SEAMONSTER: A Smart Sensor Web in Southeast Alaska

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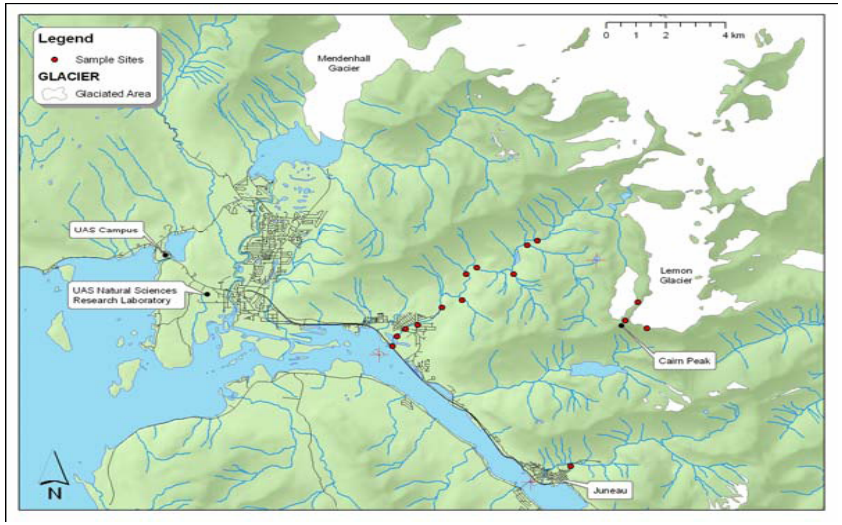
Objective

We will construct a smart sensor web in Southeast Alaska to serve four broad research applications-- Science, telecommunications, education and monitoring--with three technological emphases: (1) Network adaptation in response to acquired data and detected events, (2) Network nodes that self-modify their power management strategy, and (3) Flexibility and adaptability to accommodate new sensors, applications, and investigators. The network will return data on glacier dynamics and mass balance, watershed hydrology, coastal marine ecology, and human impact/hazards monitoring. Additional features include a semi-closed network model that employs common communication standards to import data and export configuration directives, power-miserly nodes, redundant connectivity and a robust network transport protocol.



Lemon Glacier, Lemon Creek Watershed (SEAMONSTER Subnet)

Approach

We propose to integrate two synergistic technology development efforts at UAS and Vexcel Corporation to create SEAMONSTER, a semi-autonomous, semi-closed smart sensor web in Southeast Alaska. The UAS and Vexcel efforts provide a natural opportunity for constructive synthesis because both efforts capitalize on commercial technological advances in miniaturization and commensurate reduction in operating power. SEAMONSTER will be built from network nodes and micro-sensor clusters intercommunicating via wireless Ethernet protocol and returning data to a central Server.

Co-I's/Partners

- Dennis Fatland, Vexcel Corporation
- Eran Hood, Cathy Connor / University Alaska Southeast

Key Milestones

- Integrate and Test Sensors and Network in Lab Dec/2006
- Begin SEAMONSTER in the Lemon Creek watershed May/2007
- Expand SEAMONSTER with second subnet May/2008
- Expand SEAMONSTER with third Subnet May/2009

TRL_{in} = 4

Earth Science Technology Office