

TITLE: Temperature and Radiation Observation for Alaskan Shrub Tundra

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DATA SET OVERVIEW:

This data set includes observations of temperature and incident radiation for eight transects near the Nimiutuk River on the North Slope of Alaska. The measurements were taking using HOBO sensors and data loggers. The instruments were deployed in June of 2008 and retrieved in September 2010, and recorded hourly observations for the duration of the measurements period. Transect locations are shown in the table below.

| transect | Nimiuktuk River, Brooks Range | | | |
|----------|-------------------------------|---------|-----------|---------|
| | latitude | dec min | longitude | dec min |
| 1 | 68 | 29.35 | 159 | 54.86 |
| 2 | 68 | 21.376 | 159 | 54.745 |
| 3 | 68 | 21.602 | 159 | 54.755 |
| 4 | 68 | 21.595 | 159 | 54.799 |
| 5 | 68 | 15.507 | 159 | 55.27 |
| 6 | 68 | 15.455 | 159 | 55.074 |
| 7 | 68 | 15.485 | 159 | 55.158 |
| 8 | 68 | 15.383 | 159 | 55.085 |

---INSTRUMENT DESCRIPTION:

HOBO Pendant[®] Temperature/Light Data Logger 64K - UA-002-64

A miniature two-channel temperature and relative light level data logger, this 64K model is waterproof and value-priced for deployment in indoor, outdoor, and underwater applications measuring relative light levels and ambient temperatures. This 64K model stores approximately 52K of 10-bit readings.

Measurement range

Temperature: -20° to 70°C (-4° to 158°F)

Light: 0 to 320,000 lux (0 to 30,000 lumens/ft²)

Accuracy:

Temperature: ± 0.53°C from 0° to 50°C (± 0.95°F from 32° to 122°F), see Plot A

Light intensity: Designed for measurement of relative light levels, see Plot D for light wavelength response

Resolution:

Temperature: 0.14°C at 25°C (0.25°F at 77°F), see Plot A

Drift: Less than 0.1°C/year (0.2°F/year)

Response time:

Airflow of 2 m/s (4.4 mph): 10 minutes, typical to 90%

Water: 5 minutes, typical to 90%

Time accuracy: ± 1 minute per month at 25°C (77°F), see Plot B

Operating range

In water/ice: -20° to 50°C (-4° to 122°F)

In air: -20° to 70°C (-4° to 158°F)

---DATA FORMAT:

Excel spreadsheet *.xls file

TX Zcm Time: Time for transect X at depth Z (see Data Remarks for explanation of depths).

TX Zcm Temp F: Temperature Fahrenheit for transect X at depth Z.

TX Zcm Temp C: Temperature Celsius for transect X at depth Z

TX Zcm Light: Light (lux) of transect X at depth Z.

DATA REMARKS:

There were 2 hobos installed at each of 8 transects, 1 hobo at -5cm (belowground) and 1 hobo at +20cm (above ground), both sensing temp and light at 1-hr intervals.

There were an additional 2 hobos installed in windblown areas, also at 20cm.

The only of the transect hobos not recovered was T6 at 20 cm. I think it got munched by passing game.

The T6 buried hobo got unearthed after about a month of deployment, and that is evident in the light data for that hobo.

The T7 20cm hobo had a broken stick and was laying in the tussock grass.

The control (windblown) hobo for T1-4 had been chomped on by something and was retrieved, but unreadable.

The control (windblown) hobo for the T5-8 transects had been knocked over a couple months after deployment and continued to log light and temp at the ground surface.

Nearest weather station is Noatak Village, and Ken has air temp covering this record that can be provided.