

## IGCSE Geography – Data Interpretation (approx. 1000 Words)

How have geomorphic processes altered the coastline in Sitges & how successfully have people tried to manage these processes?

*Remind the examiner that you know about the different geomorphic processes (erosion, transportation, deposition) and that the processes can be linked to the sea and the geology (type of rock under the surface). Then suggest what would happen if this was left to happen without any interference from humans, what would the S.E.E consequences be for Sitges?*

So, what did you see in Sitges?

A way to structure this would be to look at each process– Erosion, Transportation, Deposition one by one and explaining the physical processes that we observed followed by humans try to control this.



### Erosion

#### **Location 1 – The Headland - Your Field Sketch & Photos**

**Where?** – locate the headland on a map of Sitges (Google Map in Satellite view) and on your Geology Map from geographypods. Remember, the headland is a hard rock feature. **Which rock is it created from?** It takes longer to erode and so projects out into the sea unlike the softer rock on either side which erodes backwards at a faster rate to form bays & headlands.

**What?** Write about the features you saw and how they were created

*Stump, Wave Cut Notch, Joints & Weaknesses in Cliff Face, Small Cave*

At this point, a good IGCSE Geography student will try to explain the processes that caused each of the features and be using terminology like

*destructive waves, fetch, attrition, hydraulic action, limestone, resistant rock, solution, wave attack*

#### **Location 2 – The Sandy Beaches (1-6) – Your beach shapes & photos**

**Where?** Refer to your beach shapes (where you plotted the width on the left, middle & right hand side). Refer to your geology map and state what rock type is found underneath the area with the beaches. What is the link between this soft rock and the rate (speed) of potential erosion?

**What?** Beaches that are much narrower than the rest would most likely be suffering from erosion of beach material. Can you identify one or more of these beaches and suggest which geomorphic processes are causing this. **Don't add anything here about human intervention. Save that until RQ2.**

Write a short paragraph that tells the examiner why Sitges is worth protecting. Have a think about how the key Geography words below could help you.

*Tourism, Economy, 3<sup>rd</sup> Most Expensive Land in Spain, Expensive Property, Businesses, Railway, Jobs,*

### How have People affected Erosion? – Sea Wall (photos & bi polar analysis)

**Where?** – Sandy Beach & Promenade

**What?** Sea Wall. Explain how the sea wall works and tries to prevent erosion.

Erosion normally provides sediment for LSD to build beaches further down the coast so what is the likely result of cutting off this supply of eroded beach material? Pebble beach photos and observations.

### How have People affected Erosion? – Rock Islets (photos & bi-polar analysis)

**Where?** – In front of the expensive houses on beach 6 & 7.

**What?** Explain the physics behind rock islets are and how they work? Why would they put these right in front of the most expensive houses? What do rock islets do to the shape of the beaches here? Look at the satellite view of the beaches and your own photos!

Talk about your bi-polar results. How well do they work in your opinion. Refer to grades that you gave to the groynes you studied.

## Transportation

### Location 3 – Sandy Beaches – Your Located Bar Chart

**Where?** – Beaches 1 – 6. You are looking for evidence of longshore drift. Which way does it appear to be coming from? How can you tell? Make sure you give examples of the depths from the groynes in your explanation. Make sure you explain any anomalies.

**What?** – Link the direction with the Wave Attack Information Sheet in your pack (with loads of arrows showing Incident Energy & Frequency). Don't forget to explain where this sand has come from and what would happen to this sand if it was not trapped by the groynes. Remember about the construction of the marina further updrift in the 1970's?

### Location 4 – Pebble Beach

**Where?** – Pebble beach close to the headland. You will need your compass rose sheet with directions of pebbles.

**What?** – Which way were most pebbles pointing? Does this direction match your sandy beach measurements? If not, continue reading below.

**If not, don't worry!** – Look at the Wave Attack Information Sheet – Are there often waves from this new direction (frequency)? If there are, then your question has been answered. Longshore drift can occur in different directions on different bits of coastline. The pebble beach is much more reactive to LSD than the sandy beaches on any given day. Link your direction to this data ... et voila!



## How have people affected Transportation – Groynes (photos & bi-polar analysis)

**Where?** – Sandy beaches 1-6

**What?** – Groynes. How have these affected the natural process of LSD? Do they work or are some beaches better protected than others? Include bi polar analysis here if you have one.

Don't forget to talk about your data and if sand has built up on one side of the groyne then it is a real way that humans are affecting longshore drift on this stretch of the coast.

## Deposition (this will be a brief section)

### Location 5– Any beach

**Where?** – Which sandy beaches were very wide according to your beach profile shapes? Any reasons for this? Look at shape, direction facing etc.

**What?** Where has longshore drift deposited most material, but link to the fact that humans have caused this to happen more by building a particular type of coastal defence. **\*\*The best one for trapping sand\*\***

## How have people affected deposition in Sitges? – Beach Starvation (photos)

**Negatives?** - As Elliot said on the video (remember ladies?) ***“you can't meddle with nature on this scale without it having negative effects elsewhere”***

You now know that LSD on the sandy beaches travels in a \_\_\_\_\_ direction. What has happened to the beach past the last groyne? This result doesn't match up with your LSD sandy beach data but does match up with the overall Wave Attack Information sheet. Why is it narrow and covered in pebbles?

Key word – ***Beach Starvation***

***End with a little sentence telling the examiner which processes you think has the biggest effect on the coastline in Sitges. Is it erosion, transportation or deposition? Explain briefly why you think this. Then complete with a little sentence telling the examiner which processes you think humans have had the biggest effect on. Explain briefly why you think this.***

