

The logo for the International Asteroid Warning Network (IAWN) is located in the top left corner. It features a stylized Earth with a red line representing an asteroid's trajectory passing through it. To the right of the Earth, the text "International Asteroid Warning Network" is written in a blue, sans-serif font, with each word on a new line.

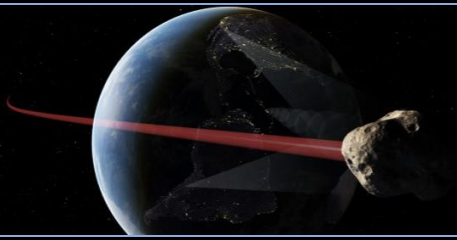
International
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Warning
Network

International Asteroid Warning Network (IAWN) Update

Kelly Fast
IAWN Coordinating Officer
Near-Earth Object Observations Program Manager
NASA Planetary Defense Coordination Office

Update to IAWN
17 September 2024

<https://iawn.net/>



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IAWN Administration supporting NASA's organizing role for IAWN

NASA Planetary Data System Small Bodies Node at the University of Maryland

Tim Spahr	IAWN Manager – membership (<i>leave of absence</i>)
Vishnu Reddy	IAWN Coordinator – campaigns, meetings, membership
Elizabeth Warner	IAWN Webmaster – website, meetings, membership
J. “Gerbs” Bauer	IAWN Administration supervisor

NASA Planetary Defense Coordination Office

Lindley Johnson	Lead for NASA's IAWN organization role
Kelly Fast	IAWN Coordinating Officer
Mike Kelley	NASA lead for IAWN Campaigns
Josh Handal	NASA support for IAWN

UN Office of Outer Space Affairs Committee on Peaceful Uses of Outer Space

Overview for NEO Threat Response



United Nations
COPUOS/OOSA

*Inform in case of
credible threat*



Parent Government Delegates

Determine Impact time,
location and severity

International Asteroid
Warning Network
(IAWN)
www.iawn.net

Coordinated
by NASA

Observers, analysts, modelers...

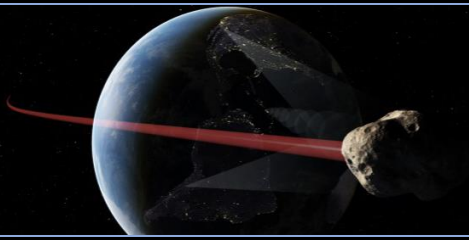
Potential deflection
mission plans

Space Missions Planning
Advisory Group
(SMPAG)
www.smpag.net

Chaired
by ESA

Space agencies and offices





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International Asteroid Warning Network (IAWN)

A worldwide collaboration of asteroid observers, analysts, and modelers recommended by the United Nations

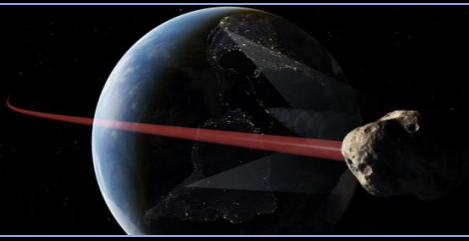
New signatories to IAWN in the past year include:

**IAWN includes
60 signatories
from 28 countries
(September 2024)**

United Arab Emirates	Al-Khatim Observatory M44
United States	John J. McCarthy Observatory 932
Hungary	Konkoly Observatory 461, 561, K88
Italy	ABObservatory L90
Italy	Montagna Pistoiese 104

Latest Updates

- The IAWN Steering Committee held its first meeting in January 2014 – 10 years!
- IAWN Steering Committee Meeting – 30 January 2024
 - This executive session addressed the future of the IAWN Steering Committee by detailing, for the Terms of Reference and based on the IAWN Statement of Intent, the core IAWN capabilities to be represented by a geographically and organizationally diverse representation from among IAWN signatories
 - The IAWN Steering Committee will continue to work on responsibilities outlined in the ToR (such as IAWN's process for impact threat notification) at their meetings on the margins of the UNCOPUOS Scientific and Technical Subcommittee Meetings and at other times as needed
 - The full IAWN membership will meet once a year (generally in the autumn) and at other times for IAWN campaigns and other meetings as needed



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IAWN Steering Committee Membership

*As defined in the IAWN Steering Committee
Terms of Reference 2024*

IAWN Permanent Observers

Space Mission Planning Advisory Group (SMPAG)

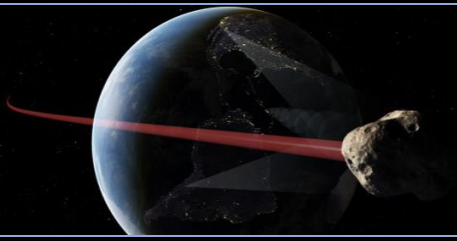
Detlef Koschny, Chair for ESA

United Nations Office for Outer Space Affairs (UNOOSA)

Romana Kofler

International Astronomical Union (IAU) - NEO Working Group

Gonzalo Tancredi, Univ. del Uruguay



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IAWN Steering Committee Membership

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Core Capability Providers NASA and ESA

IAWN Coordinating Officer (provided by NASA)

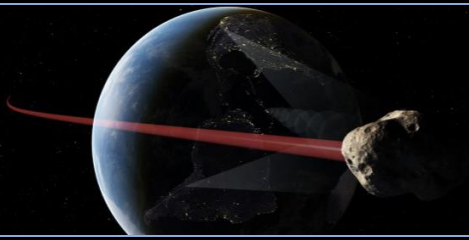
Kelly Fast

NASA Planetary Defense Officer

Lindley Johnson (Emeritus)

Head of ESA Planetary Defence Office

Richard Moissl



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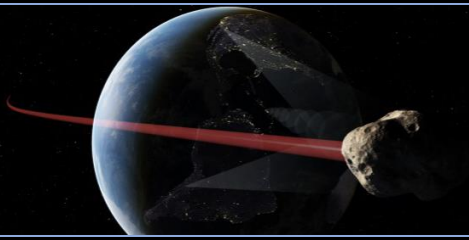
IAWN Steering Committee Membership

*As defined in the IAWN Steering Committee
Terms of Reference 2024*

IAWN Core Area	IAWN Member	Last Meeting
Data Management, Archiving, and Distribution	vacant	
Large-Scale Surveys	vacant	
Astrometric Follow-up	vacant	
Small Observatories/Independent Observers	Michał Żołądowski (6ROADS)	2028
Physical Characterization	Alan Harris (DLR)	2025
Impact Effects Modeling	vacant	
Orbit Determination	Paul Chodas (NASA JPL CNEOS)	2025
Interface to Emergency Management Organizations	vacant	
Public/Media Information	Patrick Michel (CNRS/OCA)	2028

Boris Shustov (INASAN) TBD

<https://iawn.net/>



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IAWN Steering Committee Membership

*As defined in the IAWN Steering Committee
Terms of Reference 2024*

- An email will follow this meeting to again invite applications from the IAWN membership now that the Steering Committee positions are expanded and defined around the core IAWN capabilities
 - Applicants need to justify why they are suited to represent a core IAWN capability that is or will be vacant
- The Steering Committee will vote to accept, defer, or reject applicants, taking into account expertise along with a goal of diverse geographic and organizational representation from among IAWN signatories
- Those who applied earlier this year at the time of the last Steering Committee Meeting may reapply with justification

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**Many thanks to those who just completed
their Steering Committee service:**

Giovoanni Valsecchi, INAF

Sergio Camacho, INAOE

The logo features a stylized Earth with a red line representing an asteroid's path. The text 'International Asteroid Warning Network' is displayed in a white, sans-serif font to the right of the graphic.

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End

IAWN Background

IAWN is a worldwide collaboration of asteroid observers and modelers that was recommended by the United Nations

From the IAWN Statement of Intent:

“The intent of the International Asteroid Warning Network (IAWN) is to establish a worldwide effort to detect, track, and physically characterize near-Earth objects (NEOs) to determine those that are potential impact threats to Earth. This network is comprised of a partnership of scientific institutions, observatories, and other interested parties performing observations, orbit computation, modeling, and other scientific research related to the impact potential and effects of asteroids.”

Peer-Reviewed Publications

2023 DZ2 Planetary Defense Campaign

Vishnu Reddy et al 2022 Planet. Sci. J. 5 142 <https://doi.org/10.3847/PSJ/ad4a6d>

The Second International Asteroid Warning Network Timing Campaign: 2005 LW3

Davide Farnocchia et al 2023 Planet. Sci. J. 4 203 <https://doi.org/10.3847/PSJ/acfd22>

International Asteroid Warning Network Timing Campaign: 2019 XS

Davide Farnocchia et al 2022 Planet. Sci. J. 3 156 <https://doi.org/10.3847/PSJ/ac7224>

Apophis Planetary Defense Campaign

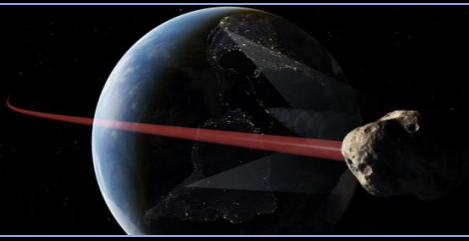
Vishnu Reddy et al 2022 Planet. Sci. J. 3 123 <https://doi.org/10.3847/PSJ/ac66eb>

Near-earth asteroid (66391) Moshup (1999 KW4) observing campaign: Results from a global planetary defense characterization exercise

Vishnu Reddy et al 2022 Icarus 374 114790 <https://doi.org/10.1016/j.icarus.2021.114790>

Near-Earth asteroid 2012 TC4 observing campaign: Results from a global planetary defense exercise

Vishnu Reddy et al 2019 Icarus 326 133 <https://doi.org/10.1016/j.icarus.2019.02.018>



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Notification by IAWN - Threshold

IAWN shall warn of predicted impacts exceeding a probability of **1%** for all objects characterized to be greater than **10 meters** in size*

**Roughly equivalent to absolute magnitude of 28 if only brightness data can be collected.*

Reference: Report [SMPAG-RP-003](#) on Recommended Criteria & Thresholds for Action for Potential NEO Impact Threat (led by IAWN) at [smpag.net](#)
UNCOPUOS conference paper [A/AC.105/C.1/2017/CRP.25](#)

Notification by IAWN – Who?

The IAWN Coordinating Officer or a member of the IAWN Steering Committee will notify:

- Chair, Space Mission Planning Advisory Group (SMPAG)
- United Nations Office of Outer Space Affairs (UNOOSA)
 - UNOOSA will notify UN Member States

IAWN signatories will also notify and work with their own governments according to their own national policies, as applicable.



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Core data management capabilities currently provided by ESA and NASA

NASA Planetary Data System's Small Bodies Node

NEO position measurements from observatories worldwide



The International Astronomical Union
Minor Planet Center
<http://minorplanetcenter.net/>

- Identification
- Designation
- Initial orbit computation



near-earth objects coordination centre 
<https://neo.ssa.esa.int/>



 Jet Propulsion Laboratory
California Institute of Technology
cneos | Center for Near Earth Object Studies
<https://cneos.jpl.nasa.gov/>

Independent calculations of:

High precision NEO orbits

- Short-term: new discoveries
- Long-term: future orbits of hazardous asteroids

Time, location and geometry in the event of a predicted impact