

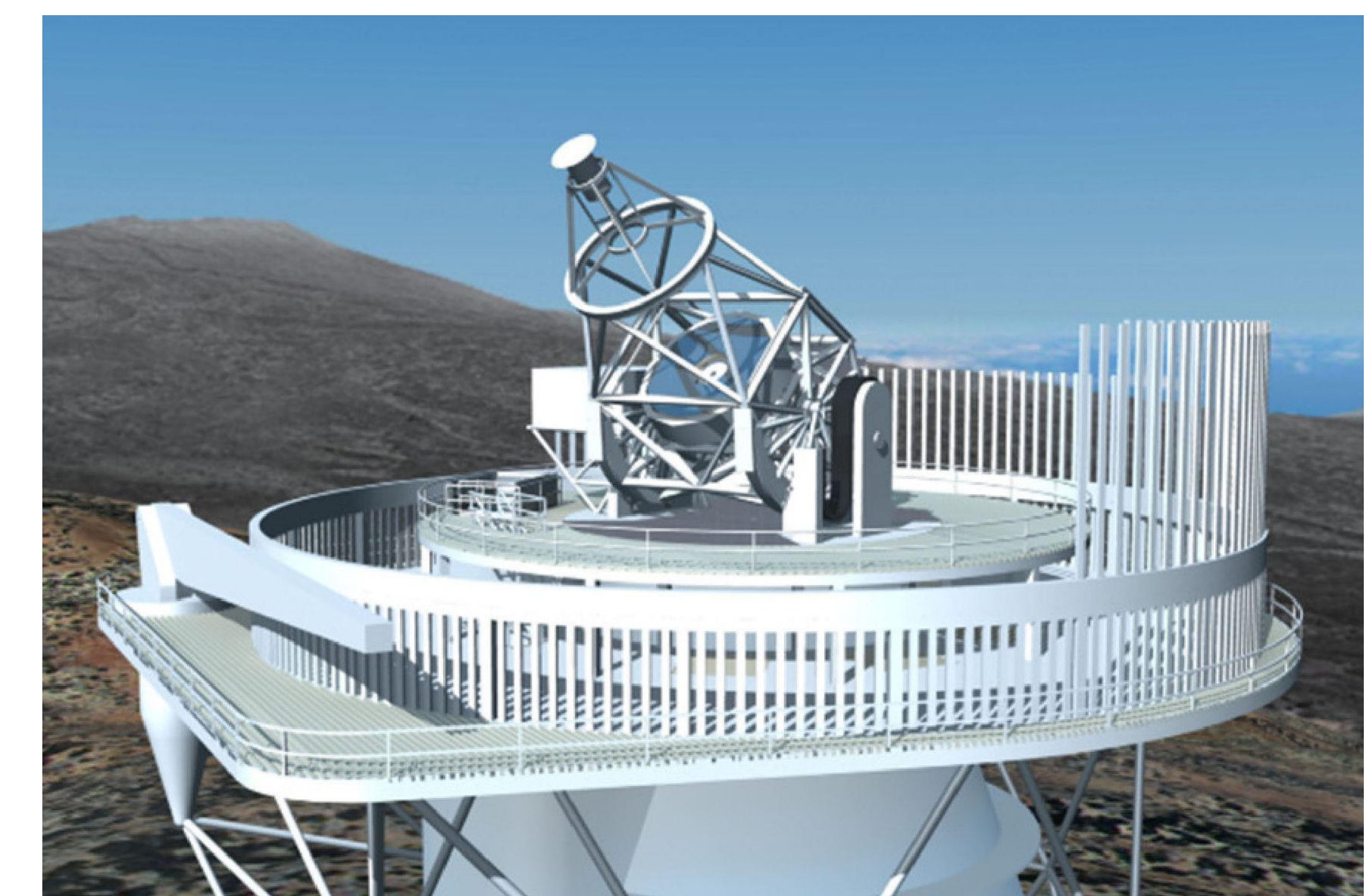
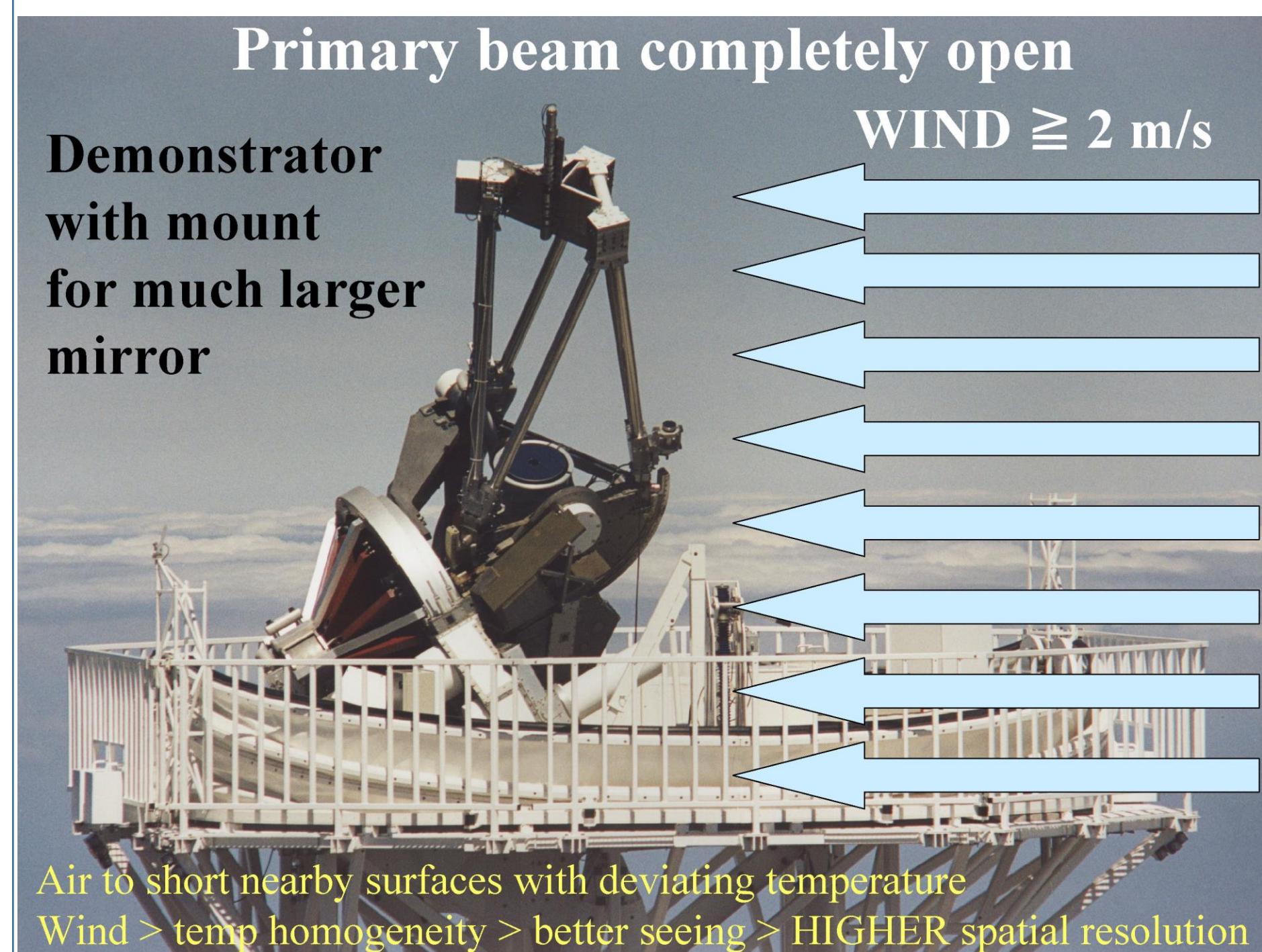
WP_070: Wave front control: Turbulence and correction
 Sub WPs: 2. Atmospheric Seeing Characterisation
 3. Local Seeing
 Lead Institution: IAC (Instituto de Astrofísica de Canarias)
 Project Leader: Dr. Manuel Collados Vera
 Participants for this work: HANKOM, WU, KIS, SU and IAC on the Telescopes DOT, SST and GREGOR on the IAC observatories ORM and OT

Fully open-foldable dome cool in Sunshine: Fast temperature equilibrium and no heat production

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Telescopic photocell Unit → Several in line, here 6 = SHABAR → on towers GREGOR[†], SST and DOT → Results show most scintillation from nearby air layers ↑ SHAdow BAnds Ranger → Solar Eclipse then air-disturbance light fluctuations (scintillation) cause dark SHAdow BAnds moving over the ground. Correlation measurements between the photocell signals deliver information about distance on which the light fluctuations are formed, also without Eclipse. Result: In case of good conditions of higher atmosphere, most disturbances from the air in the direct neighborhood of the telescope, see graph on right top with the scintillation contributions of the successive air layers as function of height and daytime. For high resolution telescopes in the visible light: with 0.1° C temperature fluctuations of the air in the primary beam, reduction of image sharpness starts already.

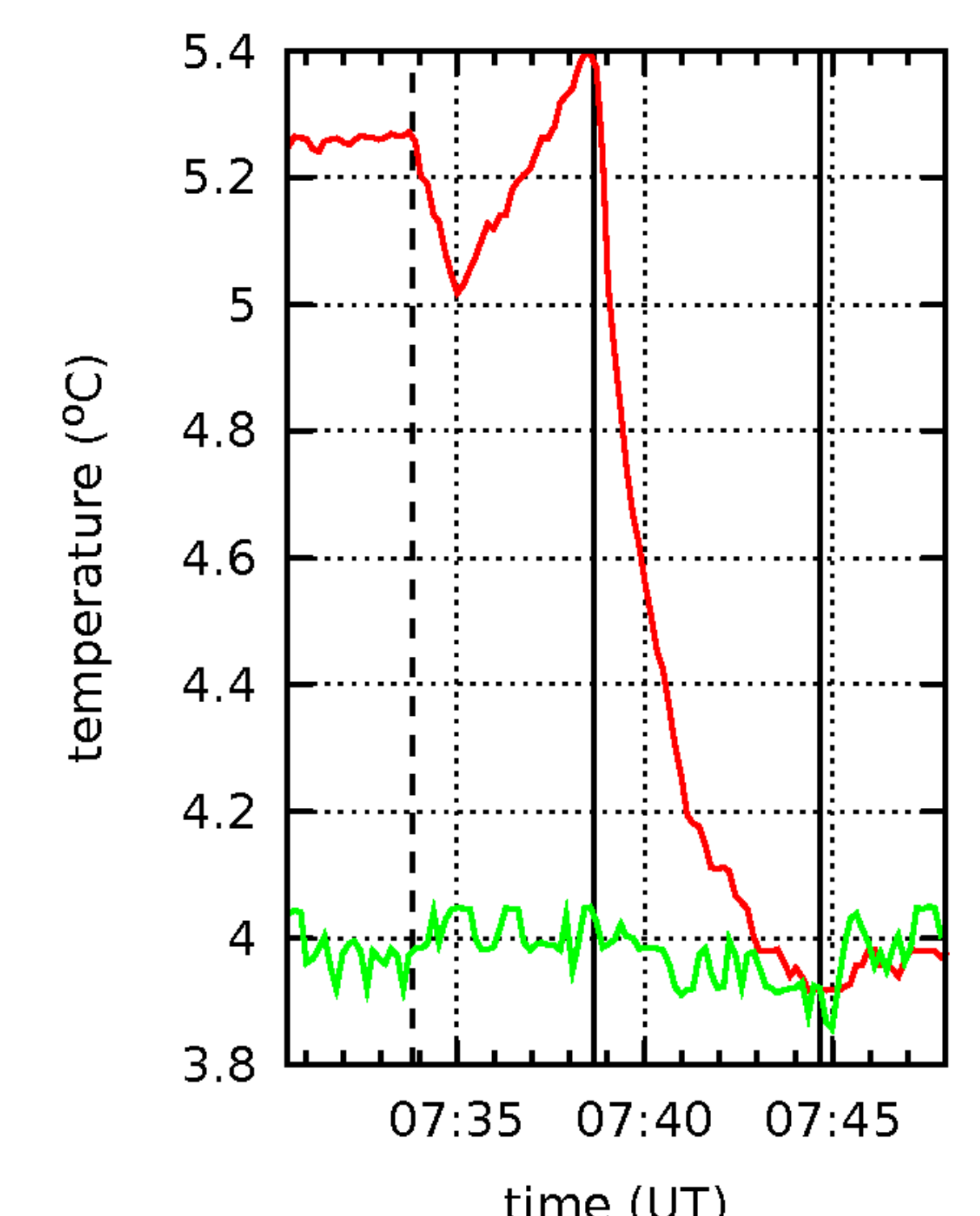
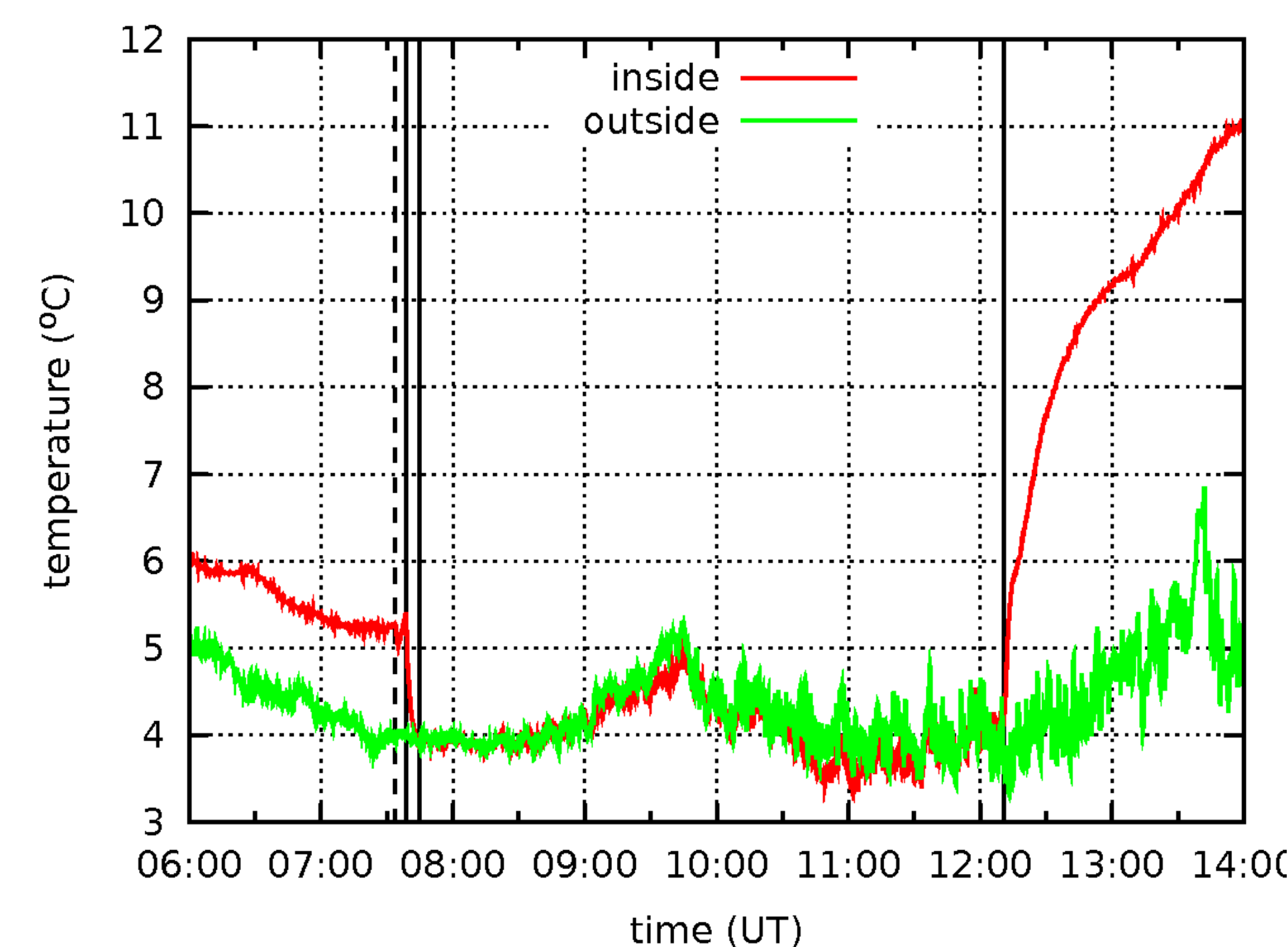


Solution for high resolution observations telescope: Open structure and completely open-foldable dome of which all parts remain relatively cool in sunshine, only few degrees increase in temperature. Air has no time to take over different temperatures from mount and dome. The DOT, successful demonstrator.

Production in the large factory hall of Poly-Ned of the light coloured textile membranes from many strips to form the stable saddle shape.

Rubber tubes at the factory of Hercorub. Light coloured rubber was not stable enough for bad weather sealing. Solved with inside tubes of stiff black rubber, which gives stiffness to the outside tubes. Stiff black rubber is from similar compound but with added carbon for the stiffness.

European Solar Telescope (EST) design based on the open principle with open telescope structure and completely open-foldable dome specialised for observations with highest resolution of polarised light for studying the Solar magnetic fields essential for understanding the Solar activity.



After opening, the air temperature inside the dome is very fast equal to the outside air temperature. Left side registration of whole morning, right side detail of opening.