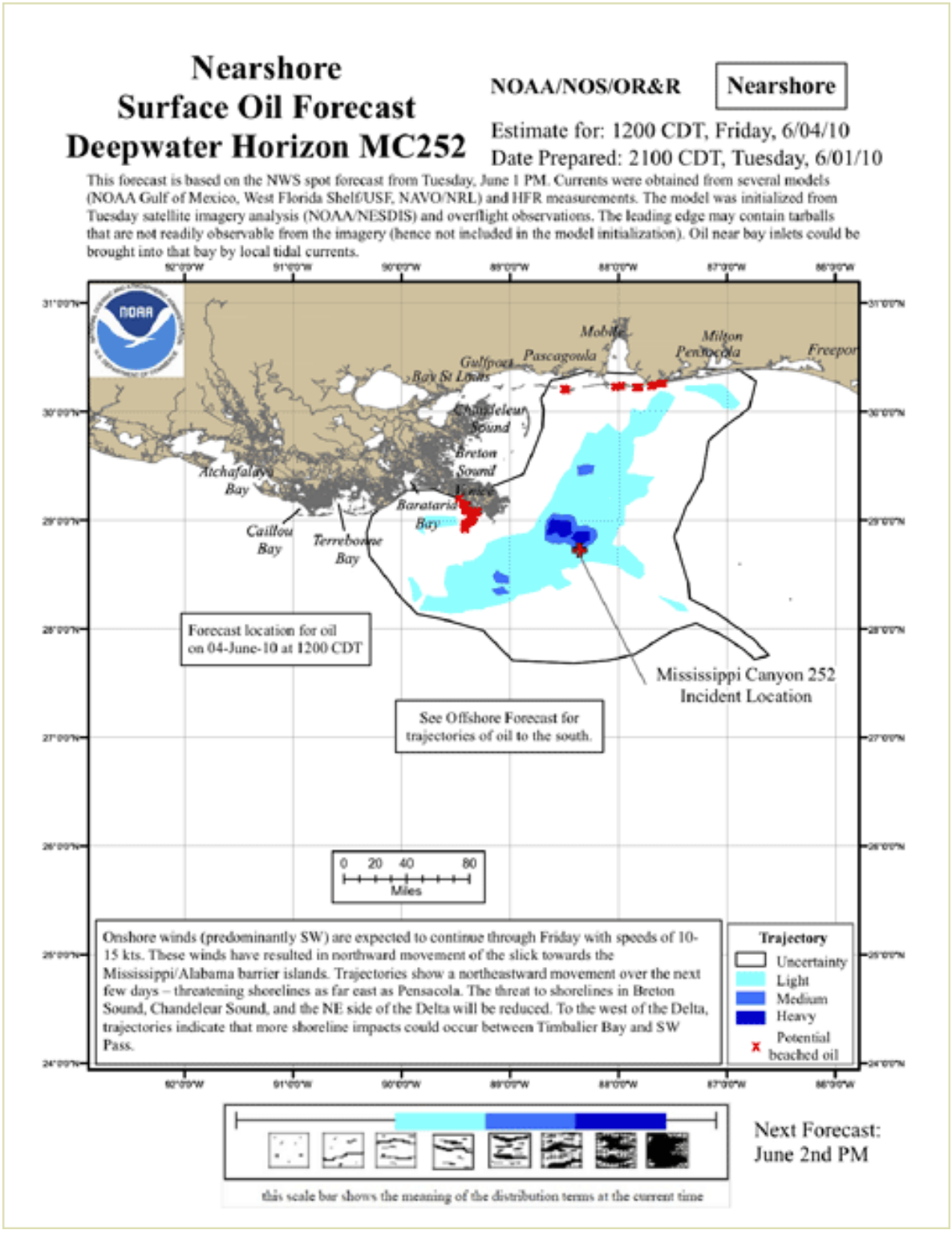
Espacestemps.net

Penser les humains ensemble.

Louisiana, we’ve got a situation (yes, again…).

Responsable éditoriale , le mardi 23 novembre 2010



There are only three seasons in Louisiana: football season, Mardi Gras season, and hurricane season.[1] The beginning of each is marked by civic rituals (knocking on wood comes to mind), heated discussions, expert strategizing, and complicated chart-supported predictions. Just as Mardi Gras represents a major event on the Louisiana calendar (whereas it is just another Tuesday for the rest of the American nation), the first day of June—the date instituted as the start of the hurricane season—bears a special significance for the area. This particular June 1st, that of 2010, brought new meaning to the concept of 'worst-case

scenario' for New Orleanians, as they glanced apprehensively at a simplified version of the map above, displayed on the front page of the local newspaper, the *Times-Picayune* (download the map above in pdf format).

Alarming graphic representations have become a daily fixture of the Gulf Coast press over the past few years. From the trajectory of Hurricane Katrina and the expanse of the ensuing flood to the first recovery plans suggesting that some neighborhoods of New Orleans may not be rebuilt, maps have proven to be a powerful tool when it comes to shaping lives and decisions down here.

The latest round of maps to be thus offered to the Gulf Coast residents' attention has been a graphic bulletin produced and updated daily by the National Oceanic and Atmospheric Administration (NOAA), the federal agency in charge of coastal and atmospheric environmental data gathering, analysis, and diffusion. As part of the US Department of Commerce, the NOAA also plays the role of scientific advisor for the management of coastal and marine resources. Although oil and other mineral resources technically depend on the Mineral Management Service, the NOAA has unique expertise in analyzing the phenomena unfolding in interactions among the hydro-, litho-, and atmosphere.

The technique employed to produce this map resembles that used to plot the trajectories of hurricanes: a set of empirical data (from wind and current speeds to air and water temperatures) is gathered through satellite imagery and overflight observations. This information is then inputted into a model designed to forecast the most likely scenarios. At this point, the 'certainty' of empirical measurements is transformed into the 'uncertainty' of probabilities and estimations. What gets mapped—and communicated to citizens with no technical background—is called the 'uncertainty area', which in this case almost triples the potential size of the oil spill.

This significant cartographic 'guess' about the spill is the result of three factors:

- First, such models are based on probability analyses for multivariate phenomena, whose relative weights leave room for a significant margin of error, as illustrated by the annual 'spaghetti plots' forecasting the potential trajectories of tropical storms every summer.

- Secondly, unlike storms and hurricanes, the fluid dynamics of oil when dispersed in such a vast body of salt water, as well as the relative effects of winds, water currents, and waves, are not necessarily well understood.

- Thirdly, satellite imagery and visual data-collection techniques only detect the surface oil, while missing the potential submarine 'plumes' spread by undercurrents. As one of my colleagues put it, it is like attempting to describe a person's body by looking down at the top of their head.

The puddles of oil emerging around the marshy environs of the Barataria Bay (south of

New Orleans), along the white sandy beaches of Pensacola, Florida, and down in the Mississippi Canyon all indicate that amounts of oil are churning in slow-moving plumes through water columns before surfacing. Unfortunately, the standard defenses against oil spills are but large plastic 'booms' designed to encircle and contain floating oil. The first landing of tarballs, soon followed by crude oil caking barrier islands and beaches, has demonstrated the ineffectuality of such fixed structures (like containment booms or, say, levees) against a dynamic and pervasive enemy (Paskoff, 1998)—a tale not unheard of in Louisiana.

Indeed, a dramatic impression of déjà vu fuels the frustration and anger of the Gulf Coast residents who contemplate this map morning after morning since the occurrence of the 'incident' (as certain parties insist on calling it) on April 20th. Once again, greed, sloppiness, negligence, and a criminal disregard for human and environmental consequences—in fact, a disregard for anything relating to consequences, responsibility, or just plain common sense, as well as a serious lack of imagination—has led to the loss of lives and the ruination of this area's economy, landscape, and way of life. Once again Louisiana, whose population represents barely 4% of the United States but contributes to the production of one-third of its oil and gas, as well as more than 20% of its seafood, will be presented with an impossibly costly bill: two of the biggest man-made disasters that ever hit the state, all in less than five years. Yet, under the Gulf of Mexico Security Act of 2006, Louisiana will have to wait until 2017 to finally see 37% of the revenues from newly opened oil and gas tracts diverted towards its coastal restoration (Day, Boesch, et al., 2007). Presently, while the endless game of finger pointing is wasting precious time and energy, an estimated 900 000 cubic meters (a volume equivalent to the water contained in the *étang de Berre*, near Marseilles) of crude oil is 'spilling' into the Gulf.

The very term used to designate the event ('spill') is a sad tribute to the mishandling of this tragedy—a catastrophe scandalously described as 'unforeseeable' by certain officials. Usually, when I spill my coffee in the morning, it does not keep on gushing out of the mug and flowing upwards. So how about renaming it an oil 'hemorrhage'? A hemorrhage happening at 1500 meters under the surface of the Gulf, and that no band-aid or tourniquet has been able to stop so far. Now the best hope seems to be the two relief wells currently being excavated by BP robots, but this 'bypass' strategy may not be effective before August of this year, well into the hurricane season. That is, if a storm does not force the armada of recovery vessels and engineers to evacuate the Gulf waters before a Katrina- or Gustav-like surge pushes them inland—a chaotic scenario that has not yet been fully contemplated.

The probability of a hurricane occurring at any given time is actually difficult to predict, but the further the oil spreads out into the Gulf, the more likely it is that at least one storm will push through it. And spreading it is, toward the Alabama-Florida coast, due to the infamous loop current pulsating between the Yucatan Peninsula and Cuba and sending a current around Florida and up the East Coast of the United States. This extremely warm current, while mechanically directing the oil eastward, also acts as a 'storm highway' through its high surface temperatures. This year, the loop current seems to be flowing as northward toward the US Coast as it had in 2005 and 2008, two tragically busy hurricane seasons.

The consequences of this worst-case scenario are difficult to anticipate. Oil, pushed forward by strong winds and 'surfing' the storm surge, could spread far into the very flat land of the Gulf States, adding innumerable issues of environmental damage and public health to the flood damage.

Unfortunately, southeastern Louisiana does not even need a hurricane this year to be at the heart of arguably the worst environmental disaster ever to have affected the United States. The area toward which the oil has been inexorably creeping over the past few weeks is one of the most complex and fragile natural environments on the continent. If you were to trace a parallel to the 30° North latitude going through Bay St. Louis, any portion of land below that line would be less than 7200 years old (younger, say, than most of the megaliths erected in Western Europe) and made of thin and soft alluvial sediments (silt, sand, and clay) deposited throughout shallow coastal waters by the Mississippi River as it hits the slack water body of the Gulf of Mexico (Campanella, 2010). This deltaic construction, fueled by the materials eroded by the river along its gigantic basin (the mighty 'Father of the Waters' drains about 41% of the continental United States), is responsible for the production of the southeastern Louisiana landscapes of low-lying marshlands (dominated by brackish and salt waters, in dark gray on the map) and freshwater swamps closer to the continental coastline. A web of active and abandoned distributaries of the river (the Louisiana 'bayous'), punctuated by old natural levees, ridges, and brackish bays, crisscrosses the area.

This dynamic battleground between land and ocean also constitutes one of the richest ecosystems on earth: up to twenty-four million birds a day use it as a migratory or winter haven. Fish and shrimp are only a fraction of the diverse species that proliferate along the coastal marshes, where decaying vegetation and sediments brought by the river create a most nurturing environment.

This wealth of resources, however, comes with a curse, insofar as the forces that built Louisiana's marshy coast also imparted them with vast reserves of fossil oil, the exploitation of which has been eating away at the fragile ecosystems since the 1950s (Boesch and Rabalais, 1987). The wetlands, as a complex construction of sediments, vegetation, and other organisms resting in a delicate mix of salt and fresh water, cannot survive when severed by artificial levees from the material supplies delivered by the meandering and flood-prone waters of the Mississippi River. Navigation canals built by shipping oil and gas companies thus accelerate coastline erosion and precipitate saltwater intrusions that will in turn sterilize a growing fringe of wetland. The result of all this environmental tinkering is the infamous 'football field' measure: in Louisiana, for an estimated forty years, a football-field-sized portion of wetland has been disappearing every thirty-eight minutes. This figure is usually accompanied by another haunting reminder: each linear mile of wetland acts as a buffer capable of reducing a storm surge by one foot (thirty centimeters). In other words, the wetlands act as 'horizontal levees', or natural buffers, against the hurricanes that threaten the Gulf Coast. Unfortunately, this non-structural line of defense might be covered in oil by the end of the summer.

Although the coasts of Mississippi, Alabama, and Florida (on the eastern portion of the map) might appear slightly less fragile than the deltaic marshes, their barrier islands

and low-lying bays are also vulnerable to oil devastation. The contamination may also invade the port of Mobile, one of the busiest in the area, or destroy the Alabama and Florida beaches that rely so heavily on tourism. These areas, we should point out, are still reeling from the blows of hurricanes Ivana (2004), Katrina (2005), and Gustav (2008).

Worrying about the long-term environmental consequences and increased vulnerability is a luxury that the residents of the area represented in dark gray on the map cannot afford. Far from New Orleans, jazz, or gumbo, rural southeastern Louisiana is home to a complex social and cultural fabric, where the Cajun country (note the toponymy of 'Chandeleur' and 'Breton' Sounds, 'Terrebonne' and 'Caillou' Bays on the map) blends with Native American Nations (the Houma Nation being the most important in Terrebonne Parish) as well as coastal communities whose ancestry can be traced back to Europe (the *islenos* traveled from the Canary Islands to settle in Lower St. Bernard Parish in the 18th Century) as well as the Caribbean. All have in common their multi-generational ties to the area and to the coastal and marine resources on which they live. The ordeal of fishermen forced by the oil leak to anchor their boats on dry land and accept federal welfare checks has fueled media reports and, soon enough, class action lawsuits.

But here's the kicker: most of the residents of southeastern Louisiana work for the oil industry, either directly or through auxiliary business and service activities. The very same fishermen who suffer the consequences of deep-water drilling also gain employment through drilling, during the periods when fishery prices or catches are down. The six-month moratorium on deep-sea drilling enacted recently by Obama, while welcomed by environmentalists, could in fact further devastate the economy and culture of the Louisiana coast. Thus it comes as no surprise that the pages following the daily NOAA oil leak map in the *Times-Picayune* tend to be filled with passionate editorials against the very moratorium designed to ensure the leak does not happen again. Those editorials share the page with other voices calling for the sustainable management of the already damaged coastline and the desperate short-term economic needs of coastal communities. Competing here are the voices of the 'experts' and the voices of the victims, the righteously angry demands for punishment, and the tentative efforts to convert this tragedy into an opportunity for rethinking environmental stewardship in the United States.

It has been said and written that this might be Obama's Katrina (Parienté, 2010). Given that the President visited the Gulf Coast more often in six weeks than his predecessor did in the six months following the 2005 hurricanes, a more relevant analogy was suggested by an editorialist for the *New York Times*, who pointed out that this might be Obama's 9/11 (Friedman, 2010). The most crucial (and, in the long term, the most significant) decisions that Obama will make do not involve the disaster itself, but how this disaster will inform a necessary change in US energy policy. Researchers and journalists alike pointed out, after Katrina, the incestuous relations between coastal erosion, oil exploitation, the ill-warranted Middle Eastern wars, the crumbling levees, and the state's increased economic, social, and environmental vulnerability.

The Deepwater Horizon 'spill' is once again highlighting this vicious circle through all the shades and densities of oil. President Obama's job is to ensure that Louisiana will

never have to suffer through this again, and that the only charts that its citizens will have to inspect daily involve the New Orleans Saints football team.

Le mardi 23 novembre 2010 à 00:00 . Classé dans . Vous pouvez suivre toutes les réponses à ce billet via le fils de commentaire (RSS). Les commentaires et pings ne sont plus permis.