

International Asteroid Warning Network (IAWN): Brief Summary & Status of the Current Worldwide NEO Survey Effort

UNCOPUOS STSC Open Forum

18 February 2016

Vienna, Austria

*Rob Landis
Planetary Science Division
NASA Headquarters*

Origins of the NEO Issue

(in the U.N.)

- **UNISPACE III (1999)**
 - To improve the scientific knowledge of near and outer space by promoting cooperative activities in such areas as astronomy, space biology and medicine, space physics, **the study of near-Earth objects (NEOs)** and planetary exploration;
 - **To improve the int'l coordination of activities related to near-Earth objects**, harmonizing the efforts directed at identification, follow-up observations and orbit prediction, while at the same time giving consideration to **developing a common strategy that would include future activities related to NEOs.**
- **Action Team 14 (AT-14)** established (2001); followed by terms of reference (2002)

Origins of the NEO Issue ***(in the U.N.) [con't]***

- **Tasking to AT-14**
 - **Review the content, structure and organization of ongoing efforts in the field of NEOs;**
 - **Identify any gaps in the ongoing work where additional coordination is required and/or where other countries or organizations could make contributions;**
 - **Propose steps for the improvement of int'l coordination in collaboration with specialized bodies.**

Open-ended membership: including intergovernmental, governmental and non-governmental space-related institutions

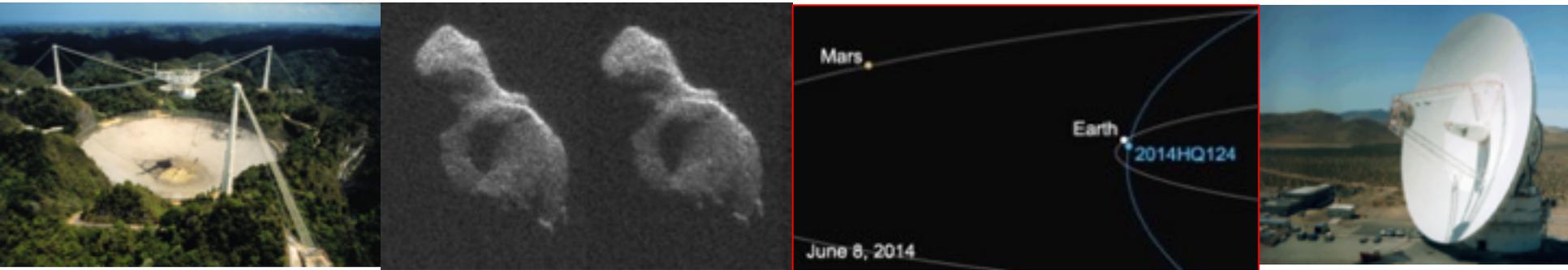
AT-14, STSC, COPUOS, UN General Assembly

- **AT-14:** Technical body, open-ended; composed of government and non-government experts (27 member states and other entities)
 - Worked inter-sessionally
- **NEO Working Group** established 2007
 - Prepared yearly interim progress and final reports for STSC
- **STSC:** considers NEO Working Group reports; regular agenda item (74 Member States; Dec. 2013)
- **COPUOS** considers report on NEOs of STSC and endorses recommendation
 - Set multi-year work plans for STSC (2009 - 2011, 2012 - 2013)
- The **General Assembly** endorses COPUOS report; sets new mandates for COPUOS, STSC and LSC (193 MS)

Recommendations - Int'l Response to NEO Impact Threat

- Three overarching recommendations:
 - An **International Asteroid Warning Network (IAWN)** should be established
 - Initially composed of existing capabilities of member states
 - A **Space Mission Planning Advisory Group (SMPAG)** should be established
 - Framework, timeline and options for initiating & executing response activities);
 - An **Impact Disaster Planning Advisory Group (IDPAG)** should be established [not accepted by the working group on NEOs]
 - Inform the civil defense community of nature of impact disasters and incorporate that community into overall mitigation planning process

IAWN Charter



The international asteroid warning network (IAWN), open to contributions by a wide spectrum of organizations . . . be established by linking together the institutions that were already performing, to the extent possible, the proposed functions, including discovering, monitoring and physically characterizing the potentially hazardous NEO population and maintaining an internationally recognized clearing house for the receipt, acknowledgment and processing of all NEO observations ... recommend criteria and thresholds for notification of an emerging impact threat.



International Asteroid Warning Network (IAWN)

IAWN is established (2013) to create an international group of organizations involved in detecting, tracking, and characterizing NEOs. The IAWN is tasked with developing a strategy using well-defined communication plans and protocols to assist Governments in the analysis of asteroid impact consequences and in the planning of mitigation responses.



IAWN Functions

- (a) To discover, monitor, and physically characterize the potentially hazardous NEO population using optical and radar facilities and other assets based in both the northern and southern hemispheres and in space;
- (b) To provide and maintain an internationally recognized clearing house function for the receipt, acknowledgement and processing of all NEO observations;
- (c) To act as a global portal, serving as the international focal point for accurate and validated information on the NEO population;
- (d) To coordinate campaigns for the observation of potentially hazardous objects;
- ❑ (e) To recommend policies regarding criteria and thresholds for notification of an emerging impact threat;
- ❑ (f) To develop a database of potential impact consequences, depending on geography, geology, population distribution and other related factors;
- ❑ (g) To assess hazard analysis results and communicate them to entities that should be identified by Member States as being responsible for the receipt of notification of an impact threat in accordance with established policies;
- ❑ (h) To assist Governments in the analysis of impact consequences and in the planning of mitigation responses.

IAWN Steering Committee

- **Steering Committee Membership**
 - Sergio Camacho (UNCOPUOS)
 - Lindley Johnson (NASA HQ, PDCO)
 - Boris Shustov (INASAN)
 - Giovanni Valsecchi (INAF-IAPS/NEODyS)
 - Patrick Michel (Observatoire de la Côte d'Azur)
 - Alan Harris (DLR)
 - Detlef Koschny (ESA/ESTEC)
 - Paul Chodas (CNEOS/JPL)
 - Matt Holman (SAO/MPC)
- **Annual Steering Committee Meetings, 3 to Date**



Initial Signatories to IAWN



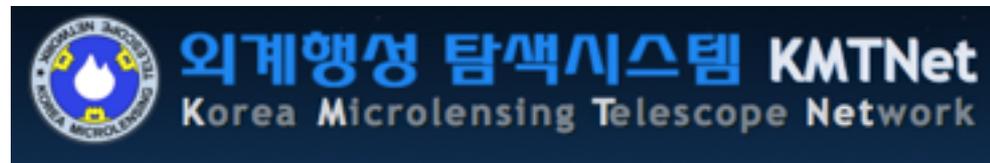
National Institute of
Astrophysics, Optics & Electronics



Peter Birtwhistle (*amateur
follow-up observer, United
Kingdom*)

and, NASA
PDCO

European Southern
Observatory
(ESO)



Korean Astronomy Space
Science Institute (KASI)



NASA's Planetary Defense Coordination Office

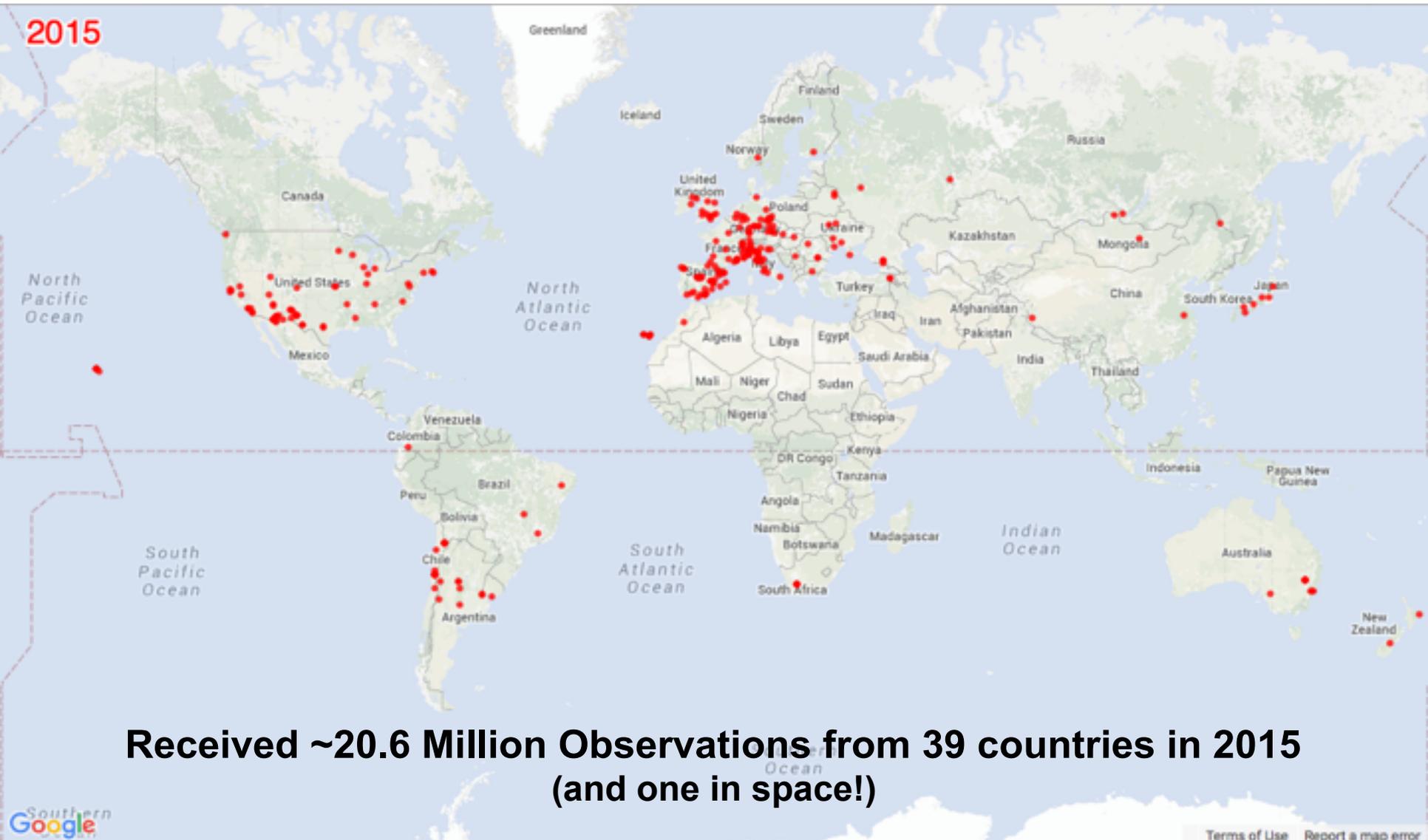
This new office was recently established at NASA HQ to coordinate planetary defense-related activities across NASA as well as coordinate both U.S. interagency and international efforts and projects to address and plan response to the asteroid impact hazard. In so doing, the Planetary Defense Coordination Office dovetails with the needs, goals, and objectives of IAWN.

Mission Statement:

To lead national and international efforts to:

- Detect any potential for significant impact of planet Earth by natural objects
- Appraise the range of potential effects by any possible impact
- Develop strategies to mitigate impact effects on human welfare

Worldwide Observing Network



**Received ~20.6 Million Observations from 39 countries in 2015
(and one in space!)**