

AMAT06RR (Alford) Cruise Plan, 5/21/06

The following is the cruise plan for leg 2 (AMAT06RR) of the "Internal Waves Across the Pacific" (IWAP) cruises, 6/2/2006-6/18/2006. The goal of the experiment is to track the long-range propagation of the internal tide as it travels hundreds of km north from Hawaii (Figure 1). The internal tide is a gravity wave just like surface waves seen breaking on beaches, except that it is 1000 m beneath the surface, has a 12-hour period instead of 10-20 seconds, and can be as high as a 30-story building.

The main purpose of this second cruise is to recover the moorings we deployed on leg 1. In addition, we will be using Seasoar, the Pinkel sonar and the shipboard CTD to measure these waves as they travel and eventually break.

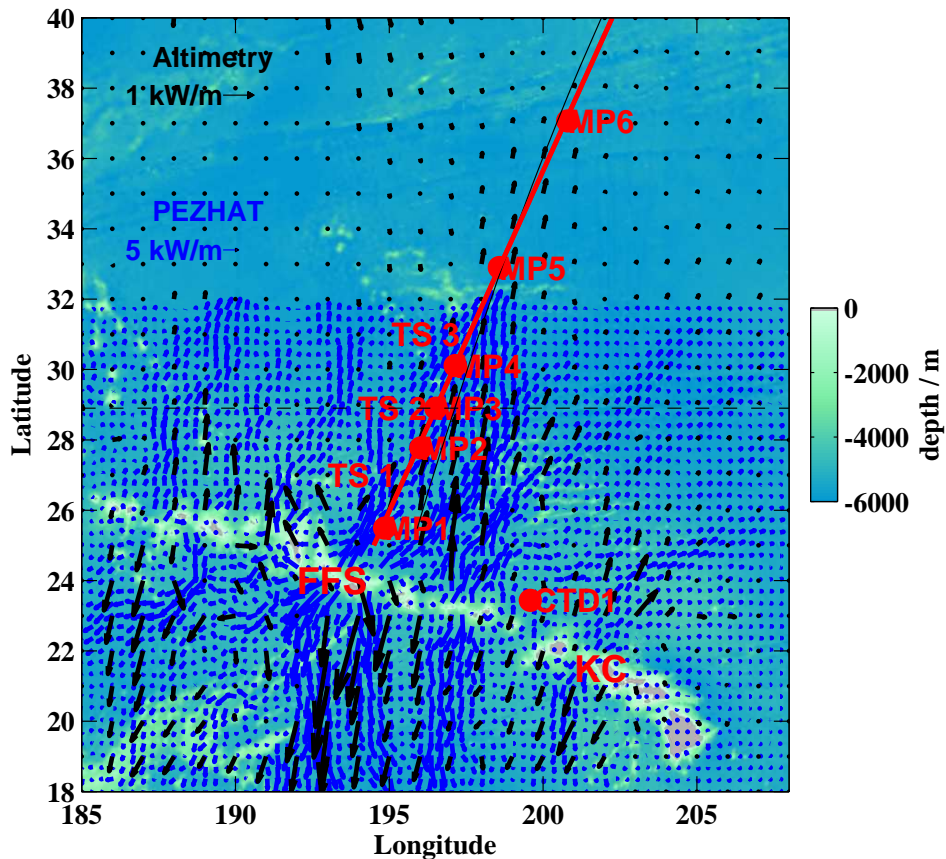


Figure 1: Broad view of our work area. The black line is a theoretical path the internal tide might follow, and arrows indicate various measures of the energy carried by it. Our mooring positions are indicated as MP1-MP6. All of our time will be spent along this line.

Deck Layout

The deck will be laid out exactly as during the first cruise, with the exception that the Pinkel gear will not be on board. In fact, the PI's on the student cruise prior to tours have kindly allowed us to leave much of our gear where it is from the deployment cruise. As we bring the subsurface floats on board, they will be put back in their stands and tires and lashed on the port side.

Table 1: IWAP Stations. **Mooring locations are our best estimates of the *actual* mooring location, and so differ slightly from anchor drop locations.**

Station	Lat, Lon	Comments
MP1	25-29.348'N, 165-09.293'W	actual mooring locations
MP2	27-46.142'N, 163-58.191'W	
MP3	28-53.974'N, 163-29.370'W	
MP4	30-7.876'N, 162-53.072'W	
MP5	32-54.441'N, 161-24.193'W	
MP6	37-4.148'N, 159-12.960'W	
N	37-12.088'N, 159-07.551'W	north end of line
S	25-19.961'N, 165-13.470'W	south end of line

Gear

To trigger our acoustic releases, we will be using our decksets. We hope to be able to use the ship's port 12 KHz transducer. If this does not work, we will lower a small transducer over the side.

Ship's equipment: Seasoar, CTD. We will be attaching an ADCP to the bottom of the CTD cage as we did the first cruise.

** We attempted during cruise 1 to range on the profiler at MP2 with another acoustic transducer, but did not have success owing to noise from the screws. In the next few days, we hope to locate a mounting plate back at the lab which we have used before to mount this transducer on the pipe string in the staging bay (which is acoustically much quieter). If we can find this mounting bracket, we would like to consider using it. This would allow us to determine if each profiler is still profiling up and down. If it is, we may decide to delay its recovery until later in the cruise.

Mooring recovery equipment: We will be using the SIO mooring winch for most of the mooring operations. To recover the subsurface floats, we will use either the ship's crane or the trawl wire/A frame.

Timetable

In the following plan, all times are in local time (GMT - 10 hours). Though the details in the later part of the cruise may vary, our basic plan is to recover the moorings on a northward line *except for MP3, which we will leave in until last. If we are able to use our transducer to determine if the profiler on a mooring is still profiling, we may delay its recovery. At the north end of the line, we will then deploy Seasoar and tow it to MP3, and survey that area for several days. We also plan to do at least one 30-hour timeseries with the shipboard CTD.

Jun 2, 1600: Depart Honolulu for station S at 12 knots.

≈ June 8: After recovery of the 37N mooring (MP6), we will proceed to N, deploy Seasoar and tow it at 8 kt to station MP3.

June 14, 0800: Recover Mooring MP3. When finished, deploy shipboard CTD and repeatedly cycle to the bottom until it is time to go home.

June 16, 0800: Depart for Honolulu (2 days at 11.5 knots).

June 18, 0800: Arrive Pier 31.

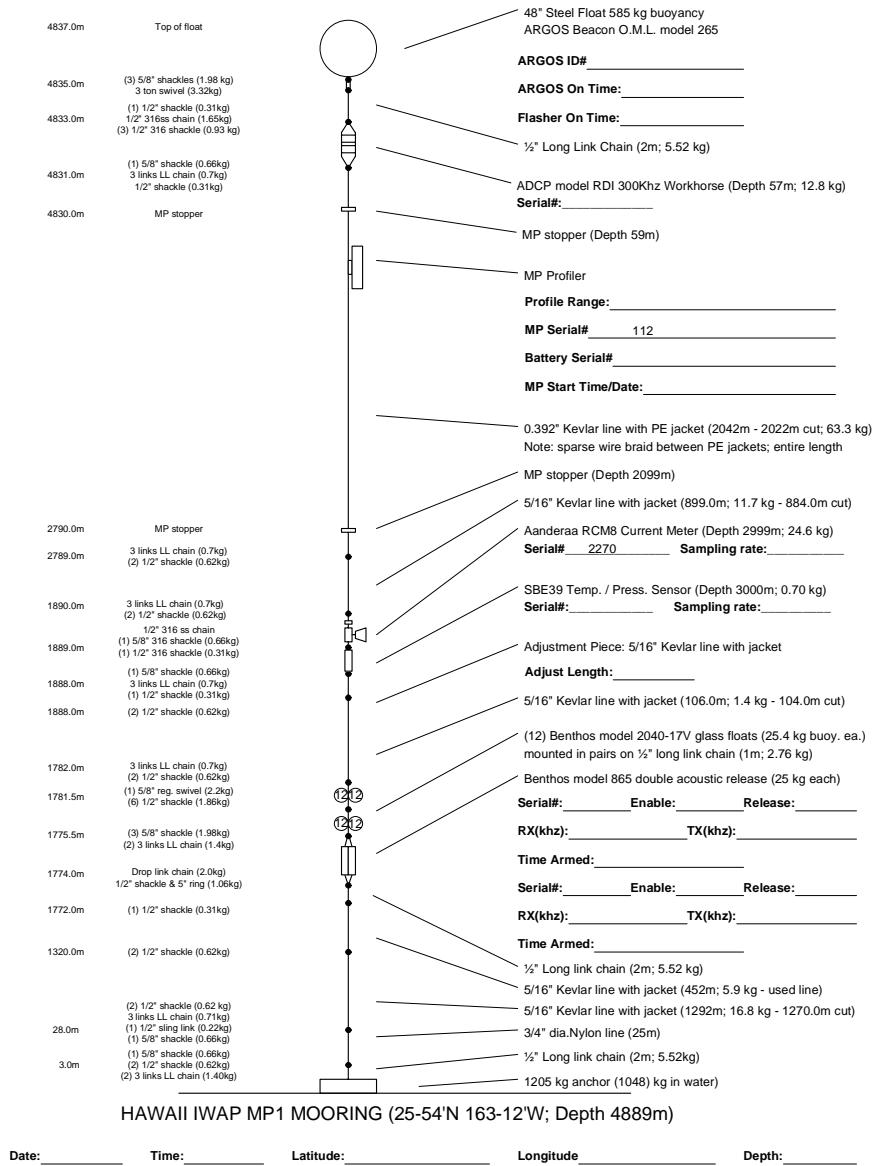


Figure 2: Mooring diagram for MP1, the first to be recovered. The other moorings are nearly identical, with the exception of MP3 which has two subsurface floats separated by 4-m of chain. *Please ignore the lat/lon shown in figure; the position in Table 1 is the correct one.