Raw_GPR_Data.zip:

Level 0 raw data from the Ground Penetrating Radar (GPR). The raw GPR profiles are in the manufacturer's format used by GPR practitioners. These can be opened with a variety of commercially available or free processing packages. An example of a commercially available software is ReflexW (Sandmeier Scientific Software, Karlsruhe, Germany). An example of a free software package is MATGPR (http://users.uoa.gr/~atzanis/matgpr/matgpr.html). The dataset being archived here was processed with ReflexW, Sandmeier Scientific Software, Karlsruhe Germany © 2014 (http://www.sandmeier-geo.de/GPR.html).

There are three files for each trace with the corresponding extensions:

File Extension	Description of File Type
Cor	GPS coordinates
RAD	GPR data header file (I.e. System & survey parameters)
RD3	Raw GPR data

Note: Within each RAW folder, a designation of "hires" in the file name indicates that the measurements were taken in high resolution. High resolution surveys were done when comparing point by point measurements from GPR with ALT probe measurements.

For more information on this product please refer to the Chen et al., (2015) paper.

Chen, A., Parsekian A., Schaefer K., Jafarov E., Panda S., Liu L., Zhang T., and Zebker H: 2015. "GPR-derived measurements of active layer thickness on the landscape scale with sparse calibration at Toolik and Happy Valley, Alaska."

Files with ".cor" extension:

Column Number	Variable	Unit	Description
1	Trace number	N/A	N/A
2	Date	YYYY-MM-DD	Date
3	GPS Time	HH:MM:SS	Time Zone: AKDT (UTC -8 hours)
4	Latitude 1	Degrees	North latitude in a geographic projection and WGS 84 datum.
5	Latitude 2	North	N = North
6	Longitude 1	Degrees	West longitude in a geographic projection and WGS 84 datum.
7	Longitude 2	West	W = West
8	Elevation	meter (see column 9)	Elevation

9	Elevation Units	M = meter	Meter
10	PDOP	N/A	GPS precision indicator, "positional dilution of precision"

Files with .rad extension:

This is a header file to be read by the GPS processing software.

SAMPLES none FREQUENCY Samples per second FREQUENCY STEPS none SIGNAL POSITION nanoseconds RAW SIGNAL POSITION samples DISTANCE FLAG meter TIME FLAG nanoseconds PROGRAM FLAG none EXTERNAL FLAG none TIME INTERVAL seconds DISTANCE INTERVAL meters OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACKS none STACKING TIME seconds	***************************************	TT 1
FREQUENCY FREQUENCY STEPS none SIGNAL POSITION nanoseconds RAW SIGNAL POSITION DISTANCE FLAG meter TIME FLAG none EXTERNAL FLAG none EXTERNAL FLAG TIME INTERVAL DISTANCE INTERVAL DISTANCE INTERVAL OPERATOR CUSTOMER SITE none ANTENNAS ANTENNA ORIENTATION ANTENNA SEPARATION TIME WINDOW STACKS STACK EXPONENT none STACK EXPONENT none	Variable	Units
FREQUENCY STEPS SIGNAL POSITION RAW SIGNAL POSITION DISTANCE FLAG meter TIME FLAG PROGRAM FLAG EXTERNAL FLAG INONE EXTERNAL FLAG DISTANCE INTERVAL DISTANCE INTERVAL OPERATOR CUSTOMER SITE ANTENNAS ANTENNAS ANTENNA ORIENTATION ANTENNA SEPARATION COMMENT TIME WINDOW STACKS STACK EXPONENT none none none none SITE none none TIME WINDOW nanoseconds STACK EXPONENT none	SAMPLES	none
SIGNAL POSITION RAW SIGNAL POSITION Samples DISTANCE FLAG meter TIME FLAG nanoseconds PROGRAM FLAG none EXTERNAL FLAG TIME INTERVAL Seconds DISTANCE INTERVAL Meters OPERATOR CUSTOMER SITE none ANTENNAS none ANTENNAS ANTENNA ORIENTATION ANTENNA SEPARATION TIME WINDOW TIME WINDOW STACKS TACKS TACK EXPONENT none	FREQUENCY	Samples per second
RAW SIGNAL POSITION DISTANCE FLAG meter TIME FLAG nanoseconds PROGRAM FLAG none EXTERNAL FLAG TIME INTERVAL DISTANCE INTERVAL OPERATOR CUSTOMER SITE none ANTENNAS ANTENNA ORIENTATION ANTENNA SEPARATION TIME WINDOW TIME WINDOW STACKS STACK EXPONENT none meters meters none meters meters mone meters mone meters mone	FREQUENCY STEPS	none
DISTANCE FLAG meter TIME FLAG nanoseconds PROGRAM FLAG none EXTERNAL FLAG none TIME INTERVAL seconds DISTANCE INTERVAL meters OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none	SIGNAL POSITION	nanoseconds
TIME FLAG nanoseconds PROGRAM FLAG none EXTERNAL FLAG none TIME INTERVAL seconds DISTANCE INTERVAL meters OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	RAW SIGNAL POSITION	samples
PROGRAM FLAG none EXTERNAL FLAG none TIME INTERVAL seconds DISTANCE INTERVAL meters OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	DISTANCE FLAG	meter
EXTERNAL FLAG none TIME INTERVAL seconds DISTANCE INTERVAL meters OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	TIME FLAG	nanoseconds
TIME INTERVAL seconds DISTANCE INTERVAL meters OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	PROGRAM FLAG	none
DISTANCE INTERVAL meters OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	EXTERNAL FLAG	none
OPERATOR none CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	TIME INTERVAL	seconds
CUSTOMER none SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	DISTANCE INTERVAL	meters
SITE none ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	OPERATOR	none
ANTENNAS none ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	CUSTOMER	none
ANTENNA ORIENTATION none ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	SITE	none
ANTENNA SEPARATION meters COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	ANTENNAS	none
COMMENT none TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	ANTENNA ORIENTATION	none
TIME WINDOW nanoseconds STACKS none STACK EXPONENT none	ANTENNA SEPARATION	meters
STACKS none STACK EXPONENT none	COMMENT	none
STACK EXPONENT none	TIME WINDOW	nanoseconds
	STACKS	none
STACKING TIME seconds	STACK EXPONENT	none
	STACKING TIME	seconds

LAST TRACE	none
STOP POSITION	meters
SYSTEM CALIBRATION	none
START POSITION	meters
SHORT FLAG	none
INTERMEDIATE FLAG	none
LONG FLAG	none
PREPROCESSING	none
HIGH	none
LOW	none
FIXED INCREMENT	meters
FIXED MOVES UP	none
FIXED MOVES DOWN	none
FIXED POSITION	meters
WHEEL CALIBRATION	samples
POSITIVE DIRECTION	none

Files with .rd3 extension:

GPR software is required to view this file.