

## WORKING GROUP ON NEAR EARTH OBJECTS

*(GROUPE DE TRAVAIL SUR LES OBJECTS PROCHES DE LA TERRE)*

**PRESIDENT: DAVID MORRISON**

**MEMBERS: richard Binzel, Edward Bowell, Andrea Carusi, Alan W. Harris, Syuzo Isobe, Brian G. Marsden, Robert McMillan, Andrea Milani, Karri Muinonen, Steven J. Ostro, Viktor Shor, Gonzalo Tancredi, Jana Ticha, Donald K. Yeomans.**

### 1. Opening Remarks

WGNEO Chair David Morrison opened the meeting by noting that more than one half of the 65 WGNEO members had attended in Palermo, providing an unusual opportunity for broad discussions. The primary issue at Palermo concerned how and when to release information on NEAs with preliminary orbits that allow the possibility of collision; the consensus was for openness with the media and the public, in spite of the potential for misunderstandings when preliminary results are misinterpreted.

Morrison noted that our problems with the media were getting

better, perhaps as we have learned how to deal with them. While bad reporting cannot be prevented, we appear to be learning from our mistakes that have created media storms. Although automatic orbit computers are now effectively performing technical reviews automatically, Morrison proposed that the technical review process remain in place and available for any one who needs it. It remains entirely possible for someone outside of the automated system to make a hazard prediction claim, and we should be ready to serve the IAU if needed. Morrison noted that under IAU rules we must make a justification for our continued existence, noting that having an expert group ready and able to advise the IAU on potential impacts may be just one of many justifications.

### 2. Address by IAU General Secretary

IAU General Secretary Hans Rickman addressed the meeting and stated the WGNEO is an asset to the IAU with a vital role. The role for the WGNEO may be increasing in the future as the IAU makes initiatives to have the NEO problem recognized by the International Council for Scientific Unions (ICSU). The IAU has received \$100K (US dollars) to prepare a report with the objective of putting NEOs on the political agendas of participating countries. A workshop is planned for next year. The specific tasks to be addressed include:

- How can the IAU increase NEO funding, mindful of the risk to human society?
- How does human society respond to impacts?

### 3. Other reports

Stefan Michalowski, Executive Secretary of the Global Science Forum of the Organization for Economic Cooperation and Development (OECD) gave a report on the recent

OECD workshop held in Frascati. The basic item considered was the question of whether NEOs pose a public safety issue that should be recognized by governments. A policy level document was produced and distributed to member countries. The recommendation is that governments should have designated personnel who are responsible and knowledgeable on NEOs. The next step is to bring together risk specialists with NEO specialists.

Andrea Milani described the improvements in automatic calculations of impact probabilities, and the automatic checking between computer systems in Pisa and JPL. Most of the code is independent, though they are based on currently developed theories of motion. Milani echoed the agreement that the Technical Review Committee should remain in place. The wording of the guidelines for this voluntary review might be revised to indicate the routine nature of cross-checking between the Pisa and JPL systems.

Richard Binzel noted the importance of discoverers and orbit computers to keep the WGNEO informed about objects that may generate media stories - regardless of whether or not a Technical Review is being sought. Simultaneous, or slightly advance release of information to WGNEO members can provide the best means for clear, consistent, and reliable information to be disseminated by responsible journalists. We should emphasize that the most likely outcome is that new data will make the apparent hazard go away. (If the chance of impact is 1 in 1,000,000 then there are incredibly high odds of 999,999 to 1 that new data will ultimately make the object go away.)

Don Yeomans gave a short report on some of the conclusions and recommendations arising from a year-long NASA study into the next generation of NEO searches, focused primarily on surveys of sub-kilometer NEAs that might represent the next step beyond the current Spaceguard Survey. The report of this NASA Science Definition Team will be available in mid-August.

Steve Chesley presented an overview of the tsunami hazard taking into account the frequency of tsunami generated by impacts, shore profiles, and population distribution data along shorelines. The preliminary findings are that most of the hazard stems from 2-10 meter waves caused by the impact of 100-400 meter objects. Overall, one-half of the tsunami risk comes from objects smaller than 300 meters. The rate at which people are displaced, i.e., made wet and angry but not necessarily killed, is about 180 per year, with uncertainty around the factor of two level.

David Tholen presented an overview of the PANSTARRS system being planned by the University of Hawaii. The current vision for the system is to use four 1.8m telescopes, with 30 second exposures, to cover 3000 square degrees per night.

Ted Bowell described plans for a new Lowell Observatory 4m telescope to become operational in 2008. When used for NEO work, it is expected to have the capability of about 150 square degrees per hour to V magnitude 23.

Alan Harris described plans for the Large Synoptic Survey Telescope (LSST). This single 8.4m telescope with a 3 degree diameter field of view is expected to reach a limiting V magnitude 24 with 10 second exposures. Harris noted that high efficiency in discoveries is achieved through the use of sky subtraction (requiring fewer visits per field), higher precision astrometry, improved linkage strategy, and by concentrating searches within +/- 20 degrees of the ecliptic. Such efficiencies are essential for a telescope with additional astrophysical survey demands.

David Morrison  
*Chairperson of the Working Group*