



Fall 2023 ASL Newsletter. This issue:

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Film Crew from Manito Media Visits ASL

Stéphane Normandeau, production coordinator for Manito Media, a production company based in Winnipeg, is presently filming an episode on the work of marine biologist Dr. Marc Trudel for its series [La faune connectée](#). Dr. Trudel works as a research scientist with Fisheries and Oceans Canada in St. Andrews, New Brunswick. Part of his research has involved the use of an Acoustic Zooplankton Fish Profiler (AZFP) manufactured by ASL. A key component of this series is an emphasis on innovative technologies that enable scientists to investigate their research objectives. As such, a film crew from Manito Media arrived at ASL in early September to interview ASL's Jay Milligan. Jay explained how the AZFP works, how it's calibrated and the testing that's done before it is sent out. Stay tuned for more information on this episode on the [La faune connectée](#) website.



Film crew from Manito Media setting up to interview Jay Milligan about ASL Acoustic Zooplankton Fish Profiler.



ASL Invited to Teach Hydroacoustics at Bamfield Marine Sciences Centre

Every year Bamfield Marine Sciences Centre (BMSC), located on the west side of Vancouver Island, British Columbia, offers world-class, university-level courses on a variety of topics including biological oceanography. This summer this course was taught by Dr. Jennifer Putland and Dr. Louis St. Laurent of the University of Washington. As part of the course, ASL staff member Julek Chawarski was invited to teach students about hydroacoustics and how to analyze complex oceanographic data. Prior to this course an [ASL Acoustic Zooplankton Fish Profiler](#) (AZFP) was deployed to collect data on krill and fish in the Barkley Sound area (Figure 1).



Figure 1. ASL's Julek Chawarski, returning from Trevor Channel, Barkley Sound, BC after recovering the AZFP mooring from BMSC's research vessel MV *Alta*.

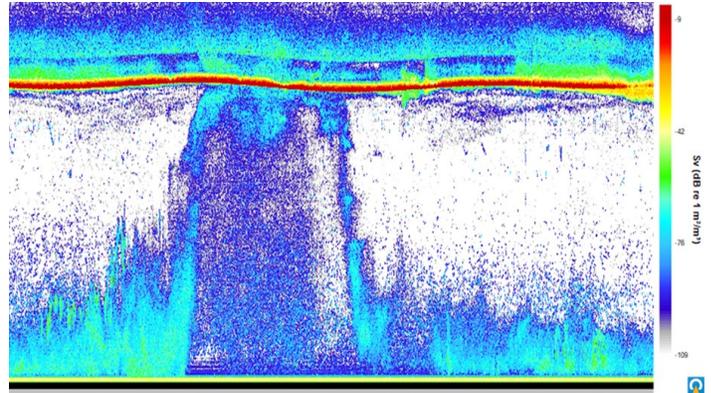


Figure 2. Echogram showing the diel vertical migration of krill over a 24-hour period in Trevor Channel, Barkley Sound, BC.

Krill are key mediators of energy flow in marine systems, providing an important food source for migrating Pacific salmon. Like many planktonic species, krill are also diel vertical migrators—they rise each night from the seafloor to feed on the phytoplankton, protected from predators by the cover of darkness. They're also great at scattering sound; their backscatter can be measured using hydroacoustic instrumentation such as the AZFP (Figure 2).

Students taking this course were provided with mentorship and given access to a 40-day time series of AZFP data for their research projects. During the course, students also participated in real-time profiling work where Julek and several students were able to join the BMSC team as they sampled various sites around Barkley Sound. This provided an opportunity to investigate krill abundance and migration patterns during peak biologically productive months in Barkley Sound. For more information contact Julek Chawarski, Biological Oceanographer at ASL (jchawarski@aslenv.com)



Figure 3. Scientists and students at BMSC, awaiting sunset to begin net sampling for krill and other zooplankton with Bongo nets.

ASL Environmental Sciences Completes Two-year Wave Current Study for Ksi Lisims LNG

ASL recently completed a two-year (2021–2023) wave and current study for Ksi Lisims LNG at a proposed LNG terminal site in northern BC. The project is being conducted in cooperation with the Nisga'a First Nation.

A bottom mounted TRDI ADCP was used to collect full water column current profiles, as well as hourly directional wave data. The pressure sensor on the ADCP provided water level measurements. A Seabird CT logger measured near-bottom temperature and salinity.

Challenges included steep and rocky bathymetry, large tides, and adverse winter weather.

Servicing of the mooring was done every 3-months, and full data sets were collected except for a few hours during each turnaround. The data are now being analyzed for seasonal variations, tidal currents, large wave events, wind forcing, and extremal analyses.



ADCP in bottom frame ready for deployment. A Spotter wave buoy (lower right) was also used for part of the study.

Ocean Hack Week 2023

Our recent hire, Amanda Dash, has been excited to learn more about the scientific side of our work here at ASL ('being a lowly programmer' as she puts it). She participated in OceanHackWeek2023, a 5-day collaborative learning experience with international participation. This conference took place over the week of August 7-11 and was attended virtually. There she could network with other environmental scientists and learn about current strategies, technologies, and problems others are tackling. A part of OceanHack is to participate in a project, as pitched by other participants. An Oceanography Masters student was working on identifying and classifying oil spills using Synthetic Aperture Radar (SAR) imagery. The SAR is an active sensor that transmits pulses of radio waves and receives the backscatter that can be interpreted visually, or automatically processed using advanced methods such as deep learning.

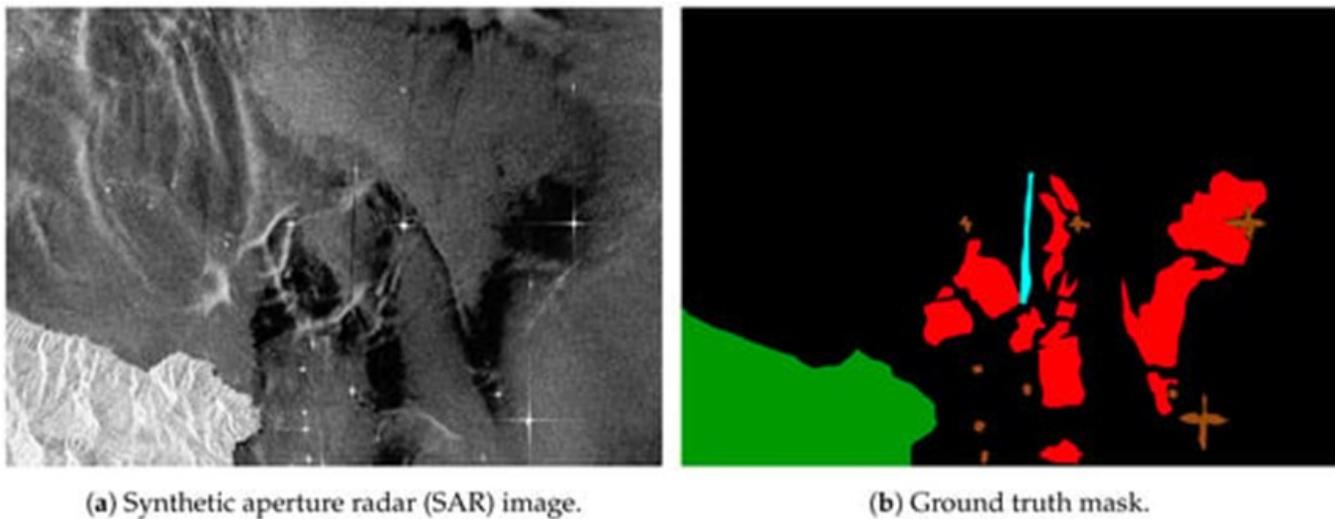


Figure 1: (a) Sample of a SAR image and (b) Corresponding annotated image. Cyan color corresponds to oil spills, red to look-alikes, brown to ships, green to land and black to sea surface.

(Source: Krestenitis et al, 2019 <https://www.mdpi.com/2072-4292/11/15/1762>)

It just so happens that Amanda is doing her dissertation on Computer Vision and Machine Learning! It was her first time working on these types of images but was happy to help and give advice based on her own experience. She had learning of her own to do as she hadn't worked with the latest big data structures, which she can now incorporate into her growing toolbox for ASL. It was a very informative week and we look forward to next year's OceanHackWeek.

Oil spill detection is not a new subject for ASL. Our team has previously mapped major oil spills using an airborne multispectral sensor¹, used optical and SAR imagery from spaceborne platforms², as well as used underwater acoustics (ASL's AZFP) for oil in the water column^{3,4}. We look forward to applying Amanda's expertise to this problem.

¹[Detection and mapping of the November 2002 PRESTIGE Tanker oil spill in Galicia, Spain, with the airborne multispectral CASI sensor](#)

²[Characterization of Oil Slicks at Sea Using Remote Sensing Techniques](#)

³[Acoustic Detection of Oil in the Water Column.](#)

⁴[Acoustic Detection of Subsurface Oil](#)

ASL Connecting with Our International Product Representatives

ASL Visits [HidroMares Oceanografia](#), Brazil

ASL president [Jan Buermans](#) visits @HidroMares - Assessoria Ambiental & Oceanografia, our Ice Profiling Sonar (IPS) and Acoustic Zooplankton Fish Profiler (AZFP) product representatives in Santos, Brazil.



ASL Welcomes Visit from [J. Bornhöft Industriegeräte GmbH](#)

Our partners, Stefan Theophile and Volker Karpen, of J. Bornhöft Industriegeräte GmbH visited ASL last week. J. Bornhöft represents ASL products in Germany.



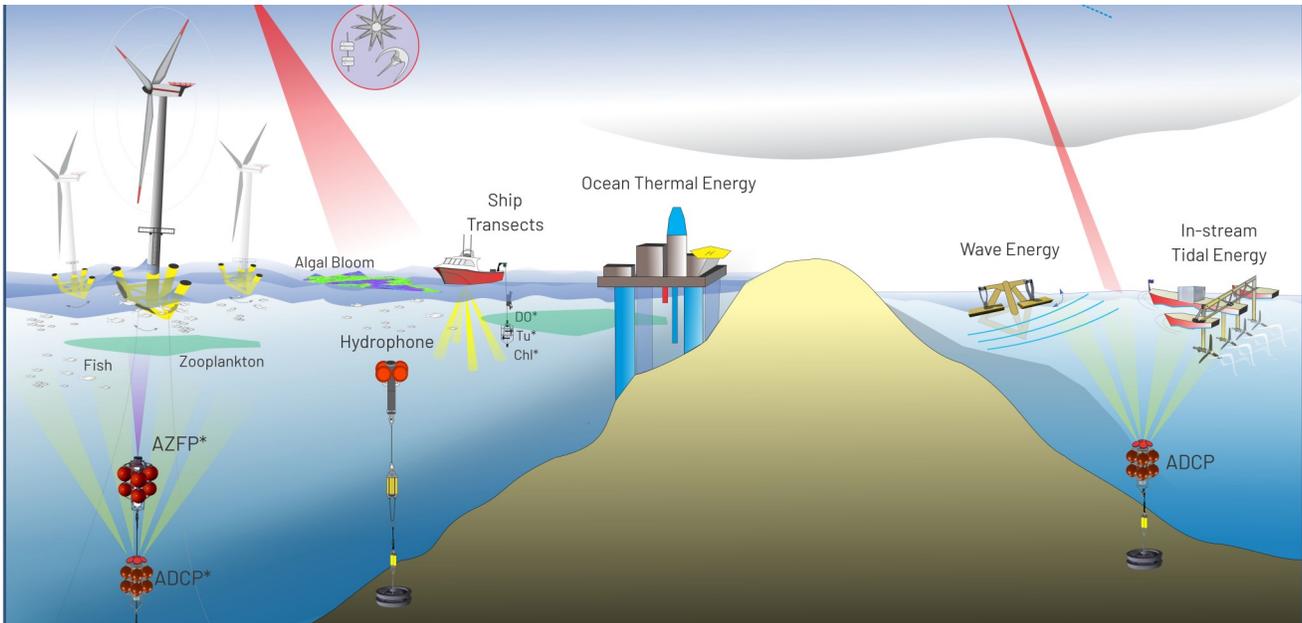
(Left to right: James Bartlett, Stefan Theophile, Jan Buermans, Volker Karpen)

ASL President Presents at International Hydroelectric Forum in Argentina/Uruguay

[Jan Buermans](#) attended and presented details of ASL [ASL AQFlow Inc's](#) Acoustic Scintillation Flow Meter (ASFM) for efficiency measurements at the Challenges and Strategies for the Renewal of Hydroelectric Plants International Forum held September 14 and 15 at the Salto Grande Hydroelectric Complex. The talks focused on the Challenges and Strategies related to the upgrade of the Salto Grande Hydroelectric Plant (Complejo Hidroeléctrico de Salto Grande). The hydroelectric power plant on the border of Entre Ríos Province, Argentina and Salto, Uruguay uses fourteen (14) 135MW Kaplan turbine generating units.



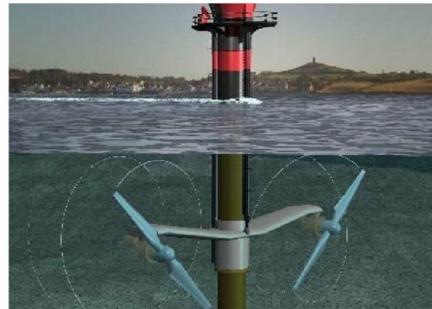
ASL Highlights Its Services to Marine Renewable Energy



ASL Environmental Sciences Inc. proudly supports renewable marine energy projects for a greener future around the world including site assessments, current profile measurements, sediment transport assessments and more. Find out more details [here](#).



Offshore Wind Farms



Tidal Energy



Ocean Thermal Energy Conversion



Wave Energy as a Resource

ASL Continues to Clean Up Local Beaches



ASL's 6th annual beach clean-up was held at Cole's Bay, North Saanich on Saturday, June 3, 2023. ASL staff, family and friends helped make Cole's Bay a little cleaner than when we first arrived. Some items taken off the beach included a couple of lawn chairs, a push scooter and some disintegrating sails from a boat. Thanks again to Jake and John of the CRD for helping us with supplies and for removing items from the park for us.



ASL Held Its Start of Summer BBQ

ASL kicked off its summer with a company-wide BBQ. Here's a note from our President.

"To All:

Thank you to those who came to the ASL "Start of Summer 2023" BBQ earlier today! It was very nice to see all of you in person! The food was good too.

Thank you to the organizers, Carol and Des, as well as those who helped out: Alex, Jose, Michell, Dan, Patrick, Brett, Matt S. and others for a successful event.

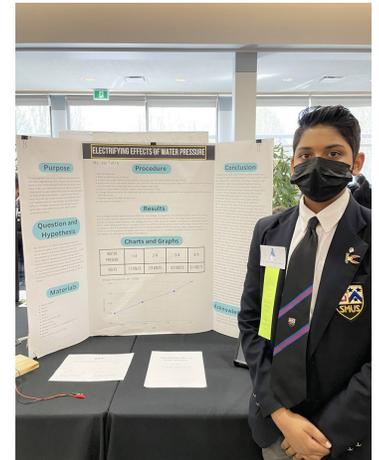
Cheers,
Jan."

Update ASL Awards for Vancouver Island Regional Science Fair—This Year's Winners

On Sunday, April 16th, the 2023 Vancouver Island Regional Science Fair took place at UVic. This was the first in-person fair since COVID. The room was filled with the bright, enthusiastic and energetic scientists and engineers of tomorrow. Picking two students for the ASL Environmental Sciences Environmental Awards was very challenging because of all of the talent at the fair. After much deliberation, we are pleased to announce the two winning projects. The two projects spanned the intermediate/junior levels and were from grade 7/8.



Conner Beamish
Harnessing the Power of Tides



Jai Tatra
Electrifying Effects of Water Pressure

Conner Beamish presented his research on tidal energy. He looked at some of the different ways of harnessing tidal energy, and some of the associated challenges. Jai Tatra presented an innovation project where he built a model water-wheel and looked at some of the parameters which controlled the output voltage. Jai had thought about some of the limitations of his experiment, and had several more ideas he would like to test to further improve his model. Ultimately, he would like to be able to contribute to better hydroelectric generation to sustain our electricity needs in the future as we move towards electric vehicles.

Conferences

Upcoming Conferences

[Association of British Columbia Marine Industries](#) ABCMI 2023

October 17-18
Vancouver, BC

[Advanced Sar workshop for Remote Sensing Radar](#)

November 27-30, 2023
Canadian Space Agency Headquarters,
Longueuil, Quebec

[Marine Renewables Canada](#)

December 4-6
Ottawa, On

Recent Conferences

[Canadian Meteorological and Oceanographic Society](#)
(CMOS 2023)

May 28-June 1, 2023
St. John's Newfoundland

[Coastal Zone Canada Conference 2023](#)

June 11-15, 2023
Victoria, BC

[44th Canadian Symposium on Remote Sensing](#)

June 19-22, 2023
Yellowknife, NWT

[American Fisheries Society](#)