Ruwai Grounding Manual

→ Bill of materials to bring:

- ☐ cable ties
- ☐ 2-3 hose clamps + tool to tighten
- ☐ wire stripper
- ☐ cable cutter
- ☐ wire terminal (ring or ferrule?)
- ☐ crimping plier for wire terminal

Grounding option 1:

- ☐ ~3 m rubber cable
- ☐ cable gland
- ☐ battery drill
- ☐ drill bit in right diameter for cable gland
- ☐ tools to tighten cable gland

Grounding option 2:

- ☐ ~3 m single wire, flexible type
- ☐ self amalgamating tape, or
- ☐ non-corrosive silicon

→ Grounding tests with the seismic stations in Zackenberg revealed that data quality is substantially improved by grounding the sensor plug. Figure 1 shows the NUK_L seismic station where the same grounding strategy should be applied. Figure 2 shows the Ruwai datalogger and describes where to find the sensor plug (orange keying, bigger diameter) and the power plug (cyan keying).

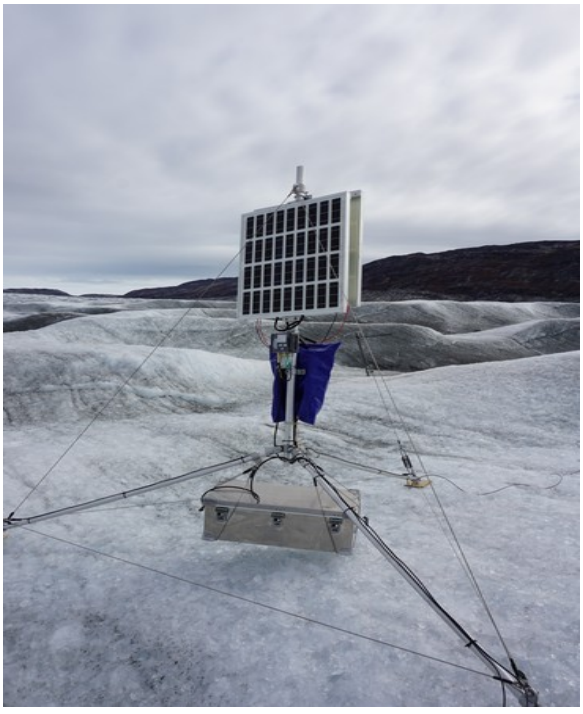

Figure 1: NUK_L seismic station is located next to the Promice NUK-L weather station. Inside the blue plastic cover the Ruwai datalogger is situated. Open the string and the velcro to access the datalogger.

Figure 2: Pelicase in 'portrait'-mounting orientation. Red encircled plug with orange keying feature is the sensor plug. Power plug (cyan keying feature) is on top of the Pelicase. The sensor plug has a bigger diameter than the power plug.

→ Open the Pelicase and check the LCD display on the front panel inside if the right status messages are shown. Status messages are listed in the appendix of the cardXchange manual.

→ Generally, the plugs are unplugged by pulling and rotating the plug ring counter-clockwise. Unplug the power plug and then the sensor cable.

→ Wrap the unstripped wire ends (~10 cm) around the sensor plug and fix it properly. In the case of the Zackenberg dataloggers a stiff wire was used to fix the electric wire (Fig. 3). However, ideally use hose clamps, and if nothing else is available then use cable ties. Make sure that you can still rotate the ring of the sensor plug.

Figure 3: The unstripped ends of the grounding wire are wrapped around the sensor plug and are fixed here with a stiff wire.

→ Since the NUK_L seismic station is situated on ice the only reasonable grounding point is the negative pole of the power supply batteries. The critical part is to lead the grounding wire into the battery box without destroying the watertightness of the battery box.

→ Grounding option 1 (preferred):
Use a full rubber cable (~3 m) without any fabric strings or wire wrapping to avoid water creeping inside the cable. Cut the cable in the right length so that it can be guided with a little slack along the tripod to the battery box. Install the for the grounding cable right dimensioned cable gland on the battery box. Ideally, crimp on an optimum wire terminal (ring or ferrule?) on the grounding cable to properly connect to the negative battery pole.

→ Grounding option 2 (fast one):
Use a single wire (~2 mm², 3 m). Ideally rather a flexible wire type with multiple strings, than one with a single stiff wire. Cut the wire in the right length so that it can be guided with a little slack along the tripod to the battery box. Lead the grounding wire in to the battery box through the same cable gland used for the power supply cable. Bring some sealing agent, ideally a self amalgamating tape or a non corrosive silicon, to assure a watertight bonding of the power supply cable and the grounding wire led through the cable gland.

→ Connect the sensor plug and power up the Ruwai datalogger by connecting the power plug on top of the Pelicase.

→ Give it a bit of time (~1 min) for the software to start and to synchronize with the GPS time. Open the Pelicase and check the status informations on the LCD inside . Check the GPS fix status and that the file size of the recorded files increases between the status display loops. The whole LCD sequence after powering up is described in the appendix of the cardXchange manual.

→ If the Ruwai datalogger gets stuck after start-up message ‘Hello, ruwai is speaking.’, check if the microSD card is inserted properly.

→ If status informations are displayed, close the Pelicase properly and tighten the strap. Close the tarp with the velcro and tighten the string.

→ In the case that the LCD display doesn’t show any status informations after a few (~5) ‘powering up’-attempts, remove the datalogger and take it home with you. If you bring home the datalogger, please be sure to seal the open sensor and power plug.