



### Freak or Frequent?

Was this a freak of nature that marked the course of Boscastle and Cornwall's history, or was it a peculiarity that we may expect to see once every decade or so? These severe weather conditions are just not localised to the South West, as flash floods in Summer affect localities throughout the British Isles, almost annually. Below are listed similar occurrences to hit the region. Of note, are the dates on which some of these occurred.

**6-7th August 1770 at Lynmouth (Devon)** This flood that struck the South West, is thought to have had even heavier rainfall than the historic floods of 1952.

**28th October 1827 at Boscastle (Cornwall)** "One of the most awful days I ever experienced at Boscastle. It rained very heavily in the morning & whilst we were in the Chapel increasingly so - when about to leave the whole street was filled with a body of water rolling down & carrying all materials with - that devastation & ruin were its concomitants - by about 1 o'clock the rain ceased leaving the fine McAdamised road in complete ruin from Polrunny to Dunn Street. At Bridge teams of Wagon Horses were saved with difficulty. Pigs also belonging to the Cottagers were taken out of ye Roofs of Houses. Mr Langford & Cottagers the West side of the Bridge suffered much. But thro the goodness of God on the East River [Valency] the waters were raised but little & our property preserved in safety - I would mark the finger of Divine providence & acknowledge his loving kindness." - from the Journal of Thomas Pope Rosevear.

**16th July 1847 at Boscastle & North Cornwall** The devastating floods that swept down from Davidstow Moor, washed away all but 2 of the bridges along the River Camel - Wadebridge and Helland being the only survivors.

**12th July 1901 at Maidenhead (Somerset)** 92mm fell in 1 hour.

**28th June 1917 at Bruton (Somerset)** 242.8 mm of rain fell in 24 hours.

**16th August 1924 at Cannington (Somerset)** 238.8 mm fell in 24 hours, with 215mm falling in just 5 hours.

**19th August 1924 at Brymore (Somerset)** 225mm fell in 5 hours.

**6th August 1930 at Cheddar (Somerset)** 111mm fell, flooding the famous caves.

**15th July 1937 at Pensford (Somerset)** 106mm of rainfall.

**4th August 1938 the South West** 162mm fell in a severe thunderstorm, just before dawn. At Torquay (Devon), 127mm fell in just over 2 hours.

**6th September 1950 at Boscastle, Camelford and Bude (Cornwall)** The

remarkable feature of this flood was the torrential rain, the heaviest in living memory, and the rapidity with which the Valency river rose and burst its banks. Trees 6m (20ft) high were ripped up along the valley and carried along the river, passed through the road bridge but then piled up against the lower bridge forming a dam that then caused the waters to back up into the village.

**15-16th August 1952 at Lynmouth (Devon)** 229.5mm of rain fell in 24 hours with 275mm over certain parts of Exmoor and even 300mm at Simonsbath. Heavy rainfall over the preceding two weeks, then 21 hours of torrential rain starting around noon on the 15th, drained into the West Lyn river. The almost stationary cloudburst lasted over 7 hours, then, as at Boscastle, a sudden surge of water swept through the valley causing devastation on a scale that people still talk of, 50 years on. The flood claimed 34 lives and left 420 people homeless. 93 houses and 28 bridges were destroyed and 38 cars swept out to sea. It was concluded that a large dam of debris had accumulated upstream, which under the strain of the deluge, gave way, and some 200,000 tonnes of rubble, trees and boulders were carried down the valley, through the village and into the Bristol Channel.

**18th July 1955 Martinstown (Dorset)** 280mm in 15 hours, 190mm falling in 4.5 hours. This remains the British record for daily rainfall.

**8th June 1957 Boscastle and Camelford (Cornwall)** 203 mm in 24 hours, 140 mm of it in 2½ hours with hail drifts over ½m (2ft) deep.

**3rd June 1958 Boscastle (Cornwall)** The Valency river is estimated to have risen 4½m (15ft) above its normal level in the short space of 20 minutes after a cloudburst on the high ground around the village. This was the worst flood in living memory and tragically claimed the life of 45 year old Mr Berryman, the Bandmaster of Boscastle Silver Band, who helping neighbours, was washed off his feet, down the river and into the harbour where he drowned.

**6th February 1963 at Boscastle (Cornwall)** Many villages and towns in North Cornwall suffered flooding during this week, as the heavy snows that had hit the country began to thaw. Boscastle suffered as the slush on the high-ground flowed down into the valleys rivers.

**14th June 1965 at Wadebridge (Cornwall)** 140mm of rain fell in 220 minutes.

**10th July 1968 at Chew Stoke, Mendips (Somerset)** 175 mm was recorded. 125mm of rain in 90 minutes in parts of Devon and several people in Sidmouth (Devon) drowned.

**11-12th July 1982 Bruton (Somerset)** recorded 113 mm of rain in 16 hours.

**9th June 1993 Culdrose & Helston (Cornwall)** 125mm of rain in 9 hours, 92mm of this in 2 hours.

### What of the future?

Despite conflicting views on the topic of Global Warming, it is now acknowledged that our climate is changing. With evidence suggesting that the past 100 years was the warmest of the last millennium.

In visible terms, spring arrives in Britain (on average) one week earlier than 30 years ago and although there are benefits from this, there are also disadvantages. As temperatures rise, instances of violent storms and floods seem set to increase.

Another factor increasing the risk of flooding is the rise in urban development. As more housing complexes are built with their accompanying infrastructures, there is less ground for excess rainwater to percolate into, therefore it runs off the surface - roads acting as riverbeds, a key ingredient of flash floods.

Most of the inhabitants of Boscastle are under no illusion, from past experience the village may well witness further floods in the future, but hopefully not on this scale. Preventative



measures and improvements by the Environment Agency are already under way. They include a new culvert on the River Jordan, upstream of the Wellington Hotel, extending a further 80m into the River Valency. At the time of publishing, discussions concerning flood risk management in the upper Valency catchment area were also taking place, but no conclusions have yet been reached on further works in Boscastle.

### The aftermath - a short summary

- Around 1000 residents and visitors are believed to have been affected in this devastating event. They witnessed the largest peacetime rescue in the history of mainland Britain.
- Miraculously, there were no fatalities, with only 1 reported casualty - a broken thumb.
- 7 helicopters airlifted 100 people (including 6 firefighters) to safety.
- 29 out of the 31 Cornwall County Fire Brigade stations were involved in the incident. They remained at Boscastle for 7 days, assisting in the clean-up operation.
- 58 properties were flooded, 4 of which were demolished, The Visitor Centre, Clovelly Clothing, Things and the Harbour Light.
- A further 40 properties were flooded in Canworthy Water, Bude, Helebridge and Crackington Haven with severe flooding at Otterham, Week St Mary, Marshgate, Millook and Camelford.
- 4 footbridges along the Valency Valley were washed away.
- 84 wrecked cars were recovered from Boscastle's harbour and streets, 32 could still be out at sea.
- The significant infrastructure damage to buildings and services, could cost North Cornwall District Council up to £2 million.
- A National Appeal was set up and administered by local trustees, with help from North Cornwall District Council. Over £200,000 of donations had been received by November 2004; £100,000 of which has already been distributed.

#### Useful internet sites you might wish to visit:

- [www.ncdc.gov.uk](http://www.ncdc.gov.uk)
- [www.visitboscastleandtintagel.com](http://www.visitboscastleandtintagel.com)
- [www.environment-agency.gov.uk/subjects/flood](http://www.environment-agency.gov.uk/subjects/flood)
- [www.southwest999.co.uk/boscastle](http://www.southwest999.co.uk/boscastle)
- [www.tintagelweb.co.uk](http://www.tintagelweb.co.uk)
- [www.meto.gov.uk/climate/uk/interesting/20040816](http://www.meto.gov.uk/climate/uk/interesting/20040816)
- [www.personal.dundee.ac.uk/~taharley/all\\_extreme\\_weather\\_months](http://www.personal.dundee.ac.uk/~taharley/all_extreme_weather_months)
- [www.wiseweather.co.uk/weatherwise](http://www.wiseweather.co.uk/weatherwise)

#### NCDC wishes to thank everyone involved with the rescue, restoration and recovery.

Leaflet credits: Coast & Countryside Service for 1st hand accounts; Cornwall County Fire Brigade, Pam Durrant and Daniel Combes for flood photos; RNAS Culdrose for aftermath photos; Ann & Rod Knight for historical information; Malcom Lee for statistical data.

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# BOSCASTLE The Flood

16:08:2004



Photo by Pam Durrant



The photographs above show the carnage and the aftermath, on Tuesday 17th. They were kindly supplied by RNAS Culdrose.

Proceeds from the sale of this leaflet will go towards re-establishing the Visitor Centre in Boscastle

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[www.ncdc.gov.uk](http://www.ncdc.gov.uk)

The storm clouds over Boscastle, taken by Daniel Combes at Sandymouth, Bude



The following dramatic sequence of images were taken by Firefighters from Delabole Fire Station, the first emergency fire crew on the scene.

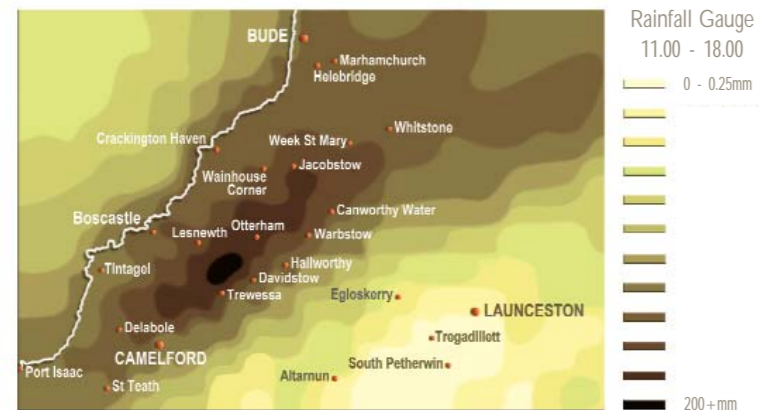


## How did it happen?

Studies of extreme rainfall patterns have concluded that freak floods are more likely to occur in June, July and August than at any other month of the year. They follow a course of events categorised as Convective. This is when atmospheric conditions, such as a warm ground surface, typically found during summer, lead to the uplift of air masses which subsequently cool, producing cloud and rainfall formations.

At midday, on the 16th August 2004, heavy, thundery showers had developed across the South West, these were the remnants of Hurricane Alex which had crossed the Atlantic. Bands of showers aligned themselves with winds that had converged along the coastal high ground around Boscastle, creating Cumulonimbus clouds 12192m (40,000ft) high and kept them stationary for many hours. This, along with the topography of the area, was the key to the catastrophe.

It has been estimated that the Boscastle valley's catchment area exceeds 23sq kms (9sq miles), spanning inland to Bodmin Moor where many small rivers spring. The steep sided valleys that converge down to the sea, known in the trade as "flashy catchments", act as huge funnels and can produce true flash floods after a sudden cloudburst or prolonged heavy rainfall. During the afternoon of the 16th, an incredible amount of rainwater fell, conservatively estimated to have been over 1,422 million litres (310 million gallons) of rain in just 2 hours, that's over 197,500 litres (43,000 gallons) falling per second. At its peak, nearly 25mm had been recorded in a 15 minute time span, that's over 632,000 litres (139,000 gallons) falling per second, the equivalent of 100 tonnes or 21 petrol tanker loads flowing through Boscastle every second!



## The Visitor Centre

The original Boscastle Visitor Centre was opened in 1994, for visitors to discover more about the area. It was run by the District Council's Coast & Countryside Service, and was managed by Rebecca David and staffed with local volunteers. After 10 years of service, with over a million visitors stepping through its doors, its interior displays were refurbished in 2004, ready for the summer season. Amongst the new panels and information boards was a C14th segment of a screen from nearby Trevalga church, which had been kindly lent for display and safe keeping. This 1.2m (4ft), historic piece of oak, carved with Christian symbols and angels, had with the accumulation of time turned as hard and heavy as stone and had been placed, in what was known as the "ecclesiastical" room. This unfortunately bore the brunt of the 3m (10ft) wall of water that swept down the valley. The Centre's manager, who was ushering trapped visitors up the narrow ladder that led to the storage attic at the far end, saw this weighty relic float by and despite her efforts to save it, witnessed it riding the waves out of what was once a window and onwards to the harbour. 10 days later, one of the display panels, complete with geological samples, turned up on the coast of South Wales.



(right) The Boscastle Visitor Centre, a popular attraction, where some 100,000 visitors had already called in 2004.



(right) The aftermath. It was from the small remaining roof space of the building that 12 people were eventually airlifted to safety whilst the structure was literally dissolving into the deluge below them.

## Sequence of events at Boscastle on Monday 16th August 2004

- 12.15 Rain gauge at nearby Lesnewth some 4km (2½ miles) up the valley, shows no rainfall and it is dry in Boscastle's harbour area, yet there are torrential showers at Camelford and at the top of Boscastle.
- 12.30 Rain gauge at Lesnewth records just over 3mm of rain.
- 12.39 A Floodwatch is issued.
- 12.45 Rain gauge at Lesnewth records just over 12mm of rain fallen within the last 15 minutes.
- 13.15 Rain gauge at Lesnewth records 15mm of rain in 15 minutes.
- 14.15 Rain still persists, but seems to have eased. Rain gauge at Lesnewth records 7mm of rain in 15 minutes.
- 15.00 First of several power cuts caused by lightning. Start of persistent, heavy rain. Rain gauge at Lesnewth records 13mm of rain in 15 minutes.
- 15.15 Rain gauge at Lesnewth records nearly 16mm of rain in 15 minutes.
- 15.30 The River Valency begins to breach its banks.
- 15.35 Call to Cornwall County Fire Brigade, reports of people trapped by flood water in the Valency Valley, Boscastle. Launceston Station's Firefighters are mobilised.
- 15.45 Rain gauge at Lesnewth records almost 25mm of rain in 15 minutes.
- 15.46 Call from Boscastle's Cliff Rescue Team to Falmouth coastguard concerning rising water levels. Reports suggest that the river has risen over 2m (6 - 7ft) within the last hour.
- 15.50 Call from the Visitor Centre to the Fire Brigade, reporting flooding in the car park.
- 15.53 - 16.49 Fire services from Launceston, St Austell, Bodmin, Padstow and Truro are mobilised to Boscastle.
- 16.00 A 3m (10ft) wall of floodwater rides through Boscastle car park at an estimated speed of 40mph. Bins are afloat. Rebecca David has ushered 5 adults and 6 children up a step ladder into the attic of the Visitor Centre. Rain gauge at Lesnewth shows that the rain is now easing with 10mm of rain in 15 minutes.
- 16.02 Coastguard are informed "situation bad". Roads are flooded.
- 16.03 RAF Kinloss, the rescue co-ordination centre, is put on standby.
- 16.06 Firefighters from Delabole Station, after attending a car accident, are mobilised to Boscastle.
- 16.15 Firefighters from Delabole Station, the first emergency service, are in attendance at Boscastle. Water levels seem to be dropping.
- 16.17 Port Isaac Inshore Lifeboat launched.
- 16.20 A footbridge is washed away.
- 16.22 Rescue helicopters 169 from RAF Chivenor and 193 from RNAS Culdrose are scrambled.
- 16.30 All access roads to Boscastle are closed by the Police. A further wall of floodwater rides through Boscastle car park and crashes into the Visitor Centre. Water now entering the Visitor Centre, the double doors are breaking.
- 16.35 Bude Inshore Lifeboat launched.
- 16.36 Cornwall's air ambulance requested to standby for casualties.
- 16.45 Rain gauge at Lesnewth records no rain in 15 minutes, yet it is pouring in Boscastle.
- 16.52 Severe flooding is reported by the Police helicopter.
- 17:00 The Boscastle floods are approaching peak level. Cars are being washed out of the car park. There is an almighty crash and the whole of the Visitor Centre building is shaken. The end wall collapses along with the roof. The waters, some 2½ m (8ft) deep, are now lapping the top step of the attic ladder. 9 climb out of the velux window onto the remaining roof of the Centre, whilst 3 wait inside. The rain is so heavy that it is hard to see a few feet away.
- 17.10 "Pass to all emergency services. This is a major incident, repeat major incident. We request all the standby aircraft available and all available land-based emergency crews as we are in danger of losing Boscastle and all the people in it." Cptn. Pete McLelland's message to RAF Kinloss from RNAS Culdrose Rescue helicopter 193.
- 17.18 Helicopters 170 from Chivenor, 180 from RAF St Mawgan and 194 from Culdrose are scrambled.
- 17.23 Helicopters begin winching people from buildings.
- 17.55 Truro and Plymouth Hospitals are put



Photo by Pam Durrant, around 15:30



Photo by Pam Durrant, around 16:30

- 18.00 Rescue helicopter 193 reports 15 people dropped off so far, 12 of whom have been rescued from the Visitor Centre's roof and flown to safety on Boscastle football pitch, which is the drop zone for the helicopters. This is one of the largest numbers of people rescued in a single flight during the whole operation.
- 18.00 Portland's Coastguard helicopter is scrambled.
- 21.00 First Fire Brigade relief crews mobilised to Boscastle from St.Ives, St.Austell, Newquay, Camborne and Penzance. Helicopters begin to return to bases. Over 150 people have been airlifted or assisted to safety by the emergency services. Cliff rescue and inshore lifeboat teams continue to search for casualties, checking cars washed out to sea. 2 dogs trapped in cars and lost, are reported. Over 50 local people and visitors spend the night at an emergency rest centre managed by the WRVS at Camelford Leisure Centre.

## Tuesday 17th August 2004

- 09.00 24 hour rainfall totals - Lesnewth, 184.9mm (181mm between 11.30 - 16.30). Otterham, 200.4mm. Boscastle 88mm in 60 minutes and 112mm in 90 minutes.
- 09.00 16 people are possibly unaccounted for.

The search and rescue operation involving North Cornwall District Council, Cornwall County Fire Brigade, specialist search teams with dogs from Wales Fire Service, Devon Urban Search and Rescue, Marine and Coastguard Agency, Ministry of Defence helicopters, RNLI, Devon and Cornwall police, Yorkshire police, Environment Agency and others, continue to search buildings and vehicles.

- 13.00 One person unaccounted for. This is later resolved.

## Wednesday 18th August

Occupants are escorted back into their homes to gather vital belongings.

## Thursday 19th August

Overall co-ordination and control is handed over to North Cornwall District Council. Restoration and recovery begins.



Photo by Pam Durrant, around 17:30