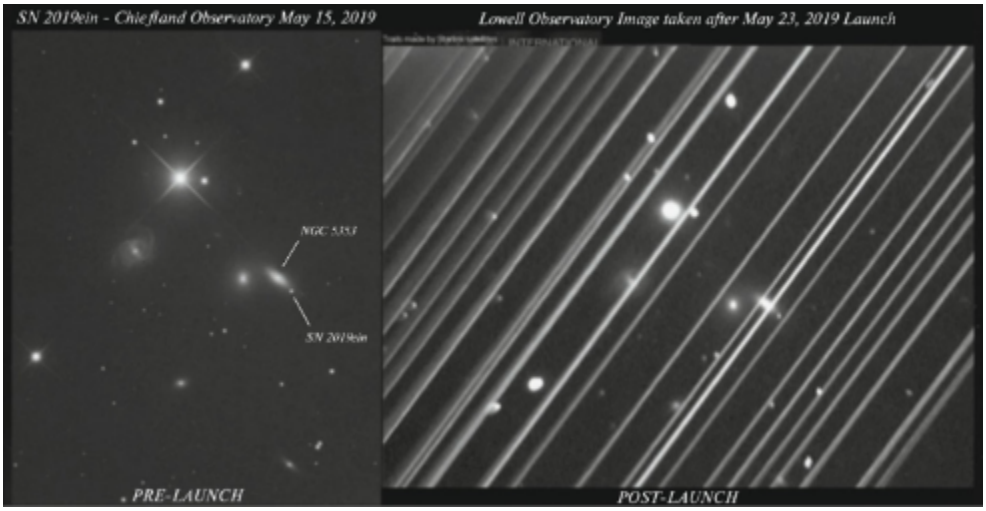
**The Dark and Quiet Skies Act**
Senators Hickenlooper and Crapo

**Background:**
Certain scientific research and amateur astronomy activities are impacted by unintentional light and radio interference caused by orbiting satellites. Efforts to reduce interference to science by making satellites "dark" and radio signals more "quiet" is referred to as "dark and quiet skies."




Long-term observations needed to capture scientific data also captures the brightness of orbiting satellites. In 2019, there were about 2,200 satellites in orbit. Today there are 9,900. Current application estimates indicate there will be over 500,000 by the 2030s.

Industry, academia, federal agencies, and international entities (e.g., ITU, IAU, UNCOPUOS) have expressed a desire for additional research and development (R&D) into mitigating brightness and radio leakage interference earlier on in the satellite design process, *prior to* launch. R&D has thus far relied on voluntary contributions from industry and academic volunteer hours. Industry lacks a mechanism for sharing best practices with the community despite interest in doing so.

One obstacle to this R&D is the absence of optical brightness goals set by NIST or the NSF and the need for additional facilities to measure the effectiveness of certain mitigation techniques. Without a facility to iterate quickly, technological adjustments must wait until the next launch to be implemented and tested. As a result, improvements can only go into effect at the start of the next research and development cycle.

**Summary:**

The Dark and Quiet Skies Act would create a Center of Excellence overseen by NIST and

operated by a third-party entity to research, develop, and deploy voluntary best practices for interference mitigation. The Center would increase voluntary participation among stakeholders and promote collaboration between the astronomical community, industry, and Federal agencies to protect the integrity of federally-funded scientific research observing the sky and celestial bodies.

**Goals of the Center:**
By facilitating coordination early-on in the satellite design process, the Center of Excellence will mitigate unintentional light and radio interference by:

- Establishing and circulating feasible, scientifically based best practices for unintentional optical and radio interference avoidance,
- Conducting transdisciplinary research, development, and demonstration projects with an emphasis on tracking, identifying, modeling, and characterizing satellite interference, and
- Developing mitigation technology that includes (but is not limited to) satellite paint, film, orientation adjustments, cooling techniques, or fuselage design