


LGP Baseline Measurements 09/10 Season

General Site Description

Site Name: Koettlitz Glacier Margin		
		
Photo 1: Glacier margin ponds on NW margin of Koettlitz Glacier, looking west.		
Geographical coordinates <i>(for KO81B camp 1 on NW edge of glacier)</i>	Latitude and Longitude S 78 18.266 E 163 35.937	Note if from GPS or Not GPS GPS.
Elevation:	510 m asl	GPS
Slope:	Degrees: 0 – 20°	Estimated
Date (s) visited: 7 – 14 Jan 2010		
Aspect: SE facing moraine, gentle slope		
Samples taken? Yes		
Photos taken? Yes		
Aerial Photos available? Yes		
Notes taken by: Jenny Webster-Brown (University of Canterbury)		

Soil Parameters

Geomorphological characteristics	<input type="checkbox"/> Pro-Glacial <input type="checkbox"/> Nival - Chionophilous <input type="checkbox"/> Periglacial <input type="checkbox"/> Fluvial <input type="checkbox"/> Coastal <input type="checkbox"/> Fell-Field	<input type="checkbox"/> Slope <input type="checkbox"/> Plateau <input type="checkbox"/> Valley <input type="checkbox"/> Landslide <input type="checkbox"/> Scree slope <input type="checkbox"/> Rock wall
Rock Lithology	<input type="checkbox"/> Siliceous rock <input type="checkbox"/> Calcareous rock	Rock type: Basalt, scoria, basement gneiss(?) and intrusive.
Soil Typology	<input type="checkbox"/> Soil Absence <input type="checkbox"/> Soil Presence	<input type="checkbox"/> Mineral soil <input type="checkbox"/> Organic soil

Surface Lithology	<input type="checkbox"/> Outcropping Rock <input type="checkbox"/> Loose Material <input type="checkbox"/> Glacial <input type="checkbox"/> Fluvial <input type="checkbox"/> Eolic <input type="checkbox"/> Coastal <input type="checkbox"/> Scree Slope, Debris
Surface Texture	30 % Blocks ($\varnothing > 25\text{cm}$) 40 % Pebbles ($5\text{cm} < \varnothing < 25\text{cm}$) 10 % Gravel ($0.2\text{cm} < \varnothing < 5\text{cm}$) 20 % Sand and finer material ($\varnothing < 0.2\text{cm}$)

Vegetation

Plants and Lichens:	Orange lichens seen, hyperlithic communities observed under quartz rocks (cyanobacteria-lichen-moss consortia)
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Fauna

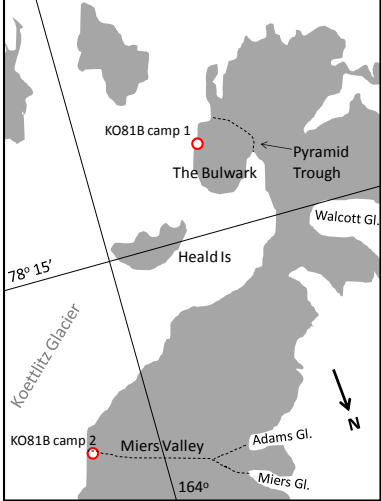
Mammals	Dead seal in high valley on Bulwark (S78 18.192, E163 32.457)
Birds	None seen
Invertebrates	Rotifers seen in pond waters

Glacial

Ablation/accumulation	N/A
Ice temperature	N/A
Snow pit measurements	N/A

Aquatic Non-Marine Systems

<p>Types of water bodies:</p> <p>Cryoconites on the glacier surface, glacier margin ponds along edge of Koettlitz Glacier (see Photo 1), and terrestrial ponds inland.</p>	<p>Photo 2. Terrestrial pond in high valley on the Bulwark, showing remnant ice plug in base of pond (foreground).</p> 
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<p>Sketch/map of water bodies and immediate catchment. Include orientation.</p> <p>In vicinity of KO81B camp 1, water bodies occur along margin of glacier, and cryoconites occur in patches over glacier surface. Terrestrial ponds occur inland from glacier in low points on W & S side of the Bulwark.</p>	
<p>Size and depth: Cryoconites <50cm diameter, glacier margin ponds; from 5m to km in length, Terrestrial ponds usually 1-10m diam., but some larger (e.g. 30 x100m).</p>	<p>Estimate or actual: measured</p>
<p>Inflows and outflows (for non running systems): Glacier margin ponds fed by glacial melt, or melt from ice-cored terrain. Terrestrial ponds fed by snowbank melt.</p>	
<p>Duration and spatial distribution of free water: Semi permanent (?) on glacier margin. Terrestrial ponds may be shorter lived (<5 – 10 yrs?), smaller ponds may even be seasonal. Cryoconite age unknown.</p>	
<p>Evidence of water level variation? Yes - evidence includes discoloured rock, salt precipitation and dried cyanobacterial mat on soil surface around terrestrial ponds and glacier margin ponds</p>	
<p>Isolated habitat or part of a connected network? Terrestrial ponds isolated, glacial ponds connected via glacier or glacier edge flows.</p>	
<p>Proximity to other aquatic systems: Spacing between ponds 200m to several km</p>	
<p>Any sign of salt or vegetation accumulation around margins? Yes (see above)</p>	
<p>Range of levels over season (peg or otherwise reference the margin): Not measured.</p>	
<p>Water sources: Terrestrial ponds</p>	<ul style="list-style-type: none"> - 100% Snow - % Glacier - % Non-glacial Ice - % Other
<p>Water sources: Glacial margin ponds and cyroconites ponds</p>	<ul style="list-style-type: none"> - 0% Snow - 100% Glacier - % Non-glacial Ice - % Other
<p>Ice cover: glacial margin ponds (to be recorded at intervals over the season)</p>	<ul style="list-style-type: none"> - Mixed ice cover in terrestrial ponds: some open, some partially frozen (possibly to base?) - Glacier margin ponds: permanent ice with thin ice or no cover on moat (typically 80% ice cover). Cryoconites, ice covered 100%. - Thickness: 1-5?m in centre, 10-20cm on moat or cyroconites.

	<ul style="list-style-type: none"> - Transparency: permanent ice = opaque with some snow cover, moat ice transparent.)
Water properties. (to be recorded at intervals over the season)	<ul style="list-style-type: none"> - Clarity: Close to 100% (estimated) - Colour: None - Foams : Seen in ponds/atreams with cyano mats - Conductivity (measured): Glacial ponds: 16 – 100 uS/cm, terrestrial ponds 175 - 118,000uS/cm - Temperature (measured): -3.5 – 4.3°C
Bed characteristics	<ul style="list-style-type: none"> - Substrate (%) <ul style="list-style-type: none"> o Cobbles 30% o Gravel 40% o Sand 20% o Silt 10% - Vegetated (% cover) Variable 0 - 100% <ul style="list-style-type: none"> o cyanobacterial mats <ul style="list-style-type: none"> ▪ Colour – orange, green/black, pink ▪ Thickness – >5mm (thick) ▪ Gross morphology (cohesive, muciligenous, leathery) o Encrusting: No o Mosses - Yes o green algae - Yes
Others	Animal observation: Rotifers observed in one glacial margin pond.
Sample collection and preservation	Samples of water, sediment, salt and mats were collected as part of our research. Chemical and biological analysis is being undertaken

Aquatic Marine Systems N/A

Environmental (AWS): Bratina Is AWS is the closest.