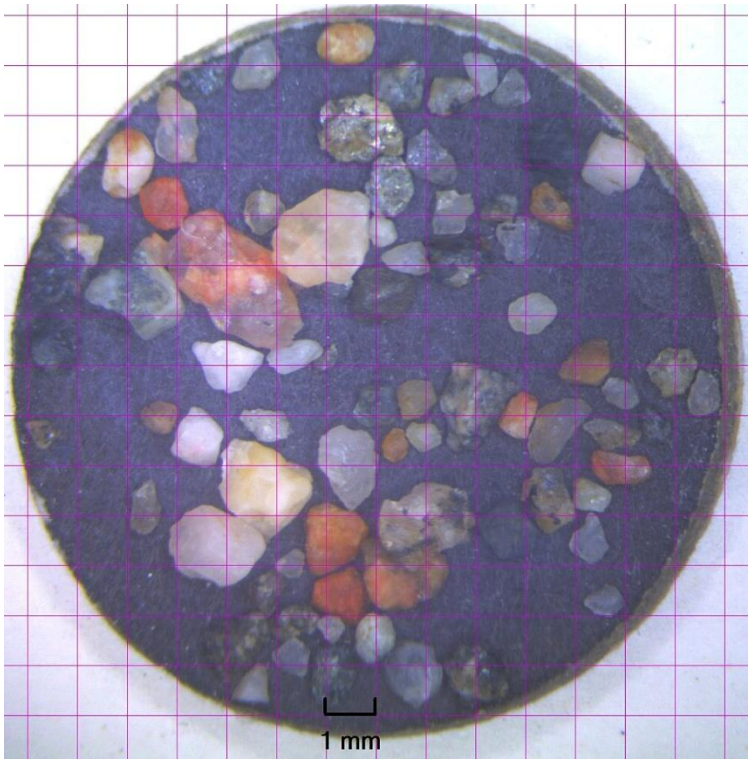
Sediment grain mounts of sands deposited in different sedimentary environments.

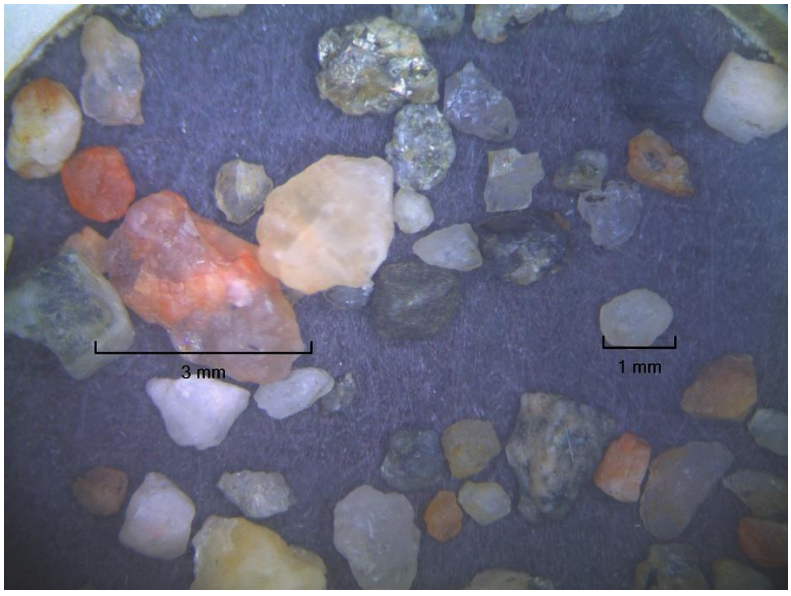
This resource features photographs of grain mounts of three different sands.
For each sediment, there is an analysis of the sediment and the interpretations made of the analysis.

The three sediments are:

- A - fluvial (river) sand
- B - beach sand
- C - desert (dune) sand.

Sediment analysis: Sample A - Fluvial (river) sand





Sediment analysis: Sample A fluvial (river) sand

Date:		**Sample Number:**	

Grain Size Observations:

Grain size data:

Grain sizes	0.25mm	Minimum (mm)	Grain sorting and distribution
	3mm	Maximum (mm)	*Describe the sorting and distribution of the grains: **Sorting** (well sorted, poorly sorted, bimodal). **Distribution** (Positive(fine)skew, symmetrical, negative (coarse) skew).*
Mean Grain size	1.5mm	mm	
Wentworth division name	Coarse to very coarse sand		Angular, sub-spherical. Moderately to poorly-sorted.

Grain Type Observations:

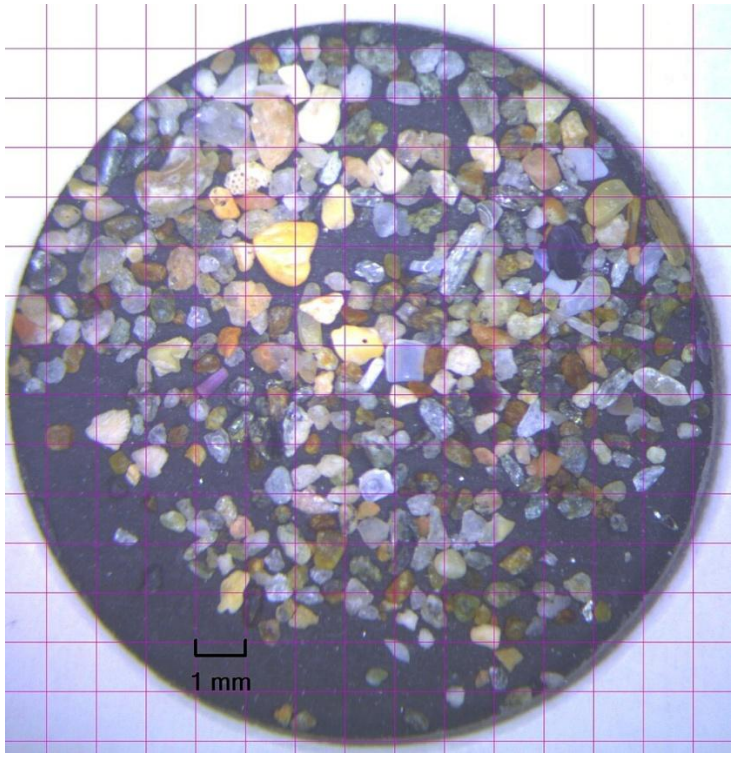
Mineralogical and textural data:

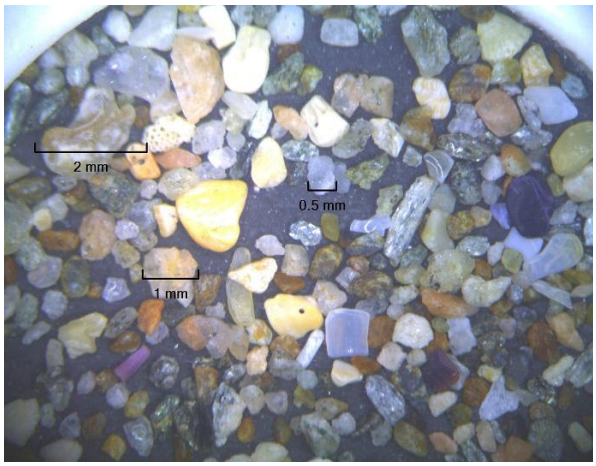
Grain type	Diagnostic features	Surface texture	Grain shape	% abundance
Mineral type Quartz (Q), Feldspar (F), Lithics (L), Bioclasts (B)	***Cleavage** (yes, no). **Colour** . **Transparency** (transparent, translucent, opaque). **Mono crystalline/Polycrystalline** . **Lustre** (shiny, pearly, glassy, vitreous, dull, silky, bright, metallic, greasy, resinous, adamantine, earthy)*	***Rough/Smooth** . **Fractures** (conchoidal, sharp, smooth). **Abraded/Polished** .*	***Grain shape** (Tabular, disc, equant, plate, sheet, blade, rod). **Roundness.** **Sphericity***	*Modal abundance*
Quartz	Clear, colourless, transparent to translucent, glassy grains. No cleavage.	Often show sharp angular or conchoidal fractures. Rough surfaces.	Angular, high sphericity.	10%
Feldspars – some stained with iron oxide	Pink/red milky grains. Translucent or opaque, minor traces of cleavage, vitreous.	Irregular fractures. Rough surfaces.	Angular, sub-spherical.	40%
Lithics	Dark grey/green grains containing many individual crystals.	Irregular and angular fractures. Rough surfaces.	Sub-angular, spherical.	20%
Feldspar	Milky grains, translucent or opaque.	Irregular fractures. Rough surfaces.	Angular, sub-spherical.	30%

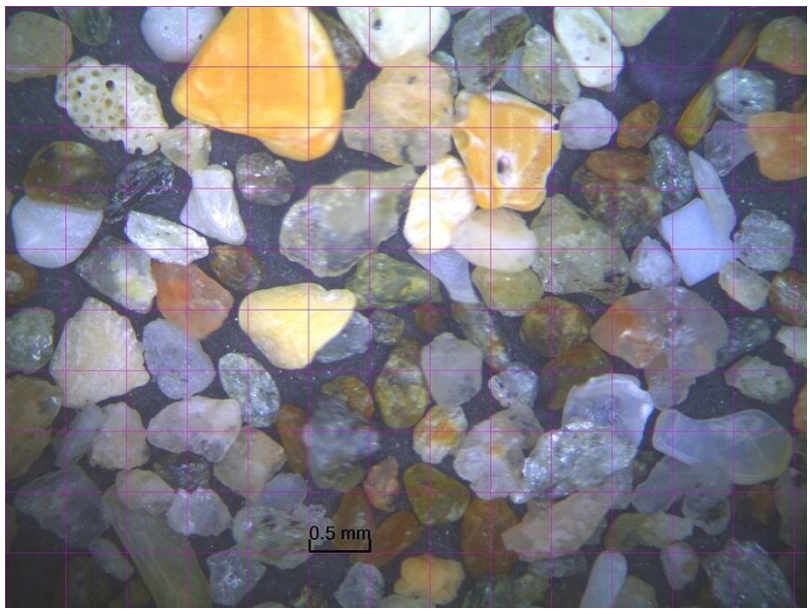
Interpretations

Textural maturity *i.e. have the grains been sorted and transported?*	Immature
Mineralogical maturity *i.e. have the grains been sorted and transported?*	Immature
Provenance (source of the sediment) *Proximal (deposited close to source) Distal (deposited a long way from source). Specific information e.g. bioclasts (beach).*	Proximal
Transportation history (use textural and mineralogical maturity) *What does the degree of sorting and the presence or absence of a muddy matrix tell you about processes operating when the sediment was deposited?*	
***Processes operating** (fluvial, aeolian) **Flow velocity** (low flow velocity, high flow velocity, changing flow velocity).*	Fluvial, high current velocity (no matrix)
Sediment name	
Sediment names should summarise all the key features of the sediment as briefly as possible e.g. "well-sorted, mineralogically mature, medium sand"	Poorly-sorted, texturally and mineralogically immature very coarse sand.

Sediment analysis: Sample B - Beach sand







Sediment analysis: Sample B Beach sand

Date:		**Sample Number:**	

Grain Size Observations:

Grain size data:

Grain sizes	0.1mm	Minimum (mm)	Grain sorting and distribution
	1.5mm	Maximum (mm)	*Describe the sorting and distribution of the grains:* ***Sorting*** *(well sorted, poorly sorted, bimodal).* ***Distribution*** *(Positive(fine)skew, symmetrical, negative (coarse) skew).*
Mean Grain size	0.25mm	mm	
Wentworth division name	Fine to medium sand		Angular, sub-rounded and sub-spherical. Moderately well sorted.

Grain Type Observations:

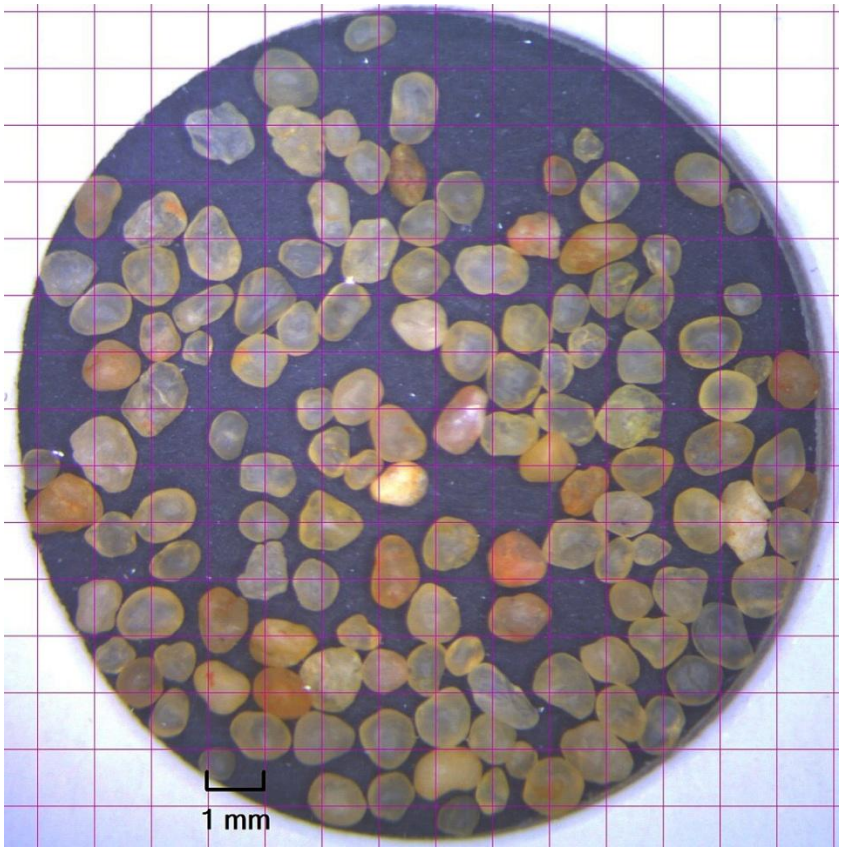
Mineralogical and textural data:

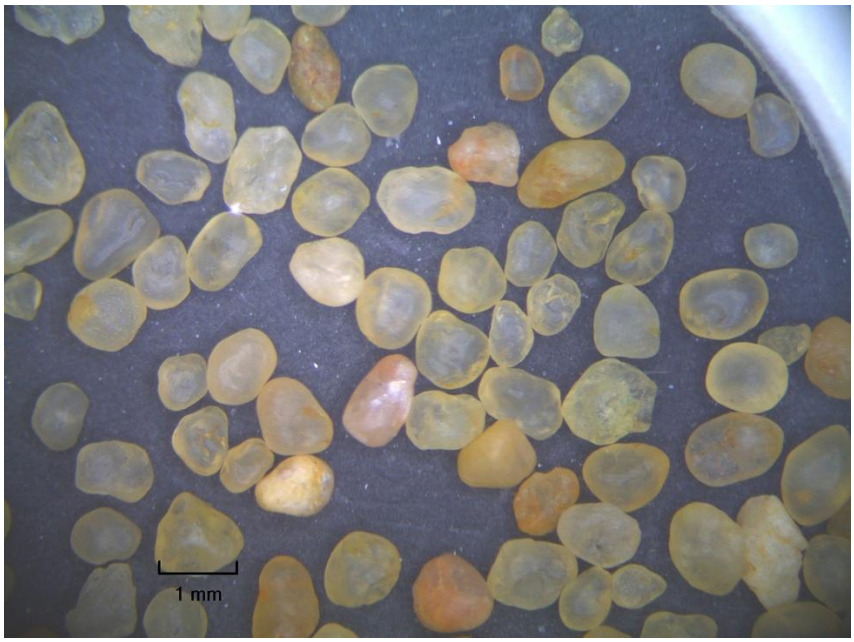
Grain type	Diagnostic features	Surface texture	Grain shape	% abundance
Mineral type Quartz (Q), Feldspar (F), Lithics (L), Bioclasts (B)	***Cleavage*** *(yes, no).* ***Colour*** *.* ***Transparency*** *(transparent, translucent, opaque).* ***Mono crystalline/Polycrystalline*** *.* ***Lustre*** *(shiny, pearly, glassy, vitreous, dull, silky, bright, metallic, greasy, resinous, adamantine, earthy)*	***Rough/Smooth*** *.* ***Fractures*** *(conchoidal, sharp, smooth).* ***Abraded/Polished*** *.*	***Grain shape*** *(Tabular, disc, equant, plate, sheet, blade, rod).* ***Roundness.*** ***Sphericity***	*Modal abundance*
Quartz	Clear, colourless, transparent to translucent, glassy grains. No cleavage.	Often show sharp angular or conchoidal fractures. Rough surfaces.	Equant, rounded, spherical.	30%
Bioclasts	White/cream opaque to translucent grains. Some with internal layers. ridges or other ornament.	Shell fragments, broken, polished, smooth grains.	Oblate, highly rounded.	10%
Lithics	Dark black/red/grey/grains. Opaque. Some seem to be made up of smaller crystals	Irregular and angular fractures. Rough surfaces.	Sub-angular, spherical.	20%
Feldspar	White/cream, translucent to opaque. Trace of cleavage on some grains.	Irregular fractures. Rough surfaces. Polished.	Angular, sub-spherical.	20%
Feldspar	Pink/red, milky opaque to translucent, vitreous. Trace of cleavage on some grains.	Irregular fractures. Rough surfaces. Polished.	Angular, sub-spherical.	20%

Interpretations

Textural maturity *i.e. have the grains been sorted and transported?*	Mature
Mineralogical maturity *i.e. have the grains been sorted and transported?*	Immature
Provenance (source of the sediment) *Proximal (deposited close to source) Distal (deposited a long way from source). Specific information e.g. bioclasts (beach).*	Proximal sediment, grains from different sources, bioclasts – beach environment.
Transportation history (use textural and mineralogical maturity) *What does the degree of sorting and the presence or absence of a muddy matrix tell you about processes operating when the sediment was deposited?*	
Processes operating *(fluvial, aeolian)* ***Flow velocity*** *(low flow velocity, high flow velocity, changing flow velocity).*	Beach, transport in water. Variable flow velocity. No matrix, but bioclasts
Sediment name	
Sediment names should summarise all the key features of the sediment as briefly as possible e.g. "well-sorted, mineralogically mature, medium sand"	Moderately well-sorted, texturally mature and mineralogically immature, fine to medium sand.

Sediment analysis: Sample C – Desert (dune) sand





Sediment analysis: Sample C desert sand			
Date:		**Sample Number:**	

Grain Size Observations:			
Grain size data:			
Grain sizes	0.5mm	Minimum (mm)	Grain sorting and distribution
	1mm	Maximum (mm)	*Describe the sorting and distribution of the grains:* ***Sorting*** *(well sorted, poorly sorted, bimodal).* ***Distribution*** *(Positive(fine)skew, symmetrical, negative (coarse) skew).*
Mean Grain size	0.75mm	mm	
Wentworth division name	Coarse to very coarse sand		Highly rounded, highly spherical. Very well—sorted, symmetrical grain size distribution.

Grain Type Observations:				
Mineralogical and textural data:				
Grain type	Diagnostic features	Surface texture	Grain shape	% abundance
Mineral type Quartz (Q), Feldspar (F), Lithics (L), Bioclasts (B)	***Cleavage*** *(yes, no).* ***Colour*** *.* ***Transparency*** *(transparent, translucent, opaque).* ***Mono crystalline/Polycrystalline*** *.* ***Lustre*** *(shiny, pearly, glassy, vitreous, dull, silky, bright, metallic, greasy, resinous, adamantine, earthy)*	***Rough/Smooth*** *.* ***Fractures*** *(conchoidal, sharp, smooth).* ***Abraded/Polished*** *.*	***Grain shape*** *(Tabular, disc, equant, plate, sheet, blade, rod).* ***Roundness.*** ***Sphericity***	*Modal abundance*
Quartz	Orange, transparent glassy (vitreous) grains. No cleavage.	Abraded (etched appearance). Some rounded conchoidal fractures.	Equant. Highly rounded and spherical shapes.	95%
Feldspar	White/milky grains. Opaque, minor traces of cleavage,	Irregular fractures. Rough surfaces.	Equant. Highly rounded and spherical shapes.	5%
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Interpretations	
Textural maturity *i.e. have the grains been sorted and transported?*	Mature
Mineralogical maturity *i.e. have the grains been sorted and transported?*	Mature
Provenance (source of the sediment) *Proximal (deposited close to source) Distal (deposited a long way from source). Specific information e.g. bioclasts (beach).*	Distal, only one grain type.
Transportation history (use textural and mineralogical maturity) *What does the degree of sorting and the presence or absence of a muddy matrix tell you about processes operating when the sediment was deposited?*	
Processes operating *(fluvial, aeolian)* ***Flow velocity*** *(low flow velocity, high flow velocity, changing flow velocity).*	Wind blown (ablated and etched surface on grains), high flow rate
Sediment name	
Sediment names should summarise all the key features of the sediment as briefly as possible e.g. "well-sorted, mineralogically mature, medium sand"	Well-sorted, texturally and mineralogically mature coarse sand.