**Mica Weather Board**

*Micro-Weather Station*

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### Design Goals

- Sense events relevant to scientists
- Calibrated sensor with meaningful units
- Miniature size to prevent disturbing existing habitats
- Low Power Operation: Sensors must last at least one field season (approximately 9 months)
- Reliable and repeatable operation
- Low Cost
- Collaboration between UCB, UCLA, and Crossbow

### Revision 1.0

- Analog + Digital Sensors
- Onboard ADC
- Digital Sensor Interface
- Low Power Operation
- Coexists with Other Sensor Boards via Enable Protocol

### Revision 1.5

- All Digital, Calibrated Sensors
- Power Conditioning
- 3V sensor support
- 5V sensor support
- Low Power Operation
- Coexists with Other Sensor Boards via improved Enable Protocol

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### Deployments

**Great Duck Island**

- Breeding area for North Atlantic seabird: Leach’s storm petrel
- Biologists are very interested in knowing:
  - Occupancy of the burrow during incubation
  - Changes in environmental conditions over 7 month breeding season
  - Differences in the micro-climate of nesting vs. non-nesting burrows
- First long term wireless sensor network application

**UC Botanical Gardens**

- Botanical Garden and Redwood Grove
- Biologists are very interested in knowing:
  - Microclimate variations along elevation of redwood trees
  - Microclimate variation along transects of the botanical garden
- Local proving ground and testing area for wireless sensor networks

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### Enclosures

- Acrylic
  - RF Transparent
  - IR Transparent
- Breathable
- Parylene protective sealant on electronics

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### Future Work

- Deploy Weather Board r1.5 at:
  - UC Botanical Gardens
  - UC James Mountain Reserve (with UCLA)
  - Intel Research Lab Monitoring Application
  - Second deployment at Great Duck Island
- Create smaller customized boards for use with the Mica Dot wireless sensor platform
- Size of a quarter
- Deploy in small spaces
- eg: petrel burrows on Great Duck Island
- Design, build, and evaluate new enclosures
- Integrate into the Generic Sensor Kit
- Easy deployment of wireless sensors with software support for scientists

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For more information: [http://www.greatduckisland.net](http://www.greatduckisland.net)
[http://webs.cs.berkeley.edu](http://webs.cs.berkeley.edu)