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AUSTRIAN SPACE FORUM

They Don`t Believe COVID; Will They Believe The Asteroid Impact?

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The Problem: Communicating the Danger of an Asteroid Impact in the Age of "Fake News" and Conspiracy Theories

- The impact of an asteroid / NEO is a more or less predictable natural disaster; impacts are known to have happened in the geological past and from such studies we have a reasonable idea about how often such impact happen on average.

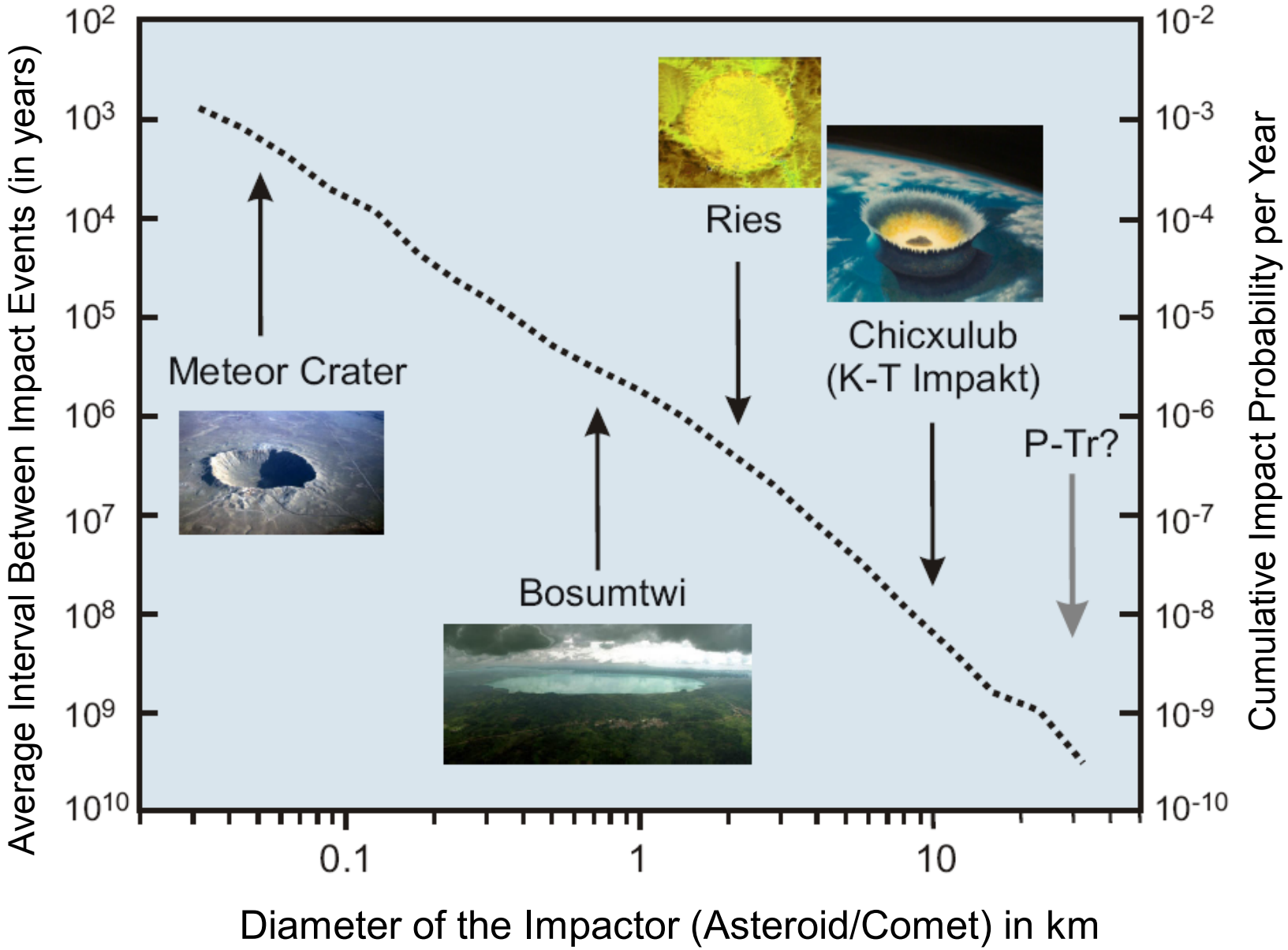
- If an impact event occurs, geological evidence, as well as modeling, tells us that even small-scale impacts can be regionally devastating; for example, an impact event similar to the one that created Meteor Crater (Barringer Crater) in Arizona, USA, with 1.2 km in diameter (from an impactor that was about 50-60 m in diameter) would be able to more or less destroy a city the size of Vienna. Larger events can have country-wide or continent-wide effects.

- Astronomical observation may give us up to several years warning, but predict only a fairly long and wide "impact corridor"; more precise information about a possible impact location may only be available months to weeks before the actual impact.

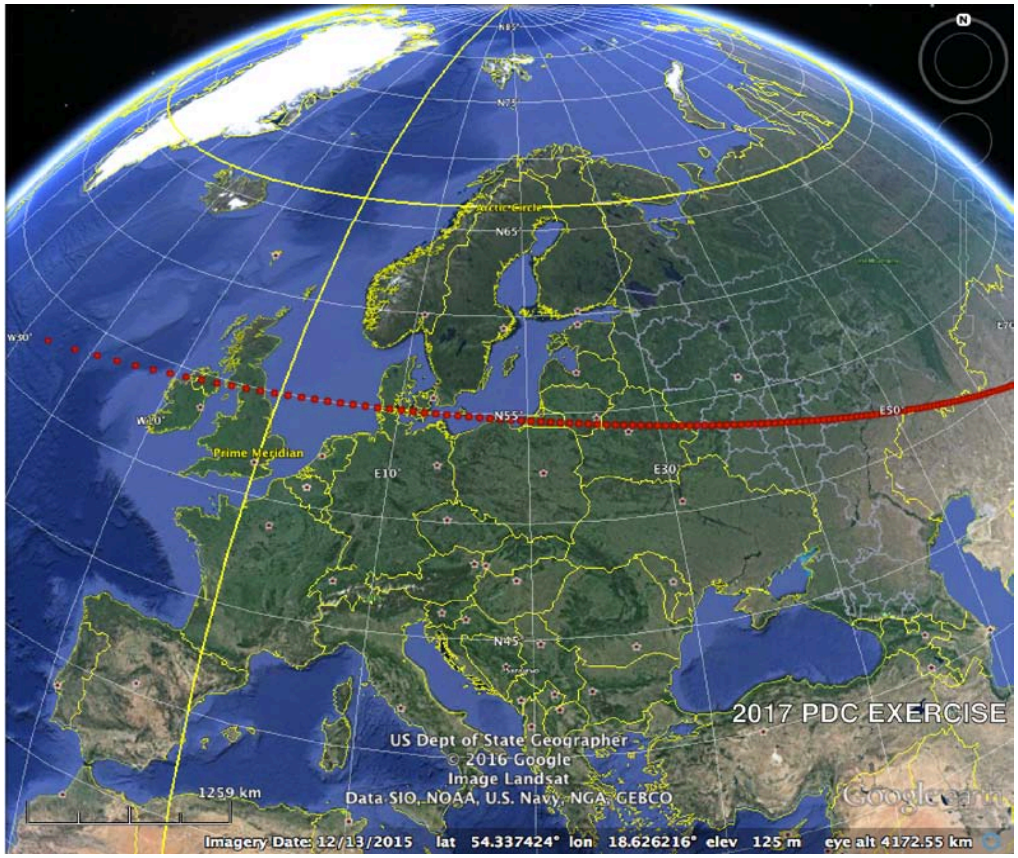
- The question is, how would such information be reliably communicated to the public, also considering that knowledge of the impact location, i.e., which country or city might be hit hardest, changes with time.

- Experience with the current virus pandemic calls into question how much the public might believe scientists, the media, or national or international organizations.

Probability of an impact event on Earth – impactor diameter vs. time interval

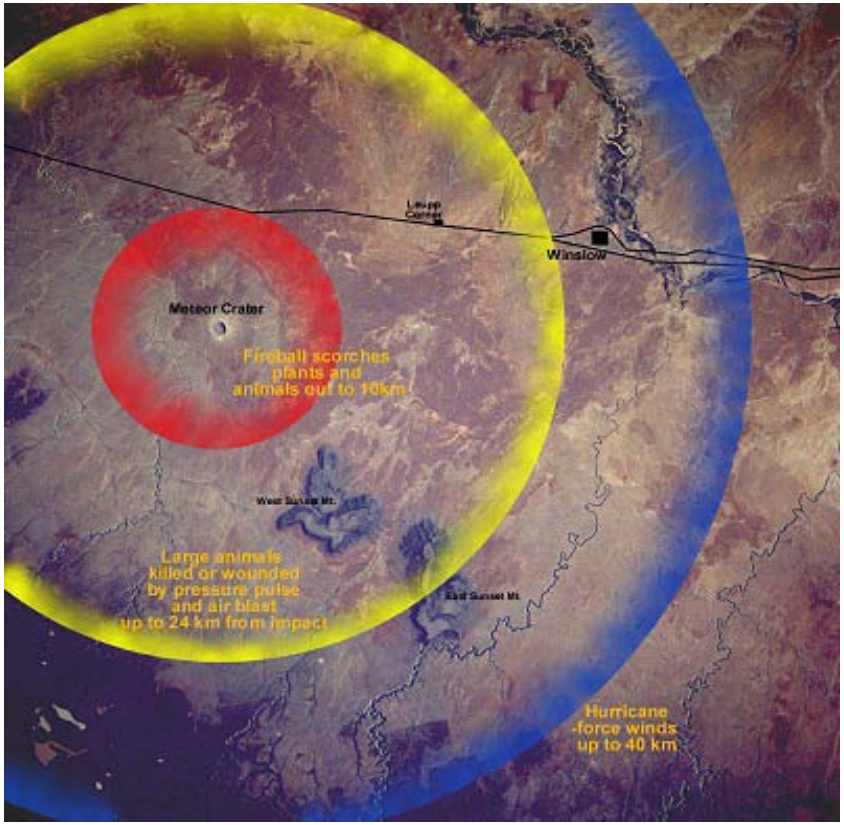


Impact corridor for a possible impact event (PDC exercise 2017), showing many possible impact sites in multiple countries



https://cneos.jpl.nasa.gov/pd/cs/pdc17/

Impact effects for small (50 m diameter) impactor / 1.2 km diameter impact crater – far-reaching destruction



Kring (2007) Meteor Crater Guidebook, Lunar & Planetary Institute, Houston

The Threat and the Role of International Organizations

- The global public became aware of the asteroid threat when, in June 1994, and predicted one year earlier, Comet Shoemaker-Levy impacted on the planet Jupiter.

- The question “could this happen on planet Earth?” became obvious. Even cursory analysis showed that this was entirely possible. So the related question “what can we do about it?” came up as a consequence. Various concepts were being explored, albeit superficially.

- Given the global importance of the issue, the United Nations formed, at the occasion of the UNISPACE III conference, an Action Team (AT14 “Mitigation of the Asteroid Threat”) to investigate all aspects of this matter, including possible technical solutions.

- AT 14 has since evolved into two working groups: SMPAG and IAWN. The are attached to the Scientific and Technical Subcommittee of COPUOS. They report through the usual UN mechanism.

- Objectives, and status and achievements of these WGs are being reported elsewhere at this Conference.

Building Awareness of the Threat

- It is evident that in order to combat a threat of possible global dimensions requires the involvement of the international community.

- IAWN has designed, and is in fact using, mechanisms for the communication among professionals. The communication channels between the professionals and the global decision making entities are being developed and defined at this time.

- A workshop on subject-related communications was held in Boulder, Colorado, in 2014. Various issues were discussed and a communications concept was proposed.

- While this effort produced a satisfactory result, it suffers from a serious shortcoming: it assumes that a uniform group of knowledgeable and responsible experts communicates in a knowledgeable and responsible manner with knowledgeable and responsible decision makers, who in turn convey this information to a knowledgeable and responsible media infrastructure, which then feeds this information in a knowledgeable and responsible manner to a cooperative public.

- The current experience with the COVID pandemic demonstrates that all these assumptions have serious problems, or are just plain wrong.

GLOBAL NATURE & COMPLEXITY

- A major impact will have global consequences in terms of physical, socio-economic, and legal aspects.

- Real time nature of modern communication channels introduces unprecedented complexity.

- Communication strategies can no longer be based on a transmitter-receiver model ("many-to-many" communication).

- Audiences interpreting information according to various cultural, legal, and ideological frameworks & reinjection of interpreted information.

- UN/COPUOS/IAWN/SMAPG are authoritative, impartial communicators, **but:** lack of direct power and sanction → This power lies with national and regional entities.

- Global communications network is fractured by national and regional norms, laws, different types of media systems and culture.

Cascade effects and social instability

- The pandemic is a non-linear, complex crisis, leading to cascade effects.

- The initial acceptance of government measures during the first weeks was followed by increasing uncertainty and disparity among the population.

- Socio-economic effects led to dissatisfaction and to discussions about the relative value of different occupations, gender inequalities, adequacy of the educational and health systems.

- Political parties and individual politicians used the intrinsically fluid situation for attacks, some of them quite vicious, on their opponents. This erodes the trust of the population in the decision makers.

- This resulted in demonstrations, often including violence and destruction, fanned by media coverage.

Political conflicts & helplessness

- Uncertainty and dissent provide a breeding ground for existing national & international political conflicts (e.g. US, Iran, China).

- Different management - “silver bullets” held against each other (between parties, local regions).

- Leads to: public skepticism, confusion, anger and fear.

- While the pandemic affects essentially all countries, a possible asteroid threat will affect some countries more than others.

- The current world-wide mitigation effort, as coordinated by the UN, might suffer severely from regional political considerations.

Conspiracy theories and groups of denial

- During COVID-19 we observe the global phenomenon of misinformation (unintended or deliberate) and non-factual claims. These increased and spread, necessitating a measure of censorship on the social media (suspension and closing of account).

- Conspiracy theories, some of them defying logic, gained unexpected acceptance on the social media (5G, Bill Gates, Chinese and/or Jewish conspiracy).

- In the guise of defending constitutional rights several groups acted in defiance of government measures (Q-anon, Proud Boys, *Querdenker, Reichsbürger*).

- Right-wing, nationalistic and populistic groups gained acceptance, even tough it is quite obvious that their goal is not to express their civil liberties, but to further their political agenda.

NEW ERA OF COMMUNICATION

- Given present communication technology it is impossible to control and direct the flow and the content of information, neither nationally, nor globally.

- The traditional separation between the generators and the recipients of information has disappeared. Derivative information feeds back into the information flow.

- The authority of scientists is being eroded by TV personalities and celebrities of different kinds, and self-appointed experts on social media.

- Unfortunately we observe that legitimate scientific criticism is being misinterpreted as dissent: the peer review process, and the suggestion of alternative methods. Media benefit from dissent ("We write what the public wants to hear"). And dissenting scientists benefit from public visibility.

- Straight-forward, traditional concepts of "truth" and "reality" cannot be assumed to work any longer.

WHAT TO DO?

- Differentiation & establishment of legitimate governmental and non-governmental authorities on a national and international level (e.g. European Civil Protection Mechanism, IAWN).

- Increased consideration & implementation of “human factors” is necessary → e.g. psychology, business and advertising studies.

- Foundation of any communication plan: A fundamental understanding of the actual communication environment.

- Roles of established media (and national and international organizations, as well as scientists) have to be renegotiated in a public discourse.

Summary and Conclusions

- An asteroid /NEO impact might happen in the not too distant future.

- An important question is, how to convey the possible danger to the general public?

- Given the recent experience with trying to communicate the dangers of the Corona virus, and possible responses, to the public, we identify several possible problems.

- As the impact threat is at first vague, and the location of the impact will not be know until shortly before the event, a similar “learning process” might occur as for COVID, making it difficult for scientists, media, and politicians to deliver clear and unambiguous messages.

- Communication problems range from being accused of “fake news”, conspiracy theories, to political “games”, all diluting the scientific process and causing the possibility of “too little, too late” responses.

“Deep Impact” (1998), © Paramount Pictures