

Field Projects and Research Highlights for Jeff Nystuen 2004/2005

1. Spatial Averaging of Rain Generated Sound in the Ionian Sea, Greece: Jan-Apr 2004
An acoustic mooring with 4 PALs was deployed in 3 km deep water off the southwestern coast of Greece. Co-located radar measurements show the spatial distribution of rainfall over the listening area of the PALs. A good rainfall signal was received at all of the PALs, including the ones deployed at 1000 and 2000 meter depths. There appears to be a “Moment of Silence” associated with the end of the rain storms, suggesting that rainfall damps the sound-producing wind waves. (NSF sponsor)

2. High Frequency Studies of Ambient Sound in the Ocean: 2 deployments

May-Aug 2004 on the continental shelf in the Bering Sea. FOCI Mooring #2 maintained by NOAA PMEL (Stabeno, PI).

June 2004 – June 2005 at 45N, 150W (PAPA). This is a deep ocean mooring maintained by IOS, Canada (Vagle, PI). Data were successfully recorded.

I’m using these data to develop universal rainfall detection and measurement techniques and to develop the idea of “Ambient Sound Budgets.” Recent conference presentation. (Sponsor, ONR Ocean Acoustics)

3. Marine Mammal Detection (Sponsor NOAA NWFSC): 5 deployments

Haro Strait (May-June 2004), co-located with SIO instrument

Westport, WA (Apr-July 2005), co-located with SIO instrument

Cape Flattery, WA (Apr-June 2005) – 2 moorings deployed by APL

Haro Strait (May-Aug 2005) – 1 mooring deployed by APL

The PALs have been modified to try to automatically detect marine mammal vocalizations. The data have just been recovered and the initial results show successful recordings of orca vocalizations.

4. Ambient Sound Measurements on ARGO Floats: The PAL technology has been incorporated onto an ARGO float. The float is currently collecting data in the Bay of Bengal, India. It was deployed in Jan 2005 and is operating as planned. The acoustic data are consistent with satellite and climatology observations of rainfall and wind speed in the Bay of Bengal. (Sponsor NOPP – lead PI is Steve Riser, Oceanography).

5. Ambient Sound in Hurricanes: The PAL technology has been added to the D’Asaro mixed layer floats (MLFs). Unfortunately during the 2004 hurricane season both of the acoustic MLFs were lost at sea. (Sponsor ONR CBLAST).