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Fraser River Delta Sediment Studies

ASL is collaborating with Gwyn Lintern of Natural Resources Canada in studying turbidity flows and other processes on the submerged portion of the Fraser River delta. ASL provided an ADCP mooring that is measuring near-bottom turbidity flows within the main submerged channel. Over winter the ADCP recorded several events. ASL is also assisting Gwyn by processing data from the NRCan Delta Dynamics Lab. Future collaboration will include deployment of a custom sonar instrument with two high frequency channels that will be used to monitor sediment dynamics.

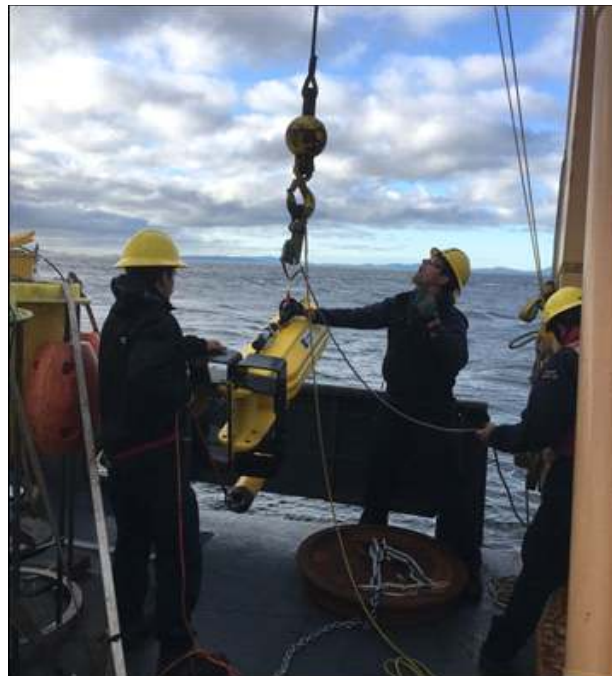
Custom Oceanographic Moorings

ASL provided two taut-line moorings to Andrea Niemi of the DFO Freshwater Institute for deployment in the Canadian Arctic Beaufort Sea. The moorings were complete and included steel flotation, satellite beacons, Acoustic Zooplankton Fish Profilers (AZFP) in custom tilt cages, temperature–salinity–turbidity–chlorophyll loggers, spliced amsteel lines, tandem acoustic releases, and anchors. A numerical model was used to ensure the mooring would perform as required in the expected currents and water depths.



A comprehensive guideline document was provided for mooring assembly and deployment. The moorings were loaded aboard the Coast Guard vessel Sir Wilfred Laurier in Sidney, BC for transport to the Arctic where they were deployed.

ASL can provide custom metocean moorings to suit client needs. This can include full system integration of third party instrumentation.



Deployment of ASL's mooring for measurement of turbidity flows off the Fraser River Delta. Photo courtesy of Paul Macoun of Ocean Networks Canada.

Schematic of mooring design and image of ASL's acoustic zooplankton and fish profiler.

Fine-scale Foraging Behaviour of Juvenile Pacific Salmon and North Pacific Humpback Whales in British Columbia

ASL is proud to announce two Ph.D. candidates who are currently conducting studies that couple the unique capabilities of ASL's Acoustic Zooplankton Fish Profiler (AZFP) with predator telemetry and prey sampling to provide novel perspectives on predator/prey interactions in selected study regions in southern BC. These projects examine fine-scale processes with large scale implications for marine ecosystems and the services that they provide. Rhonda Reidy and Will Duguid are part of the Fisheries Ecology and Marine Conservation group, working under thesis supervisor Francis Juanes of the University of Victoria. Collaborators on their projects include Stephane Gauthier and Svein Vagle from Fisheries and Oceans Canada. Both projects are briefly described below.

The objective of Rhonda Reidy's study is to link humpback whale feeding behaviours to concurrent measurements of prey in southern BC waters. Will Duguid is examining how interactions of tidal currents and abrupt topographic structure influence the feeding ecology of chinook and coho salmon juveniles at fine spatiotemporal scales.



Ph.D. candidates Will Duguid and Rhonda Reidy with multi-frequency 38, 70, 125 and 200 kHz AZFP (shown in inset).



Multi-sensor suction cup attached to a humpback whale to record 3-D movement. Research permit number MML-45.

Current Measurements at Fin Fish Aquaculture Sites

ASL recently deployed ten oceanographic moorings for a large aquaculture company. The taut-line moorings will measure a full month of current profile data at each farm site to meet government and engineering requirements. ASL's ability to supply the large number of current meters enabled all ten sites to be deployed at once which reduced overall costs and provided the current data sooner than if deployments had been consecutive.



Ten taut-line current meter moorings ready to deploy for a major aquaculture company. Most of the moorings had both upward- and downward-looking ADCPs, allowing full water column current profiles, including near-surface and near-bottom.

Drones for Earth Observation Applications

ASL Environmental Sciences has been working on a project under the Earth Observation Application Development Program (EOADP), administered by the Canadian Space Agency (CSA), to explore the potential complementary uses of unmanned aerial systems (UAS) and spaceborne imagery to enhance Earth Observation (EO) applications.

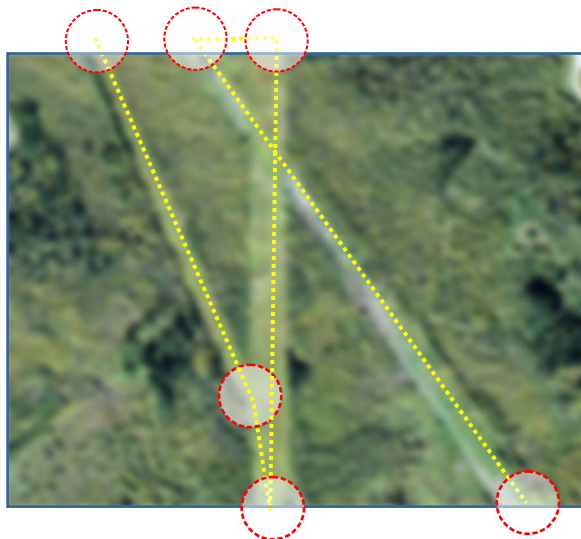
ASL has teamed up with PAL Aerospace and the Hyperspectral–LiDAR Research Group (HLRG) at the University of Victoria to investigate the benefits of using imagery acquired by drones to support reclamation and remediation efforts on disturbances caused by industrial activities, such as seismic lines, access roads, pipelines, and transmission lines.

Building on our deep knowledge of and long expertise in EO applications, ASL has been working with various stakeholders and end-users from government, industry, and academia to understand the problems and obstacles that hinder their daily operations. From our previous EOADP project, where we developed methodologies to extract accurate land cover information from the integration of optical and RADAR imagery, we know that current spaceborne sensors do not have the spatial resolution to accurately characterize land vegetation within narrow linear features such as pipeline corridors and seismic lines.

This project will develop a concept utilizing both spaceborne EO and UAS technologies and include a cost–benefit analysis of mapping and monitoring scenarios for vegetation within narrow linear features. We will demonstrate the benefits through data products that complement and enhance spaceborne EO applications.



Photo credit: HLRG UVic



Coarse satellite image showing UAS flight paths of linear corridors.



Linear corridor details provided by UAS survey.

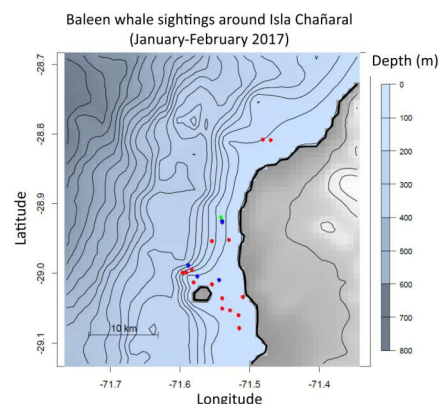
ASL Happy to Announce Its 2017 Acoustic Zooplankton Fish Profiler (AZFP) Award Winner

The recent submissions for the 2017 AZFP early career scientist award exceeded our expectations. ASL's Award Selection Committee is happy to announce that Dr. Susannah Buchan will receive free of charge a multi-frequency AZFP for a three-month deployment to conduct research on the spatial distribution of prey and baleen whale species off Isla Chañaral, northern Chile. This area, within the Humboldt Current System (HCS), is considered one of the most productive marine environments on the planet and sustains the highest fishery catches in the world. It hosts a number of reproductive colonies for sea birds, including the Humboldt penguin, sea lions and otters, and is a feeding ground for endangered baleen whales, particularly blue and fin whales. Due to the unique biological characteristics of this area, the Isla Chañaral Marine Reserve (ICMR) was developed to protect a small part of the marine ecosystem of the coastal islands of the HCS.

Susannah, who serves as co-investigator with the Center of Advanced Studies in Arid Zones (CEAZA), and Associate Researcher at the Universidad de Concepción in Chile, as well as being a guest investigator at the Woods Hole Oceanographic Institution in the USA, has proposed a spatial boat based survey consisting of continuous profiling transects. These transects will give insights into the distribution of various zooplankton and small pelagic fish species and will be coupled with boat based baleen whale observations.



Dr. Susannah Buchan, University of Concepcion, Chile.



Sightings of baleen whales around Isla Chañaral during the summer of 2017. Red dots: fin whales; blue dots: blue whales; green dots: humpback whales. (S. Buchan, unpublished data).

International Conferences

Recently Attended

- CMOS Congress, Toronto
- Canadian Water Resource Association (CWRA), Alberta
- Earth Observation Summit, Montreal
- Marine Environmental Observation Prediction & Response Network (MEOPAR), Montreal
- International Society of Offshore and Polar Engineers (ISOPE), San Francisco
- Working Groups on Fisheries Acoustics Science and Technology (WGFAST), New Zealand
- Offshore Technology Conference (OTC), Houston
- Wave Modelling Meeting, Victoria
- Western Dredging Association, Vancouver

Upcoming

- Oceans 17, Sept 18–21, Anchorage, Alaska
- Teledyne Marine Technology Workshop Oct 15–18 San Diego, California
- Asian Fisheries Acoustics Society, Nov 13–15 Guangzhou, China
- Ocean Sciences Meeting ASLO, Feb 11–16, 2018 Portland, Oregon
- Oceanology International, March 13–15, 2018 London, UK



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Acoustic Scintillation Flow Meter (ASFM) News

ASFM Moves Closer to Engineering Code Acceptance

The acoustic scintillation method for measuring flow through turbines in hydroelectric plants is moving closer to adoption by the engineering organizations that set standards for those measurements. Those organizations are the ASME (American Society of Mechanical Engineers), whose PTC-18 test code is used primarily in North America, and the IEC (International Electrotechnical Commission) which publishes the IEC-41 code, used internationally. Committees drafting the next editions of both these measurement codes have included acoustic scintillation as an appendix to the main body of their code, describing how the method is to be used when parties to a turbine test have agreed to use it. New editions to both codes are expected to be published within the next one to two years. Inclusion in the appendices is a step towards full acceptance as a code-approved method.

ASFM Flow Measurements Conducted at Units 3 and 4 at Wells Dam

In August 2017, ASL was contracted by Douglas County Public Utility District No. 1 to assist with flow measurements for testing two turbines at Wells Dam on the Columbia River in Washington State. ASL provided assistance to the District to install and operate its Acoustic Scintillation Flow Meter during the performance testing to obtain a baseline at Unit 3 prior to its overhaul and at the Unit 4 following the generator rebuild and unit refurbishment. The work went smoothly and the District is happy with the results.



Instrumented ASFM frame being lowered into intake slot.

ASL Personnel

- David Lemon has scaled back his hours with ASL and passed on the Presidency to Rene Chave. Rene continues as CIO. Jan Buermans, who presently serves as Product Division Manager, has also taken on the role of Vice President. David Fissel has also cut back his hours. Both Davids will continue as Directors of ASL. David Fissel and David Lemon have been with ASL from the start and have been instrumental in growing the company from a few people in 1978, to near forty at present. We thank them for all their effort, good work and sacrifice.
- Keath Borg has taken on the added responsibility of IPS product manager. For more information please contact Keath at 1-250-656-0177 ext 105 or at kborg@aslenv.com
- ASL is now client representative for Deep Water Buoyancy. Ben Garrett will take the lead on DWB sales. Ben can be reached at 1-250-656-0177 ext 161 or at bgarrett@aslenv.com.