

# Maritime Limits and Boundaries

**John Brown**

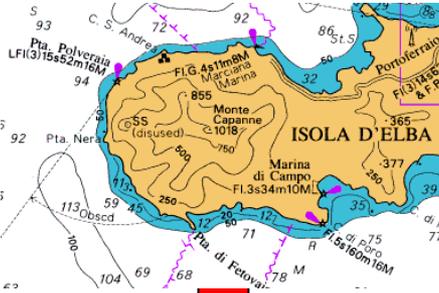
**Law of the Sea Consultant Cooley LLP**

**Robin Cleverly**

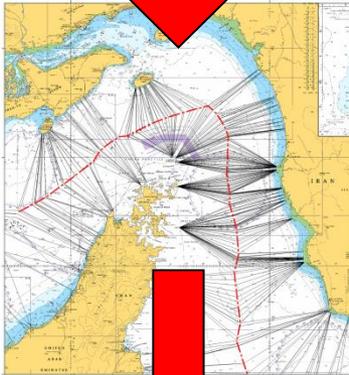
**Director Marbdy Consulting Ltd**

# Outline

Territorial sea baseline



Equidistance



Equitable boundaries



## 1. Baselines

Practical – drawing territorial sea limit

## 2. Maritime Boundaries – median/equidistance lines

Practical – drawing equidistance line

## 3. Equitable boundaries – relevant circumstances

Practical – cartoon scenarios

Practical – Scenario – Tasmania vs Victoria

# What this session will cover

- The normal baseline and how it is derived
- How is it shown on charts
- What are the uncertainties
- Use of straight baselines
- Drawing a limit from the baseline

# The Normal Baseline

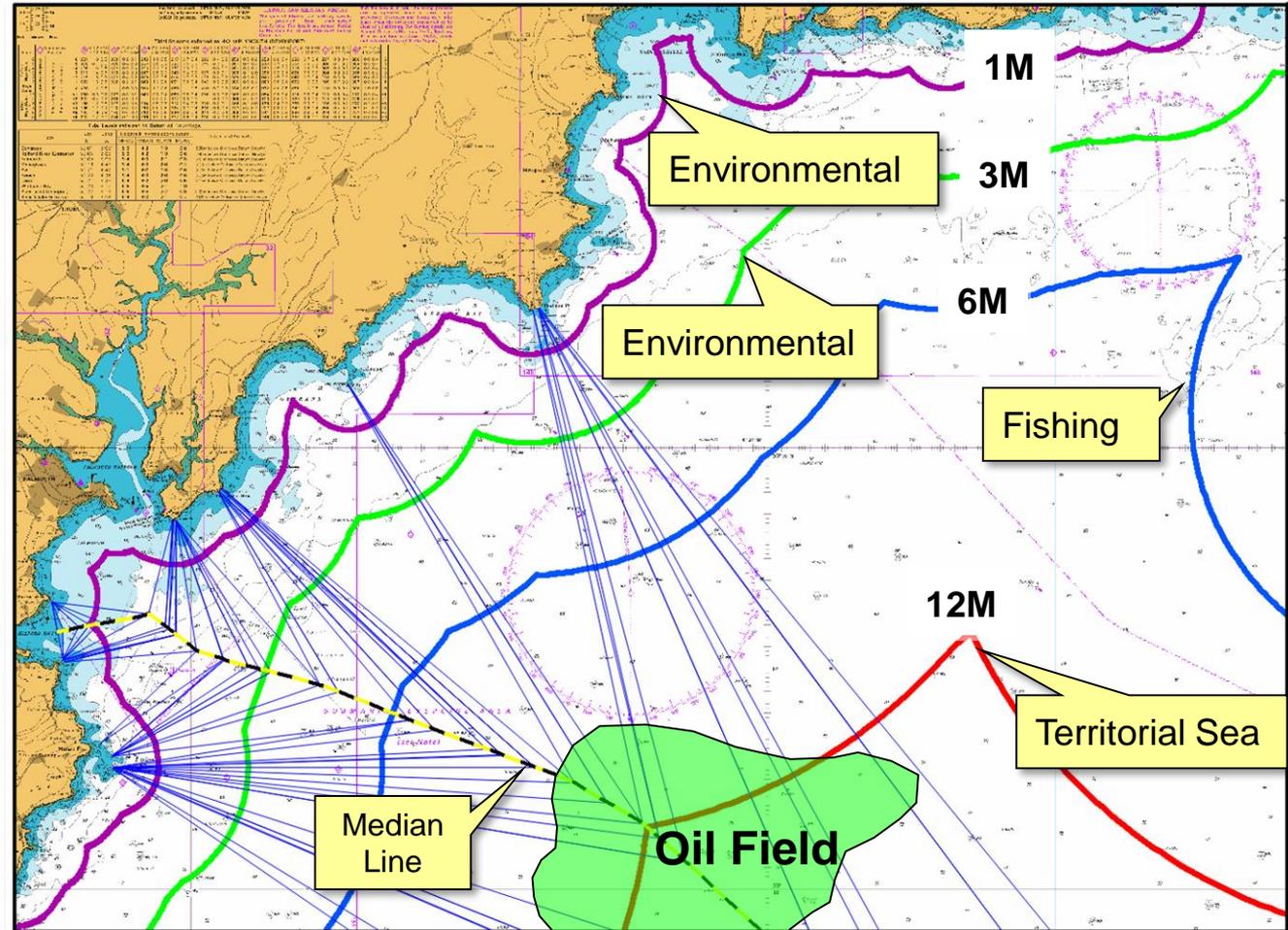
- The normal baseline for measuring the breadth of the territorial sea is the low water line along the coast as marked on large scale charts officially recognised by the coastal state

UNCLOS Article 5

# Why is the baseline important?

Baselines are used for:

- generating maritime zones,
- enforcing national jurisdiction
- and calculating boundaries



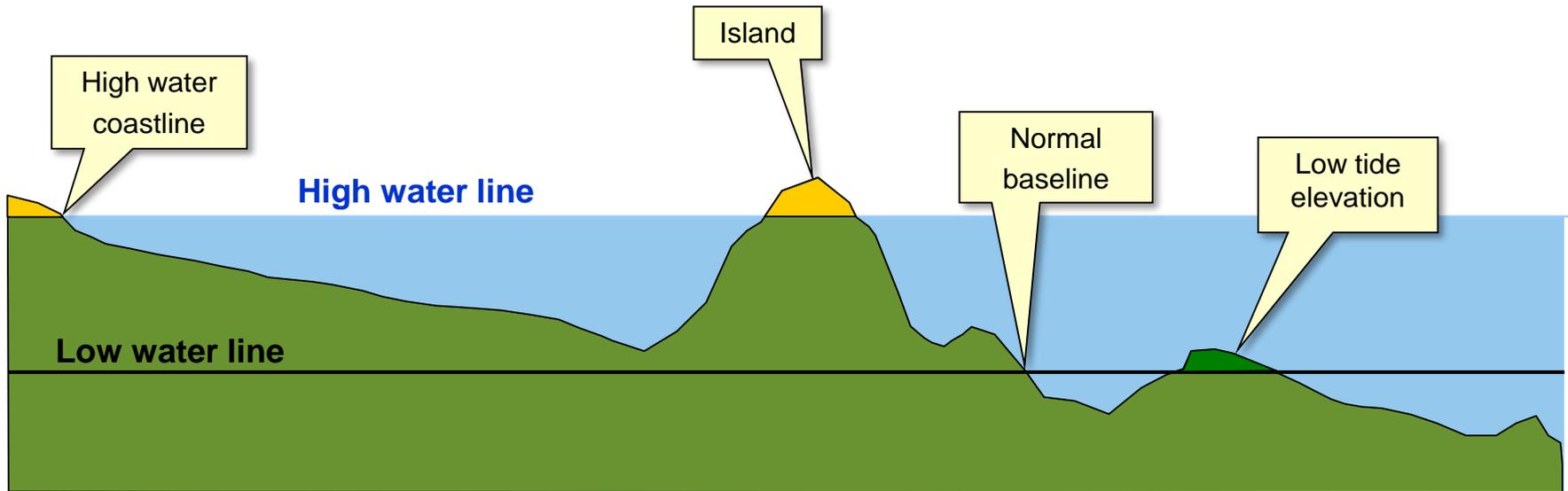
How much is a metre worth?

~\$?,000,000

# What constitutes the normal baseline?

- Low waterline along the coast (includes islands) (art 5)
- Low tide elevations and drying rocks (art 13)
- Reefs (seaward low waterline of the reef) (art 6)
- Rivers – line across river mouth (if river flows directly to the sea) (art 9)
- Harbour works – outermost permanent harbour works are regarded as forming part of the coast (art 11)
- Bays – a line can be drawn across the mouth of a bay subject to it meeting certain conditions (art 10)

# Low water line and vertical datums



**Lowest Astronomical Tide (LAT):**

**lowest predictable tide  
(18.6 year cycle)**

**Mean Low Water Springs**

**Mean Lower Low Water**

**Lower Low Water Large Tides**

**Lowest Low Water Spring Tide**

**Alternative vertical datums.**

Low water  
line along  
the coast

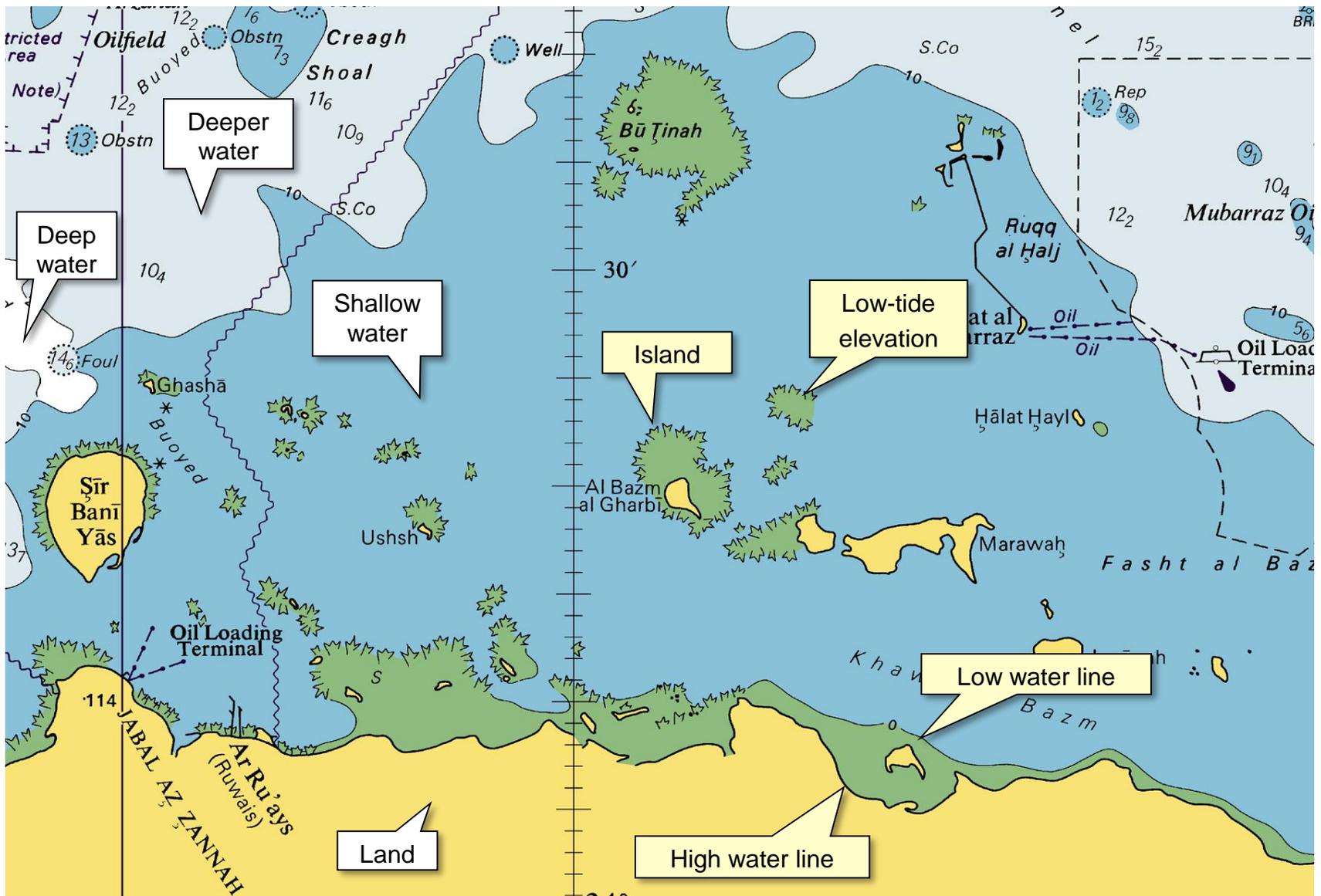


# Low-Tide Elevations (Art 13)

- Naturally formed;
- Above water at low-tide but submerged at high tide;
- Cannot be used as a legitimate basepoint if  $>12\text{M}$  from mainland or island.



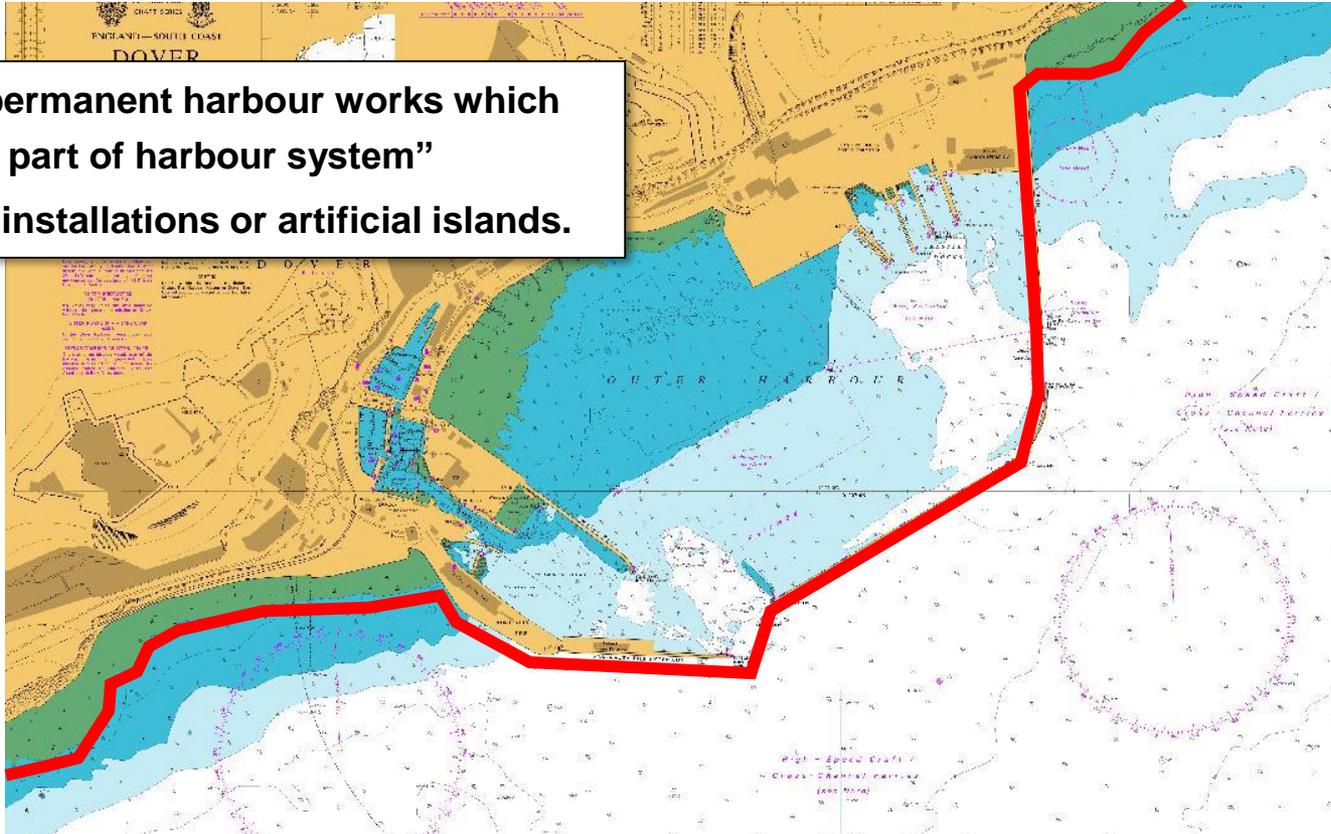
# Chart basics



# Harbour Installations

**Baseline**

**“outermost permanent harbour works which form integral part of harbour system”  
Not offshore installations or artificial islands.**



# Baseline: reefs

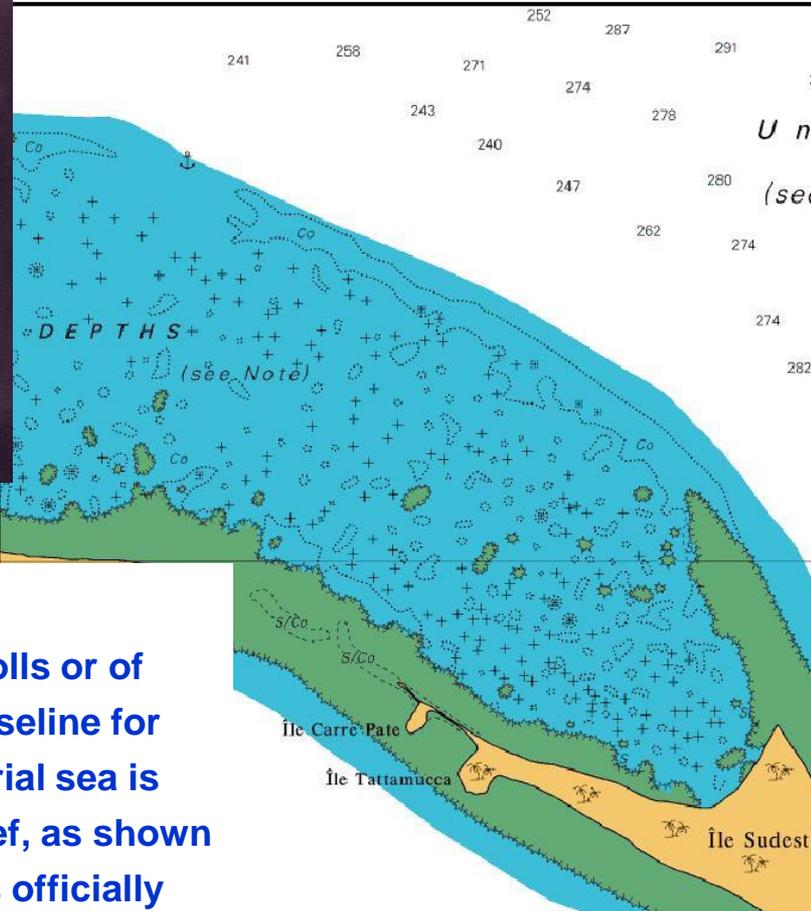


Pulau Ligitan

459

## UNCLOS Article 6:

In the case of islands situated on atolls or of islands having fringing reefs, the baseline for measuring the breadth of the territorial sea is the seaward low-water line of the reef, as shown by the appropriate symbol on charts officially recognised by the coastal State.



Chagos archipelago

# Juridical Bays (Art 10)

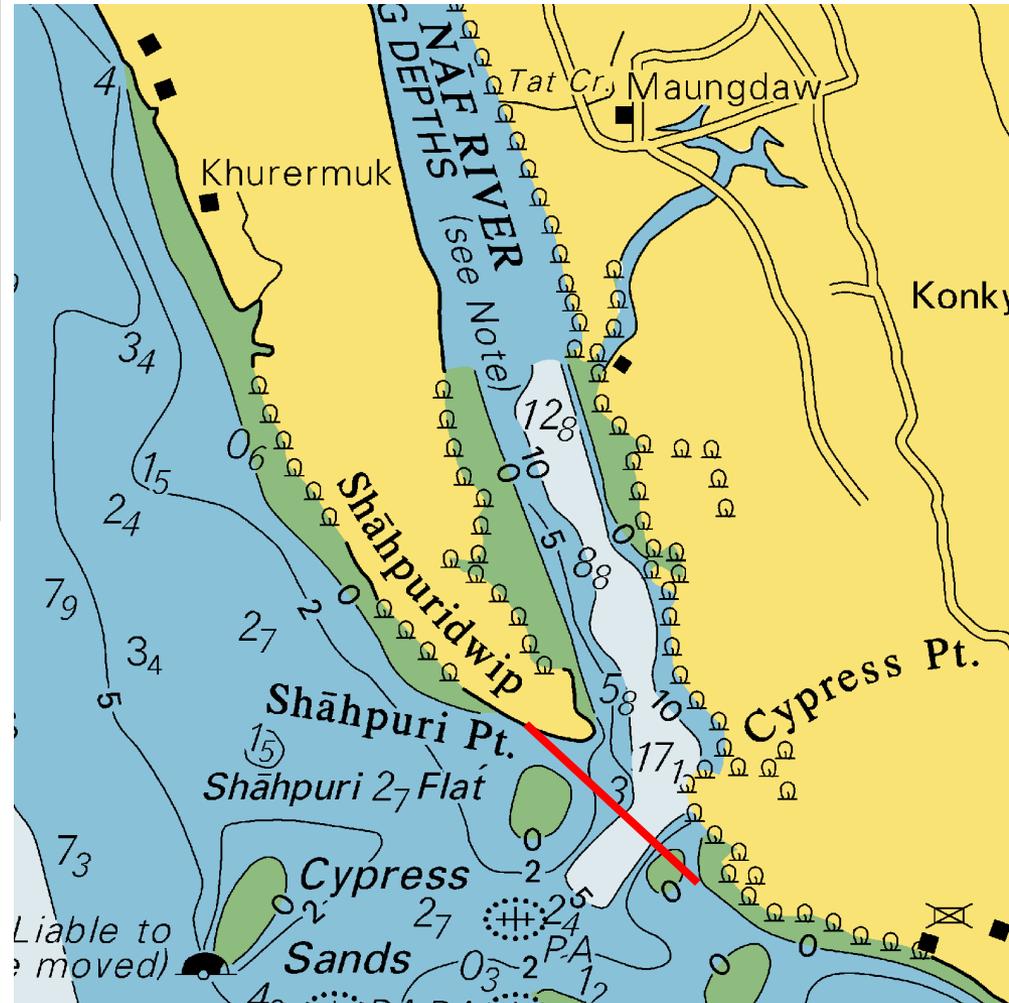
- Single state only;
- Well-marked indentation containing land-locked waters – more than mere curvature of coast;
- Area greater than semi-circle drawn across its mouth;
- Islands in the bay treated as water for area calculation;
- Bay closing line <24M;
- Exceptions: historic bays.



# River mouth

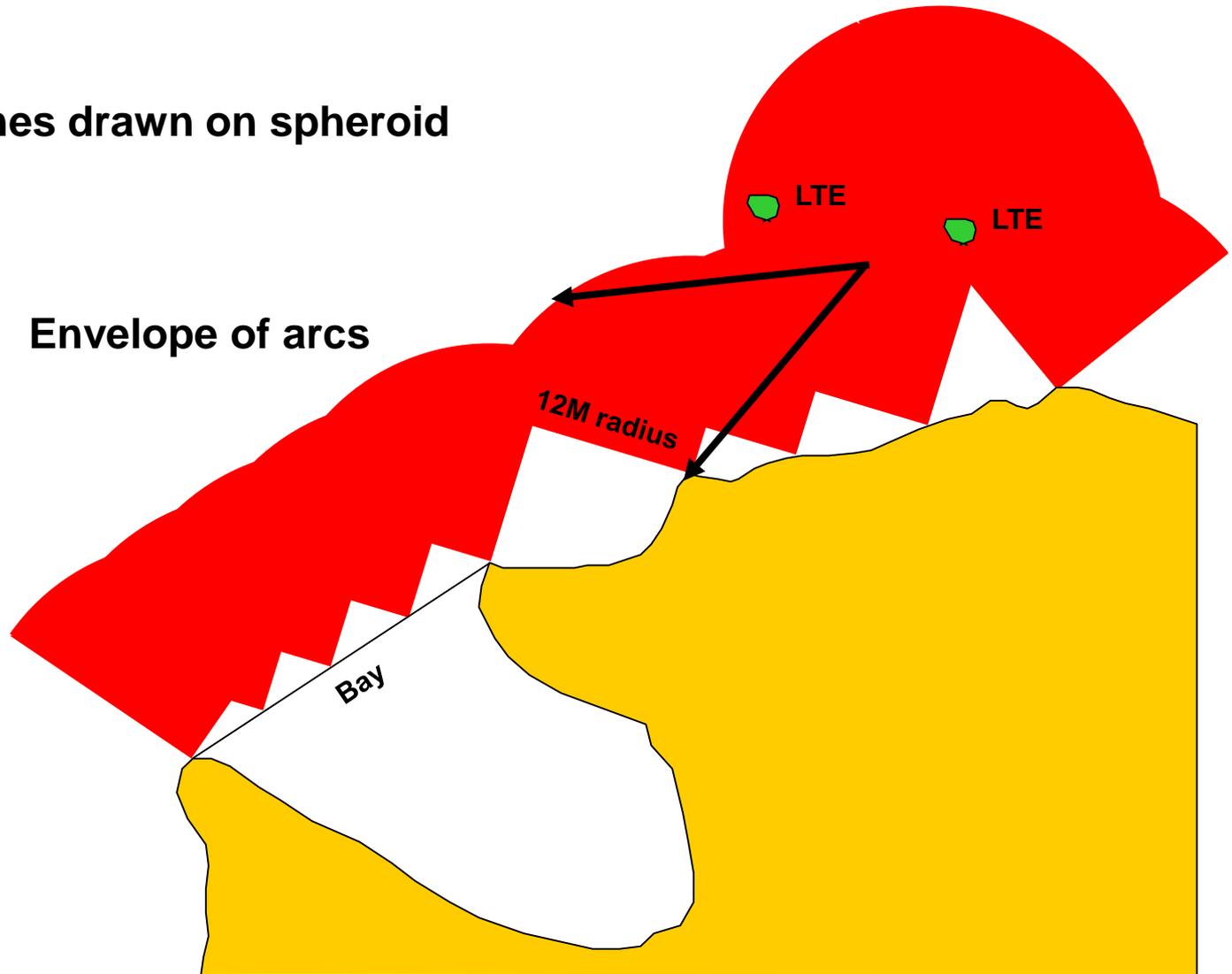


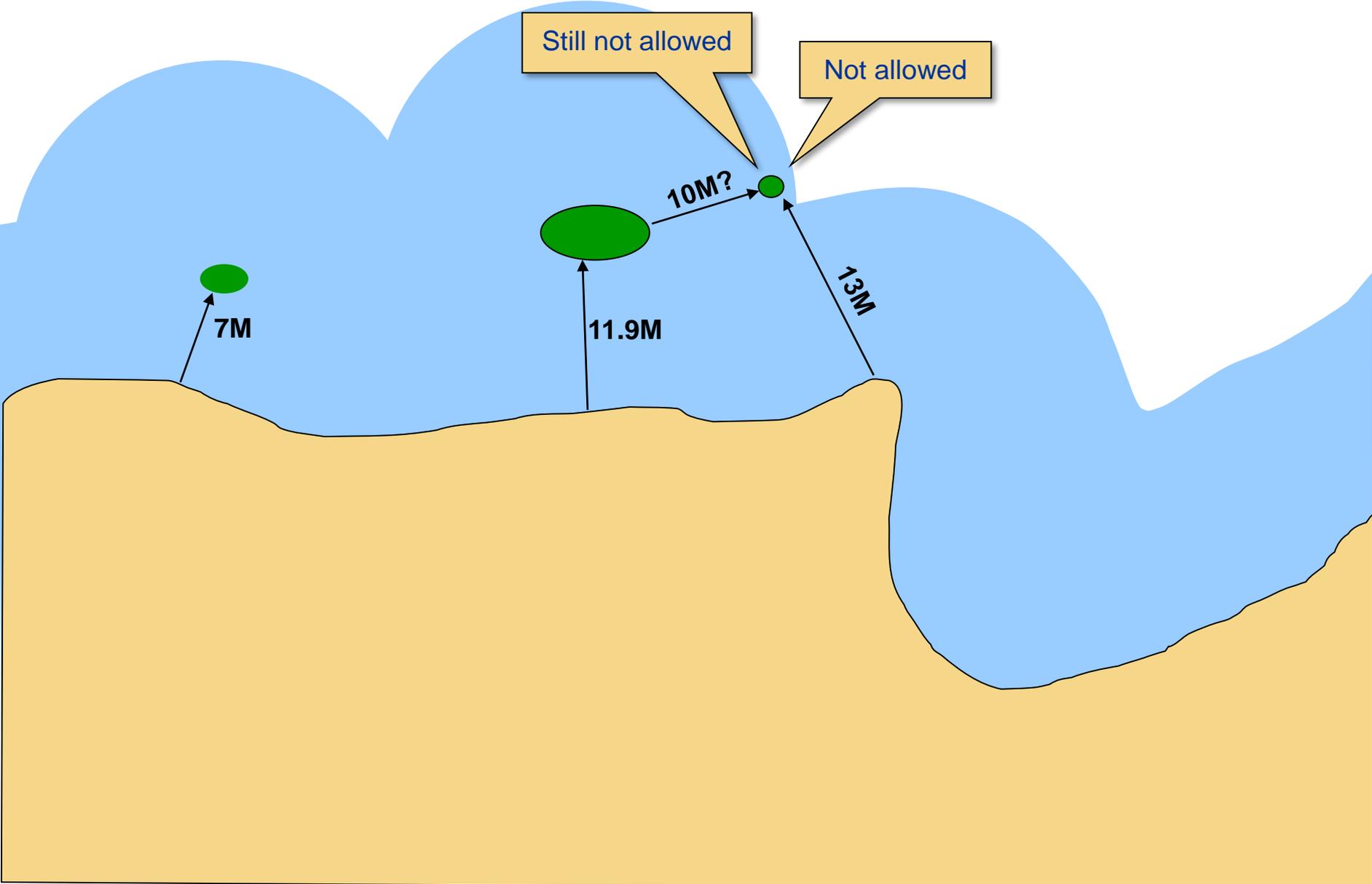
If a river flows directly into the sea, the baseline shall be a straight line across the mouth of the river between points on the low-water line of its banks.

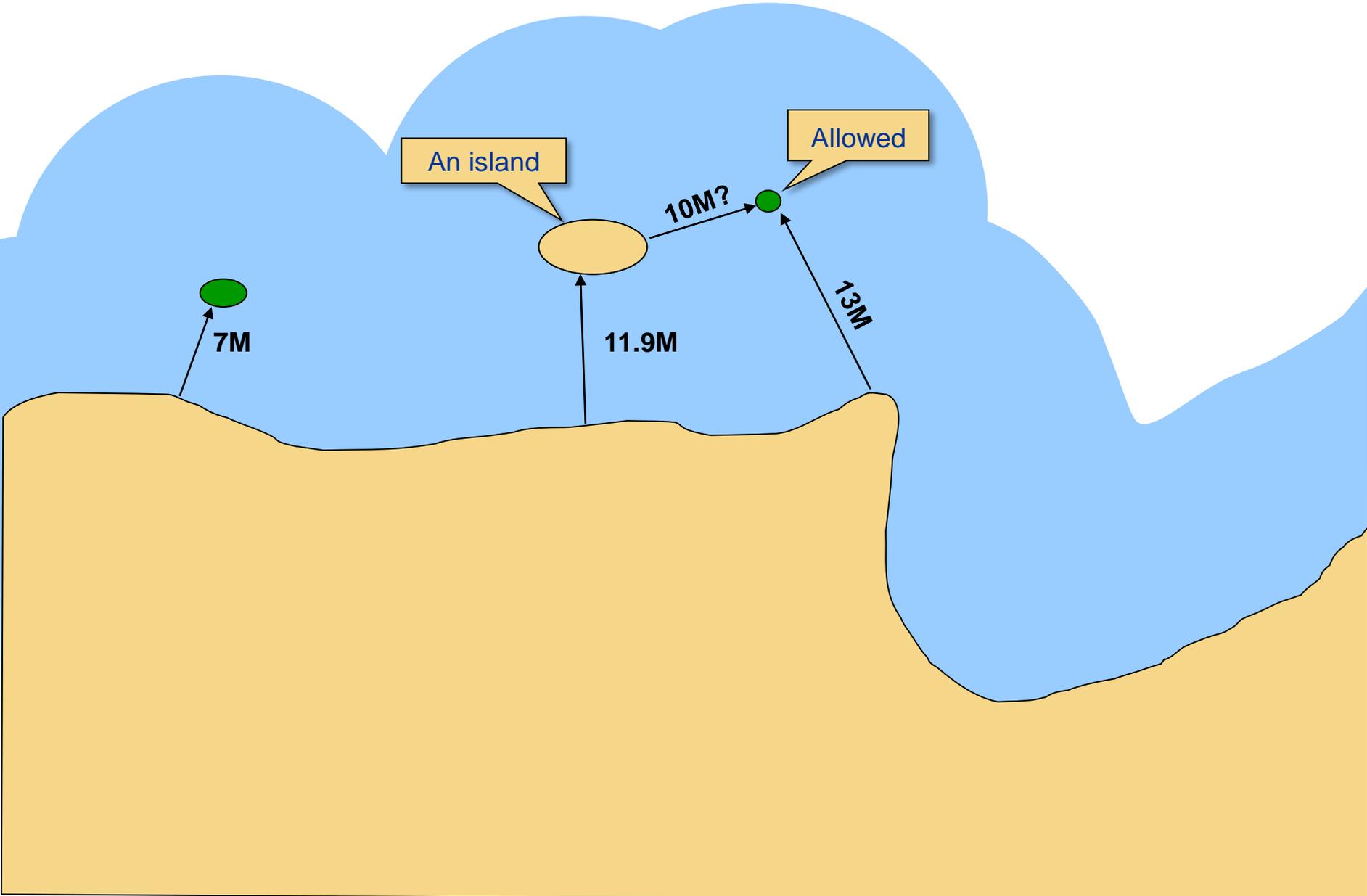


# Calculation of 12M buffer

N.B. All zones drawn on spheroid



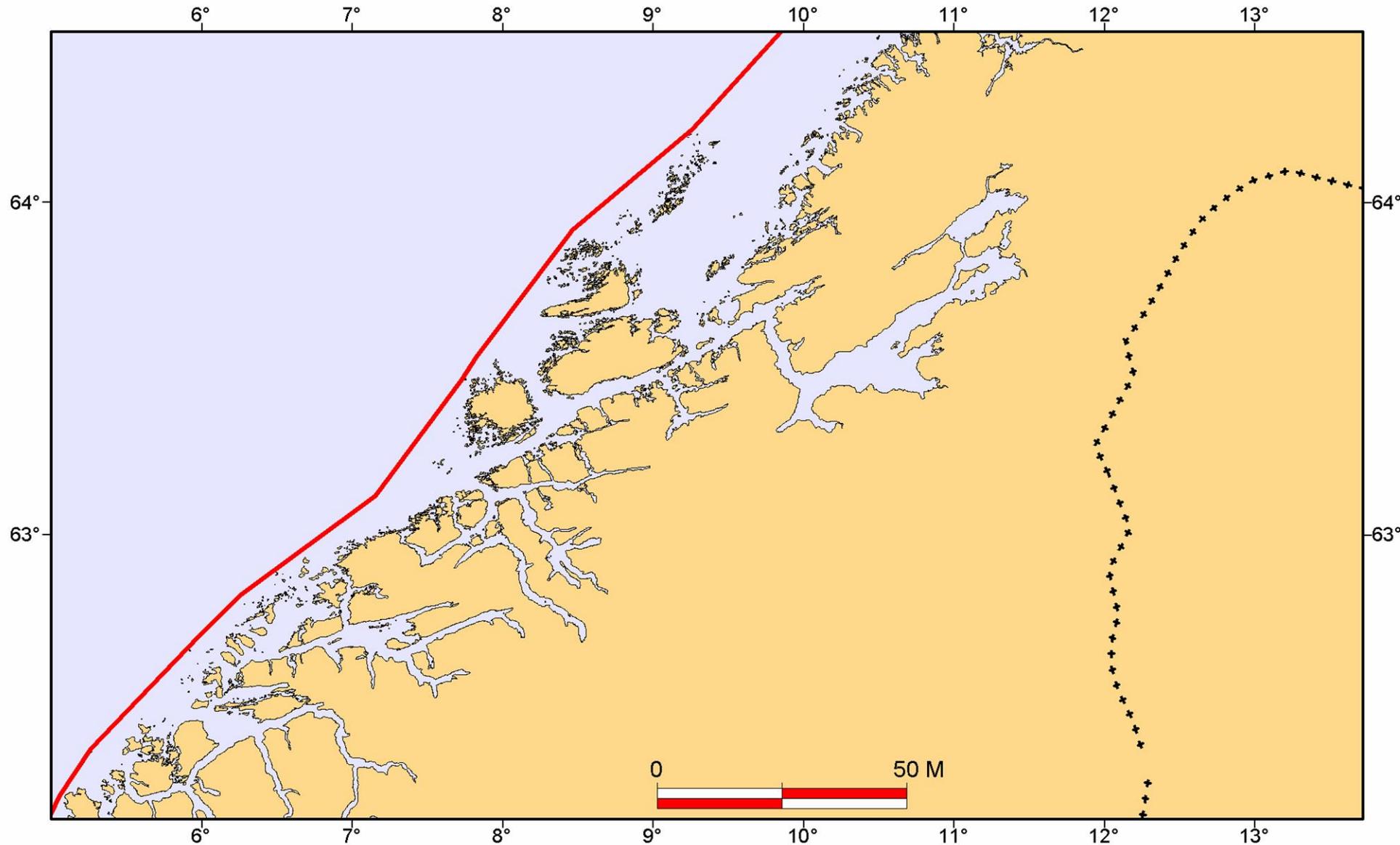




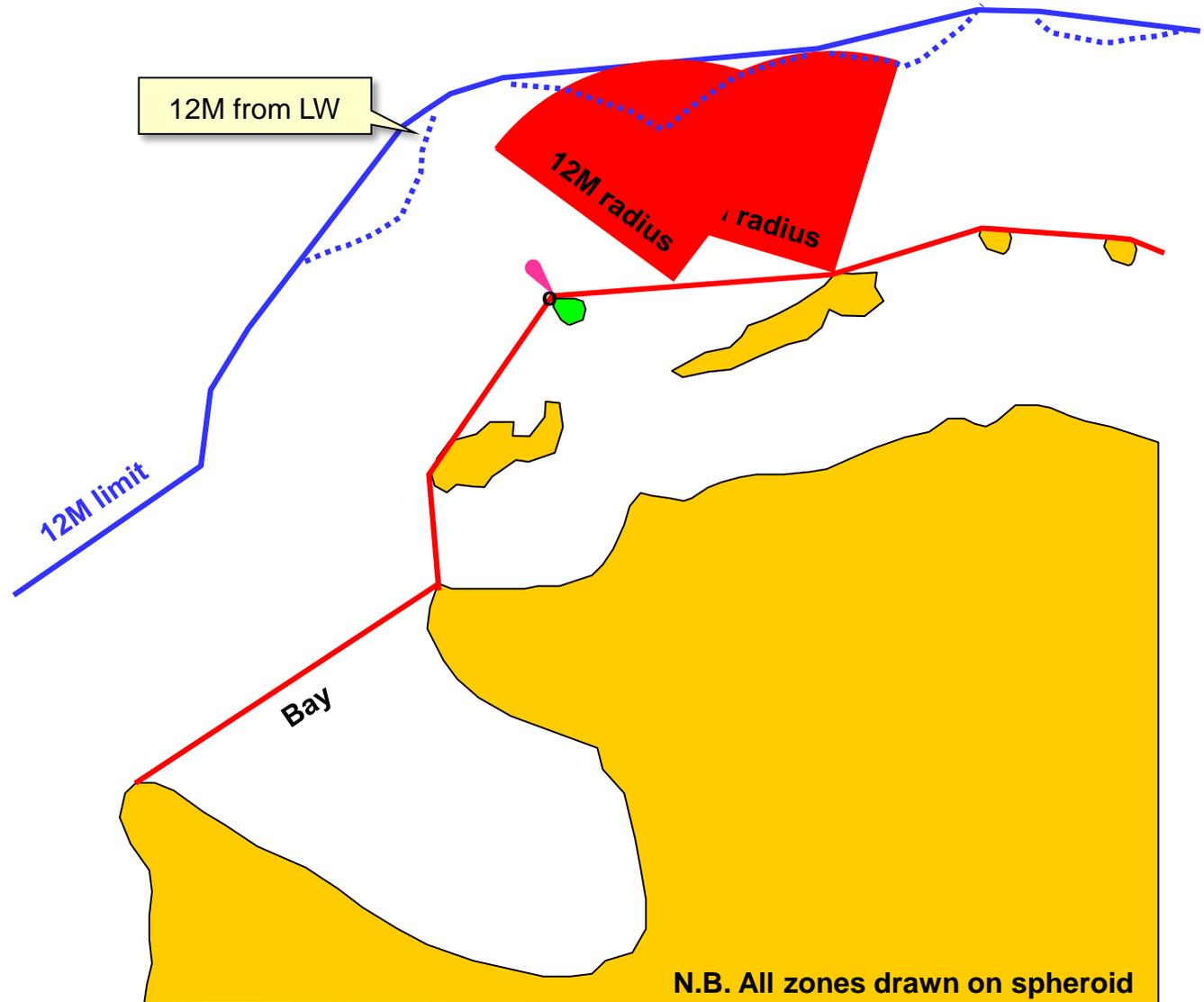
# Straight Baselines (Art 7)

- Where coastline is deeply indented, or fringe of islands;
  - or highly unstable delta coasts;
- Must follow the general direction of the coast;
- Can't use low-tide elevations, unless lighthouses or similar installations have been built on them;
- No limit on length of line segments.

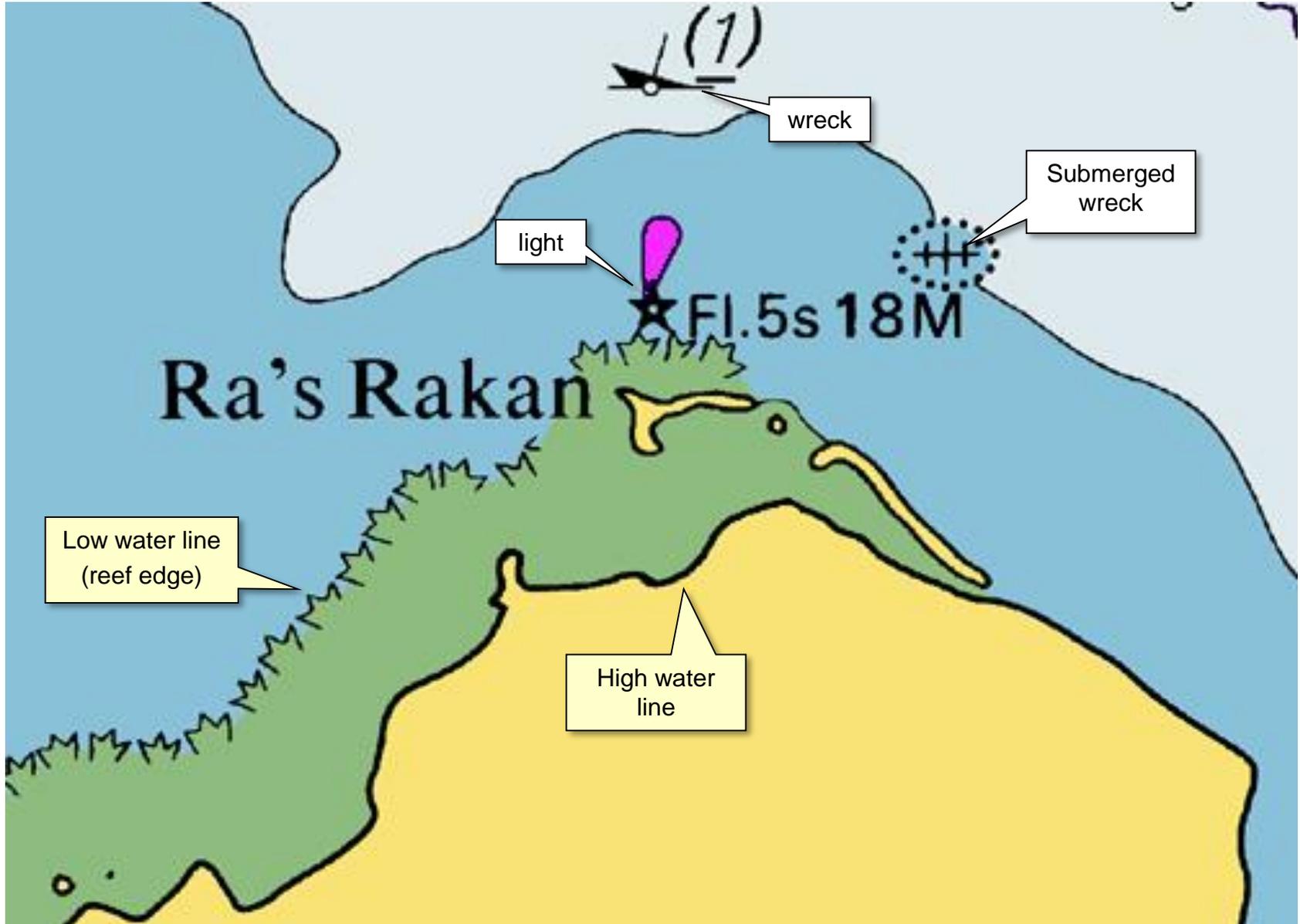
# Straight Baseline Detail



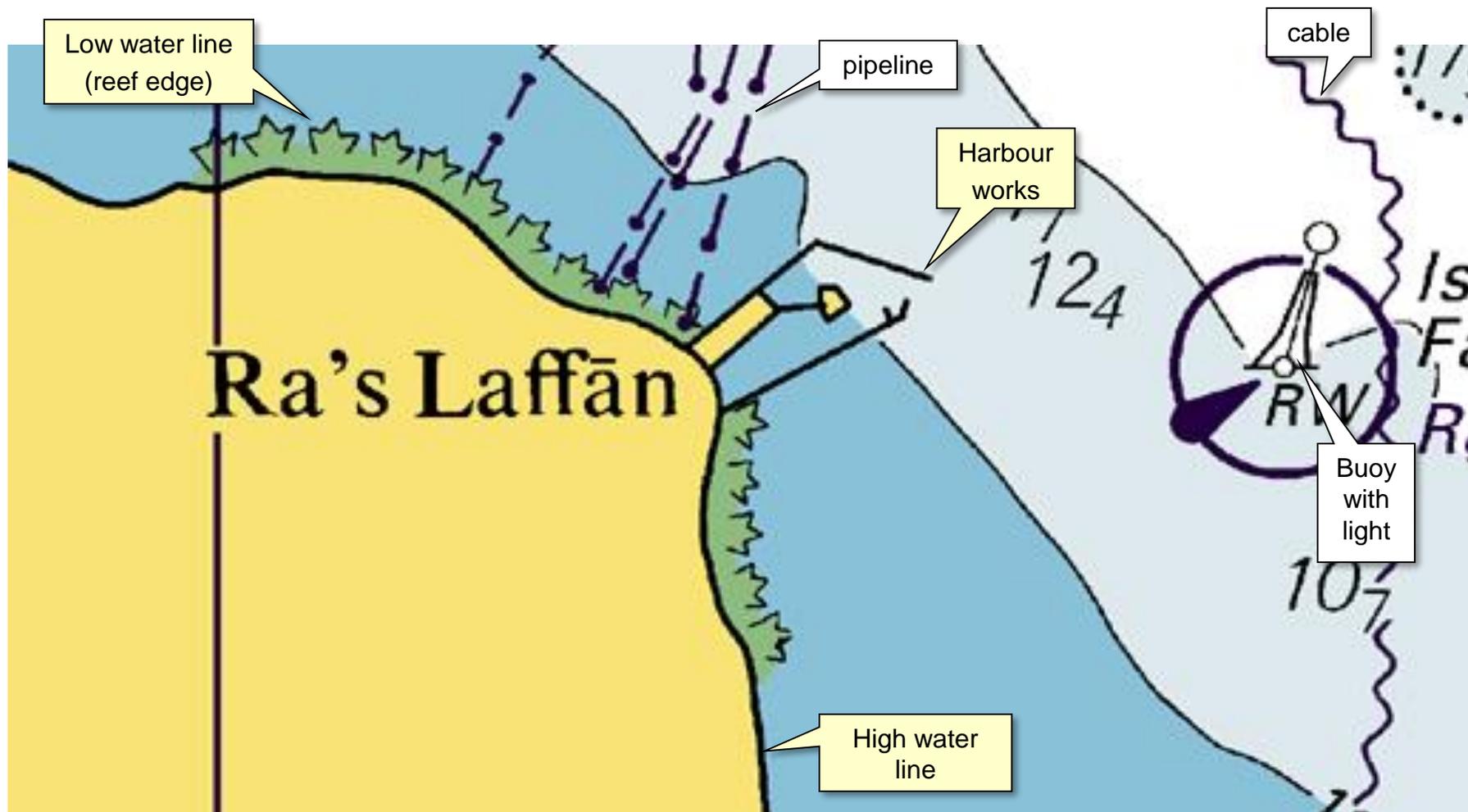
# Calculation of 12M buffer (straight baseline)



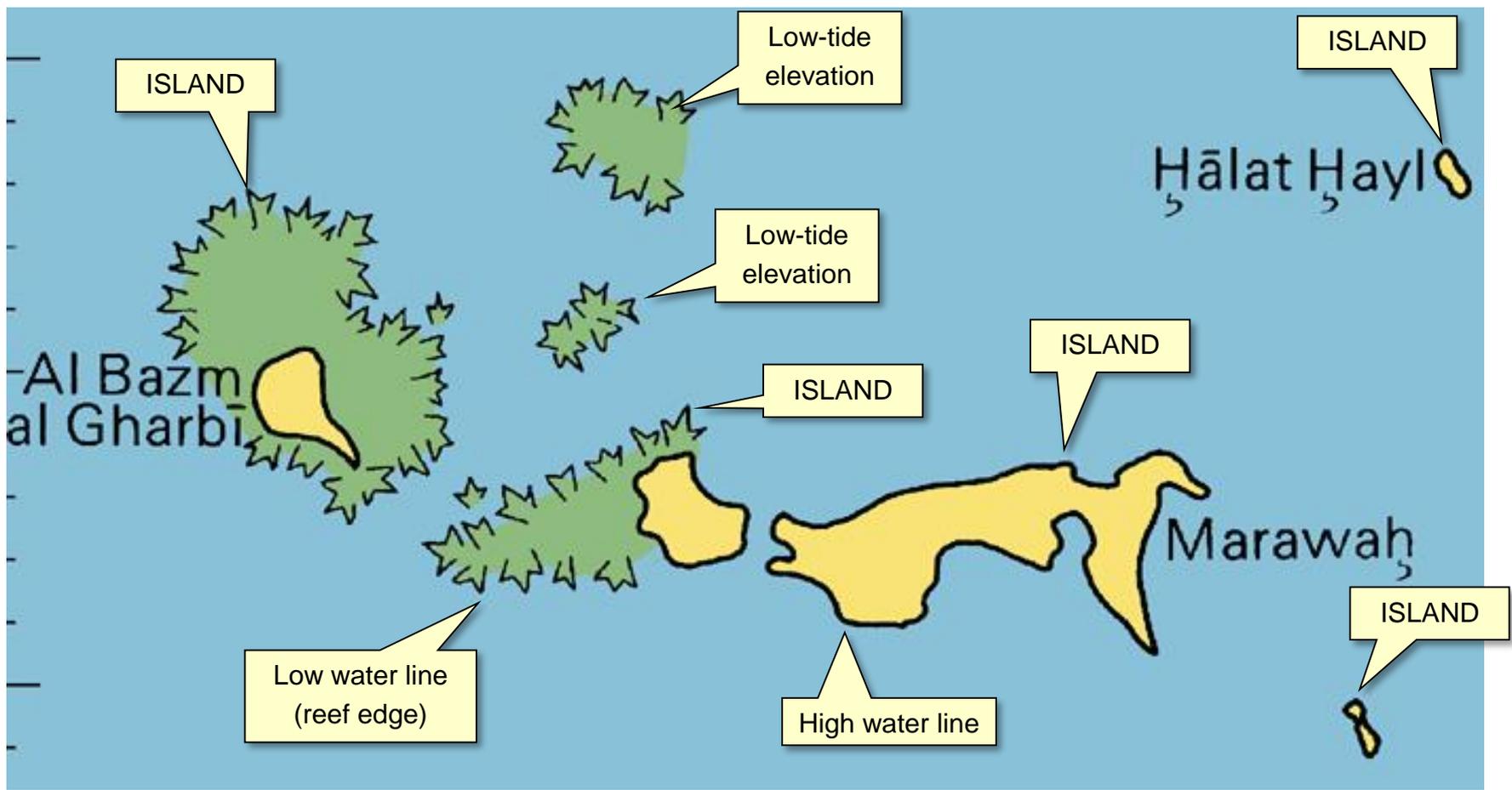
# Normal baseline



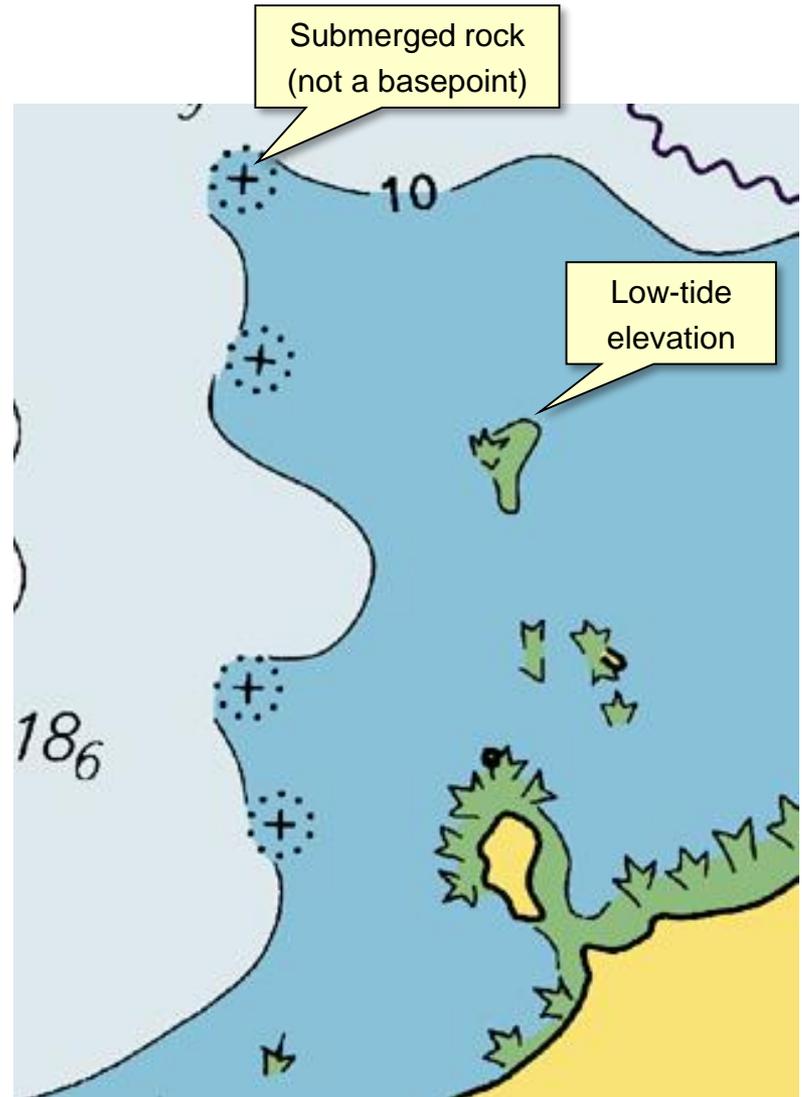
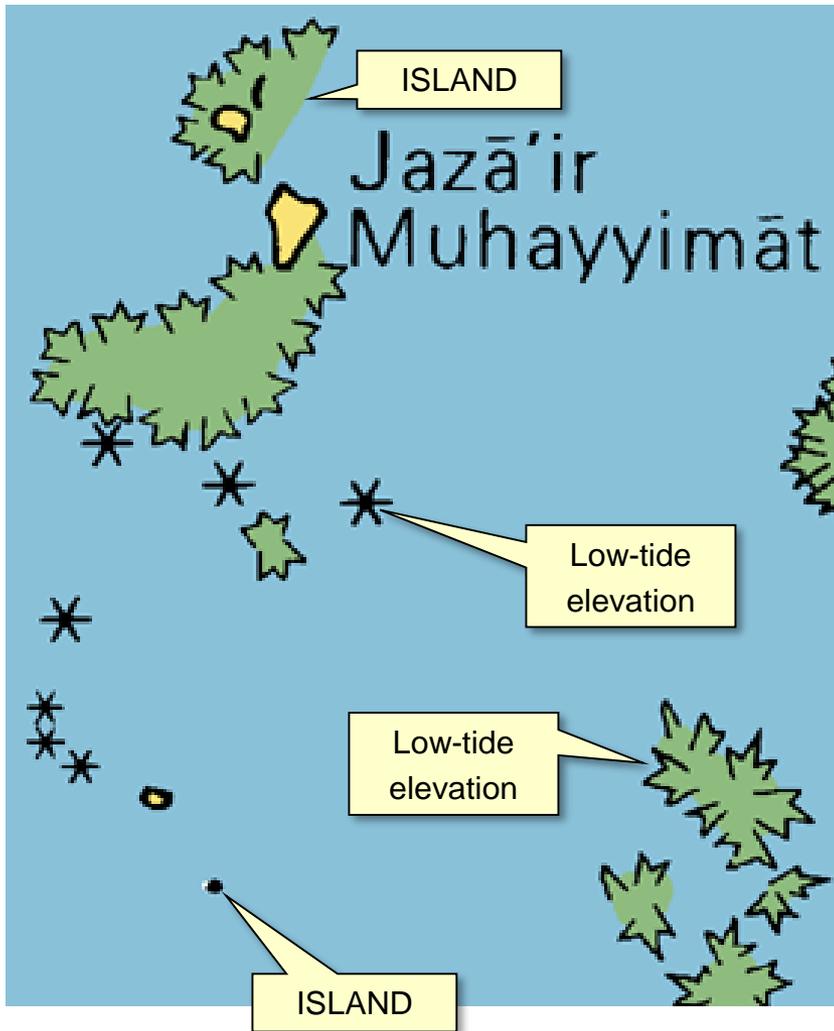
# Normal baseline (2)

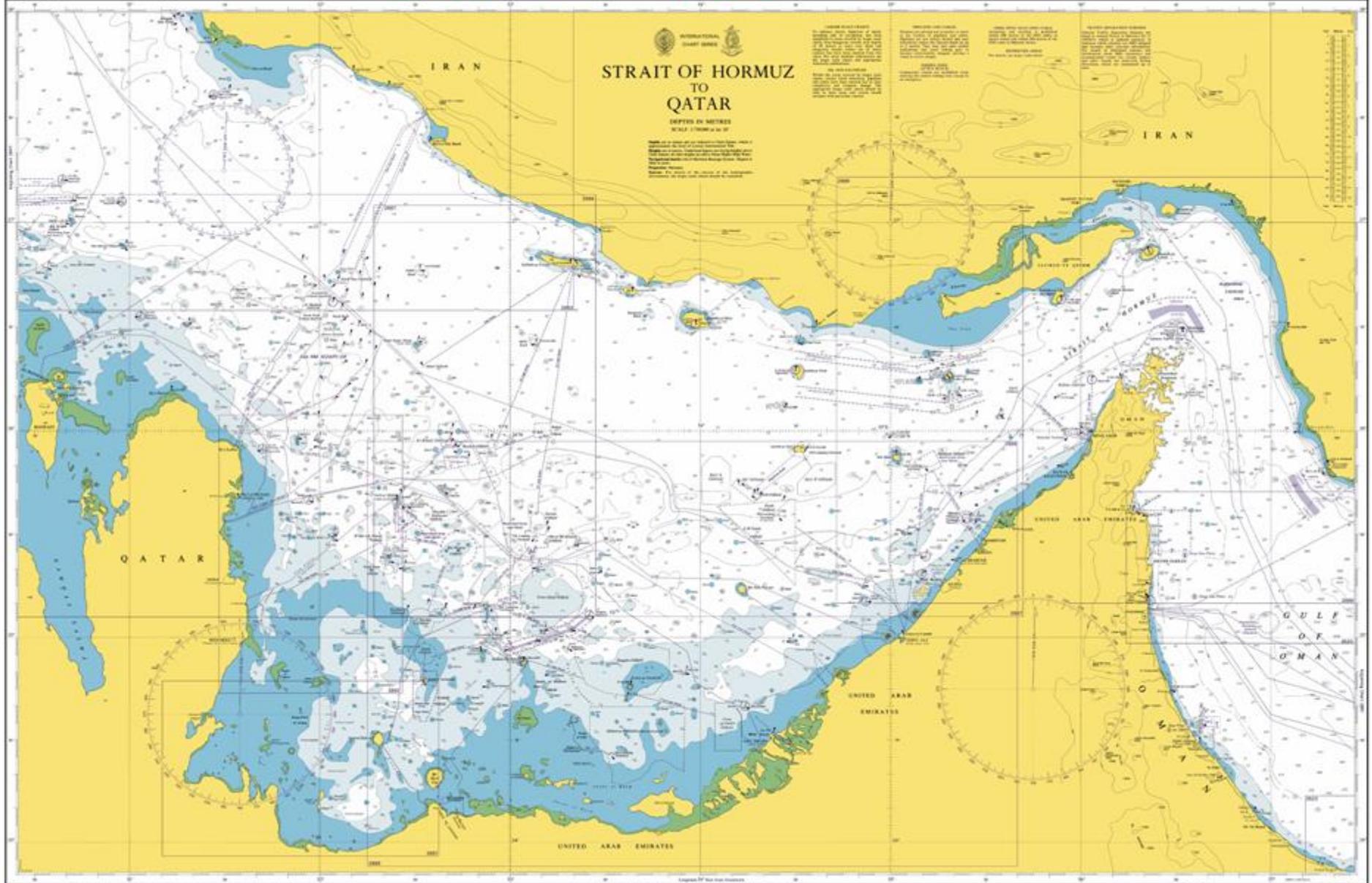


# Normal baseline (3)



# Rocks and Islands





## Distance scale

**M = nautical mile**

**1 sea mile = 1' of  
latitude**

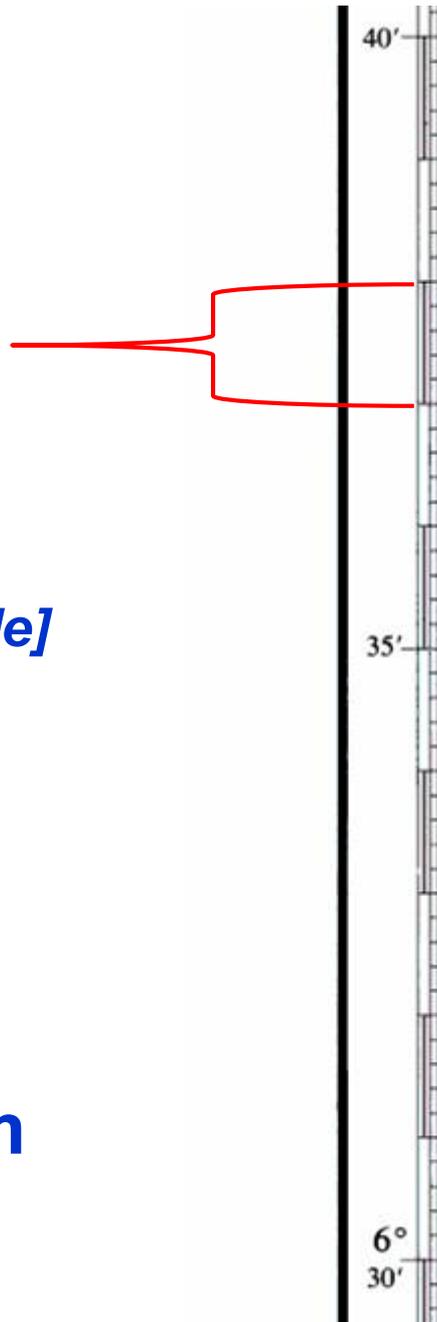
*[variable]*

**1M = 1852m**

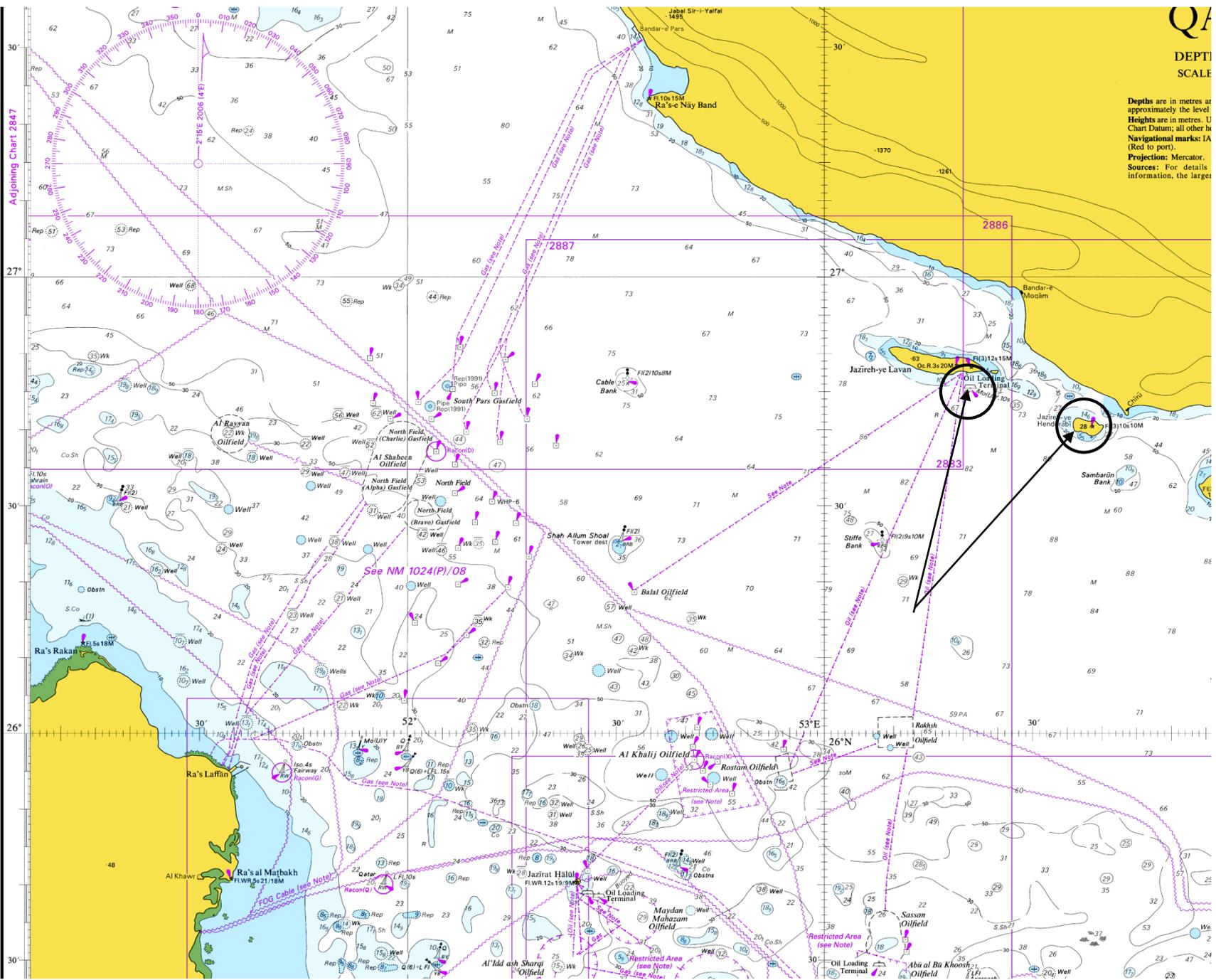
**.01' = 18.52m**

**1'' = 1/60 M = 31m**

**.1'' = 3.1m**



Depths are in metres at approximately the level of Chart Datum; all other heights are in metres, unless otherwise stated.  
Navigational marks: LA (Red to port).  
Projection: Mercator.  
Sources: For details information, the larger



Adjoining Chart 2847

See NM 1024(P)/08

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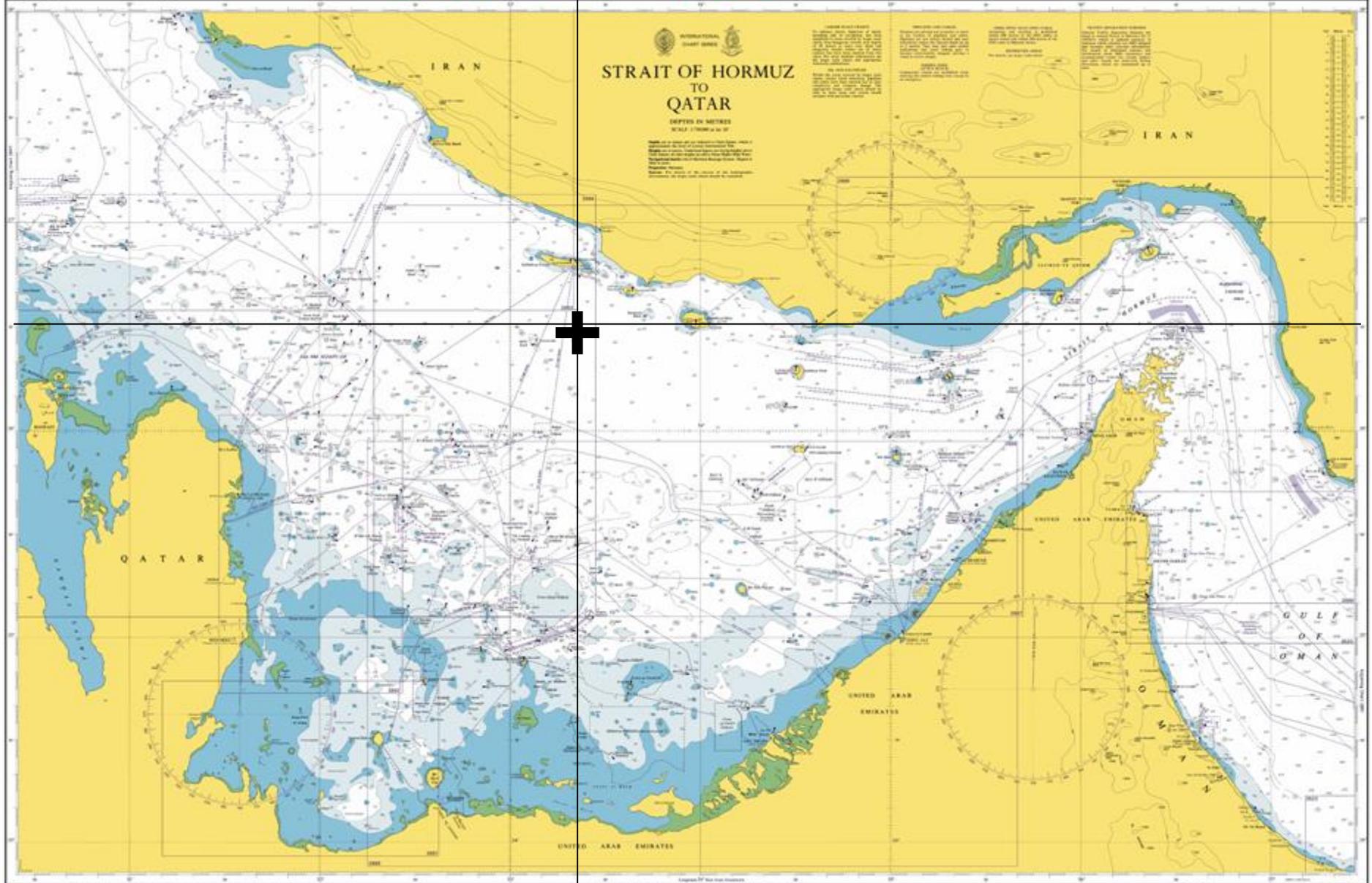
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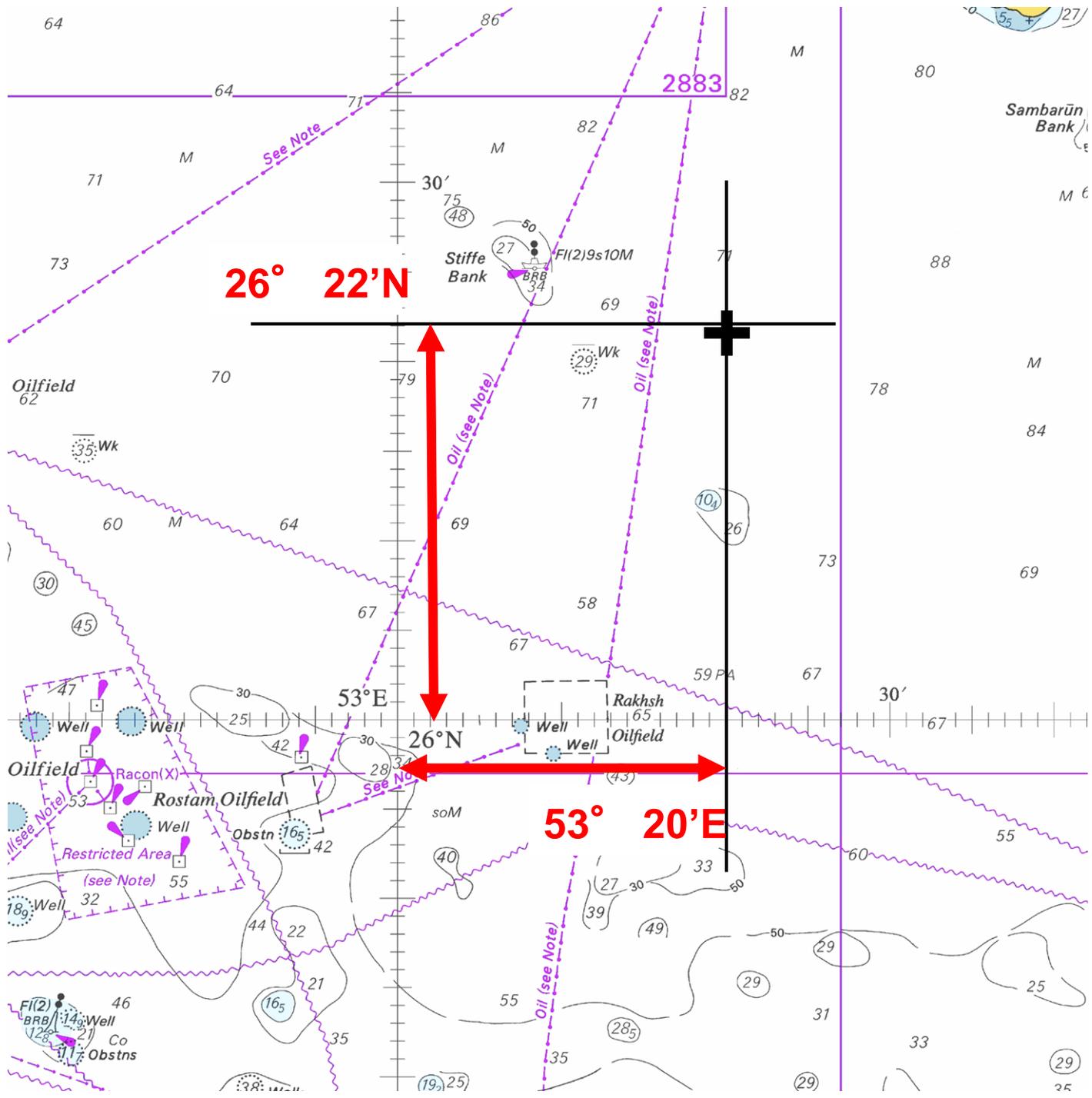
2903



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INTERNATIONAL CHART SERVICE  
**STRAIT OF HORMUZ TO QATAR**  
 SOUNDED TO METRES  
 SCALE 1:100,000



Depths are in metres and approximately the level  
Heights are in metres. U  
Chart Datum; all other h  
Navigational marks: IA  
(Red to port).  
Projection: Mercator.  
Sources: For details  
information, the larger



12 Miles

12 Miles

See NM 1024(P)/08

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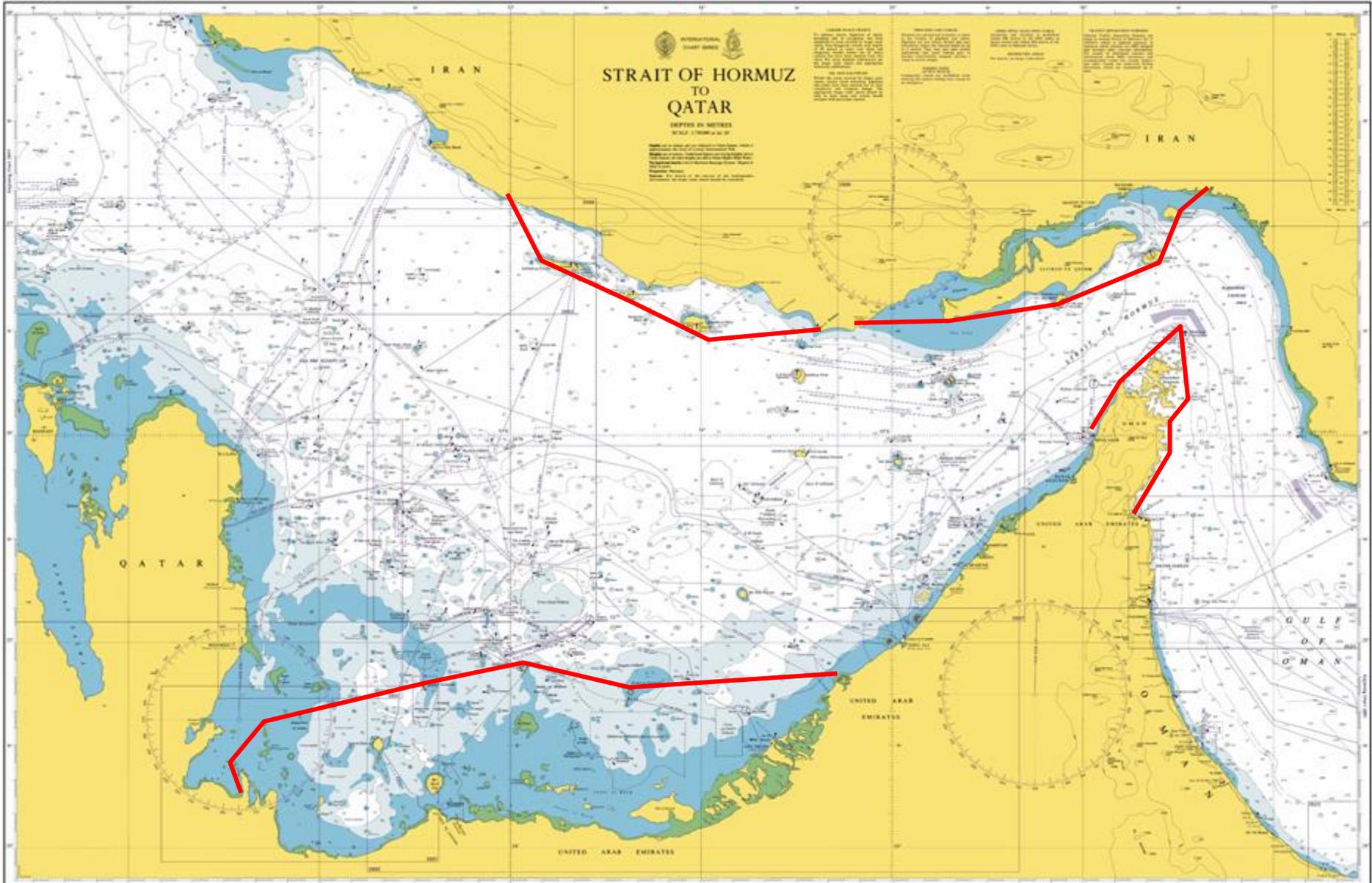
53°E

26°N

# PRACTICAL SESSION: Baselines

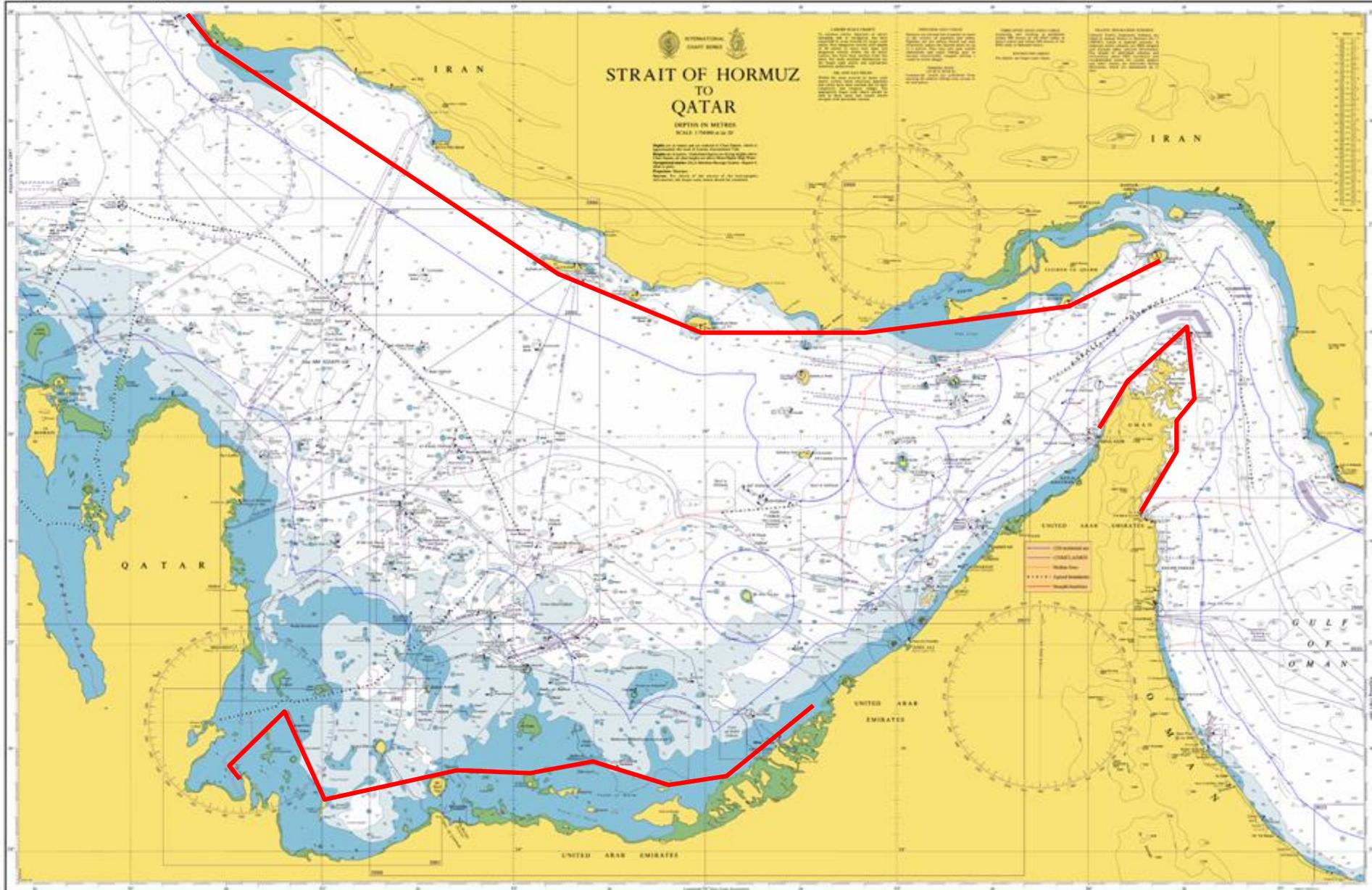
1. Draw the 12M territorial sea limit using the low water line (normal baseline).
2. Draw straight baselines where appropriate.
3. Draw the 12M limit from the straight baselines.

INTERNATIONAL CHART SERVICE  
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INTERNATIONAL CHART SERVICE  
**STRAIT OF HORMUZ  
 TO  
 QATAR**  
 SOUNDED TO METRES  
 SCALE 1:75,000

Scale of Soundings: 1:75,000  
 Scale of Horizontal Distances: 1:75,000  
 Scale of Vertical Distances: 1:75,000  
 Scale of Depth Soundings: 1:75,000  
 Scale of Horizontal Distances: 1:75,000  
 Scale of Vertical Distances: 1:75,000  
 Scale of Depth Soundings: 1:75,000



STRAIT OF HORMUZ  
TO  
QATAR

DEPTH IN METRES  
SCALE 1:100,000

INTERNATIONAL HYDROGRAPHIC ORGANIZATION  
SOUNDINGS IN METRES  
SCALE 1:100,000  
EDITION 2011

- (1) Uncharted sea
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# Maritime Limits and Boundaries: 2. Median Line

# What this session will cover

- Delimitation principles
- Construction of median/equidistance line

## **Next session**

- Equitable boundaries
- Special circumstances
- Effect of islands

# UNCLOS 1982: Territorial Sea

*Article 15: Delimitation of the territorial sea between States with opposite or adjacent coasts*

- Where the coasts of two States are opposite or adjacent to each other, neither of the two States is entitled, failing agreement between them to the contrary, to extend its territorial sea beyond the *median line* . . . .
- The above provision does not apply, however, where it is necessary by reason of historic title or other *special circumstances* to delimit the territorial seas of the two States in a way which is at variance therewith.

# UNCLOS 1982: EEZ

## *Article 74 and 83: Delimitation of the EEZ/Continental Shelf between States with opposite or adjacent coasts*

1. . . . shall be effected by agreement on the basis of international law, . . . . . in order to achieve an *equitable solution*.
2. If no agreement can be reached within a reasonable period of time, the States shall resort to the procedures provided for in Part XV.

# Legal principles

- Land dominates the sea – by the intermediary of the coastal front.
- Rights to maritime space are derived from the sovereignty over the landmass.
- The maritime front (coastline), rather than the landmass.



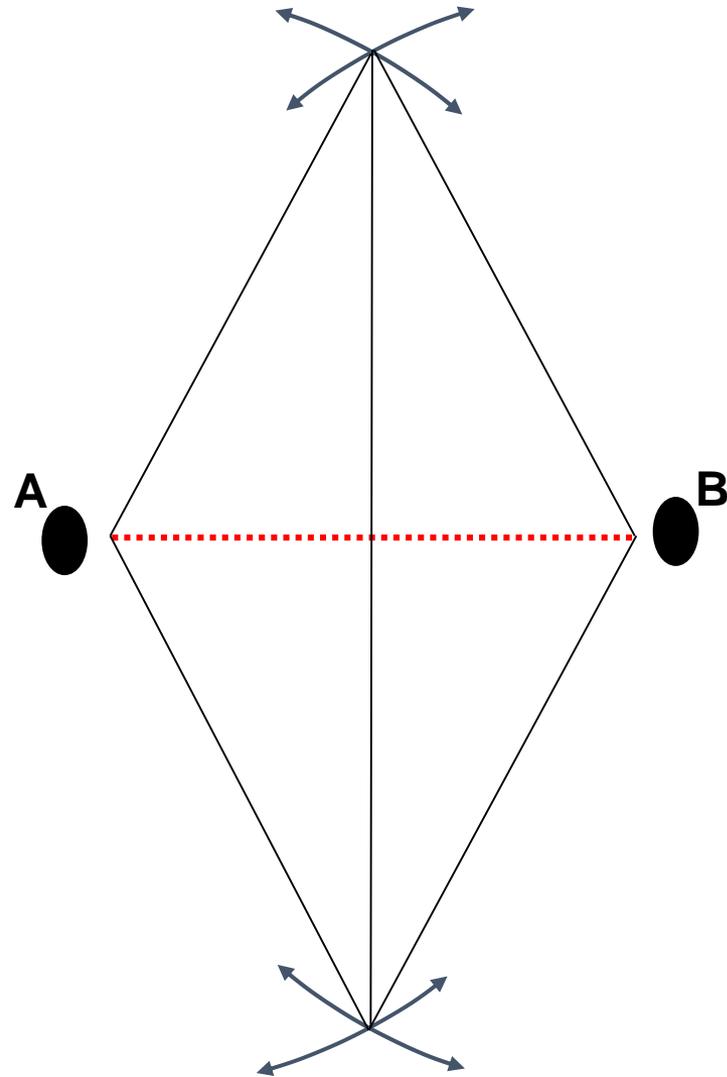
# Recipe for Delimitation

1. [Select basepoints]  
Draw **equidistance line** as a provisional boundary
2. Adjust provisional line as necessary for equitable solution in light of **relevant/special circumstances**
3. Check for proportionality

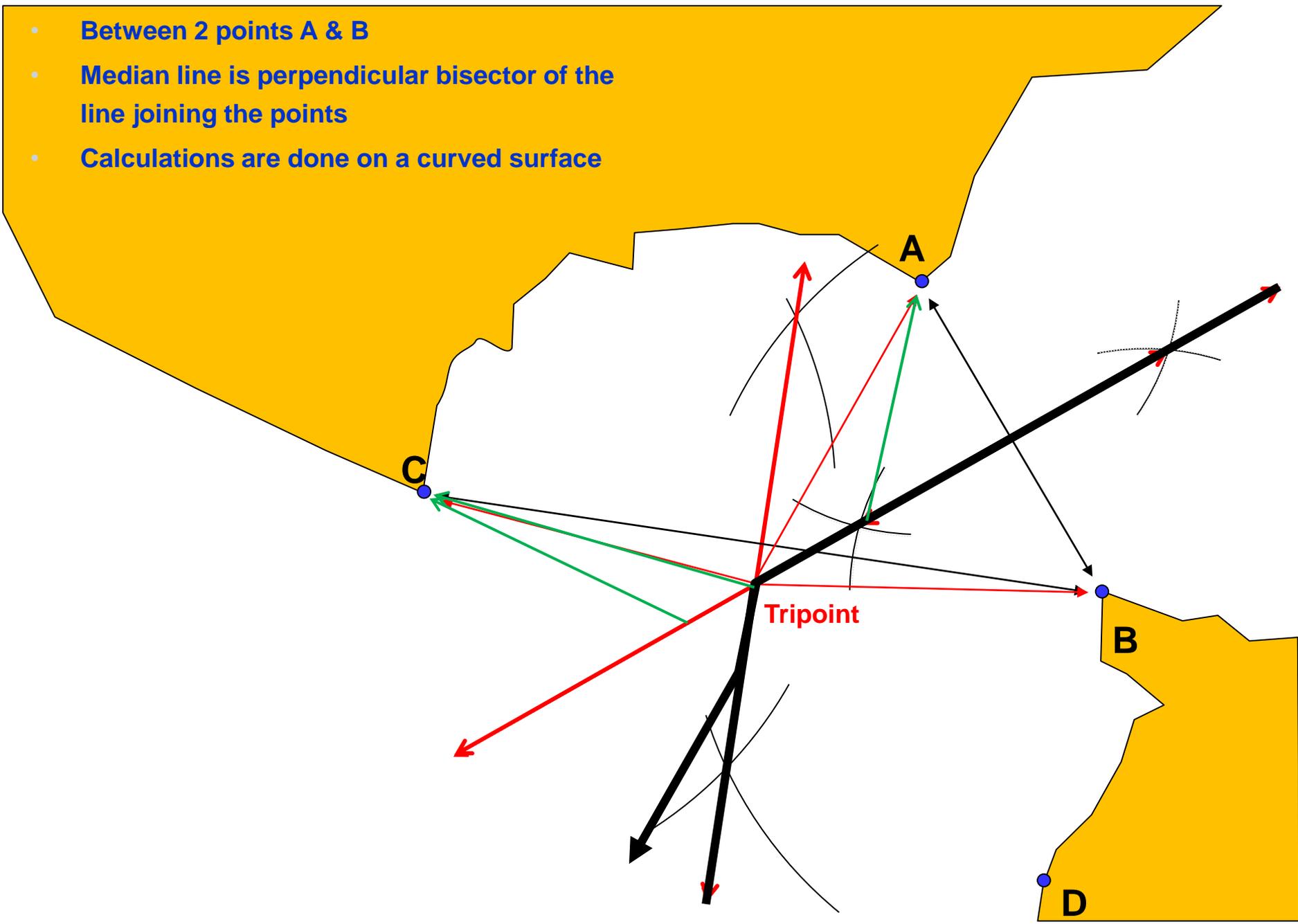
# MEDIAN/EQUIDISTANCE LINE

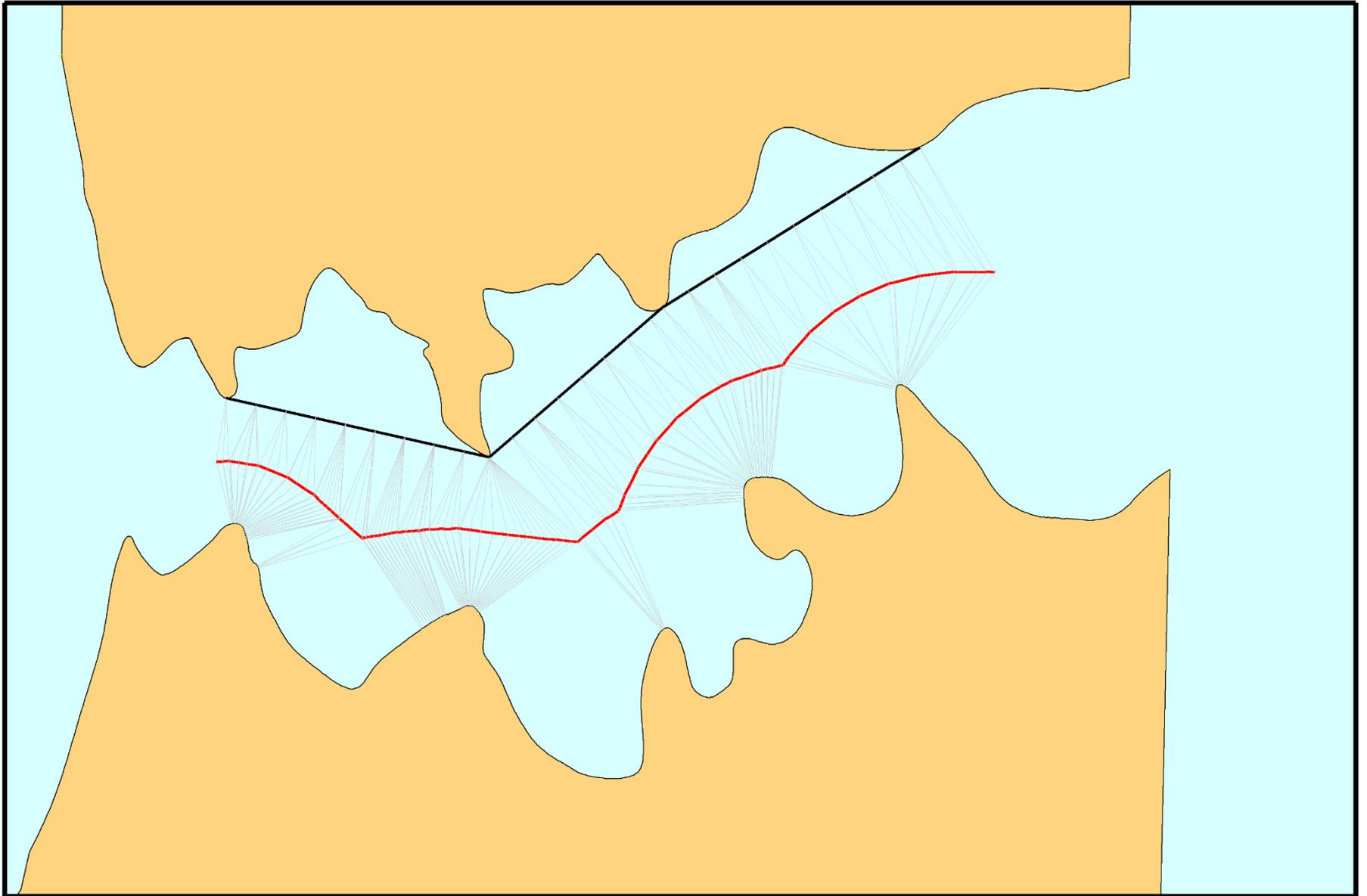
- A line on which every point is equidistant from the nearest base point on either coast
- Median normally used for opposite coasts, equidistance for adjacent coasts but technically the same
- The only rigorous method of dividing sea areas under the influence of the coasts that face them
- The usual starting point for delimitation

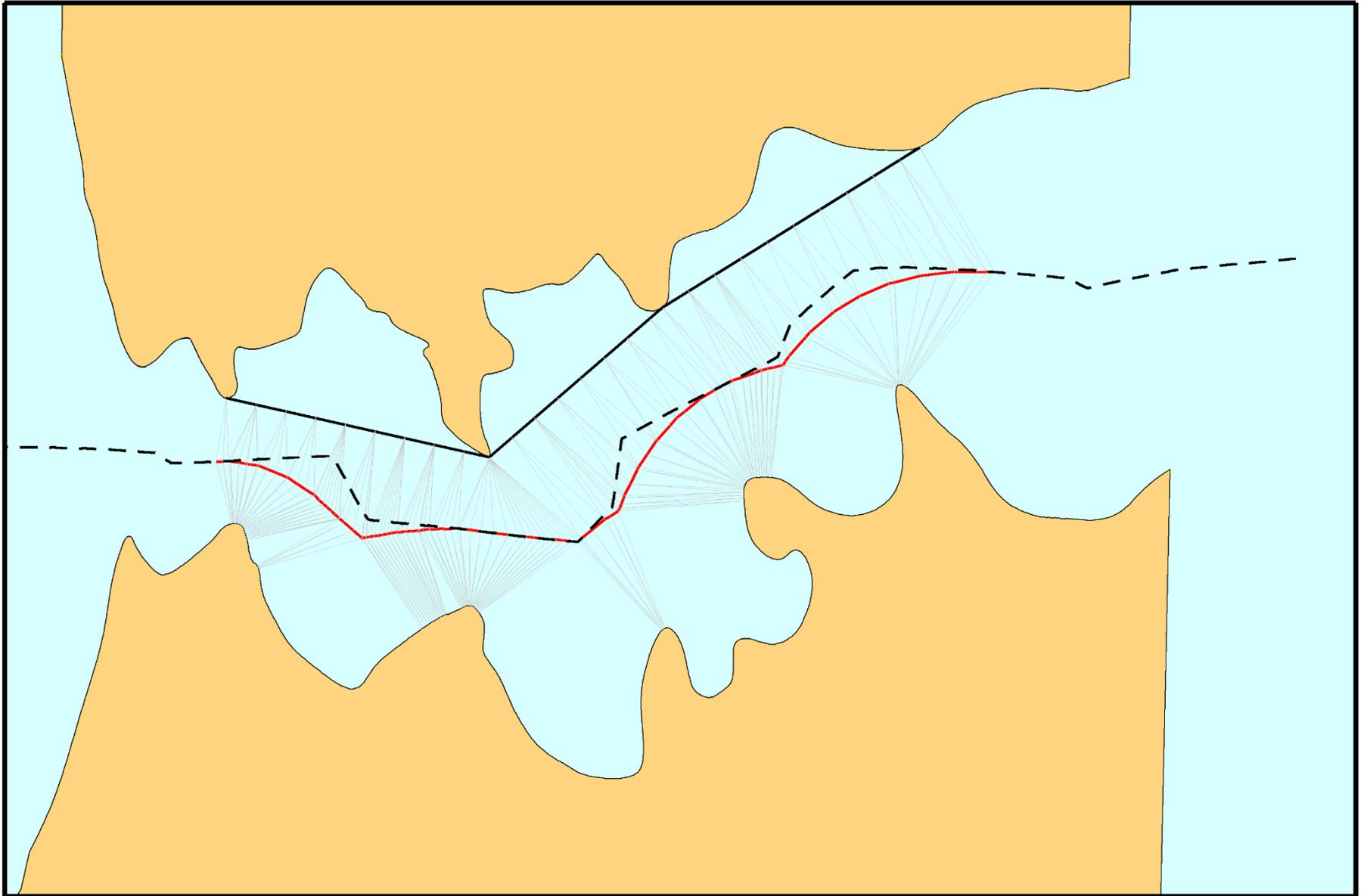
- **Perpendicular bisector of a line**
- **Draw equal Radii from each end**
- **Join intersections**



- Between 2 points A & B
- Median line is perpendicular bisector of the line joining the points
- Calculations are done on a curved surface

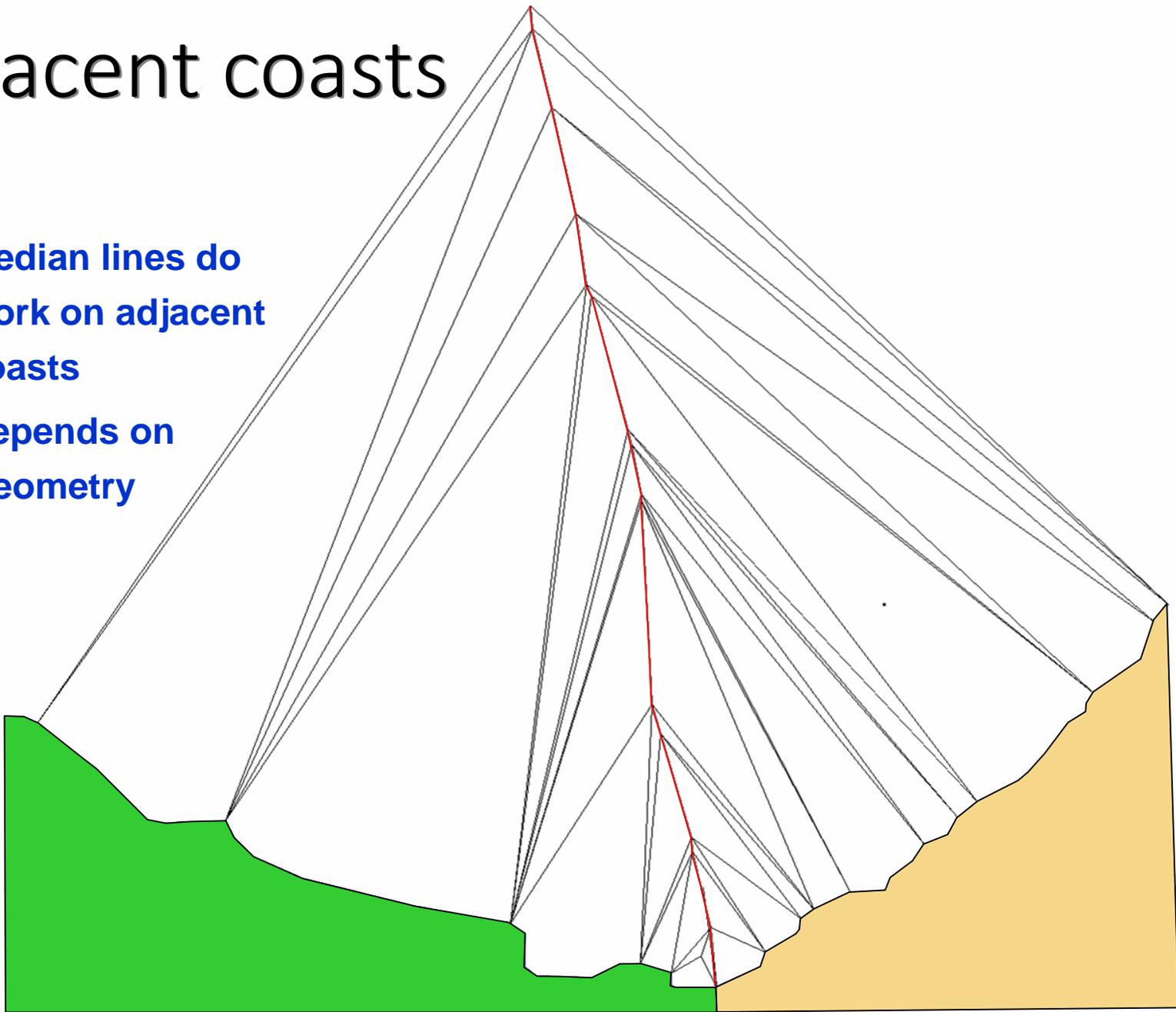


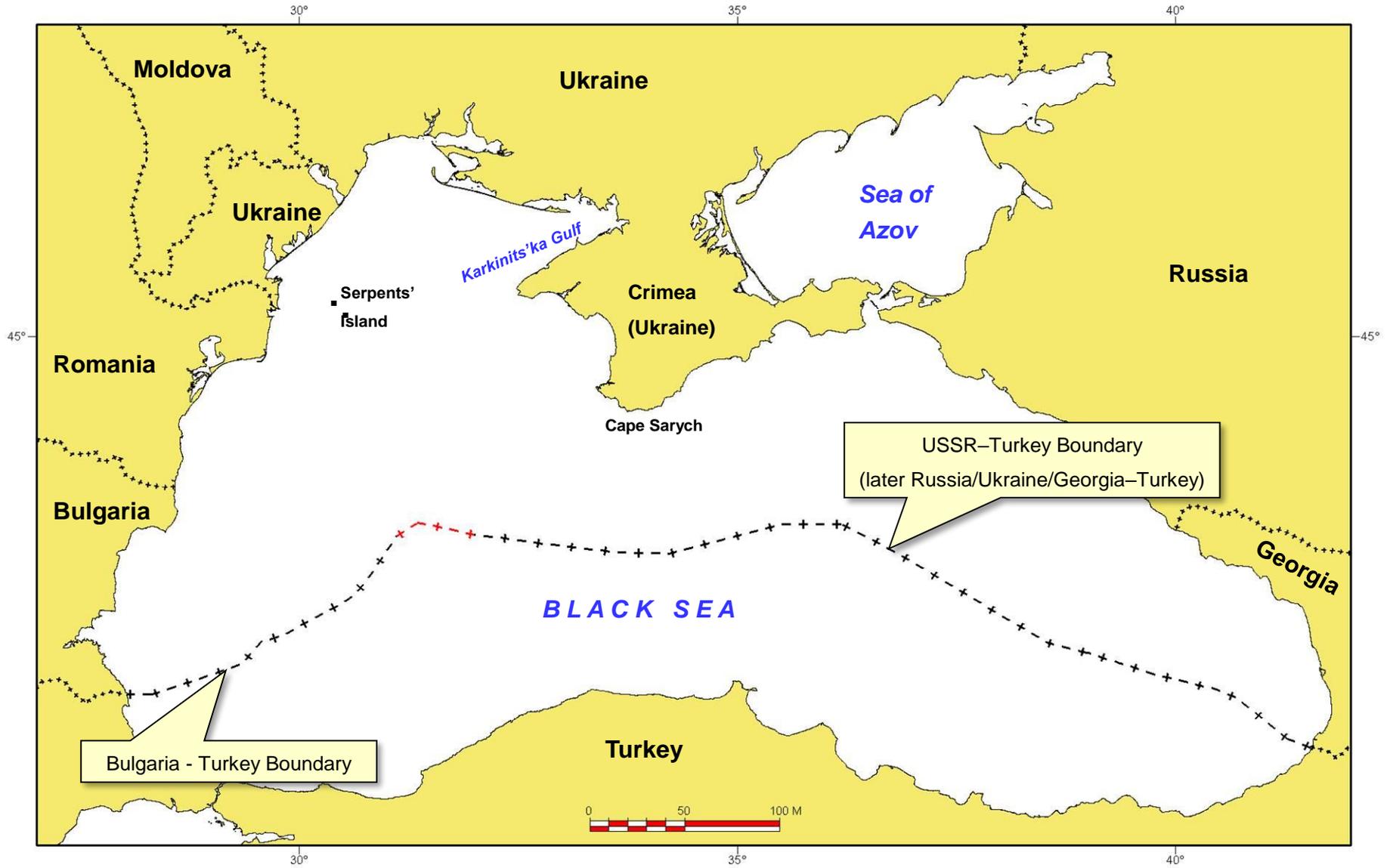


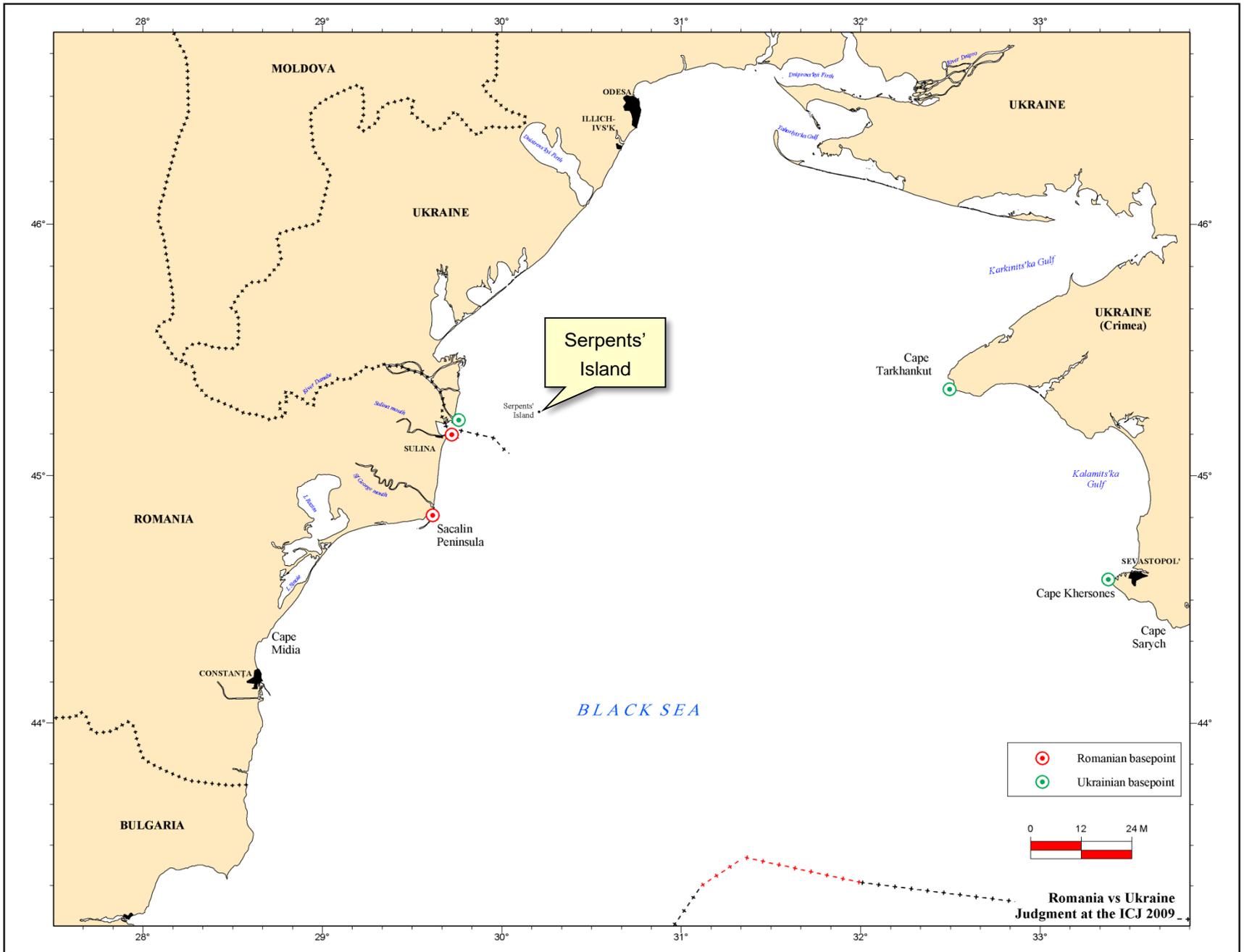


# Adjacent coasts

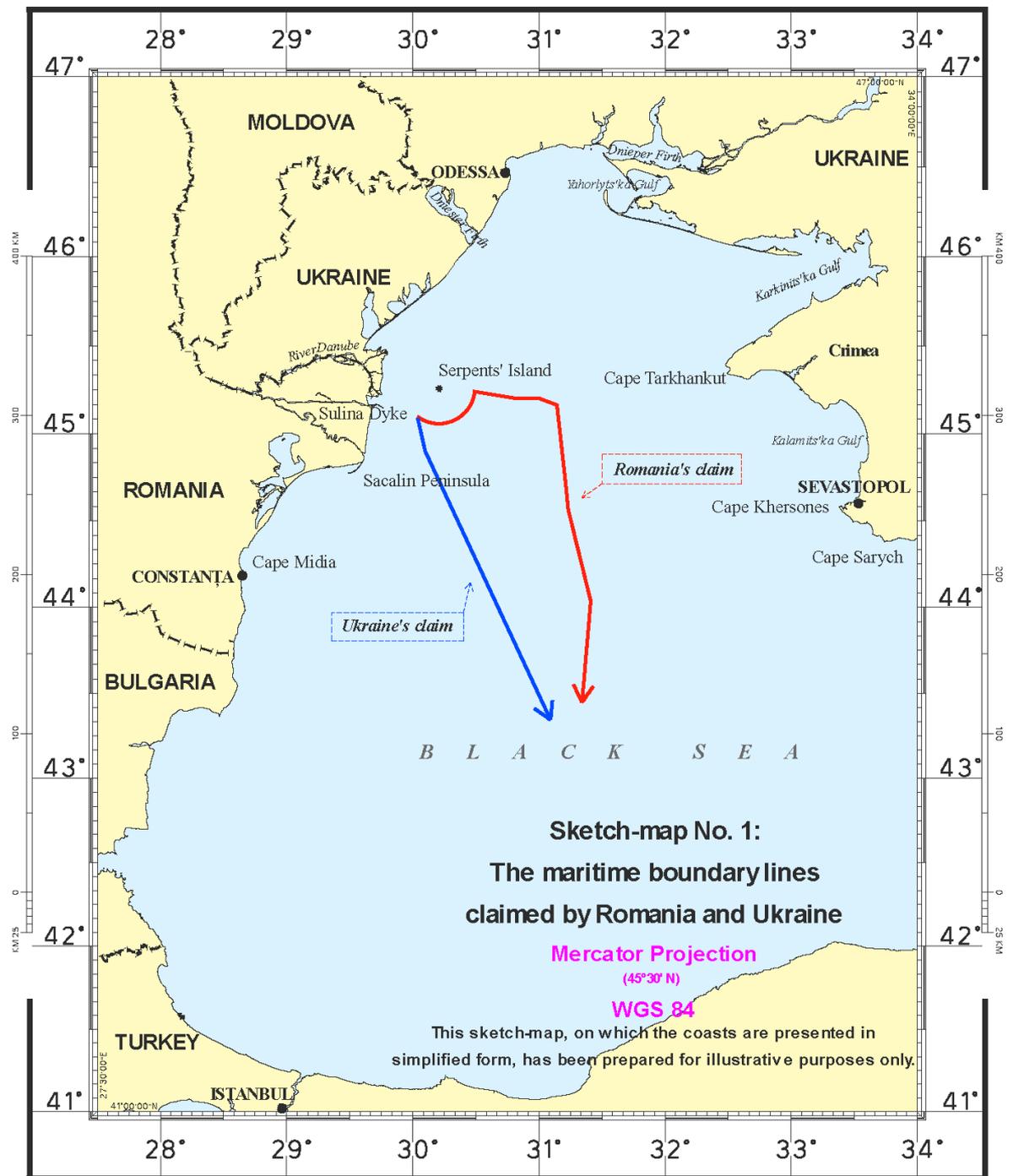
- Median lines do work on adjacent coasts
- Depends on Geometry

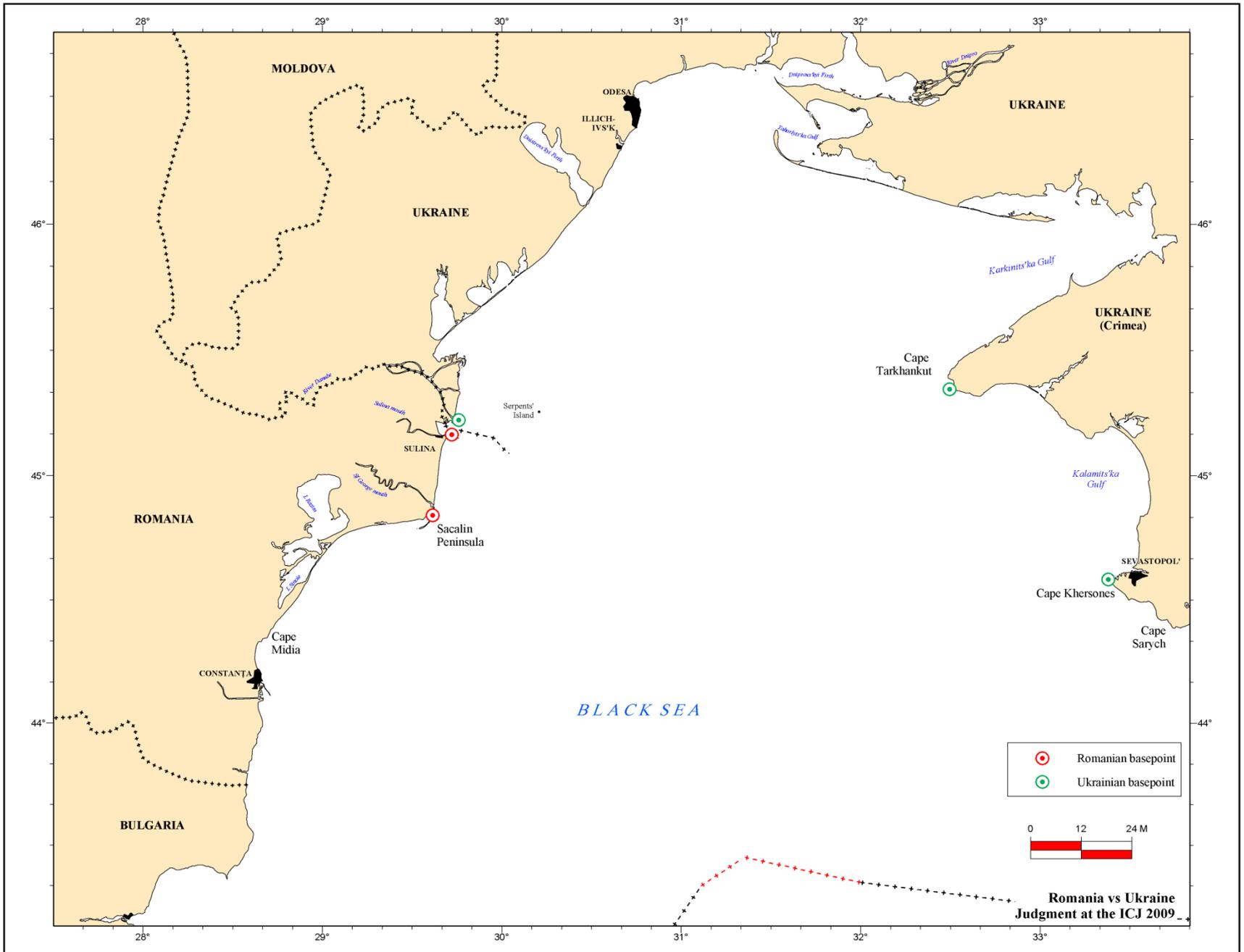






Romania-Ukraine  
ICJ Judgment  
Map 1





MOLDOVA

ODESA

ILICH-IVSK

UKRAINE

UKRAINE

UKRAINE (Crimea)

Cape Tarkhankut

SULINA

Sacalin Peninsula

SEVASTOPOL'

Cape Khersones

Cape Sarych

ROMANIA

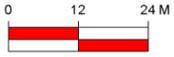
CONSTANTA

Cape Midia

BULGARIA

BLACK SEA

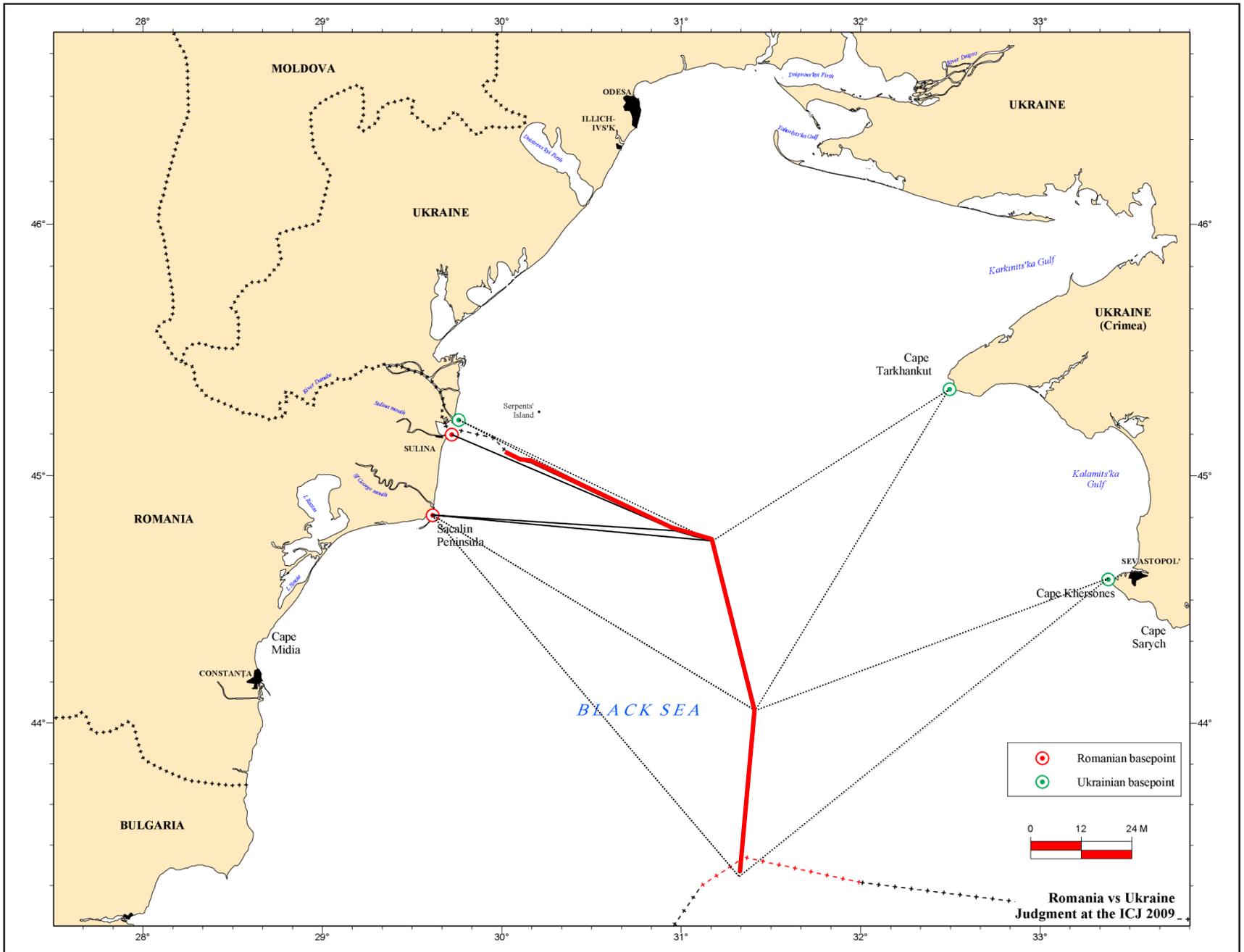
- ⊙ Romanian basepoint
- ⊙ Ukrainian basepoint



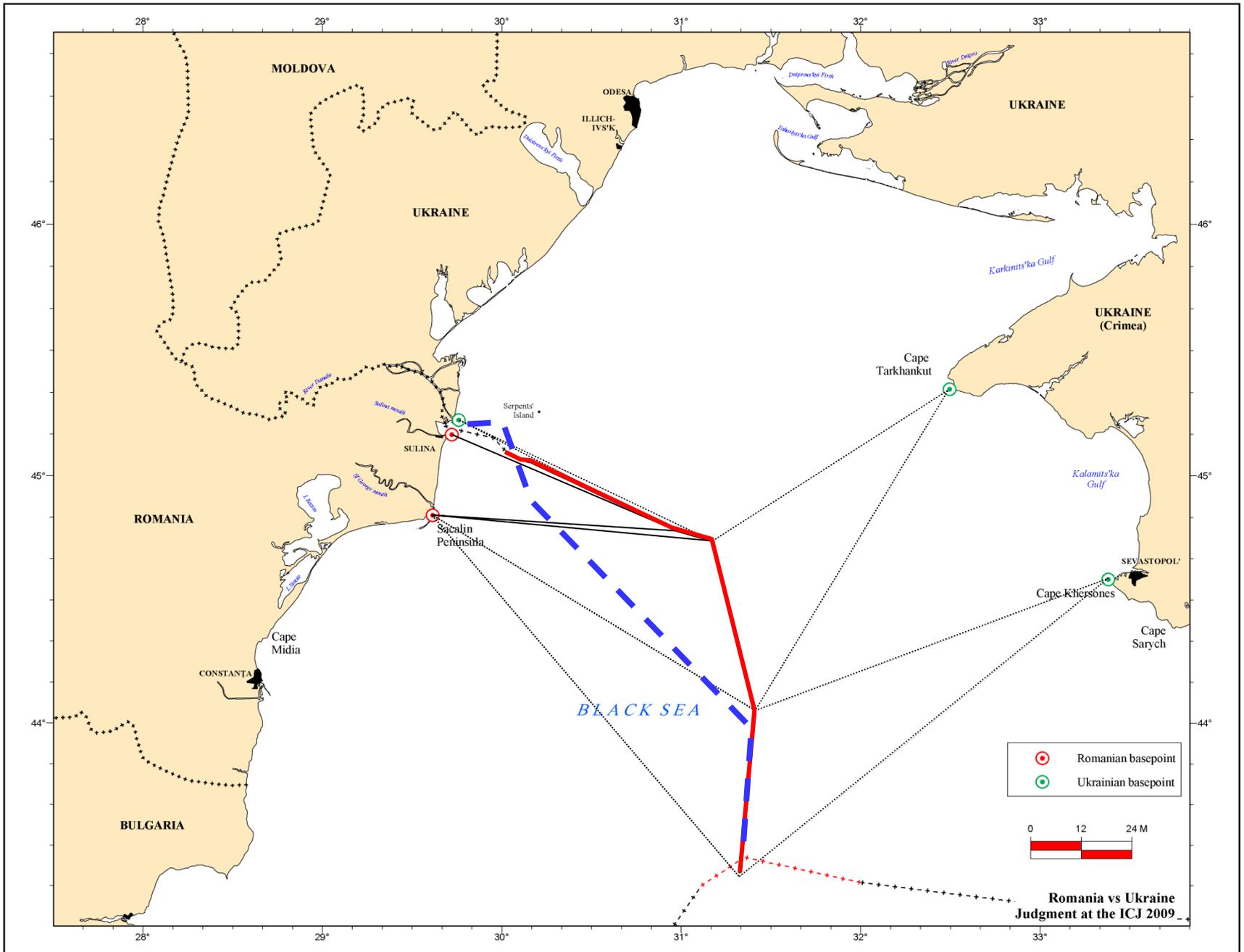
Romania vs Ukraine Judgment at the ICJ 2009

# Practical session

- Construct the Court's judgment in the case of Romania vs Ukraine using their basepoints
- Draw the equidistance line giving Serpents' Island full weight

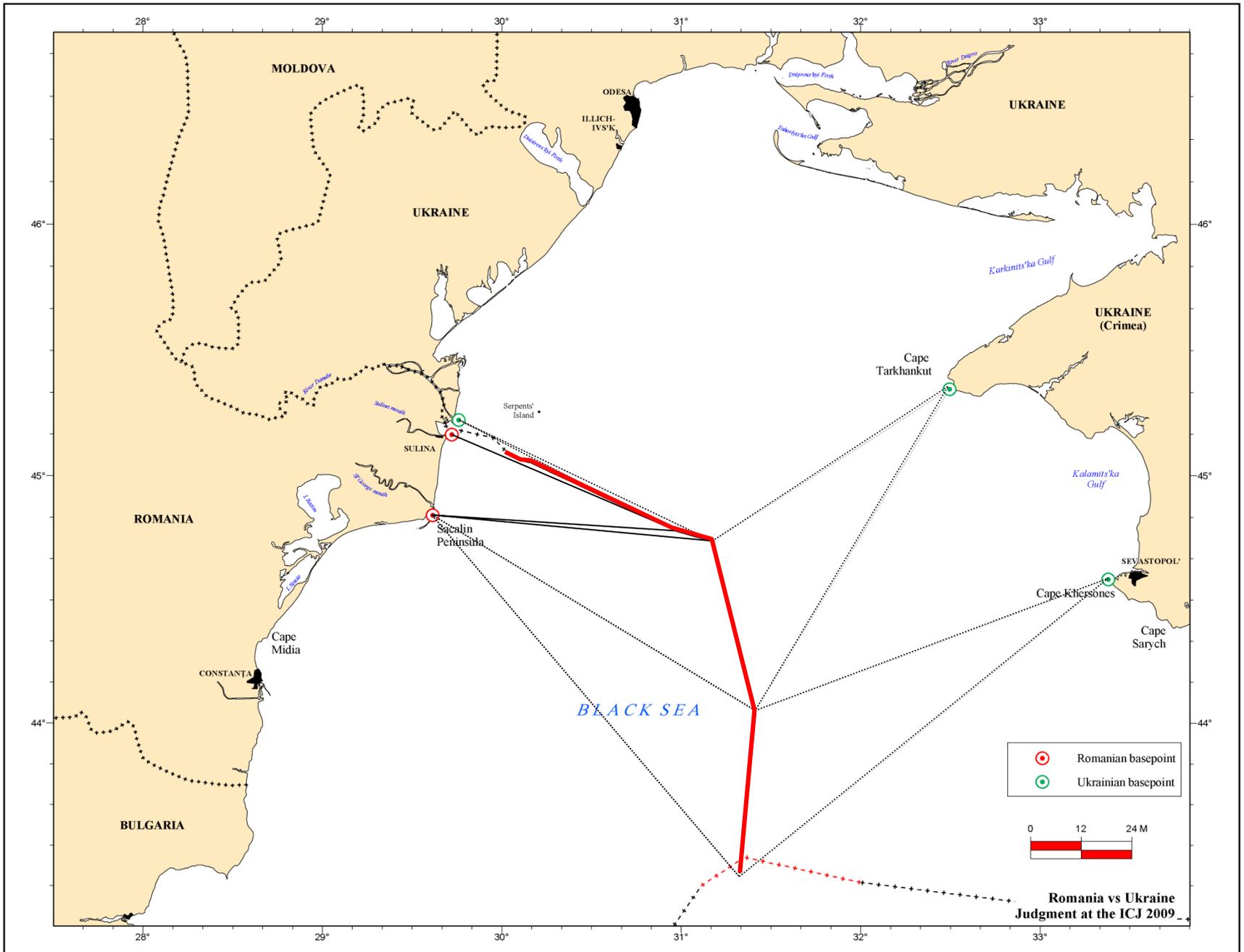






# Maritime Limits and Boundaries:

## 3. Equitable Boundaries



28° 29° 30° 31° 32° 33°

MOLDOVA

ODESA

ILICH-IVSK

UKRAINE

UKRAINE

UKRAINE (Crimea)

46°

46°

Cape Tarkhankut

SULINA

Serpents' Island

Kalamits'ka Gulf

45°

45°

ROMANIA

Sacalin Peninsula

SEVASTOPOL'

Cape Khersones

Cape Sarych

BLACK SEA

44°

44°

CONSTANTA

Cape Midia

BULGARIA

⊙ Romanian basepoint  
⊙ Ukrainian basepoint



**Romania vs Ukraine Judgment at the ICJ 2009**

28° 29° 30° 31° 32° 33°

# Serpents' Island: The Border Guard Post



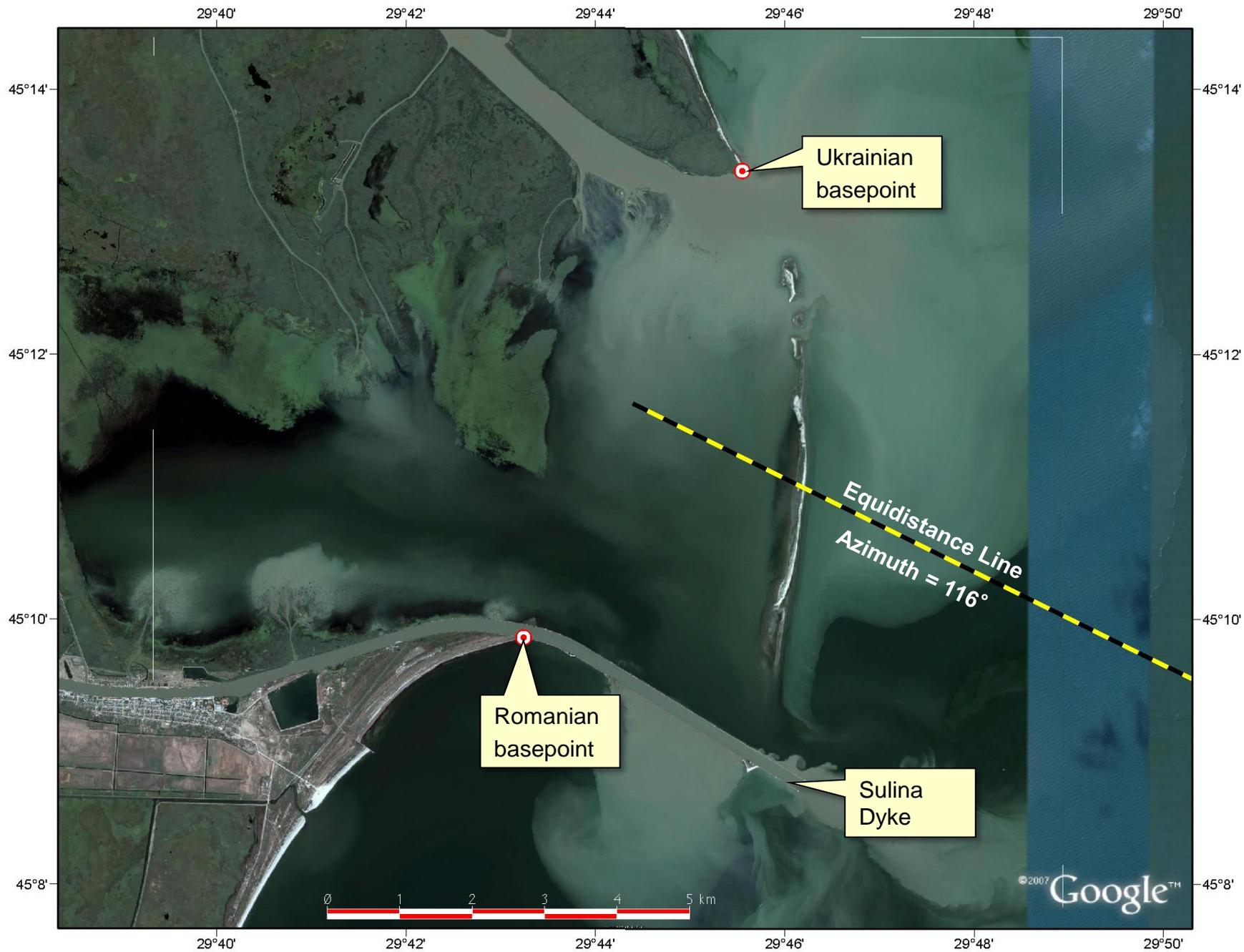
Photograph from Google Earth (Panoramio)

# Terminal Point of Sulina Dyke

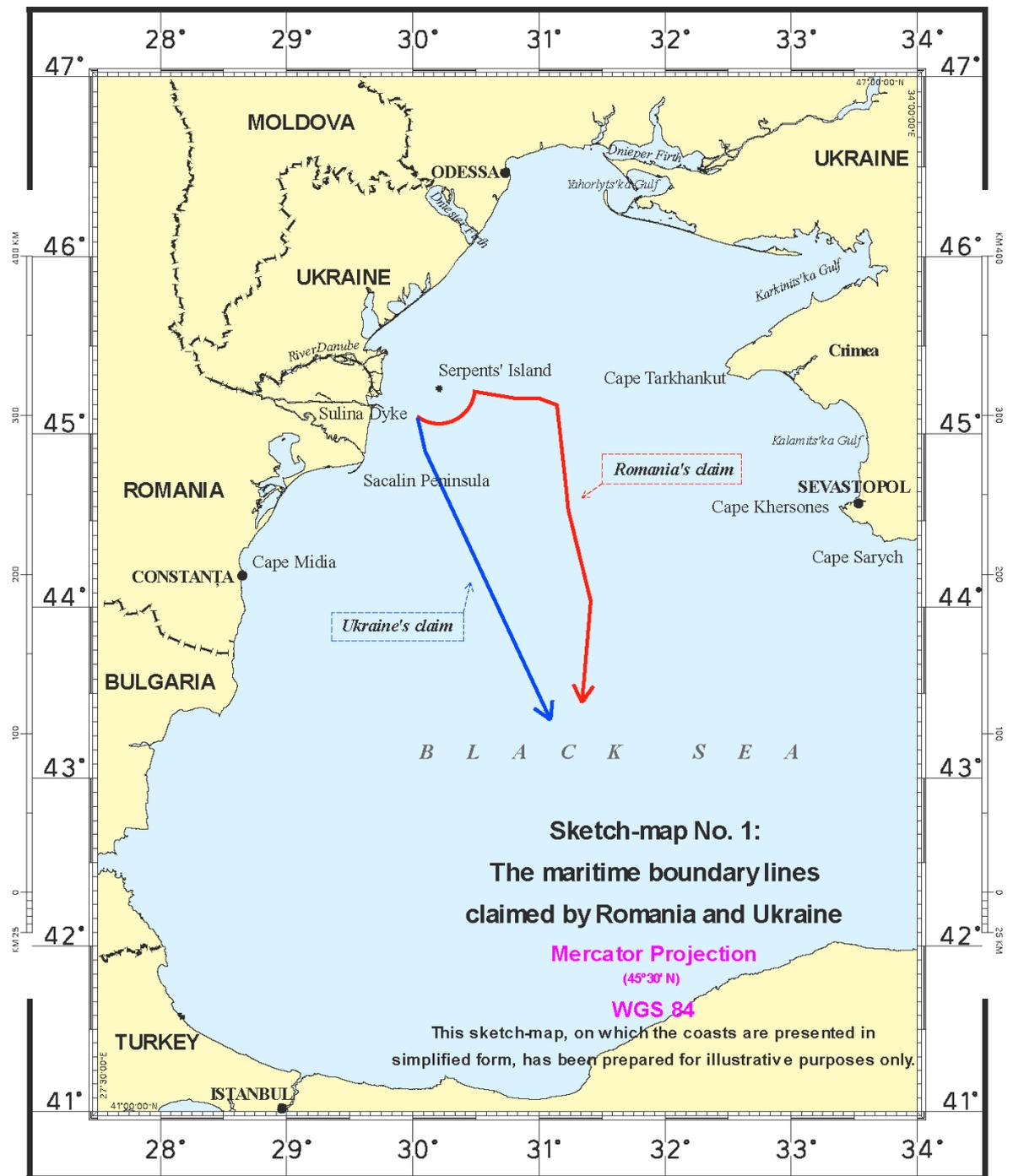


Photograph from Google Earth (Panoramio)

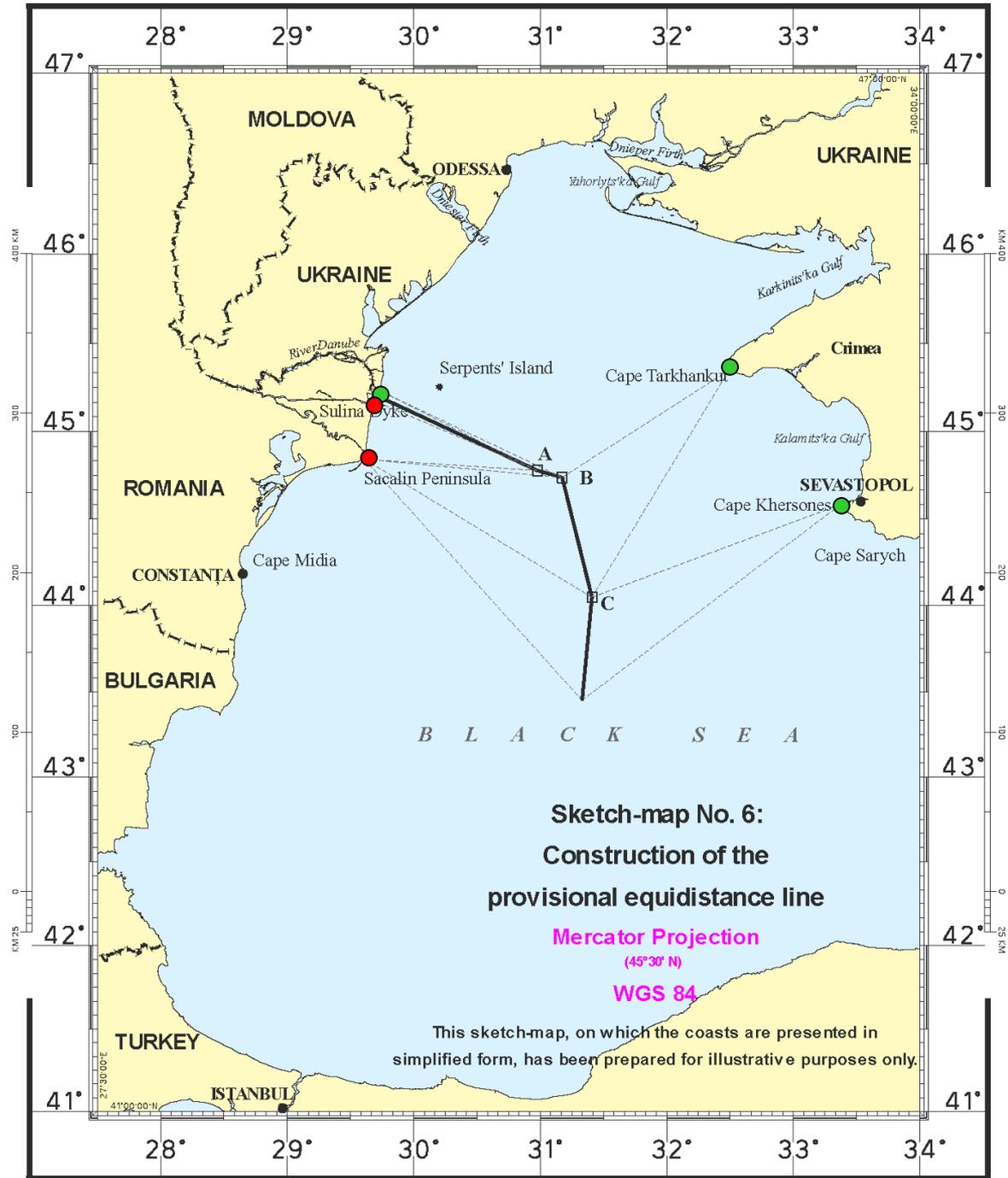
<http://www.panoramio.com/photos/original/7437>



Romania-Ukraine  
ICJ Judgment  
Map 1



Romania-Ukraine  
ICJ Judgment  
Map 6



30°

31°

UKRAINE

ROMANIA

Island of Kubansky

Serpents' Island

Tsyganka Island

Sulina Dyke

Basepoint

Sacalin Peninsula

### Sketch-map No. 7: Enlargement of Sketch-map No. 6

Mercator Projection  
(45°30' N)  
WGS 84

This sketch-map, on which the coasts are presented in simplified form,  
has been prepared for illustrative purposes only.

45°35'00"N

31°15'00"E

30'

20'

10'

45°

50'

40'

KM 50

0

10 KM

30°

31°

28°20'00"E

44°40'00"N

30'

20'

10'

45°

50'

40'

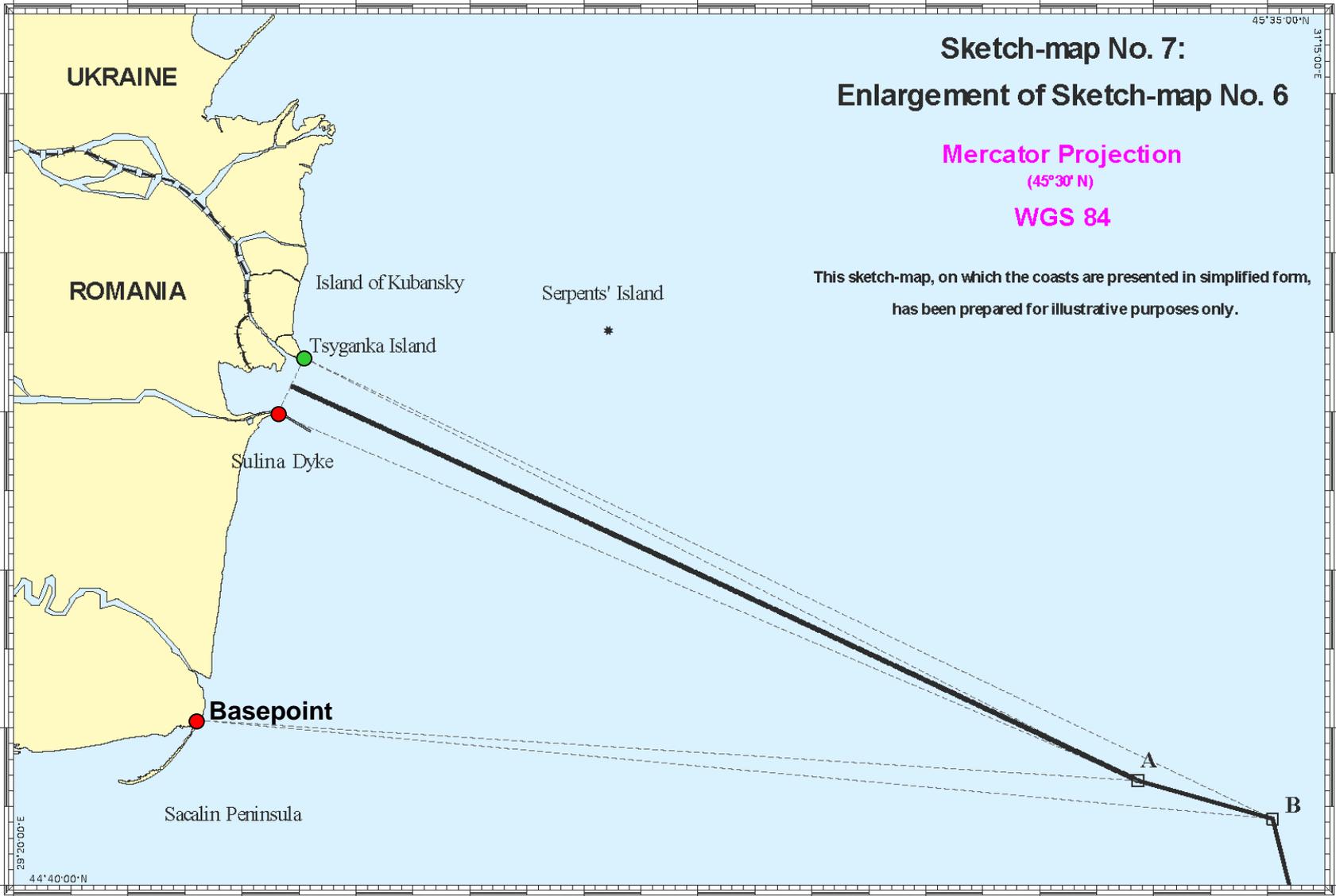
KM 50

0

10 KM

KIM 10

KIM 10



# Summary of intentions

## Territorial Sea

- Equidistance + **special circumstances**

## EEZ/Continental Shelf

- Equitable principles
- Equidistance as starting point (usually)
- Adjustments for **relevant circumstances**

# Special/Relevant Circumstances

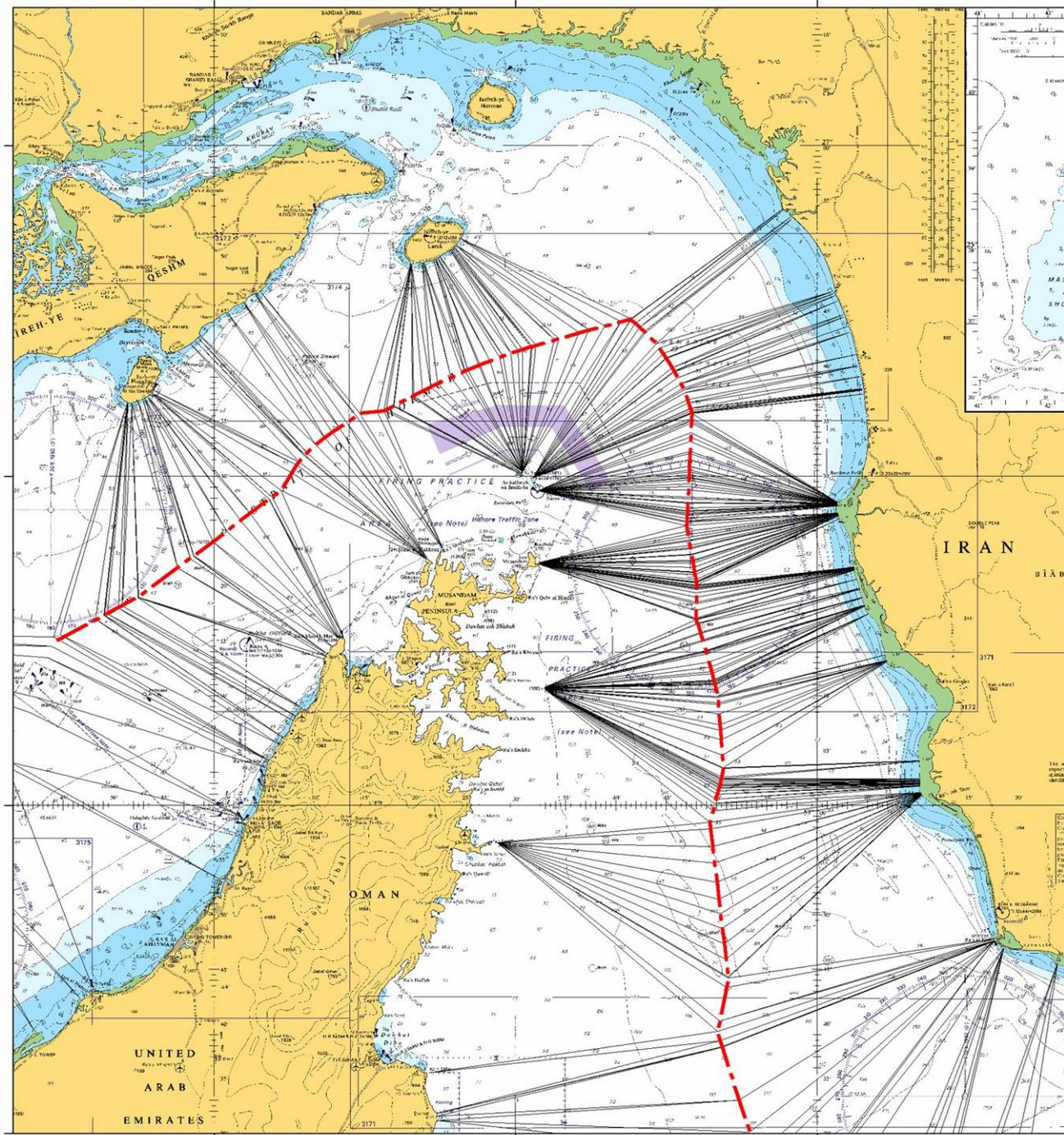
- **Geographic**
- Political
- Strategic
- Historical
- Legal regime
- Economic, e.g. fisheries, oil
- Environmental

# Geography

1. Opposite or adjacent coasts – distortions of median line
2. Coastal geometry – concave coastlines
3. Use of islands and rocks – reduced weight/enclaves
4. General direction of coast – local features
5. Baselines – straight or normal
6. Non-encroachment – cut-off of state's projection
7. Maximum reach – extension e.g. to 200M/CS limit
8. Coastal length/proportionality – ratio of coastline to area

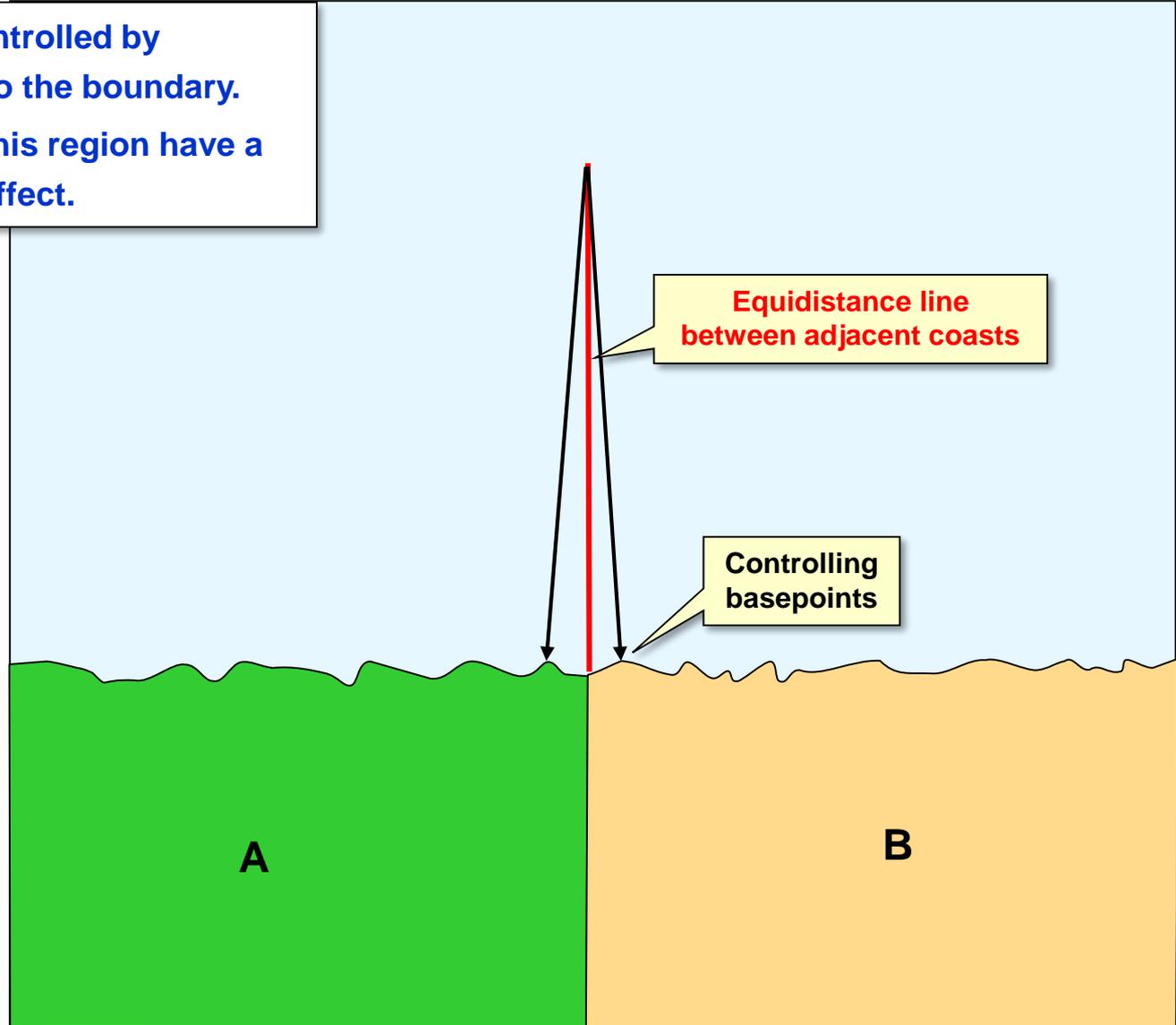
1. Opposite coasts:  
median line

**Median line**

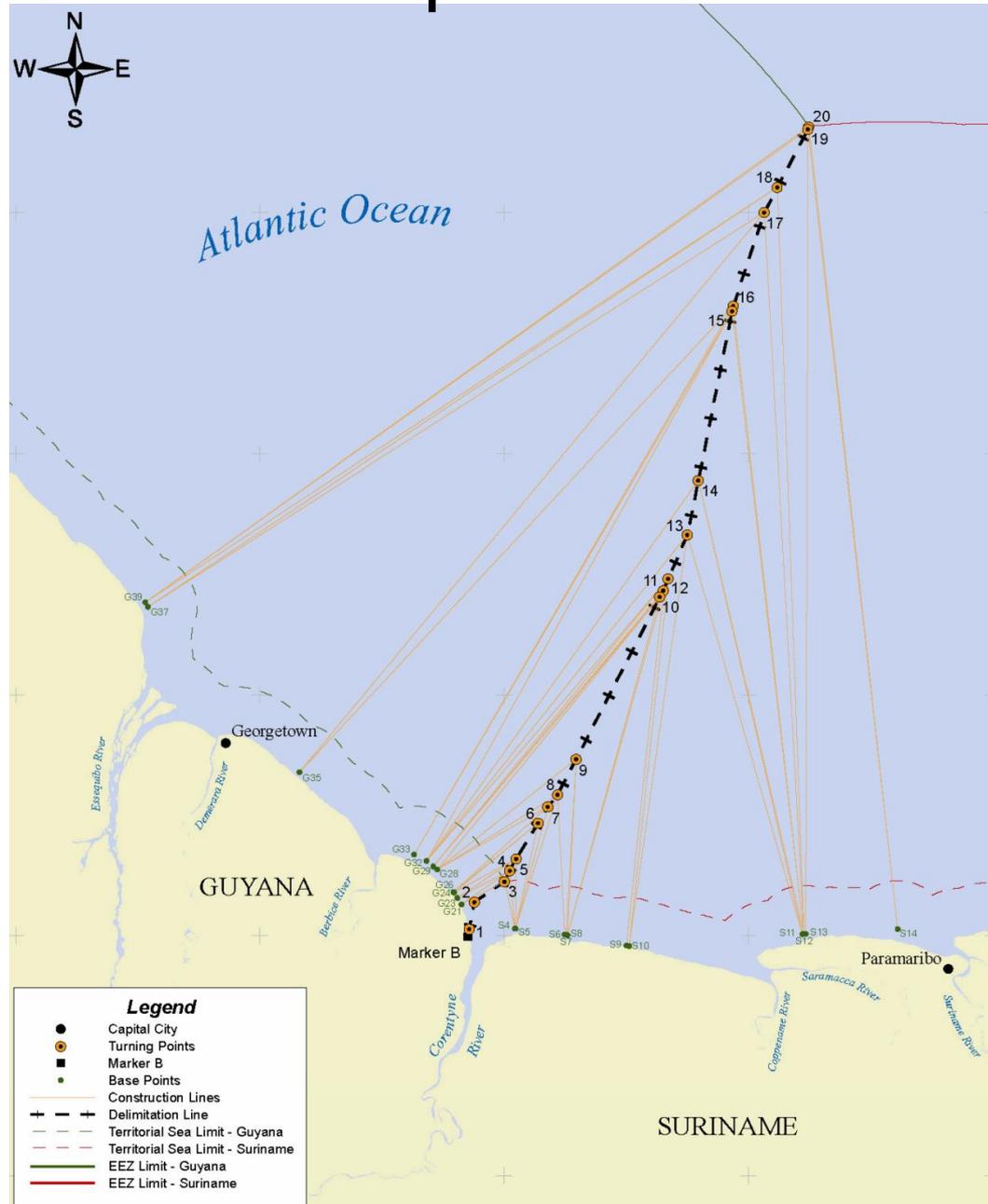


# Adjacent coasts

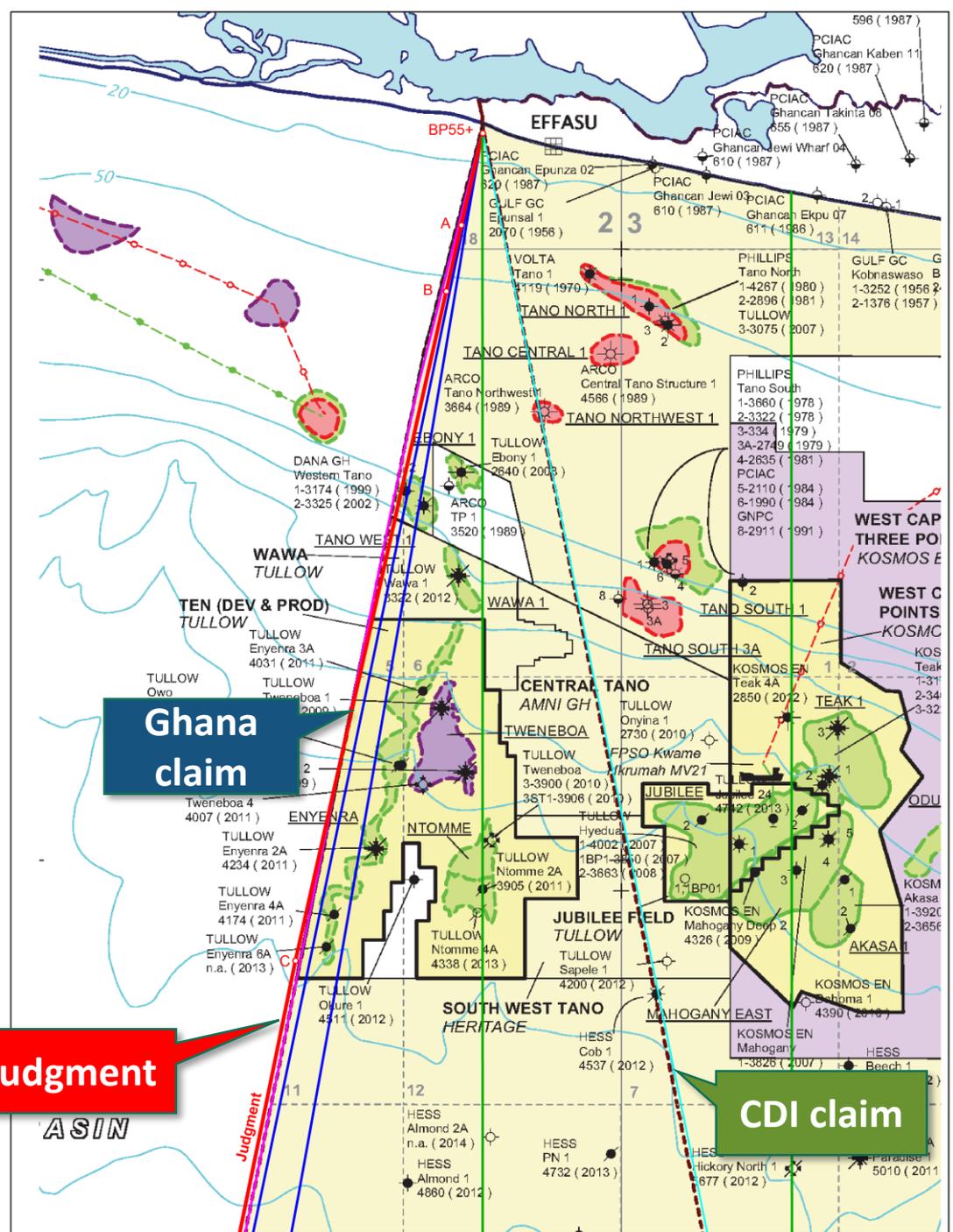
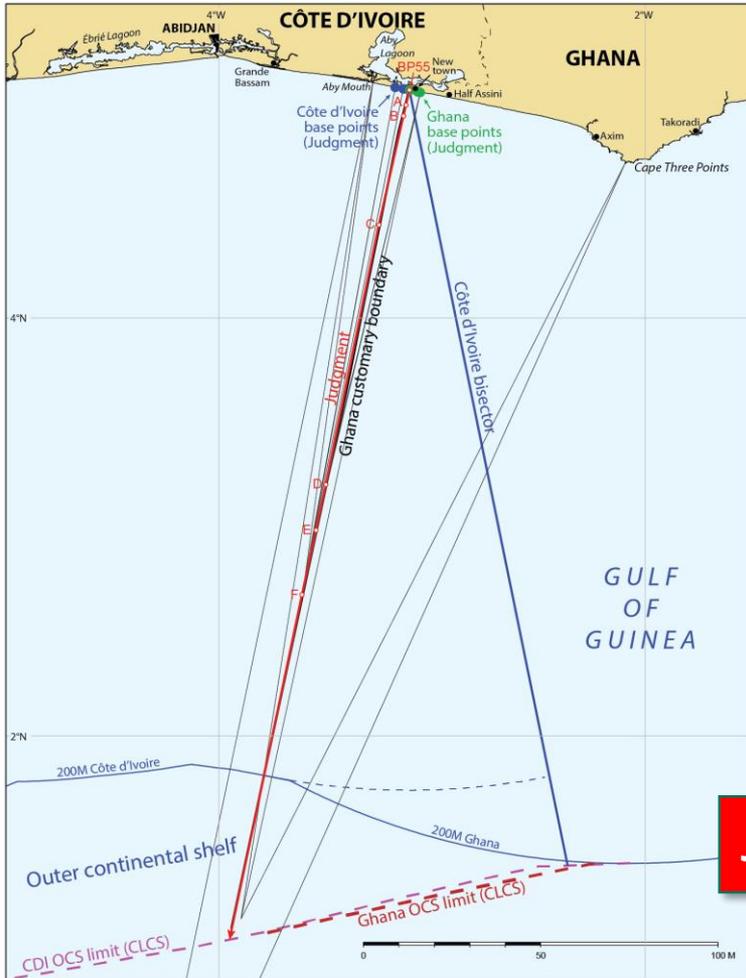
Can be entirely controlled by basepoints close to the boundary.  
Small features in this region have a disproportionate effect.



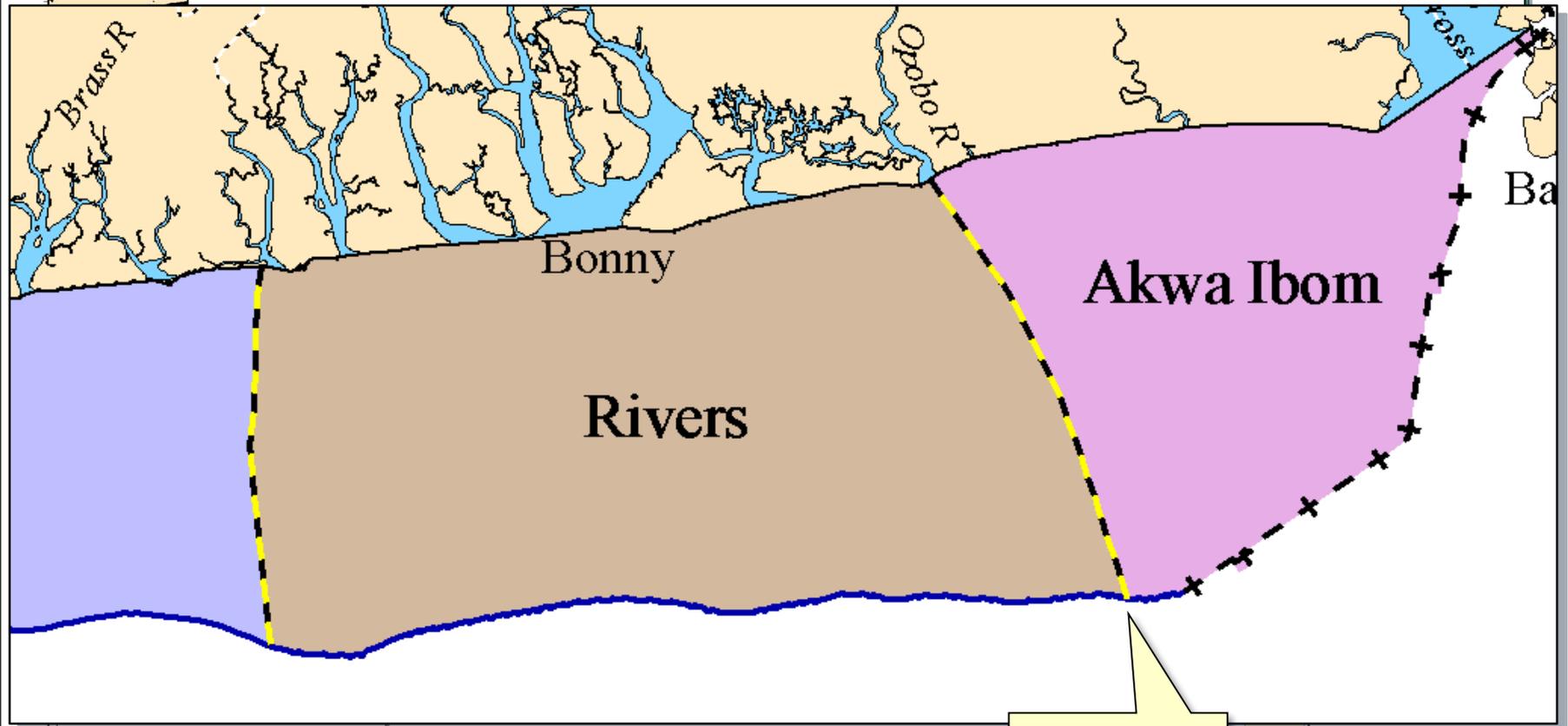
# Adjacent coasts: equidistance/median line



# Adjacent coasts: Ghana v Cote d'Ivoire (2017)



# 1. Adjacent coasts: strict equidistance



- Equidistance lines
- 200m isobath
- International boundary
- International land boundary
- Inter-state boundary (approx)
- Coastline from satellite imagery
- Internal water

Inequitable?

Well Dichotomy Study  
Equidistance Model

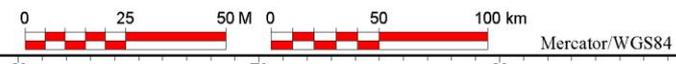
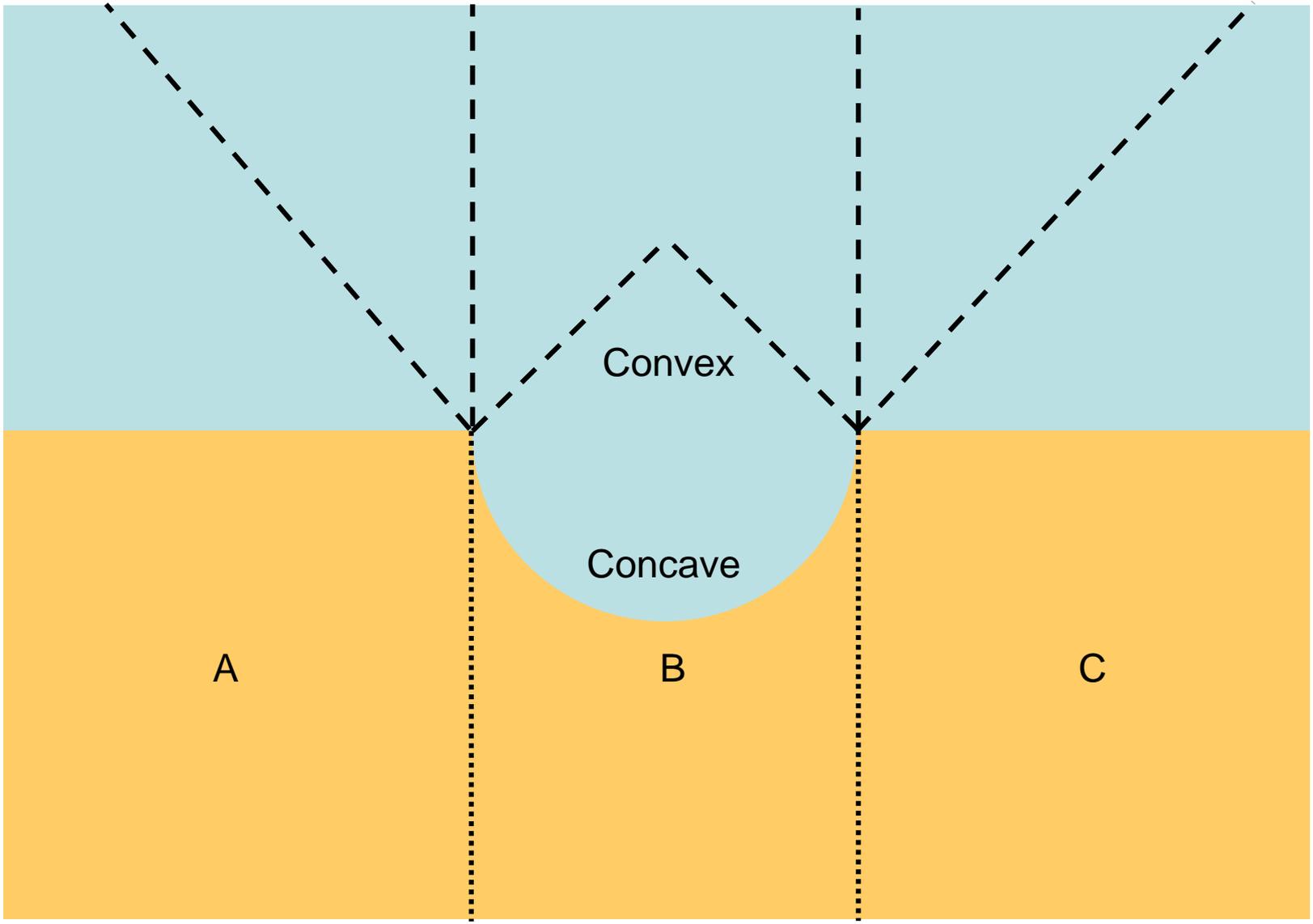


Figure 1

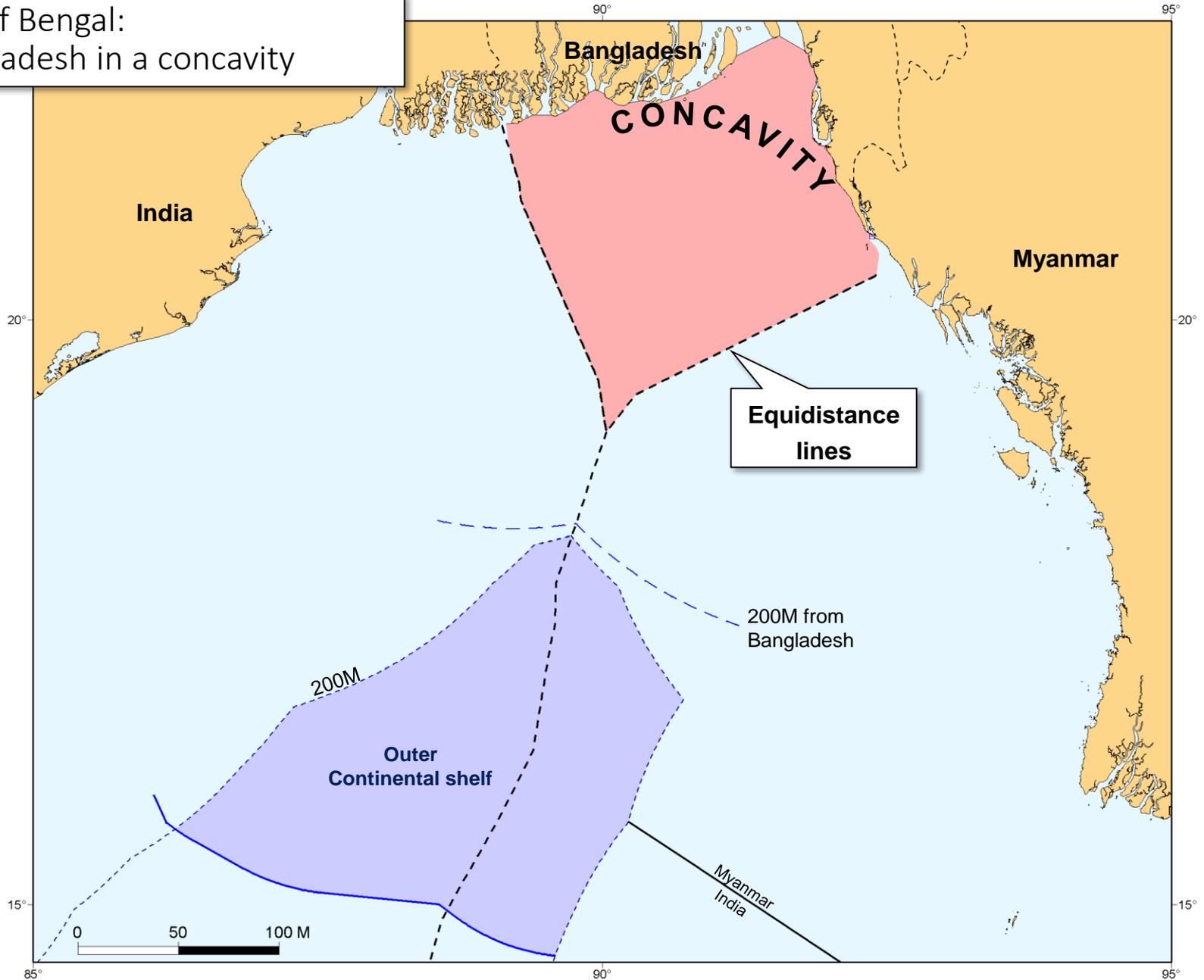
## 2. Coastal geometry – concave/convex coastlines



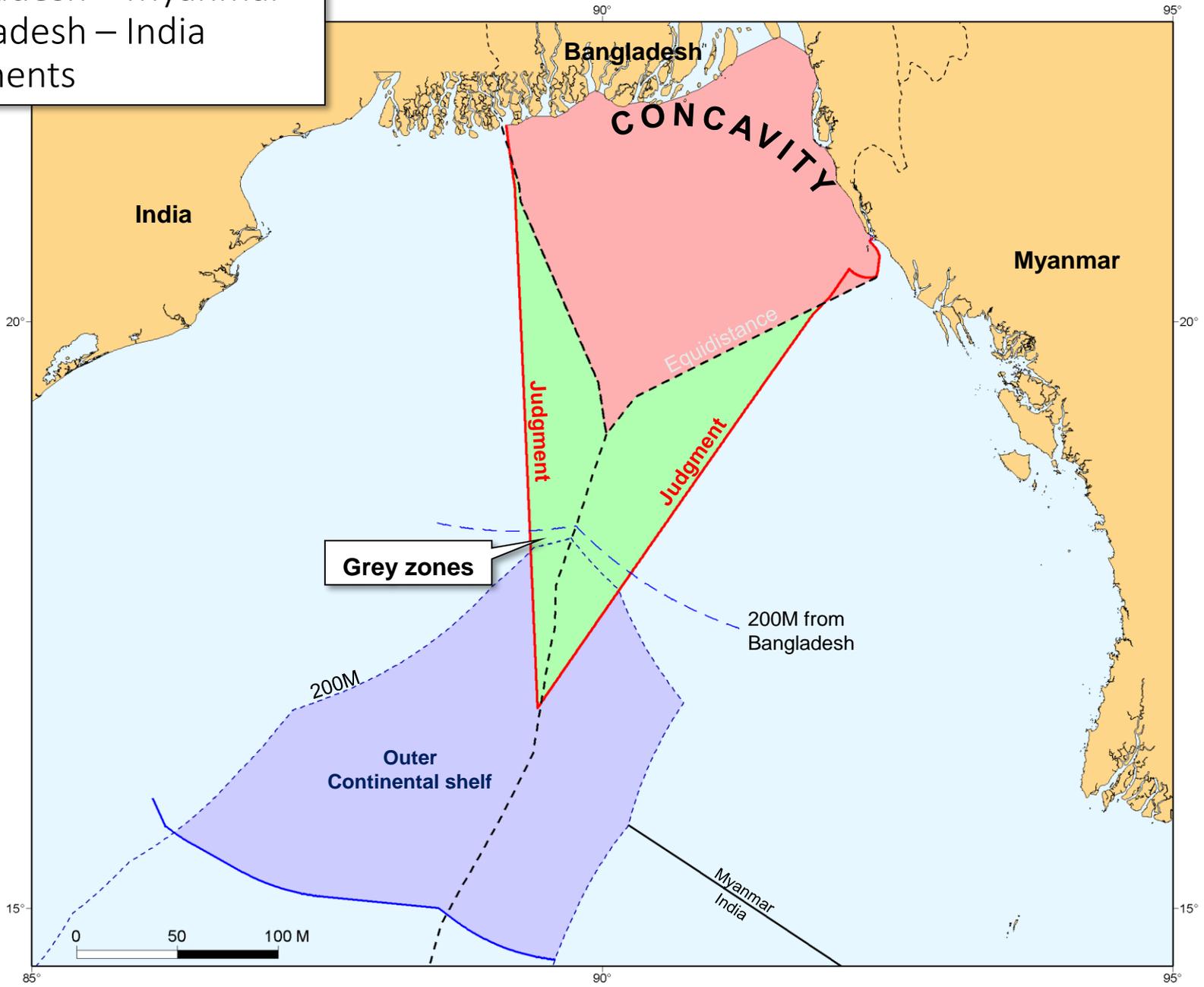
Coastal concavity:  
Germany (North Sea)



Bay of Bengal:  
Bangladesh in a concavity

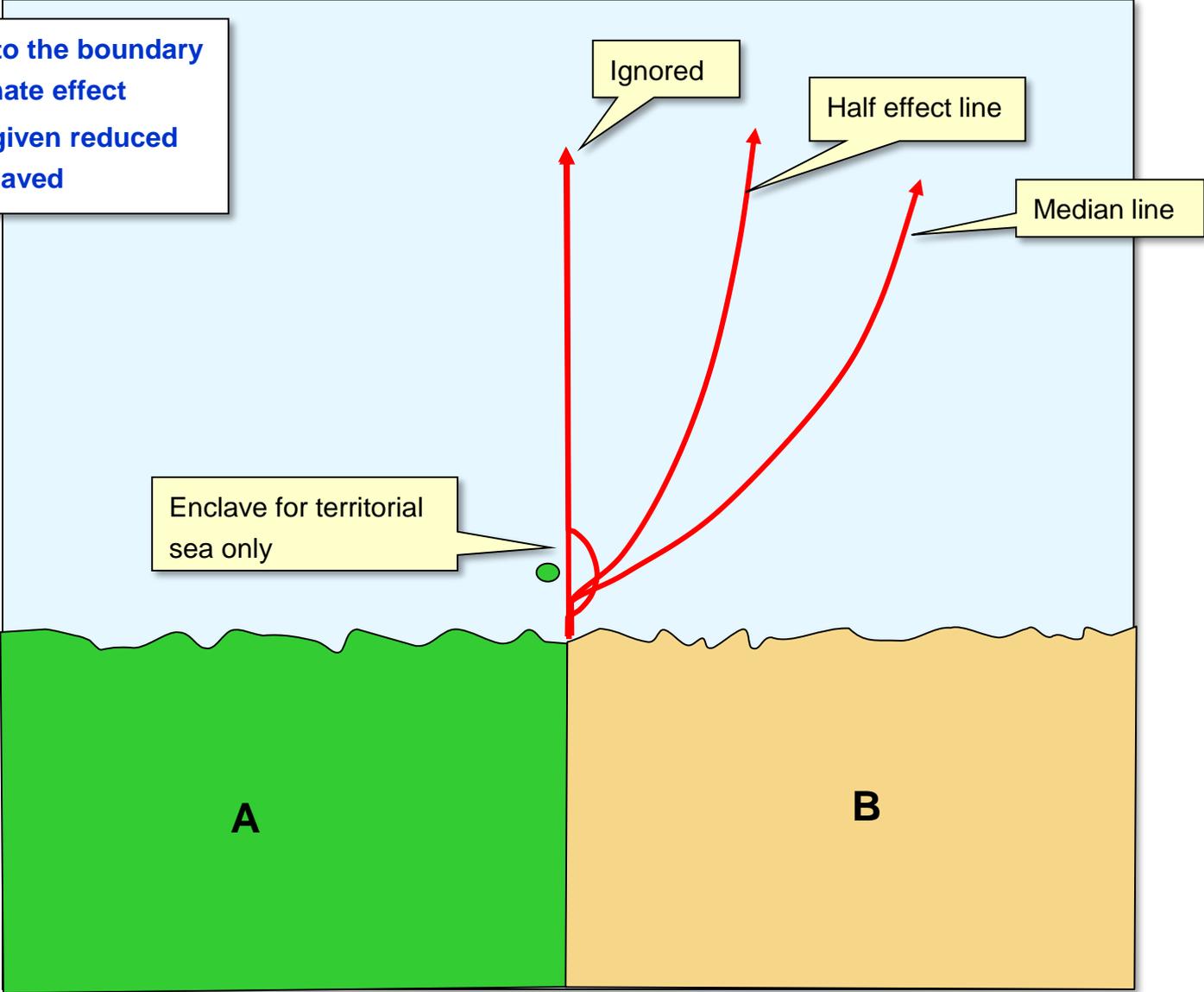


Bangladesh – Myanmar  
Bangladesh – India  
Judgments

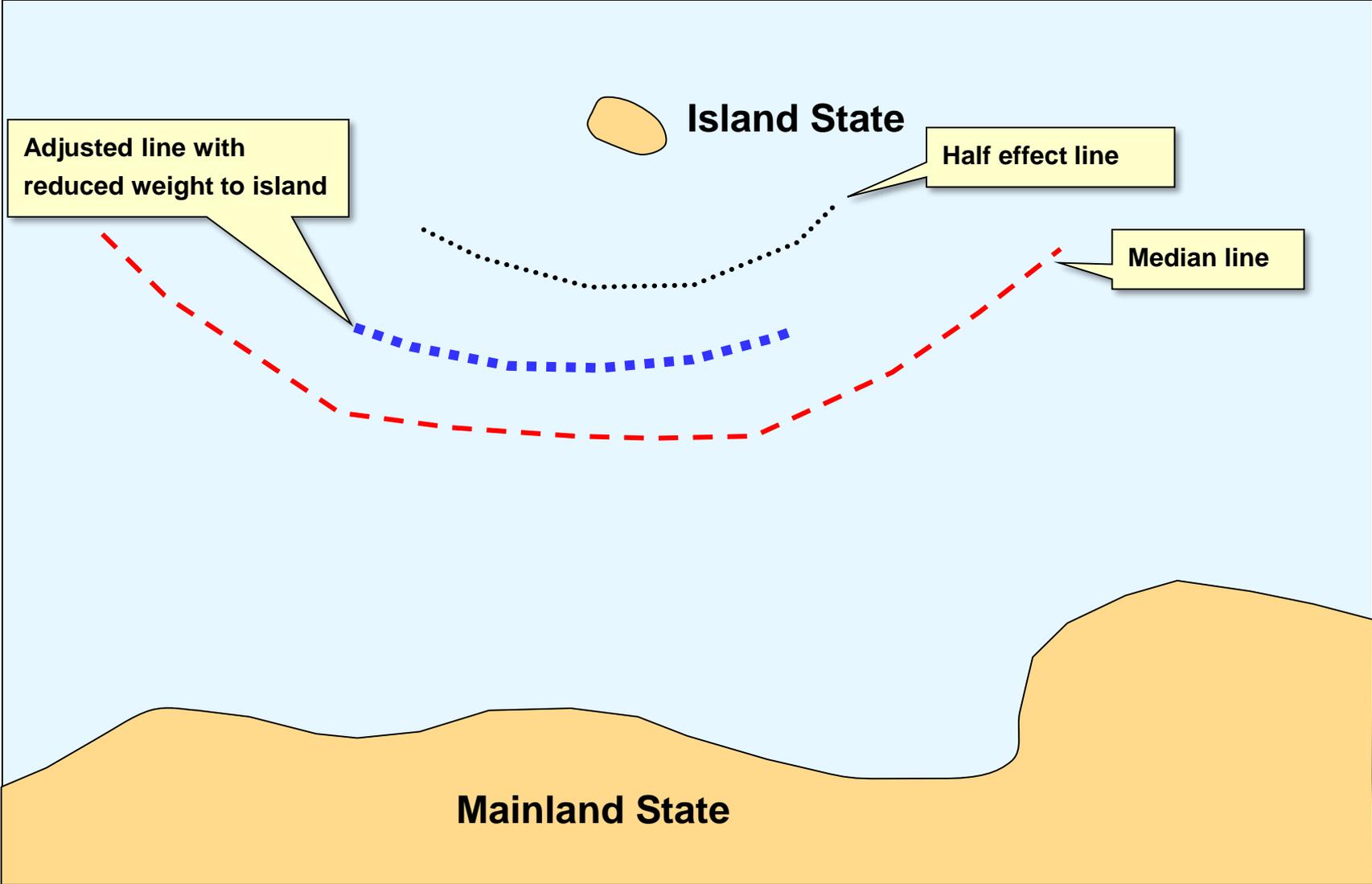


# Islands and Rocks: Adjacent states

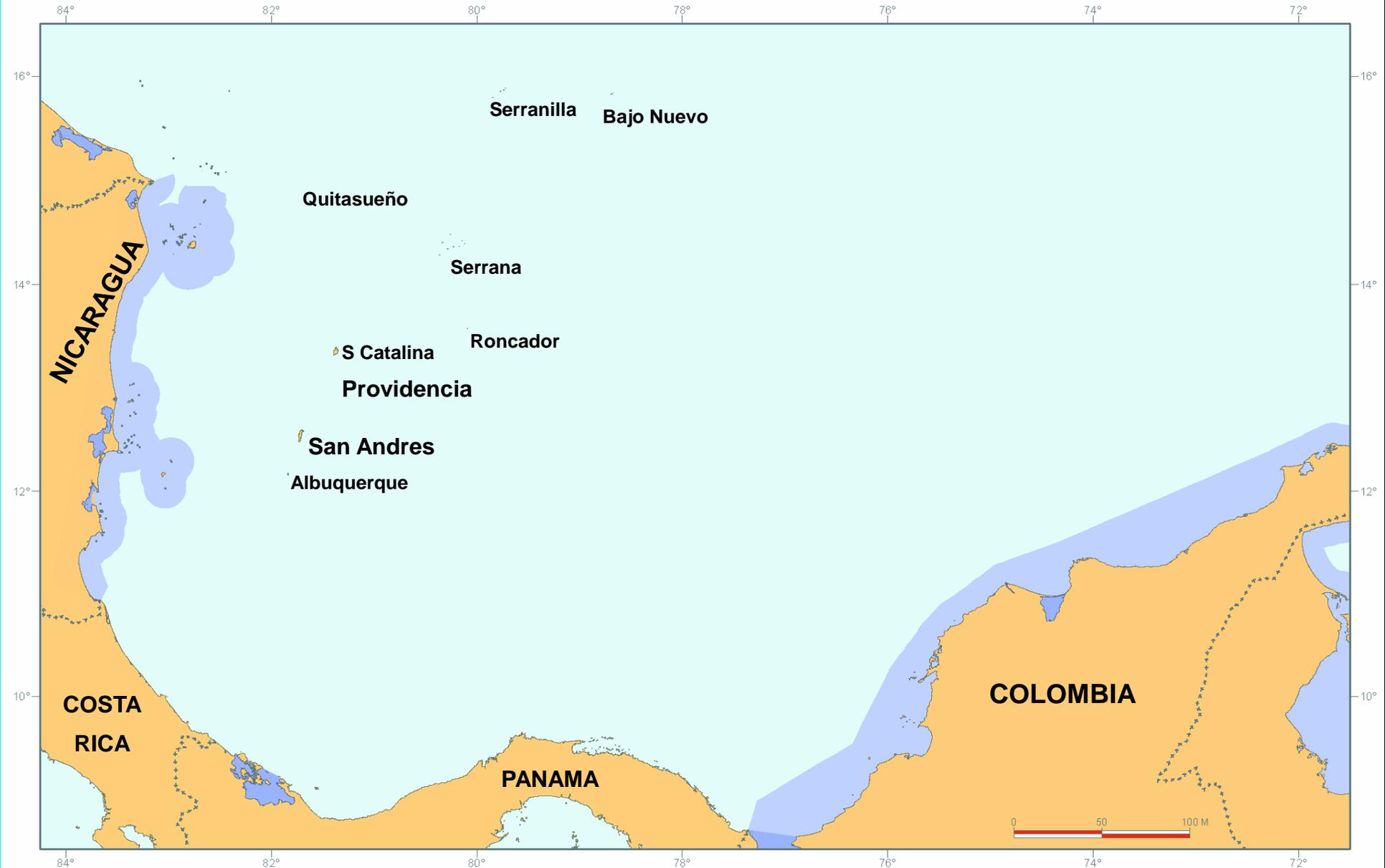
- Small islands close to the boundary have a disproportionate effect
- Should be ignored, given reduced effect or (semi-) enclaved



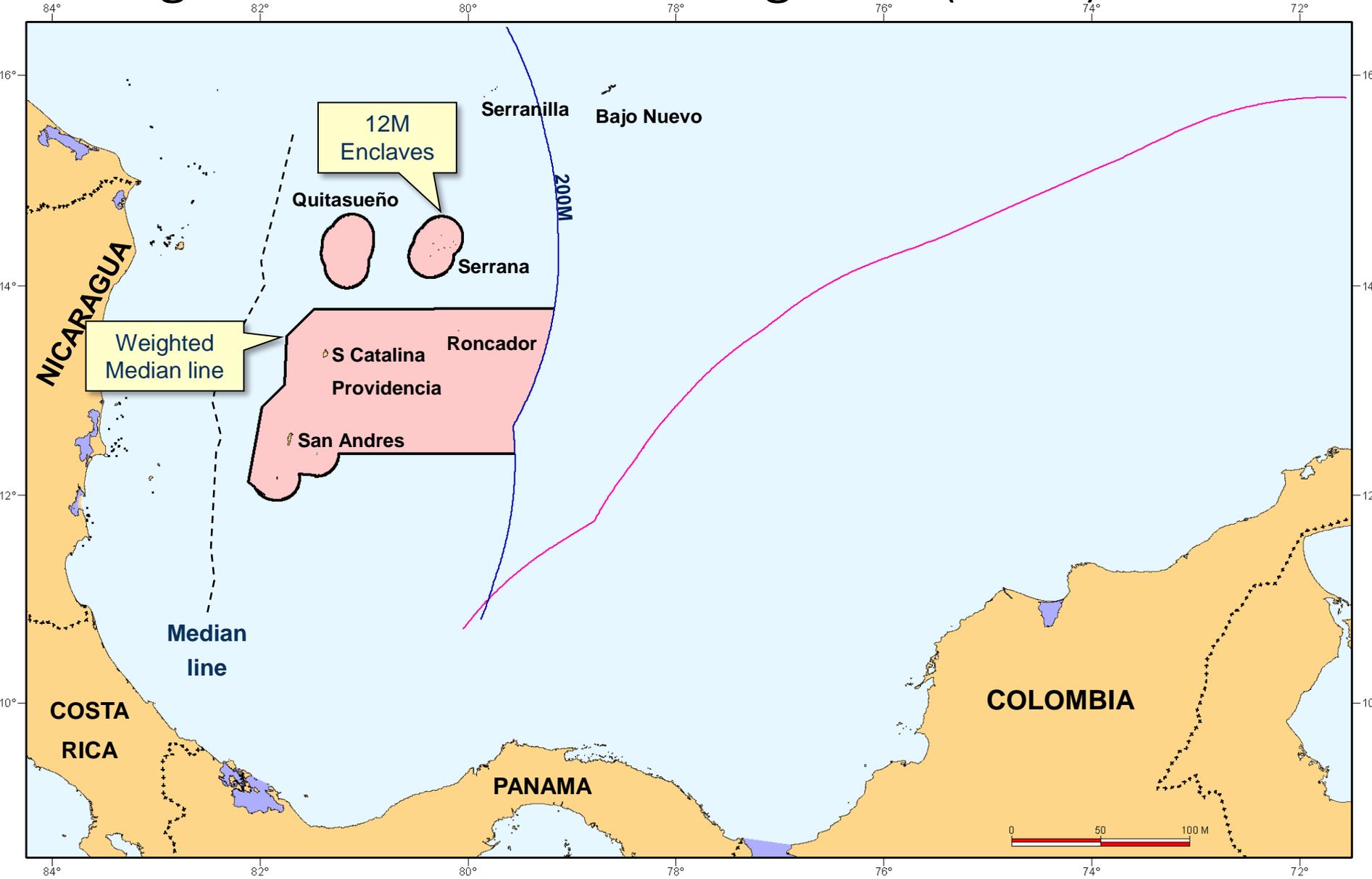
# Islands vs mainland



# Nicaragua vs Colombia



# Nicaragua vs Colombia: ICJ Judgment (2012)





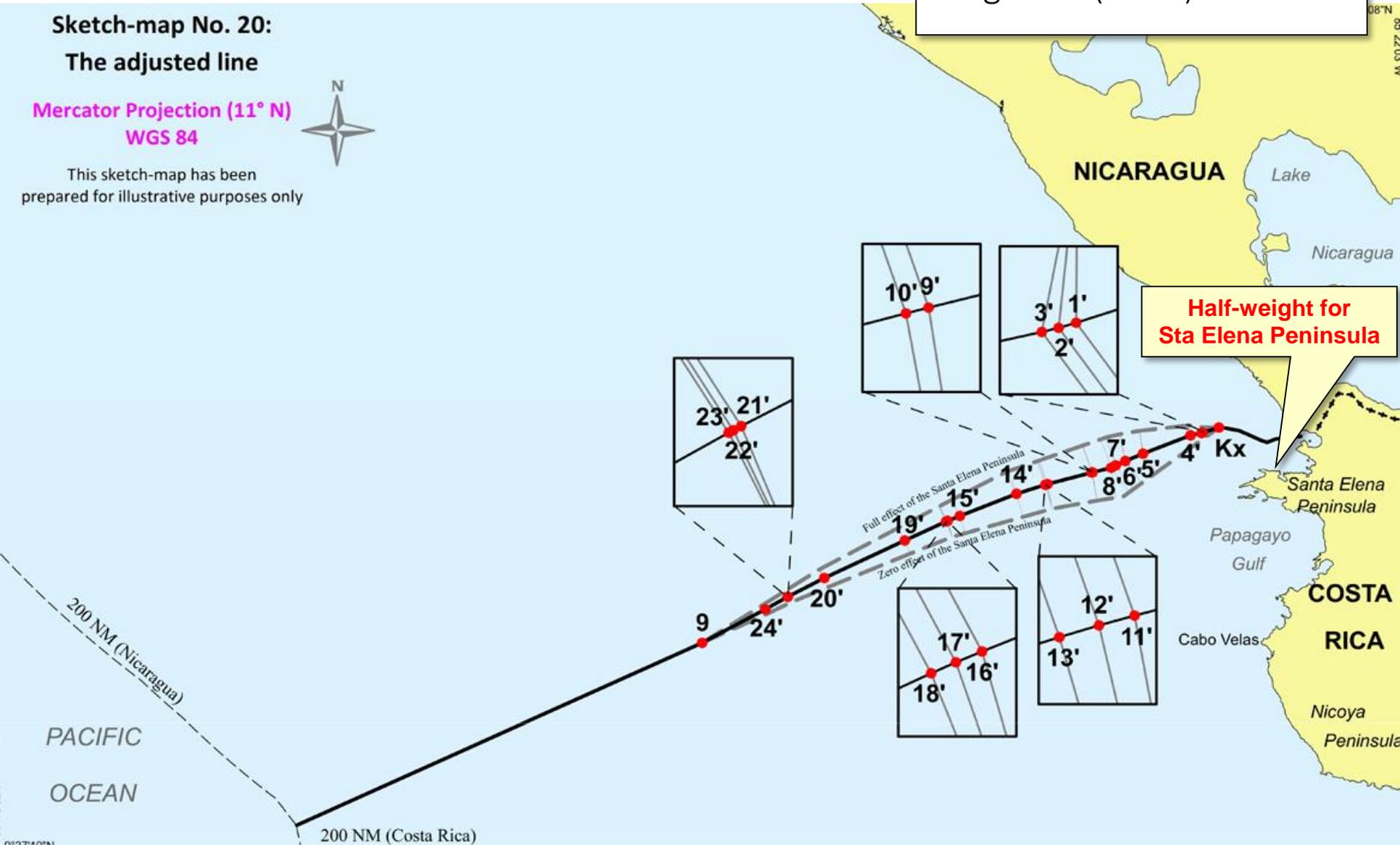
# Costa Rica v Nicaragua ICJ Judgment (2018)

## Sketch-map No. 20: The adjusted line

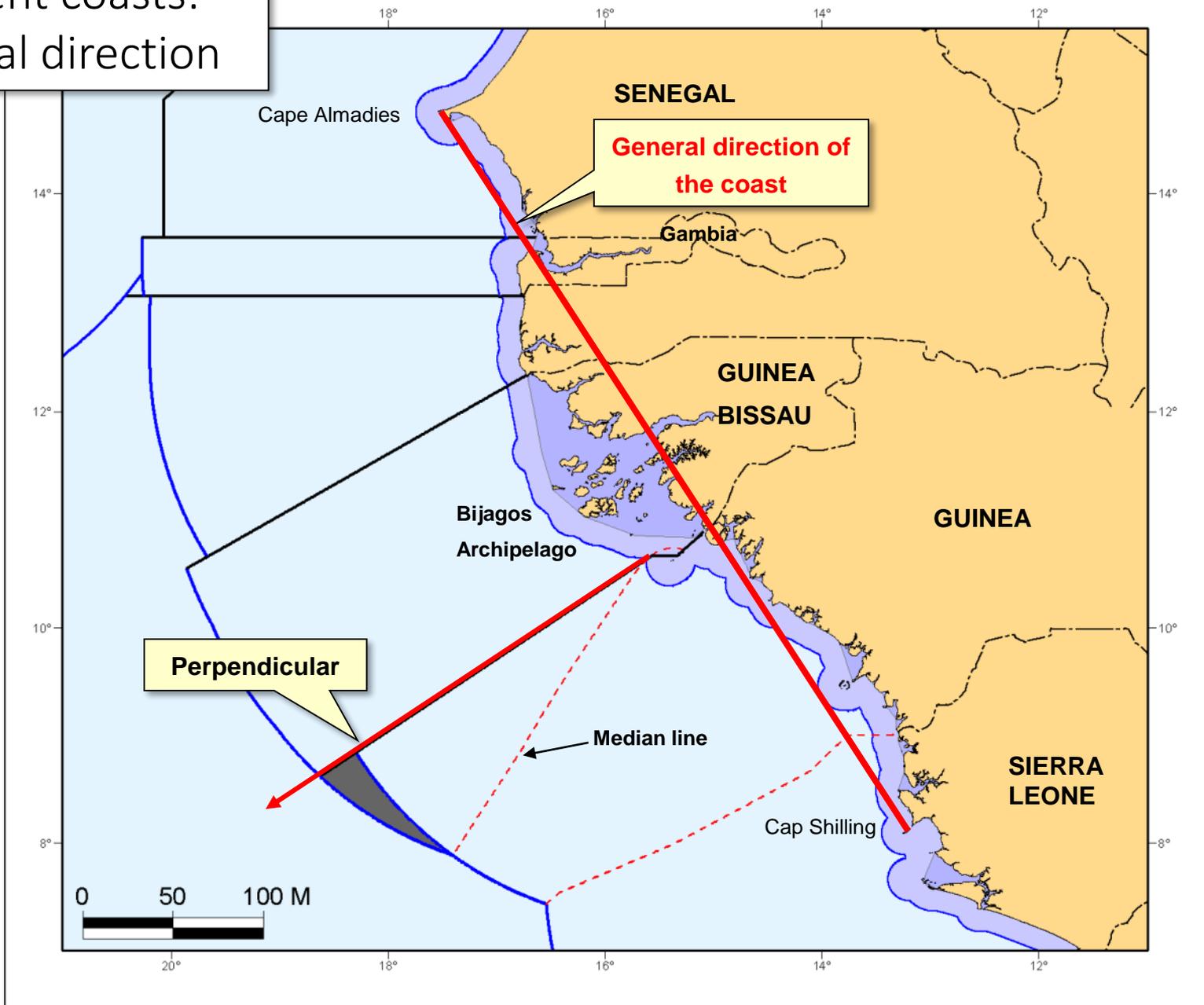
Mercator Projection (11° N)  
WGS 84



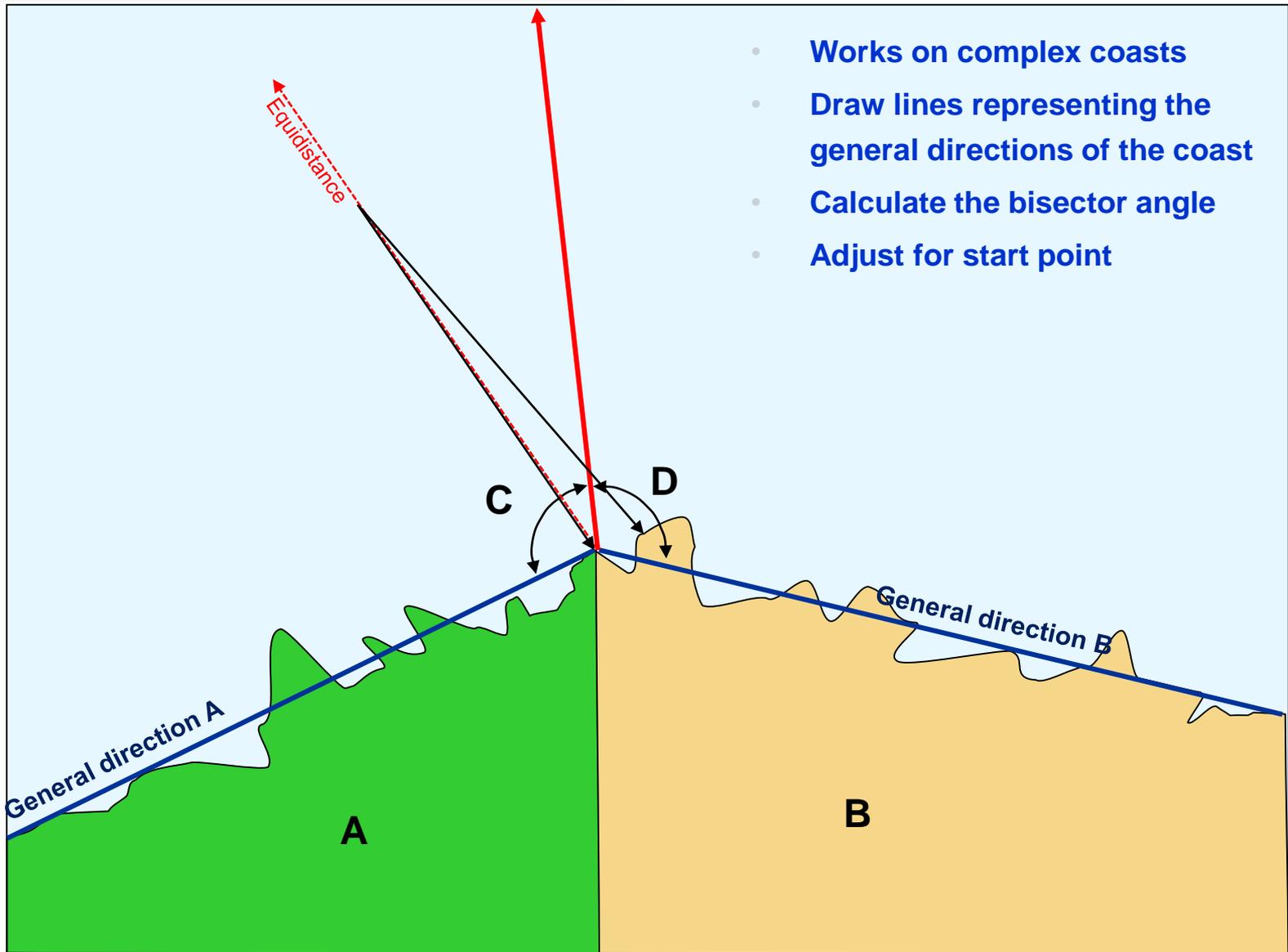
This sketch-map has been prepared for illustrative purposes only



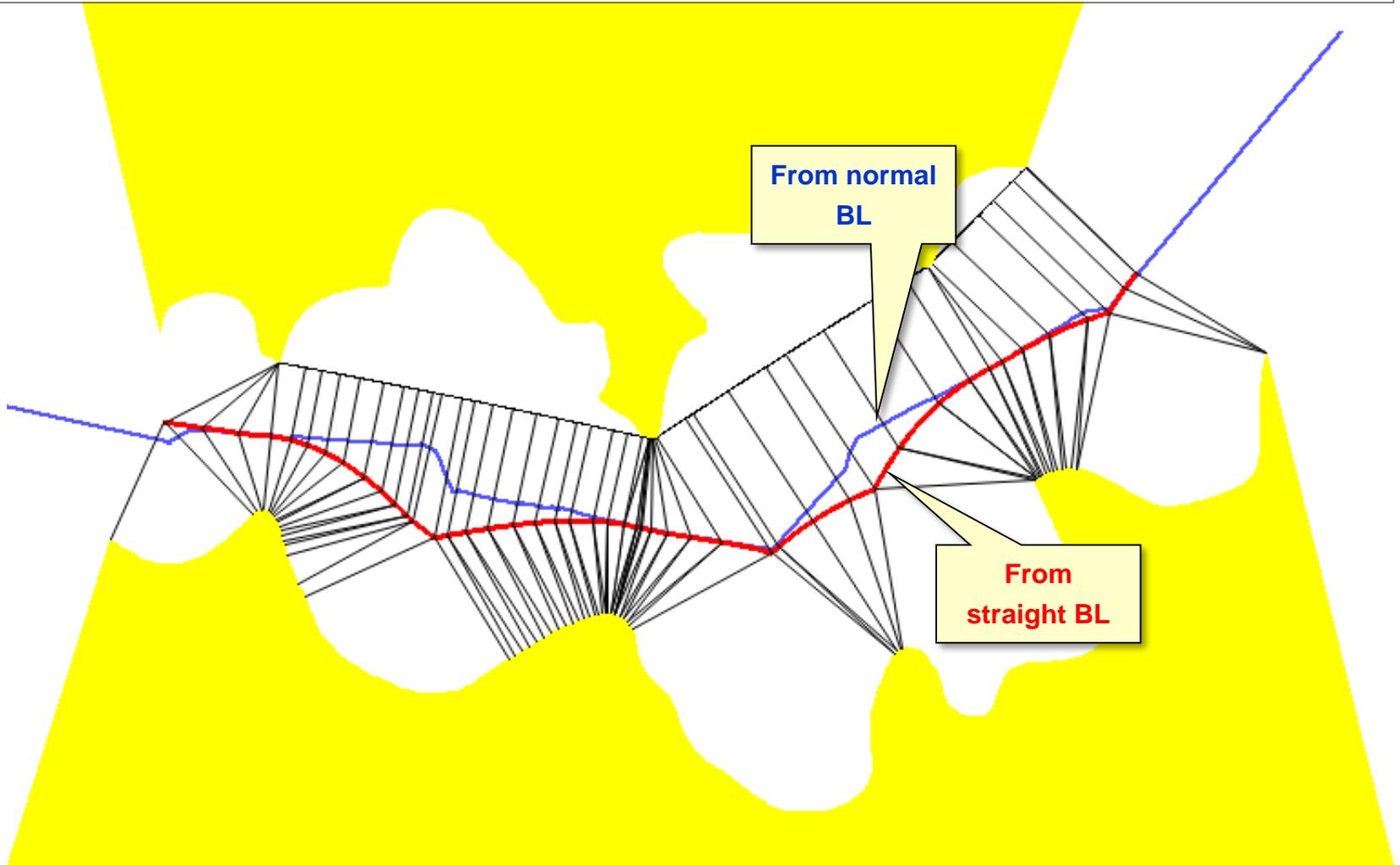
Adjacent coasts:  
General direction



# Adjacent coasts bisector

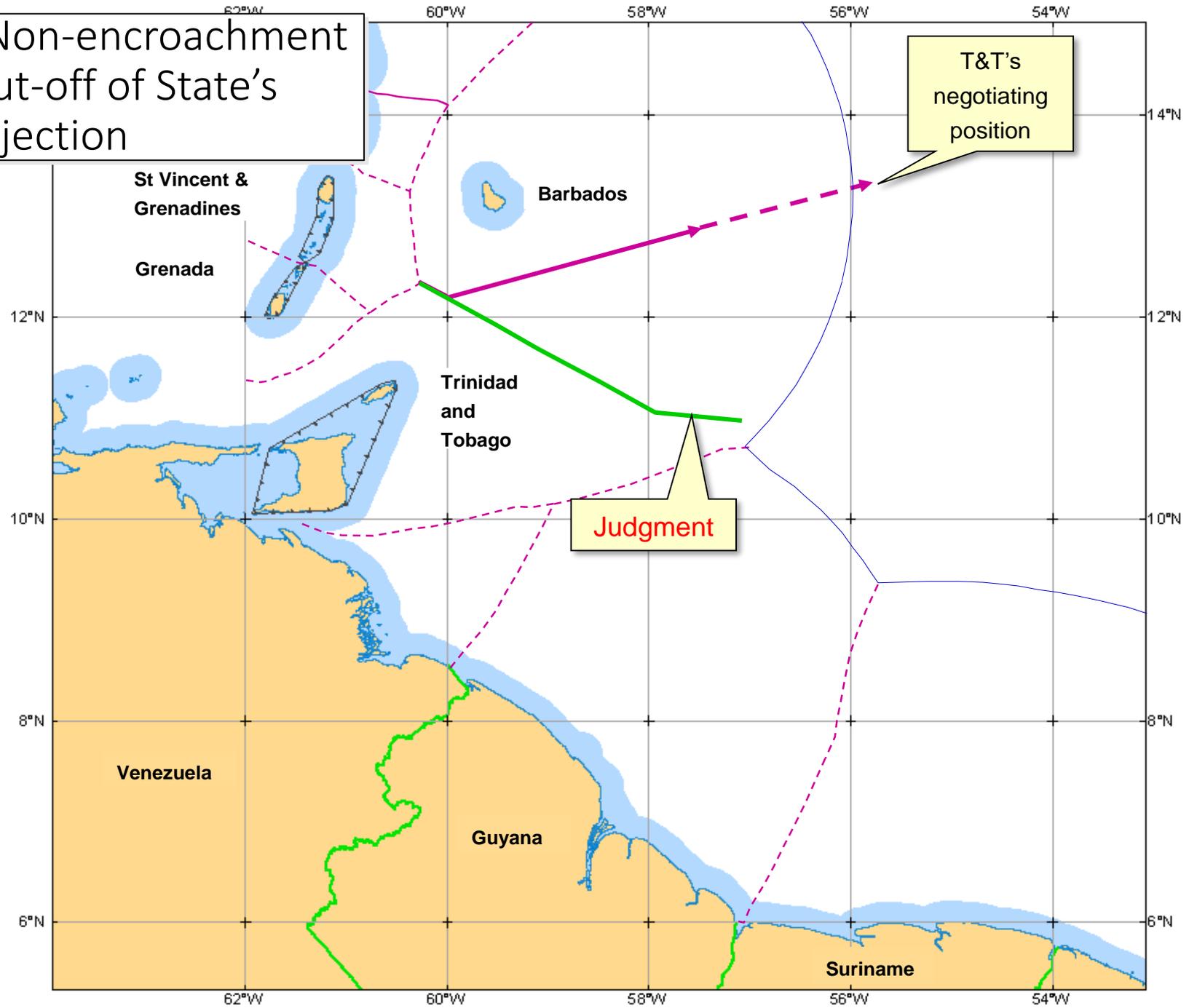


## 5. Effect of straight baseline vs normal baseline



**Straight baselines always win vs normal baselines**

6. Non-encroachment  
– cut-off of State's  
projection

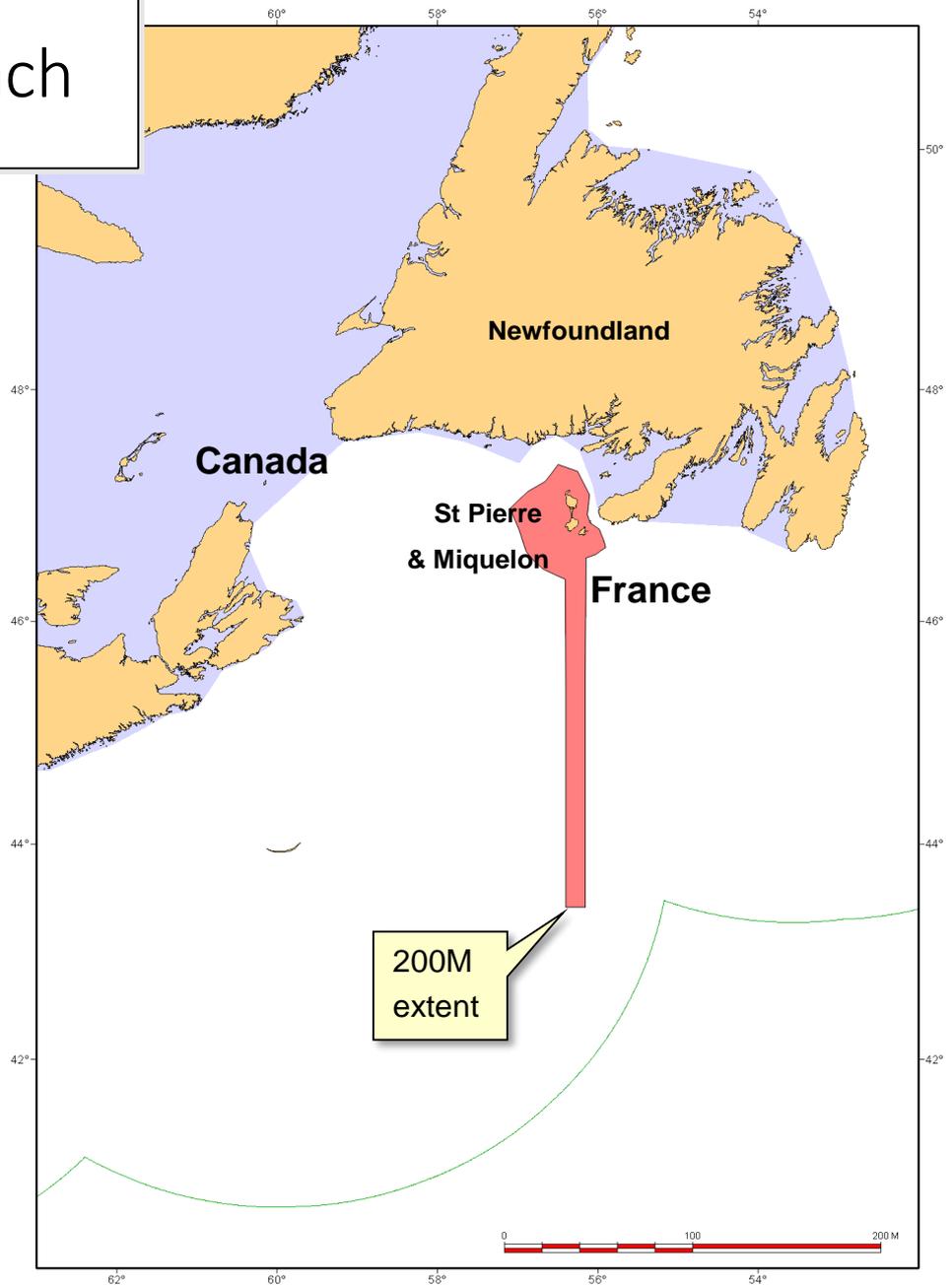


T&T's  
negotiating  
position

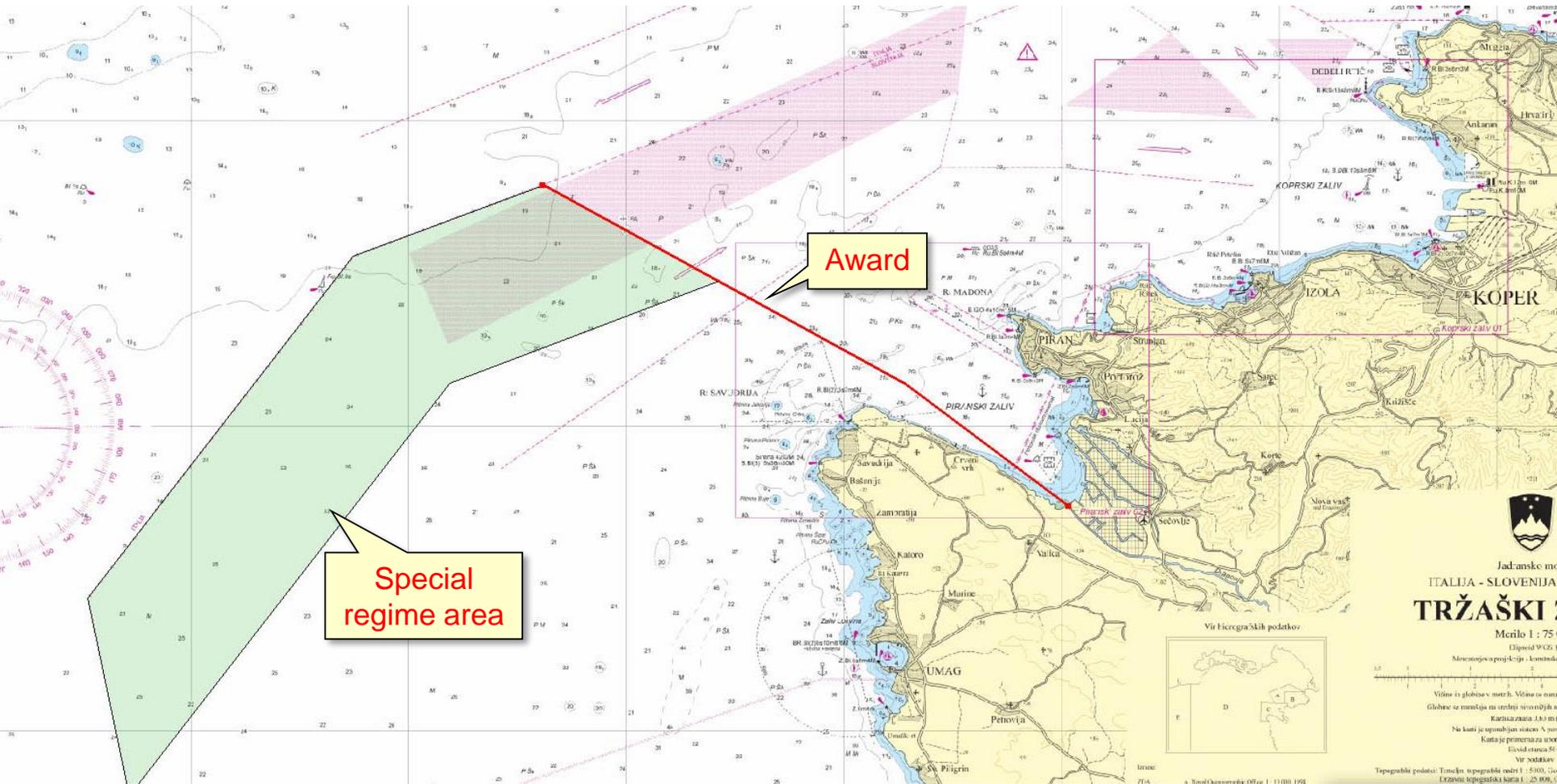
Judgment

# 7. Principle of maximum reach

Access to seaward  
limit of any  
maritime zone,  
e.g. EEZ,  
continental shelf

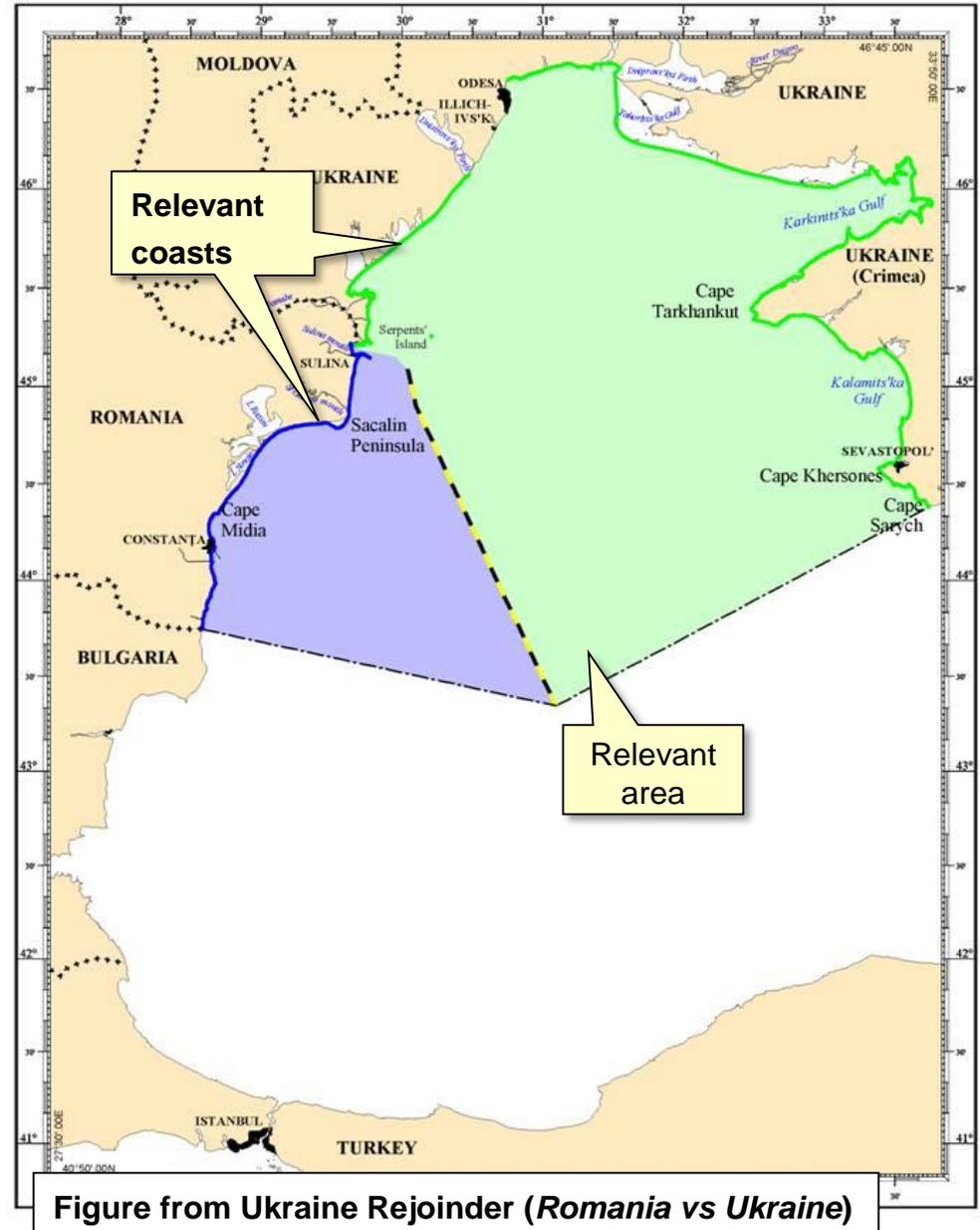


# Croatia/Slovenia Award (2017)



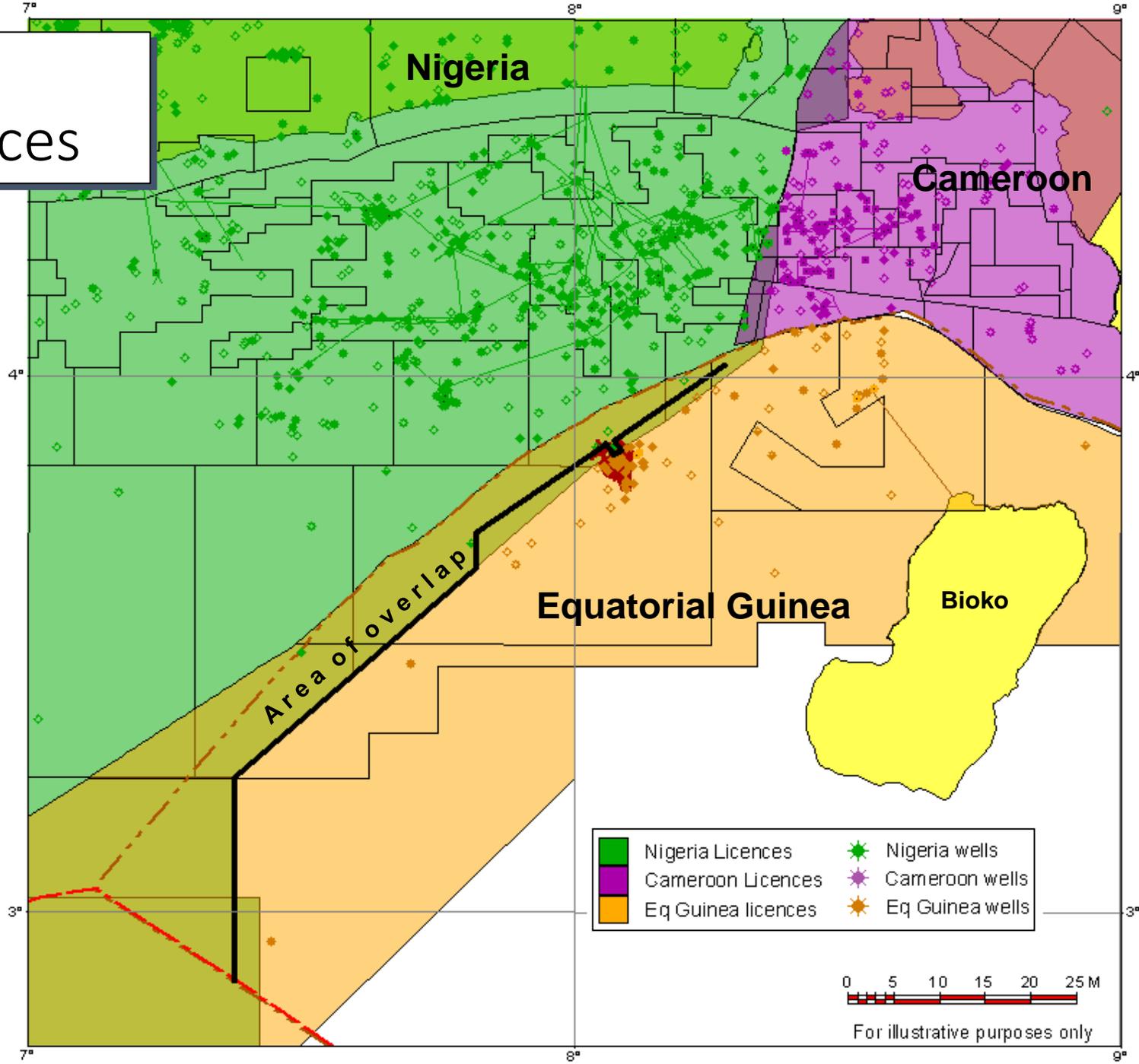
# Proportionality

- Used as test of an equitable solution not as a method in its own right.
- Maritime areas broadly proportional to ratio of coastal lengths.



Economic circumstances

Oil/gas  
Fisheries  
Minerals

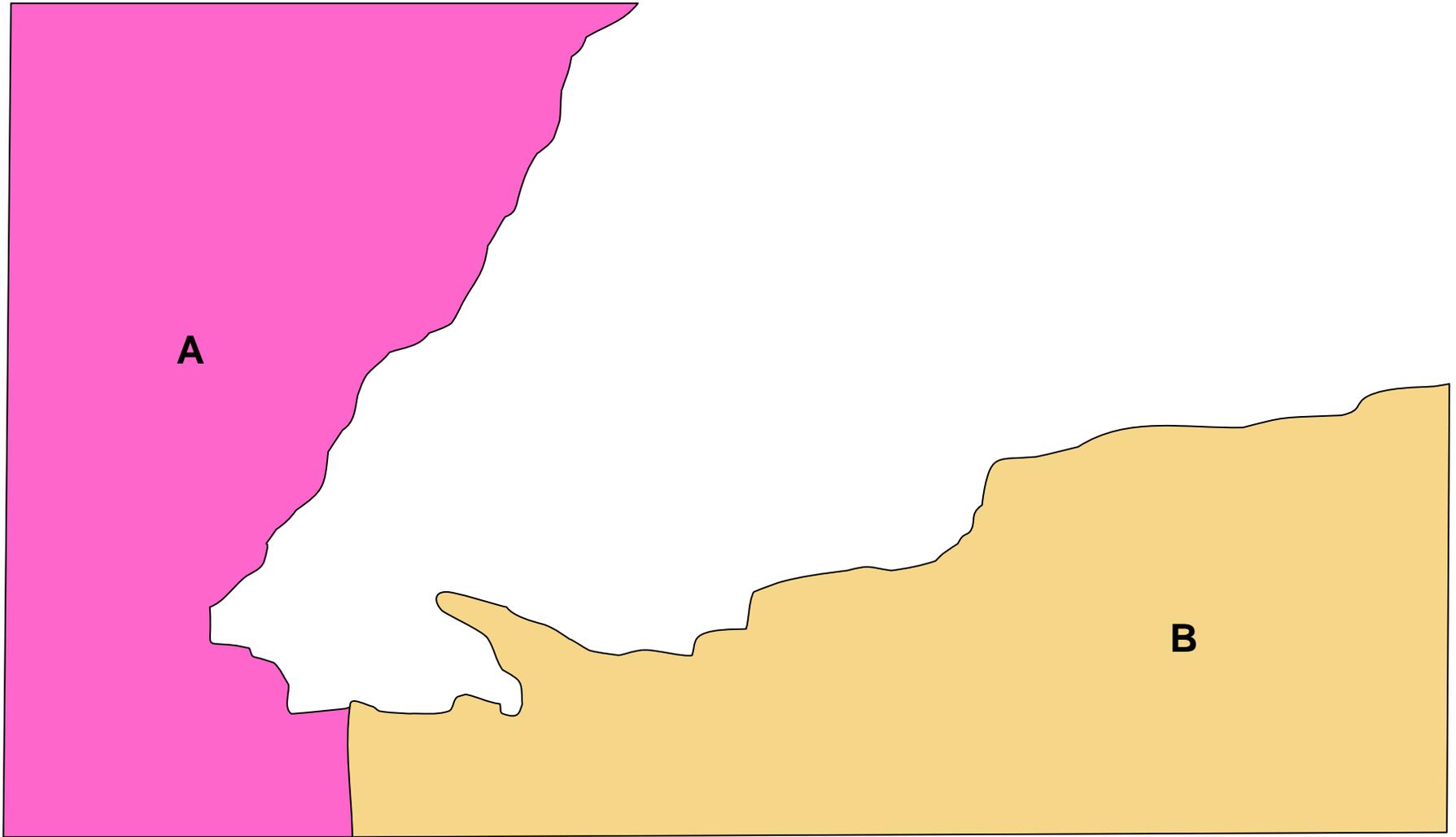


# Special/Relevant Circumstances

- **Geographic**
- Economic, e.g. fisheries, oil
- Historical
- Strategic
- Political
- Environmental
- Legal regime

# Recipe for Delimitation

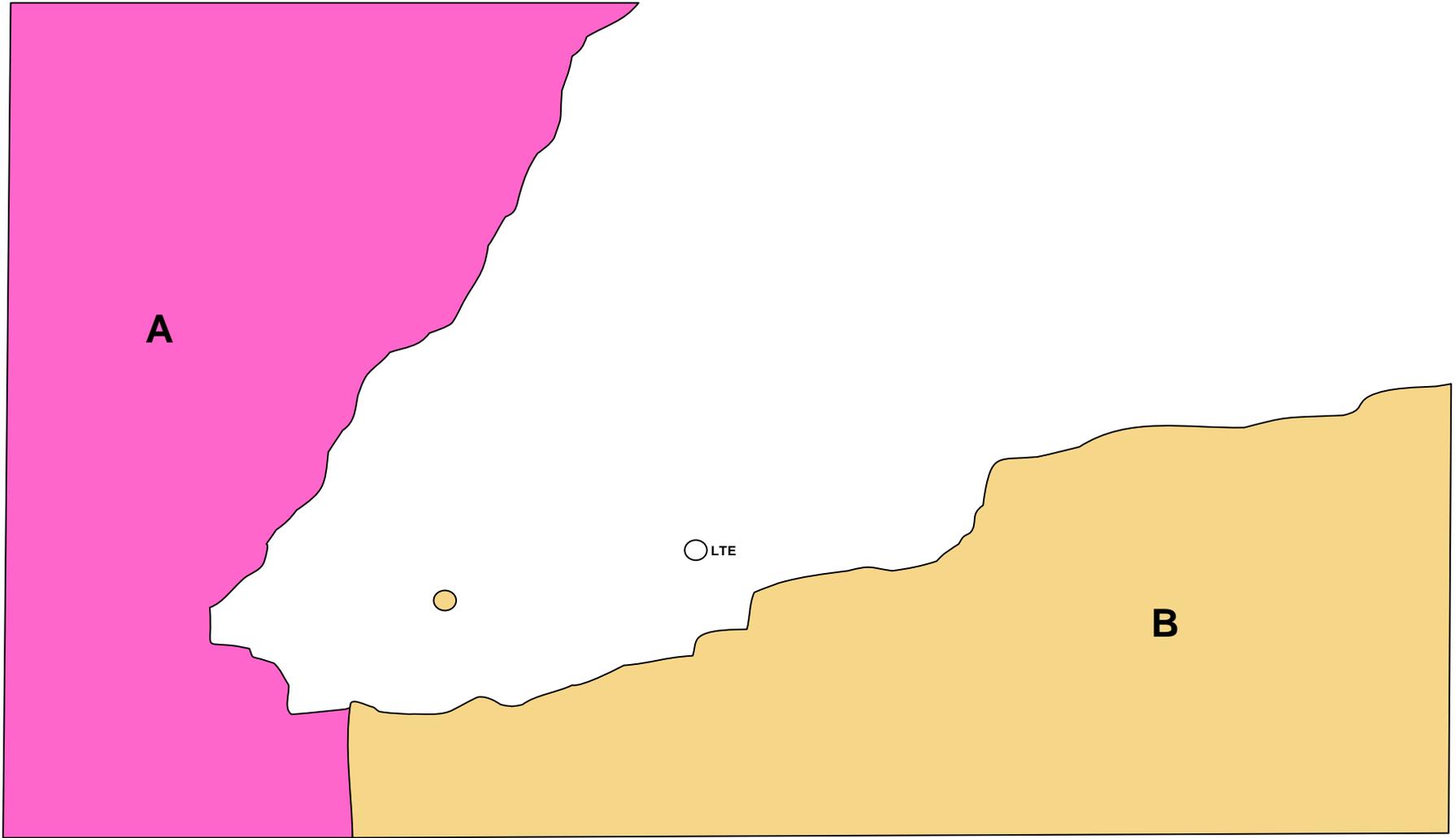
1. [Select basepoints]  
Draw **equidistance line** as a provisional boundary
2. Adjust provisional line as necessary for equitable solution in light of **relevant/special circumstances**
3. Check for proportionality



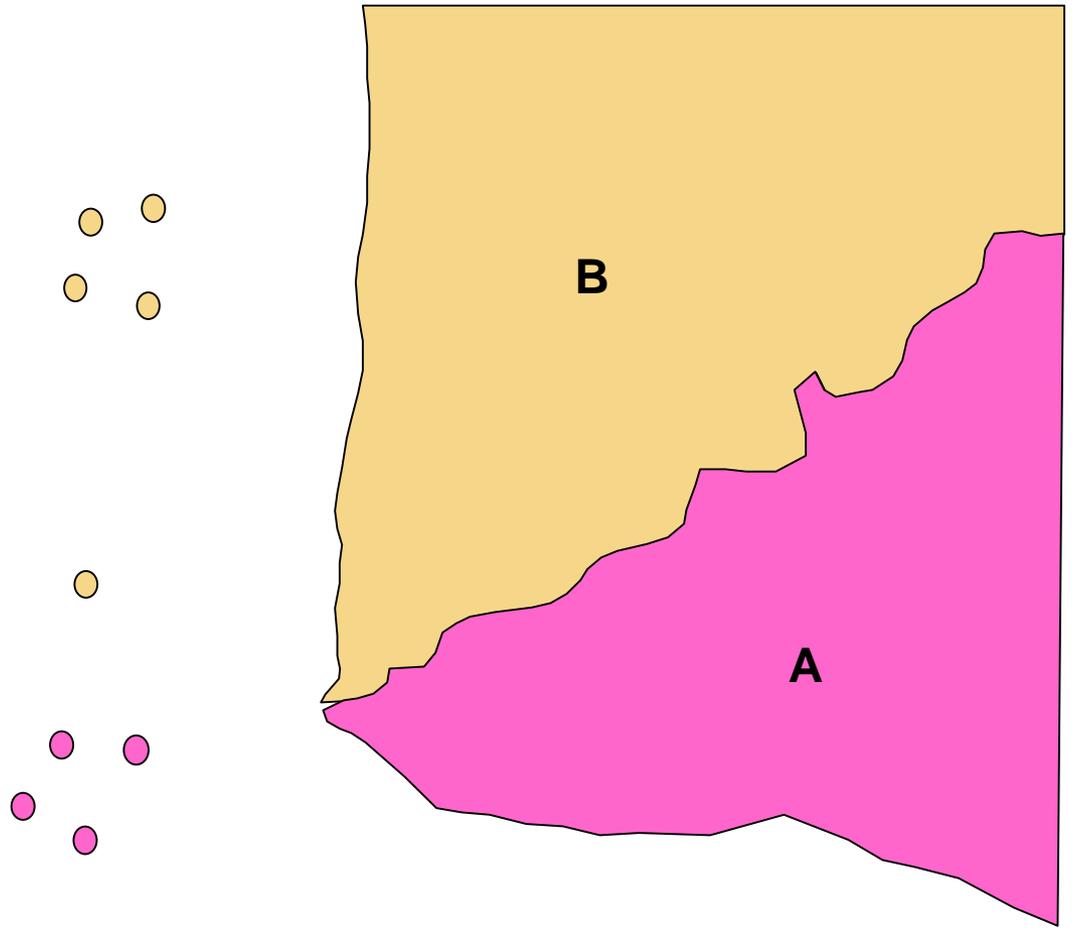
A

B

— 12M



— 12M



12M



\_\_\_\_\_

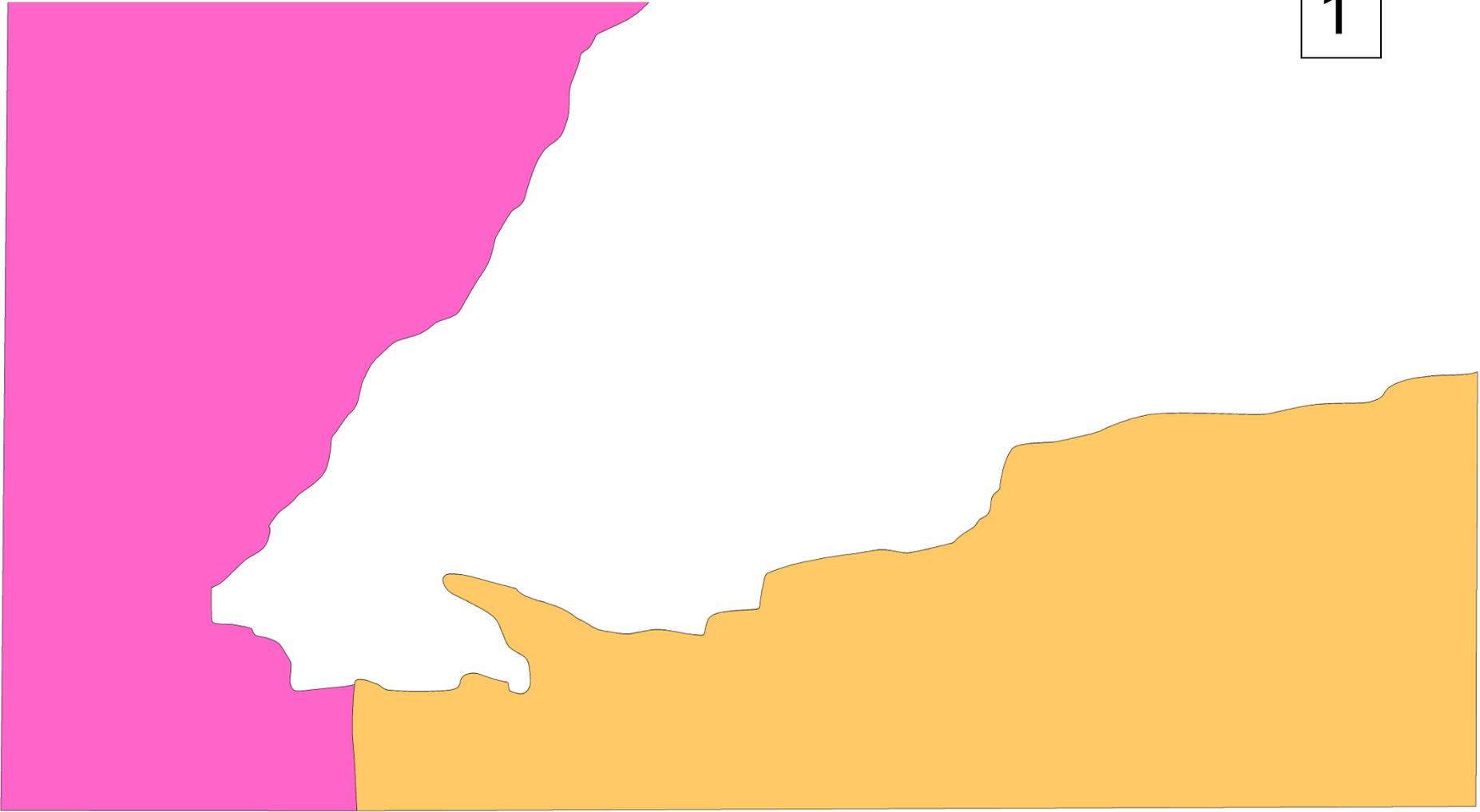
1



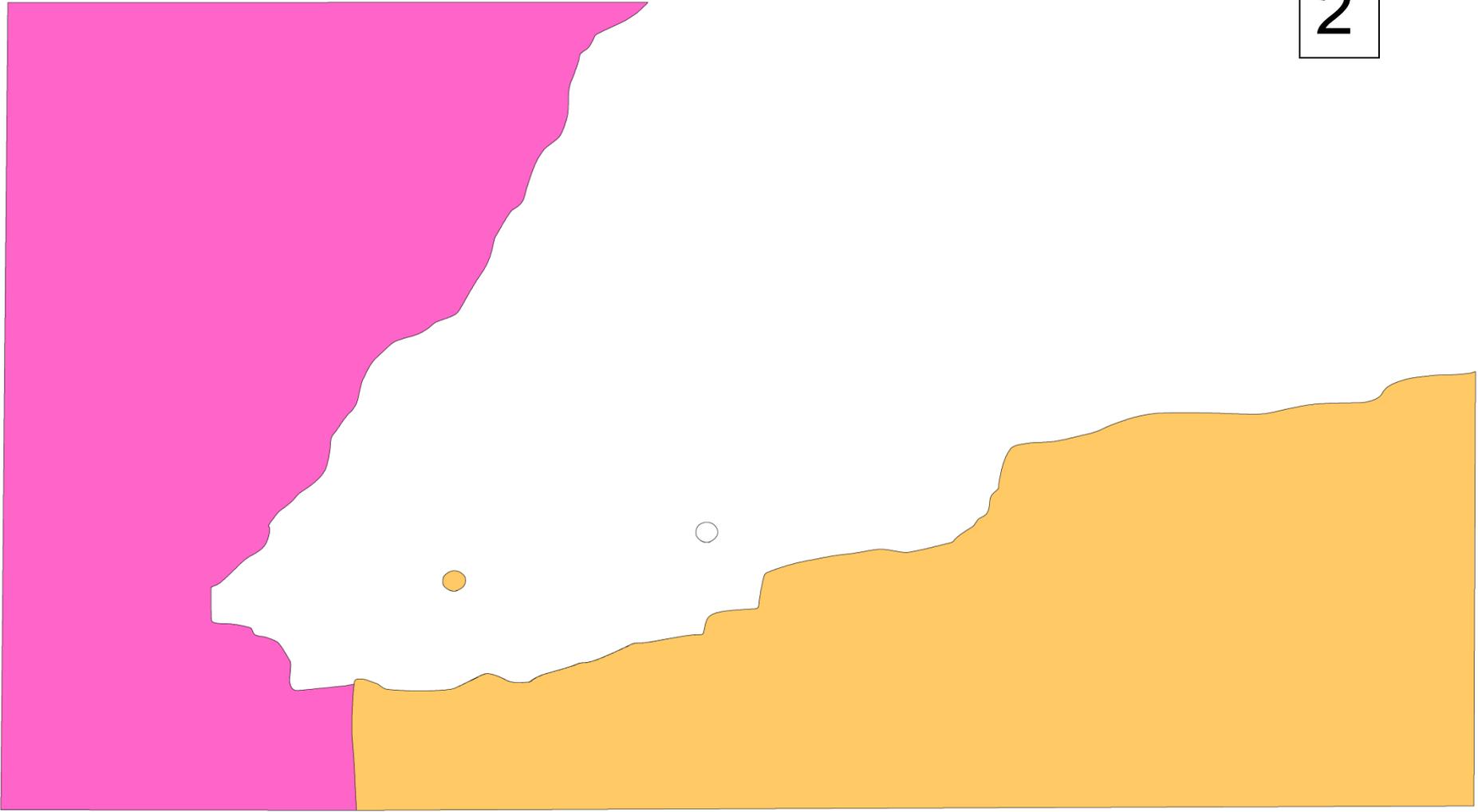
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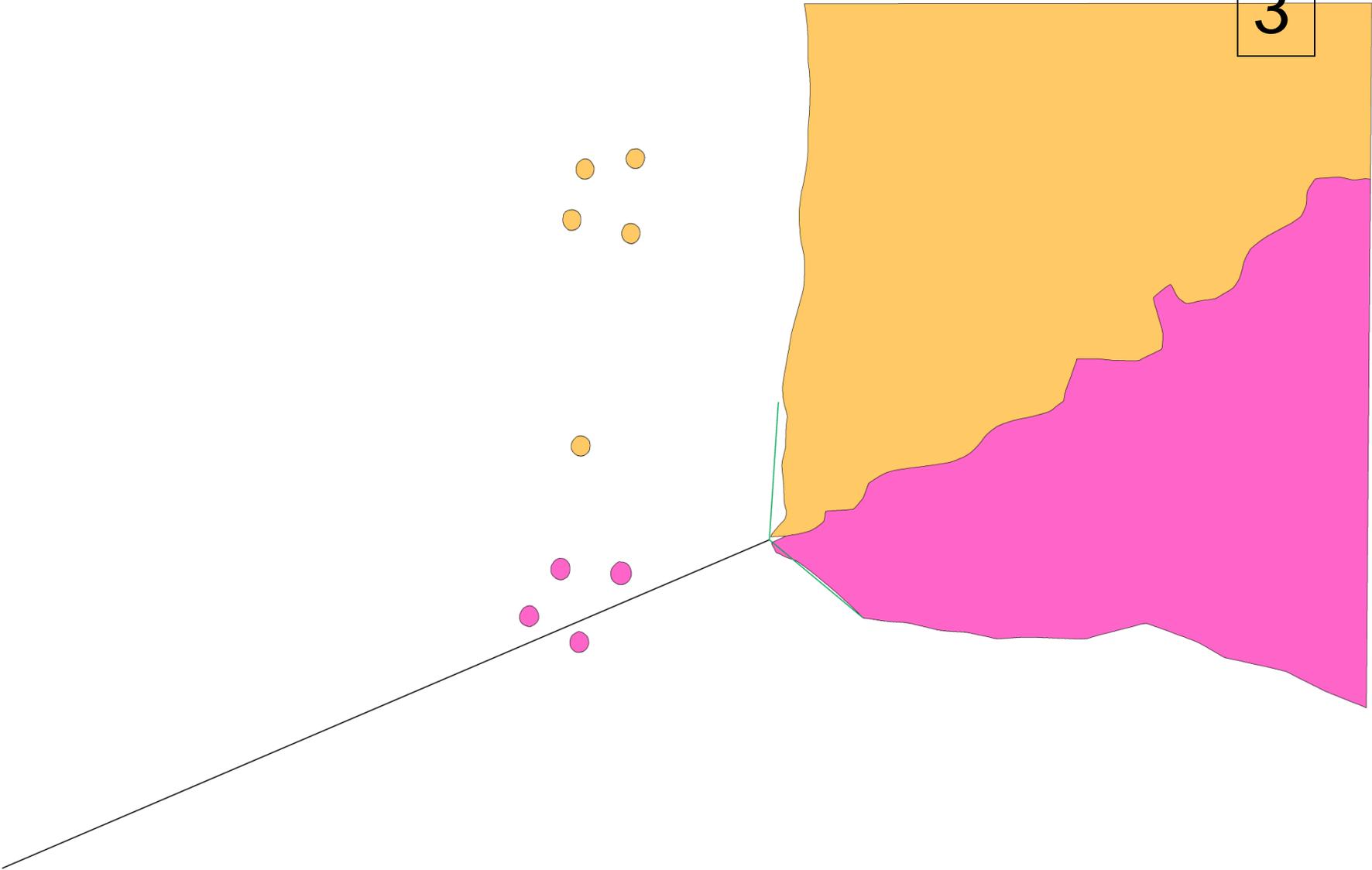


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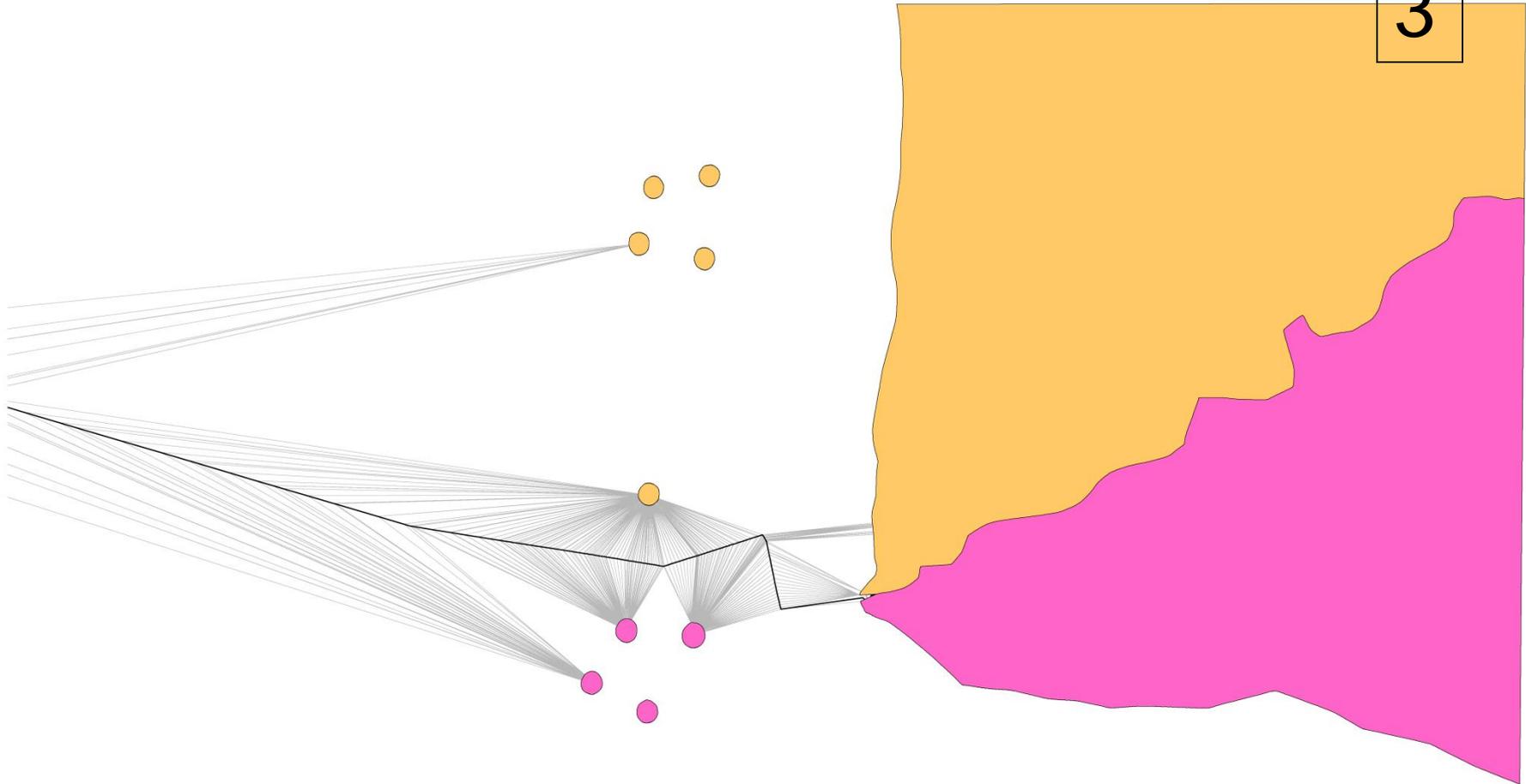


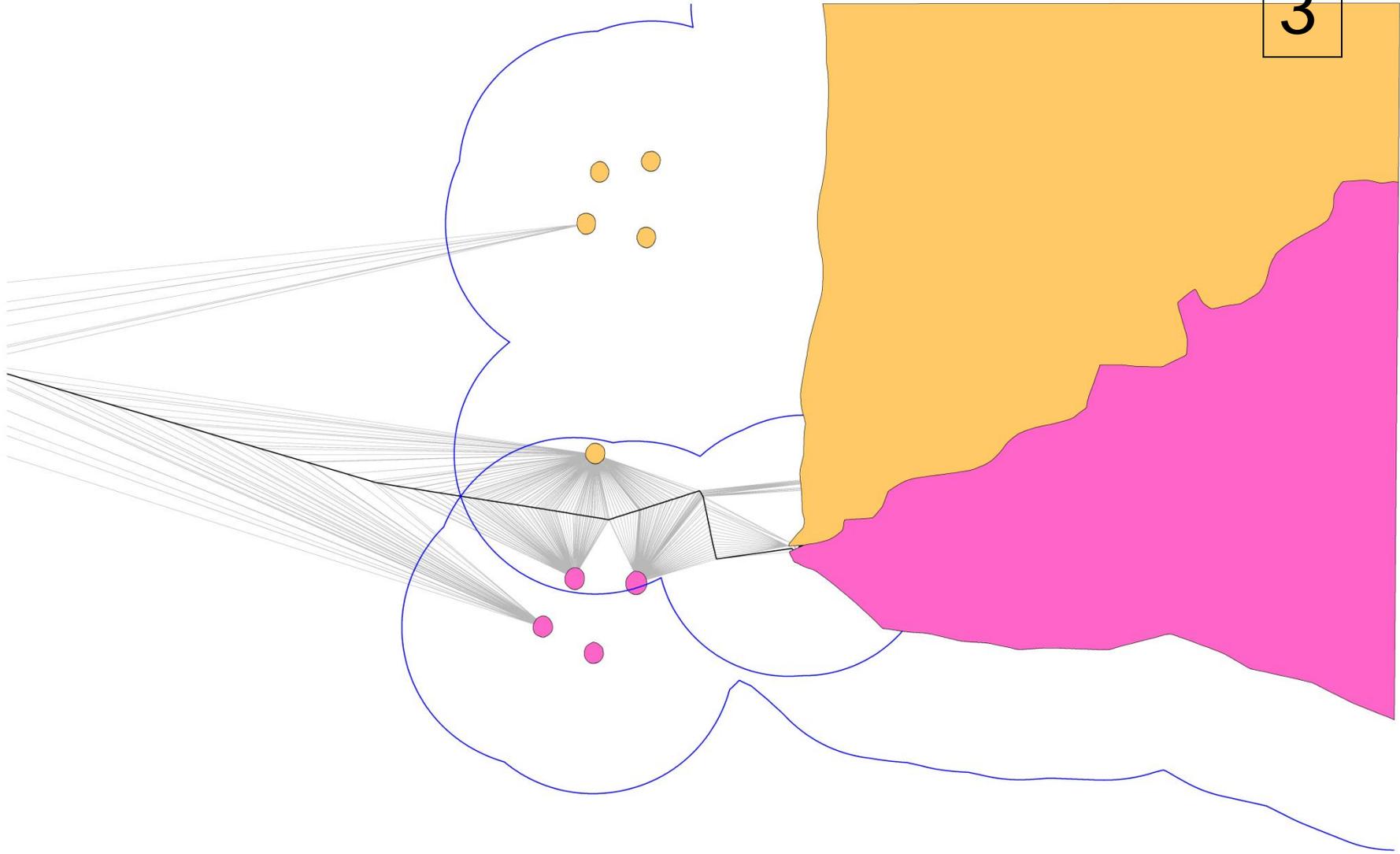
\_\_\_\_\_

3



3





—

# Boundary Scenario: Tasmania vs Victoria

1:3 500 000 at lat 22°30'

DEPTHS IN METRES

HEIGHTS IN METRES

Mercator Projection

Training chart produced by UK Hydrographic Office, Law of the Sea

Later information has also been included.

MAGNETIC VARIATION CURVES ARE FOR 2000

The magnetic variation is shown in degrees, followed by the letter E or W, as appropriate, at certain positions on the curves. The annual change is expressed in minutes with the letter E or W and is given in brackets, immediately following the variation.

**Victoria**

vicinity.

CURRENTS

For further information on ocean currents in the area of this chart, see Admiralty Sailing Directions and Routing Charts.

VICTORIA

MELBOURNE

COOK SHELF

BASS STRAIT

BASS TRENCH

**Tasmania**

EAST TASMAN PLATEAU

232

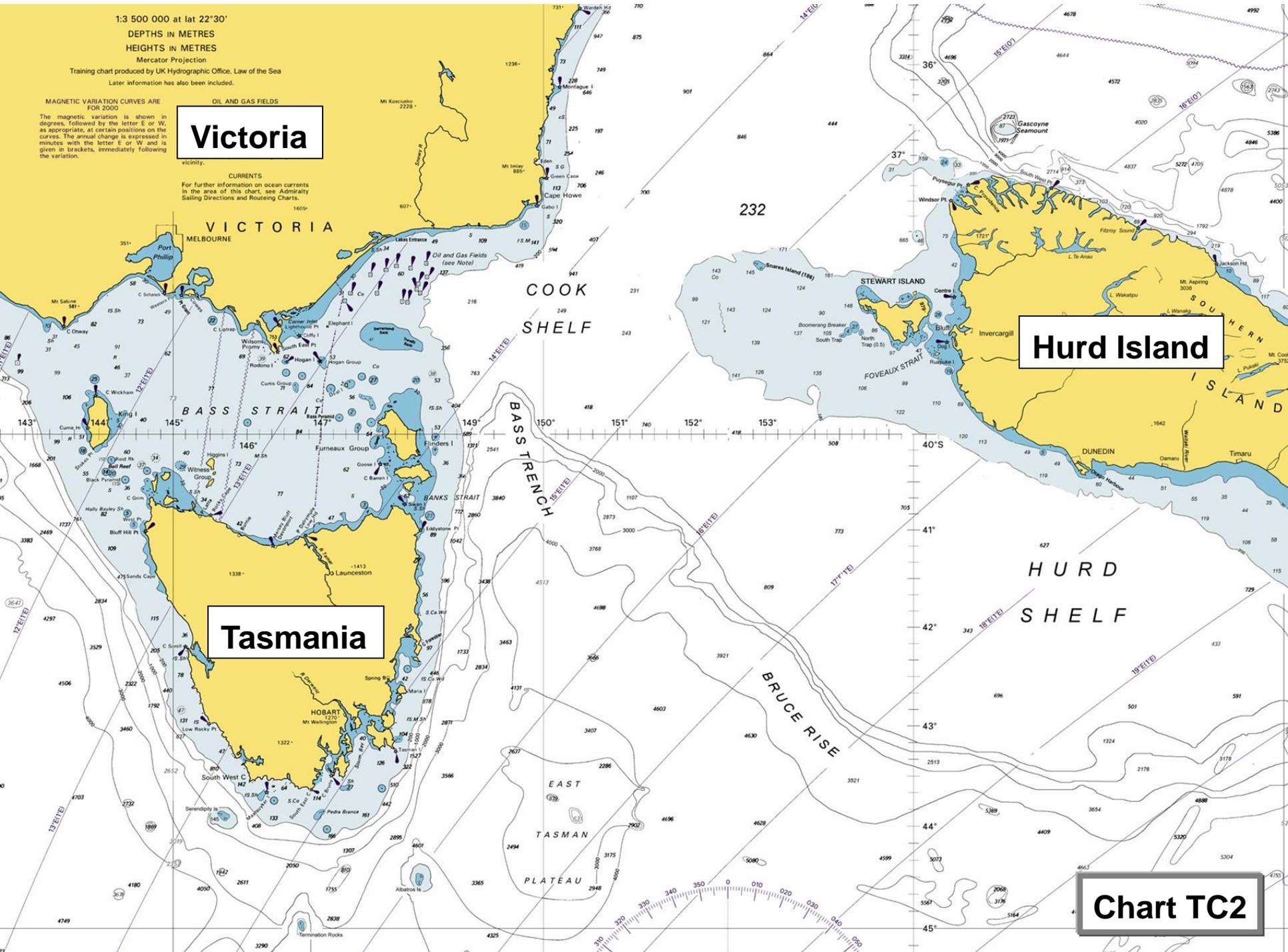
STEWART ISLAND

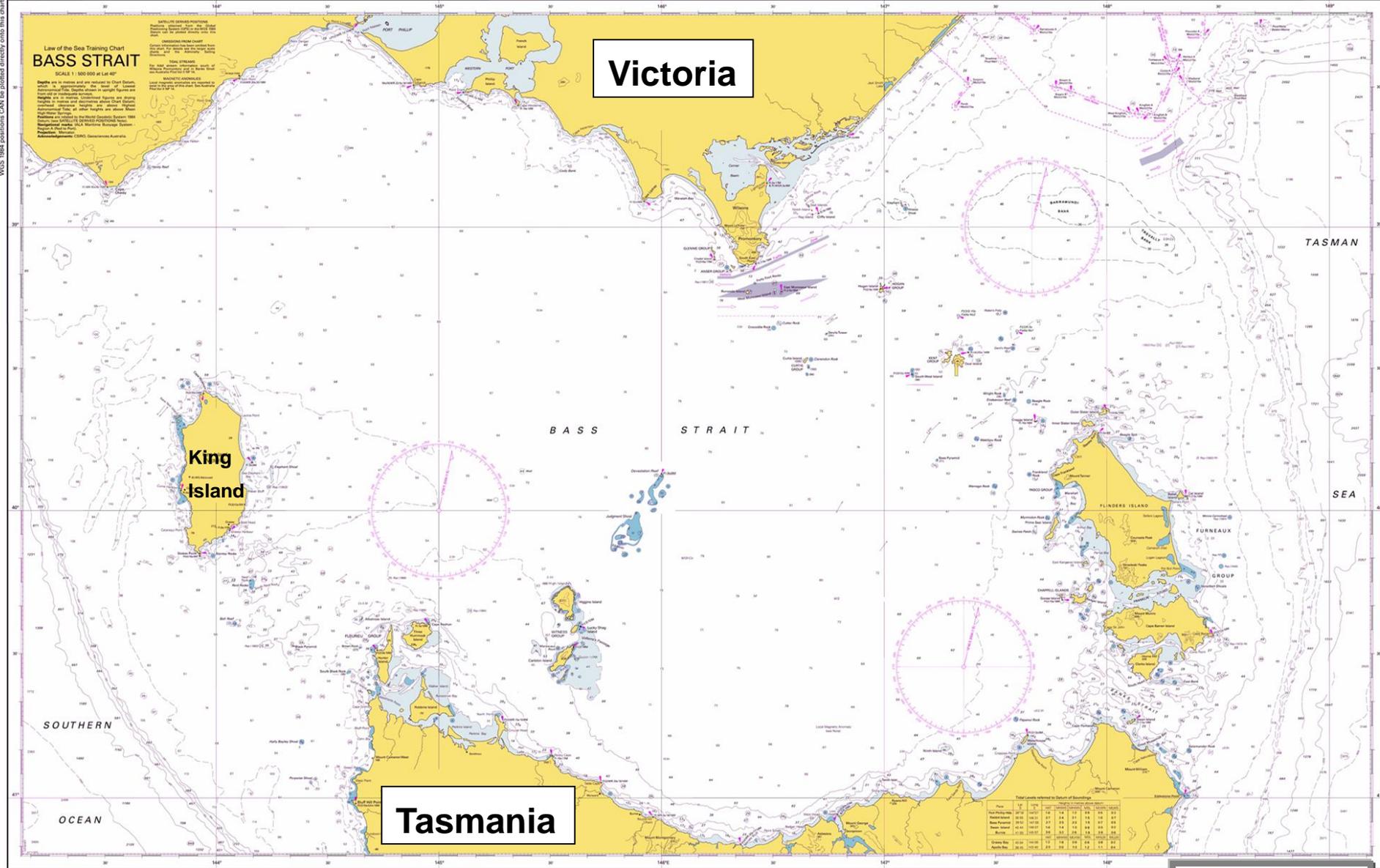
**Hurd Island**

HURD SHELF

BRUCE RISE

**Chart TC2**





Law of the Sea Training Chart  
**BASS STRAIT**

**Victoria**

**King  
Island**

BASS STRAIT

**Tasmania**

TASMAN

SEA

SOUTHERN

OCEAN

**Chart TC1**

WGS 1984 positions CAN be plotted directly onto this chart

WGS 1984 positions CAN be plotted directly onto this chart

