

# Science Flight Report

## Operation Ice Bridge August 2011



**UAF Alaska Flight No 7**  
**Mission Plan: Chugach Range**

### Flight Report Summary

<b>Aircraft</b>	<b>DHC-3 Otter</b>
<b>Flight Number</b>	UAF-7
<b>Flight Request</b>	11M009
<b>Flight Hours</b>	8.0
<b>Take off time</b>	8:00:00.00 akdt from Ultima Thule Outfitters
<b>Landing time</b>	16:00:00.00 akdt at Ultima Thule Outfitters
<b>Date</b>	August 29 2011, Day of Year 241
<b>Purpose of Flight</b>	LiDAR surveys of the Chugach Range.
<b>Aircraft Status</b>	Airworthy.
<b>Sensor Status</b>	operational.
<b>Significant Issues</b>	None.
<b>Accomplishments</b>	<ul style="list-style-type: none"> <li>• LiDAR profiles of the Columbia, Yale, Harvard, Knik, Marcus Baker, Matanuska, Tonsina, Tazlina and Valdez Glaciers. Over 10000 DMS images were acquired coincident with the LiDAR data.</li> </ul>
<b>Planned Events</b>	<ul style="list-style-type: none"> <li>• The next surveys will be in Icy Bay, St. Elias Range.</li> </ul>

### Science Data Report Summary

This mission performed LiDAR surveys of the Columbia, Yale, Harvard, Knik, Marcus Baker, Matanuska, Tonsina, Tazlina and Valdez Glaciers.

LiDAR data were collected at a height of 500-650 meters above the glacier surface, and mapped a 0.5 km wide swath along the centerline of the glaciers. This swath map consists of measurements from individual laser shot points on a roughly 1 meter by 1 meter grid. The individual point measurements of the glacier surface latitude, longitude and elevation have an accuracy of approximately  $\pm 10$  cm.

The DMS imagery acquires distortion-calibrated images with 70 percent overlap, covering a swath width identical to the LiDAR, with 10 cm resolution (pixel to pixel spacing) on the ground. The DMS images are directly coupled with the LiDAR IMU, so precise timing, position and pointing angles (aircraft attitude) are recorded with every image.

Geographic keywords: (Chugach Range, Alaska)

Repeat Mission: yes (2010, 2009, 2005, 2000, 1995)

Instrument	Instrument Operational		Data Volume for days 240	Instrument Issues
	Target area	Entire Flight		
<b>UAF LiDAR</b>	Yes	No	~5.0 GB in raw binary format	None
<b>GPS</b>	Yes	Yes	~1.2 GB in raw binary format	None
<b>IMU</b>	Yes	Yes	~700 MB in raw binary format	None
<b>DMS</b>	Yes	No	~40 GB in jpeg format	None

### **Mission Log (Chris Larsen)**

Today's mission is LiDAR surveys of the Chugach Range. The weather had been bad for an extended period, and finally cleared yesterday. Calm and clear conditions were present through the day. People onboard included Paul Claus (pilot), and Chris Larsen. The flight was ended at Ultima Thule Outfitters.

#### **Individual instruments on board the aircraft:**

**LiDAR:** The UAF LiDAR system worked well.

**GPS:** System worked normally. No problems.

**IMU:** System worked well. No issues.

**DMS:** System worked well. No issues.



Figure 1: LiDAR ground tracks.