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- ☐ **Key International and Political Developments**
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- ☐ **NEO Characterization Results**
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FAINT NEO OBSERVATIONS USING THE UH-2.2m TELESCOPE

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In 2006 Congress tasked NASA to discover 90% of NEOs larger than 140m. As a result of this directive, to date, over 19000 NEOs have been discovered, with a rate of discovery increasing every year. Additionally to the large asteroids capable of global impact, this has lead to an increasing number of smaller NEOs (currently over 10000) to being found. These are still capable of causing major disruption if they land in populated areas. With the coming online of LSST, it is predicted that the rate of discovery of NEOs will increase by a factor of ten. After discovery, the follow-up of an NEO is critical to ensure the object has a long enough arc to prevent it from getting lost. In order to deal with the increasing discovery rate of NEOs and the multitude of important but challenging small objects that are being discovered, there is a need for facilities capable of performing follow-up objects towards the fainter end of observability. Using the UH-2.2m telescope, we are capable of following-up Virtual Impactors (VIs) down to V=25.5, thanks to the combination of excellent seeing on MaunaKea, open filter and our photometric methods involving trailed long exposures and image stacking. Over the last 2 years, we spent around 30% of our observing time dedicated to observing NEOs fainter than V=23 and 30% of our time observing fainter than V=24. Our faintest observation recently has been 2012 QQ10, at V=25.3, requiring 6.25 hours of

observation time over two nights. Recent highlights of our observing program have been:
--Observations of Apophis, the object that holds the record for highest Palermo value ever reached, which we observed at a very low altitude of 16 degrees, pushing the observing limit of our telescope.
--The second opposition recoveries of VIs 2017 RH16, 2012 EM7 and 2018 LR3.
Compared to previous years, we have reduced our overheads by increasing the automation in the observing procedures and we are optimising our observations with the aid of in-house software to prioritize observations, which takes an object's future orbital uncertainty into account. These, together with recent upgrades to telescope hardware place us at the forefront of being able to respond to critical and challenging follow-up requirements.