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Totality through Zeiss telescope (700 mm) and Nikon FM2

# Darkness at Dawn in India: “Jai Ho” for Mother Nature!

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Months before July 22, 2009, the longest total solar eclipse of the century, Indian scientists, amateurs and planetarians had started their preparations. The easier part was to check and re-check and keep the equipment and exposure charts ready, but choosing a suitable observation point along the totality path that cut across densely populated parts of India—from the Arabian Sea coast on the west to the Himalayan ranges on the other end where India meets China—was a task as important as the celestial event itself.

July is a month of monsoon and it rains heavily all over the country. The NASA eclipse page weather section had forecast the least cloud cover and rain for the area around the city of Patna around the eclipse date. That made it the destination for most of the folks, including some foreign scientists.

We looked hard at the monsoon wind flow pattern for past several years and noticed a “void” situation over Robertsganj, a place 1500 km from Mumbai as the crow flies. My team said “yes” in unison. Robertsganj—that’s it! Latitude 24.6°N, longitude: 83.1°E. Incidentally, this place was also on the central line of the 24 October 1995 eclipse!

## Members of the team

My team had three other members: Assistant Planetarium Manager Kiran Hedukar, photographer Chandu Karambelkar and Program Coordinator Suhas Naik-Satam. Many other people, such as two representatives from Infovision (a partner of Evans & Sutherland), a mother-daughter duo turned amateur astronomers, and most importantly, my wife Rashmi, decided to give us company.

Seven of us took a flight to Varanasi on 19 July and the others who travelled by railways joined us there later. It rained very hard that

day in Mumbai and the same happened on our way from Varanasi to Robertsganj by cars. We were greeted by unending lines of trucks carrying coal and sand in that area and it took us 9 hours to negotiate the unusual traffic jam and cover the 120 km distance between Varanasi Airport and Robertsganj. Famished and emaciated, we reached there by 11 p.m., but somehow managed to find some meal.

The next morning we went around scouting for a suitable observation spot. It had started raining again. My colleagues would exchange meaningful glances and would talk in whispering tones about the “void” that Piyush had seen in the cloud map. We decided to settle on the roof of the District Collector’s office, located on a small hillock that provided an unobstructed view of the eastern horizon.

We checked the weather on the internet and the prospects looked bleak. By the evening the sky cleared for a while, giving enough time for some practice shots on stars. That was the evening of the 20th.

The next morning and the rest of the day strong monsoon winds swept the town of Robertsganj with rain in the toe. Everyone looked like an embodiment of disappointment. We did not talk much to each other. Thoughts of wasted effort, time and money must have crossed every mind thousands of times. Someone remarked, “While everyone was heading to Patna, why did we succumb to

this quixotic idea of Piyush?” With just a day left before the event, I made an important decision. “We are not moving our equipment to the selected site, rather we would observe from the open terrace of our Hotel Savera (meaning dawn).” A very cooperative District Information Officer of Robertsganj, Mr. Anil Gupta, lent his 2 KVA UPS that we parked on the hotel’s open terrace. Robertsganj was suffering from acute power shortage and the electrical supply was not available from 3 a.m. to 10 a.m. The hotel did look after its guests by providing supply from a diesel generator, yet the UPS was still required. We did not want any interruptions and the possibility of electrical spikes. This was quite in contrast to Mumbai, where power rostering is unheard of.

We spent our night till 2 a. m. setting up



NP Team ready to depart: (from left) Suhas, Chandu, Piyush & Kiran posing before the planetarium. All illustrations provided by Piyush Pandey



and testing the equipment and my telling the umpteenth time to my team mates what to do and not rely on their gut sense while taking exposures and rather they should stick to what I had told them. This was particularly aimed at Chandu, who was a professional photographer.

The E-Day: All of us woke up after two hours of sleep at 4 a.m. and quickly rushed to the hotel terrace and fixed up our equipment. The generous hotel staff also got up early to serve us tea at that hour (their normal services started at 7 a.m.). The event began at the predicted time, but the initial phase of totality was obscured by low clouds which soon dissolved.

We had a Nikon D70S camera with 300 mm focal length lens that we had configured to operate from a laptop computer using Nikon Capture 4 software. I decided to operate it myself.

We carried with us a Zeiss 700 mm focal length refractor and at its eyepiece end we had fit our film camera Nikon FM2 loaded with a 200 ASA film. There were two such cameras; one was meant for use while the eclipse was partial and the objective was covered with a Mylar filter and the second one for totality and events on its either side. Since it required quick switching of cameras, the obvious choice for its operator was our staff photographer Chandu, who did a marvellous job (not a single frame out of 72 that he took was blank).

We had our Nikon Coolpix 5000 fitted with a fisheye lens and the task of its operation was entrusted to Suhas. A Sony Handycam was also there to capture live moments and eclipse and was handled by Kiran.

I was carrying my personal Panasonic (Lumix) FZ7, but was left with no hands or time to operate it. My wife Rashmi, who took leave from her school teacher's job to join us to watch the celestial treat, gingerly offered to

operate it for me provided I do all the settings and make her task simple. She, too, did a marvellous job, as she was the only one who could capture both the diamond rings! Her camera's FOV was large so she could also capture a cloud trail left by a passing jet plane.

Weather machinery smiled on us throughout that morning. The partial eclipse at the site began at 5:30 a.m. when the sun was just 1 degree above the horizon. The sky started darkening rapidly; suddenly the sky turned pitch black (Suhas-operated Coolpix fisheye captured it very well). The totality began at 6:23 a.m. at our location and ended 3 minutes 41 seconds later (the sun was 12.5 degrees high). The eclipse ended at 7:27 a.m.

As already said, both the diamond rings were observed this time, but there were hardly any Bailey's Beads, no shadow bands (which were expected as the altitude of sun was low), and no prominent coronal streamers. Chandu's Diamond Ring snap shows a prominence arching up behind the lunar limb.

There were loud cheers of "Jai Ho" for Mother Nature and Piyush Pandey as if the latter, not the former, had ordained the grand spectacle. We quickly packed our bags, snatched some breakfast and returned to Mumbai using the same route backwards, but this time there were no traffic hassles. The local press and other people who had joined us on the terrace were provided solar goggles by us to watch the partial phase. The press and locals were gaga with us that we chose their town for our observations.

We had no time to check what we had captured and particularly Chandu's film camera had a longer wait ahead before the lab returned the film late evening in Mumbai. When we saw all that, we were awestruck.

Reports from other sites started coming in when we switched our mobile phones on. The much-hyped Patna and all the Indian desti-

Top: The July 22, 2009 eclipse path through India. Below, top: A very happy Piyush! Below, bottom: diamond Ring and prominence through Zeiss telescope (700 mm) & Nikon FM2.



nations except ours and the nearby Varanasi were totally washed out. What a pity. A team from Mumbai had travelled all the way to Wuhan in China, but had to return empty handed. The 19, 20 & 21 July rain notwithstanding, my colleagues now say I should have been working at the meteorological department, for I was the one who put all his money on the "void" that I saw. ☆