



Starscan

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ECLIPSE UNDER THE ARCTIC CIRCLE

Paul Maley

If ever there were long odds against seeing an eclipse, this was the one. Iceland is a notorious cloud magnet and that was our destination. Iceland, the exotic Faroe Islands, and the largest island on earth---Greenland were all part of our ambitious eclipse itinerary. The map below shows the three countries and the relative distances between them.

We arrived into Reykjavik, the capital of Iceland under completely clear skies. That was the first indication that something abnormal was happening. Our stay there was very short, just enough to experience this rare May sky and then jet to the east where the next three days were spent in the Faroe Islands. These places and Greenland would all experience the annular eclipse on May 31. Because of the proximity of Iceland to the Arctic Circle, we would experience essentially no dark sky. With 22 hours of official daylight, the sun only dipped to -3.5 degrees below our horizon at 'night'.

The Faroes are a remarkable cluster of islands and due to a strike by union employees, bus transport and food delivery and availability were impacted. No fresh produce was available and many restaurants were closed. The weather was generally overcast and rainy as advertised but the highlight of the Faroes was the remarkable Vestmanna Bird Cliffs, home to thousands of sea birds. This motor boat trip must be seen to be believed. Approaching cliffs 600 to 800 meters high shrouded partly in cloud seemed like a scene from a movie (such as JURASSIC PARK).



Photos could hardly do justice to it. The cliffs are also populated by semi sure-footed sheep and lambs---lots of lambs. May was the end of lambing season. One quote was that 1 of every 4 sheep fell to their deaths from these sheer heights.

Rain kept away as our motor craft hugged the coast and entered dark and mysterious corridors from which the calls of birds could be heard and guano droppings plummeted from the air such that all passengers were required to wear hard hats just in case of an impact.



The towering cliffs at Vestmanna, by Lynn Palmer



Group photo by Paul Maley, which is why I am not in the picture

Returning to Iceland we spent the rest of the trip here with the exception of a day tour to Greenland. Wow! How cool was that. A nearly cloudless day, smooth air and no delays. This was followed up by a surprise flight seeing around the fjords and mountains of Greenland in the vicinity of Kulusuk.



Dogsled return by Lynn Palmer

Ruben and the Greenlander in a face-off by Howard Bruensteiner

While some of the group elected to take the easy route back via dog sled, some of us chose to hike the nearly 2 miles back through the snow. It was tough but memorable as was the drum dance provided by a native Greenlander.

Iceland itself is a geological wonderland. Not an exaggeration---its a fact. Space does not permit showing all the photos. However, this one of the Strokkur geysir (the original Geysir for which the class is named is found just meters away but is nearly tapped out!) is shown in eruption which occurred 1 to 4 to 8 minutes apart depending on how you timed it.



The Strokkur Geysir erupts with Lynn a few feet away, by Paul Maley



Matt and Debbie in the steam from Strokkur geysir, by Howard Bruensteiner



Another neat feature was a visit to the 18-inch telescope at Seltjarjarnes, the biggest instrument in all of Iceland.

Inside the dome looking east, by Lynn Palmer

Now for the eclipse story. On E-day minus one we saw the weather forecast and it was a grim one. Nice bright sunny days were to give way to a complete overcast condition over all of Iceland. We were positioned that day at Myvatn in the north central part of the country. This was the first time we had allocated independent travel means

to all participants. Two persons to a car, each team would have the chance to travel where and when they liked. Per the last weather forecast, prospects were given to be 10-30% of seeing the eclipse near Myvatn, 20% in the northwest fjord area and 50% in the north central portion. It was 0% elsewhere with rain predicted to cover the southern half. In fact it would be far worse than this.

Our team broke up into five parts. The cast of characters reveals the variety of occupations that engender interest in eclipses. One small group consisting of:

- Dick Dietz (professor of astronomy),
- Susan Landon (geologist),
- Eli Maor (mathematics instructor),
- Dalia Maor (environmental engineer),
- Kody Wallace (historical home rehabilitation specialist)
- Gary Donaldson (statistician) remaining at Myvatn

site 4 as marked on the map below;

- Paul Maley (project manager),
- Lynn Palmer (biostatistician),
- Richard Nugent (real estate entrepreneur),
- Dick Mischke (Colonel, USAir Force retired),

David Callender (systems engineer),
 Emiko Allen (financial advisor),
 Maryann Ott (arts administrator),
 Chris Triessl (software engineer),
 Robert Geary (musician and software engineer) going north of Dalvik

to site 2;
 Matt Delevoryas (systems programmer)
 Debbie Moran (Houston Symphony violinist) in Husavik

at site 3;
 Howard Bruensteiner (pharmacist)
 Ruben Ruiz (information technology manager) headed toward the Skagi Peninsula

Note that Icelanders in the far northwest at site 5 managed to see some of the eclipse and Snaevarr Gundmundsson, who led us through the observatory tour, was situated in a small aircraft located above the water at approximately site 6. He also was kind enough to have his brother-in-law open his electronics store on a national holiday in order that we could buy emergency smart media cards.



Photo from 550m altitude by Snaevarr Gundmundsson of central annularity



OBSERVER MAP

Leading the main group I stopped at Akureyri where it was obvious that the sky was gradually being lost the farther west we went from Myvatn. Taking some time to watch cloud movements, the cloud motion was west to east at high levels and barely a south to north motion. I led the group north along the east coast of the Trollaskagi peninsula. At the

northern tip just before a tunnel leading to Olafsfjordur, I recommended the group remain on a bluff overlooking the fjord. At the mouth of the tunnel some 10 amateur astronomers had parked in the small lot next to the entrance and among them was Timo Karhula of Sweden. He reports that at eclipse time according to the newspaper Morgunbladid there were 4,000 spectators. Lynn and I drove through the tunnel hoping to increase overall chances of at least someone observing the eclipse by heading farther west. However, the moment we left the 3 km long tunnel we had a clear view of the west and it was solid cloud cover. Even though we were not far from the main group, the tunnel was essentially one way temporarily and it was difficult to return because of cars moving from east to west. A nice site overlooking the fjord was found at the west entrance to the tunnel and we stopped our car there. The temperature hovered in the low 40's. We watched as the sun went down at 11:51pm and then rose at 2:37 am. I had calculated that a -6.7 magnitude Iridium flare would occur during central eclipse from a narrow geographical window. However, the cloud cover thwarted my plans to photograph the flare



during annularity. As we watched and waited, the clouds slowly crept eastward but still there was a small lateral gap allowing us to watch the sun nearly continually.

The clearest moment occurred during the partial phase. Note sunspots, by Howard Bruensteiner.

Howard used a Canon 10D. But for the broader views of the sun were with a 70-200 f2.8 Canon zoom lens. He added a Canon 2X teleconverter

for the closer views of the sun. No filter was used for any image due to the cloud cover. As first contact approached at 3:07 UT (also 3:07am local time), local people from Akureyri began to drive up. A bus disgorged 30 walkers who set out for a steep climb two hundred feet above our heads. A policeman had stopped several times and led others to where we were set up. We then noticed he had his daughter in the front seat. Lynn noticed baskets on the ground in front of our car, which were filled with spent shotgun shells. It seems that we set up at a shooting range. Other cars zoomed in and screeched to a halt. Students and their instructor from the University of Akureyri astrophysics class broke out binoculars and then compact discs and exposed film to use to watch the eclipse. I had never seen such a display of unsafe materials. Where could they have gotten their eclipse viewing advice? Lynn made a point of jogging during the partial eclipse to try to extend her running abilities, in addition to having participated in a 10k race in Reykjavik 3 days before the eclipse.



Paul using a towel to balance a C5 telephoto and Thousand Oaks Type II solar filter on the trunk of his rental car. Not the best combination but given the odds of seeing the eclipse..., by Lynn Palmer

I had set up my Celestron 5 telephoto with ASA400 film and Olympus camera back; also a camcorder (see photo above). Since the sun was essentially near the horizon the whole time, the equipment was pointed horizontally. The university students and their instructor would periodically watch the eclipse and wander about between my camera and the sun, unaware of what they were doing. There was a 5-minute period where the partially eclipsed sun was completely unobscured by any clouds whatsoever. Three sailboats could be seen below us in the fjord no doubt with eclipse viewers on board pointed east but not moving. At 3:52 the sun was blocked completely. But at 3:59 it was beginning to remerge! I switched between an ND5 filter and variable grade of mylar. As central eclipse approached there was always a thin cloud covering part of the annulus but in this digital photo from Howard Bruensteiner you can get a good idea of what we saw.



Central eclipse from Skagi peninsula by Howard Bruensteiner

Ruben demonstrates typical hardware: A camcorder and telephoto setup, by Howard Bruensteiner



Bailey's Beads are almost seen to begin (left side) at 3rd contact, David Callender



In David's shots, note that Camera: Canon A1 using Kodak Elitechrome 400 ASA slide film, underdeveloped to give an effective speed of 200 ASA Shutter speed: 1/1000th sec; Lens: Sigma 400 mm at f22 with 2x converter (effectively 800 mm at f45 - f50); Filter: None - the cloud cover and low elevation combined to make using an ND5 filter impractical. Note that since no filter was used, the lens was physically stopped down to reduce the light intensity and avoid damage to the camera metering system (not all cameras / lenses allow you to do this). Framing the shot was carried out using a co-aligned video camera so that he did not have to look through the camera viewfinder at any time.



David's convenient side by side setup

Richard Nugent used a point and shoot Pentax 28-140mm zoom and then 200 and 400 ISO print film to make it easy to scan. We were really lucky. We drove as far north as we could go without getting to the island of Grimsey which is on the Arctic Circle. Given the tight return flight

connection, we packed up and left shortly after 3rd contact and began the nearly 7 hour trip back. The sky clouded over after 3rd contact, and almost all the other spectators also left about the same time. It would have taken us less time to reach Reykjavik, but we had to pull over to sleep for an hour since neither Lynn nor I had any rest in the previous 24-hours. We saw the stream of cars, usually endless at normal eclipses but subdued because it was an annular eclipse and not a total one. This eclipse was unusual since there had been virtually no publicity about it. Everyone I asked in all three countries responded with "what eclipse?" when asked about it.



Driving back to Akureyri looking to the west. Solid overcast! Lynn Palmer shows her ability to drive and photograph at the same time.

Most of the group except the four who remained for extra time in Iceland convened at Keflavik airport and swapped stories. Tired but happy, the trip was terrific not for only the eclipse and its tense moments, but also for the beautiful scenery and generally good weather. I wish to thank Snaevarr Gundmundsson for having helped us with logistical information, the Seltjarjarnes Astronomical Society for hosting us at their observatory, and most importantly, Susan Landon for giving the group motivational and informative presentations on the history and geology of Iceland.

First Hispanic American Astronaut Lives Childhood Dream NASA

Few NASA astronauts have chalked up more than a decade in space, but Franklin Chang-Diaz says he's been touring the cosmos for nearly half a century. His first spacecraft? An oversized cardboard box fueled by the vivid imagination of a small boy who already knew what he wanted to do with his life and would meet every challenge to make it happen. Chang-Diaz is an engineer, scientist and member of NASA's Astronaut Corps at the Johnson Space Center (JSC) in Houston. No more cardboard boxes for him. He has flown on seven Space Shuttle missions, completed three spacewalks and serves as director of the Advanced Space Propulsion Laboratory at JSC. A self-described "normal kid" growing up in Costa Rica in the 1950s, Chang-Diaz had an early interest in science and physics, building and launching his own rockets through the rain gutters of his grandparent's house. His parents fostered his enthusiasm, but offered some wise counsel as well. "You can't just be an explorer who goes along and looks for things," his mother told him. "You have to study and be a scientist, so you can tell what you're really finding." Inspiration also came from Chang-Diaz's father who always told him to believe in himself. "My dad was my hero," he said. "He instilled in me a very strong sense of self-assurance."

When a NASA official visited Costa Rica to talk to high school students about space exploration, Chang-Diaz made a decision that would alter his life. "I sat in the front row, listening to this guy talk about rockets and rocket propulsion," he recalls. "He had copies of a booklet, 'So You Want To Be a Rocket Scientist,' by Wernher von Braun, it told you how to become a rocket scientist and work for NASA. That's what I wanted to do," he said. He immediately wrote to von Braun. NASA's reply commended him on his interest, but stressed careers in NASA were reserved for U.S. citizens. "That's when I formulated my plan to come to the United States," he said. Chang-Diaz graduated from a Costa Rica high school in 1967. He worked as a bank teller for nine months and saved \$50. His father got him a one-way ticket to Hartford, Conn., where he would live with relatives. "The first thing I had to do was learn English, so I enrolled myself in public high school," he said. "Then I planned to find a way to get a scholarship to go to a university." He got that scholarship, and earned a bachelor's degree in mechanical engineering from the University of Connecticut in 1973. In 1977, he earned a doctorate in applied physics from the Massachusetts Institute of Technology in Cambridge, Mass. He may have traveled millions of miles in space and received scores of awards and honors for his scientific research, but Chang-Diaz still hasn't lost the wonder of that little boy whose first "space missions" were conducted in cardboard rockets. "Space is just wonderful," he said. "It's a place I long to be now. When I get there, it's like being home every time. I have the sensation of more familiarity." And he still hasn't forgotten his parents' lessons in self-reliance and hard work. "My dad used to make me fix things, sort out problems and find solutions on my own," he recalls fondly. "During a spacewalk on the Shuttle mission in June 2002, we had a couple of pesky connectors that just didn't want to work. I thought, if my dad were here he'd say, 'Solve this problem, boy, don't expect anyone else to solve it for you'." Chang-Diaz flashes a dazzling smile, remembering his father (now deceased), who lived to see his ambitious son become the first Hispanic-American astronaut. "I could feel my dad right there with me, telling me to believe in myself," he said. "We got the connectors to work and went back to business." One imagines the boy in the cardboard rocket ship would have done the same, already confident the cosmos was out there, just waiting for him.

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