PDC2019
Washington, DC, USA

Please send your abstract to iaapdc (at) iaamail.org

You may visit www.pdc.iaaweb.org

(please choose one box to be checked)
(you may also add a general comment - see end of the page)

☐ **Key International and Political Developments**
☐ **Advancements and Progress in NEO Discovery**
☒ **NEO Characterization Results**
☐ **Deflection and Disruption Models & Testing**
☐ **Mission & Campaign Designs**
☐ **Impact Consequences**
☐ **Disaster Response**
☐ **Decision to Act**
☐ **Public Education & Communication**

The LCO Follow-up Network for NEOs

Tim Lister[1], **Joey Chatelain**[1], **and Edward Gomez**[1]
[1]*Las Cumbres Observatory, 6740 Cortona Drive Ste. 102, Goleta, CA 93117, USA,*
tlister@lco.global

Keywords: NEOs, characterization, photometry, spectroscopy, optical

ABSTRACT

The LCO NEO Follow-up Network is using the telescopes of the Las Cumbres Observatory (LCO) and a web-based target selection, scheduling and data reduction system to confirm NEO candidates and characterize targets of special interest such as radar-targeted known NEOs, close passing NEOs and potential mission destinations. The LCO NEO Follow-up Network's main aims are to obtain characterization data such as light curves, rotation periods and taxonomic information on NEOs and to assist in obtaining confirming follow-up of the large number of NEO candidates. The NEO candidates come from the NEO surveys such as Catalina, PanSTARRS, ATLAS, and others. In particular, we are targeting objects in the Southern Hemisphere, where the LCO NEO Follow-up Network is the largest resource for NEO observations.

The LCO Network has grown to comprise two 2-meter telescopes, nine 1-meter and ten 0.4-meter telescopes at sites at Haleakala (Hawaii), McDonald Observatory (Texas), Tenerife (Canary Islands), Cerro Tololo (Chile), SAAO (South Africa) and Siding Spring Observatory(Australia). The network has been fully operational since 2014 May, and observations are executed remotely and robotically. Work is

underway to deploy a second 1-meter telescope to McDonald Observatory and two 1-meter telescopes to the Tenerife site during 2019-2020.

We have developed web-based software called NEOexchange which automatically downloads and aggregates NEO candidates from the Minor Planet Center's NEO Confirmation Page, the Arecibo and Goldstone radar target lists and the NASA mailing lists. NEOexchange allows the planning and scheduling of observations on the LCO Telescope Network and the tracking of the resulting blocks and generated data. The NEOexchange software also allows for automated scheduling of objects and moving object detection, with the results presented to the user via the website.

The NEOexchange software has been enhanced to allow planning and scheduling of low resolution spectroscopy observations using the robotic FLOYDS spectrographs on the LCO 2-meter telescopes. We have also added retrieval of prior taxonomic information and spectra from e.g. SMASS. In addition we are working to integrate additional information derived from photometry such as period determinations, light curve amplitude etc. from our own and other data sources, in order to give the most complete picture of a given NEO in one place.

We will present results from the spectroscopic and photometric data obtained with LCO NEO Follow-up Network and from the development of the NEOexchange software used to schedule, analyze and report observations. In addition, we will describe our plans for the future which include a generalized telescope and instrument model for imagers and spectrographs, allowing observations across telescopes from 0.4-meter to 8-meter diameter. This is part of AEON, LCO's plan for the Astrophysical Events Observing Network, allowing a network of robotic and part-robotic telescopes including LCO, the SOAR 4-meter and the Gemini 8-meter telescopes to operate together and respond rapidly to targets of interest, including new and close-passing NEOs.

****