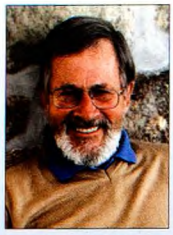
Article



The Geography of a Maritime Boundary Delimitation

By Adam J. Kerr (UK)

Abstracts

A Judgment of the International Court of Justice, dated 8 October 2007, resolved the Case Concerning Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea. Essentially the case involved the delimitation of the maritime boundary between the two countries on their eastern sides. This paper describes the geographic matters involved in the Judgment and the influence of the availability of modern technology.

Résumé

Un Jugement de la Cour Internationale de Justice, en date du 8 octobre 2008, a conclu l'affaire concernant le différend territorial et maritime entre le Nicaragua et le Honduras dans la Mer des Caraïbes. L'affaire concernait essentiellement la délimitation d'une frontière maritime entre les deux pays sur leurs côtés orientaux. Cet article décrit les questions géographiques soulevées dans le Jugement ainsi que l'influence de la disponibilité de la technologie moderne.

Resumen

Un Juicio de la Corte Internacional de Justicia, de fecha 8 de Octubre, 2008, resolvió el Caso Concerniente a la Disputa Territorial y Marítima entre Nicaragua y Honduras en el Mar Caribe. Esencialmente el caso envuelve la delimitación de la frontera marítima entre dos países en sus lados del este. Este escrito describe los temas geográficos involucrados en el Juicio y la influencia de la tecnología moderna disponibilidad.

Introduction

The written judgment goes at length into the geographic situation in which a solution had to be made (Judgment, Case Concerning Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea. 8 October 2007 – hereinafter referred to as the "Judgment"). The two countries both span the isthmus of Central America and have both a Pacific and Atlantic (Caribbean) coast. The Judgment concerned solely the latter. Much of the land boundary between the two countries follows the River Coco. This river, stated to be the longest river of the Central American isthmus, had a significant effect on the Judgment. The actual coastline, particularly that of Nicaragua, is extremely mobile with significant lateral transport of sediments, resulting in the formation of numerous deltas, sandbars lagoons and other features of an unstable coastline (Judgment, paragraph 31). Offshore there are numerous reefs and cays of disputed sovereignty, position and dimensions. To complicate the situation further the available mapping and charting is of uncertain quality. No national charts of the two countries involved are available and the most relevant charts describing the offshore cays are those of the British Admiralty but comprised of surveys dating back to 1830-43 (e.g. UK Chart 2425). Fortunately the availability of modern satellite imagery, in particular that provided by Google Earth, allows a reasonably up-to-date high resolution description of both mainland and island coastlines and features.

Although the Judgment refers to the various underwater physiographic features of the Caribbean Sea and in particular, the description of the undersea feature called the Nicaraguan Rise (Judgment, paragraphs 22 and 27), the decision does not seem to have involved any particular consideration of the offshore submarine geomorphology (Judgment, paragraph 138). This is fortunate because the amount of offshore data available and in the public domain is very sparse. An examination of the GEBCO (General Bathymetric Chart of the Oceans) digital atlas shows very little systematically measured bathymetric data.

Figure 1: Source: Judgement Nicaragua v. Honduras 8 October 2007.

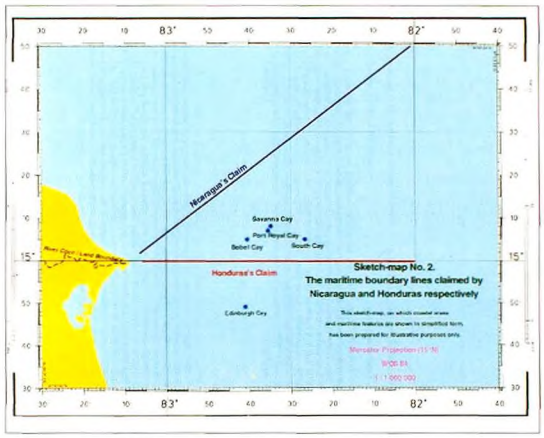


Figure 2: Source: Judgement Nicaragua v. Honduras 8 October 2007.

The General Direction of the Line

In their written and verbal pleadings the two countries took two rather different approaches in defining the boundary. Honduras claimed that a parallel of latitude (14 degrees 59.8 minutes north), projected eastwards from the mouth of the River Coco, should be used. Nicaragua examined the possibility of a median or equidistant line but contended that the present case was not one in which the equidistance/special circumstances approach would be appropriate for the delimitation to be effected. Instead it proposed constructing a maritime boundary from "the bisector of two lines representing the entire coastal front of both states." (Judgment, paragraph 273). Nicaragua asserted that the instability of the mouth of the River Coco was one of the reasons not to use the equidistance method but other factors, such as the convex shape of the coast, makes the method difficult. The Court supported these views and reached the conclusion that the construction of an equidistance line from the mainland is not feasible (Judgment, paragraph 283.)

The idea of a general line of the coast has been used in other cases, notably that of US and Canada in the Gulf of Maine (Delimitation of the Maritime Boundary in the Gulf of Maine Area, Judgment, ICJ Reports 1984). While the Court showed preference for the method proposed by Nicaragua, as opposed to a parallel of latitude proposed by Honduras, it was concerned with the manner in which the general direction of the coasts was proposed. The Nicaraguan pleadings proposed that the lines should be defined from a point at the entrance of the River Coco, which had been the eastern terminus of the land boundary, to the points were the coast of the two countries joined their respective neighbouring states. In the case of Honduras this was its boundary with Guatemala and in the case of Nicaragua it was its boundary with Costa Rica. The Nicaraguan coastal front so defined is approximately 480 km. in length and while generally following the coastline it skirts most of it to seaward. The Honduran coastal front is approximately 640 km in length. It leaves most of the actual coastline to the north. When the bisector of these two proposed lines is computed it tends to have a bias to the northwards.

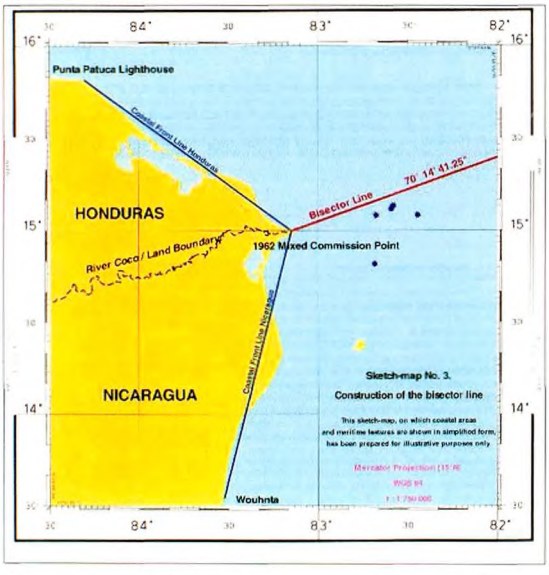


Figure 3: Source: Judgment Nicaragua v. Honduras 8 October 2007.

Before going on to describe the various options for the Court in selecting general directions of coastal fronts it may be useful to digress onto the possible use of a median or equidistance line and its subsequent rejection. The Court had been asked to determine a single maritime boundary between the area of territorial sea, continental shelf and economic zone, in accordance with equitable principles and relevant circumstances recognised by general international law as applicable to such a maritime boundary (Judgment, paragraph 17). Although Nicaragua was not a party to the 1982 Convention on the Law of the Sea (UNCLOS) at the time it filed its application in this case, the parties were in agreement that UNCLOS was now in force between them and its relevant articles were applicable between them in the dispute (Judgment, paragraph 261). UNCLOS differs in its article 15 describing the delimitation of the territorial sea between states with opposite or adjacent coasts with articles 74 and 83 on the delimitation of the economic one and continental shelf. Article 15 is more prescriptive in terms of the possible use of the median line, although it is not mandatory. In the Judgment, the possible use of the median line was explored but the geography of the coastline in the vicinity of the mouth of the River Coco does not result in a satisfactory solution. As stated by Nicaragua, there are only two points that could control the direction of the line (Judgment, paragraphs 84 & 102). These are a point in Nicaragua and a point in Honduras that face each other across the mouth of the river. From these points the coastlines of both countries trend away to leave the coastline with a convex shape. The approach to drawing a median line between two adjacent states works well enough on a concave coast as the line is well controlled by measuring equal distances from points on the two adjacent coasts. However in the case of a convex coast, such as that at the mouth of the River Coco, the line is very poorly controlled. As historical data presented showed the deltaic mouth to be very unstable and the two points would be liable to frequent change. This would result in a boundary that would be subject to continual change in direction. The problems of using a median or equidistance line were recognised by the Court and some other approach was sought.

In considering the possible use of coastal fronts and a bisector the Court considered three different points along each country's coastline and using a common central point, computed three different bisectors. The points chosen (Judgment, paragraph 293) were:

- For Nicaragua: Punta Gorda, Wounta, Rio Grande.
- For Honduras: Cabo Falso, Punta Patuca, Cabo Cameron.

For the central point, where the coastal fronts met, the Court considered it most convenient to use the point fixed in 1962 by the Mixed Commission, as the terminus of the land boundary. From the above the following coastal fronts could be calculated:

- Cabo Falso (distance 137km) with Punta Gorda (distance 74km)
- Punta Patuca (distance 154km) with Wounta (distance 166km)
- Cabo Cameron (distance 230km) with Rio Grande (distance 235km).

In making these comparisons some matters of geography and geodesy have to be considered. It is necessary to identify prominent points along the respective coastlines and to obtain their geographic coordinates. Due to the rather poor resolution of the map and chart data some assistance can be provided by modern satellite imagery to obtain precise coordinates. As can be seen from the sketch maps attached to the Judgment, these coordinates were referenced to the World Geodetic System 1984 (WGS 84), including the coordinates of the Mixed Commission point of 1962, which can be assumed to have originally been in the North American 1927 datum and had to be converted to WGS 84. In actually computing the azimuths and lengths of the coastal front lines and the bisectors it was important that this be done along the geodesics.

The Court examined each possibility and decided (Judgment, paragraph 298) that the front that extends from Punta Patuca to Wounta, would avoid the problem of cutting off Honduran territory (as proposed in the original Nicaraguan proposal) and at the same time would provide a coastal façade of sufficient length to account properly for the coastal configuration of the disputed area. Thus a Honduran coastal front running to Punta Patuca and a Nicaraguan coastal front running to Wounta were, in the Court's view, the relevant coasts for drawing the bisector. The resulting bisector has an azimuth of 70 degrees 14 minutes and 41.25 seconds.

The Effect of the Cays

It was noted earlier that a number of reefs and cays are located off the relevant coast. It was stated that the cays are small, low islands, comprised largely of sand derived from the physical breakdown of the coral reefs. The reefs are very extensive but the cays are small (see UK Chart 2425). Depending upon the sovereignty and location of these features the Court had to decide in what way they may influence the boundary line. This not only brought into question matters of a social nature but of physical geography and its interpretation. The mapping and charting of these offshore features is probably even less precise than that of the mainland. Most of the reefs and cays that had a possible bearing on the case were located approximately 20 miles off the mainland and as such, outside the territorial sea. Although the charts and maps lack precision, detailed information is available on the positions of some of these features from US-Honduran surveys, dated in the early nineteen seventies. Although these surveys made no attempt to precisely delineate the features they did measure the precise horizontal position of survey markers embedded on the islands. These surveys used a Doppler satellite system for the measurements. Accompanying the measurement data were some diagrams and photographs which provided some information on the visual appearance of the cays. Photographs of the actual survey markers appear to show that they were embedded in the coral rather than the less permanent sand. This permanency of the markers becomes important in view of the hurricanes in the area.

Several of the cays were located within 12 miles of the previously determined bisector line. As the Court decided by virtue of UNCLOS Article 3, that

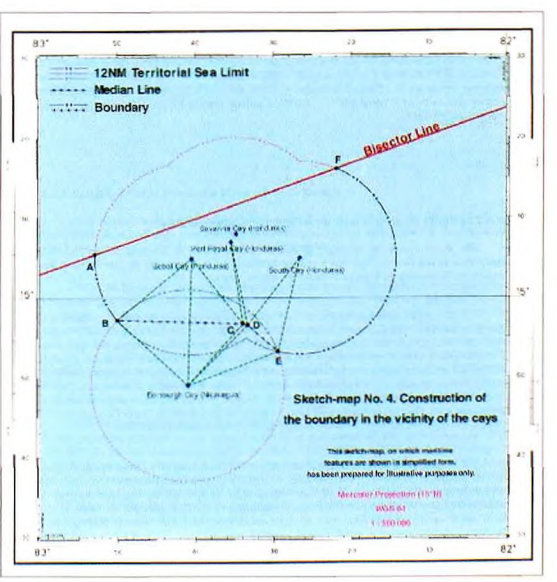


Figure 4: Source: Judgment Nicaragua v. Honduras 8 October 2007.

such islands could be allowed a territorial sea of 12 miles of their own (Judgment, paragraph 302) there was a possibility that their existence would influence the direction of the line as it passed in their vicinity. A first task for the Court was to decide on the disputed sovereignty. The Court decided that Honduras had sovereignty over Bobel Cay, Savanna Cay, Port Royal Cay and South Cay (Judgment, paragraph 227). Sovereignty having been established it becomes a matter of precisely determining the sea areas that would be included and how these areas would affect the division made by the bisector line described previously. The most precise geographic position of the four cays under Honduran sovereignty can be obtained from observations of a Honduran/USA survey in the 1970s. These observations had been taken using a Doppler satellite system and are recorded by the US Board of Geographical Names. A number of photographs taken during these surveys were made available to the Court by the Parties in their pleadings and show that the cays were covered with vegetation and there were some buildings. Apparently owing to the lack of precise information on the size and shape of the cays no attempt was made to draw the 12 mile limits from the actual low water line as is prescribed for the Normal Baseline in Article 5 of UNCLOS. Furthermore, there are very large areas of reef surrounding some of the cays (see UK Chart 2425) but once again they are poorly mapped and no attempt was made to use the seaward low water line as prescribed for reefs in Article 6.

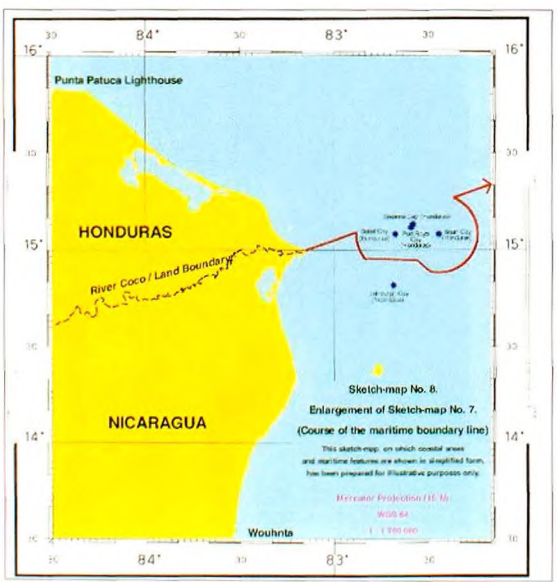


Figure 5: Source: Judgment Nicaragua v. Honduras 8 October 2007.

The circles of 12 mile radius defining the territorial sea are entirely centred on the single point of each cay. In the Judgment, the Court discussed the possible use of low-tide elevations and the lack of general customary law which unequivocally permits or excludes appropriation of low-tide elevations, as noted in the Qatar and Bahrain judgment (Judgment, paragraph 141), which supported the decision not to use low-tide elevations in this case. The Court decided that it was only able to consider the effect of the territorial sea of the four Honduran cays (Bobel, Savanna, Port Royal and South) that overlapped with the Nicaraguan area to the south of the bisector. It also considered the territorial sea of one Nicaraguan cay (Edinburgh) that overlapped with the territorial sea claimed by the Honduran cays. The overall effect of these overlaps (Judgment, paragraph 302) was to break the bisector line and to draw the boundary along a series of arcs to the southwards of the bisector line.

Geographic Uncertainty and Assistance of Technology

It is only when one is faced with the actual task of delimiting a maritime boundary that the theory must give way to the practical and the unique geographic conditions of any area must be examined. This is particularly evident in the lack of precise geographic data in some parts of the world and is in places evident in the nautical charts which are often the only source that portray such data. UNCLOS, for instance, refers to information that is provided on large-scale charts officially recognised by the coastal State. However if the charts themselves are lacking in detail or precision it may bring into question the boundaries that are to be delimited. Priorities for nautical charts are usually driven by concern for the safety of shipping and if there is little shipping the existing charts may be found quite lacking in both density and precision of the data needed for precise boundary delimitation. Adding to this problem is the fact that some developing countries have yet to develop any hydrographic capabilities and there may be no charts published by the country itself of its own territory. In the case of the Nicaragua/Honduras boundary it may be noted in this regard that a significant source of information, particularly concerning the offshore cays, was a chart published by the British Admiralty drawn mainly from surveys carried out in the nineteenth century (UK Chart 2425). Both Par-

ties used this chart extensively in their pleadings. This chart also covered critical areas of the mouth of the River Coco which according to satellite imagery presented to the Court by the Parties had undergone significant changes in topography.

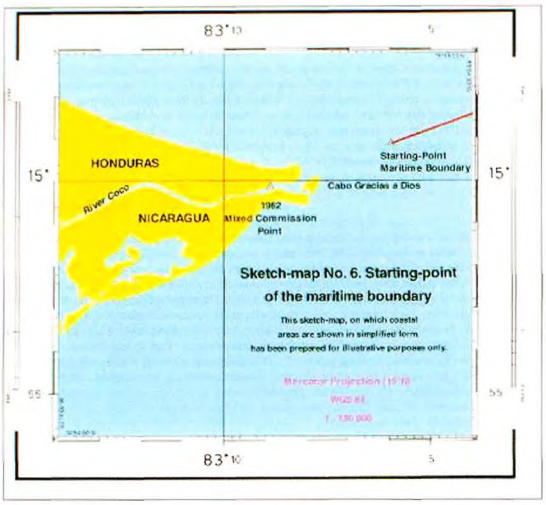


Figure 6: Source: Judgment Nicaragua v. Honduras 8 October 2007.

Particularly important to the definition of the coastal front lines is the precise positioning of the coastline of the two countries. Although some national topographic maps are available to supplement information shown on the nautical charts there is some doubt about the precise position of the coastline. Much of this, particularly along the Nicaraguan coast, is of a mobile nature, as evidenced by the numerous spits, lagoons and other features, which tend to evidence mobile geography. The changing topography of the mouth of the River Coco was presented by the Parties as satellite imagery, taken over a period of time and in the pleadings, showed just how changeable was both the course of the river and the islands within its deltaic mouth. Evidence was presented showing how the mouth of the river was being gradually extended seawards and the entrance channels were changing their positions and probably their depth. A key feature was the point determined by the Mixed Commission in 1962 as the eastern end of the land boundary, which at that time was positioned on the thalweg but today may not be located in this deepest part of the channel. The value of modern satellite imagery to complement the information shown on published charts and maps may be realised.

The limitations of the nautical charts used in defining the offshore cays, reefs and other features also has to be considered in cases such as this. Apart from the precise positioning of the cays, that has been discussed earlier, there is the need to examine the use of features which are not permanently above water. According to the nautical charts there are extensive reefs in the vicinity of the cays, some parts of which may be above water at certain stages of the tide. The Court noted that there was no dispute on the fact that Bobel Cay, Savanna Cay, Port Royal Cay and South Cay remain above water at high tide and thus fall within the regime of islands under article 121 of UNCLOS (Judgment, paragraph 137). However it also took note of the fact that there were a number of smaller, islets, cays and reefs in the same area of which their physical status (such as whether they are completely submerged above sea level, either permanently or at high tide) and consequently their legal status is not clear (Judgment, paragraph 136). While the Court did discuss in the Judgment the situation in which features are not permanently above water and which lie outside a State's territorial waters. In this they made reference to the case of Qatar v. Bahrain but it does not appear to have examined the entire situation of Article 13 of UNCLOS in which it is possible to extend the breadth of the territorial sea when a low-tide elevation is situated wholly or partly at a distance not exceeding the breadth of the territorial sea. Although it did recall "the rule that a low-tide elevation which is situated beyond the limits of the territorial sea does not have a territorial sea of its own." (Judgment, paragraph 141). The intent of this discussion is not to discuss that legalities of the situation of islands, reefs and low-tide elevations but to note the difficulty of decision making when the geographic details of such features are not well defined on existing charts. It is possible to supplement information provided on the charts with some recent satellite positioning surveys discussed earlier and by imagery from satellite sources and available on Google Earth.

Conclusions

The Nicaragua/Honduras maritime boundary case has demonstrated clearly how difficult it is to define boundaries in areas of the world that are lacking both up-to-date topographic and hydrographic data. Mapping and charting agencies are today driven by economic factors and if there is limited demand for the products their work is often given low priority.

Fortunately, countering this difficulty, the ready availability of satellite and other aerial imagery has done much to provide precise geographic information. Although several articles of the UNCLOS 1982, such as the critical Article 5 on Normal Baselines, state that only features as " marked on large scale charts officially recognised by the coastal State," this is not always realistic. Not only because the best charts are often not those of the coastal state but also because the charts officially recognised by the coastal state are sometimes out of date or inaccurate when compared with the latest satellite or other aerial imagery, which has yet to be incorporated in the charts.

The particular situation of defining precisely the seaward low-water line of a reef (Article 6, UNCLOS 1982) and indeed low-water elevations in general (Article 13), needs examination in the light of modern technology. Charts compiled from surveys dating before the availability of airborne imagery will have been carried out from boats and the difficulty and danger of approaching a coast, often involving a heavy surf, did not permit precise surveys of the features. Airborne surveys will do much to improve this situation and eventually lead to more precise charts.

The commonly accepted practice of using rivers to define boundaries can lead to difficulties when the rivers carry large amounts of silt and consequently may continuously change their topography. The Court discussed the situation of the River Coco, noting that it was the longest river of the Central American isthmus and bears one of the largest volumes of water. It went on to discuss its dynamic nature and in particular its network of diverging and shifting river channels. Due to the unique geographic situation of every river it is difficult to have rules that can suit all situations. Although the legal situation in deltas and rivers is discussed in UNCLOS it deals more with the situation of drawing baselines across the mouths of rivers than of actually how to determine a boundary along the line of the river. Rules for accretion and deposition of rivers is more likely to be found in laws concerning terrestrial rather than maritime boundaries.

Finally, some comments may be made on the drawing of median or equidistance lines, titles that are often used interchangeably. The construction of equistance lines has been discussed in numerous texts and some of the earliest discussions can be found in Shalowitz (Sea and Shore Boundaries Vol. 1). Its importance seems to have diminished over the years and while it now exists in Article 15 of UNCLOS for a means to delimiting the territorial sea with opposite or adjacent coasts, it does not exist in Articles 74 and 83, for delimiting respectively the Economic Zone and the Continental Shelf. In these case an equitable solution is stressed. While the construction of an equidistance line between opposite states seems to present no geometric difficulties, the Nicaragua/Honduras case has demonstrated that the construction of such a line between adjacent states can be a problem. Unfortunately most text book examples show how an equidistance line may be drawn when the general line of the coast in the area of adjacency of two states is concave. This allows firm geometric control over the direction of the boundary line. However when the coast has a convex shape, as has the area of adjacency of Nicaragua and Honduras at the mouth of the River Coco, it is not possibly to geometrically construct the equidistance line with any surety as the coastline on both sides trends away and no points can be used to control the line. In this case only two points can be used to control the boundary and these are situated on each side of the mouth of the River Coco and relatively close together. If the line is to be propagated offshore the progressive equal distance controlling its direction cross at an increasingly acute angle, leading to a weaker and weaker position. The case is further weakened by the fact that two points are liable to changing geographic position and these changes will affect the direction of the line which could make significant differences to the division of territory as the lines goes further offshore. These comments do not entirely condemn the equidistance method used for adjacent states, as it has been successfully used in a number of delimitations, but that the method fails to provide a well controlled boundary when the coastline has a convex shape.

In summary it may be noted that the Nicaragua/Honduras boundary provided a fine laboratory for studying many of the difficulties caused by geography and the difficulties that must be faced by the maritime boundary maker.