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TOTALITY!

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THE JOURNAL FOR ECLIPSE CHASERS

eclipse travel adventures

http://xjubier.free.fr/en/site_pages/Solar_Eclipses.html

and

<http://www.eclipse-chasers.com/totality.html>



The Diamond Ring at C2, showing the Diamond Ring Effect in Svalbard, but unlike the usual images where most observers were, this image was taken by Deidre Sorensen in a rather isolated location away from most other eclipse chasers where the still of the location could best be appreciated.

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RESULTS: ECLIPSE IN THE NORTH ATLANTIC

BOOKING: 2016 TOTAL SOLAR ECLIPSE

ECLIPSE IN THE NORTH ATLANTIC

Earth – Air – Sea

What are the odds of seeing a total solar eclipse in (or near) the Arctic? The answer is very low since the Arctic is quite often overcast. But nothing stops a serious eclipse chaser, even if the chances of seeing the eclipse are slim. Today's eclipse chasers manage to travel nearly anywhere in the world to some of the most remote locations, viewing eclipses from land (or ice), on the ocean, on mountain tops, or high in the air aboard a jet aircraft. So for the 2015 total eclipse with the weather conditions expected to be marginal from land, eclipse viewing took to all types of viewing locations; on the land, on the sea and in the skies.

I am certain that everyone that traveled to the eclipse has a great story (mine will be shared shortly), whether it was clear, or cloudy. For this eclipse only two land areas lay under the path of totality, with the centerline passing over just one. If you were selecting eclipses that had a high probability of clear skies, you would not have picked the one of 20 March 2015. A good number of individuals took a chance on the Faroe Islands, and even fewer traveled to the frozen district of Svalbard, well inside the Arctic Circle.



The port at Tórshavn, as seen from the deck of the Norröna

Image © Larry A. Stevens

EARTH | THE FAROES



The North Atlantic Current is fed from the Gulf Stream heading north from the east coast of North America and branches near Scotland; one branch heads toward Greenland and returns down the coast of North America, but the other continues further north and becomes the Norwegian Atlantic Current which separates the North Sea from the Norwegian Sea, and this is where we find the Faroe Islands. Indeed the land mass here is tiny, but the focus was huge on the Faroes, either on land, by sea or in the air.

At about 62 degrees north, still a few degrees shy of the Arctic Circle, the Faroe Islands (FO) is a collection of rocks that jut out of the water from the North Sea, and sometimes rather irregularly. Located not quite half way between northern Great Britain and Iceland, these small islands are part of the country of Denmark, yet they are also somewhat autonomous, as they use their own currency, though with Denmark's coins, but they are not bound by any of the EU restrictions. If you could combine all of the islands into one, the collected area would still be slightly smaller than the island of Kaua'i, fourth in size among the Hawai'ian Islands. One feature of the islands I cannot recall seeing on any of the islands we visited, are trees; there are none.

Nearly 50,000 individuals live in the Faroes; about 40% live in the capital city of [Tórshavn](#), yet there are nearly 100 smaller towns, most located in the many natural port areas along the almost never-ending coast. Undersea tunnels presently link two of the large islands, and a bridge to a third. The weather in the Faroes is similar year round and is actually rather mild, at times dropping below freezing during the winter when the grass turns brown and snow can accumulate, but usually in small quantities. As the seasons change the rain takes hold, and eventually the terrain turns a vivid green as attested to in many photos you can see of the region when you browse images on the web.



Our trip to the Faroes first took us to Copenhagen for a few days to see the sights there, and a quick day trip to Malmö, Sweden; this way we could add another country to our growing list. After a few days we were on our way. We flew up to Aalborg, in northern Denmark and rented a car and stayed the night there. The following morning we drove to the port at [Hirtshals](#), and got in line with the other cars. The ship was late arriving, and then it had to offload and restock the ships stores. We visited with a few of the other travelers, and it was a bit cold so they opened up a small waiting room where you could get coffee. There were even a few motorcycles. After several hours in line we finally were able to drive aboard the ferry *Norröna*, unloaded our luggage and made it to our room. Soon we were on our way to the Faroe Islands. After a day and a half at sea we arrived in Tórshavn.

Indeed the temperatures were rather cool, and the wind was a certainty, which had a knack for making it feel colder than it really was. Rain occurred every day, not always continuous, but at least once a day, and rarely did the Sun shine even for a brief duration. Being the beginning of spring I had hoped that the land would be green, this was not the case however. The past winter had seen a lot of snow, which is

good for plants, and there were a few flowers that were blooming, but the grasses were still brown for the most part.

We arrived in the morning on Monday March 16 and waited a while until we could unload the cars. Once off the ferry, the cars would park just adjacent to our ship, which would now serve as a hotel. We had only part of a day, and being near equinox, the day and night were each 12 hours long. Our first day we drove north on Streymoy Island (the same island that Tórshavn is on), and followed a side road to Saksun (population of 37), a tiny town made up of almost a dozen houses, and a church. I think to be a town in the Faroes you have to have at least one church, no matter how few people live there. The road ends at Lake Pollur Lagoon, fed by waterfalls, the lake overflows into the Atlantic Ocean on the eastern shores of the island. There was some light rain and after a few minutes a hole in the clouds opened up, allowing a shaft of sunlight to illuminate the nearby waterfall and a rainbow to accompany it above the falls, and then continued up the land like a brush of an artist's painting, it was quite a picturesque view of the lake.



I had made arrangements with SEML'ers Aaron Brown and Stefano Rosoni to share the rental fee for a car and gas while on the Faroes, making touring more affordable for transportation in the Faroes, and to have mobility on eDay, if we needed it. It turned out to be cheaper to bring a car on the ferry (the fees to bring the car on the ferry were notably more than the rental fee for the vehicle for 10 days) than to rent a car on the Faroes, if one were even available. Both Aaron and Stefano arrived on the DFDS



Seaways on the *MS Princess Seaways* on Tuesday. They docked in [Kollafjørður](#) and we went to meet them. Aaron had bumped into fellow SEML'er Sheridan Williams (UK) on the Seaways, and had driven aboard the ferry at Newcastle, and Aaron decided to go with Sheridan on Tuesday. Stefano, Michelle and I drove north on Streymoy Island, then later backtracked and crossed the bridge to Eysturoy Island, where we visited the town of [Eiði](#). From this location the duration of totality would be 2m 21s, and it is this area where [eclipse guru] Fred Espenak selected for the viewing site months earlier for him and Spears Travel [group], for which he has been the eclipse guide for several years. They announced an aurora in progress this evening, so I went to the car to grab my equipment, got Michelle and when we got back to topside, there were clouds covering it up. It was still going on as you could see spots of green through small holes in the cloud, but no real detail, just green. I took some time exposure pictures of it anyway, and soon went below to get some sleep. At some time during the morning hours it cleared, and the ship's eclipse guide managed to get several very nice shots from across the street by the light beacon. Sleep was also good, just not as exciting!



Sandavágs kirkja (Lutheran church) in Sandavágur

On Wednesday the 18th we headed west to [Vágar](#) island, and this time Aaron Brown was with us; Stefano and a fellow Italian countryman, Alberto Palazzi joins us. So we squeezed the three of them into the back seat; fortunately you don't have to drive very far until you find a vantage point to stop and take pictures. We found a great view to the southeast from western [Sandavágur](#), also known as Í Húsi, and drove on a side road to check it out. We liked the vantage point which looked out onto the ocean to the southeast with a great view looking out toward [Koltur](#) and [Hestur](#) islands and beyond. We looked around for a good vantage point and selected a location just outside a local appliance store, called [Thorfinn Nielsen Spf.](#), and

asked if we were to return here on eclipse day, we might set up our cameras in their parking lot. The store was run by a married couple, and the wife did not want to commit to it without her husband's approval, so asked if we could stop back later to see what his response was. That was fine as we were still headed further west to the Vágar airport. I wanted to see if there was any weather authority there (where is Jay Anderson when you need him?), and then we continued on to Gasadalur to see the Mulafoosur [waterfall], on the western edge of the island. The waterfall and mountain are likely the most photographed location on the Faroes. Here, the fresh water drops directly into the ocean. We returned to the appliance store when we were done here and got the ok to set up there if we returned on eclipse day. We had passed through one of the underwater tunnels to get to these locations, and cameras record your passage; and on your honor you stop at the local petrol station and pay your fees. If you don't, you will be billed based on your car tags.

Mulafossur [waterfall] (right) and the village of Gásadalur (population of 17) with [Árnafjall](#) mountain (722 meters), the highest point on Vágur Island. This is the site of the eclipse stamp and other stamps that have been issued in the Faroes, and likely the most photographed spot in the islands.



On Thursday, Stefano, Alberto, Michelle and I headed north and west, first north on Streymoy, across to Eystuoyri where we explored the central and Southern areas and through the underwater tunnel to Bordoy island and on to Vidoy Island. We barely got back in time to hear the tail end of a briefing by the captain of the *Norröna* telling everyone that a final decision on what if anything *Norröna* would do on eDay would come at 8:30 pm local time. I loaded up the car with some of the equipment we would need on Friday and waited for the later briefing. The captain announced that the weather prediction had a clearing headed for Tórshavn in the morning, I looked at the hourly predictions and it showed the clearing occurring after totality. I texted Aaron and Stefano that the ship would stay in port, so I would pick them up at 6am local time and we would plan on heading to the eclipse site we picked out in Sandavágur, and got everything else ready and went to bed.



17 and 19 Kroner (European and international rates respectively) eclipse postage stamps from the Faroe Islands

At last it was Friday, eDay. Michelle and I awoke at 5am local time, even though I did not get a lot of sleep, so the night seemed to be very long. There was light rain as I took the rest of the equipment to the car. We were quickly on our way north to Kollafjørður to pick up our SEML companions. It was still dark when we drove, and the rain got harder as we went north, then got lighter and then heavier on and off, over and over, but this was no surprise to me. We arrived at the ship and Stefano was ready to go, Aaron had decided to head down to Tórshavn on a bus to view the eclipse from there since the weather predictions put this as the best viewing location. Anyway we loaded up Stefano's equipment and headed west. We arrived at the site we had picked out the previous Wednesday and it was cloudy, with a bit more wind than there was on that previous day, and it was lightly raining. I drove back and forth between our selected location and the airport, a distance of about 4 or 5 kilometers, and did that twice before deciding it would not make much difference where we set up, so back to the appliance shop.

On this morning we were not able to see the two islands offshore in the Vágafjørður Sound as they were enshrouded by rain and fog. Finally after watching clouds come and go, and a few blue spots become visible, we finally started setting up our equipment. I had recently purchased an iOptron alt/az guided mount, for which I had some issues with the first one, and received a replacement only 3 days before departure (even a big snowstorm delayed the rush 1 day shipment by an extra 2 additional days). I had only one opportunity to try it out before packing it up for the trip. I got it set up, and mounted my relatively new 600mm f/4 Canon lens.

I say relative new 600 mm as I did not get to capture any eclipse images in Kenya in 2013, partly because it clouded over (there is more to this story that I hope to elaborate on in Issue 15 when I get a chance to retroactively publish it). I set up my new iOptron alt/az tracking mount, and since it was getting rained on, and no rain gear to cover it with, I kept the rear hatch of the vehicle opened, and backed it up so it would cover at least part of the equipment from the light rain showers. I think it was for this reason that the GPS could not get an accurate lock, and I had to manually adjust the image between every single bracket set of 9. Add to that the vehicle automatically shutting down the electricity flowing out of the DC power connector (formally known as a lighter receptacle) after about 5 minutes. Indeed this kept me busy.



Now, only to find the Sun! This was quite a chore. A big clearing would drift overhead, but by the time it would get near the Sun, the clouds would fill back in as it kept looking like it would clear. It was visible for only a few brief seconds. But to our good fortune, about 20 minutes before totality, the Sun became more visible than not, the sky turned mostly blue with infrequent clouds drifted across the Sun. But would this clearing last through totality? Now with totality only a few seconds away, a small cloud began to obscure the eclipsed Sun, however it was still visible through the cloud (see image on the left).

The ISO was set at 200, and the bracketing controller (from Promote) was set at a 2/3rds-stop increment. The exposures would start at 1/4000th second, and ended at 1/100th second, and then repeat after a break of a few seconds so the images would not bog down and have trouble writing to the memory card. This was the last settings I had set up doing testing back home, and was intended for use at totality, but not really for the partial phases. The rain caused delays in setting up the equipment, and last minute programming of the timer escaped me.

We had a huge hole in the clouds above us, and at just the right time. However, we did not dodge all of the clouds. Just before 2nd contact, a light cloud moved across the nearly totally eclipsed Sun, but with the fast winds, the cloud passed quickly. We had an excellent view of totality, and as 3rd contact approached, another cloud passed quickly by. My bracketing computer finished its sequence early, so I missed a few images during 3rd contact, but Stefano and Danny (Widdecombe - AU) was shooting the eclipse as the cloud passed over, and it appears that both captured the elusive, but recently occurring *shadow bands in the*

clouds (see pages 25-26). With some careful processing I was able to get a small amount of shadow bands in a couple of my own images, but Danny managed to record them quite well. That I know of these shadow bands in the clouds have been seen at TSE2010, 2012, and 2015. Not that I am trying to infer any regularities between these eclipses, but all were seen at sea level.

Our small group and a few others nearby, managed to get the best views on the Faroe Islands.

WOULD YOU BELIEVE . . . not all of the Faroes were overcast. Your editor managed to pick one of the few locations on the islands that had clear skies for essentially all of the total phase, and a fair several minutes before and after 2nd and 3rd contacts, with only a few seconds of clouds that briefly veiled the Sun in a very thin, transparent, layer of clouds. Here is the result of the clear sky portion on this page and the next page, and the cloudy pieces can be found on page 6 and 25-26!

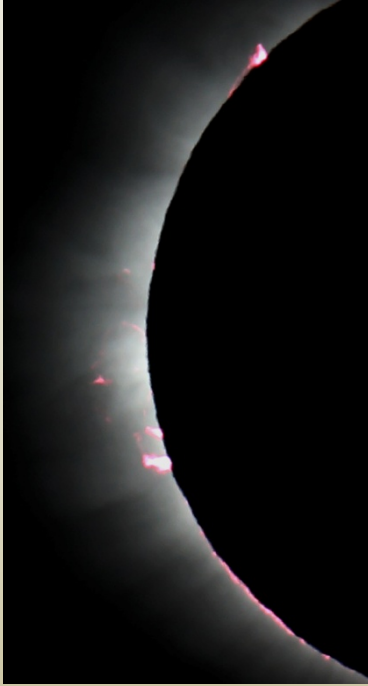


2015 Total Solar Eclipse on the Faroe Islands – The Best Image of Totality from the Faroes?

With remarkable luck, a few isolated groups managed to view totality on the Faroe Islands where most were clouded out. This is my image of totality made near Sandavágur, and is composed of 9 images ranging from 1/100 to 1/4000 second in 2/3 stop increments, combined using Fitswork4 and PhotoShop CS5 to realize the details in the middle corona seen in this image taken using a Canon f/4 600mm with a Canon 70D camera. Instructions for creating this image can be found on page 27.

The 3 images below are variations on the same image (same as the one above), the only difference was made by shifting the values in the Adjustments/Levels selection to show differences in the contrast and brightness which are stretched here by doing so in Photoshop (CS5).



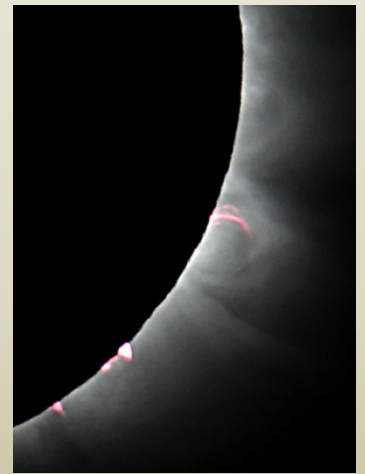


© Larry A. Stevens

I texted Aaron to find out how conditions in Tórshavn, “Had some Sun for a few minutes, but it’s gone now. A few patches of blue sky,” then about 15 minutes later, after totality, “Almost completely overcast and rainy.” Later Aaron posted this on Facebook; “Sun was out 30 minutes before and 5 minutes after, but not during totality. The skies were relatively clear perhaps 30 minutes after totality. But [we] didn't get to see the totally eclipsed sun. But due to the clouds, it got darker than a typical eclipse. The sudden change of day to night is spectacular in and of itself, and there was a nice rainbow at the end of the eclipse.”

Katharina Nottbohm (DE), a teenage eclipse chaser traveling with her father (Wilhelm) and attending her 2nd total solar eclipse were travelling on the Norröna, she managed to get two quick snapshots of totality just after C2 began in Tórshavn, and unfortunately ended just as quickly when the clouds covered it over completely.

Prior to 3rd contact, this image shows a curved double prominence and curved coronal arcs.



© Larry A. Stevens



← Left

A view of the sky during totality, with Venus seen to the left and Mercury to the right (marked). The small cloud below and right of the eclipsed Sun was the one that passed in front at C2, and the larger one to the upper left is the one that passed in front at C3. © Larry A. Stevens

A few other eclipse chasers gathered around at our location making it a small and intimate group that had the shared experience of successfully viewing totality. Our hosts even came out to share some coffee, tea and a local snack of specially prepared sheep intestines with us, and a couple from England shared some wine. Hugs went all around concluding our unexpected, but well justified success.



Our observing group gathered just outside the Thorfinn Nielsen Spf. appliance store after totality to raise glasses, observers from the UK, Denmark, USA, Australia, Italy and our site hosts from the Faroes.
Photo used by permission © Danny Widdicombe.

Paul Deans from TravelQuest brought a plane full of 140 eclipse chasers to Vágur airport and reports, "We caught about 1 min 18 sec of totality, from diamond ring to cloud cover. We had cloud at first contact and rain off and on after that. Rapidly moving clouds, with larger and larger gaps flowed eastward overhead. In the last 10 minutes prior to totality, the Sun was cloud free...then cloud and cloud steamers moved in during the last minute. We briefly lost the Sun in cloud (screams of "Noooo" rose from the group), but then we saw beads thru cloud. The diamond ring thru cloud (with iridescence) was amazing, the sky around the Sun cleared, and the prominences and corona were stunning. We could see heavy cloud rapidly moving in, and we lost totality about a minute before third contact. About five minutes later, it was raining."

A unique music video was recorded live by a local band, Hamferð, singing their song Deyðir varðar, as the total phase of the eclipse was beginning, and everything was dark with only the eclipse being visible during totality through thin clouds from high on an elevated scarp overlooking the fjord. The image here was made a few seconds after totality, otherwise the band would have been invisible in the darkness. Several locations across the Faroes, and even in Tórshavn, were able to see totality for a few seconds now and then, and also through thin clouds. See it for yourself by clicking [HERE](#).



Fred Espenak - On eclipse morning, our Spears Travel group were set up at Hotel Færøyar in Tórshavn along with hundreds of other people. Although there were some holes in the clouds here and there, the Sun and its spectacular corona were hidden from view during the 2-minute long total phase. Eclipse veterans like myself were understandably disappointed, but newbies were thrilled by the appearance of the Moon's shadow on the clouds above and by the rapid darkening of the environment during totality. Oh well! Time to start planning for the next total solar eclipse on 2016 March 09! [Ed. Note: This group was initially going to view from Eiði]

A MOMENT OF CLARITY IN TÓRSHAVN



Photographer Petr Horálek was in Tórshavn for totality. He has taken great images of previous eclipses. "While the people on Svalbard could enjoy the incredible total solar eclipse with no clouds on 20th March 2015, the conditions on the Faroe Islands made it completely different. Lots of clouds covered the dreamt-of views of the eclipsed sun and lots of people saw just a darkening world around them, not the eclipse itself. Some were lucky and saw the phenomenon through a hole of the clouds. This was my case too as I observed the eclipse close to the lighthouse in Tórshavn. Just a few seconds after the totality ended, there was a short view among the clouds to the rest of disappearing corona while the sun was now visible. I looked through my 11×70 binoculars to enjoy at least the part of the covered sun and accidentally took one shot with my prepared equipment next to me. I was in shock when I took a look at the image that resulted, truly, one lucky shot. There are faint structures of the corona and one of many dramatic prominences as seen from the images taken by photographers on Svalbard. Good luck in bad luck...". Equipment: Canon 6D IR Mod, Rubinar 500/8, ISO 200, 1/250 second.

© Petr Horálek and used by permission

For more amazing images from Petr click [HERE](#)



Australian psychologist, author and eclipse chaser, Dr. Kate Russo (left) went to the northwestern part of the Faroe Islands, to watch the eclipse "Very cloudy in Eidi this morning. Sadly we didn't get a glimpse of the Sun at all, so no use for eclipse glasses. While that was very disappointing, the darkness was striking, especially in such a beautiful setting." She spent a lot of time getting the locals ready for the 2015 eclipse in the Faroes, and was there a month before the eclipse to do so. Visit her [web site](#) and check out her books at ([Totality: The Total Solar Eclipse of 2012](#), [Total Addiction: The Life of an Eclipse Chaser](#), and [Transformed by the Shadow](#), which will be her next book which will be published in early 2016).

AT SEA | THE NORWEGIAN SEA

There was no deficit of cruise ships and ferries in and around the Faroes on the days surrounding eclipse day. World of Cruising Magazine had 10 entries for cruise ships that planned to be at sea during the eclipse, some fighting for space to find clearings in the clouds. Fred Olsen Cruise Lines booked 3 individual ships because there was a demand for eclipse cruises.

- **Azores** - (Cruise & Maritime Voyages', CMV), Maximum Capacity; Passengers=550
 - Port; Unknown
 - Viewing conditions: *At sea during the eclipse and only saw clouds.*
- **Black Watch** - (Fred Olsen Cruise Lines), Actual Counts; Passengers=672, Crew=359
 - Port; Ruavík at 8:00, arriving from Southampton
 - Viewing conditions: *Saw totality through very thin clouds.*
- **Boudicca** - (Fred Olsen Cruise Lines), Maximum Capacity; Passengers=880, Crew=329
 - Port; Unknown
 - Viewing conditions: *Our Captain went full steam and found a break in the clouds so that we had a perfect view of the entire eclipse. (A video at totality shows light clouds at the very start and very end of totality, and clear in between, Editor)*
- **Braemar** - (Fred Olsen Cruise Lines), Maximum Capacity; Passengers=929, Crew=371
 - Port; Unknown
 - Viewing conditions: *We saw it through cloud right up until the moment of totality when we lost it in thick cloud. The moment totality finished it became visible again. But we saw Venus appear to the left of the Sun. It was a good experience nevertheless. Both the other Olsen ships were apparently better placed and saw everything.*
- **Saga Sapphire** - (Saga Cruises), Maximum Capacity; Passengers=633, Crew=429
 - Port; Tòrshavn at 8:00, arriving from Lerwick with passengers mostly from the UK
 - Viewing conditions: Totality was seen
- **Oriana** - (P&O Cruises'), Maximum Capacity; Passengers=700
 - Port; Arrived from Southampton but turned around and chased the Saga Sapphire to view the eclipse from sea, south of Tòrshavn, then ported at Tòrshavn after the eclipse
 - Viewing conditions: *Luckily we were not able to dock due to wind, we did in fact see the solar eclipse*
- **Magellan** - (Cruise & Maritime Voyages', CMV), Maximum Capacity; Passengers=1250
 - Port; Unknown
 - Viewing conditions: Unknown
- **Marco Polo** - (Cruise & Maritime Voyages', CMV), Maximum Capacity; Passengers=731, Crew=346
 - Port; Kollafjørð at 9:50, arriving from Southampton with, mainly from the UK.
 - Viewing conditions: Unknown
- **Norröna** - (Smyril Line), Maximum Capacity; Passengers=1482, Crew=118, Cars=600 (was not full)
 - Port; Stayed in port at Tòrshavn, March 16 thru 20
 - Viewing conditions: Stayed in port at Tòrshavn, many observed nearby, totality seen very briefly
- **Princess Seaways** - (DFDS Seaways), Maximum Capacity; Passengers=1250, Cars=600 (was not full)
 - Port; Kollafjørður, March 17 thru 21, sent busses down to Tòrshavn for the eclipse
 - Viewing conditions: Stayed in port at Kollafjørður, sent busses down to Tòrshavn
- **Voyager** - (Voyages of Discovery), Maximum Capacity; Passengers=515, Crew=228
 - Port; Tòrshavn at 8:30, arriving from Portsmouth, passengers mainly from the UK.
 - Viewing conditions: *We were at sea on the day of the eclipse and the captain did a great job in positioning the ship in areas where there was enough breaks in the cloud to allow us a reasonable view of the event.*

IN THE AIR | SOLAR ECLIPSE WEST & EAST CORRIDORS

At least a dozen airplanes, from full-fledged passenger aircraft like the Airbus A320-200 or B737-800, to several Dassault Falcon business jets, seating up to 150 or as little as 14 passengers, all lined up just west of the Faroe Islands and headed northeast so the duration of totality would be extended beyond the earthbound duration, both due to the height of the airplane above the Earth, and also by the velocity of the plane traveling ahead of the Moon's shadow.

The historic data of weather in both the Faroes and Svalbard indicated a low possibility of good skies, so several tour companies scheduled airplanes to fly above the clouds nearest the point of maximum eclipse. Two parallel corridors that were laid out by the Icelandic air traffic control authority, [ISAVIA](#). It is difficult to find data on exactly how many airplanes were able to view some or part of the eclipse, but the app *Flightradar24* placed about a dozen planes, all heading in the same direction. Eclipse chaser Xavier Jubier organized 3 Falcon 7X XMJ aircraft to fly between 44,000 and 49,000 feet, and giving them a slightly longer duration than all other planes due to their increase altitude. Above much of the Earth's atmosphere (and clouds), the sky above is inky black with the corona around the Moon glows like an eye in space.

Observers would be able to view through a small airplane window, and some would even take photos, many of the more remarkable taken were of the extended corona (see page 15) and of the Moon's shadow as it eclipsed the Earth below. Also, seven year old, Phillippe Rowland (UK) entry in the *Insight Astronomy Photographer of the Year* contest, was given a "Highly Commended" classification for his image taken of the eclipse out the window of the airplane at 37,000 feet using his iPad mini.



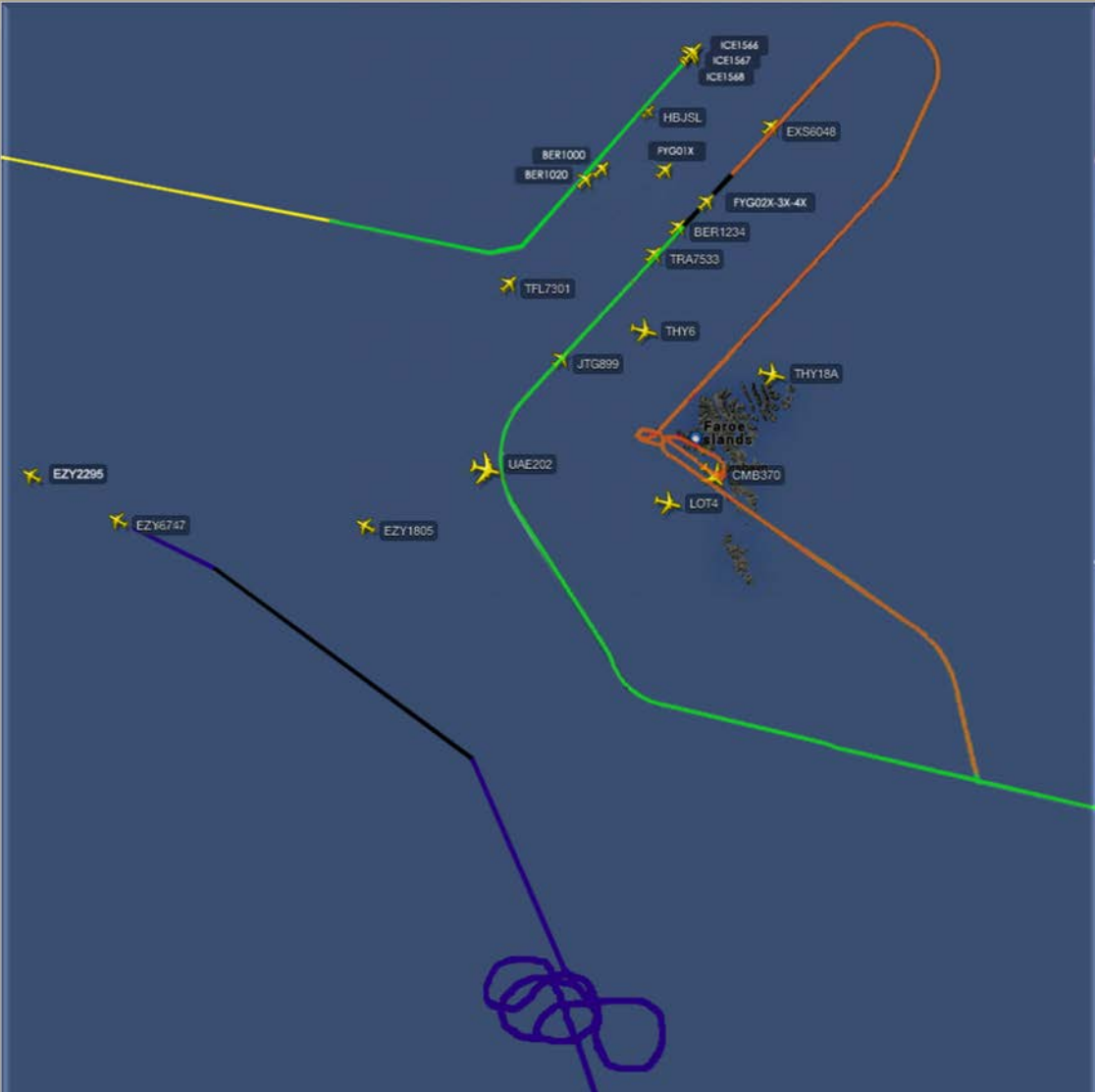
The TravelQuest (TQ) flight (above) got 3m 39s of totality traveling at Mach 0.78 at 35,000 feet and 56 passengers .



Xavier Jubier departed from the Paris - Le Bourget business airport, seen here (right) in front of the Falcon 7X #2, and is pictured with a good part of the Dassault Falcon Service staff (crew and ground) who actively participated to make a successful trip, with 3m 46s of totality at 49,000 feet.



Beattie's Bunch: 2015 – John Beattie teamed up with TEI Tours that created a charter flight out of Aberdeen to view the eclipse from the air at 35,000 feet



Several airplanes took advantage of being above the clouds to view the 2015 eclipse, with more than a dozen planes chartered to follow the eclipse, and a number of planes passed through at least part of the shadow, some even delayed their arrival by flying in circles so they would be able to intercept the shadow, and can be seen in the path here. The air traffic control authority set up two flights paths in the area for planes paralleling the passage of the Moons shadow. This is not a complete diagram of all flights, just those that are known, most data was derived from Xavier Jubier.

The captains commanding flights for Scandinavian Airlines, Norwegian Airlines, and Icelandic Air, all performed 360 degree loops to ensure that none of their passengers missed the spectacular natural occurrence. Image based on a screen capture made by Glenn Schneider from the [flightradar24](#) app.

The following planes lined up in this area to chase the eclipse and extend their time in the moon's shadow.

- **Air Berlin**
 - **BER1000** B737-800 ER2 @ 37,000 – Eclipse Reisen #2
 - **BER1020** A320-200 - Eclipse Reisen #1 → AirBerlin from Zurich – 3m 40s
 - **BER1234** B737-800 TQ-GS @ 37,000 - TravelQuest → from Düsseldorf - with Glenn Schneider
- **Private jets (coordinated by Amjet Executive SA and Xavier Jubier)**
 - > Dassault Falcon 7X XMJ between 44,000 to 49,000 feet
 - **FYG01X** – Antwerp (Private Flight)
 - **FYG02X** – Geneva
 - **FYG03X** – Paris – with Xavier Jubier – Duration of Totality: 3m 46s
 - **FYG04X** – Paris
- **HBJSJL** - MD-83 – Danish Air Transport dat.dk Charter from TEI Tours and working with John Beattie @ 35,000 from/to Aberdeen – Duration of Totality: 3m 38s+
- **Iceland Air**
 - **ICE1566** (FI1566) Icelandair
 - **ICE1567** (FI1567) Icelandair
 - **ICE1568** (FI1568) Icelandair
- **JetTime** - **JTG899** – JetTime
- **Jet2.com** - **EXS6048** – Green Witch – Omega Holidays / Jet2.com UK from Glasgow with Lee Sproats
- **Arkefly** - **TFL7301** – Arkefly – (Amsterdam)
- **Transavia** - Transavia Airlines (Amsterdam)

These planes observed the eclipse as an incidental event and passing through the path of totality during a regularly scheduled flight across this region. Some planes even delayed their arrival slightly by flying in circles for a while so they could give passengers an extra special event during their flight. The flights also had eclipse glasses aboard so passengers could view the progress of the eclipse.

- **Iceland Air flight from Reykjavik to London was grounded with a technical problem**
- **CMB370** –Unknown airline
- **EZY1805** from Manchester to Reykjavik @ 37,000 easyJet
- **EZY2295** from London to Reykjavik @ 37,000 easyJet
- **EZY6747** from Belfast - Airbus A319-211 easyJet
- **LOT4** – LOT Polish Airlines
- **THY6** – Istanbul – Turkish Airlines
- **THY18A** – Istanbul – Turkish Airlines
- **UAE202** - Emirates Airline

38,000 feet above the Atlantic-Norwegian Sea | by Robert Slobins

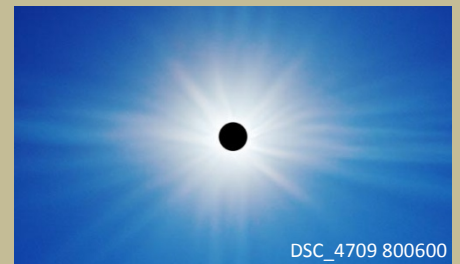
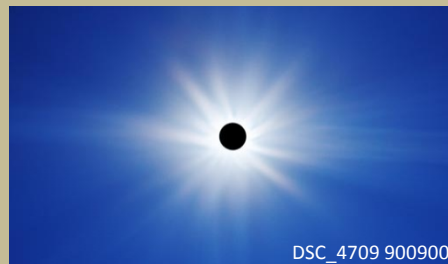
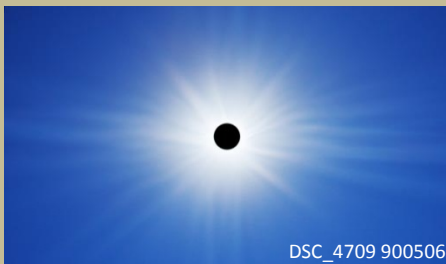
I joined an eclipse intercept flight from Glasgow to an area between Iceland and the Faroe Islands organized by Lee Sproats of Green Witch Telescopes and Binoculars, Omega Holidays and Jet2 Airlines, all of the UK. The arrangements and flight were superbly executed and I thank and commend them all for their efforts!

This was my fifteenth total solar eclipse and having the lunar umbra pass by while at 38,000 feet (11.5 km) above the ocean is an easy way to maintain a perfect record. However, this was the first eclipse I ever photographed from the air, and that made me into a beginner again. I faced these challenges:

- I had to shoot through plastic windows which, although clean, degrade the optics. Therefore my images have artifacts: horizontal streaks on both sides of the eclipsed sun. Images could also be distorted or out of focus especially at the window's edge.
- The flight passed through a zone of wind shear which caused turbulence. The jet engines added additional vibrations. I could have used a gyro-stabilizer, but that was beyond my budget. Vibration reduction is a feature on zoom lenses mostly, but zoom lenses tend to create ghost images. I chose instead to use fixed length lenses and shoot as many images as possible and hope to get a few good ones that I could combine and manipulate.

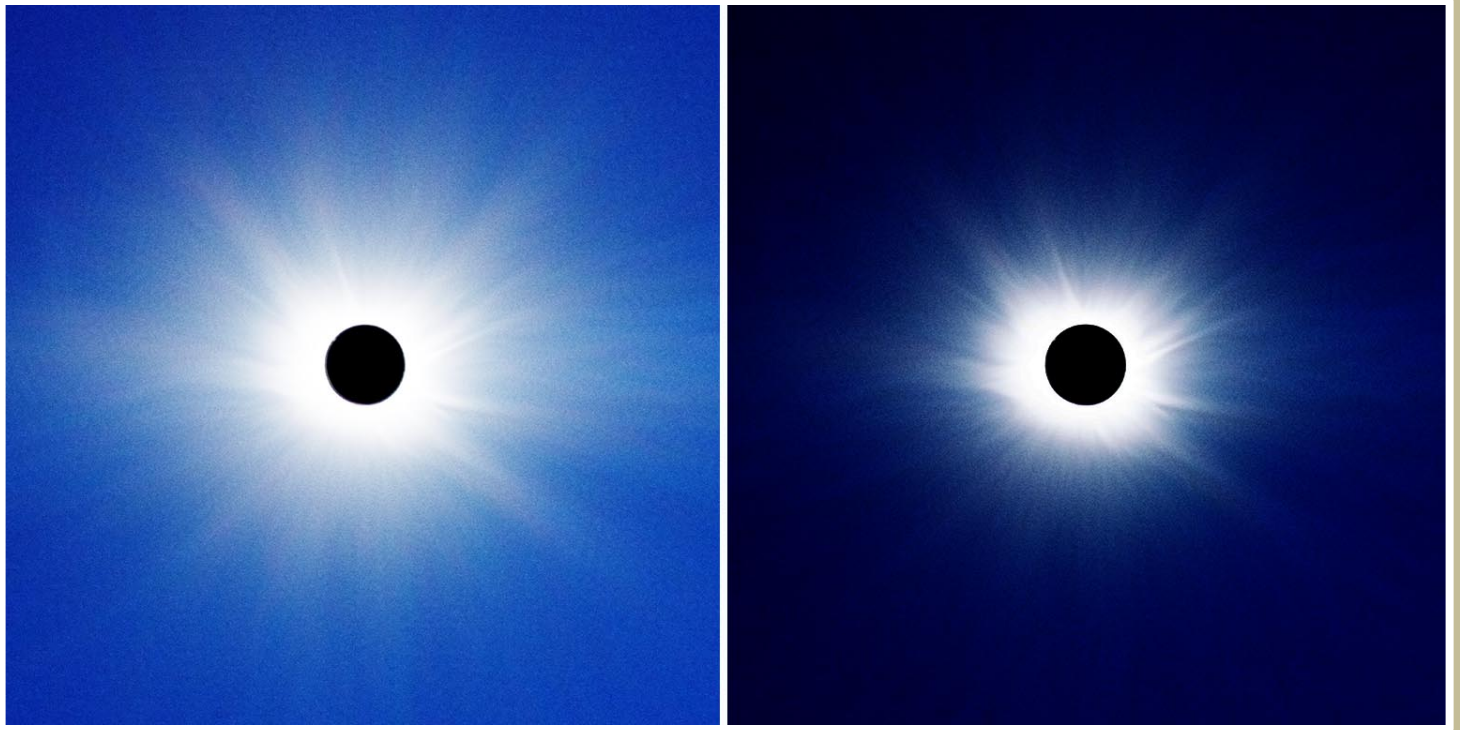
My primary goal was to record the solar corona as far from the sun as possible, taking advantage of the clear, clean atmosphere at high altitude. I would then use Capture One to translate the RAW files into images and create additional, longer exposures from them and extend my exposure range to 14 exposure values (EV's). Then I combined the images using Fitswork and brought out the details using its Larsen-Sekanina filter. I enhanced the outer corona by combining four of the "longest duration" exposures to one of the shorter duration exposures.

My image of the corona was off the center of the frame, and I am able to trace coronal streamers to about 28 solar radii to the west. The attached images are cropped for appearance.



- Image DSC_4709 900506 shows more detail, especially closer to the sun.
- Image DSC_4709 900900 shows less detail but better form, so one can better distinguish between coronal streamers and the defects caused by the plastic aircraft window.
- Image DSC_4709 900900 FF4 is a cropped version of image DSC_4709 900 900 (see the image on page 16)
- Image DSC_4709 800600 could be a compromise between image DSC_4709 900 900 and image DSC_4709 900 506, but it is more difficult, in my opinion, to distinguish between the window artifacts and coronal streamers.

These images were centered around 09:44 UTC. The flight experienced 3 minutes, 44 seconds of totality.



Robert's goal was to get the furthest extended corona he could record at altitude. Above is the same image, the one on the left displays the greatest extent of the corona, and the one on the right is with the levels adjusted to cut down the brightness of the sky. Compare the image on the right with that of the extended corona processed by Miloslav Druckmüller taken in Svalbard on page19. Artifacts from the airplane window have been removed in this final version. The image is centered around 09:44 UTC. © Robert Slobins

I have compared these images to those from the LASCO C2 and C3 images. There is a LASCO C3 image from 09:42 UTC showing a dispersing coronal mass ejection to the west and that is likely indicated by the two curving streamers to the upper right, just above the horizontal artifacts. There is a LASCO C2 image from 09:48 UTC that helps identify streamers from vertical artifacts.

For the coronal images, I used a Nikon D-800 body and a Nikon 180/2.8 ED AF-D lens at f/4 and f/2.8 and exposures ranging from 1/250 – 1/8 second and ISO values from 200-800.

I am also including an example of handheld coronal spectroscopy. Image DSC_28055 was the best of the lot because I could easily eliminate the secondary reflection of the solar corona below the spectrum. We see the distinct 5303 Å Fe XIV line here, as the only coronal line recorded. Technical details: Nikon D7000 body, Nikon 105/2.5 lens, ISO 640, f/2.5 1/320 second with Capture One processing adding 2.4 stops to bring out the image.



EARTH (and ICE) | SVALBARD



Not quite at the top of the world, but not all that far from it, [Svalbard](#) was the only other land mass that the path of totality would encounter. Like the Faroes, Svalbard is a set of islands found well within the Arctic Circle, but here the land is 60% glaciated. It is 44 times the size of the Faroes, yet is 20 times less populated, likely due to its much colder climate. At 78-degrees north, [Longyearbyen](#) is the main population center, and is a community of nearly 2000, three-quarters of the entire population of Svalbard, and it was here that the perhaps 1000 or more eclipse chasers descended.

Svalbard has more polar bears (around 3000+) than people, and resides on the edge of the polar ice pack. The Moon was once thought to be a great place to store and protect the seeds of the world, but because of the great difficulty and cost in getting them there, Svalbard was chosen as a more suitable location for what is now called the [Svalbard Global Seed Vault](#), which was completed in 2008. As of 2015 it stores over 840,000 samples at -18C (0F).



It is so far north that the “auroral oval” or “donut” lies overhead, specifically the donut “hole,” meaning the aurora borealis is often seen to the south. You might think of Svalbard as the poor man’s Antarctica as it is not quite as extreme in temperatures as Antarctica, and it is not nearly as remote since it is not too far from Europe, so air transportation is much easier and cost effective. Svalbard is one of those places where people go to see and photograph polar bears in the wild.



Mark Sood, CEO/COO of *A Classic Tours Collection*, and eclipse guide Prof. Jay Pasachoff of Williams College, viewed the eclipse successfully from Svalbard with the tour participants and members of Williams College.

Paul Maley, eclipse guide for Ring of Fire, displays the traditional Texas flag in Svalbard that they take on all eclipse trips.



Outside the confines of the city, polar bears were a big concern, and rightly so. Indeed a polar bear did attack an individual that was there to view the eclipse. Jakub Moravec, of the

Czech Republic (CR), was camping in a tent, without taking the required precautions, when a polar bear attacked him. A fellow camper from the same tour group had a pistol at hand and she fired at the polar bear, which then fled. The eclipse chaser was injured and was taken to the local hospital and treated for scratches, while the polar bear was located and destroyed for its behavior.

Svalbard was the only land location that the centerline passed over, and as a stroke of luck that occurred not far northwest of Longyearbyen, and the duration was not significantly different. There are several hotels in Svalbard, some with very small rooms, and for those that did not book early, there were camps for tents.

Although the land mass is much larger than the Faroes, there is little area here outside of the population centers near the west coast or along the Fjords. Geoff Sims (AU) and Nelson Quan (CN) trekked out onto the ice a few kilometers in order to be isolate from everyone and set up multiple cameras. The results will be pieced together into their “Chasing Shadows” movie about Geoff’s travels in 2013 and 2015 to view the solar eclipses. Nelson had a Kickstarter that raised \$20,000 in order to put together the 2nd half of the movie and generate disks for subscribers.



This 25 frame sequence was taken by Valeria Hwang with the Travel Quest tour group. 1 exposure was taken every 5 minutes.

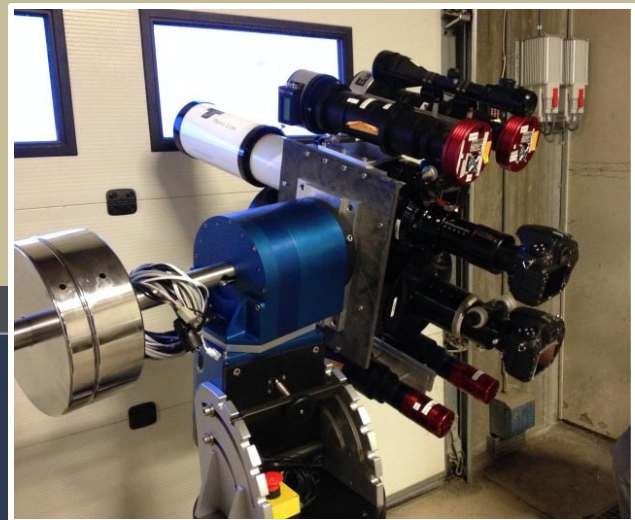
More often than not, the skies are often cloudy in the high arctic; however, the day of the eclipse the Sun shone in an almost pristine, clear blue sky, which also meant it was rather chilly without the clouds to keep things warm. Everyone who came here to this cold environment were given one of the grandest views of a spectacular eclipse.

Experienced eclipse chasers tried to plan for cold conditions, and those that took extra precautions did well. Cold temps are bad for digital cameras as the batteries cannot take the extreme cold weather very well. They effectively will shut down until you can get them to a warmer temperature. A number of cameras stopped working for this reason, or the shutters froze. Photographers who needed to make camera adjustments could not take having their gloves off for more than 30 seconds without it being very painful. Chasers in Longyearbyen were able to see 2m 27s of totality.



SOLAR WIND SHERPAS

The 2015 Solar Wind Sherpas traveled to Svalbard to image the eclipse in various wavelengths. The imaging platform is seen assembled here on a massive mounting. All photos © and are used with permissions given by Shadia Habbal.



SOLAR CORONA OUT TO 15 SOLAR RADII

48 images were used to create this image of totality as seen in Svalbard which was taken with 2 different Nikon cameras and 2 different lenses, a 200mm and a 800mm, and at 2 different locations in Longyearbyen. © by Miloslav Druckmüller, Shadia Habbal, Peter Aniol, Pavel Štarha and used by permission.

Visit this web site at <http://www.zam.fme.vutbr.cz/~druck/Eclipse/index.htm>

The Sherpas are a collection of teams that were positioned along the path of totality in order to maximize potential viewing. Dr. Shadia Habbal, Institute for Astronomy (IfA), University of Hawaii was the Team Lead overseeing the project.

- **Longyearbyen;** 2 teams, using Fe XII and Fe XIV instruments, IR spectrograph, Geiger counter, all sky cameras, visible cameras and GoPro videos and 11 team members
- **Faroe Islands;** using Fe XII and Fe XIV instruments, and 3 team members
- **Airplane Team;** using Fe XII and Fe XIV instruments, and 4 team members
- **Dublin Team;** using Fe XII and Fe XIV instruments, and 2 team members

Details of the individuals are listed on the Sherpas' web pages.



A view of Longyearbyen (left) and eclipse chasers line up to view and photograph the eclipse (below), for which one had to go at least a kilometer out of town.

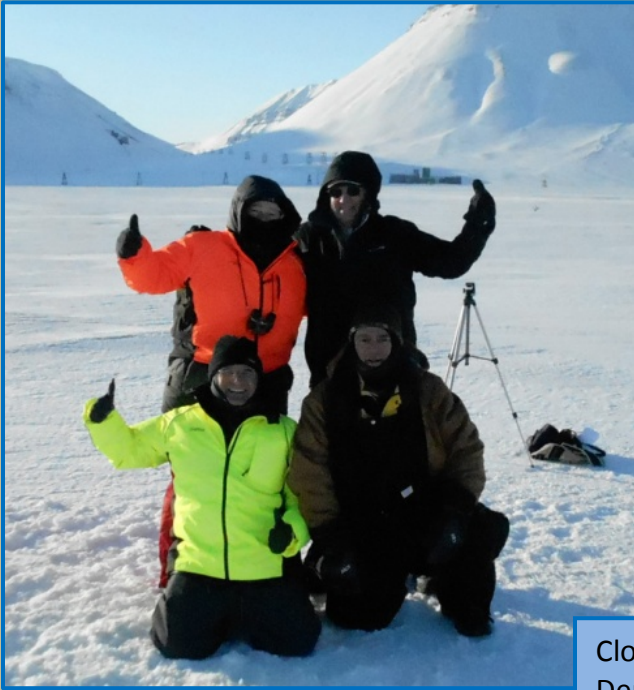


Total Solar Eclipse in Svalbard - Adventdalen

Patrick Poitevin

All photos are used with permission and are © from Patrick and Joanne Poitevin
For much more see his site at; <http://patrickpoitevin.weebly.com/tse-20-march-2015.html>

It was an amazing trip... Joanne and I travelled to Svalbard, the most northern settlement about 800 miles from the North Pole. Contrasting the Faroe Islands and Svalbard, we choose the latter to observe the total solar eclipse of 20 March 2015.



Preparation started more than 2 years ago. Despite the majority of the Svalbard accommodation having been taken by the larger eclipse tour operators, Jo found two rooms. Since I had been in Svalbard in 1993 for a partial solar eclipse, I knew there is a not a lot to find in terms of accommodation. We had two double rooms in one of the old Coalminers barracks transformed into accommodation, called Guesthuset 102. All other accommodation was booked more than five years in advance by the major eclipse chasing organizations. We offered the other room to our dear friend Derryl Barr, who shared with his friend Johnny Duran.

Clockwise, Joanne Poitevin (orange coat), Derryl Barr, Johnny Duran, Patrick Poitevin

Our flights we fixed about 11 months ago and we secured a single week's stay. March is still pretty cold in Svalbard. Temperatures can go down below minus 30 degrees Celsius. So we were geared up to the extremes as we would have to concur at least a few hours of extreme cold during an eclipse period of 2 and half hours. No shelter, just in the middle of nowhere. We would have a 2 minute 27 seconds totality in which where the Sun is completely covered by the Moon and complete darkness occurs in this permafrost ice-and-snow region.

We had a few days to "acclimatize" and thought we could get used to the cold. Dog sledging on the day before the eclipse for about four hours and besides cameras and equipment, also checked out; fingers and feet got so frozen and stiff it was painful. So, we used extra layers for eclipse day! No telescopes and expensive cameras for this eclipse due to power issues where they will die almost instantly, lens-focusing failures and lens frost once you are in the "sticks." Not to mention our fingers or hands



[We] hired a private taxi and a private polar-bear guard (Katja) as we selected our solar eclipse observation place where no mountains obscured the low altitude sun as they were outside of protected zone. Once out of the Longyearbyen settlement, due to the polar bears, everyone is obliged to carry a gun or rifle. Even during our stay, a Czech hiker was attacked and the polar bear had to be shot.



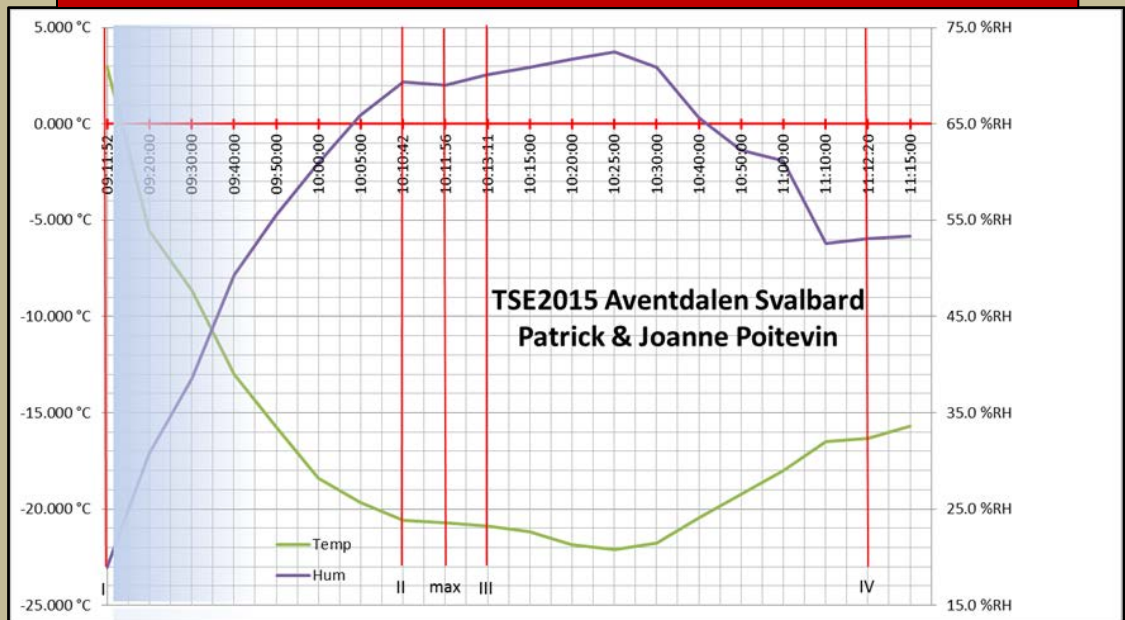
Katja, Polar Bear Guard

Eclipse day and first contact would be at 10h 11m local time, and though it was completely clouded out at 5 h in the morning, the sky opened up and it completely cleared well before eclipse time. The taxi driver told us that a lot of eclipse chasers have been around and he described them "as penguins," standing in ice or snow and watching. We felt safe having the guard with rifle and could observe the eclipse entirely under ideal clear sky conditions.

The sky was clear blue and crisp. A "sun dog," a small rainbow at 22 degrees at the right appeared, then a circumzenithal arc was visible above the Sun. Wow!!! A perfect sky. As the partial phase progressed it started to become darker. Crescents were visible when we crossed fingers over the long shadows. The shadows were long and fuzzy. The sun was at an altitude of only about 10 degrees. We could feel the temperature drop. Johnny measured it as low as minus 25 degrees Celsius. But the data of the programmed sensors I had set for humidity and temperature had to be analyzed and downloaded once we were home. The sensors gave a drop of nearly 6.5 degrees, down to -22 Celsius, while the humidity increased nearly 20%. The log showed the coldest temperature being -22.1 Celsius about 13 minutes after the totality. Humidity increased nearly 20%, being 74.1%, also about 15 minutes after maximum eclipse. (see the accompanying graph).

Temperature and Humidity measurements were captured every second. Sensors were not acclimatized in the beginning, "serious" values begin from 09h45 onwards.

Just before totality, shadow bands, very obvious and clear on the snow and ice surface in front of us were visible. Amazing! I started a wide field camera to run for filming the eclipse and surroundings. Once home, I could see what it showed. It was my first time



using this camera, but at least it could withstand the lower temperatures. Venus was constantly in the footage and so were the shadow bands that we noticed visually. The corona was overexposed, but the surroundings were very good! Another small pocket camera, which I held inside all the layers on my body for some general shots also worked well.

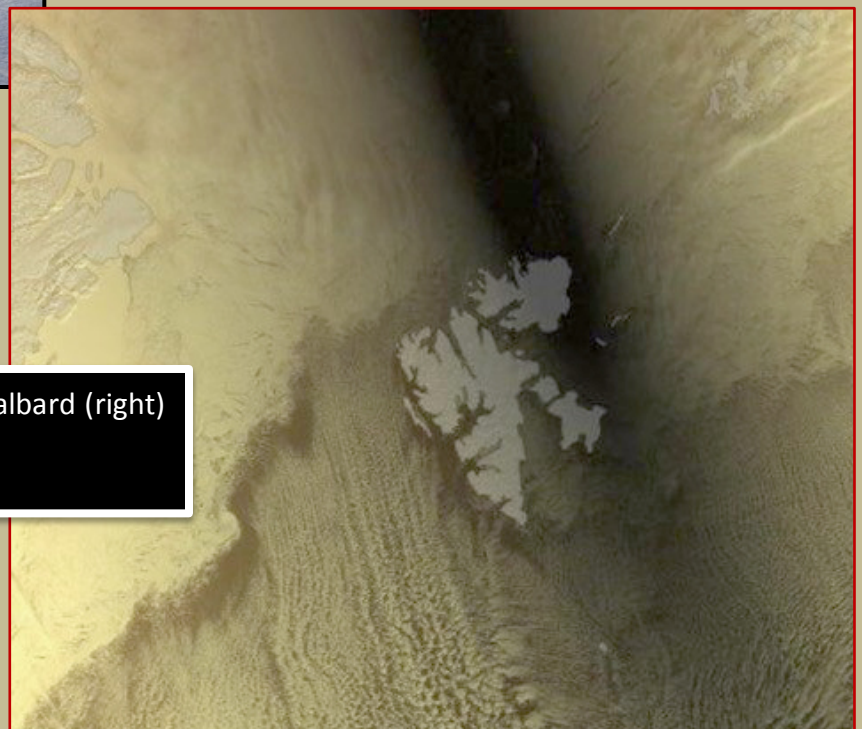
Visually, Baily's beads, the chromosphere and the corona showed well. There were beautiful prominent streamers in the corona, very asymmetric, so white so crisp. Wow!!! This was a beauty! The sky remained cloudless and perfect for the entire eclipse, and the altitude of the Sun was being so low that it seemed to be larger than normal! There were prominences that were large and noticeable; and the planet Venus was visible far to the left of the Sun.

But the 2½ minutes were over so quickly. The chromosphere, Baily's beads and a beautiful diamond ring appeared and the show was over! We observed once again beautiful shadow bands on the white surface. The partial phase and the solar eclipse was finished at 12h 12m local time. Feet half frozen, exited but tired and our transport which we arranged did not turn up. At least



our polar bear guard was constantly with us to protect us from the any predators. So after an extra half-hour delay waiting for the taxi to show, we returned to the settlement to warm up and have . . . drinks!!!

Although [I have] seen many solar eclipses before, this was the most beautiful and extreme total solar eclipse I have seen. No pictures and no photos or footage can describe it!



The Moon's shadow over eastern Svalbard (right) as seen from the Suomi NPP Satellite. Image courtesy NASA.



An excellent composition of images made in Svalbard, by Reinhold Wittich (DE).
See more images of this eclipse and other astronomical marvels at; <http://www.wittich.com/>.

School Bans Watching Eclipse - From RT online @ rt.com/uk

The original article with this text no longer exists at its original web page, but is included here because of its relevance in eclipse education.

The first eclipse of the 21st century [which] was visible across the UK and northern Europe [was] on Friday. In the UK, the Moon obscured at least 83 percent of the Sun, reaching its peak at 9.35am. A West London school (North Primary School in Southall) banned classes from watching last Friday's partial eclipse outdoors due to "cultural and religious" reasons, but were instead [allowed] to watch on TV screens in the classroom. Ealing Council, the local authority, said each school was responsible for its own policies concerning the eclipse.

Parent Phil Belman, whose 7-year-old daughter goes to the school, accused them of giving in to "superstition." He said he rang the school to demand an explanation from head teacher Ivor Johnstone. *"I was put through to him straight away and he confirmed it, religious and cultural reasons. I said that was totally outrageous. I asked him to elaborate and he refused,"* Belman said. *"I am extremely upset about it. My child went in having spent an hour preparing and making up her pinhole camera. This is an issue about scientific matters versus religious superstition. I am outraged – is it going to be Darwin next? We will be like mid-America,"* he added. Johnstone said in a statement: *"The school made this decision when we became aware of religious and cultural concerns associated with observing an eclipse directly. Although we are sorry for any disappointment, pupils were still able to watch the eclipse on screens in classrooms. However, the overcast conditions in West London today meant they would not have been able to see it live in any case."*

North Primary School, which has no religious affiliation, has yet to elaborate on which religions or cultures deem looking at a solar eclipse to be offensive. When RT contacted the school, a spokesperson said it had *"no comment."* Social media users in the UK expressed their bafflement at the news.

Editor: The rest of the article deviated into specifics about religious and cultural backgrounds that had seemed out of place for this article. Indeed this was just one particular instance, whereas many other schools which had optimal viewing conditions and were allowed to view the eclipse using filtered glasses.

THE RETURN OF ~~SHADOW BANDS~~ ON THE CLOUDS FOR TSE2015!



The two images above were shot by Australian eclipse chaser Danny Widdicombe at the Thorfinn-Nielsen viewing location on the Faroe Islands. If you look carefully on the images you can see the shadow bands on the clouds, which makes this the 3rd total solar eclipse since 2010 to demonstrate this detail. The only total eclipse not exhibiting this feature (that I am aware of) was that of TSE2013. These images were taken a fraction of a second apart as a small cloud passed in front of the Sun during 3rd contact. In the first image (left) the bands can be seen on the thin cloud both in front of and next to the eclipsed Sun. The second image, now slightly brighter from more sunlight being exposed, shows the bands on the cloud in front of the eclipsed Sun, and also on the cloud to the lower right, but still shows a hint of the shadow bands.

Likely the images on these pages, all taken from the Sandavágur area, are the only images of the shadow bands in the sky that were captured during TSE2015. This effect was first noticed in French Polynesia and Easter Island for TSE2010, where several individuals captured them. This was a real revelation; who knew that something “new” could be discovered? For TSE2012, there were some photographs showing the shadow bands that were taken on the eastern coast. I have still not seen any images of them from TSE2013 (please let the editor know if you have some), and now TSE2015.

For all 3 times they were visible, they were imaged at or nearly at sea level, and on the beach near the water. I do not know that this type of location is part of the equation; I am just saying that this is something in common about each of them. In Australia, at the viewing sight that was inland at Maitland Downs, there we had thin clouds during 3rd contact, but I did not capture this effect. With all of the images of the shadow bands on the clouds you should be able to notice that the lines run parallel to the point of the cusps at 3rd contact (for these images).

- | | | |
|--------------------------------------|----------|------------------------|
| • French Polynesia and Easter Island | Issue 11 | Pages 1 and 33 thru 35 |
| • Australia | Issue 13 | Pages 16 and 17 |
| • Faroe Islands | Issue 16 | Pages 25 and 26 (here) |



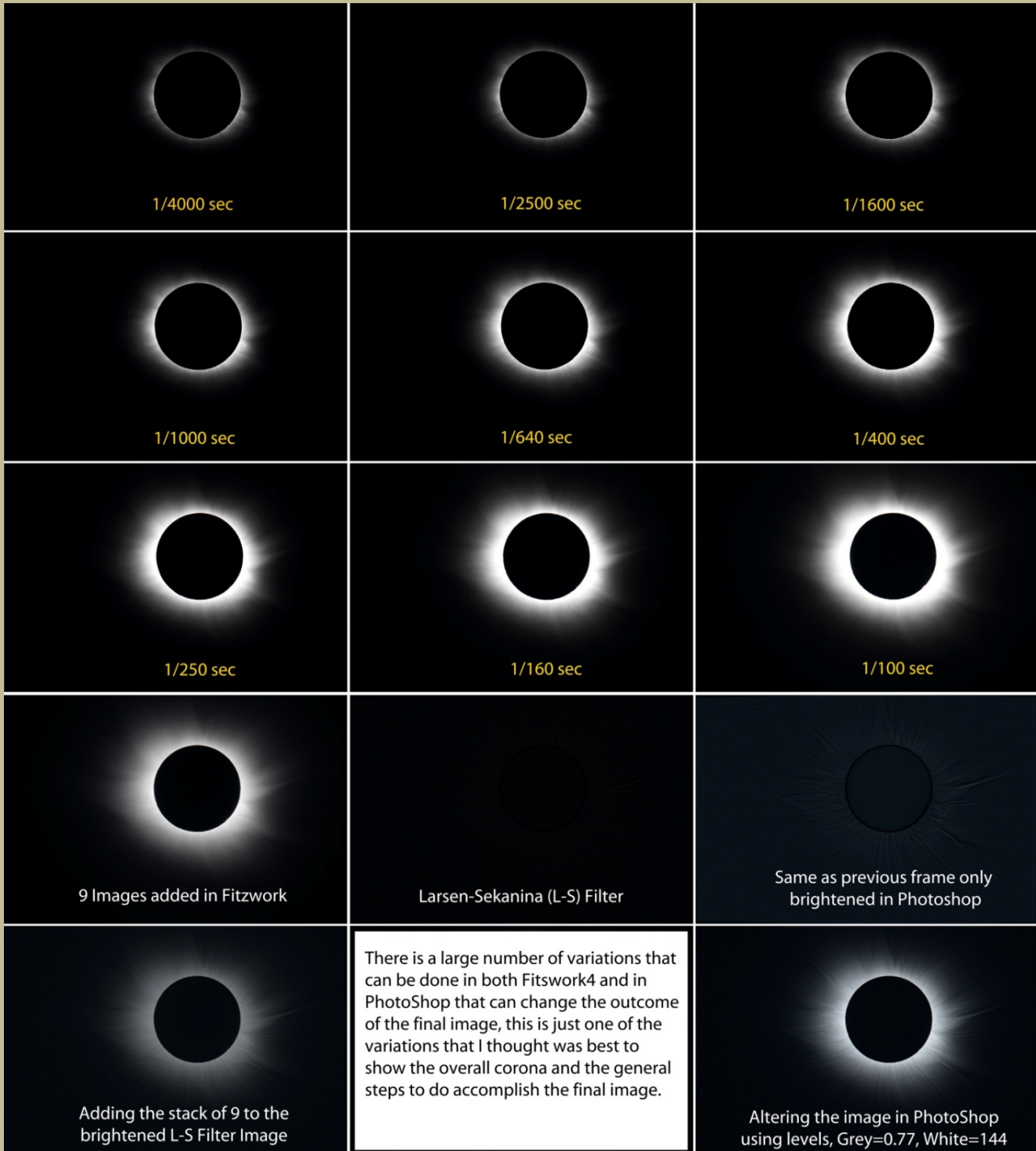
Kimon Papathanasopoulos (GR) was on the Faroe Islands, and captured the shadow bands on the clouds as well just after 3rd contact. The image on the left is his original, and on the right I have inverted altered the brightness and contrast so the shadow bands are easier to identify, although you should be able to see them in both images. Be sure to zoom in on this image to see the detail of the shadow bands. The more you zoom in, the more you will be able to see.

Also at the Thorfinn-Nielsen location, Stefano Rosoni (IT) captured the shadow bands on the clouds (below). The already over exposed image is stretched a bit further here so the detail of the shadow bands can be seen with ease.



TOTAL SOLAR ECLIPSE PHOTOGRAPHY AND IMAGE PROCESSING with Fitswork 4.0 and Photoshop CS5

Once you know the simple steps to combining your eclipse images, you will be able to create an awesome composite. Of course it starts out with taking multiple exposures during the eclipse in order to capture several levels of coronal details. In the example here I took 9 levels of exposures at 2/3 stop intervals, from 1/4000th second to 1/100th second. I knew I had some of the very few images on the Faroe Islands since most observers saw only clouds. I had contacted eclipse image guru Mikoslav Druckmüller about using his software on my images but he has a limitation where he needs images that have exposures up to 4 seconds in duration, which I did not have, and was 13 stops (at the 2/3rds interval) greater than the longest exposure I shot, so I generated the images on Page 7.



Now Booking: 2016 Total Solar Eclipse

~ INDONESIA ~

Please be aware that much of the info here was compiled several months ago, and many things have likely changed since then, sorry for the delay,



Eclipse Guide: Prof Jay Pasachoff

[2016 Solar Eclipse Tours | Option 1 | Wonderful Indonesia](#)

March 6 to 20 / \$3550.USD / 16 day tour / Arrive: Jakarta, Depart: Bali

[2016 Solar Eclipse Tours | Option 2 | Balinese New Year and Solar Eclipse](#)

March 1 to 10 / \$3495.USD / 10 day tour / Arrive: Bali, Depart: Ternate

[2016 Solar Eclipse Tours | Option 3 | Jakarta and Solar Eclipse](#)

March 5 to 10 / \$2350.USD / 6 day tour / RT: Jakarta

Eclipse viewing from Ternate for nearly 3 minutes,

Possible additional viewing from Moti Island (3m 13s) for \$575.USD, RT: Ternate



ASTRO ADVENTURES

[2016 Indonesia Total Solar Eclipse](#)

March 1 to 17 / \$2,499.USD / 17 day tour / Ship: ms Volendam / RT: Singapour /

Totality viewing: Makassar Strait



[Ternate & Tidore Total Solar Eclipse](#)

March 4 to 11 / £1995.GBP / 8 day tour / RT: London /

Eclipse viewing from Tidore (3m 5s) or Moti Island (3m 15s) @ an extra cost

[Grand Indonesia](#)

March 4 to 25 / £4,145. GBP / 22 day tour / RT: London -

Eclipse viewing: 1 ½ hours south of Palu

View eclipse from 3 possible locations, between 19 and 17 seconds duration

Extensions available for Bali – Komodo Adventure, Temples & Volcanoes, East Indonesia Adventure

Borneo Eclipse Tour 2016 (A)

March 3 to 10 / 10,890,000.IDR / 8 day tour / Arrive: Pangkalanbun, Depart: Balikpapan /
Eclipse viewing: Near Tanahgrogot, south of Balikpapan

Borneo Eclipse Tour 2016 (B)

March 3 to 10 / 8,950,000.IDR / 8 day tour / Arrive: Pangkalanbun, Depart: Balikpapan /
Eclipse viewing: Near Tanahgrogot, south of Balikpapan



New Guinea Circle Solar Eclipse

Guest Lecturer: David Reneke
February 23 to March 18 / \$20,290.AUD / 25 day tour / Ship: Coral Discoverer /
Arrive: Alotau, Papua New Guinea, Depart: Darwin, AU /
Eclipse viewing: At sea near Pulaw Jiew (about 3½ minutes)

West Papua Solar Eclipse

Guest Lecturer: David Reneke
March 4 to March 18 / \$13,160.AUD / 15 day tour / Ship: Coral Discoverer /
Arrive: Wewak, Depart: Darwin, AU /
Eclipse viewing: At sea near Pulaw Jiew (about 3½ minutes)

Eclipse Traveler

Eclipse Guide: Donald Goldsmith, PhD

2016 Luxury Eclipse Cruise

March 3 to 15 / \$9,550.USD / 13 day tour / Arrive: Darwin, Depart: Kota Kinabalu /
Eclipse viewing: From the sea west of Ternate

2016 Bali Total Solar Eclipse

March 5 to 10 / \$2,565.USD / 6 day tour / Arrive: Bali, Depart: Jakarta /
Eclipse viewing: Pangkal Pinang (2m 10s)

2016 Bali - Orangutan Eclipse

March 1 to 9 / \$3,565.USD / 9 day tour / Arrive: Bali, Depart: Jakarta /
Eclipse viewing: Pangkal Pinang (2m 10s)

2016 Orangutan – Komodo - Bali Eclipse

March 1 to 10 / \$5,448.USD / 10 day tour / Arrive: Bali, Depart: Jakarta /
Eclipse viewing: Pangkal Pinang (2m 10s)

2016 Orangutan – Java Eclipse

March 1 to 10 / \$3,365.USD / 10 day tour / RT: Jakarta /
Eclipse viewing: Pangkal Pinang (2m 10s)

2016 Bali – Komodo Eclipse

March 1 to 10 / \$3,695.USD / 10 day tour / Arrive: Bali, Depart: Jakarta /
Eclipse viewing: Pangkal Pinang (2m 10s)



Indonesia Eclipse Tour 2016

March 2 to 13 / \$3,040.USD / 12 day tour / RT: London / Eclipse viewing: Tidore (3m 12s)



Astronomy Tours

Eclipse Guide: Dr. John Mason, MBE

Java

February 28 to March 14 / £4,799.BPS / 16 day tour / RT: London / Eclipse viewing from Tidore

Sumatra & Java

February 21 to March 11 / £5,859.BPS / 20 day tour / RT: London / Eclipse viewing from Tidore

Express (Bali & Ternate)

March 4 to March 11 / £3,539.BPS / 8 day tour / RT: London / Eclipse viewing from Tidore

Bali

March 6 to March 15 / £3,569.BPS / 16 day tour / RT: London / Eclipse viewing from Tidore



16-Day Indonesia Explorer & Solar Eclipse

March 1 to 17 / \$2,399.USD / 16 day tour / RT: Singapore /
Eclipse viewing: Makassar Strait aboard the ms Volendam



Indonesian TSE & Bali New Year

March 2 to 11 / £3,509.BPS / 10 day tour / RT: Bali / Eclipse viewing: 2m 45s from Sulawesi

Umbratoll – Woleai Micronesia TSE

February 29 to March 12 / £1,180.BPS / 13 day tour / RT: Colonia /
Eclipse viewing: 4m 03s from Woleai



Indonesia Solar Eclipse & Bali Tour

March 2 to 11 / \$2,175.USD / 10 day tour / RT: Bali / Eclipse viewing: Biromaru (2m 48s)



The Great Java Sea Total Solar Eclipse

February 27 to March 10 / \$N/A.USD / 13 day tour / RT: SFO, LAX or JFK /
Eclipse viewing: Belitung Island (2m 48s)

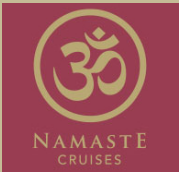


and



[Indonesia Total Solar Eclipse](#)

Eclipse Guides: Greg Bryant, Robert Naeye, David J. Tholen, PhD and Michael Wyession, PhD
March 1 to 17 / \$1999.USD / 17 day tour / RT: Singapore /
Eclipse viewing: Makassar Strait (2m 45s) aboard the ms Volendam



[Star Constellation and Total Solar Eclipse Cruise](#)

March 5 to 12 / \$4200.USD / 8 day tour / RT: Sorong, West Papua /
Eclipse viewing: Aboard the K M Bidadari from the Halmahera Sea (east of North Maluku)



with



[Total Solar Eclipse Indonesia](#)

Eclipse Guide / Tour Leader: Dr. B. Ralph Chou
March 6 to 18 / \$3495.USD / 13 day tour / Arrive: Jakarta, Depart: Bali
Eclipse viewing: Pangkalan Bun on Kalimantan Island, Indonesia



[Solar Eclipse Tour 2016 Kalimantan](#)

March 5 to 10 / £1695.BPS / 6 day tour / RT: Jakarta / Eclipse viewing: Palangkaraya (2m 29s)



Eclipse Guide: Dr. John Mason, MBE

[2016 Total Solar Eclipse in Indonesia](#)

February 28 to March 14 / \$6350.USD / 16 day tour / RT: London / Eclipse viewing: Tidore

[Indonesia Solar Eclipse Vacation - 2016 Sulawesi](#)

March 3 to March 10 / \$2515.USD / 8 day tour / RT: Jakarta /
Eclipse viewing: south of Palu (2m 50s)

[2016 Solar Eclipse Cruise in Indonesia, Kalimantan](#)

March 5 to 10 / \$2625.USD / 6 day tour / RT: Jakarta / Eclipse viewing: Palangkaraya (2m 29s)

[2016 Sumatra and Java Solar Eclipse Tour, Indonesia](#)

February 21 to March 10 / £5,859.BPS or \$9105.USD / 20 day tour / RT: London /
Eclipse viewing: Tidore (2m 29s)

[2016 Bali Solar Eclipse Tour in Indonesia](#)

March 7 to 14 / \$4555.USD / 8 day tour / RT: London / Eclipse viewing: Tidore (2m 29s)



Tour 1A – SOLD OUT

February 29 to March 10 / \$4299.USD / 11 day tour / RT: Jakarta /
Eclipse viewing: Ternate (2m 41s)

Tour 1B – SOLD OUT

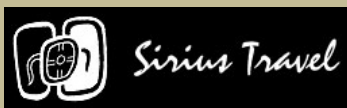
February 29 to March 10 / \$4299.USD / 11 day tour / RT: Jakarta /
Eclipse viewing: Ternate (2m 41s)

Tour 2 – SOLD OUT

March 1 to 10 / \$4299.USD / 10 day tour / RT: Jakarta / Eclipse viewing: Ternate (2m 41s)

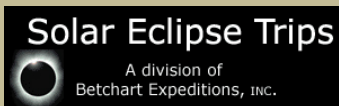
Solar Eclipse Cruise 2016

Eclipse Guide: Paul Maley / February 27 to March 14 / \$15,675.USD / 17 day tour /
Arrive: Honiara, Solomon Islands, Depart: Koror, Palau
Eclipse viewing: At sea aboard the *Silver Discoverer* (4m 7s)



Exploring Indonesia

Eclipse Guides: Kamran Sahami, PhD and Ralph Shuping, PhD
March 5 to 15 / \$5,682.USD / 11 day tour / RT: Singapore
Eclipse viewing: Luwuk, Sulawesi (2m 59s)



Bali and Sulawesi Indonesia Total Solar Eclipse

AAAS Travels / ASC & Sigma Xi Expeditions / The Planetary Society
February 26 to March 10 / \$5,895.USD + \$1,395.USD for in tour airfare / 13 day tour /
RT: Jakarta (add \$1,795 for RT: San Francisco) / Eclipse viewing from Luwuk, Sulawesi (2m 59s)

South America Classic Tours

Program 01 - Ternate

March 7 to 12 / € 1.985 / 6 day tour / RT: Jakarta / Eclipse viewing: Ternate (2m 45s)

Program 02 - Ternate

March 5 to 20 / € 3.350 / 16 day tour / RT: Jakarta / Eclipse viewing: Ternate (2m 45s)

Program 03 - Luwuk

March 7 to 10 / € 925 / 4 day tour / RT: Luwuk / Eclipse viewing: Luwuk (2m 59s)

LAST MINUTE NOTE FOR, ALASKA AIRLINES – As of 2016.02.05, Joe Rao reports: 1 remaining window seat on the starboard (right) side of Flight 870 (seat 16F) from Anchorage to Honolulu is still available for the March 08 scheduled departure at 1:35 pm, but will actually be postponed until 2:00 pm in order to intercept the eclipse and give observers 1m53s of totality. There are a few other seats available on the starboard side, but no other window seats. This entire row is marked as still available and is a more expensive seat. Fly up early on March 2 or 3, spend a few days watching the aurora (the perfect time of year for this, and return to watch the eclipse on the 8th. The Sun will be 10 degrees above the horizon at totality. There will be a few eclipse chasers there.



[Bali New Year and Total Solar Eclipse](#)

March 2 to 11 / \$5,335.USD / 10 day tour / RT: Bali / Eclipse viewing: Sulawesi (2m 45s)
Eclipse viewing: Grand Teton NP (2m 16s) or (2m 20s)

[Indonesia and Borneo Cruise to Totality](#)

March 4 to 15 / \$7,495.USD / 12 day tour / Arrive: Darwin, AU, Depart: Koto Kinabalu, ID /
Totality viewing: Molucca Sea (3m 12s) aboard the PONANT Le Sóléal cruise ship

TOTAL DISCOVERIES

[Sulawesi Tour](#)

February 29 to March 10 / \$2,895.USD / 11 day tour / Arrive: Makassar, Depart: Luwuk /
Totality viewing: Molucca Sea (3m 12s) aboard the PONANT Le Sóléal cruise ship

[Easy Raja Ampat \(Euphoria Cruise\)](#)

March 3 to 11 / \$5,990.USD / 9 day tour / RT: Sorong / Ship: Euphoria /
Totality viewing: From Molucca sea (3m+)

[Comfort Raja Ampat \(Tiger Blue Cruise\)](#)

March 3 to 11 / \$99,000.USD (Charter cruise for 12 people) Diving available daily / 9 day tour /
RT: Sorong / Ship: Tiger Blue / Totality viewing: Molucca Sea (3m+)

[Exclusive Raja Ampat \(Mutiara Laut Cruise\)](#) **SOLD OUT**

Exclusive Eclipse /Astronomy Guide: Slim Hamdani

March 3 to 11 / \$11,450.USD – Diving available daily / 9 day tour / RT: Sorong /
Ship: Mutiara Laut / Totality viewing: Molucca Sea (3m+)



[Total Solar Eclipse Tour 2016 ro Palu Sulawesi, Indonesia](#)

Exclusive Eclipse /Astronomy Guide: Slim Hamdani

March 3 to 11 / \$2,429.USD (addl. airfare from LAX or SFO for \$974 and leaving March 2) /
9 or 10 day tour / RT: Jakarta / Totality viewing: Sulawesi (2m 50s)

[Solar Eclipse Cruise from Singapore 2016](#)

March 1 to 17 / \$1,999.USD / Ship: ms Volendam / 17 day tour / RT: Singapore /
Totality viewing: Makassar Strait (2m 45s)



[March 9, 2016 Total Solar Eclipse](#)

March 3 to 10 / \$2,650.USD / 8 day tour / RT: Jakarta /
Totality viewing: Pangkal Pinang (2m 10s)



[Magic Minutes – Eclipse 2016](#) **SOLD OUT**

March 6 to 11 / 2370 € / 6 day tour / RT: Jakarta /
Totality viewing: Ternate

[Magic Minutes – Eclipse 2016](#) **SOLD OUT**

March 6 to 18 / 3650 € / 6 day tour / RT: Jakarta /
Totality viewing: Ternate



[Total Solar Eclipse of 2016: Darwin to Kota Kinabalu](#)

Eclipse Guides: Dr. Rick Fienberg, Leila Thompson
March 4 to 15 / \$7,495.USD / 6 day tour / Ship: Le Soleal /
Arrive: Darwin, Depart: Kota Kinabalu /
Totality viewing: At Sea near Ternate - 0° 06.0438 ' N 126° 19.84016' E (3m 12.5s)



Eclipse Guide: Prof Jay Pasachoff

[2017 Solar Eclipse Tours | Option 1 | Best of Oregon Tour](#)

August 12 to 22 / \$TBD.USD / 11 day tour / RT: Portland, OR

[2017 Solar Eclipse Tours | Option 2 | Best of Oregon Tour, early start](#)

August 8 to 22 / \$TBD.USD / 11 day tour / RT: Portland, OR

[2017 Solar Eclipse Tours | Option 3 | Best of Oregon Tour, extended](#)

August 12 to 31 / \$TBD.USD / 11 day tour / RT: Portland, OR

[2017 Solar Eclipse Tours | Option 4 | Salem with the Eclipse](#)

August 19 to 22 / \$TBD.USD / 4 day tour / RT: Salem, OR

[2017 Solar Eclipse Tours | Option 5 | Salem \(extended\) with the Eclipse](#)

August 15 to 22 / \$TBD.USD / 8 day tour / RT: Salem, OR

Eclipse viewing for all 2017 totality tours will be from a location in Salem, OR (2m 00s)



ASTRO ADVENTURES

[2017 USA Total Solar Eclipse](#) **SOLD OUT** (Wait List Available)

March 19 to 21 / \$690.USD / 3 day minimum stay - The Inn at Cross Keys Station / Madras, OR
Totality viewing: Makassar Straight



[2017 Eclipse – The American West](#)

August 16 to 26 / £3,495.BPS / 11 day tour / RT: London /

Eclipse viewing: 9 miles north of Jackson, WY near the Grand Teton NP (2m 16s)

[2017 Eclipse – U.S. National Parks](#)

August 18 to 29 / £2,790.BPS / 12 day tour / RT: London /

Eclipse viewing: 9 miles north of Jackson, WY near the Grand Teton NP (2m 16s)

[2017 Eclipse – Grand America](#)

August 8 to September 2 / £5,289.BPS / 26 day tour / RT: London /

Eclipse viewing: 9 miles north of Jackson, WY near the Grand Teton NP (2m 16s)



Astronomy Tours

[U.S. Eclipse - Cascades and Coast](#)

August 16 to 25 / £3,300 / 10 day tour / RT: London / Eclipse viewing: TBD near Salem, OR

[U.S. Eclipse – Canadian Rockies](#)

August 8 to 26 / £5,130 / 19 day tour / RT: London / Eclipse viewing: TBD near Grand Teton NP



and



[The Great American Eclipse](#)

August 17 to 22 / \$3099.USD / 6 day tour / Arrive: Huntsville, AL, Depart: Nashville, TN /

Eclipse viewing: Hopkinsville, KY, the point of Greatest Eclipse (2m 40s)



[The Great American Total Solar Eclipse](#)

August 13 to 23 / \$N/A.USD / 10 day tour / RT: Boise, ID / Eclipse viewing: Grand Teton NP



Eclipse Guide: Dr. John Mason, MBE

[2017 USA Solar Eclipse Tour, Cascades and Coast](#)

August 16 to 24 / \$2590.USD / 9 day tour / RT: Seattle, WA / Eclipse viewing: Oregon

1 space left as of July 23, 2015



[Total Solar Eclipse – Wyoming Cowboy Experience](#)

August 20 to 26 / \$4,200.USD / 7 day tour / Eclipse viewing from Grand Tetons NP (2m 20s)

[Total Solar Eclipse – Americana Road Trip](#)

August 19 to 27 / \$3,600.USD / 9 day tour / RT: Denver, CO

Eclipse viewing from Alliance, NE @ Carhenge (2m 30s)

[Day Trip from Denver](#)

August 21 / \$200.USD / 1 day tour / RT: Denver, CO / Eclipse viewing from Glendo, WY(2m 29s)

South America Classic Tours

[Program 01 – Turpin Meadow Ranch – Yellowstone NP & Teton NP](#)

August 18 to 24 / € 4.198 / 7 day tour / RT: Jackson Hole, WY

Eclipse viewing: Grand Teton NP (2m 20s)

[Program 02 – American West](#)

August 16 to 26 / € 3.119 / 11 day tour / Arrive: Denver, CO, Depart: San Francisco

Eclipse viewing: Grand Teton NP (2m 16s) or (2m 20s)

[Program 03 – American National Parks](#)

August 18 to 28 / € 2.298 / 11 day tour / Arrive: Cody, WY, Depart: Phoenix, AZ

Eclipse viewing: Grand Teton NP (2m 16s) or (2m 20s)



[Americas Music Cities Total Solar Eclipse](#)

August 14 to 22 / \$4,280.USD / 9 day tour / Arrive: New Orleans, Depart: Nashville /

Eclipse viewing: north of Nashville (2m 40s)

[National Parks of the American West](#)

August 13 to 25 / \$6,850.USD / 13 day tour / Arrive: Scottsdale, AZ, Depart: Rapid City, SD /

Totality viewing: Jackson Hole (2m 20s)

[Yellowstone and Tetons Family Adventure Total Solar Eclipse](#)

August 19 to 26 / \$3,680.USD / 8 day tour / Arrive: Scottsdale, AZ, Depart: Rapid City, SD /

Totality viewing: Jackson Hole (2m 20s)

[Pacific Northwest and San Francisco Total Solar Eclipse](#)

August 17 to 26 / \$4,580.USD / 10 day tour / Arrive: Scottsdale, AZ, Depart: Rapid City, SD /

Totality viewing: from the Columbia Basin (2m+)



[Yellowstone and Tetons 2017 Total Solar Eclipse Tour 7 Nights](#)

August 16 to 23 / \$2,595.USD / 8 day tour / RT: Salt Lake City, UT /
Totality viewing: Jackson Hole, WY area (2m 17s)

[Total Solar Eclipse Tour 2017 USA Yellowstone Tetons Adventure 8 Nights](#)

August 15 to 23 / \$3,959.USD / 9 day tour / RT: Salt Lake City, UT /
Totality viewing: Teton Springs Resort or nearby location (2m 17s)

TOUR GROUPS LISTINGS > DISCLAIMER & ADVICE PAGE

At **TOTALITY!**, we have done a GOOGLE web search to find travel groups that are presently booking eclipse tours. Because they are listed here is in no way an endorsement for the veracity of any of these groups. We present these brief overviews for your convenience and to be a reference for your further examination to help you find the package that best fits your travel desires and prices. Please use the links to review all of the accompanying details about each trip.

Nearly all tour packages do NOT include airfare to and from your country of origin if other than the country you reside in, and visas are also extra, unless noted otherwise, but there are some exceptions. Meals are sometimes included and sometimes not; please read these itineraries carefully. All prices listed are usually the starting price; single supplements (one person/per room) prices are usually notably higher, and I encourage anyone traveling alone to find a travel buddy so higher costs can be avoided. A good travel buddy will also watch your back, just like a diving buddy, and keep strangers at a distance when you are making an ATM withdrawal abroad.


Additional trip extensions are also often available.

There is a distinction between tour groups that specialize in eclipse and astronomical tours, and tour groups that are including the eclipse into either their regular tours, or perhaps have modeled a tour to take advantage of the eclipse in a region they often cover in their tours. As a rule, even the eclipse/astronomy tour groups frequently contract out to local tour groups familiar with the sites of the host country. The difference is when a tour group engages an experienced eclipse guide, the day of the eclipse, and even a couple of days leading up to the eclipse, in order to do anything within reason to get everyone to a location where the Sun will be visible at the time of totality, even if it means racing to find a hole in the clouds (heaven forbid), and even if it means moving the tour hundreds of miles in an attempt to view totality. That is why they call it “Eclipse Chasing.” Also, the eclipse guide can monitor the weather patterns, as well as describe the events of a total solar eclipse to first time eclipse chasers (FTEC’s). No matter what, plan to have a great sightseeing trip, and even if it is cloudy, you will still have had a fascinating tour.

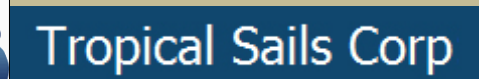
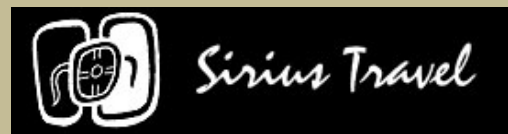
If your group does NOT have an “eclipse guide,” and if you have eclipse experience, you may need to step up to be sure that on eclipse day, the focus is getting to and giving ample time for the experienced eclipse chasers to set up equipment. It is important to have a lot of time to set up and align your equipment, with plenty of time to spare.

In most cases expect there to be a fee for a visa to the country or countries you will be visiting, and some can be a fairly hefty sum, the visa might require you to acquire it months ahead of time, so the more countries, the more fees, and these are usually not included in your basic tour price. Sometimes you will be able to purchase the visa as you enter the country. You may need to make these purchases, as well as pay a departing tax, using the countries money, not in USD or Euro. Often your tour company can arrange your international flights for an additional fee, or you can book them for yourselves. In some cases, if you land in one country in order to get to another, even that short time in the airport may require another visa, be careful reading all of the rules and regulations.

LUGGAGE: With the more recent advents of charging extra fees for luggage, it is becoming more and more difficult to transport equipment for eclipse gear, and likely it is no longer part of the trip, but is an additional cost, yet even at this the weight limits are now enforced, rather than a total length. You need to minimize the size of the equipment you take with you, or go with one or more friends that can share the load. I always take my camera gear in a backpack, which is the correct size to take on board, yet the smaller commuter planes have much smaller overhead compartments, and often I must place it on the floor. The backpack is usually overweight, but they have never weighed the backpack, even though it is regularly, and sometimes thoroughly, searched. I have taken a small single tripod in a case that easily fits at the back of the overhead compartment, where few bags can ride, but because it measures perhaps 2 inches longer than allowed, Japan and Qatar are the only locations that objected to the difference and measured it with a tape measure, and took it to be loaded with the regular luggage (there may be others, but I still have many other places to travel to).

Whenever a gold star  is displayed, the tour group is one that specializes in eclipse and astronomy tours as a significant part of their tours, and will do their best at serving the eclipse chaser to their fullest abilities. Other eclipse tours are done by tour groups that do not always understand the intricacies and needs of eclipse chasers.

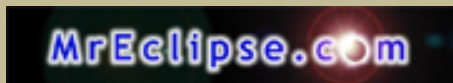
ECLIPSE SPECIALTY TOUR GROUP WEB SITES ...



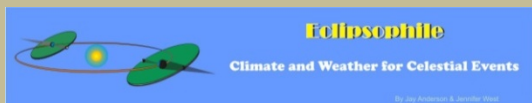
OTHER USEFUL ECLIPSE WEB SITES ...



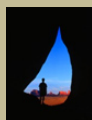
← NASA's Eclipse Web Site



← Fred Espenak's Eclipse Web Site



← Jay Anderson's Eclipse Weather web site



← Xavier Jubier's Web Site and Eclipse Maps

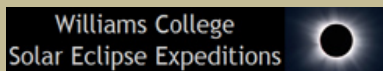


← Bill Kramer's Eclipse Chasers



← IAU Working Group on Solar Eclipses

Working Group on Solar Eclipses/Program Group on Public Education at Solar Eclipses



← Williams College and Jay Pasachoff



← Glenn Schneider's Web Site



← Eclipse2017.org set up by Dan McGlaun

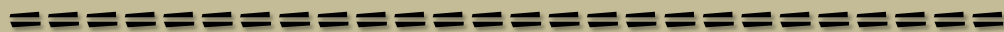


← Jeffrey R. Charles Eclipse Chaser Journal



← Charlie Bates Solar Astronomy Project

PERPETUAL ACKNOWLEDGMENTS . . .



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Eclipse Predictions by **Fred Espenak**, NASA/GSFC

Eclipse Weather Predictions by **Jay Anderson**

Google Eclipse Maps and Predictions by **Xavier M. Jubier**

Additional Eclipse Maps by **Michael Zeiler**

And with special thanks to . . . **Prof. Jay Pasachoff**

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