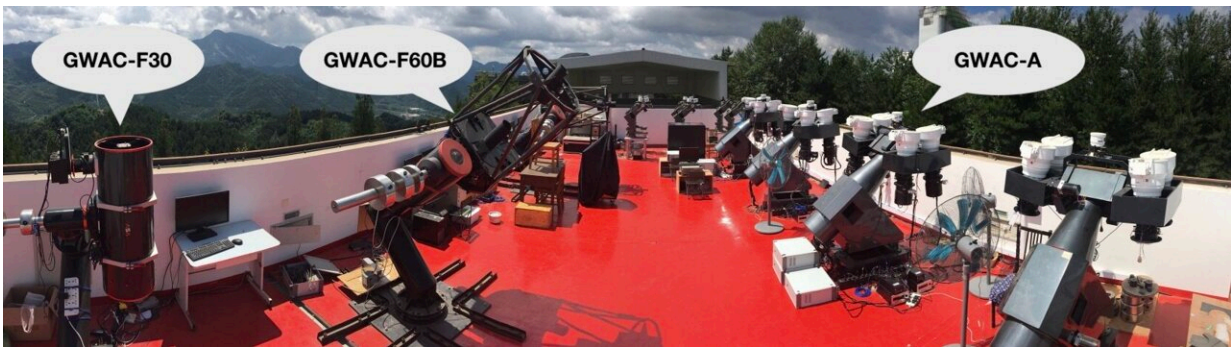


Automatic Observation Management system to coordinate telescope network

August 25 2021, by Li Yuan



The telescopes of the GWAC-A, the GWAC-F60A/B and the GWAC- F30.
Credit: HAN Xuhui

The incorporation of distinct telescopes into larger coordinated networks can enhance the discovery and follow-up capacity. However, challenges still remain in scaling, deploying, organizing and scheduling such networks.

A Chinese-French joint team from Space Variable Object Monitor (SVOM) mission developed an Automatic Observation Management (AOM) system to incorporate individual facilities with different [telescope](#) size, photometry parameters, and control techniques into a well-organized network.

This study was published in *Publications of the Astronomical Society of the Pacific* on June 30.

The first observation network adopted AOM is the Ground-based Wide-Angle Cameras Network (GWAC-N), a network of robotic multiple types, [optical telescopes](#) under the framework of SVOM mission.

The GWAC-N is currently located at Xinglong Observatory of National Astronomical Observatories of Chinese Academy of Sciences (NAOC). It comprises two wide FoV GWAC telescopes, two 60-cm telescopes (GWAC-F60A/B) and one 30-cm telescope (GWAC-F30).

Via AOM, the GWAC-N obtained better sky coverage and detection performance that enables multiple tasks, including large-sample surveys, the follow-up observation of Gamma-Ray Bursts and Gravitational Waves, and the detection of optical transients, variable and periodic objects, and moving objects, etc.

"AOM could perform complex observations with ten observation modes and 175 strategies. The AOM is also working with a high duty cycle and stable behavior. It scheduled an average of 1,500 targets and produced 600 observation plans per clear night in December 2020," said Dr. Han Xuhui from NAOC, the first author of the study.

According to simulation, via AOM, a 10-telescope network could handle the working load of 100,000 targets in eight seconds. This result ensures that AOM can be adapted to the largest and busiest world-wide, general purposed, telescope networks.

In the next two years, the complete GWAC-N will be installed at two observatories. The number of telescopes in the GWAC-N will be extended to nine GWAC-A telescopes and five 60-cm class telescopes. More external telescopes are also foreseen to join the [network](#).

AOM will fully support the operations of GWAC-N. With its [modular design](#), the AOM is also scientifically and technically viable for other general-purpose telescope networks.

More information: Xuhui Han et al, The Automatic Observation Management System of the GWAC Network. I. System Architecture and Workflow, *Publications of the Astronomical Society of the Pacific* (2021). [DOI: 10.1088/1538-3873/abfb4e](https://doi.org/10.1088/1538-3873/abfb4e)

Provided by Chinese Academy of Sciences

Citation: Automatic Observation Management system to coordinate telescope network (2021, August 25) retrieved 20 June 2024 from <https://phys.org/news/2021-08-automatic-telescope-network.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.