

BSG Workshop – Day 1 Quiz

To promote discussion for one of the themes of the workshop, we've designed a quiz. The broad topic we intend to highlight is the similarity, or otherwise, of bedforms between environments and flow regimes, i.e. "How unique are bedform shapes?"

In addition, specifically we want to examine the scope of using artificial intelligence (i.e. machine learning) methods to distinguish the flow regime or environment in which bedforms originated by examining if such an ability exists in non-artificial (i.e. human) intelligence. This is done by asking:

- Is it possible to identify the environment of bedform genesis from it's morphology? (fluvial, marine, aeolian, glacial)
- In the fluvial environment, is it possible to distinguish flow regime from the shape of the bedform?

***Required**

Logistics

The quiz should take 15-20 minutes. We'll stay live on Teams whilst you answer, but please don't exchange your answers to specific questions. I'll present the results at the start of the next workshop.

Consent & Ethics

All data collected will anonymous, no sensitive personal data will be collected, and we have described above key points of the Participant Information sheet to you. However, please ask us if you have any questions, or have not received a copy.

Q1.1 – I consent to take part in this survey. *

☐ Yes

☐ No

Next

BSG Workshop - Day 1 Quiz

***Required**

Participant Background

A little non-sensitive information about you, to help put your answers in context.

Q2.1 - How many years of experience have you in researching bedforms? [Whole number, numerical answer please]. (0 years is allowed!)

Your answer _____

Q2.2 - How many of the 4 environments (fluvial, marine, aeolian, glacial) do you have any familiarity with? (i.e. have read a paper or attended a talk about in the past 5 years)

0

☐

1

☐

2

☐

3

☐

4

☐

Q2.3 - How many of the 4 environments would you describe yourself as well-acquainted with?

0

☐

1

☐

2

☐

3

☐

4

☐

I would describe myself as *

☐ A geoscientist (e.g. geography, geology, earth science)

☐ NOT a geoscientist

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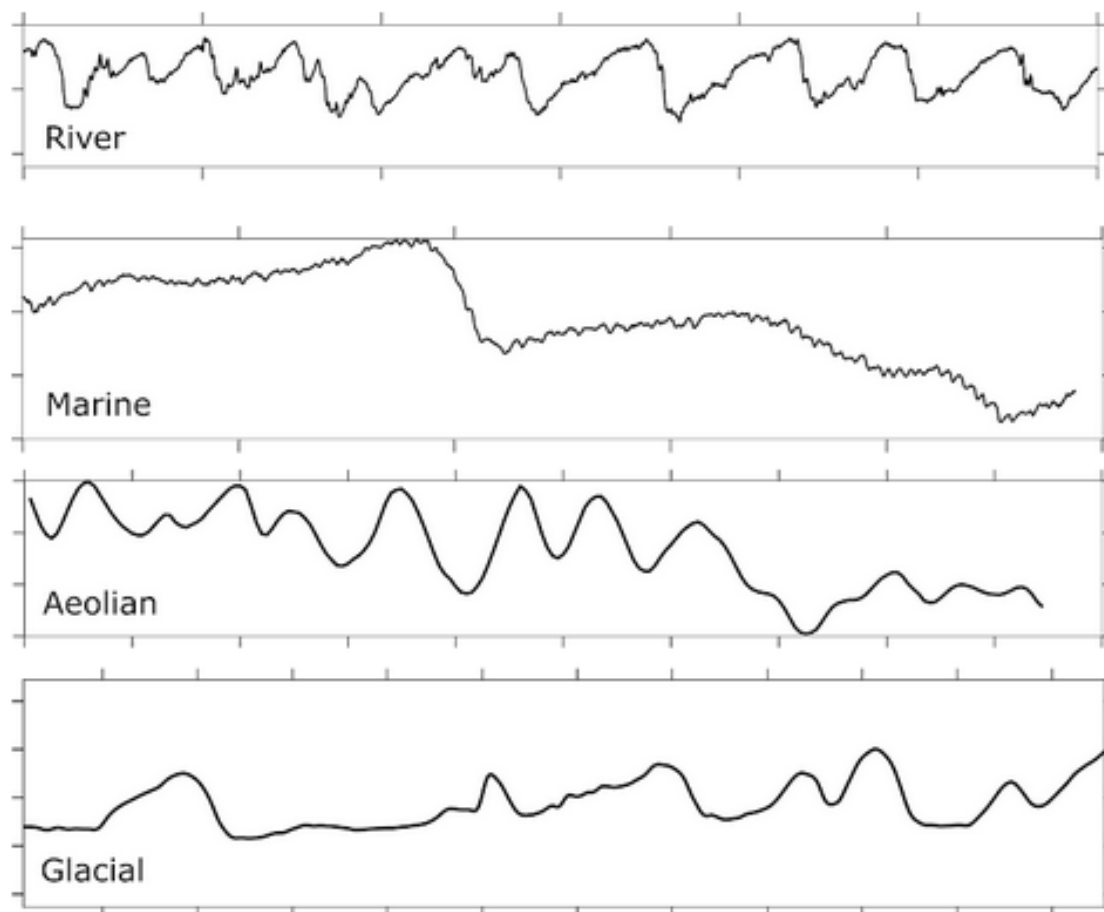
Environments: Individual Bedforms

Can the environment in which individual bedforms developed be distinguished by their shape alone?

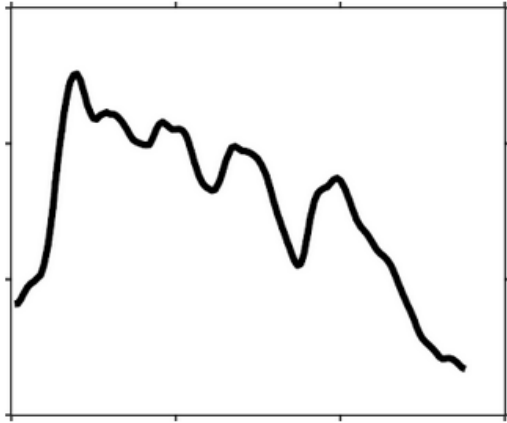
In this section are images of a profiles (distance vs height) of variety of individual bedforms, deliberately without scale to isolate shape alone. Indicate which environment (marine, river = fluvial, aeolian or glacial) you believe is most likely to produce the bedform shape you see. We suggest you spend 5-10 seconds on each bedform, although take as much time as you need.

At the end, please comment on what, if anything, makes you feel confident (or otherwise) about your decision.

Below are examples of profiles of bedforms, which are used in the quiz, one profiler per environment is shown here as an aid. Whilst only one profile from each environment shown, and a variety of bedforms may be produced in each. Identifying individual bedforms from these profiles are the first part of the quiz.

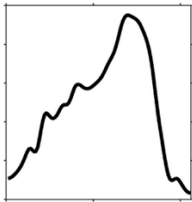


Q3.1 Which environment is this bedform from? Please tick one box. Note that 'fluvial' is another name for river in this context.



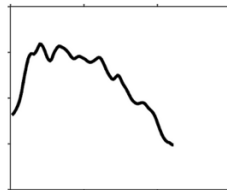
- ☐ Fluvial
- ☐ Glacial
- ☐ Aeolian
- ☐ Marine

Q3.2



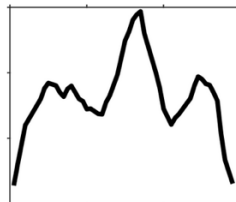
- ☐ Fluvial
- ☐ Glacial
- ☐ Aeolian
- ☐ Marine

Q3.3 TAKE CARE - ANSWER OPTIONS (i.e. Fluvial, Glacial, Aeolian, Marine) ARE PRESENTED IN A RANDOM ORDER!



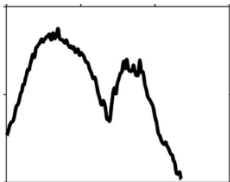
- ☐ Aeolian
- ☐ Marine
- ☐ Glacial
- ☐ Fluvial

Q3.4



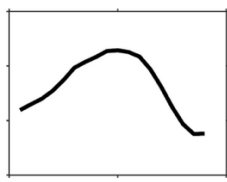
- ☐ Marine
- ☐ Fluvial
- ☐ Glacial
- ☐ Aeolian

Q3.5



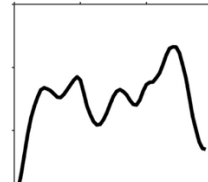
- ☐ Fluvial
- ☐ Aeolian
- ☐ Marine
- ☐ Glacial

Q3.6



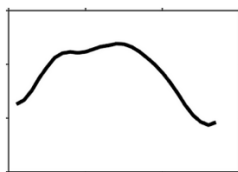
- ☐ Glacial
- ☐ Fluvial
- ☐ Aeolian
- ☐ Marine

Q3.7



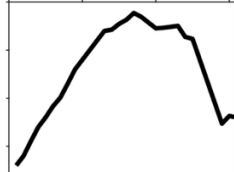
- ☐ Marine
- ☐ Glacial
- ☐ Fluvial
- ☐ Aeolian

Q3.8



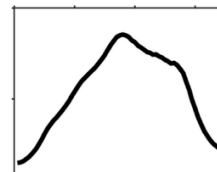
- ☐ Fluvial
- ☐ Glacial
- ☐ Aeolian
- ☐ Marine

Q3.9



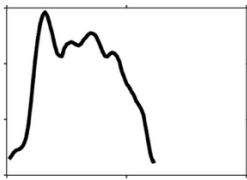
- ☐ Marine
- ☐ Aeolian
- ☐ Glacial
- ☐ Fluvial

Q3.10



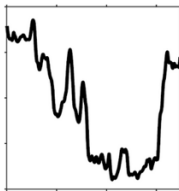
- ☐ Fluvial
- ☐ Glacial
- ☐ Aeolian
- ☐ Marine

Q3.11



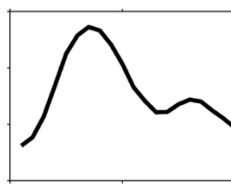
- ☐ Fluvial
☐ Marine
☐ Aeolian
☐ Glacial

Q3.12



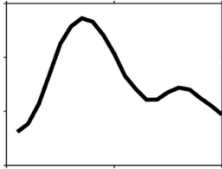
- ☐ Fluvial
☐ Glacial
☐ Aeolian
☐ Marine

Q3.13



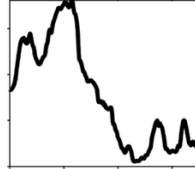
- ☐ Aeolian
☐ Glacial
☐ Marine
☐ Fluvial

Q3.14



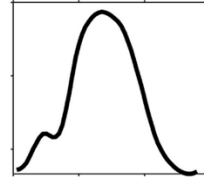
- ☐ Fluvial
☐ Glacial
☐ Aeolian
☐ Marine

Q3.15



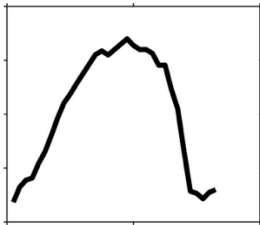
- ☐ Fluvial
☐ Glacial
☐ Aeolian
☐ Marine

Q3.16



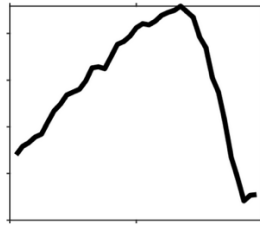
- ☐ Fluvial
☐ Glacial
☐ Aeolian
☐ Marine

Q3.17



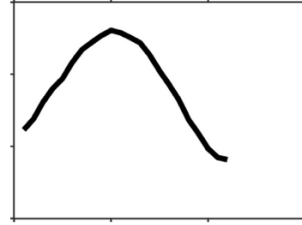
- ☐ Glacial
☐ Aeolian
☐ Fluvial
☐ Marine

Q3.18



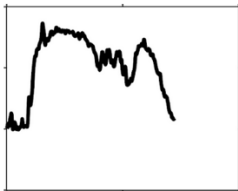
- ☐ Marine
☐ Aeolian
☐ Fluvial
☐ Glacial

Q3.19



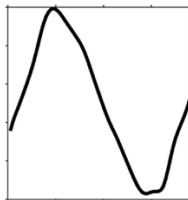
- ☐ Fluvial
☐ Marine
☐ Aeolian
☐ Glacial

Q3.20



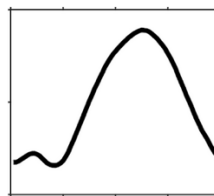
- ☐ Glacial
☐ Marine
☐ Aeolian
☐ Fluvial

Q3.21



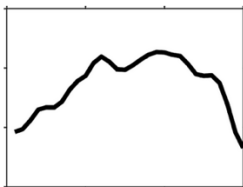
- ☐ Fluvial
☐ Glacial
☐ Aeolian
☐ Marine

Q3.22



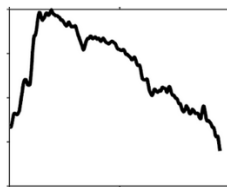
- ☐ Fluvial
☐ Glacial
☐ Aeolian
☐ Marine

Q3.23



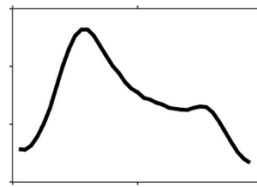
- ☐ Glacial
☐ Fluvial
☐ Marine
☐ Aeolian

Q3.24



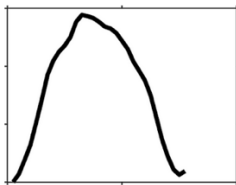
- ☐ Glacial
☐ Marine
☐ Fluvial
☐ Aeolian

Q3.25



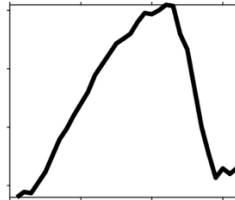
- ☐ Marine
☐ Glacial
☐ Aeolian
☐ Fluvial

Q3.26



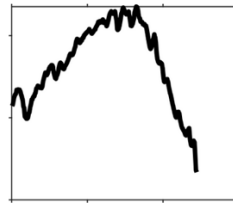
- ☐ Aeolian
- ☐ Glacial
- ☐ Marine
- ☐ Fluvial

Q3.27



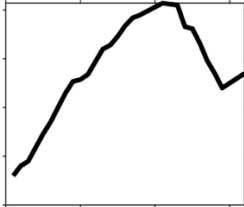
- ☐ Marine
- ☐ Aeolian
- ☐ Fluvial
- ☐ Glacial

Q3.28



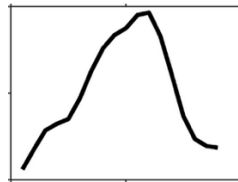
- ☐ Fluvial
- ☐ Marine
- ☐ Glacial
- ☐ Aeolian

Q3.29



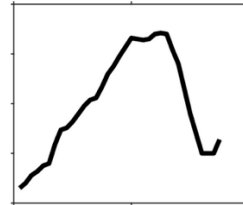
- ☐ Fluvial
- ☐ Marine
- ☐ Aeolian
- ☐ Glacial

Q3.30



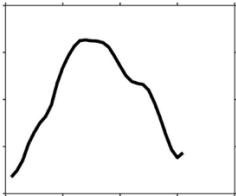
- ☐ Fluvial
- ☐ Glacial
- ☐ Aeolian
- ☐ Marine

Q3.31



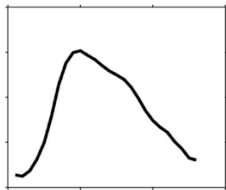
- ☐ Marine
- ☐ Glacial
- ☐ Fluvial
- ☐ Aeolian

Q3.32



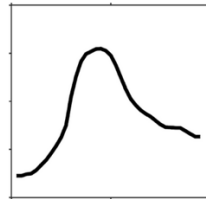
- ☐ Marine
- ☐ Fluvial
- ☐ Aeolian
- ☐ Glacial

Q3.33



- ☐ Marine
- ☐ Fluvial
- ☐ Glacial
- ☐ Aeolian

Q3.34



- ☐ Marine
- ☐ Fluvial
- ☐ Aeolian
- ☐ Glacial

Q3.35 - What, if anything, makes you feel confident (or otherwise) about your decisions? (e.g. an aspect of the shape).

Your answer

Q3.36 - If you had more contextual information (e.g. flow direction, scale), do you think it would help, or is it too hard to say?

Your answer

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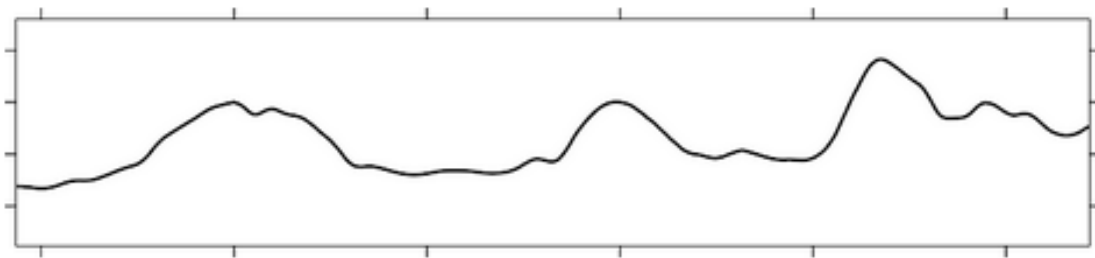
Environments: Trains of Bedforms

Can the environment in which bedforms developed be better distinguished by using short trains of bedforms?

In this section are images of a profiles (distance vs height) of variety of short trains of bedforms. Indicate which environment (marine, river, aeolian or glacial) you believe is most likely to produce the bedform shape you see. We suggest you spend 5-10 seconds on each bedform train, although take as much time as you need.

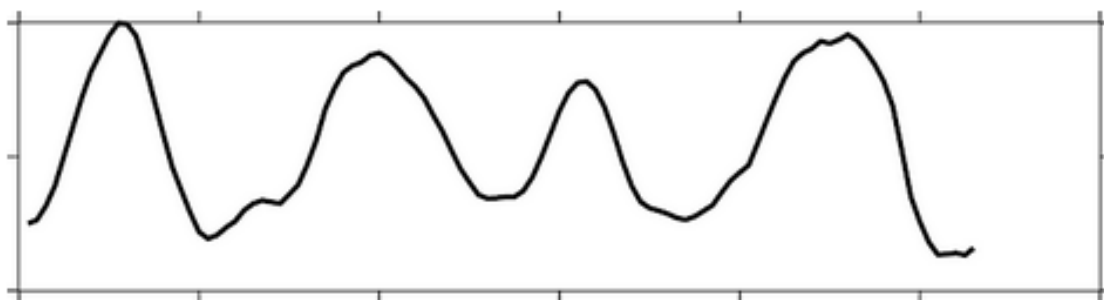
At the end, please comment on what, if anything, makes you feel confident (or otherwise) about your decision.

Q4.1 - Which environment are these bedforms from?



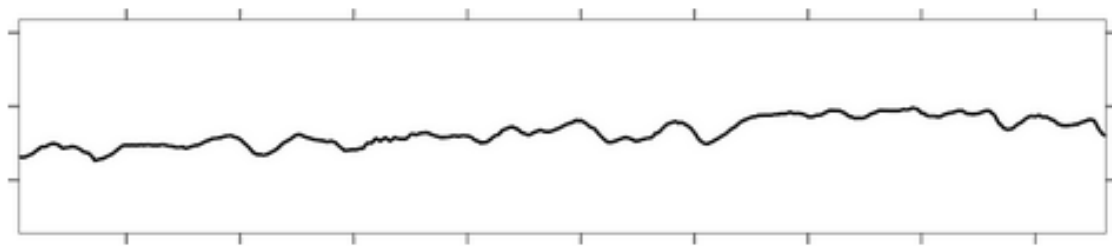
- ☐ Fluvial
- ☐ Marine
- ☐ Aeolian
- ☐ Glacial

Q4.2 - Which environment are these bedforms from? Please tick one box.



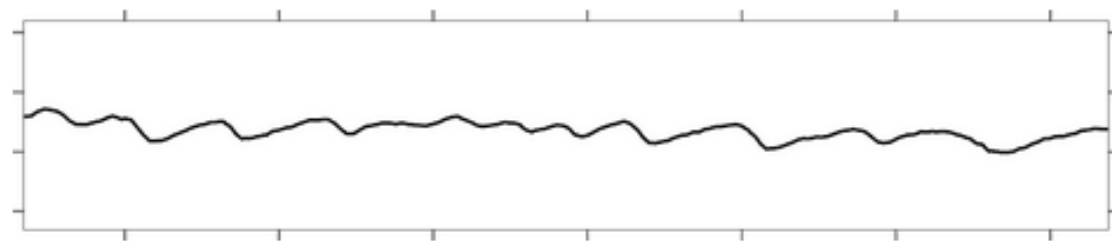
- ☐ Fluvial
- ☐ Marine
- ☐ Aeolian
- ☐ Glacial

Q4.3 - Which environment are these bedforms from? Please tick one box. TAKE CARE - ANSWER OPTIONS (i.e. Fluvial, Glacial, Aeolian, Marine) ARE PRESENTED IN A RANDOM ORDER!



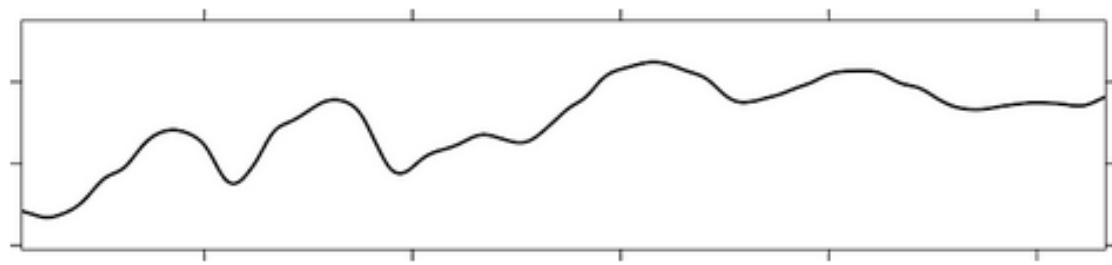
- ☐ Marine
- ☐ Glacial
- ☐ Fluvial
- ☐ Aeolian

Q4.5 - Which environment are these bedforms from? Please tick one box.



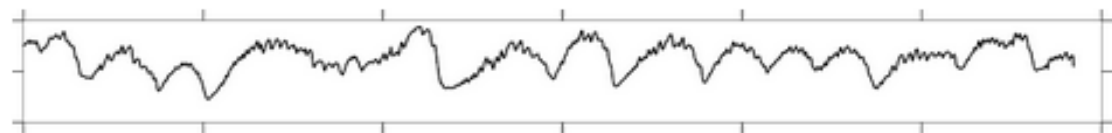
- ☐ Glacial
- ☐ Marine
- ☐ Aeolian
- ☐ Fluvial

Q4.6 - Which environment are these bedforms from?



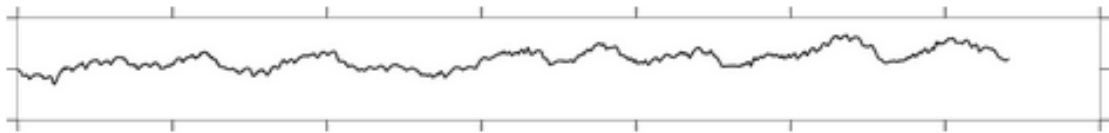
- ☐ Fluvial
- ☐ Marine
- ☐ Aeolian
- ☐ Glacial

Q4.7 - Which environment are these bedforms from? Please tick one box.



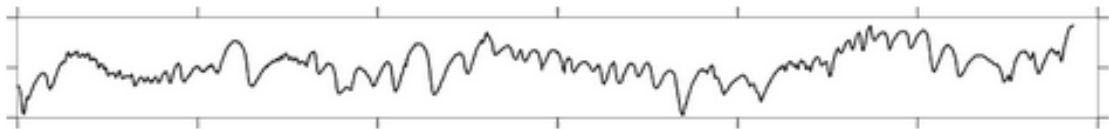
- ☐ Glacial
- ☐ Fluvial
- ☐ Aeolian
- ☐ Marine

Q4.8 - Which environment are these bedforms from? Please tick one box.



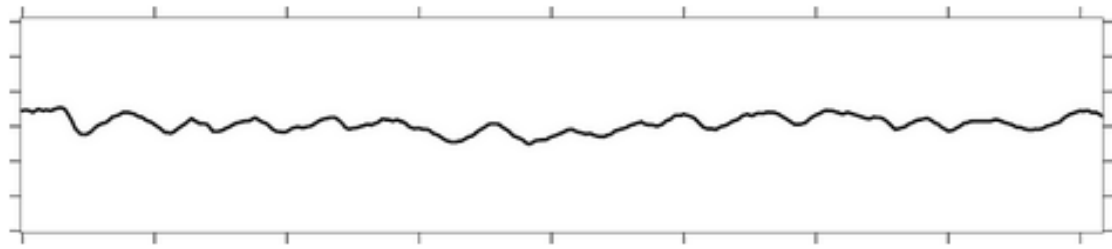
- ☐ Marine
- ☐ Aeolian
- ☐ Glacial
- ☐ Fluvial

Q4.9 - Which environment are these bedforms from? Please tick one box.



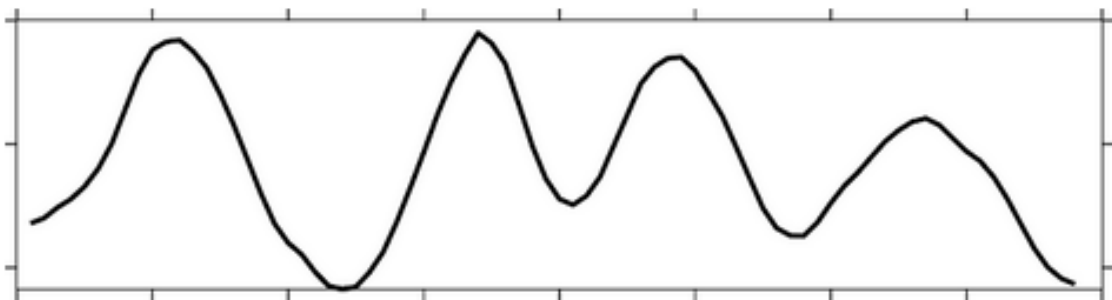
- ☐ Aeolian
- ☐ Glacial
- ☐ Marine
- ☐ Fluvial

Q4.10- Which environment are these bedforms from? Please tick one box.



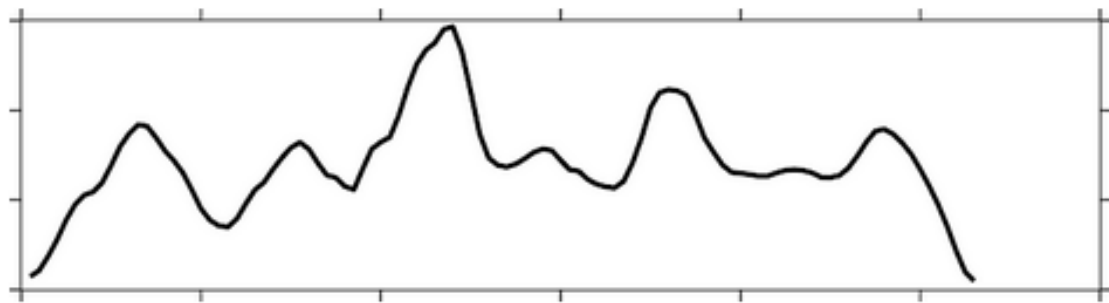
- ☐ Marine
- ☐ Aeolian
- ☐ Fluvial
- ☐ Glacial

Q4.11 - Which environment are these bedforms from? Please tick one box.



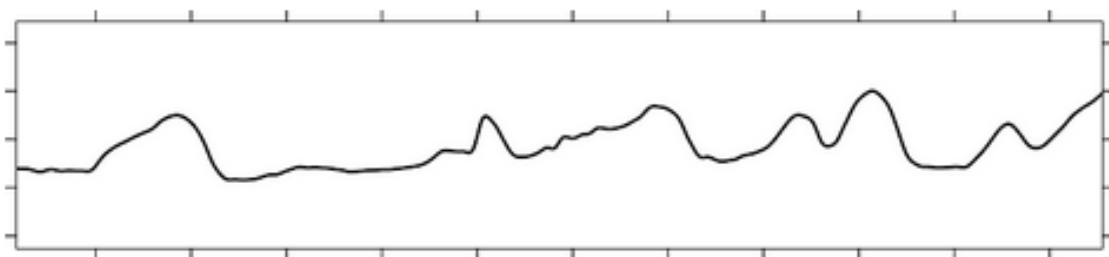
- ☐ Glacial
- ☐ Fluvial
- ☐ Aeolian
- ☐ Marine

Q4.12 - Which environment are these bedforms from? Please tick one box.



- ☐ Marine
- ☐ Glacial
- ☐ Fluvial
- ☐ Aeolian

Q4.13 - Which environment are these bedforms from?



- ☐ Fluvial
- ☐ Marine
- ☐ Aeolian
- ☐ Glacial

Q4.14 - Are you more or less confident in identifying environment from trains of bedforms as opposed to individual features. [1 = very much less, 2 = less, 3 = same, 4 = more, 5 = very much more].

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q4.15 - Why, and what (e.g. additional information) might make you feel more confident?

Your answer

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*Required

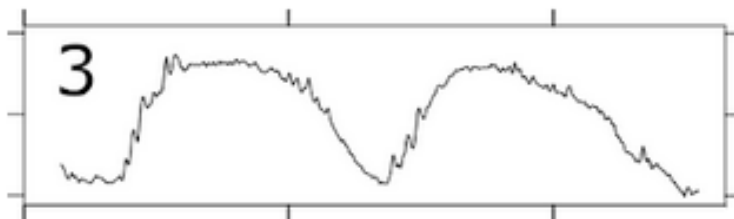
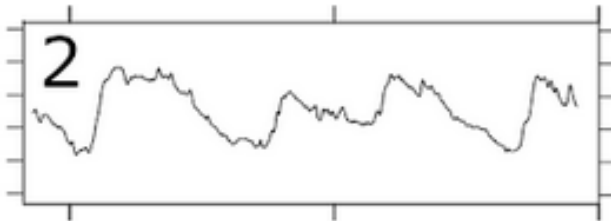
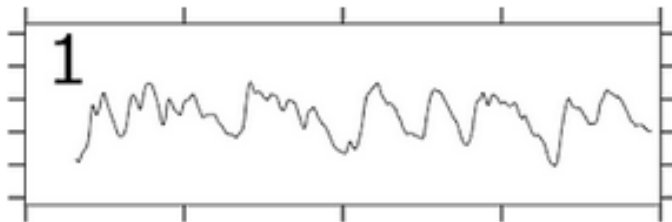
Flow Regimes: Fluvial bedforms

Can the flow regime in which fluvial bedforms developed be distinguished from the shape of bedforms?

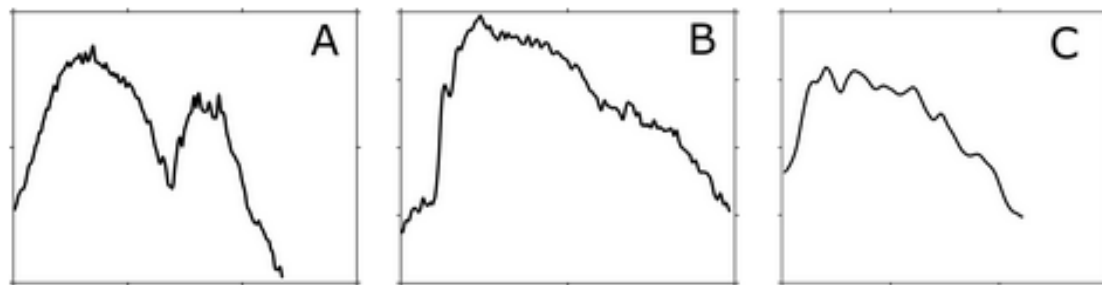
In this section are images each containing 3 profiles (distance vs height) of either individual bedforms or short trains of bedforms. These are labelled A to C, and vary in the one particular of flow regime (bed shear stress). Please rank these from lowest flow [1] to highest [3], using the numbers 1 to 3. Regimes may (or may not) be duplicated.

We suggest you spend about 1 minute on each set of 3, although take as much time as you need.

Your 'training' dataset. Examples of Bedforms. 1 = lowest stage (i.e. stress), 3 = highest stage (i.e. stress)



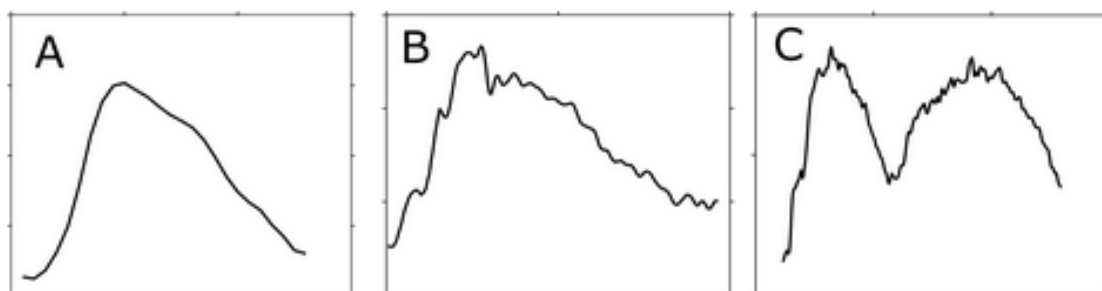
Q5.1 First image of 3 individual bedforms. Bedforms are labelled A to C, and vary in the one particular of flow regime (bed shear stress). Please rank these from lowest flow [1] to highest [3], using the numbers 1 to 3. Regimes may (or may not) be duplicated.



Rank bedforms A to C (rows) in terms of flow (columns). 1 = lowest flow, 3 is highest. TAKE CARE - THE ORDER OF THE ROWS IS SHUFFLED FOR EACH PARTICIPANT *

	1	2	3
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

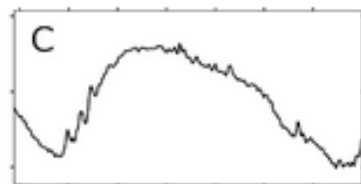
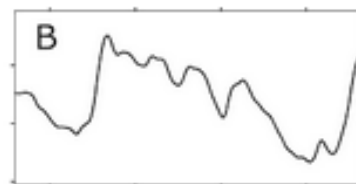
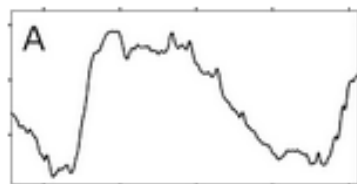
Q5.2 Second image of 3 individual bedforms. Bedforms are labelled A to C, and vary in the one particular of flow regime (bed shear stress). Please rank these from lowest flow [1] to highest [3], using the numbers 1 to 3. Regimes may (or may not) be duplicated.



Rank bedforms A to C (rows) in terms of flow (columns). 1 = lowest flow, 3 is highest. *

	1	2	3
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

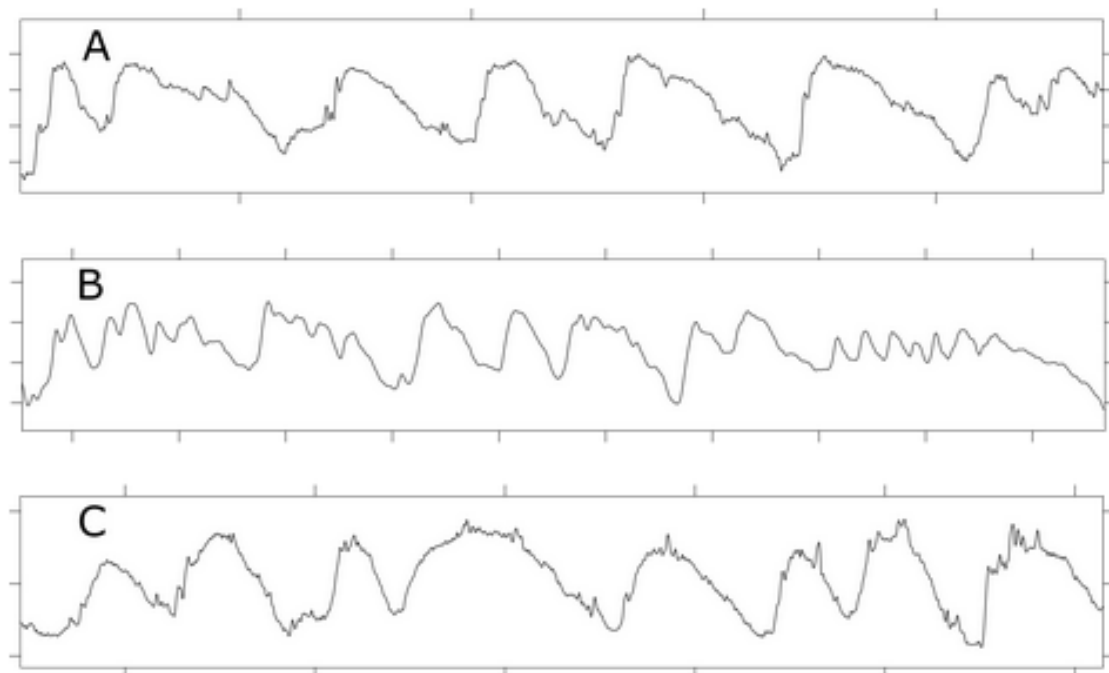
Q5.3 Third image of 3 individual bedforms. Bedforms are labelled A to C, and vary in the one particular of flow regime (bed shear stress). Please rank these from lowest flow [1] to highest [3], using the numbers 1 to 3. Regimes may (or may not) be duplicated.



Rank bedforms A to C (rows) in terms of flow (columns). 1 = lowest flow, 3 is highest. *

	1	2	3
A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

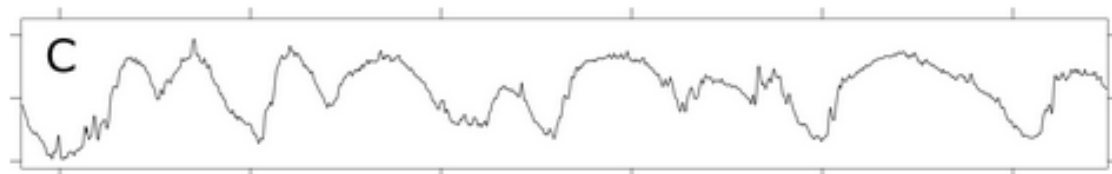
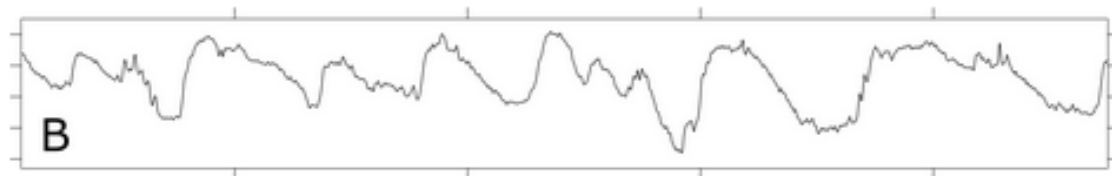
Q5.4 Image of 3 bedform trains



Rank bedforms trains A to C (rows) in terms of flow (columns). 1 = lowest flow, 3 is highest. TAKE CARE - THE ORDER OF THE ROWS IS SHUFFLED FOR EACH PARTICIPANT *

	1	2	3
A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

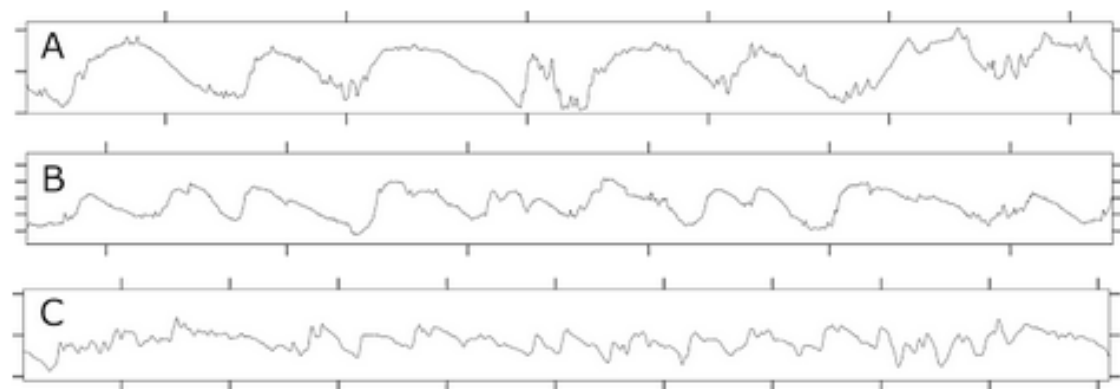
Q5.5 Second Image of 3 bedform trains



Rank bedforms trains A to C (rows) in terms of flow (columns). 1 = lowest flow, 3 is highest. *

	1	2	3
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q5.6 Third Image of 3 bedform trains



Rank bedforms trains A to C (rows) in terms of flow (columns). 1 = lowest flow, 3 is highest. *

	1	2	3
B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q5.7 - Are you more or less confident in identifying flow regime from trains of bedforms as opposed to individual features. [1 = very much less, 2 = less, 3 = same, 4 = more, 5 = very much more]. *

1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q5.8 - Why, and what (e.g. additional information) might make you feel more confident?

Your answer
