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Geopolitical, Socio-Economic and Legal Aspects of the 2024PDC25 Event



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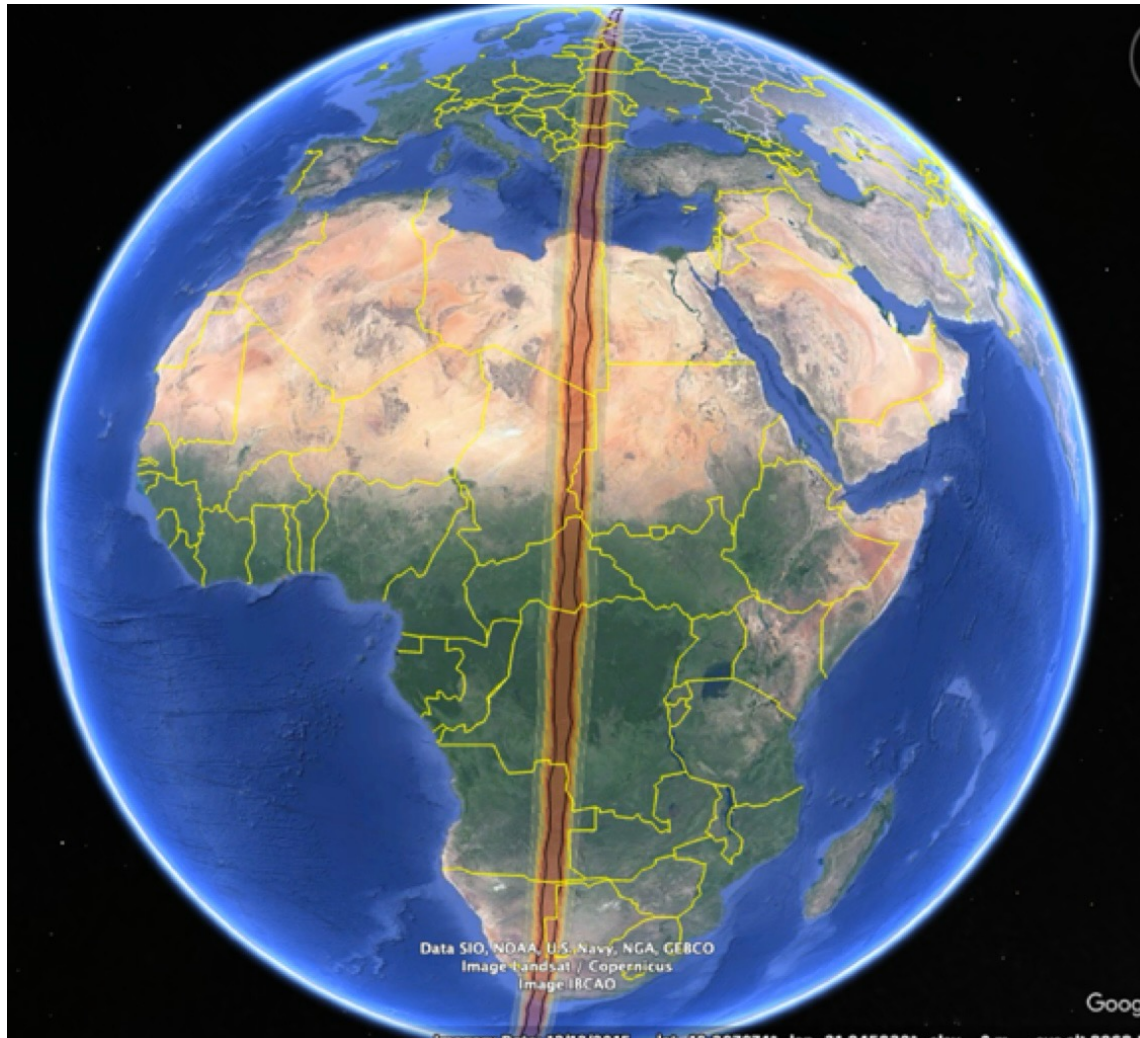
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United Nations Security Council



2024PDC25 exercise asteroid. Initial risk corridor



- Estimated diameter, 50 – 280 m
- Impact velocity 14 km/sec
- Impact energy: 3 – 720 Megatons
- Devastation up to 200 km radius
- Areas at risk: Russia, Ukraine, Romania,
- Athens, (tsunami probability: 0.5 %)
- Istanbul (tsunami)
- Kananga, Lisala, Democratic Republic of Congo; and Al-Junaynah, Sudan
- South Africa
- Impact date: 2041



Bringing the Exercise into a closer Time Frame: **What If?**

- The virtual object of the 2025 PDC exercise assumes a **possible impact in 2041**
- As it is very difficult to extrapolate geopolitical, socio-economic and legal aspects from 2025 across 16 years, we bring the scenario **forward to 2031** and examine it with today's global political and socio-economic background
- **Today would be T-6 years** and the threat is becoming immediate:
- By Aug 1 2024, IAWN would have notified SMPAG and UNOOSA, who in turn would have warned all countries
- The Scientific and Technical Subcommittee of the Committee on the Peaceful Uses of Outer Space (COPUOS) would have started discussions in Feb 2025. The Legal Subcommittee **would be discussing right now (as we speak!)**
- Recon missions, mitigation strategies, including the **use of NEDs**, and evacuation options would begin to be explored now.
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- The **UN Security Council** will have been alerted of the possible need to convene.
- The global media, traditional and social, would become involved in the **public discussion**.



What if the threat were immediate right now?

- International **politics** will react
- The **economy** will react: stock market, real estate, commodities, natural resources
- **People** would start to leave the risk corridor
- Options and **obligations under international law and space law** would begin to be explored
- The **mitigation options** developed by SMPAG would be discussed on the political level
- Mitigation requires **funding**. Who will contribute?
- The major powers have **Space Forces**. What is their role?
- Most mitigation options are **dual-use**
- The possibility to implement the **nuclear option** will be widely discussed



Global Considerations and Unknowns

- There are wars going on at this time in two of the possible impact areas: Russia and Ukraine and in Sub-Sahara Africa- Ethiopia, Sudan, Congo.
- Some major space actors, US, India, China, Japan are not at risk: Will they cooperate in SMPAG's planning and execution of deflection or disruption missions?
- St. Petersburg, one of the major cities of the Russian Federation, is close to the risk corridor.
- Would COPUOS be able to arrive at consensus recommendations to the Security Council given the current geopolitical climate?
- How would the current Members of the UN Security Council, China, France, RF, UK, US, Algeria, Denmark, Greece, Guyana, Pakistan, Panama, Republic of Korea, Sierra Leone, Slovenia, Somalia, react? Future African members pre-2031 are: Dem Rep of Congo, Zimbabwe, Libya, Morocco, Algeria
- Europe and other regions are re-arming. Will there be legislative approval/funds for mitigation missions?
- The Trump administration will continue until 2029. The role of NASA and the relationship with other space agencies (ESA) is not clear at this time.
- Is there a political price for possible collaborations ("deals")?



The Role of the UN Security Council

- “The Security Council shall determine the existence of any threat to the peace, breach of the peace, or act of aggression and shall make recommendations, or decide what measures shall be taken in accordance with Articles 41 and 42, to **maintain or restore international peace and security**”
- SMPAG will propose a mitigation strategy - this will have to be agreed upon within SMPAG. Ideally, the workload will be distributed among member space agencies.
- Possible points of contention: **the nuclear option**, i.e. dual use technologies
- Incomplete deflection of the asteroid will **change the impact location**. How to decide?
- A Security Council resolution passes with **9 votes of approval and no veto** by any of the Permanent Members.
- How to handle **possible dissent**?



Legal Considerations

- In view of Article 1.3 of the UN Charter, do countries have an **obligation to cooperate**?
- In view of Article 12 of ICCPR, **can evacuations be enforced**?
- Do countries have an **obligation to accept refugees**?
- People fleeing from a natural disaster are **not refugees** according to the 1951 Geneva Convention.
- In the case of a shortage of resources, do countries have to **contribute**? (Example: COVID, Black Sea Grain Initiative)
- Cooperation among space agencies in accordance with Articles 1 and 3 of the Outer Space Treaty
- UN Resolution 51/122 endorsed the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries.



The Local/National/Regional Political Process

- Affected states will probably declare a precautionary **state of emergency**.
- This could impact on the democratic rights, and in some cases also **human rights** of the population
- Impact on the democratic process: **elections** might be postponed or suspended
- Lesson from COVID: **not all the population will agree** and cooperate
- The role of the security forces- civil protection, police, military- will have to be defined.
- As the impact time gets closer there might be **predatory action** by local, regional or global powers: with real estate prices in the possible impact area falling considerably, companies, organizations or countries might exploit the situation.
- Would the current **global antagonism** allow the required consensus?



Possible Impact in Western Ukraine in 2031

- Ukrainian economy is already suffering severely from the ongoing war
- Millions of Ukrainians have already left the country. Many more will be leaving as soon as the impact threat becomes substantial.
- Many economic initiatives and investments will cease
- Investments in the infrastructure will cease
- Western Ukraine produces foodstuff for many third world countries.
- There will be no planting in 2030, possibly earlier, and no harvest in 2031
- Companies and infrastructure might evacuate
- Western Ukraine would evacuate to Poland/Europe: massive problem
- Some countries might not contribute to any space mitigation efforts

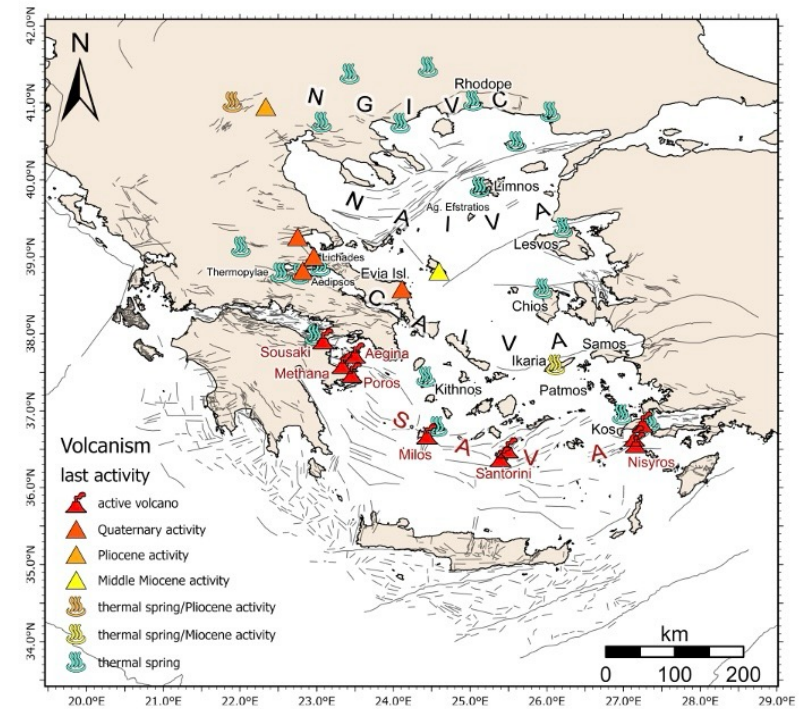
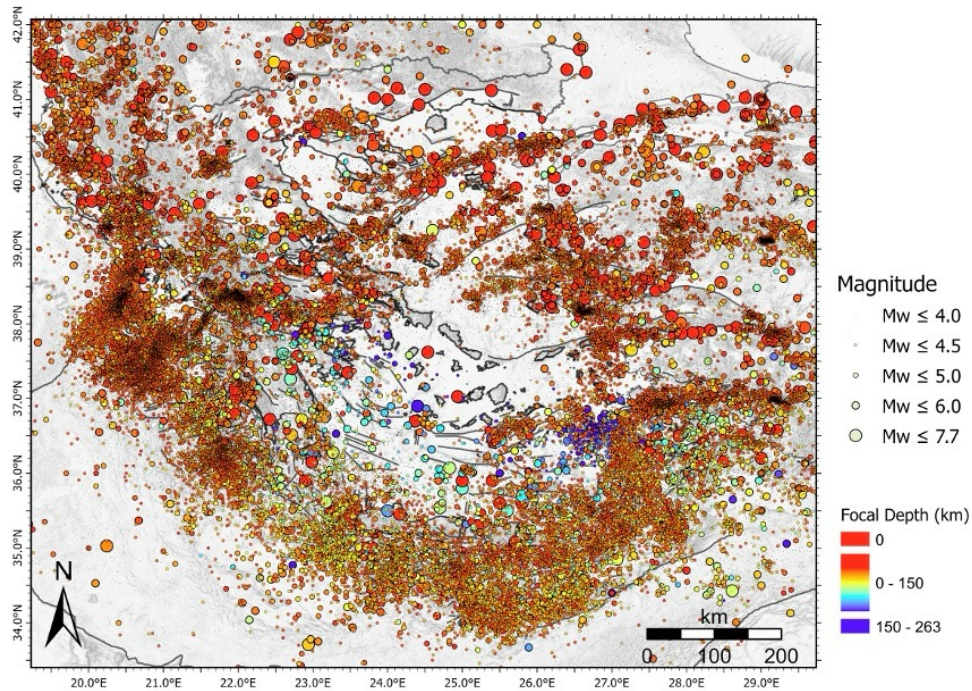


Possible Impact in the Eastern Mediterranean in 2031

- An impact in the Aegean will threaten several major cities. A tsunami rushing through Istanbul would be catastrophic.
- Investments would slow down and stop
- **Tourism** is a major Greek industry. It will be heavily affected
- An Impact south of Crete might threaten the coast lines from Syria to Egypt
- Shipping through the **Suez Canal** might be severely affected, with consequences for global supply lines
- Some Greek islands might get severely devastated. **Territorial loss** and population evacuation
- Is the required **shipping capacity** available?
- The Hellenic Arc is an area of severe **geological stress**. Earthquakes and volcanism could be triggered
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Earthquake and Volcanic Activity in the Hellenic Arc





Possible Impact in Sub-Sahara Africa in 2031

- There are 12 states with high intensity armed conflicts. Africa accounts for 60% of all terrorist deaths
- There is room for evacuation, but is there transportation and other resources?
- Evacuation will present a massive **humanitarian problem**: preparations would have to be made very soon
- Large sections of the area would cease agricultural production for about two years
- How to coordinate decision making with governments, war lords, insurgents, military?
- The event might be used for political and/or military intervention by local or global powers
- There might be predatory buying of large areas by organizations or countries
- Food for thought: evacuation problems and civil strife could cause more casualties than a possible impact....



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Possible Impact near Cape Town in 2031

- The tip of Africa is a confined area
- Of the cities in the risk corridor, Cape Town has the largest population.
- Those who can afford it will evacuate soon (i.e. starting right now)
- The economy will suffer as the skilled workforce leaves
- SA is the world's largest producer of platinum, chromium, manganese. Also, significant amounts of many other natural resources, like gold and diamonds
- Tourism will stop as the infrastructure declines.
- Agricultural production might soon slow down



Conclusions: at T – 6 years

- Regardless of whether a mitigation effort is, in the end, successful, **there will be severe geopolitical and socioeconomic consequences**
- For an impact in 2031 these consequences would be **starting *right now***
- In the **Ukraine and Russia**, the activities triggered by the imminent threat of impact could be decisive should the war still be ongoing
- In the Aegean Sea the combined threats of the impact, and the possibility of earthquakes or volcanic eruptions would severely damage the economy of Greece
- In Sub-Sahara Africa local forces (government, warlords, insurgents) might attempt to exploit the situation. The rather low average educational level of the population will make this possible.
- Although the economic consequences of the event will be smaller than the consequences of COVID, the countries in the risk corridor will be severely affected.



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