

A Lesson from "The Lost Squadron"

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In 1942, America's military leaders initiated Operation Bolero in an effort to massively buildup the number of warplanes in Great Britain. Shipping the planes would have made them susceptible to the perils of Nazi submarines, so many of them were flown to refueling bases in Labrador, Greenland, Iceland, and then on to Great Britain. Even flights in the summer season were fraught with the perils associated with variable Arctic weather.

On July 15, 1942, twenty-five brave, young U.S. Army Air Corps crewmen departed Greenland for Iceland ferrying two new B-17 Flying Fortresses and six new P-38 Lightnings. The weather deteriorated badly during their flight and a decision was made to return to base in Greenland. Bad weather there socked-in the base. With fuel running desperately low, they decided to ditch the eight planes on Greenland's icecap. Miraculously, all twenty-five crewmen survived their landings. They were 10 miles from the coastline of southeastern Greenland near 65° 20' N, 40° 20' W and separated from the sea by a crevassed glacial barrier.

Thanks to the heroic efforts of men at the U.S. Army Air Corps weather-reporting station 100 miles to the north, the twenty-five were rescued and had reached safety by July 24th. The eight planes were left behind.

The "Legend of the Lost Squadron" is well-documented in a beautifully illustrated book published by David Hayes in 1994. The story has been chronicled in several excellent documentaries. Not surprisingly, many aviators have long dreamed of recovering the eight planes left behind in Greenland. In August 1981, Pat Epps and Richard Taylor traveled to the estimated ditch site with two magnetometers in an attempt to locate the warbirds. After repeated unsuccessful expeditions to the area, and following an amazing story of perseverance to finance and execute the search, Epps and Taylor finally located the planes on July 2, 1988, thanks in no small part to the use of subsurface radar.

Early on, they had studied snow and ice patterns in the area and estimated that the planes could be as far as 40 feet below the surface. Their 1988 readings suggested that the treasures could be under several hundred feet of snow and ice.

Epps and Taylor returned the following summer and used a coring device to actually bring a small piece of a plane to the surface. There was no doubt that the

planes of "The Lost Squadron" had been found. They were fully 268 feet below the surface!

Sophisticated "cold mining" techniques were used to reach one of the B-17 Flying Fortresses. Hot water cannons created a cavern around the plane. Unfortunately, it had been heavily damaged by its half century under ice.

Another daring effort was made to recover one of the nearby P-38s. In 1992, a team traveled to the site and bored their way to a P-38 Lightning dubbed "Glacier Girl". The twin-engine P-38 was capable of near supersonic speeds of 400 mph. And, compared to the B-17s, the P-38s were smaller and more resistant to damage from the crushing icepack. As described and illustrated by Hayes (1994), the team successfully disassembled the 10-ton plane in a cavern they created below the ice and brought the aircraft to the surface a piece at a time. By August, "Glacier Girl" was once again on the surface of Greenland.

The airplane has since been transported back to the States and is undergoing careful restoration in Middlesboro, Kentucky. If all goes well, "Glacier Girl" will be aloft again, in several years.

Well, it's a fantastic story of courage and enterprise. But why might Greening Earth Society take special interest in a story of vintage warplanes landing on Greenland's icecap in July 1942 and being found fifty years later under 268 feet of snow and ice? Because, if those planes were sentient, they would find it hard to believe all these apocalyptic stories about melting icecaps that are a key ingredient of the greenhouse/global-warming debate. Consider the following:

- (1) It's possible that the accumulation of snow and ice above the eight warplanes was compensated for by melting elsewhere on the ice sheet. There could well have been a negative mass balance (a loss of ice) in southeastern Greenland. A large accumulation of snow and ice over a 50 year period at one location doesn't necessarily tell us much about the overall state of Greenland's ice sheet.
- (2) The peer-reviewed scientific literature of the 1990s provides some surprising information. For example, Huybrechts *et al.* (1991) found that a 1°C warming would actually increase the snow and ice mass of Greenland, thanks to increased snowfall. Warren and Glasser (1992) found cooling in southern Greenland since the 1950s, but their analysis of seven glaciers in the area found very different responses from one glacier to the next. Morgan *et al.* (1993) examined temperature records from throughout eastern Canada and Greenland, reporting that Greenland and the surrounding seas were cooling during this century. Braithwaite (1993) published an article entitled "Is the

Greenland ice sheet getting thicker?" and concluded that the issue is very complex. No simple answer could be defended at that time.

Verbitsky and Oglesby (1995) used a general circulation model and found a complex pattern of thickening and thinning in Greenland for a buildup of greenhouse gases. Although dealing with western Greenland, Krabill *et al.* (1995) found a net increase of more than six feet in the thickness of the ice from 1980 to 1993. Smith (1999) published an important article recently and carefully considered the relationship between temperature and melting and/or accumulation in Greenland. A general circulation model was "forced" by actual sea-surface temperatures in the analysis of the Greenland ice sheet. Due to the cooling of surrounding seas, Smith determined that accumulation rates may have decreased from 1950 to 1991, but that melting decreased even more. Smith concluded, "This implies that the overall mass balance may have increased over the period 1950-1991," which covers much of time the planes of "The Lost Squadron" resided on (or more appropriately, in) the ice.

- (3) The area's temperature records available via the UN Intergovernmental Panel on Climate Change (IPCC) verify what other climatologists tell us about cooling in Greenland. As depicted in *Figure 1*, the monthly temperature anomalies for the area near the landing site reveal a cooling of 2.25°F from the time "The Lost Squadron" touched down in southeastern Greenland until the "Glacier Girl" was restored to sunlight fifty years later.

The bottom-line lesson from the story of "The Lost Squadron" is simple enough, however. Too often in presentations about global warming, we are told (a) the world is warming and (b) the major ice sheets are melting. In focusing on this story, we learn (a) the area in question is cooling and (b) scientific literature telling us that linking temperature trends to changes in ice packs involves a complicated set of processes that defy the simplistic notion that warming automatically yields a loss of mass over major ice sheets. Once again we learn that things in the real world are never so simple as they might seem. We should be skeptical of bold pronouncements permeating "conventional wisdom" about global warming.

Those brave pilots of "The Lost Squadron" faced a lot of uncertainty regarding atmospheric conditions in their attempt to ferry planes to the European Theater of Operations. In a similar way, we face enormous uncertainty in our evaluation of the climate effects of a buildup of greenhouse gases. Those planes located hundreds of feet beneath the ice may be telling us something about the climate of the past 50 years. The great challenge before us is to understand the message. Simplistic claims of recent warming and melting just don't fly with "The Lost Squadron"!

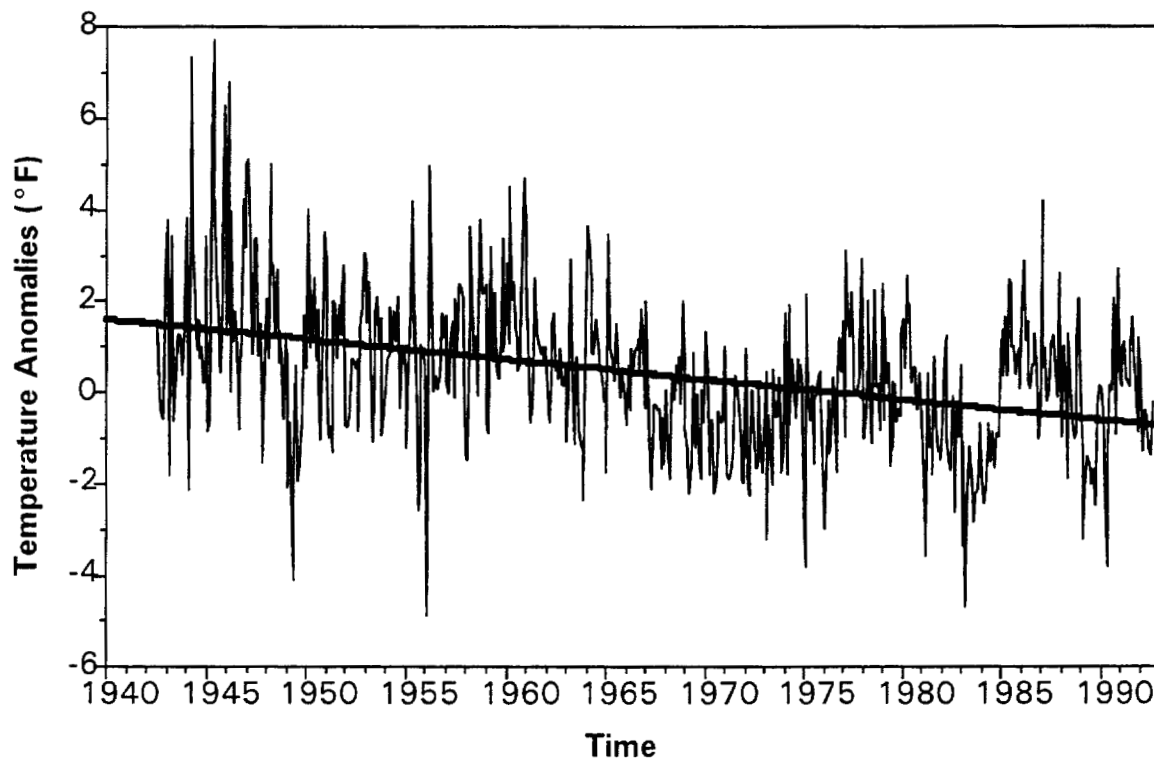


Figure 1. Plot of monthly temperature anomalies from southeastern Greenland; July, 1942 to August, 1992

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