

Site Survey for Large Solar Coronagraph

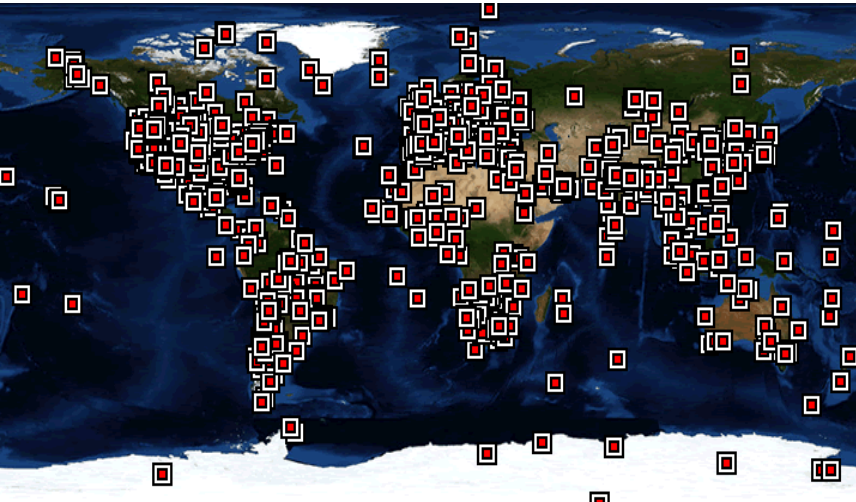
*Declan Emmons ,
NCAR Wyoming Intern*

July 30, 2020

NCAR
UCAR

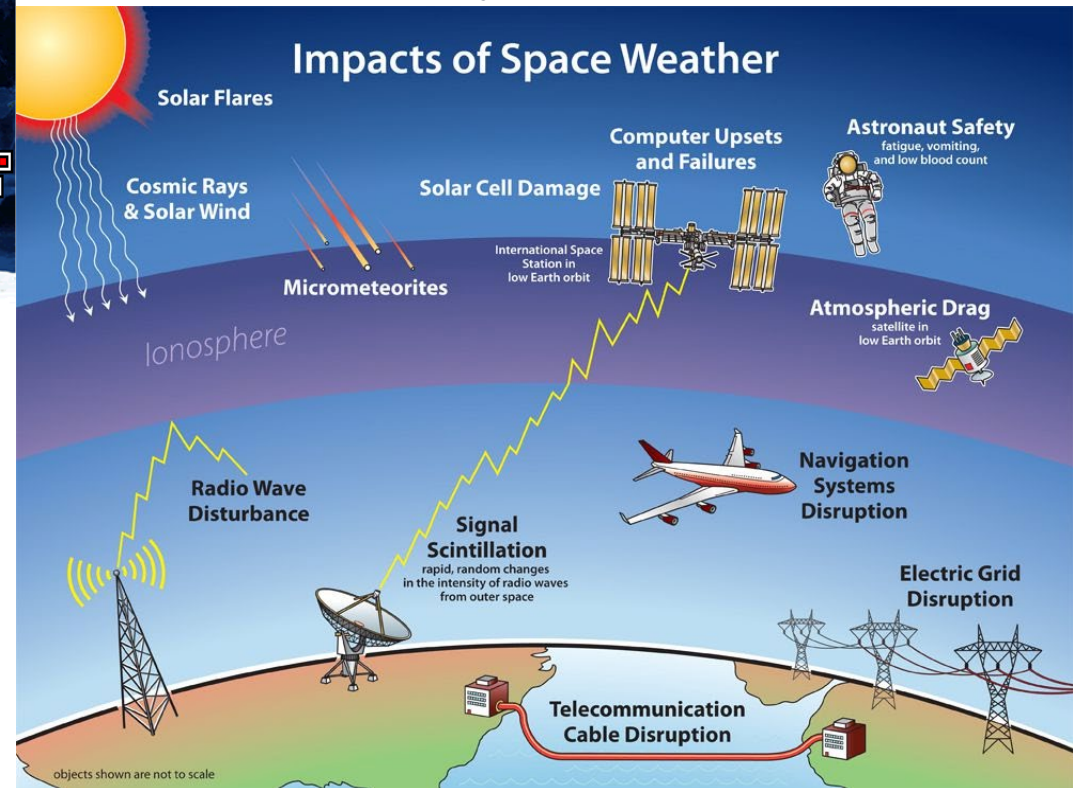
Mission

AERONET

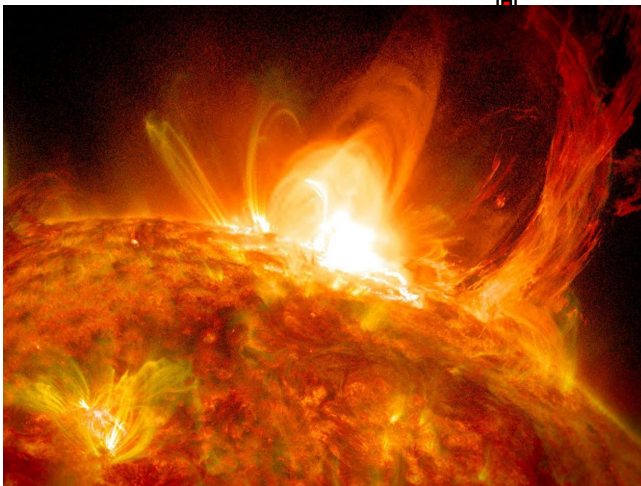


[2]

- Observe the sun from Earth
- Predict space weather
- Survey sites

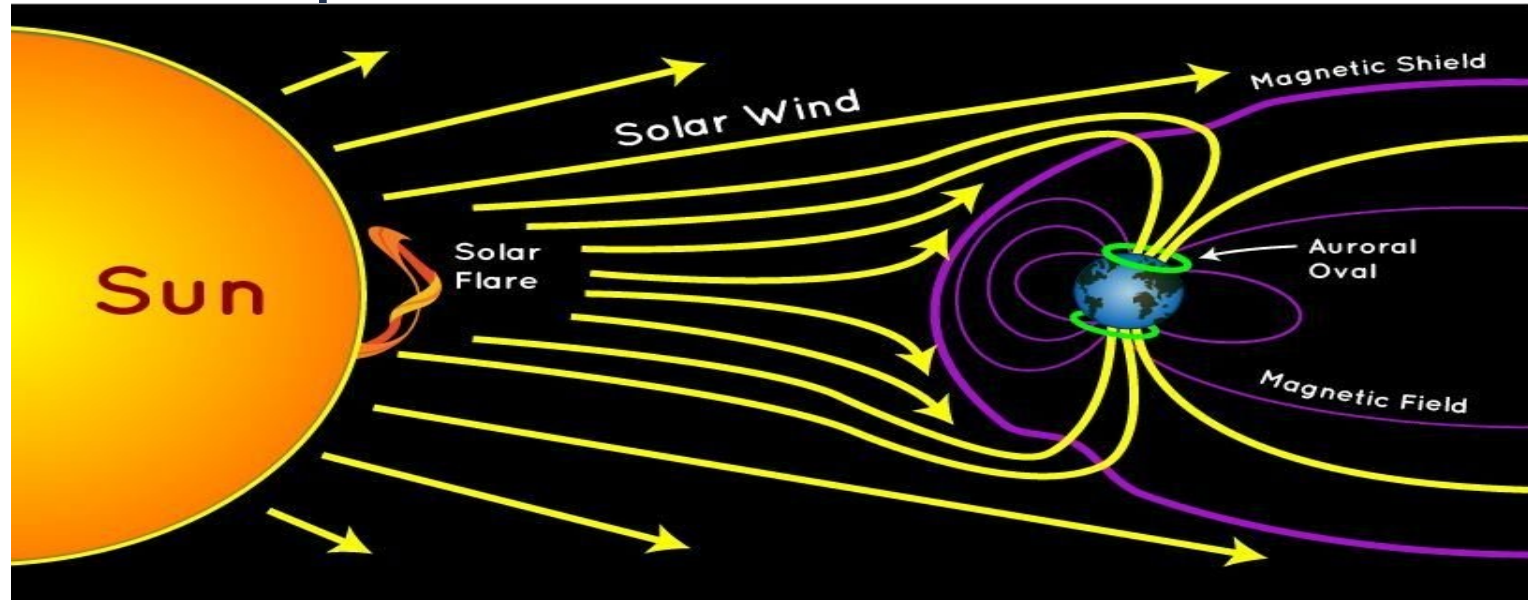


[4]



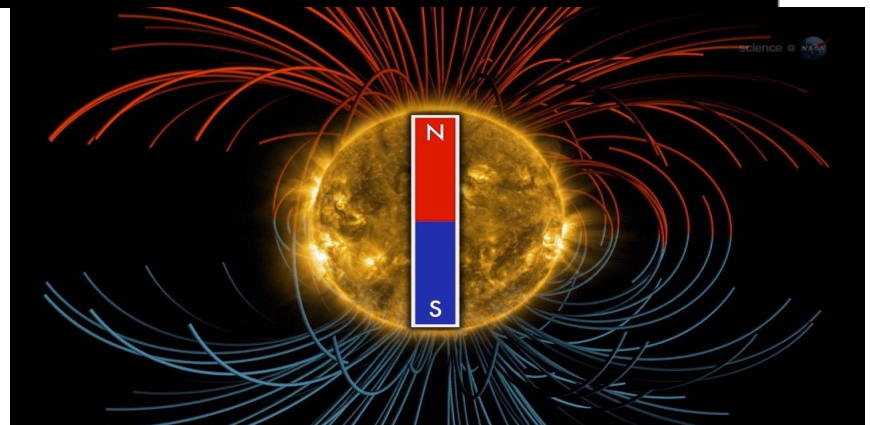
Space Weather and the Corona

[1]



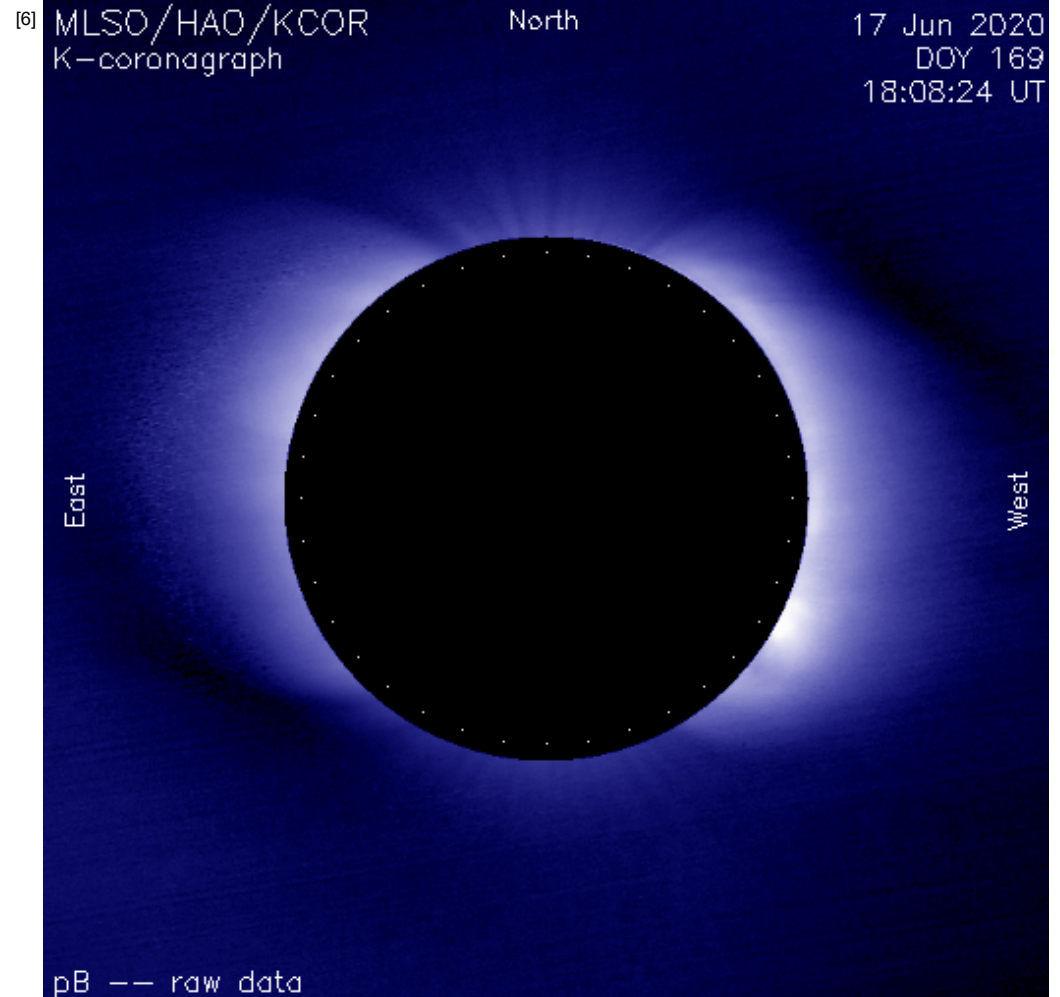
- Layer of gas and plasma
- Magnetic field
- Advanced notice

[3]

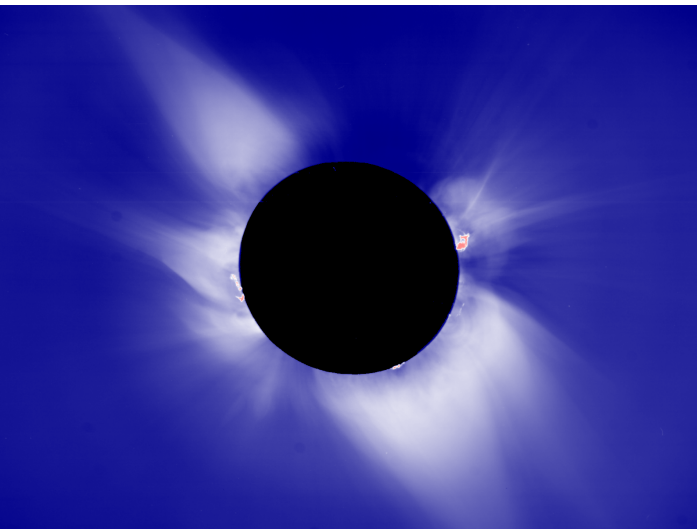


Coronagraph

- See corona from Earth
- Atmosphere
- Seeing and sky brightness



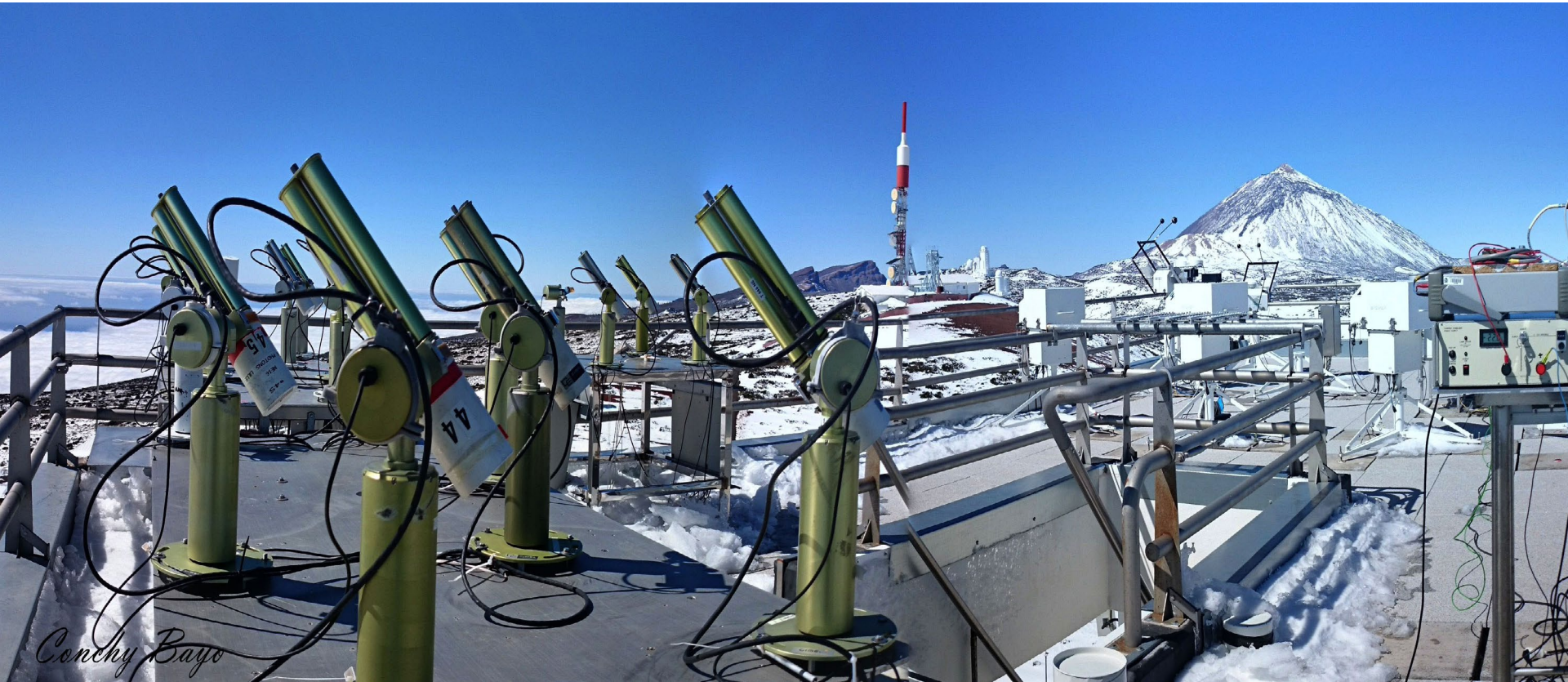
[5]



AERONET

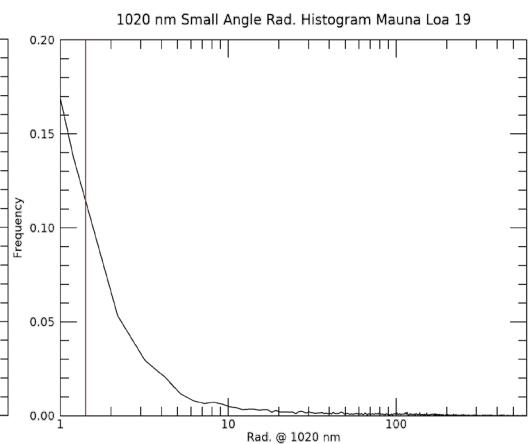
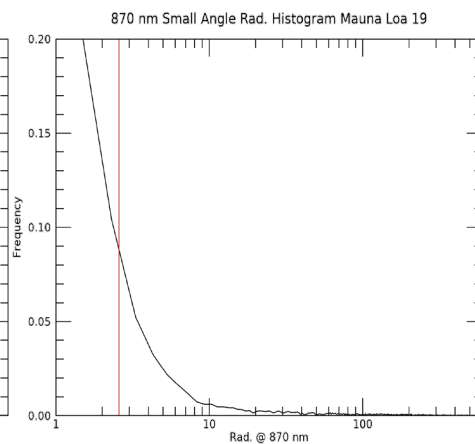
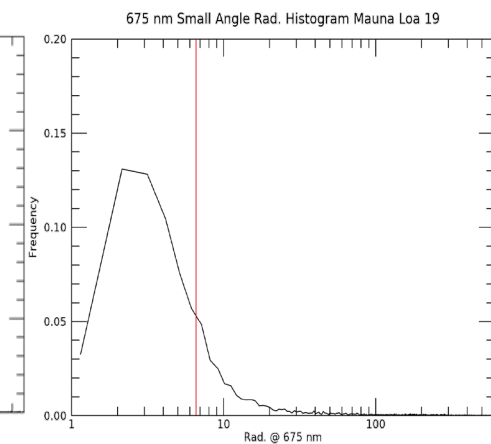
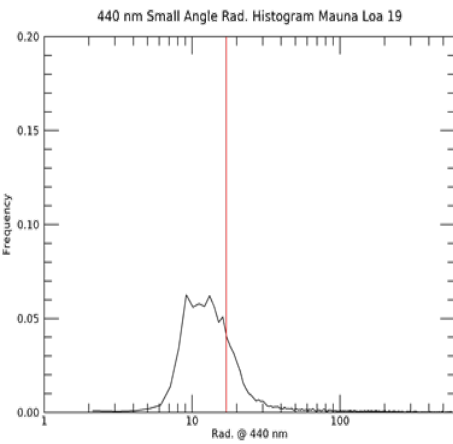
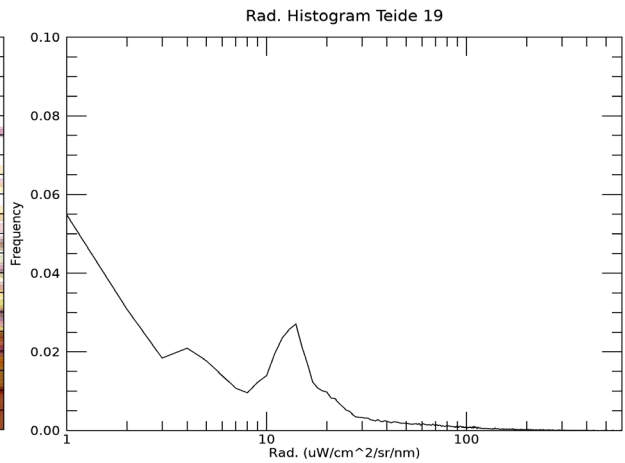
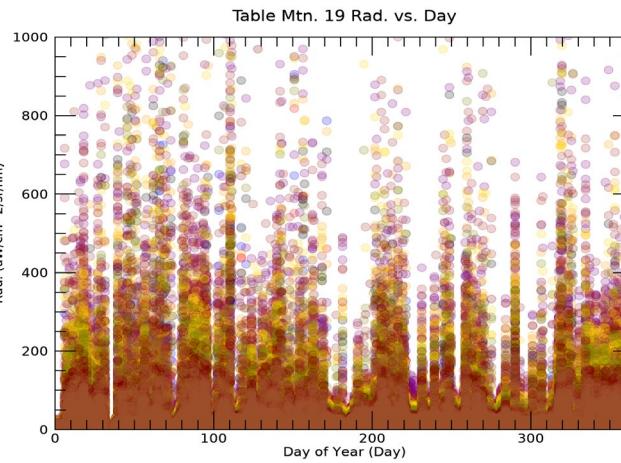
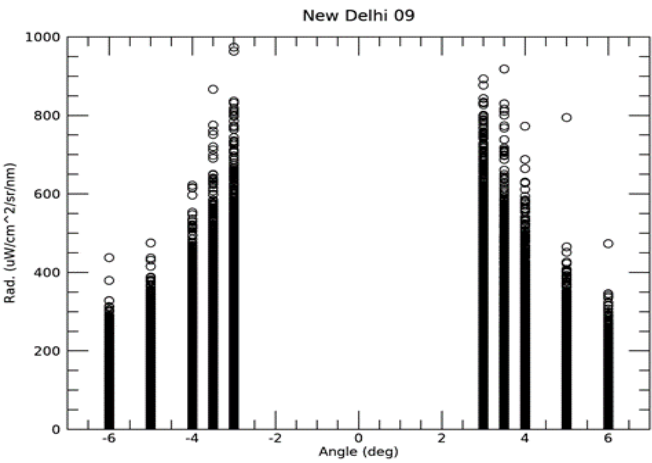
- Measure sky brightness
- Years of data
- 17 sites: Ahmedabad, Antarctica, Boulder, Casleo, Fowler's Gap, Jomsom, Kirtland, Lahore, Las Cardes, Learmonth, Mauna Loa, New Delhi, South Pole, Table Mountain, Teide, Thimphu, Tinga

[7]



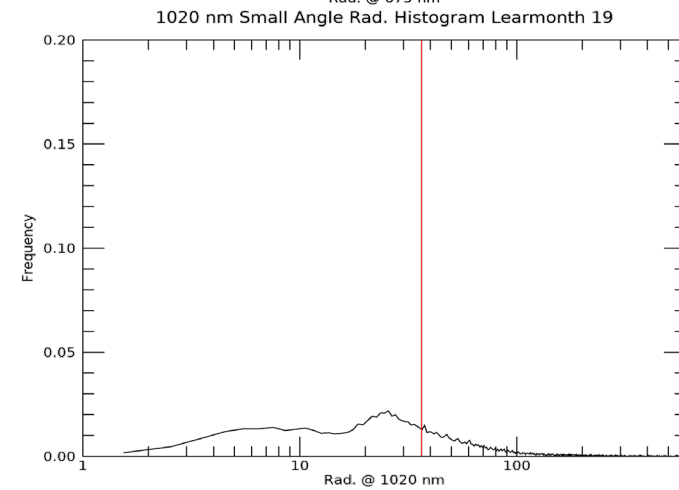
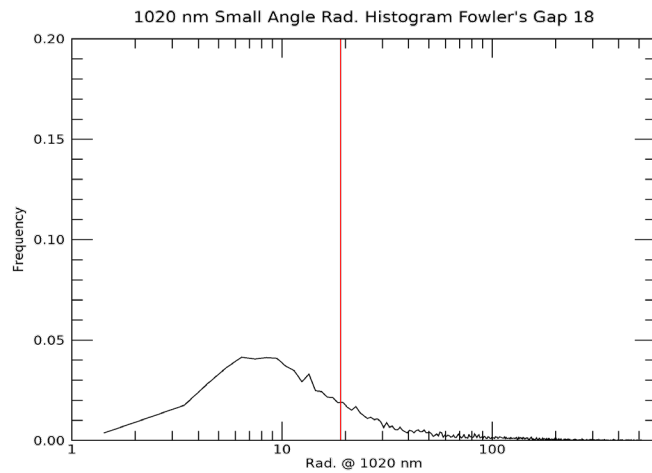
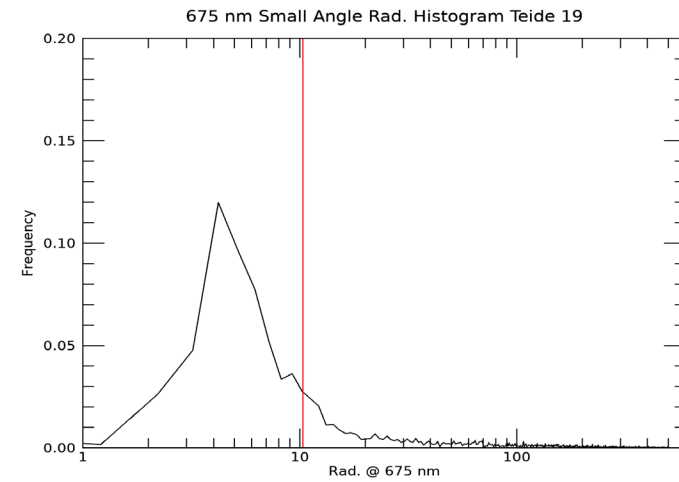
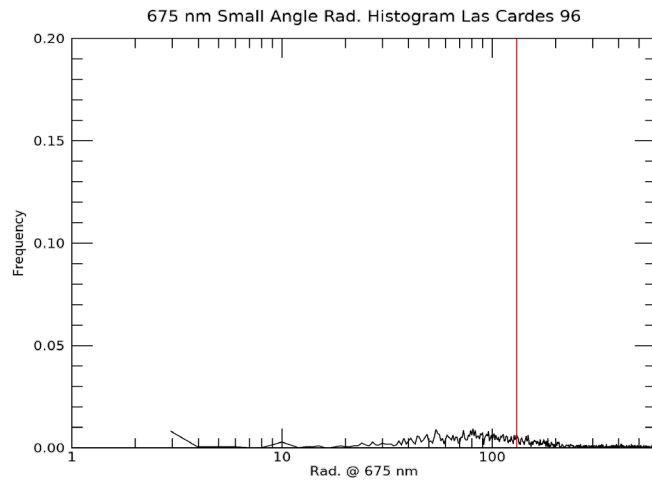
Data Analysis

- Whole year of data
- 4 analyses



Results

- Last analysis most useful
- City sites are no good
- A few very good sites
- Unexpected sites



References

Photos Courtesy of:

AERONET

- [1] <https://zoom.us/j/91486257411?pwd=RWxNb2hicnBPb0VuS0xicTR2NHZUT09>
- [2] https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.nationalgeographic.org%2Fmedia%2Fspace-weather%2F&psig=AOvVaw0O_nmkYnwbu-fnA3Q87rpv&ust=1595539225982000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCJjW0P_k4eoCFQAAAAAdAAAAABAD
- [3] <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3D34gNgaME86Y&psig=AOvVaw3QIYCd4YYRufeeWhGJ-3aa&ust=1595537764374000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCKiScTm4eoCFQAAAAAdAAAAABAD>
- [4] <https://static.independent.co.uk/s3fs-public/thumbnails/image/2020/05/01/15/sun-flash-light.jpg>
- [5], [6] Courtesy, High Altitude Observatory, National Center for Atmospheric Research (NCAR), Boulder, Colorado, USA. NCAR is sponsored by the National Science Foundation.
- [7] <https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.actris.eu%2FDataServices%2FInstrumentCalibration%2FAERONETEurope.aspx&psig=AOvVaw3wJh1miVmGLiVoqtq39uu3&ust=1595545948674000&source=images&cd=vfe&ved=0CAIQjRxqFwoTCNDO6bSA4uoCFQAAAAAdAAAAABAD>

Thank you

- Steve Tomczyk and Alice Lecinski
- University of Wyoming
- NCAR-WY Internship Program
- HAO
- SIParCS