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Climate

# The reasons behind France's recurrent deadly floods

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**Earlier this month, exceptional rainfall caused flash floods in south-east France that swept through the streets of towns and villages, killing 20 people and causing an estimated 500 million euros of damage. It was the latest in a long list of major catastrophic flooding disasters in the country over the past 27 years. As Michel de Pracontal reports, neither fate nor surprise events explain the causes, but rather the incapacity of public authorities to tackle the prevalent dangers, due in no small part to both rampant urbanisation and bureaucratic nonsense.**

The storm-driven flash floods that swept through towns on the French Riviera over the weekend of October 3rd left 20 people dead and caused devastation to homes and infrastructures at a cost estimated to reach hundreds of millions of euros.

But the probability of such an event was arguably as foreseeable as the return of Christmas every December. Flooding is now the most frequent 'natural disaster' recorded in France, and more than 200 lives have been lost in major, catastrophic floods over the past 27 years, beginning with that in the town of Nîmes in 1988. That was followed by the deadly flooding of the ancient Roman town of Vaison-la-Romaine in 1992; in the Aude département (county) in 1999; in that of the Gard in 2002; the town of Montpellier in 2005; the Var département and the town of La Faute-sur-Mer in 2010; the département of l'Hérault in 2012, in the western region of Brittany and the southern Hérault, Gard and Var départements in 2014, and then this year in the southern city of Montpellier, and finally this month in the Alpes-Maritimes département in south-east France.

Importantly, they demonstrate that neither fate nor surprise is involved. After taking up her post as ecology and energy minister in April 2014, Ségolène Royal, who as president of the regional council of Poitou-Charentes in western France had experienced at first hand the deaths and devastation - not least by flooding - caused in the region by cyclone Xynthia in February 2010, took steps to address the issues surrounding flood risks. In July 2014 she launched the first National Strategy for the Management of Flooding Risks (SNGRI), which allows for a series of measures and programmes to help local authorities dissipate the flooding dangers they face. While its full effects over time cannot yet be assessed, so far it has changed little, as first witnessed by the devastation caused by flooding in south-east France in the autumn of last year, and which left 17 people dead.

In November last year, the Riviera city of Nice experienced the heaviest rainfall that was until then on record, just 11 months before the latest flooding poured through its streets earlier this month. While the intensity of the rainfall this October was higher than November 2014, the phenomenon was hardly a surprise - no lightning strike from a clear blue sky.

According to official figures supplied by the ecology ministry, one in four French people live amid a risk of flooding, representing 17 million people, and the risk of the consequences of flooding threatens one job out of every three. Furthermore, the yearly costs from the damage caused by flooding amount to an average of between 700-800 million euros. In the case of cyclone Xynthia, which notably caused 53 deaths from flooding after its destruction of sea walls in the coastal village of La Faute-sur-Mer, the total damage was estimated at 1.7 billion euros. The cost of this month's flooding in south-east France is estimated at 500 million euros.

More than 20 years after the dramatic flash flooding in Vaison-la-Romaine in southern France in 1992 in which 42 people died, France remains insufficiently prepared against the dangers of flooding. Yet there is no lack of data and in-depth analysis of the problem, nor conferences and administrative activity dedicated to the issue.

## 'As of 30 centimetres of water a car starts floating'

The most striking indication of the failure to meet the problem is the persistent high number of fatalities during flash floods. Of the 20 people who died in the flooding this month in south-east France, 11 of them drowned inside their vehicles - seven of whom were caught out by the fast-rising waters that swept a carpark in Mandelieu-la-Napoule, near Cannes. The phenomenon is recurrent, and it is calculated that about 20% of all flooding fatalities are people who drown in their cars.

In 2011, Freddy Vinet, a flood risk specialist and lecturer with Montpellier University, together with his colleagues Laurent Boissier and Stéphanie Defossez, published an article about their research into the fatalities caused by cyclone Xynthia at La Faute-sur-Mer and those caused by flooding in the south-east Var département in 2010 [1].

They noted that "there does not exist in France a detailed data base concerning victims of flooding" and that "everything is as if the mortality due to inundations was residual, negligible, irreducible, and as if the epidemiological study of it is not worth attention". They underlined that perceived ideas about which parts of the population are most at risk are broadly erroneous. While old people, women and children are thought to be most at risk, it is in fact adult males who are the most often victims, notably those trapped within their vehicles.

"When the time for putting out a warning is short, as was the case on October 3rd, the only way to limit the number of victims is to develop 'good habits' among the population," Vinet told Mediapart. "There is a difficult pedagogic job to carry out. People take risks to save their belongings, one of the first causes of getting into danger. They are used to going out to get their cars when carparks are threatened with flooding. That doesn't pose a problem when there's ten centimeters of water, but as of 30 centimetres a car starts floating, and [this month] there were two metres [of water]."

In their 2011 article published in *Vertigo*, an online environmental studies review, Vinet and his colleagues underlined the negative effect of the division of responsibilities between ministries and administrations. Search and rescue and crisis management comes under the interior ministry, while flood prevention measures are the responsibility of the ecology ministry and local authorities, and epidemiological studies are handled by the health ministry.

## The dangers of urbanisation and log-jammed rivers

While there is little if any progress in reducing the number of deaths and educating local populations on flood dangers, it would appear that preparing terrain for flood dangers and limiting the consequences of flooding is even more of a challenge for the authorities.

In the case of the coastal region of south-east France it would appear at first glance to be fairly easy to conclude its high risk of flooding. The climate alternates between very dry periods and sudden and massive rainfall, and much of the land has been subjected to rapid, massive and concentrated urbanization which significantly heightens the dangers of flooding. The constructions along the coastal strips, driven in part due to the rare presence of inland plains, saw intensive development over recent decades. In 2009, a report by the ecology ministry's General Commissariat for Durable Development underlined that the département of the Alpes-Maritimes, in which France's south-east Mediterranean coast is situated, has the country's highest number of buildings standing in areas officially declared at risk of flooding [2], and in which 9,000 new homes were built between 1999 and 2006. In all, 300,000 people live in zones in danger of flooding in the Alpes-Maritimes, despite the recurrence of flooding. "The impermeability of surface ground, due to the presence of pavements, carparks, buildings and so on, means that water immediately runs and concentrates faster," said Freddy Vinet. "What's more, the capacity for [water]

evacuation is insufficient in urban zones, thus necessarily making water pass along the surface."

Which is what happened in the flooding in the region on October 3rd this year. A report published in March by the local prefecture found that out of 963 small municipalities (communes) in the region, 786 (or 80%) had suffered flooding incidents that were categorized as natural disasters (CatNat in the official jargon) [3]. The report, presented six months before the latest disaster, found the strip of coastline that runs west from Nice to Cannes and to Mandelieu, which was the worst hit on October 3rd, faces a significant risk of flooding, with 364,000 inhabitants threatened by rivers bursting their banks, and another 22,000 people at risk of flooding from sea swells.

But urbanisation is not the only factor contributing to flooding. In September 2014, four people died in a campsite at Lamalou-les-Bains, in the southern Cévennes region north of Montpellier. "There is no concrete at Lamalou," explained Pierre Leclerc, head of an association dedicated to tackling flooding risks in a part of the southern Vaucluse département. "What caused the drama was the rupture of a logjam, a natural dam created by tree trunks, branches and other natural objects [...] Generally, along small water courses, logjams are dangerous because they break up in a random manner and make the path of the water unforeseeable. To tackle this danger, there should be maintenance of river beds which in the south [of France] are often filled with trees and bushes. But such maintenance is held back by [the public authorities], who zealously apply European norms which impose the preservation of river beds in the name of the protection of the environment."

Logjams are not a minor danger, and they were partly the cause of the catastrophic flooding in the Var département in 2010.

## High-speed train station to be built in flood-risk zone

The complex bureaucracy surrounding flood prevention legislation can be dazzling. An example is the presentation published by a pressure group based in the Hérault department dedicated to improving the management of water resources and supply, collectif Eau Secours 34, of the application in France of a 2007 European Union directive concerning the assessment and management of flood risks.

"The floods directive requires the management of flood-risks by hydrographic districts," it explained to its members. "Firstly, the TRIs (Flood-Risk Territories) are identified and mapped in each hydrographic district. Then, a PGRI (Plan of Management of Flood Risks) is devised for each hydrographic district by all the parties concerned and not only the public services. The PGRI is for flood risks the equivalent of what the SDAGE (the Directing Schema for the Layout and Management of Water Distribution) is for the management of water and aquatic sites. The PGRI must be coherent with the SDAGE. SLGRIs (Local Strategies for the Management of Flood Risks) are also developed to the scale of the TRIs. The SLGRIs are the equivalent of SAGEs. The SLGRI must be in coherence with the SAGEs (the Schema for the Layout and Management of Water Distribution), something that is delicate to make successful because a TRI does not always perfectly cover the basin or sub-basin of a SAGE."

It should be noted that this was a simplified presentation.

Marc Lainé is a French journalist specialised in issues related to water management, and on his blog he denounces an "incomprehensible pile of programmes, plans, prevention measures" regarding policies to tackle flood risks. He argues that the bureaucratic smokescreen hides a "Balkinisation" of the areas concerned, and that the recent reforms that have reduced the number of French administrative regions, creating larger regional councils, means that "in the field, no-one in reality knows who tomorrow will exercise what responsibilities nor how they will be financed".

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But even currently the responsibilities for flood-risk planning are shared among a wide number of parties, with the result that no-one is truly responsible. Pierre Leclerc claims this is behind the startling construction of a fire brigade station in a land bowl in the southern market town of Cavailon which he says runs a "triple" risk of flooding. A future high-speed TGV train station is to be built in Montpellier, which has suffered regular flooding, in one of the town's flood-risk zones, along with a business park and housing estate. For Freddy Vinet, while the train station will be elevated, it would be "better to put it elsewhere".

Because the re-housing of the some 17 million people in France who currently live in flood-risk zones would be a vast and problematic programme, the reality is that better prevention of the existing dangers is all that can be reasonably hoped for. But there remains the question as to how and why homes continue to be built in these zones, and notably despite ecology minister Ségolène Royal's drive to reduce flood risks.

*English version by Graham Tearse.*

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[1] <https://vertigo.revues.org/11074>

[2] <http://www.developpement-durable.go...>

[3] <http://www.paca.developpement-durab...>