Archival and epigraphic records, more than just a flood magnitude

Dr Neil Macdonald

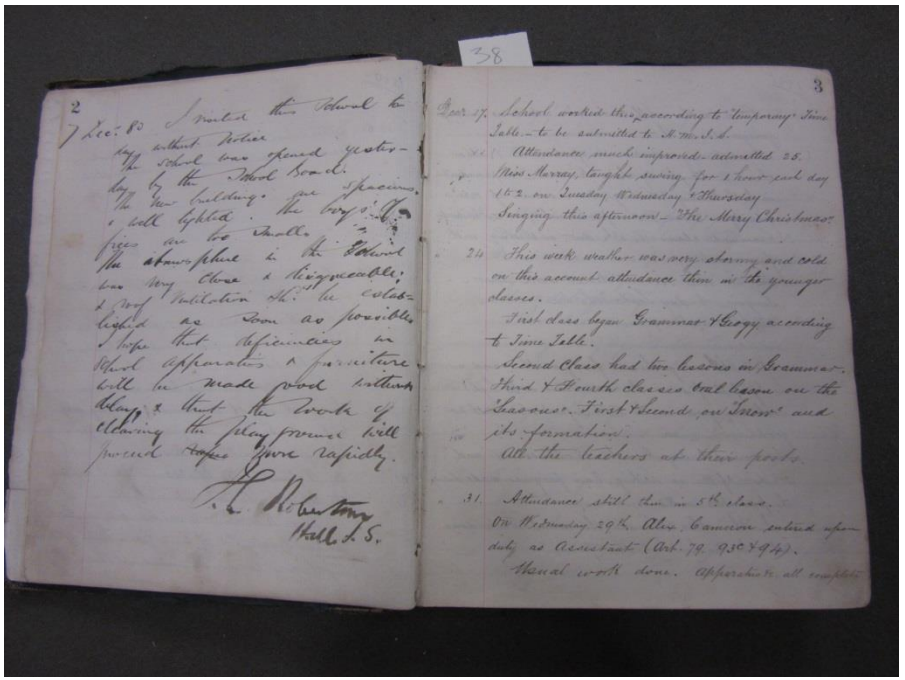
[1] School of Environmental Sciences, University of Liverpool, Liverpool, L69 7ZT
(Neil.Macdonald@liv.ac.uk)

UNIVERSITY OF LIVERPOOL

Historical records

Flood information prior to instrumental records, consisting of:

- Documentary sources
- Epigraphic records
- Images
- Markers/objects
  - e.g. floodstones



Why historical records

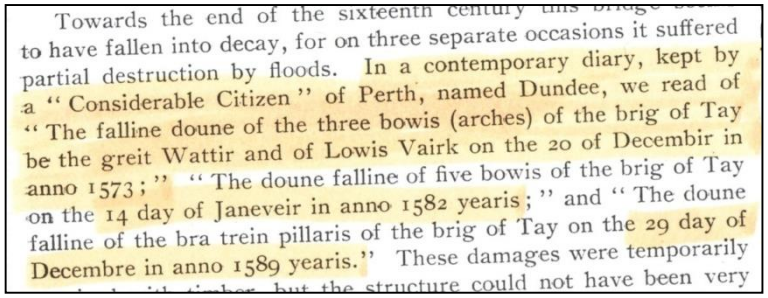
- Conventional river gauging records rarely consist of river flow data exceeding 50 years
- Only a handful of series extend >100 years in length
- Historical records provide information concerning high magnitude floods – events often not recorded within conventional gauged records

Images removed throughout where copyright may present an issue

Documentary records

Sources of documentary records vary:

- Academic publications e.g. *British Rainfall*
- Estate records and diaries
- Church/parish records
- Local accounts/histories
- Economic records
- Military sources
- City records
- Newspapers



Towards the end of the sixteenth century this bridge [illegible] to have fallen into decay, for on three separate occasions it suffered partial destruction by floods. In a contemporary diary, kept by a "Considerable Citizen" of Perth, named Dundee, we read of "The falline doune of the three bowis (arches) of the brig of Tay be the greit Wattir and of Lowis Vairk on the 20 of Decembir in anno 1573;" "The doune falline of five bowis of the brig of Tay on the 14 day of Janeveir in anno 1582 yearis;" and "The doune falline of the bra trein pillaris of the brig of Tay on the 29 day of Decembre in anno 1589 yearis." These damages were temporarily [illegible] with timber, but the structure could not have been very

Documentary records: Diaries

Explore how people have understood, been affected by and responded to extreme events.

SUPPLEMENT TO

The Exeter and Plymouth Gazette

VOL. LXXVIII.—No. 3863.] FRIDAY, JAN. 19, 1866. [GRATIS.

GREAT FLOOD.

To the numerous wind and weather mischances of the week has to be added a destructive inundation, which has torn up railways, washed away sheep and cattle, broken down bridges, swept down fences, and caused great loss of property and loss of human life. The melting snow had on Saturday swollen the Exe, and all its tributary streams; but there seemed to be no suspicion that the river would rise much beyond its boundaries, and what happened during the night came upon most of the people residing on the banks with the suddenness of a surprise. Towards evening the volume of water had greatly increased; to the lower streets in the city of Exeter it had found its way; and the traffic on the Bristol and Exeter and North Devon Railways was stayed by serious floodings. The river continued to rise, and about three o'clock a.m. was at its greatest height—higher, in fact, than it has risen for fifty years. At this time the rush and the roar of the torrent through the Exe Bridge was appalling, and the crash of timber and debris against the buttresses proved that great devastation was being committed. Between three and four o'clock on Sunday morning the waters commenced to subside, but up to a late hour on Sunday Okehampton-road was under water for part of its distance. Subjoined are details of the disaster, prepared by our reporters:—

EXE ISLAND.

The Exe Island received a good share of the flood. On Saturday night the stream running at the back of Mr. Vickary's foundry overflowed, and rushed through the foundry into the island. At one time there was as much as four feet of water over the whole area of the island. Most of the houses were flooded, some to a depth of five feet, driving the inmates for refuge to the upstair apartments, where some of them remained during part of Sunday, waiting for the water to subside. Of course more or less damage was done to the furniture in the various houses, but beyond this—except in one case where a dairyman had all his milk, cream, &c., washed away—no further casualties occurred. The same dairyman (Mr. Davey) lost a valuable cow on Saturday night from his cattle shed in the Exwick marshes. In his endeavours to save the rest of his cows, he narrowly escaped being carried away by the flood. He was obliged to take refuge on the top of his cattle shed, where he remained up to three o'clock on Sunday morning, when he was rescued by some railway porters, who threw a rope to him and dragged him through the water. The lower apartments in the Round Tree Inn were under water to the depth of three feet—casks were floating about, and a quantity of glasses and crockery was smashed. The beer in the casks was all spoilt, and the loss is very serious.

THE COMMERCIAL ROAD AND QUAY.

The Commercial-road was partially flooded, but no great damage was sustained there. The Quay was flooded to a great depth. Mr. Gully's wharf was under water, and a quantity of coal and drainage pipes has been washed away. The water also entered the bond stores, and the goods there have been much damaged. Men were busily engaged on Sunday in baling out the water. Even in the afternoon, beyond the ballast Quay, the water was still very high, and the Port Royal Inn could not be reached without going through water, which was washing into the lower apartments.

ALPHINGTON STREET.

In Alphington-street the water began to rise at three o'clock on Saturday afternoon. At first the advance of the current was slow, but about seven o'clock the river, which had risen to an alarming height, burst through the doors and windows of the shops, &c., nearest the river, in deep streams varying from eighteen inches to two feet six inches. Attempts to check the violent current proving utterly futile, all that could be done was to prevent articles of furniture, &c., from floating out into the street, which by that time was impassable to foot passengers, the "traffic" being maintained by means of carts, the axletrees of which were under water. The road was submerged as far as Alphington Cross, a distance of a mile. About eleven o'clock the pressure of the water in the drains was so great that one, opposite the Anchor Inn, burst in two places. Another large drain, running under the passage of the "Vaults," also gave way partially. Just beyond the Railway-bridge a portion of the road fell into what is called the cesspit. Of course the greatest amount of damage was done in the houses on the side of the street nearest the river. At Mr. Stockham's White Hart Inn the water carried away a door opening upon the river, utterly destroyed the bowling alley, and tore through the yard and ...

timber, which his men have been engaged on the marshes in recovering.

About four o'clock in the morning some men rescued a sow, which was being carried down the current.

A boat, or rather the wreck of a boat, was drawn out of the river, with a couple of large beams, which appear to have belonged to a bridge.

OKEHAMPTON STREET AND ROAD.

Over Exe Bridge, the ground lying low, the water settled in great volume, rendering it impossible to pass, on foot, either into Okehampton-street, Cowick-street, or Alphington-street. The houses in all these streets were flooded, but the damage to the furniture of the houses seems to be the principal loss. At the Seven Stars Hotel, however, the case was different. Here the water made its way into the cellars, destroying the whole of the beer, wines, &c., stored there. The water also penetrated to the bar and parlours, injuring the furniture, and Mr. Hex's loss is very great. The water had not completely gone back in Okehampton-street and Cowick-street on Sunday afternoon, and many of the inhabitants were still detained prisoners in their houses. At all the public-houses in the locality, beer and spirits were spoilt to a greater or less extent. Mr. Heard's garden was much damaged; even the path being broken up. Smaller gardens were served in a similar manner. The road leading from Exwick was under water to the depth of about five feet. The Exwick marshes were submerged, and nothing could be seen but the tips of the hedges and the trees. We hear that Mr. Smith, cattle dealer of St. Thomas, lost between 30 and 40 sheep that were grazing in the marshes; they were carried away by the torrent.

EXWICK.

In the Exwick-road the water did not do so much damage—except in the lower part sloping towards the river. At the residence of T. M. Snow, Esq., although the house was not at all injured, the gardens were completely under water, and very considerably damaged. A poor fellow named Saunders lost two donkeys; he suspects that the animals were driven into the flood, because he had seen them the previous evening grazing in the road, which was not reached by the water. One of the animals was found dead on Sunday morning in the mill-leat. A cottage close to the Exwick Mills was flooded to the depth of about five feet, and the inmates, although fearful that the water would burst the walls, were compelled to remain the whole night in the upstair rooms. On Sunday the inmates were engaged in removing the deposit of mud left by their unwelcome visitor, and endeavouring to dry their furniture. About forty bags of potatoes lodged in an outhouse were completely spoilt by the water. The same happened to Mr. Mallett's house at the Exwick Mills, who had the whole of his garden stuff swept away. Fortunately no damage was done to the mill. In Exwick village the effects of the flood have been most disastrous. On Saturday night the road was overflowed with water, nearly four feet in depth. The whole of the houses on one side were filled with water in the lower rooms, and the loss to the occupiers, mostly poor people, is very serious. A block of houses, known as Lloyd's Cottages, were so sapped by the water that the cob walls burst open, and the whole are now in ruins. The occupiers, about two o'clock in the morning, were aroused by the hissing and seething of water forcing its way into the houses, and as one of them coming down he discovered that the front of the cottage had fallen out, and that there was about five feet of water in his kitchen. He went upstairs, opened the window, and gave an alarm. Assistance was rendered by the neighbours, and the inmates of that house and the others were taken out by means of ladders. One of the occupiers of the houses kept a little shop, and all his goods were either washed away or rendered worthless. It was fortunate that the inmates did not stay in their houses, for within a few hours after they had left the back walls also gave way, and the whole of them are now in ruins. Some stores belonging to Mr. Shore were surrounded by water, and the contents, consisting of meal and corn, were under water and consequently rendered worthless. Passengers from Exwick, wishing to come into the city were obliged to go all round by Cowley Bridge, because the bridge leading from the village to the St. David's Station was under water, and partly carried away. The force of the water has bent a part of the bridge, and the remainder of the structure can scarcely be considered safe. It has since been made passable for foot passengers. The paths in Exwick Fields were in many places broken up, a bridge over a gully was destroyed and parts of the hedges washed away.

PRINCE'S ROAD.

At Head Weir the scene was extremely grand—an immense volume of water was rushing down the river at the rate of ten miles an hour, and at the weir it rolled in gigantic waves, putting one in mind of the sea coast during a heavy gale. The Duckes pleasure ground was mostly submerged, and great damage done to the walks. The water at one time came into the road, and entered the Shakespeare ...

is very remarkable, but their marvellous escape is due, in a great measure, to the foresight and energy of the engineer, Mr. Blackburn. About eight o'clock on Saturday night that gentleman received information that the river was rapidly rising, and an inspection proving there was real cause for alarm, he collected his workmen, to the number of forty, and set to work to remove the most valuable portion of the stock, which was very large, to the upper rooms. This having been accomplished by ten o'clock, he turned his attention to strengthening the building. The river flows under a part of the large machine room, and the floor of that portion is raised two or three feet by a brick wall. The water had already covered the raised floor and began to ooze up through the boards and the wall. The latter was hastily but strongly shored up, Mr. Blackburn and the men working up to their waists in water, by the light of candles, the gas having gone out in consequence of water having got into the pipes. A large quantity of paper was placed on the floor to prevent the water from lifting it; and these precautions saved that portion of the building, for if the floor had been lifted or the wall swept down, that angle of the structure must inevitably have been totally destroyed. Even as it was the water forced rubbish between the boards of the flooring and pushed out the wall in several places. The stream swept completely round the mills bringing with it all kinds of debris which it had been busy collecting, and a quantity of which it left in the neighbourhood. The damage done does not amount to £50, but £1,000 would not have covered the loss, had not everything that human forethought could suggest been done.

SALMON POOL.

At Salmon Pool the gardens and lawn were two feet under water, and the inmates were obliged to take refuge up-stairs. Had it been spring tides the house would have suffered materially. The marshes all around were inundated, and covered with pieces of timber. Two fat pigs were saved alive in Duck's Marsh. At Double Locks the under part of the house was covered two feet.

THE RAILWAYS.

Of the three companies whose lines run into Exeter, the Bristol and Exeter Railway Company have been by far the greatest sufferers by the floods. Such a rise of waters in the valley of the Exe has not occurred since the opening of the line, and nothing of the kind was anticipated by the constructing engineers. The melting of the snow over the wide extent of country inclining towards the Exe and its affluents was accelerated by the rainfall, and the meadows skirting the Exe were on Saturday morning pretty generally submerged. In the afternoon the river boundaries for miles were extended to the hills on each side, and the Exe had assumed the proportions of a Mississippi. Even then little apprehension was entertained of danger to the railway.

The traffic was conducted as usual until the mail train, which left Exeter at 4.15 on Saturday afternoon, neared Cullompton, when the engine and tender left the irons. The train was pulled up without further accident, or injury to any of the passengers. On examination it was found that the waters had washed away the ballasting at a place called Gibraltar Bridge, displacing the longitudinals. A guard went back a mile and placed detonators on the rails. This caused the driver of the 4.45 train (due at Cullompton at 5.10) to pull up short. It was decided to run this last train back to Hele, and the engine went on to Exeter from thence to stop the 5.35 express, and fetch assistance. Most of the passengers alighted at the station and began wondering how they were to be extricated from their unpleasant position. The telegraph posts having been blown down by the late gale on both sides it was impossible to convey any information to their friends. Some started off to walk to Cullompton, but after a while returned, having found the road inundated, in some places too deep for horses to pass. In the course of an hour or so an engine came up from Exeter, with Mr. Mears, the station-master, and others, and passed through to the mail train at Gibraltar Bridge. By this time the water had come up to the metals at the station, and by half-past eight o'clock it was a couple of feet deep over them and rushing in a torrent between the platforms towards Exeter. The stranded passengers had been discussing round the waiting-room fire the possibilities of getting back to Exeter; but it now became evident to them that even that journey, if possible, would be attended with considerable danger, and a move to the Railway Hotel was decided upon by many. This was effected with difficulty, the roadway behind being from six inches to a foot under water. Amongst the passengers were two or three gentlemen of Tiverton who intended to have reached that town in time to hear Sir John Hay's address to the electors, announced to be delivered at six o'clock, and one of our own staff, who had left Exeter for Tiverton, for the purpose of reporting the hon. baronet's speech. Some ladies were also present, who had to be carried to the inn; where it was expected all who could be accommodated would have to stay the night. The general was not improved by the landlady's statement that the ...

At daybreak on Sunday morning Mr. Blackmore and a large body of men proceeded from Tiverton junction to Gibraltar-bridge. Just below they found both sets of lines had been undermined by the flood, and forced considerably out of their course. The carriages of the mail train were inclining towards a deep water pit, from which they were only separated by a hedge. The passengers may therefore be considered to have had a narrow escape. The injury to the line was temporarily repaired in a few hours; and a pilot engine passed through and down to Cowley-bridge. About half-past eleven the first train got down to the same point. Several complaints have been made that passengers who came so far were not met by trains or other conveyances from Exeter, and had to wait about a long time or walk to the city.

The 5.30 p.m. train of the Bristol and Exeter Railway passed through Cowley Bridge safely on Monday evening.

The South Devon Company got off very easily; the waters were over the rails in several places, though little damage was done.

On the North Devon line the train that left Exeter at 6.10 p.m. on Saturday could only get as far as Portsmouth Arms, as the water was up to the axles. The passengers had to stop at the station master's house all night. They all thanked the driver for not proceeding, for it was found that the line was badly washed away beyond, and the telegraph poles were broken down. The station master at Barnstaple could not find out where the train was. He dispatched omnibuses to Umberleigh and Portsmouth Arms stations at midnight, but on their arrival at New Bridge, about three and a half miles from Barnstaple the road was submerged in water. The "leader" of the "Lion" 'bus, ridden by a postilion, was unfastened and crossed the water to ascertain its depth, which was found to be half way up the horse's ribs. The driver of the "Lion" 'bus having a postilion crossed in safety. The "Fortescue" 'bus drawn by four horses without a postilion, followed but was not so fortunate. The leaders in the middle of the stream became frightened and the driver dismounted and having liberated one of the horses, himself and the animal were carried away by the torrent, but, wonderful to relate, landed in safety on the opposite side. The 'bus and remaining three horses were in the water for seven hours when they were pulled out by means of ropes, with considerable difficulty. A person in endeavouring to rescue them lost his footing and was nearly drowned. The "Lion" 'bus in which was the Barnstaple station-master proceeded but on going down the hill to Umberleigh it was found impossible to reach the station, the water being from 8ft. to 10ft. deep. They then returned to Barnstaple, and the station master dispatched two 'busses and a coach to Umberleigh via Swimbridge(?) Road, and the passengers were brought on to Barnstaple, arriving there at half-past one on Sunday afternoon. The up mail train on Saturday night found the water over the line near Portsmouth Arms, and one or two other places, as high as the buffers of the engine; but it got down to Cowley Bridge all right. Here it was kept for some time, until it was found the passage could not be made. It was then put back to Pyne's Bridge, where the passengers were "landed," and conveyed to Exeter in 'busses and other vehicles. The first thing on Sunday morning Mr. Tyler, district superintendent, and the engineer (Mr. Kale), took a cab to Crediton, and from thence proceeded on a special engine to examine the whole of the North Devon Line before allowing any passenger train to proceed. They could only get as far as Umberleigh, as the line was slightly damaged beyond, and passengers had to be cabbed from that station to Barnstaple. The line was in complete working order throughout on Monday. The worst part of Cowley Bridge was made right at one o'clock, and the up London express passed over it as usual.

In common with other rivers in the adjoining counties the Otter was much flooded on Saturday, and in its neighbourhood the South Western rails were submerged, at some parts nearly covering the axles of the carriages. The trains, however, were run as usual and without accident. Near Gillingham, too, the water was rather high, but not sufficient to hinder the trains.

RELIEF MEETING IN ST. THOMAS.

A public meeting was held in the vestry on Tuesday morning to consider whether any and what steps should be taken to relieve the sufferers who required assistance.—The vicar, the Rev. W. H. Howard, presided, and there were also present.—Rev. F. A. Savile, T. Snow, Esq., Messrs. Prince, Elworthy, Read, Gadbear, Addicott, Stone, Clegg, and Roberts.—The chairman having stated the object of the meeting, expressed his sympathy with those who had suffered, and his readiness to give all the assistance in his power.—Mr. Addicott moved that a committee be appointed to collect subscriptions throughout the parish and city for the relief of the sufferers. The Rev. F. A. Savile said most of them had witnessed some of the suffering produced on the poorer class of their fellow parishioners by the late flood, and they must all feel anxious to relieve them as far as possible. He begged to propose, in lieu of Mr. ...

sheet of water on all sides covered the road and fields for a long distance, and rushed across with an impetuosity that human strength could not resist unaided. Darkness had set in, and the water rose higher and higher, reaching at last to their breasts, so that they had to scramble into the hedge and into a tree near for safety. Poor Jessett turned a deaf ear to all entreaties to quit the horses. Twice Mr. Wescomb went to the place where the too faithful fellow stood, offering to help him across to the protection of the hedge—on the first occasion he took Mr. Wescomb's hand, walked a few steps and then hurried back to the animals, and on the second occasion he did not stir, though Mr. Wescomb told him that he dare not venture into the current a third time to help him. Soon afterwards Jessett's cries for help ceased; the stream carried him under the fly, and there he was subsequently found drowned. Mr. Wescomb and Mr. Bennett clung with despairing tenacity to the hedge and the tree, the latter needing and receiving the former's help in consequence of the injury to his leg. For two hours and a half they continued in this dangerous predicament, the water rushing and roaring over them, and threatening to sweep them away every moment. In the meantime willing efforts were being made to rescue them. Mr. Grant, on seeing the fly overturned, hastened back to the Teign Inn, at Christow, gave the alarm there to the captain and men belonging to the mines, and they, with others, hastened to the scene of the accident, carrying with them ropes, ladders and lanterns. But the water was so deep from the mill stream to the bridge, and the current so strong, that two hours were expended in getting near the persons in peril. Brave fellows strove to get across the water with ropes round their persons, but were beaten back, and at one time it was thought that the effort must be abandoned, or more lives might be sacrificed. Mr. Leviton (familiarly known as Joe Leviton) very courageously determined to make a last attempt and was pluckily seconded by Mr. Wills. At last a ladder was carried within a few yards of the spot where the two were clinging; they scrambled along it on their hands and knees across the worst part of the current, and by means of ropes tied round them were pulled through the rest of the flood and taken to the Teign Inn. They were there attended by Mr. Stephens, surgeon, received the utmost kindness from the landlord and landlady, and were able to return to Exeter on Sunday morning. As we said before, poor Jessett perished, from his eagerness to save the horses. As soon as his body was found attempts were made for nearly an hour to restore life without effect. One of the horses kicked itself clean of the fly, had the instinct to get behind the remains of the carriage, and after being nearly covered with water for four hours was saved—the other remained in the fly and was drowned. Of course the carriage was smashed. The deceased Jessett was a steady and industrious man, and must be known to numerous families in Exeter as a skilful and obliging driver. He was a widower and leaves one son and one daughter, both married. He had been with Mr. Collings for more than a quarter of a century.

THE INQUEST.

The inquest on the body of John Jessett, aged 52, was held at the Teign Inn on Monday afternoon, before H. E. Crosse, Esq., county coroner, and a very respectable jury, of whom Mr. John Day was foreman.

The Coroner observed that the jury had a very melancholy duty to perform; but it was a very light one, because there appeared little doubt that the deceased's death had been accidental. They would hear the evidence of one of the gentlemen who so narrowly escaped a similar death, and that of the man who took the body of the deceased out of the water. This would satisfy them as to the cause of death.

The jury then proceeded to an up-stairs room to view the body; and the Coroner remarked on their return that the body had had a great deal of knocking about.

Mr. Charles Wescomb, jun., then deposed as follows: I reside in Exeter, and I came out on Saturday last on business at the mines at Christow. I was accompanied by Mr. Henry Reed Bennett, and the deceased drove us in a fly with a pair of horses. Mr. Bennett is now at home at Exeter, being too unwell to come out to-day. After leaving the mines we came back to this house (the Teign Inn) to dinner, at half-past three o'clock. We left the inn about five o'clock. The river Teign had by this time overflowed its banks, although the road was quite dry when we passed Bridford Bridge in the morning. Mr. Grant rode a little way in advance of the fly to see the state of the water, and when we came to the turning on to the bridge the water was over the road. Mr. Grant begged Jessett not to try to pass, and I ordered him not to pass. Mr. Grant pulled his horse across in front of the fly, and tried to stop him; but Jessett said he knew he could go through, and said something about our keeping our seats. After driving a few yards through the water, one of the horses seemed to be terrified by the force of the torrent, and presently they stopped. The current was very strong. I had the door on my side partly open, and was standing ready to jump out if necessary; and when the fly began to over- ...

FATAL ACCIDENT AT HELE.

On Saturday evening a man named James Leathall, a porter at Hele station, was drowned. He was sent by the station-master to Cullompton with a letter, and on returning saw Mr. Collins, paper manufacturer, Hele, who told him that a portion of the bridge over the river Culm had given way, and that it would be advisable to communicate with the people at the station so that the traffic might be stopped. Leathall volunteered to cross over by climbing the iron fencing by the side of the bridge. On getting to the bridge he guided himself by holding the fencing; but before he had taken many steps the earth gave way beneath his feet, and not having a firm hold he was precipitated into the water. He was an excellent swimmer, and managed to keep himself up for some time; his cries for assistance being heard at intervals for three-quarters of an hour. Several persons were soon on the spot with lanterns and ropes, but the night was so dark that the poor man could not be seen. One man ventured up to his neck in the water, but he could not reach the drowning man. On Sunday morning search was made for the body and about ten o'clock it was found in a marsh near the station. The deceased was 29 years of age, and had been married six months. He had been stationed at Hele ten years and a half. He was a steady man, and was much respected in the neighbourhood.

As stated above, the neighbourhood of the station was entirely submerged. Several tons of coal, belonging to Messrs. Ward and Stone, were washed away from the station-yard. The gas works of Mr. Collins were flooded, and for some time they were in imminent danger, but fortunately the damage was small. The cellars of the Railway Hotel were also flooded; up to Monday evening, the water had not been cleared out. There was a great rush of water against the bridge over the River Culm, and soon after eight on Saturday evening, two of the arches gave way. This prevented communication between the village and station. On Monday, a gang of men, employed by Mr. Collins, were busily engaged in temporarily repairing the bridge, so as to enable foot passengers to cross. The bridge near the station, over which the line runs, sank a little, but not so much as to prevent the trains passing safely over.

A SURGEON DROWNED NEAR MORCHARD.

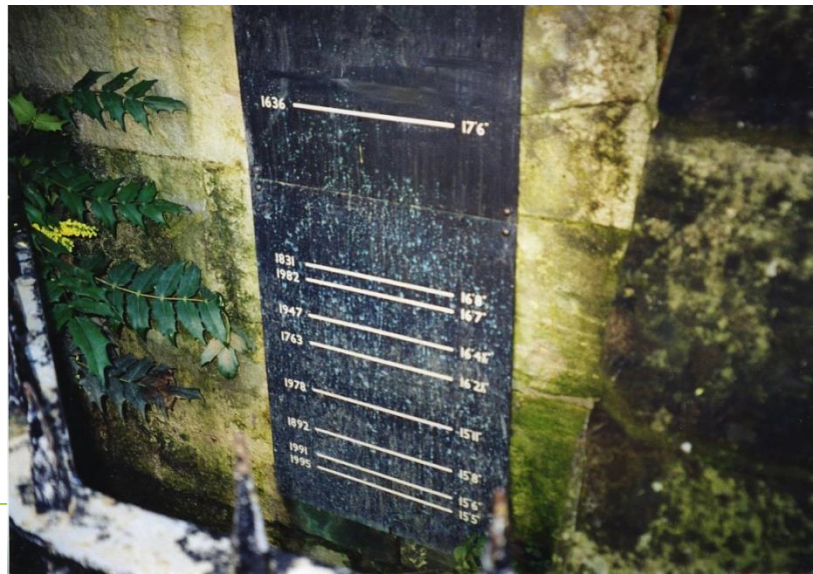
The whole district of Morchard Bishop has been cast into the deepest gloom by a distressing accident, which has deprived the neighbourhood of one of its most valuable inhabitants—C. Radleigh, Esq., surgeon. About half-past two on Saturday afternoon the unfortunate gentleman left his residence, at Morchard, on horseback, for the purpose of paying professional visits to his patients in the district. About four o'clock some labourers saw a horse without any rider, in the midst of a vast sheet of water that had flooded the road and fields, close under Afton Barton. Ordinarily there is but a small stream here, but on Saturday the water rose alarmingly, overflowed the banks of the stream, and at one part of the road, where a kind of gully ran across, a torrent of water to the depth of five feet was rushing across. The labourers were unable to get near the horse owing to its being completely surrounded by water, but it was saved from being swept away by the bridle having hitched in a tree, and thus supporting its head above water. The labourers seeing the horse in this predicament, and riderless, thought that some one must have met with an accident in the flood; they searched for traces of the rider, but could find nothing. By this time the wife and family of the deceased grew very anxious as to his safety—he having been much longer away from home than usual. At last their apprehensions became so strong that persons were dispatched on the route the deceased was to have taken in order to seek for him. At last the place where the horse was still in the water was reached, and then the fate of the unfortunate gentleman became painfully apparent—he had evidently perished in the flood. The banks of the water were explored by anxious seekers for miles, but no traces could be found of the body of the deceased. By this time the conjectures as to the fate of Mr. Radleigh had been made known in Morchard, and upon the receipt of the mournful intelligence a great number of the inhabitants went to Afton Barton to assist in the search for the body. A diligent search was kept up from four o'clock on Saturday to three o'clock on Sunday afternoon; and it was not until that hour that the body of the unfortunate gentleman was recovered. He was found lying in the water, life being quite extinct. The poor gentleman had received a severe cut on the face, and the general supposition is that he must have attempted to cross the road through the water, and that the force of the flood must have taken his horse off its legs and carried it into the stream. Mr. Radleigh must have lost his seat, and it is thought in the fall he must have been stunned, because as he was a very good swimmer it seems probable that had not this been the case he would have been able to save himself. He was greatly respected in the neighbourhood.

Epigraphic markings

- Epigraphic markings indicating historic flood levels are relatively common across much of Europe, covering several centuries in many urban centres with major rivers.

- Can be found in unexpected places.

- Societal value of markings in helping maintain local knowledge of past flood levels.



Epigraphic markings

- Normally located on structures near the river that can be easily viewed during and after flood events
- As a result, most records are preserved on bridges (or on their buttresses) and walls (defensive and domestic structures)
- Epigraphic records represent a valuable tool in understanding the nature and frequency of extreme flood events
- Extreme floods became part of local folklore – with the extent and impact recorded in popular songs and stories

Images

- A snapshot of events
- Can provide valuable information on water level, responses or impact
- Staged images common, or selective coverage

Plate XXIX.—Flood-levels cut on Tree, Right Bank of Tay, near Inver, with Mr. Charles M'Intosh.

Flood Markers

Records exist in many forms from specifically constructed recording poles / structures

Can became powerful tools in the memories of the local populace

Focal points of mourning

Record persistence

- A number of issues are important in record persistence
  - Degradation of materials / erosion
  - Loss of historic materials during floods
  - Destruction/renovation of buildings/structures

Recorder

Why and where are records kept:

- Often in historic towns and cities, but can be found in the countryside (rural); they are often sites that have a long history of residence, or importance as monastic, trade, or governmental centres, reflecting literate individuals
- Levels of significance – warning to the future or a lesson from the past?
- Personal interest
- Formal / informal recording

Spatial and temporal distribution

Localised, sporadic, historic sites with learned individuals, record preservation potential & individual interests

Why recorded and by whom?

Records become more numerous nearing the present

Relatively good records for the largest flood events since 1500AD, with very good records since ~1750AD

Application

Historical records can be used to reconstruct flood magnitudes

Historical information can be embedded into flood risk assessments, using both descriptive and quantitative approaches

Roggenkamp and Herget, 2014

Quantitative estimates of historical events can be incorporated into probability analysis

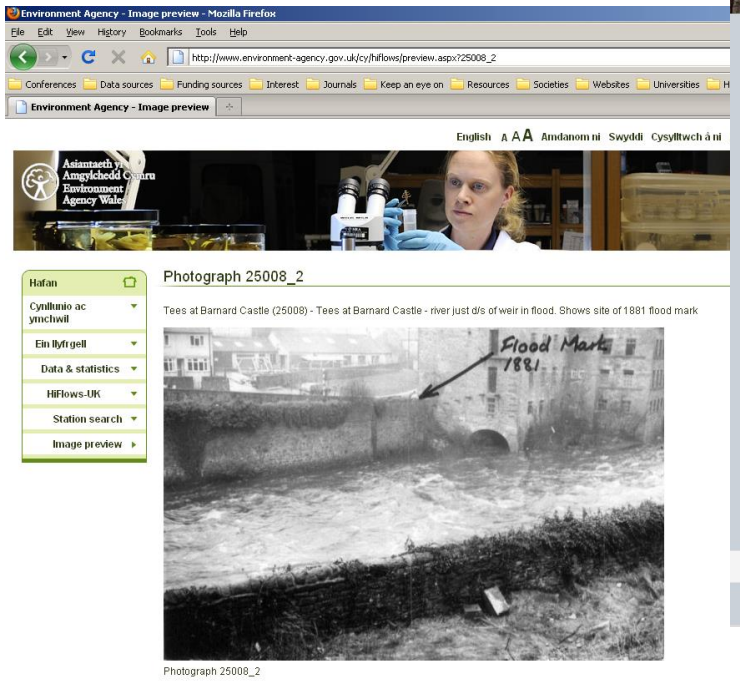
Herget and Meurs, 2010

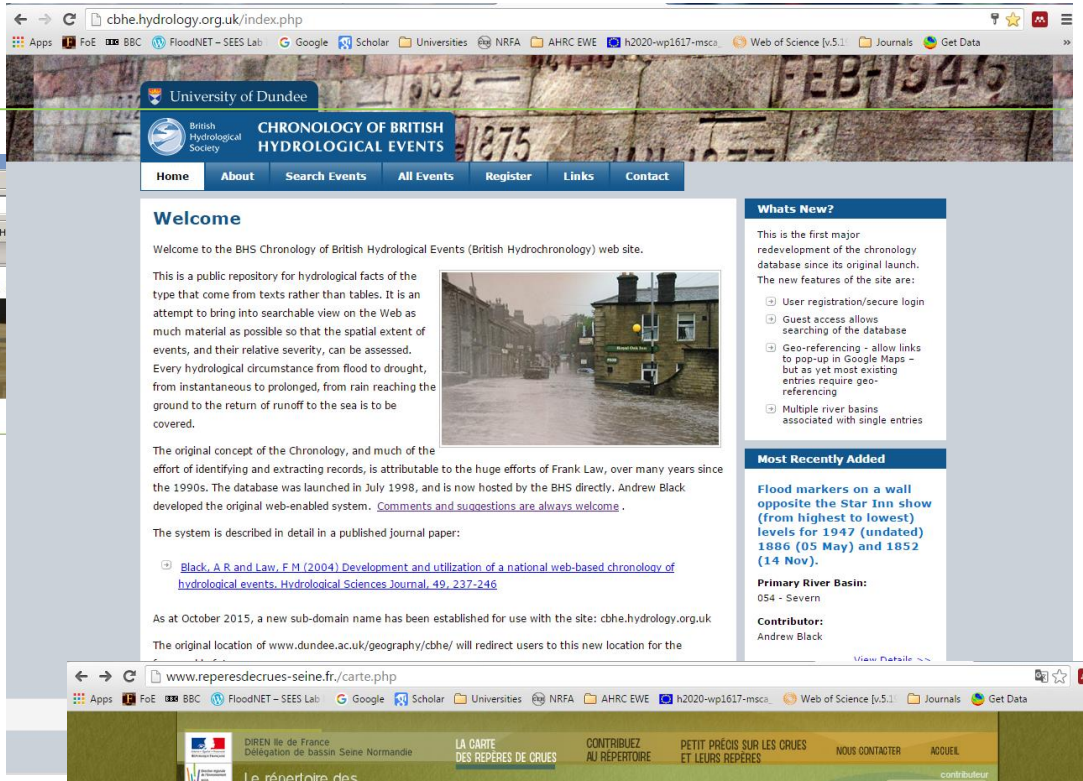
Macdonald et al., 2014

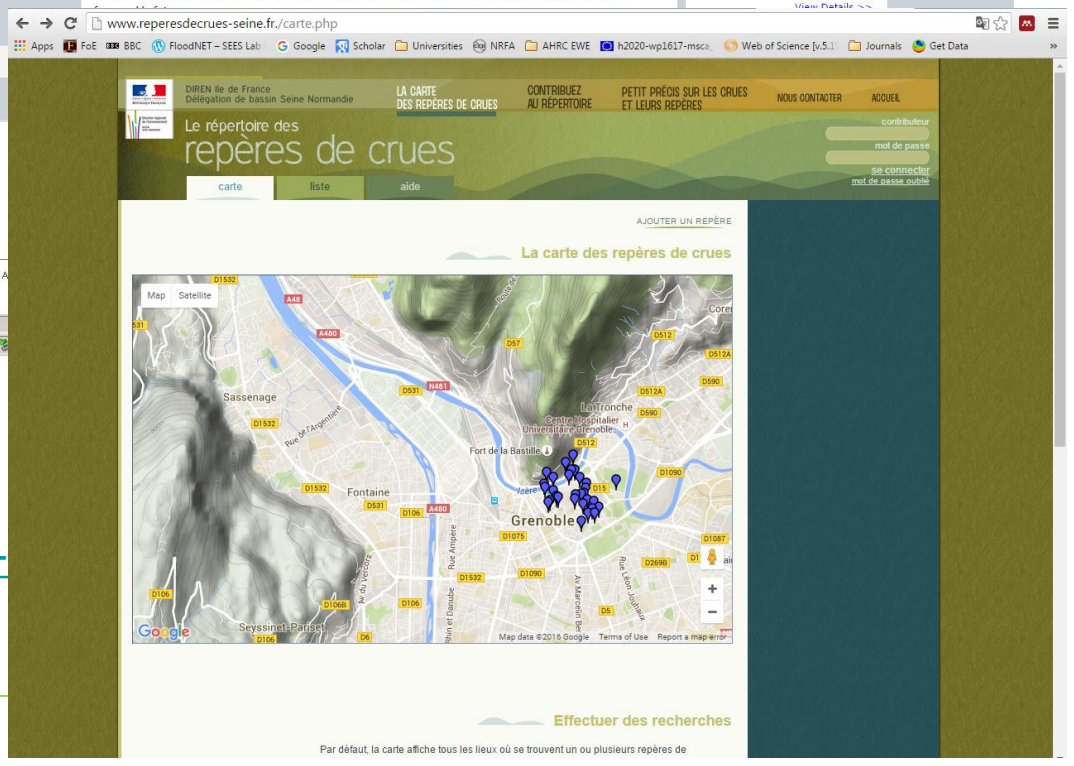
Application

Kjeldsen TR et al. 2014, Documentary evidence of past floods in Europe and their utility in flood frequency estimation, *Journal of Hydrology*, 517:963-973 DOI:10.1016/j.jhydrol.2014.06.038

Databases







http://cbhe.hydrology.org.uk/

http://www.reperesdecrues-seine.fr./carte.php

UNIVERSITY OF LIVERPOOL

Conclusions

Descriptive accounts provide an important local link with past experiences, not just the event, but the people who experienced it.

Epigraphic markings are frequently inscribed during or soon after the flood event, giving them potentially greater credibility than documentary accounts which may be embellished or provide a record of a distant memory.

High magnitude floods have very broad social-economic impacts, which are reflected in the loss of human lives and extensive material damage, as such a better understanding of frequency and magnitude is key.

Significantly enhance local knowledge and understanding, reminding local groups of potential flood levels and impacts.

Future challenges

- A few good examples of guidelines and depositories for historical flood data are present, as part of larger government hydrometric databases, but also existing independently from official databases, and operated mainly by volunteers and populated by citizen science efforts.

- The lack of practical guidelines and the fragmented access to historical information is a practical barrier towards operational use of these data sources to support current risk mapping efforts and decision-making problems.

- The lack of a single recognised approach at a European level makes comparison difficult, warranting greater communication and preferably the development of recognised approaches to historical flood information inclusion within flood frequency analysis.

Thank you