in those depressions.

Lavers and his colleagues were asked to study the subject by the Natural Environment Research Council, which is spending £15m on research into Britain's changing weather patterns.

Their work involved flying research aircraft into storms, using satellites to map the movements of moist air masses and, crucially, watching the formation of giant atmospheric rivers stretching from the tropics to Britain.

They found that much of the water falling as rain over Britain starts by evaporating from the warm Atlantic waters west of Portugal and north Africa. The depressions that dominate north Atlantic weather then ferry the moisture-laden air northward, picking up more water vapour on the way.

Sometimes, they discovered, those depressions align, generating a long, straight and fast-moving wind channel that carries vast amounts of moisture-laden air from the tropics over Britain and northern Europe.

The strongest, typically forming between 8 and 10 times a year, were carrying more water than the Amazon, the world's biggest river, which pours an estimated 60m gallons of water a second into the Atlantic. Such an event is thought to have caused the floods in Newcastle in June.

"If the end of an atmospheric river settles over an area of Britain for a few days then vast amounts of water will fall there," said John Methven, an atmospheric physicist who works with Lavers.

Little about atmospheric rivers has previously been known because they are invisible to most scientific instruments. The launch of new satellites equipped with sensors that can measure water vapour levels has, however, allowed

their importance to become more clear.

Data have shown that around the world there are just four or five areas where atmospheric rivers form and that Britain is unfortunate enough to lie beneath one of them.

Britain is particularly vulnerable because of its mountainous west coast, which forces the moisture-laden air to rise. The accompanying drop in temperature is the trigger required for air saturated with water to produce first storm clouds and then rain.

Richard Allan, another climate scientist at Reading University, said it was now clear that atmospheric rivers had caused almost all of Britain's recent severe winter floods, including the Cumbrian floods in 2009 and the Cornish floods in 2010. Autumn floods across Sussex in 2000 were also probably the result of an atmospheric river.

"A key question is how atmospheric rivers will respond to climate change," said Allan. "Warmer air can carry even more water, and that means an even greater risk of floods in future."

Young Britons put cork in binge drinking

Kate Mansey

BRITAIN may be on the cusp of turning its back on binge drinking, with alcohol consumption falling to its lowest level for 13 years.

Research reveals that the annual quantity of alcohol consumed by those aged 18 and over has fallen more than 12% from its peak of 9.5 litres in 2004 to 8.3 litres last year, the same as in 1999.

Experts believe the fall has been caused by factors ranging from the growth in online socialising to a more widespread European-style cafe culture and growing health consciousness.

The decrease is led by younger people exhibiting different drinking habits from those of the generation whose drunken antics made headlines throughout the 2000s.

In 2003, 70% of 16- to 24-year-olds told interviewers they had had a drink in the previous week. By 2010, that number had dropped to 48%.

According to the research, compiled by the British Beer and Pub Association using figures from HM Revenue & Customs (HMRC) and the Office for National Statistics, the number of children aged 11-15 drinking alcohol has fallen by 29% since 2008. Convictions relating to drunken behaviour have also halved since 2000.

Alcohol consumption grew for more than 50 years after the second world war, but evidence that a generational shift in attitudes to alcohol may be taking place is underlined by figures showing there has been little change in consumption among older groups, whose drinking has remained relatively steady since the 1990s.

Opinion is split on the reason behind the apparent downturn in drinking.

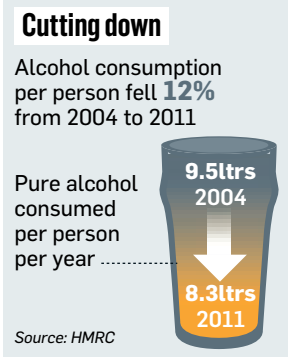
Some argue the decrease in teenage consumption has followed the rise of social networking sites, meaning teenagers are more likely to

chat to friends online than to go out drinking. Many also prefer coffee bars as venues for socialising.

Others claim Labour's relaxation of the licensing laws led to a more relaxed, southern European style of drinking.

Although the financial crisis may have forced some drinkers to reduce the amount they spend in the pub, that is believed to be only part of the reason because the decrease started before the recession.

Nick Sheron, a liver specialist at the University of Southampton, said public information campaigns had also had an effect. "Probably the biggest decrease in alcohol consumption I have




seen is in young men in their late twenties," he said.


National Health Service guidelines recommend a maximum of three to four units a day for men and two to three for women, and urge people to avoid alcohol for 48 hours after a heavy drinking session to give the liver time to recover.

While the message appears to have reached the younger generation, middle-aged drinkers appear more reluctant to give up old habits.

Siobhan McCann, of the charity Drinkaware, said: "It is habitual drinking and drinking every evening, not realising that regularly drinking above the guidelines is putting their health at risk."



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