Thursday, Dec. 15, research highlights
UAF Geophysical Institute at AGU 2022

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• SEISMICITY AND SEDIMENTARY BASINS — The seismic response of sedimentary basins has important implications for both tectonics and society. This is mainly because the geometry and low-velocity state of a sedimentary basin can trap seismic waves, leading to long shaking duration and high displacement amplification. Three-dimensional seismic modeling tools and high-performance computing clusters allow exploration of the complex seismic wavefield propagation in the basins, wiggle by wiggle in synthetic seismograms and frame by frame of wavefield snapshots. The Nenana basin in central Alaska is a useful region for studying basin wave propagation because of its detailed basin basement geometry and the previous deployment of 13 broadband seismic stations in the region.

8:15-8:20 a.m.; online only (abstract S41C-04)
Call for interview with postdoctoral fellow Yuan Tian.

• INDIGENOUS VOICES ON SEA ICE CHANGE — As communities along the Bering Strait and Chukchi coast experience the impacts of changing sea ice environments, Indigenous community members and Indigenous governance entities have made clear the need for holistic engagement from the research community. We bring together the expertise of St. Lawrence Island Yupik knowledge holders, geophysical scientists and social scientists to better understand and address the interplay between a changing sea ice environment, cultural subsistence practices and multi-level governance decisions. Here in particular we characterize St. Lawrence Island changes.

9 a.m.-12:30 p.m.; McCormick Place – Poster Hall, Hall A (South, Level 3)
Call for interview with graduate student researcher Kitrea Pacifica Takata-Glushkoff

• PERMAFROST’S FUTURE — Thawing and freezing of Arctic soils is affected by many factors, with air temperature, vegetation, snow accumulation and soil moisture among the most significant. Computer modeling developed at the UAF Geophysical Institute Permafrost Laboratory shows the potential impact of these changes in permafrost on northern Alaska ecosystems and infrastructure.

9 a.m.-12:30 p.m.; McCormick Place – Poster Hall, Hall A (South, Level 3)
Call for interview with Associate Professor Dmitry Nicolsky.
• **ALASKA IS SINKING** — Permafrost in Alaska has been warming and thawing at an increasing rate. Thaw of ice-rich permafrost induces long-term subsidence, which can radically change the hydrological and ecological functioning of landscapes. A general trend from 2017 to 2022 shows an average annual subsidence ranging between 1 and 2 inches, with the largest occurring in the warm summer of 2019.

9 a.m.-12:30 p.m.; McCormick Place – Poster Hall, Hall A (South, Level 3)
Call for interview with Graduate Research Assistant Soumitra Sakhalkar.

• **VITAL EYES IN THE SKY** — Low-earth orbiting satellites have transformed wildfire management in Alaska, where there are only 18,000 miles of public roads. The Visible Infrared Imaging Radiometer Suite, a satellite-based instrument, provides critical information for fire detection, monitoring, and mapping. VIIRS passes over Alaska frequently each day; its data is transmitted directly to receiving stations operated by UAF’s Geographic Information Network of Alaska, a direct-broadcast partner of the Joint Polar Satellite System. Within 15 minutes of an overpass, products are delivered to fire managers. JPSS launched another satellite carrying a VIIRS instrument on Nov. 10, with others scheduled for 2028 and 2032.

2:45-6:15 p.m.; McCormick Place – Poster Hall, Hall A (South, Level 3)
Call for interview with Research Associate Professor Jennifer Delamere, GINA’s director.

• **A GLACIER ON THE RUN** — Glaciers have a recurrence of years to decades between surges, so the opportunities to observe and quantify a surging glacier’s velocity from surge onset until its end are few. In late 2020, the Muldrow Glacier in Denali National Park in Alaska began to surge for the first time since 1957. This surge continued until its termination in July 2021, with portions of the glacier reactivating and continuing to surge into 2022. The glacier’s surface velocities were observed using satellite imagery, feature tracking of repeat, high-resolution aerial photos, on-ice GPS stations and a ground-based interferometric radar.

2:45-6:15 p.m.; McCormick Place – Poster Hall, Hall A (South, Level 3)
Call for interview with graduate student researcher David Polashenski.

• **ANOTHER GLACIER ON THE RUN** — Sit’Tein, or Malaspina Glacier, is the world’s largest temperate piedmont glacier. It is fed from the high coastal mountains of Southeast Alaska. Three glaciers feed into this piedmont, and all three of those have a history of surging. Understanding surge frequency and magnitude is important, because the surges contribute a significant amount of ice to the piedmont and can activate ice that becomes stagnant during quiescence. We document a history of these surges over several decades.

2:45-6:15 p.m.; McCormick Place – Poster Hall, Hall A (South, Level 3)
Call for interview with graduate student researcher Victor Devaux-Chupin.