SIMBR

Snow Ice Mass Balance Array



What is SIMBA ?

- SIMBA is an autonomous snow and ice data collection unit.
- It can identify the interface between the water/ ice/snow/air through temperature profiling and heat cycle monitoring.
- It has been used in the Arctic and Antarctic for over 10 years.
- Used in climate change research analysing polar sea ice, e.g. used in the Mosaic Project .
- It provides a cost effective solution for autonomous remote data collection

AIR	
· .	• • •
	Optional suppor deployme
ICE on water or land	
WATER sea or fresh	





Why use SIMBA?

- Novel active system provides enhanced real time snow/ice temperature gradient data with 2cm resolution.
- Low power proven 2 year battery life.
- Temperature sensor resolution 0.0625 °C
- Accelerometer & magnetometer system detects movement such as ice break up.
- Barometer & air temperature for weather indication.
- Data remote configuration via iridium or GSM (4G)



Snow-pack analysis

- Opportunity to apply the technology for use in a terrestrial environment identified through personal interest. (Skiing/ Mountaineering/Climbing)
- We set out to develop this equipment for avalanche forecasters helping them mitigate the risks of accumulated snow.



Proof of concept

- Several seasons of verified with help from Dr Blair Fyffe and the SAIS (Scottish Avalanche Information Service)
- Can determine wet or dry snow.

- Manual snow pits compared against autonomous temperature profiling.
- Snow level generated by model from raw data







Product development

- Maritime environment challenges:
- Rime ice
- High winds
- Rapid thaw

- Modular
- Different sizes available
- Easier to transport

- Material
- Thermal melt reduced
- Weight reduced by 60%
 - Structure
 - Reduce rime ice
 - Improve strength

SAMS ENTERPRISE

• System

- Used for 2 winter seasons
- Real time data
- Safer data collection
- User interface tailored

• Assembly

- Simplified process
- Optimised parts

Applications

- Snow
- Lake ice
- River ice
- Sea ice
- Permafrost
- Flood management
- Many more applications possible





Please feel free to ask any questions about the presentation, thanks for listening.

If you are interest in SIMBA for your project please get in touch at:

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SIMBA