

www.skyvision.fr

SKYVISION

By your side since 2005.

SKYVISION, The Sky in High Resolution!



1. SkyVision

French company, specialized in the manufacture of precision optics and astronomical equipment.

Based in the Dordogne, near the village of Saint Emilion, the company has been active for more than fifteen years in the manufacture of precision mirrors and opto-mechanical structures, for general public applications (complete telescopes), but also for applied research, aeronautics, space or military sectors.

The company was the forerunner in the early 2000s in the marketing of the first large diameter Alt-Az telescopes (Dobson) for the general public in France.

The company has an in-house design office, a mechanical integration workshop, as well as a precision mirror manufacturing workshop, with the appropriate inspection facilities.

Our employees have highly qualified profiles in their field and specialisation, in order to meet the increasingly demanding requirements of our various customers.

Over the years, the company has acquired a great deal of expertise in the production of instruments for the observation, measurement and study of terrestrial or spatial phenomena, while respecting environmental conditions.

Listening to users on a daily basis, the team uses all its know-how to design the best products and meet the requirements of the projects for which it is responsible.

Our production site in the Dordogne includes:

- Precision optics manufacturing laboratory with metrology bench,
- Mechanical integration workshop and storage warehouse
- Design and engineering office,
- Exhibition / Showroom.

SkyVision is a whole range of products manufactured in small series and made to measure, in order to meet the requirements of specialised and professional users.

SkyVision offers two families of telescopes, designed for expert users, looking for the best technical choices and budgetary compromise.

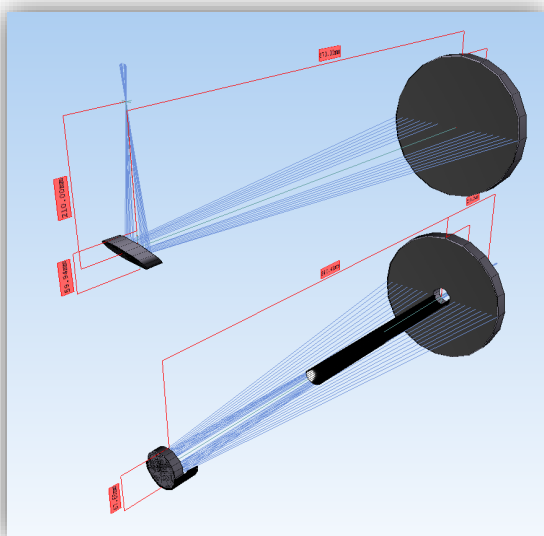
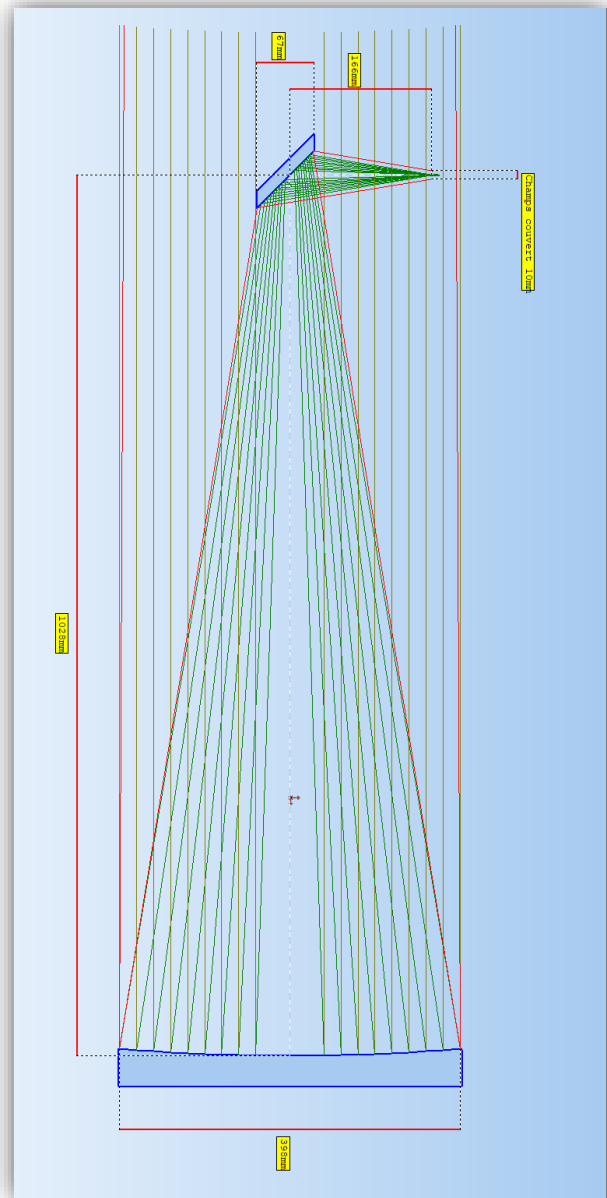
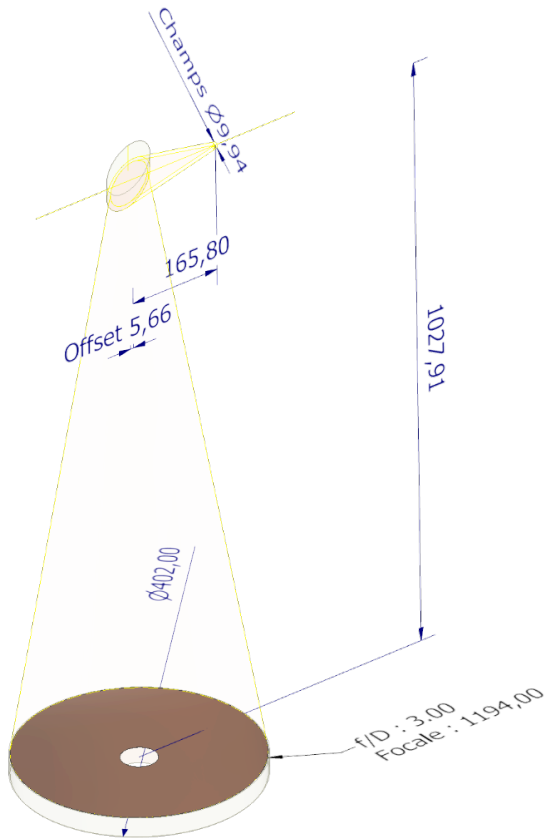


2. The design office.

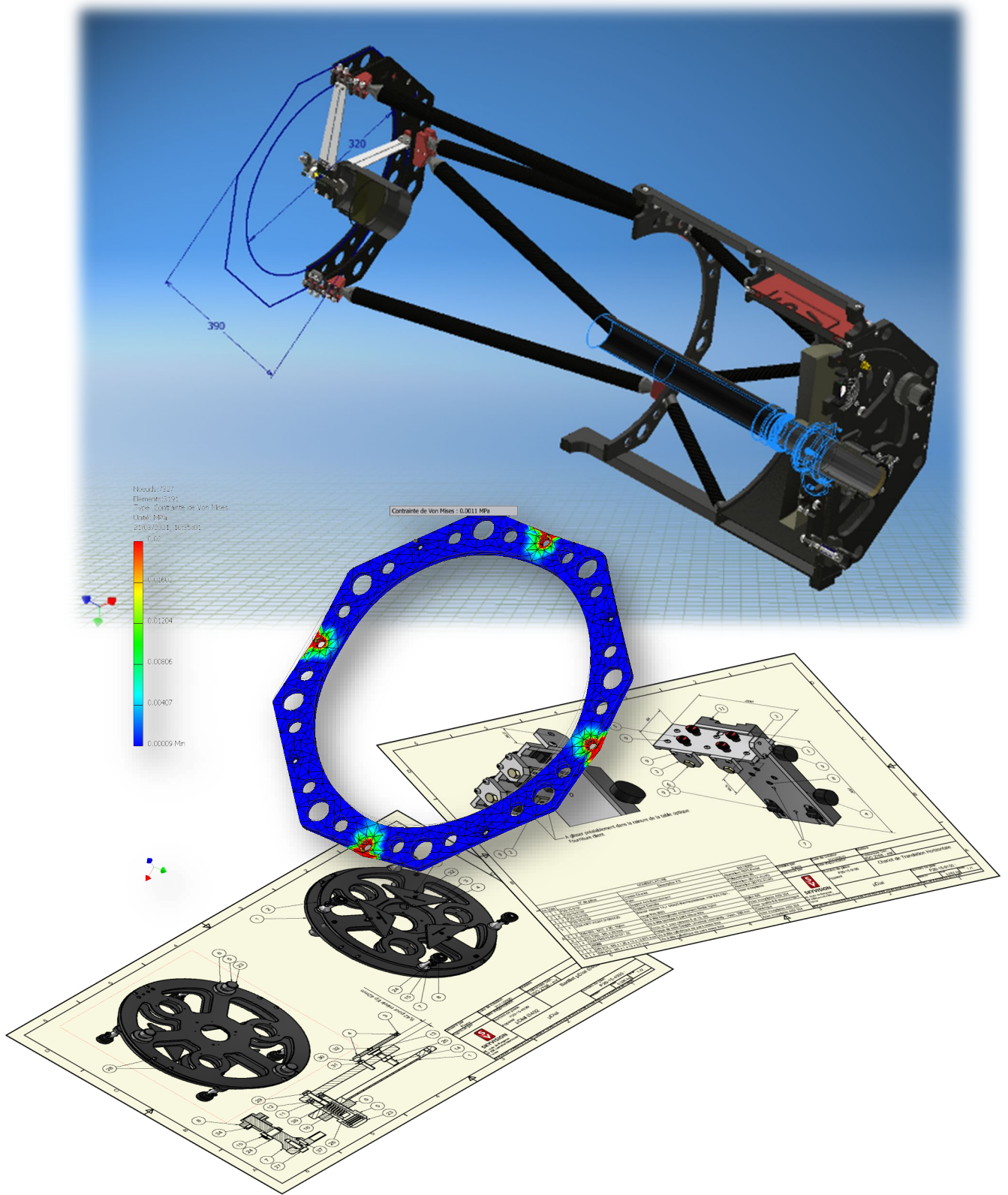
Skyvision has its own design office, and is able to design instruments to meet the specific needs of its amateur or professional customers.

2.1. Configuration Optical combination.

Pre-study of optical paths and mirror sizing



2.2. Design of telescopes and opto-mechanical structures.



3. Opto-mechanical integration.

The structures manufactured by Skyvision are assembled in our workshop. The choice of materials and their treatment allows for the durability of the structure in humid and saline environments without any degradation of quality over time. The main materials used are derived from aerospace techniques: anodized aluminum, carbon fiber, stainless steel. Skyvision uses certified subcontractors for the supply of its components



Fig. 4. Packing and preparation area

4. High precision optics.

4.1. Optical workshop.

Skyvision has its own 150m² temperature-controlled workshop dedicated to the production of mirrors.



Fig. 5. Tooling

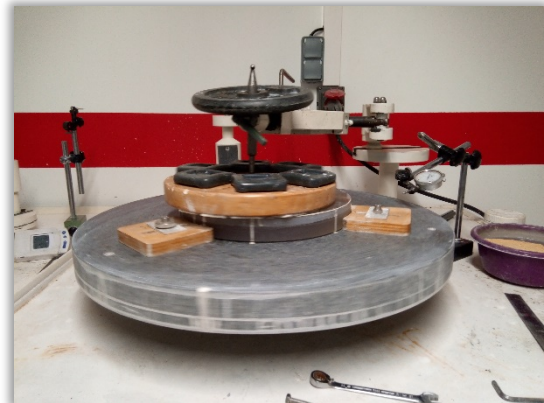
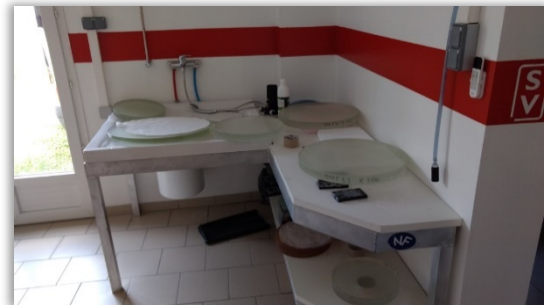


Fig. 7. Mirror's Polishing



Fig. 6. Polishing machines




4.2. Polishing capacity and measurement.

Specialised optics manufacturing between 20 and 30nm WFE.

Surface roughness appreciated between 1 and 5 Angstroms.

4.3. The substrate.

To guarantee the quality of the raw material, Skyvision sources its glass from the most reputable manufacturers: **SCHOTT**,  **auer** LIGHTING ...

4.4. Methods of controlling.

Skyvision ensures the quality of its optics through permanent controls during their development.

4.4.1. Eddy current apparatus

The Foucault apparatus allows us to visually check the appearance of our mirrors at the start of the work. It highlights the overall shape, edge problems and hummocking. It also allows us to measure the longitudinal aberration of our mirrors.

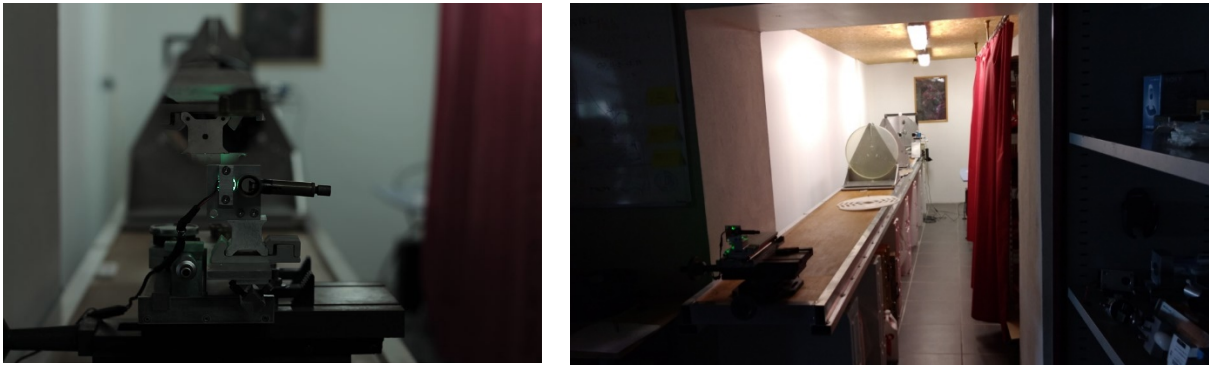


Fig. 9. Foucault apparatus

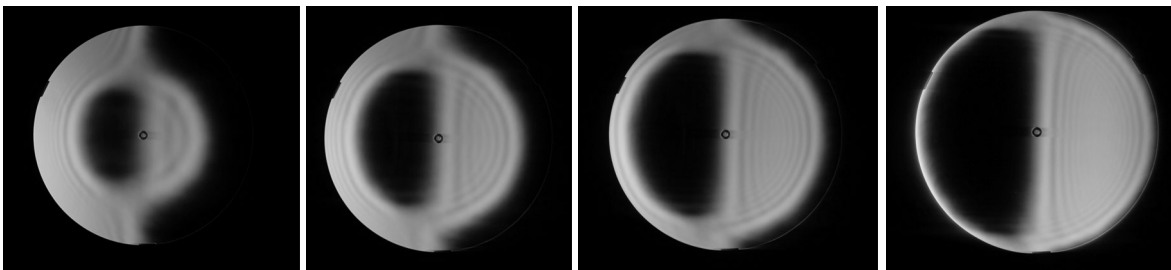


Fig. 10. What we see: correct optics

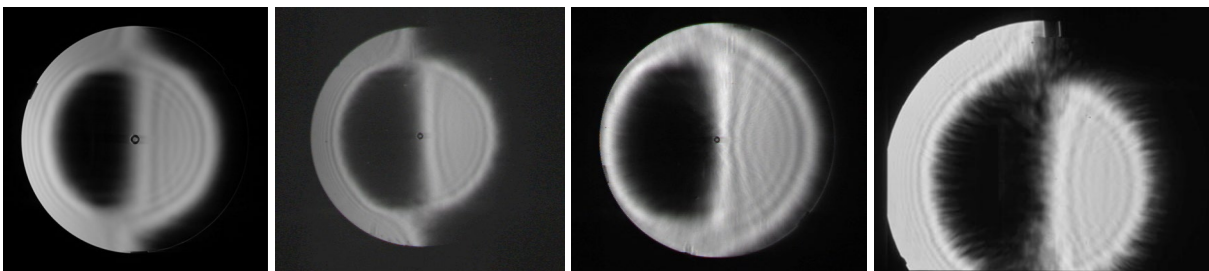


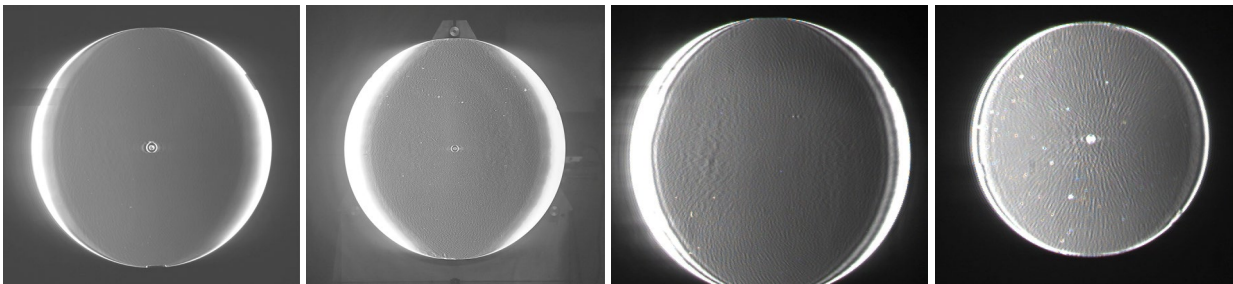
Fig. 11. What we see: Incorrect optics

4.4.2. The phase contrast or Lyot test

With its principle of transforming refractive index differences into contrast levels, this test highlights the quality of the microscopic surface condition of mirrors.



Fig. 12. Equipment



4.4.3. Shack Hartmann control

Using a camera with a microlens array, the optical imperfections of the mirror can be found by calculating the Zernick polynomials and deducing the types of defect.

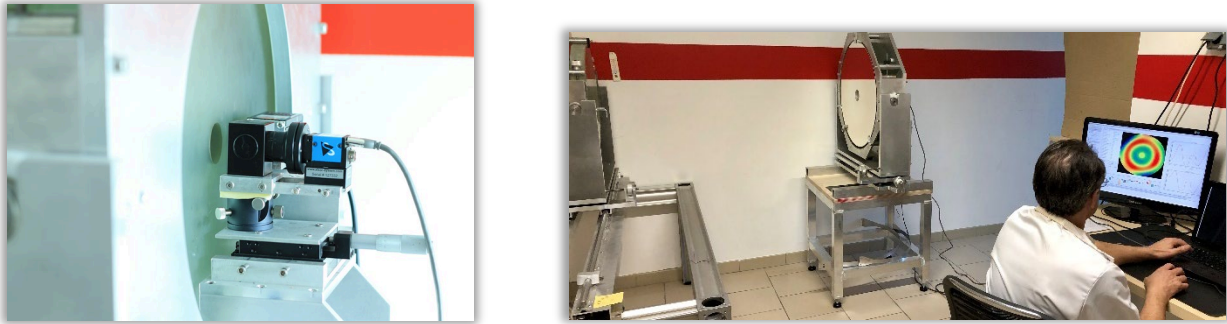


Fig. 14. The control bench

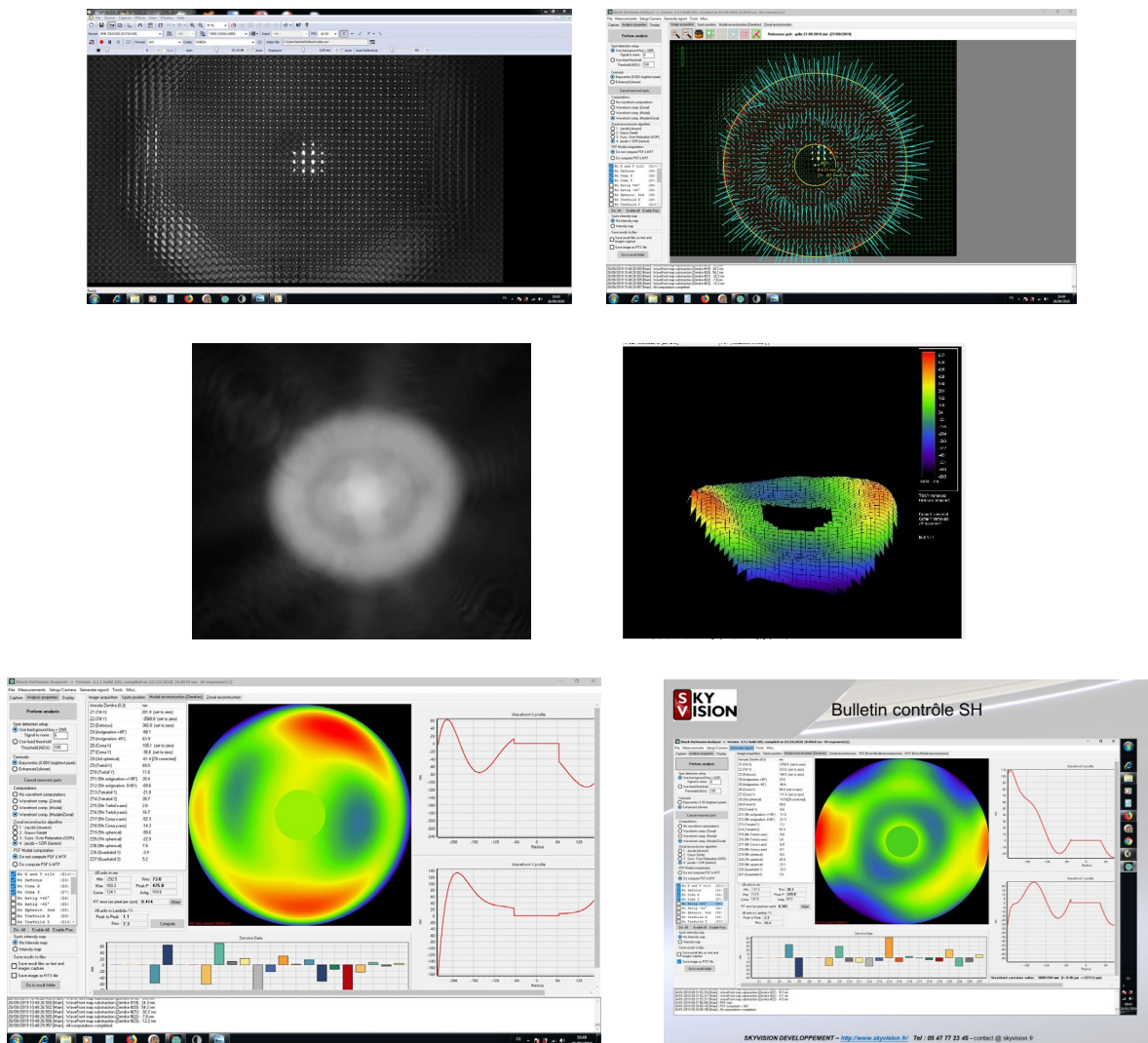


Fig. 15. What we see

5. References:

	<p>University of 'Franche Comté ' – UMR CNRS – (Besançon) Astrograph 500mm</p>
	<p>University Joseph Fourier – Labo IPAG – (Grenoble) Certification instrument 500mm</p>
	<p>Polytechnic School (Palaiseau/Paris) Opto-mechanical atmospheric CO2 measurement system from vertical lidar type</p>
	<p>University of Versailles (78) Opto-mechanical system for measuring atmospheric water vapor profile</p>
	<p>D.G.A (Délégation Générale de l'Armement) Opto-mechanical atmospheric detection system, lidar type, on board of test and measurement building (BEM Monge)</p>
	<p>Onera French Aerospace Horizontal aiming opto-mechanical system on board of aircraft Ø500mm reversible 45°, -45° plane mirror holding barrel</p>
	<p>University of Marseille High resolution telescope Ø600mm for exoplanet research</p>

5.1. Few Pictures



Picture from Yann Le Gall, SkyVision 15' telescope



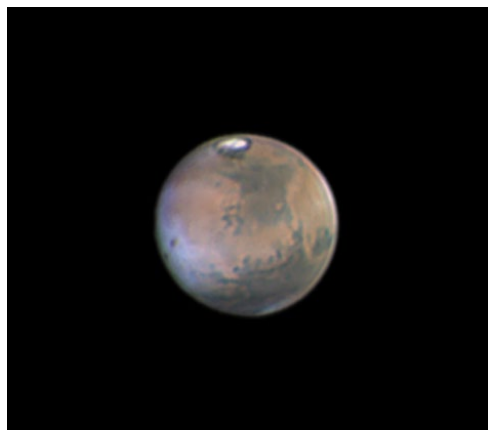
Newton-Cassegrain \varnothing 300mm



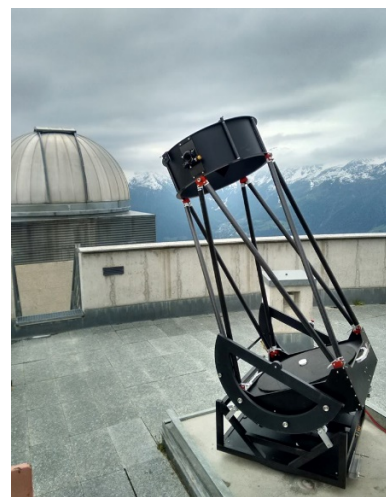
SkyVision 400 telescope under dome in autonomous control



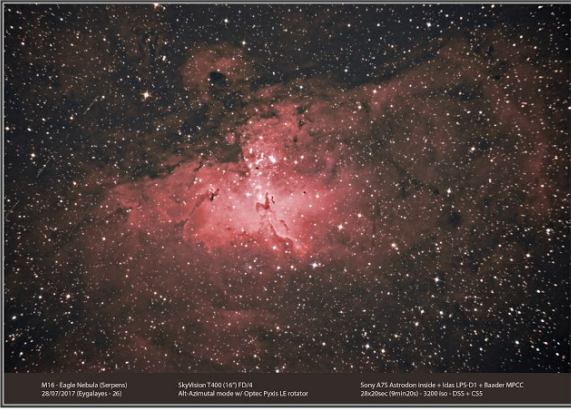
Cassegrain 350mm



Opposition of Mars (2018)



Dobson \varnothing 600mm OFBX (Switzerland)



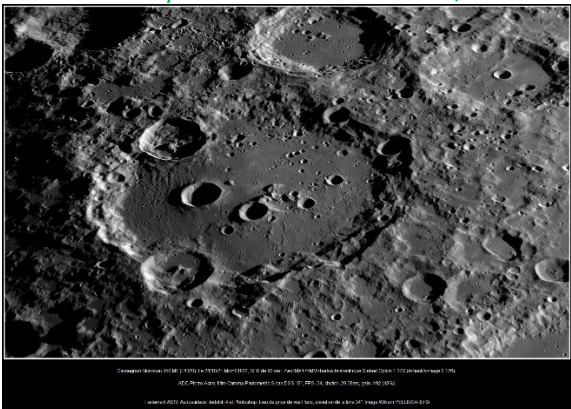
Picture: M16 with a Dobson Ø400 mm



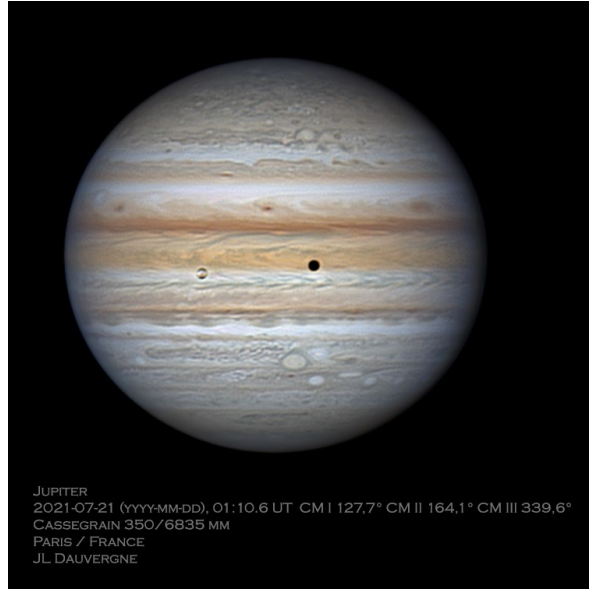
Picture: IC1396 with a Dobson Ø400 mm



Picture: Galaxy NGC4565 with a Dobson Ø400 mm



Picture: crater Clavius with a Cassegrain Ø350 mm



Picture: Jupiter with a Cassegrain Ø350 mm



Picture: jupiter with a Dobson Ø400 mm



Picture: Planetary nebula with a Dobson Ø400 mm