

# Ice Temperature Measurement using sealed temperature sensors

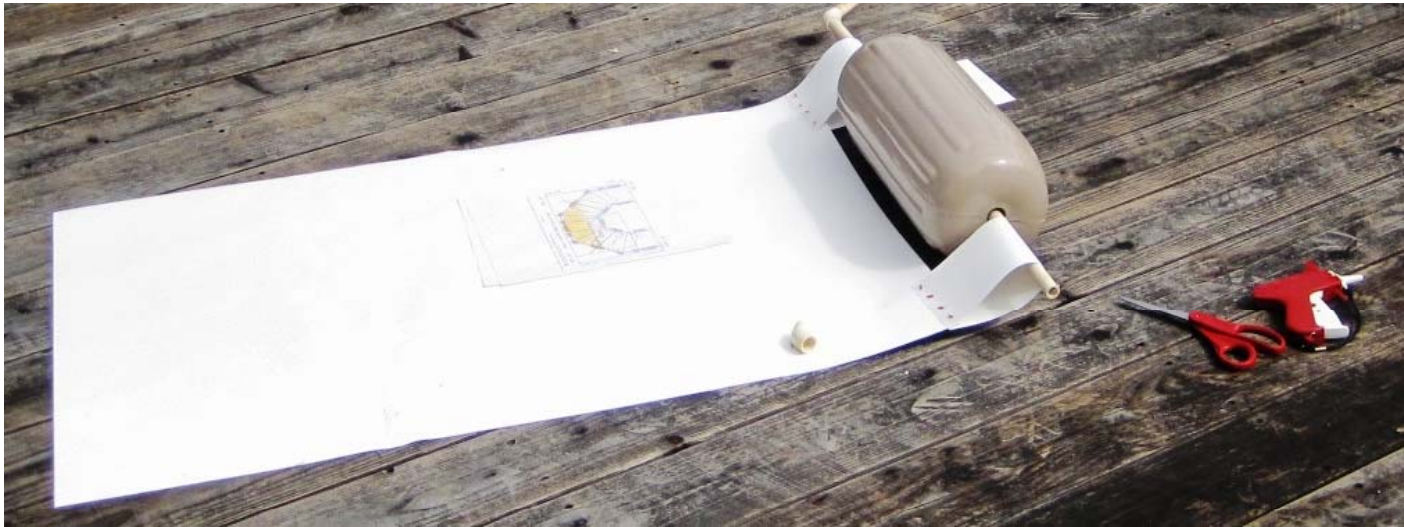


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# Functional Objectives



Pilot project to...

- Obtain albedo and weather data
- Obtain albedo and weather data with reflective material

# Initial Testing

Testing on Miquelon Lake in Alberta, Canada  
Satish Chetty, Leslie Field, Prof. Christian Haas  
and Justin Beckers



# Next Steps



# Back to Basics



- Rethink
- Redesign
- Redo

# Hardware

Buoys

Tripod and hardware

Shelter Box

CPU (TS-7260, TS-BAT, relays)

Iridium

Weather Station

Albedometer

Power System (solar panels)

Temperature Acquisition Cables

# Temperature Acquisition Cables (TAC)



- No need to A/D convertor
- RS232
- 450 meters (1500 ft) long
- User defined sensor spacing
- Robust
- Polar Weather rated

# Temperature Acquisition Cables (TAC)

| Date             | Time (PST) | TAC 1 (outside the Ice) | TAC 2 (outside the Ice) | TAC 3 (outside the Ice) | TAC 4 (outside the Ice) | TAC 5  | TAC 6 | TAC 7 | TAC 8 | TAC 9  | TAC 10 | TAC 11 | TAC 12 | TAC 13 | TAC 14 | TAC 15 | TAC 16 | TAC 17 | TAC 18 | TAC 19 | TAC 20 | TAC 21 |
|------------------|------------|-------------------------|-------------------------|-------------------------|-------------------------|--------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Sun, 30 Jan 2011 | 17:06:58   | -3.19,                  | -3.00,                  | -3.00,                  | -2.12,                  | -0.12, | 0.00, | 0.00, | 0.06, | 0.00,  | -0.06, | 0.06,  | 0.00,  | 0.06,  | 0.50,  | -4.31, | -2.25, | -1.50, | 0.06,  | -0.06, | 0.25,  | -0.06, |
| Sun, 30 Jan 2011 | 18:16:36   | -4.19,                  | -3.94,                  | -4.06,                  | -3.00,                  | -0.19, | 0.00, | 0.00, | 0.06, | 0.00,  | -0.06, | 0.06,  | 0.00,  | 0.00,  | 0.50,  | -5.25, | -3.62, | -2.12, | 0.06,  | -0.06, | 0.19,  | -0.06, |
| Sun, 30 Jan 2011 | 19:16:35   | -7.50,                  | -7.38,                  | -7.62,                  | -5.44,                  | -0.19, | 0.00, | 0.00, | 0.06, | 0.00,  | -0.06, | 0.06,  | 0.00,  | 0.00,  | 0.50,  | -9.38, | -5.38, | -3.75, | 0.06,  | -0.06, | 0.25,  | -0.06, |
| Sun, 30 Jan 2011 | 20:16:40   | -3.94,                  | -4.31,                  | -4.25,                  | -3.25,                  | -0.19, | 0.00, | 0.00, | 0.06, | -0.06, | -0.06, | 0.06,  | 0.00,  | 0.00,  | 0.50,  | -5.75, | -4.12, | -2.38, | 0.06,  | -0.06, | 0.19,  | -0.06, |
| Sun, 30 Jan 2011 | 21:16:41   | -4.81,                  | -4.75,                  | -4.94,                  | -3.88,                  | -0.19, | 0.00, | 0.00, | 0.06, | 0.00,  | -0.06, | 0.06,  | 0.00,  | 0.00,  | 0.50,  | -6.06, | -4.69, | -2.75, | 0.06,  | -0.06, | 0.19,  | -0.06, |

Done



# Challenges



# Changes



- Tool less
- Flexible Solar panel
- Redundant PS
- Single Buoy
- Easy Deployment
- Tilt Sensor
- Local Wifi Mesh
- Lighter



# Questions

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