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EQUO - EQUATORIAL ITALIAN OBSERVATORY AT THE BROGLIO SPACE CENTER FOR SPACE
DEBRIS MONITORING**Abstract**

An equatorial observatory is under development in the framework of the Italian Space Agency (ASI) – Sapienza University of Rome Agreement for scientific cooperation at the Broglio Space Center (BSC) in Malindi (Kenya). The need to improve observation capabilities in monitoring and cataloguing space debris is constantly growing, due to the continuous increase of operative satellites in the GEO and LEO regions. European States and Italy are trying to improve their space debris environment monitoring and forecast capability, establishing an operational Space Surveillance and Tracking network. The performance of a space debris observation system is strictly related to the number and dislocation of the observatories on the Earth surface. For this reason, having an equatorial observation site can potentially provide unique information concerning low inclination and low altitude objects, which are visible only by equatorial sites. In addition, an equatorial observatory can enlarge the overall orbit arc observed when observations are combined with mid-latitude observatories. ASI and the Department of Astronautics, Electrical and Energetics Engineering (DIAEE) of Sapienza University of Rome, have the opportunity to access an equatorial site with all the necessary logistic as well as scientific infrastructures and decided to establish an equatorial observatory settled at the Broglio Space Center in Kenya (EQUO – EQUatorial Observatory). The observatory has been developed by Sapienza Space Systems and Space Surveillance Laboratory (S5Lab) research group to increase space debris observation potential. The observatory is composed by two different observation sites: i) EQUO-On Ground (EQUO-OG) is installed inside the base camp of BSC and it is a 200mm diameter f/4 telescope in Newtonian configuration equipped with a CCD sensor with a wide Field of View (FOV) of about 9 degrees squared for astrometry purpose; ii) EQUO-Off Shore (EQUO-OS) will be installed on the Santa Rita off-shore platform of BSC and it is a 25mm diameter f/4 telescope in Newtonian configuration equipped with a CCD sensor with 2x2deg FOV for

photometric measurements and it is currently under development. The paper describes the installation and the operations of the fully remote controlled EQUO-OG for orbital debris observation. Moreover, the results of the off shore observatory test installation campaign on the Santa Rita platform and the firsts remote operations of the whole system are shown.