

*NEIGHBORHOOD ENVIRONMENTAL  
WATCH NETWORK*

at the

**UNIVERSITY OF ALASKA FAIRBANKS**

By Adrienne Orr, Loda  
Griffeth, and Wily Splain

## **PARTICIPANTS:**

- *Institute of Marine Science, UAF*  
*School of Fisheries and Ocean Science*
- *Rural Student Services, UAF*
- *Department of Electrical Engineering, UAF*
- *Alaska Department of Environmental Conservation*
- *Los Alamos National Laboratory*

## **SPONSORED BY:**

*Battelle-Pacific Northwest National Laboratory, Richland  
Washington*

# What is Radiation?

*Radiation* is the transmission of energy in the form of light, or radiant heat from a body as it undergoes internal changes.

*Ionizing Radiation* is a particle or wave high enough to eject a charged particle from an atom, creating an ion.

*Gamma Rays* are a form of ionizing radiation. They are high energy waves in the electromagnetic spectrum with no charge or mass, and are emitted from the nuclei of some elements undergoing a decaying process. Gamma rays are highly penetrating and are only stopped by several feet of lead, making them potentially harmful.

**RADIATION IS EVERYWHERE!!!!**

## **Why Monitor Radiation in Alaska?**

- In case of nuclear accidents and the resulting atmospheric fall-out.
- To establish a baseline level for gamma radiation to alert the community about sudden increases in radiation.
- To maintain long-term monitoring sites at the community level.

A person wearing a red parka and a fur hat is holding a rifle. They are standing in a field with a building in the background.

*Several factors regarding radiation have caused concern among many Alaskans*

- Russian Nuclear Reactors
  - Point Hope, AK
  - Fort Greely, AK
  - Amchitka, AK



Arctic Ocean

Barrow

ALASKA

CANADA

Bilbino

Point Hope

Fort Greely

RUSSIA

2173 km

Purcell Mtn

Seward Peninsula

Eagle Creek

Anchorage

GULF OF ALASKA

BERING SEA

PACIFIC OCEAN

Amchitka

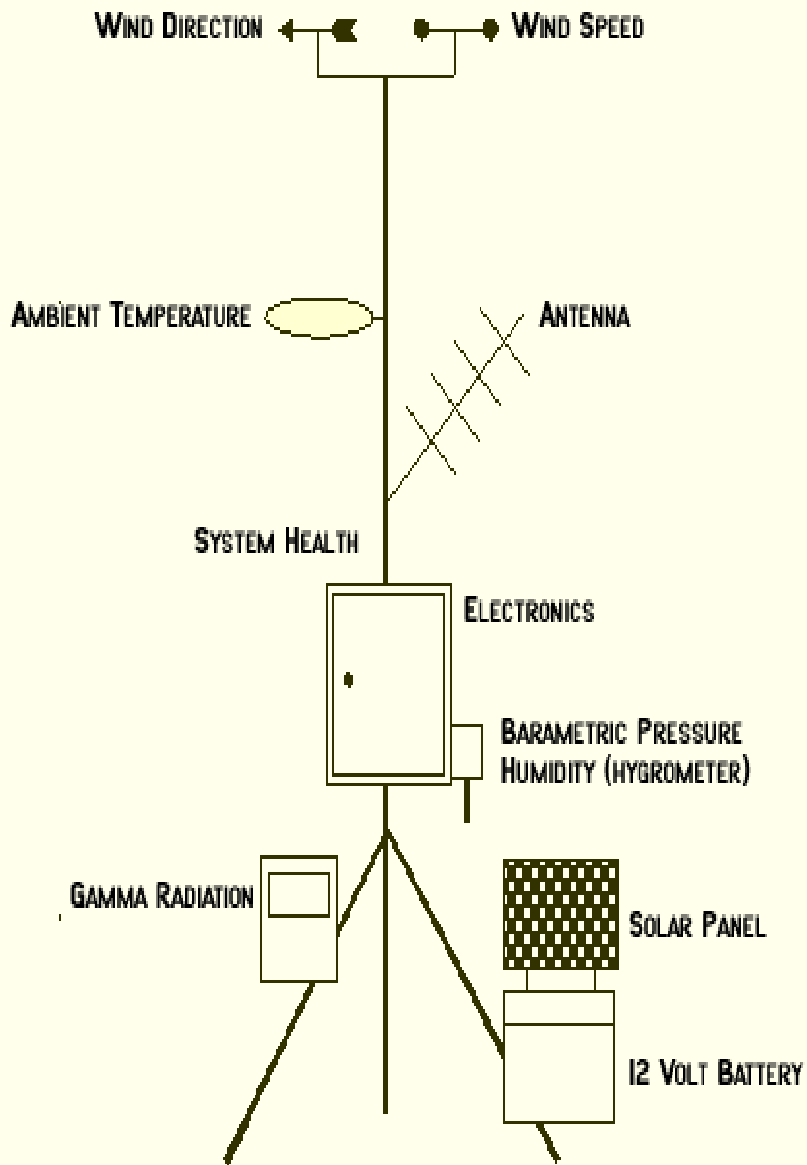
# What is NEWNET?

NEWNET is a network of meteorological and radiological monitoring stations, central data storage and processing systems.

Data products are wind direction and speed, ambient air temperature, atmospheric pressure, humidity, and *gamma radiation*.

Access to the data can be gained via the Internet or through an onsite readout located on the Data Collection Platform.

NEWNET stations in Alaska are located in Fairbanks, Seward, Nome, Point Hope, Barrow, and Kotzebue.



**DATA COLLECTION PLATFORM (DCP)**

**Typical NEWNET station**



Barrow, AK




# *American Indian Science and Engineering Society*

- **NEWNET at UAF is an AISES Project.**
- **Current AISES/NEWNET students:**

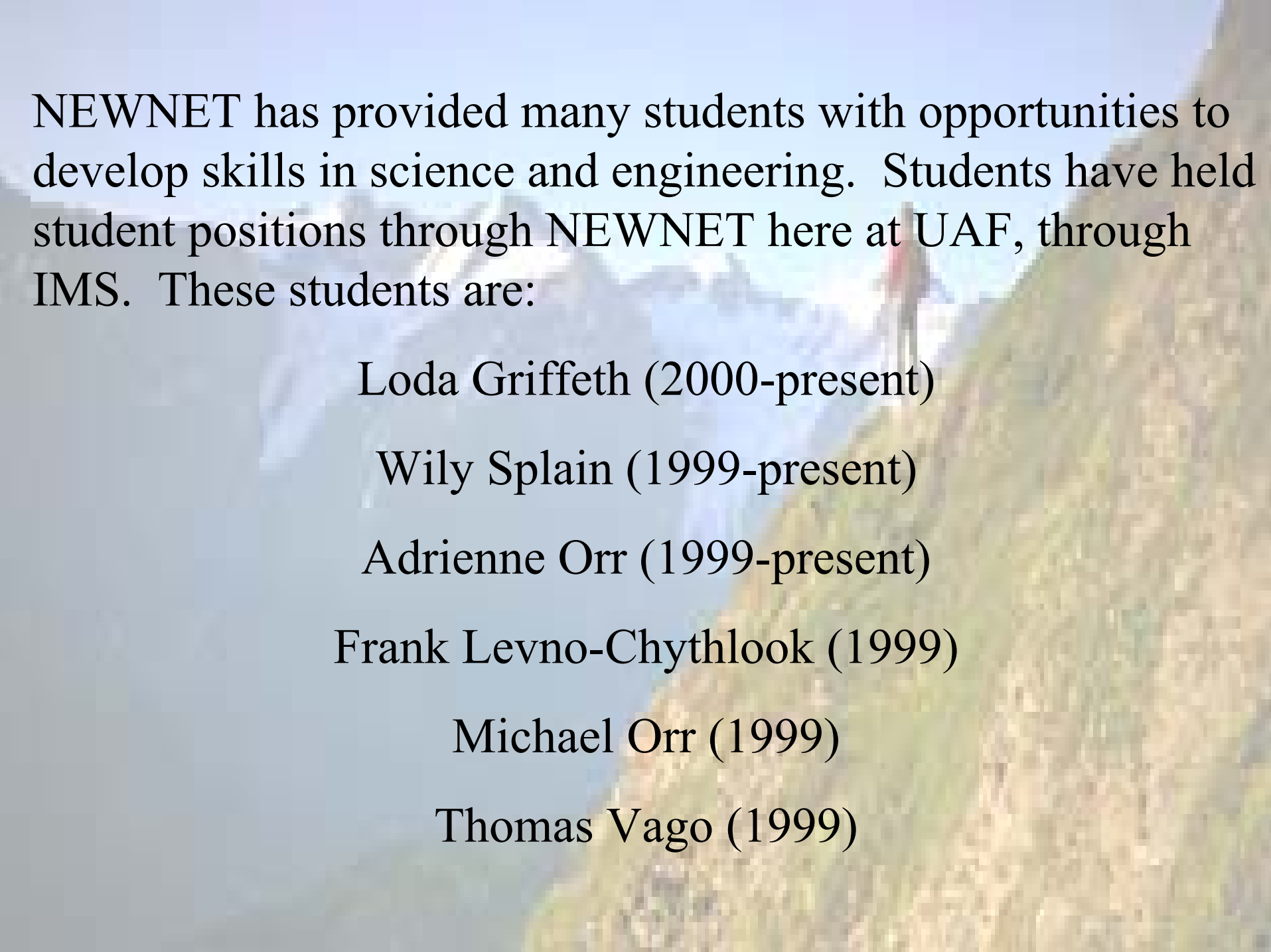
**Adrienne Orr, *Chemistry, AISES President 1999-2000***

**Wily Splain, *Electrical Engineering, AISES President  
2000-2001 and 2001-2002***

**Loda Griffeth, *Chemistry/ Fisheries***



NEWNET in Alaska was initiated as a project for Native Alaskan students to participate in atmospheric radiation monitoring and communication of the results.

A hiker is seen from behind, walking up a dirt trail on a mountain. The hiker is wearing a red jacket and a backpack. The trail is surrounded by green grass and leads towards a peak in the distance under a clear blue sky.

NEWNET has provided many students with opportunities to develop skills in science and engineering. Students have held student positions through NEWNET here at UAF, through IMS. These students are:

Loda Griffeth (2000-present)

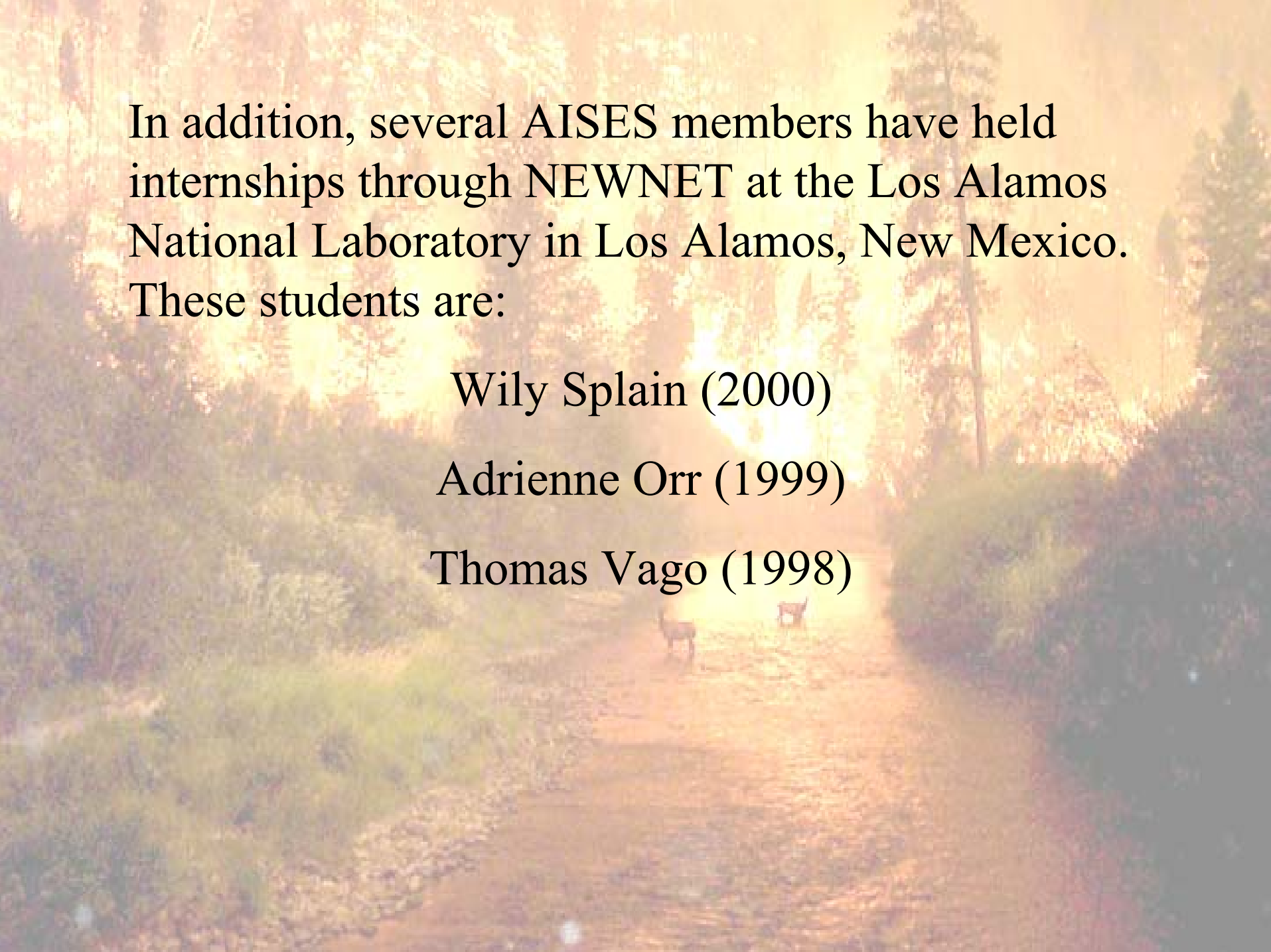
Wily Splain (1999-present)

Adrienne Orr (1999-present)

Frank Levno-Chythlook (1999)

Michael Orr (1999)

Thomas Vago (1999)



In addition, several AISES members have held internships through NEWNET at the Los Alamos National Laboratory in Los Alamos, New Mexico. These students are:

Wily Splain (2000)

Adrienne Orr (1999)

Thomas Vago (1998)

# NEWNET Projects

- Technical Presentations
  - Web Site
  - Station Maintenance
- Lichen Radionuclide Baseline Research
  - Outreach
- Ionizing Radiation Source Analysis
- International Nuclear Safety Program
  - Internship Opportunities

# Posters

## *Status of Transboundary Radiation in Alaska*

Adrienne Orr, **Chemistry Class, UAF, Spring '99**

A.Orr, Wily Splain, **AAAS-Arctic Science Council, Denali National Park, Fall '99**

A.Orr, W.Splain, **AISES Meeting, Fairbanks, Spring '00**

A.Orr, W.Splain, L. Griffeth, **Arctic Science Council, IARC, Spring '00**

Loda Griffeth, **Arctic Council, Barrow, Fall '00**

## *Neighborhood Environmental Watch Network*

W. Splain, **Undergraduate Presentations, Los Alamos National Laboratory, NM, Summer '00**

# Slide Presentations

- NEWNET System, Wily Splain, UAF 2000
- NEWNET Ionizing Radiation Source Analysis, Loda Griffeth, UAF 2000
- NEWNET at the UNIVERSITY OF ALASKA FAIRBANKS, Adrienne Orr, UAF 2000
- NEWNET at the UNIVERSITY OF ALASKA FAIRBANKS, Adrienne Orr, UAF 2001

# Web Site



[www.ims.uaf.edu/NEWNET](http://www.ims.uaf.edu/NEWNET)



# Station Maintenance



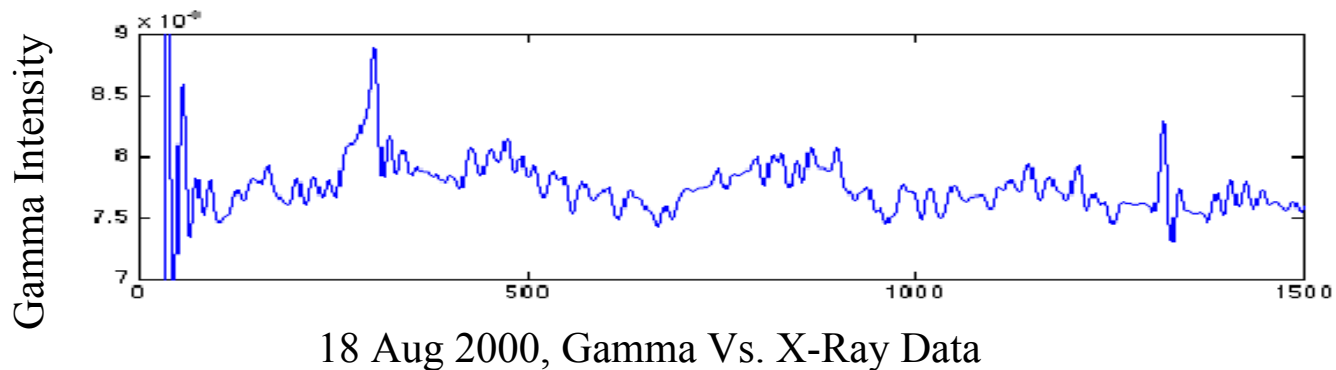
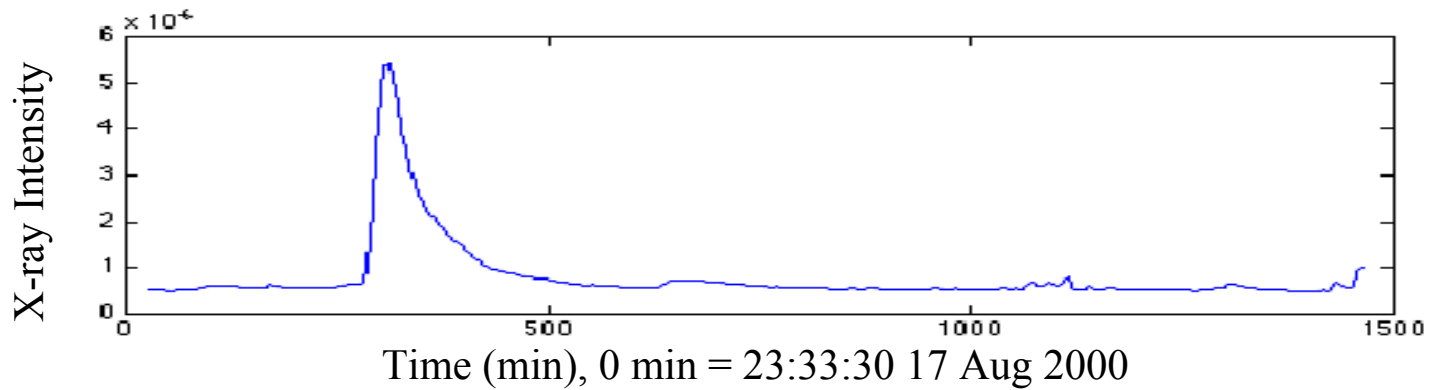
# Lichen Radionuclide Baseline Research



# Outreach



# Ionizing Radiation Source Analysis



# International Nuclear Safety Program



**Concerns about International Safety will become an important part of the NEWNET Program**

# Internship Opportunities

- Environmental Quality
- New Power Systems for Arctic Conditions
- Efficient Data Communication Systems
- International Collaboration
- Nuclear Safety Related Projects
- Solar Events
- Satellite Imagery
- Community Outreach