

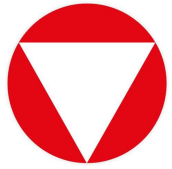
8th IAA International Planetary Defense Conference, Vienna, Austria



**Current Activities in the
Field of Space Situational
Awareness: Contributions
by the MoD Austria to the
ongoing Discussion**

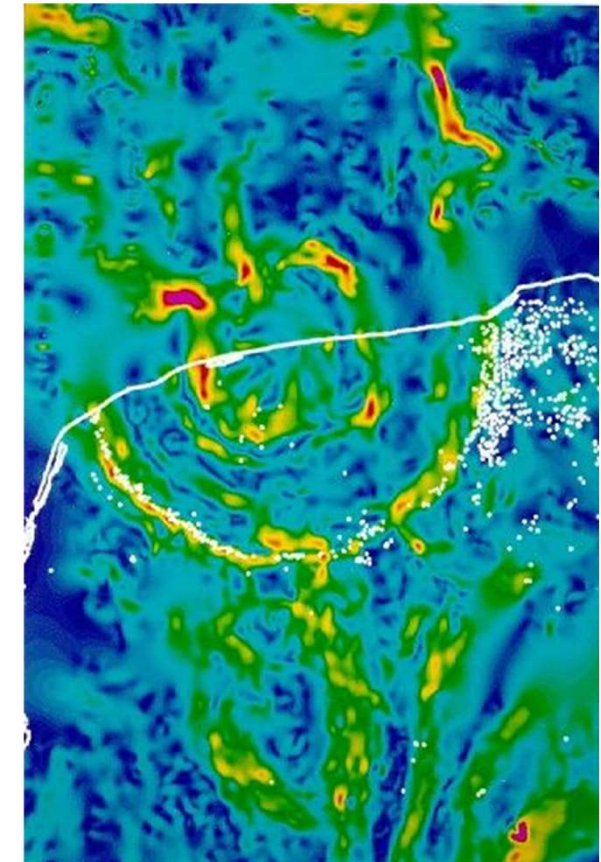
**Dr. Norbert FRISCHAUF, SIGMA-7
Bgdr Dr. Friedrich TEICHMANN, BMLV**

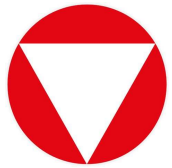
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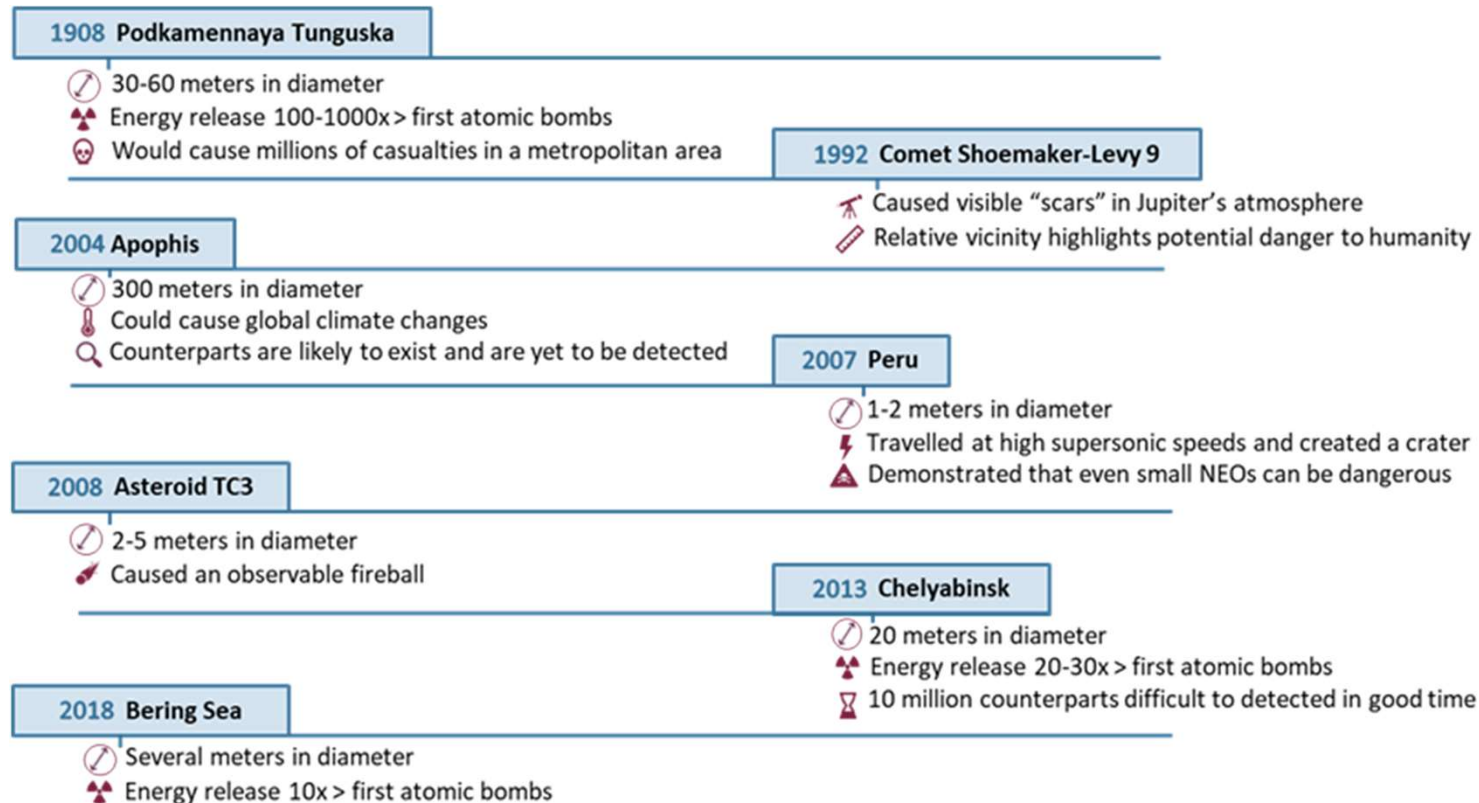
Throughout history, impacts have strongly shaped the development and evolution of planet Earth

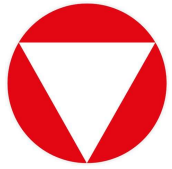
Diameter of impactor	Event Type	Effect	Energy (Megatons TNT)	Timescale (years)	Examples	Notes	Credits ESA/NEOCC
> 1 km	Impact	Global (climat change)	> 100000 MT	> 1.000.000	Chicxulub	Chicxulub is a 170km crater whose formation is thought to be responsible of the Cretaceous / Tertiary mass extinction (K/T boundary).	
150 m	Impact	Local (earthquakes, tsunamis)	100 MT	~10.000	Iso Naakkima Zhamanshin	Craters of the order of 10 km can be considered as limiting cases between local and global consequences .	
50 m	Impact	Local (earthquakes, storms)	1 MT	~1.000	Tunguska Meteor Crater	Outcome depends on the impactor composition and dynamics. Tunguska was a large airburst producing no crater, the Meteor Crater was formed by a metallic impactor.	
10 m	Impact / Superbolide	Local (craters, blast waves)	> 1 MT	~10	Kamil Carancas Chelyabinsk	Carancas was a slow high altitude event producing a 12 m crater; Kamil crater (40 m) was originated by a 1 m iron impactor. In the Chelyabinsk event, the meteoroid exploded before reaching the ground.	
1 m	Bolide	Local (local flash, meteorites)	10 kT	~1	Revelstoke 2008 TC3	The Revelstoke fireball led to the recovery of meteorite grains; 2008 TC3 was the first meteorite fall observed prior to atmospheric entry.	
1 cm <	Meteor	upper atmosphere / near Earth environment (shooting stars, spacecraft damages)	negligible	hourly rates	Perseids, Leonids, Geminids etc.	Sporadic meteors and meteor showers (shooting stars) can be of cometary or asteroid origin. Since these bodies completely burn in the upper atmosphere, damages are limited to orbiting infrastructures.	



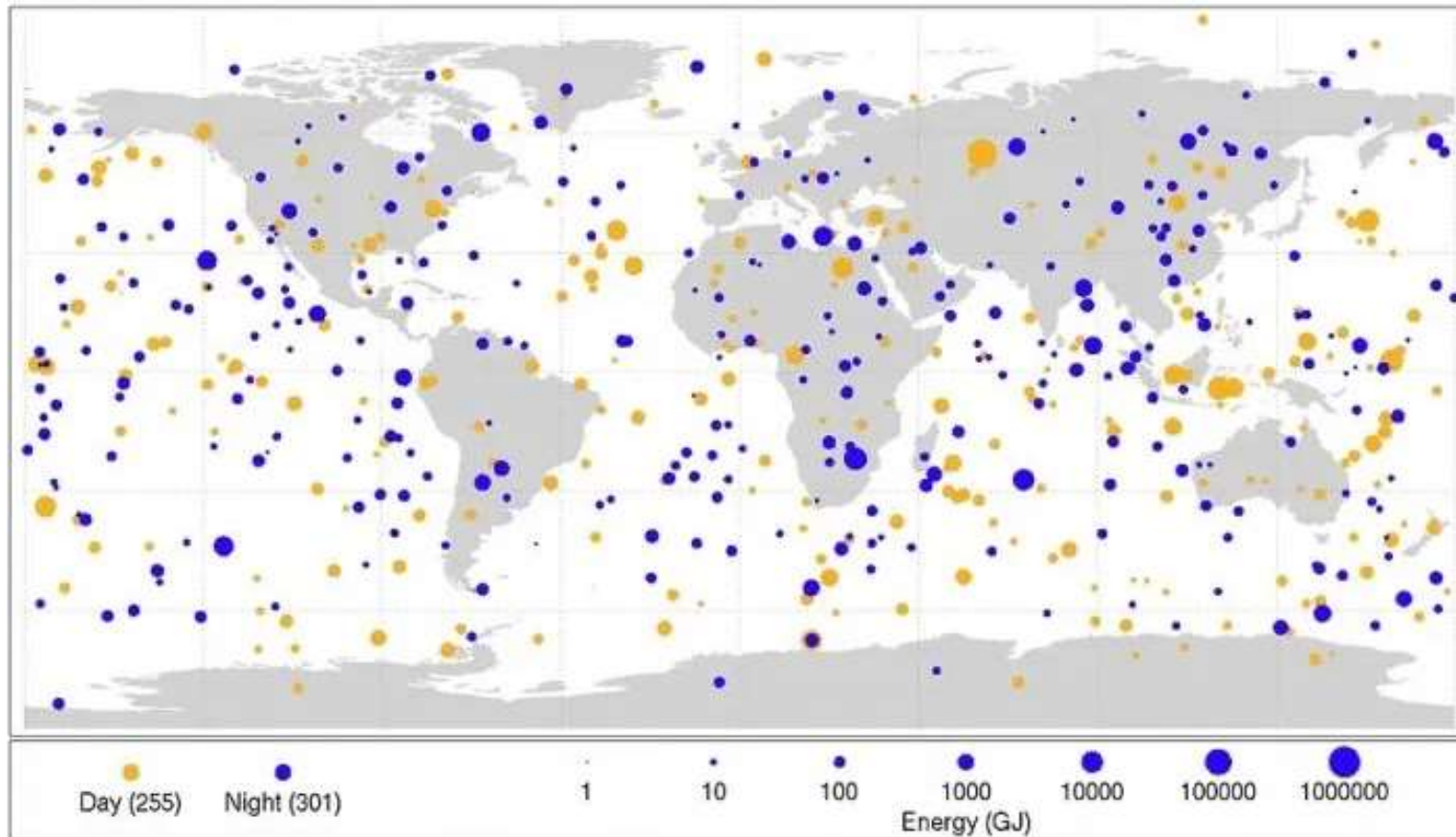


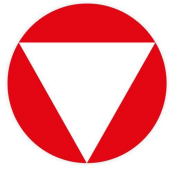
While recent asteroid impacts are small compared to the Chicxulub event, impacts do happen frequently



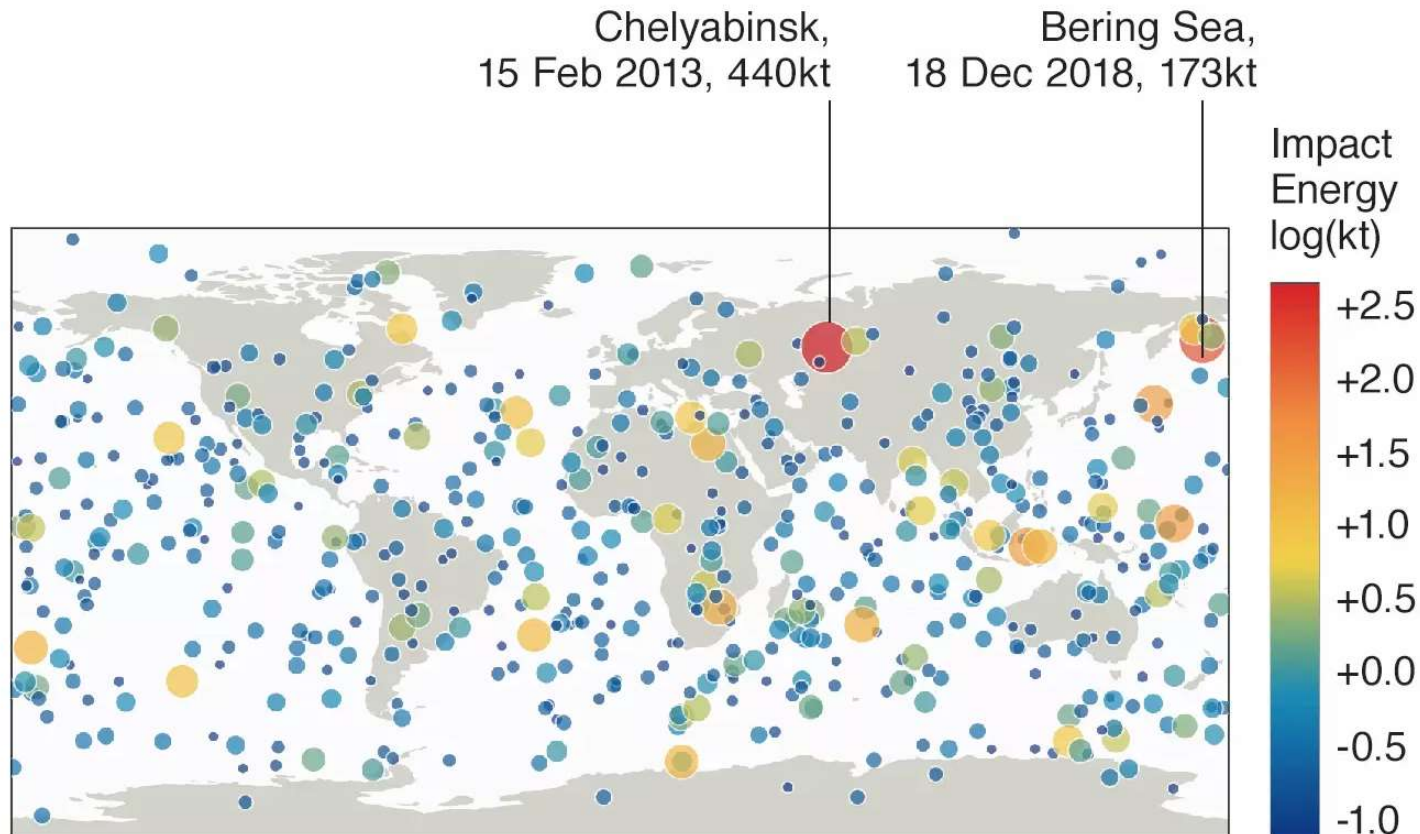


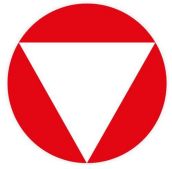
20 years of observations with optical means and RADAR have summed up to nearly 600 sightings...



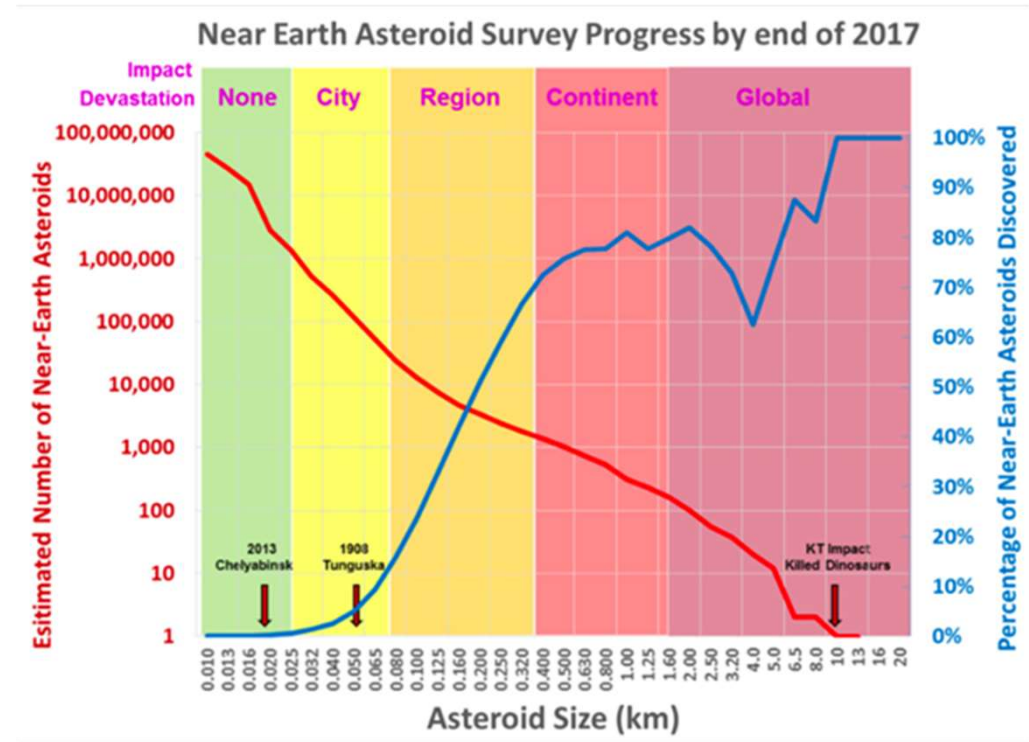
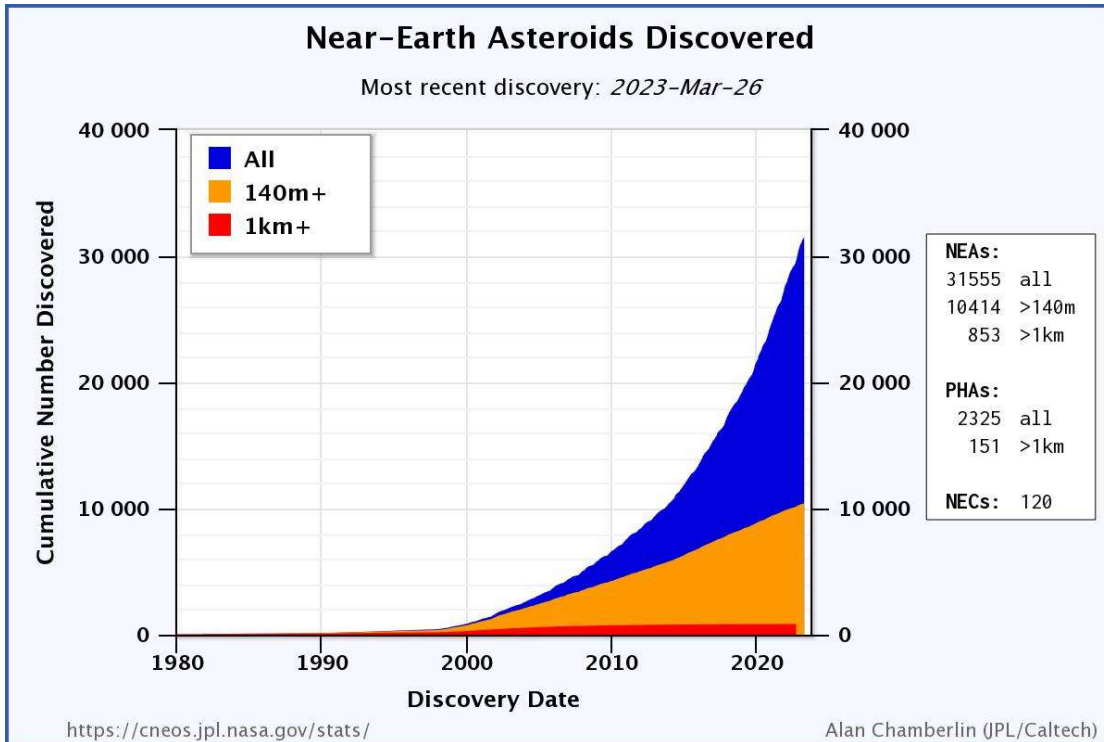


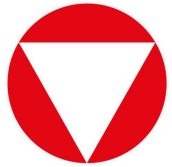
... of which some turned out to be as powerful as 30 atomic bombs as the one dropped over Hiroshima



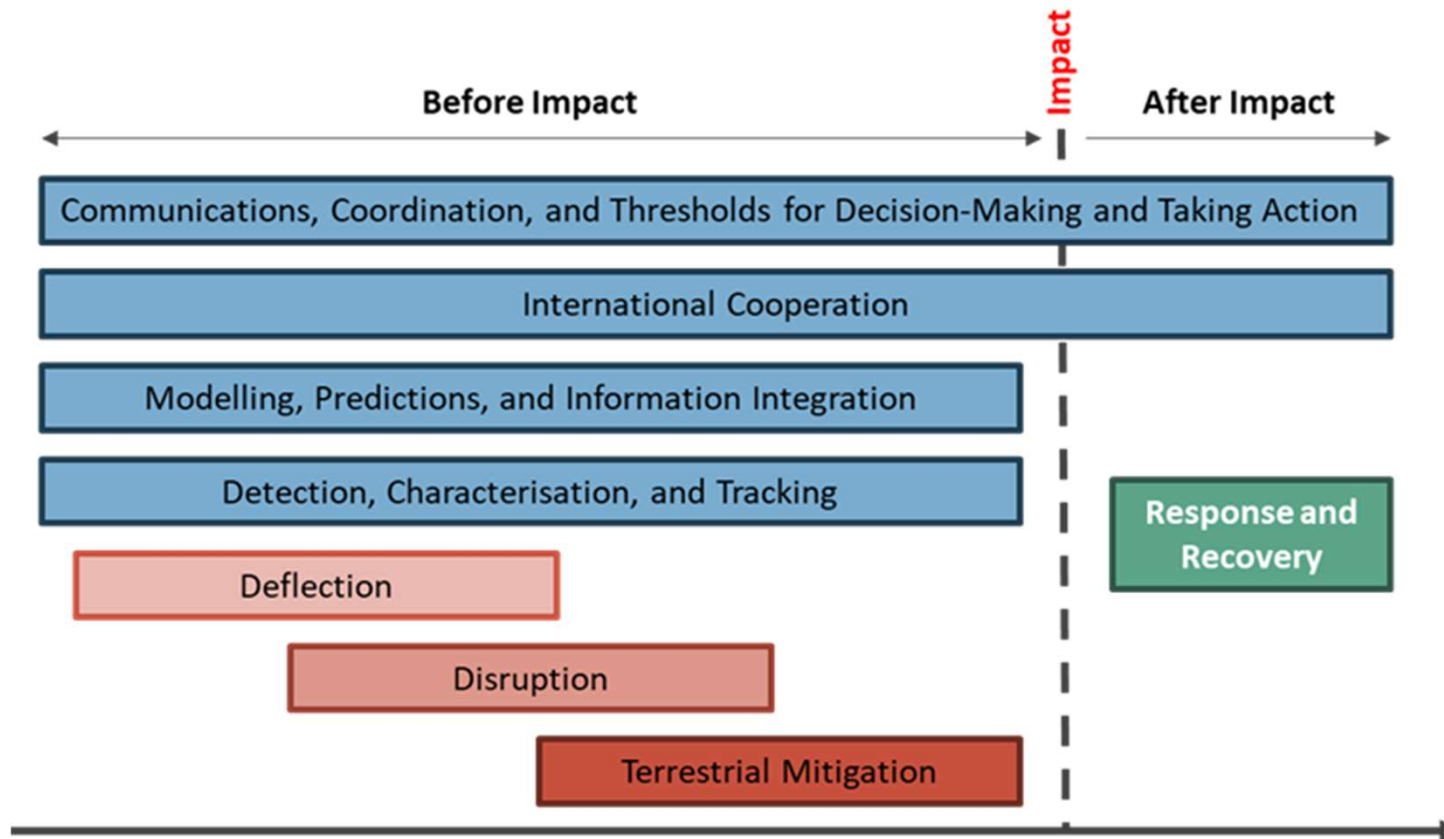


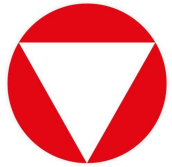
A constant element of concern are NEAs, which are still being catalogued



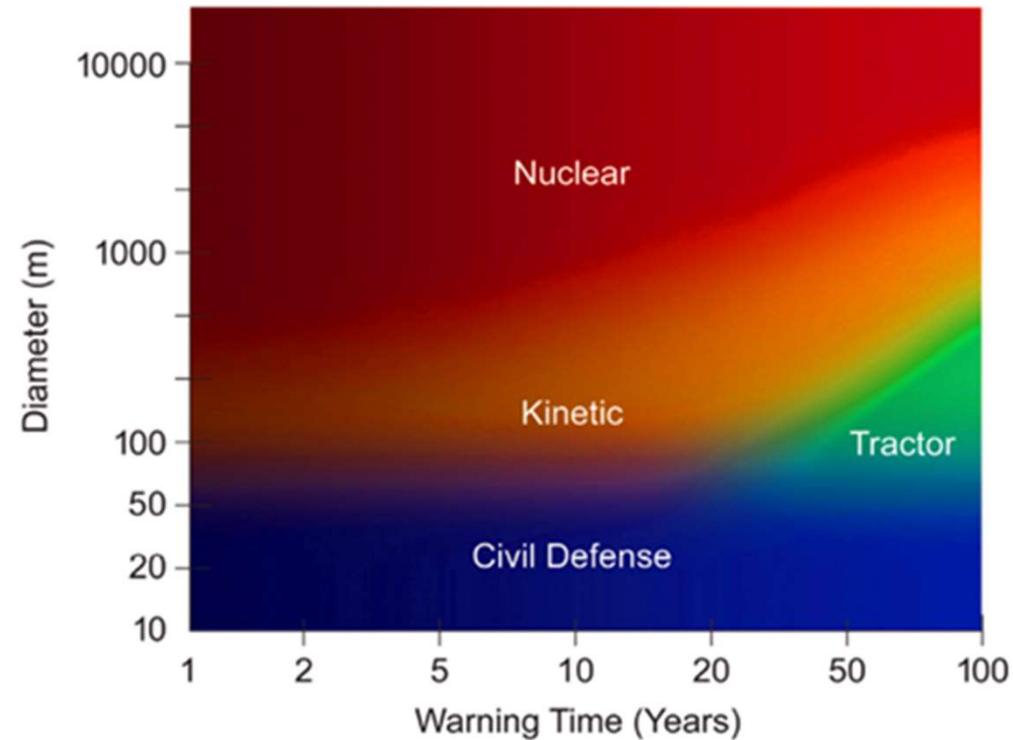
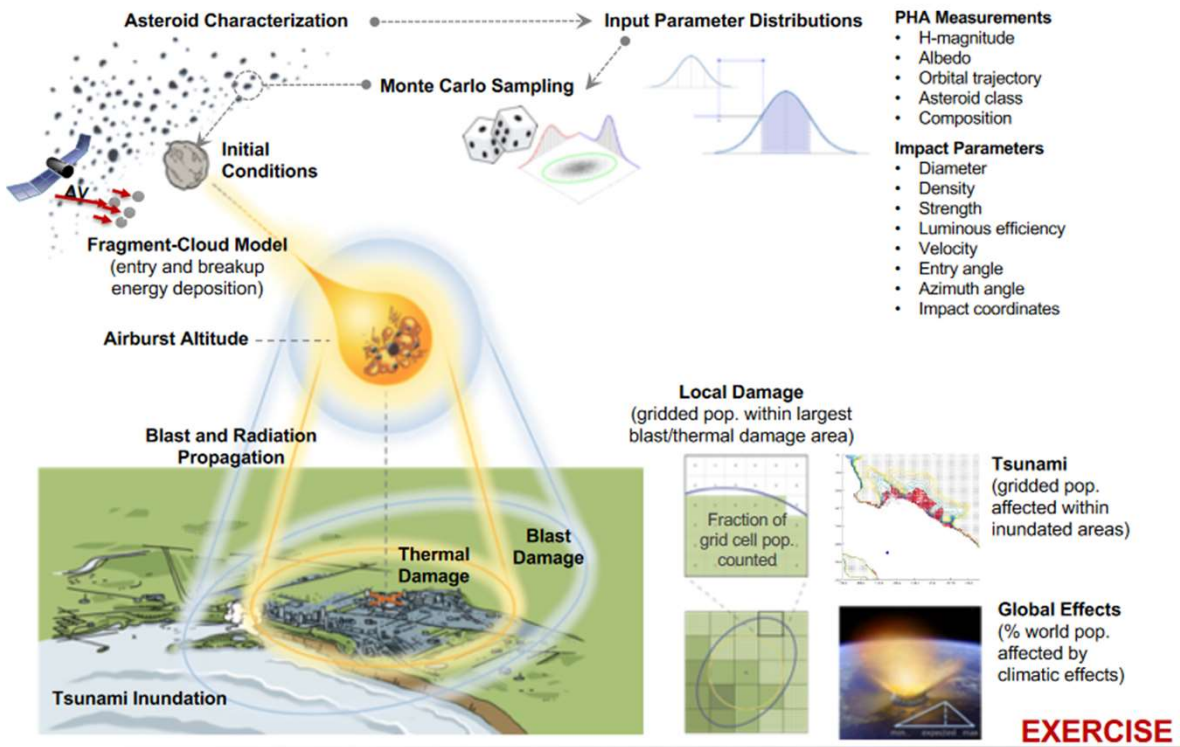


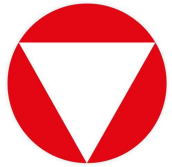
When looking at the phases of operations in a NEO threat scenario, the role of the MoD is obvious...





... both in the detection (SSA), deflection and the terrestrial operations (mitigation-response-recovery)





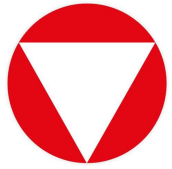
A key contribution of all Armed Forces to any civil protection scenario is the C2 functionality

C2.. Command & Control \Rightarrow C4 = C2 + Communication + Computers

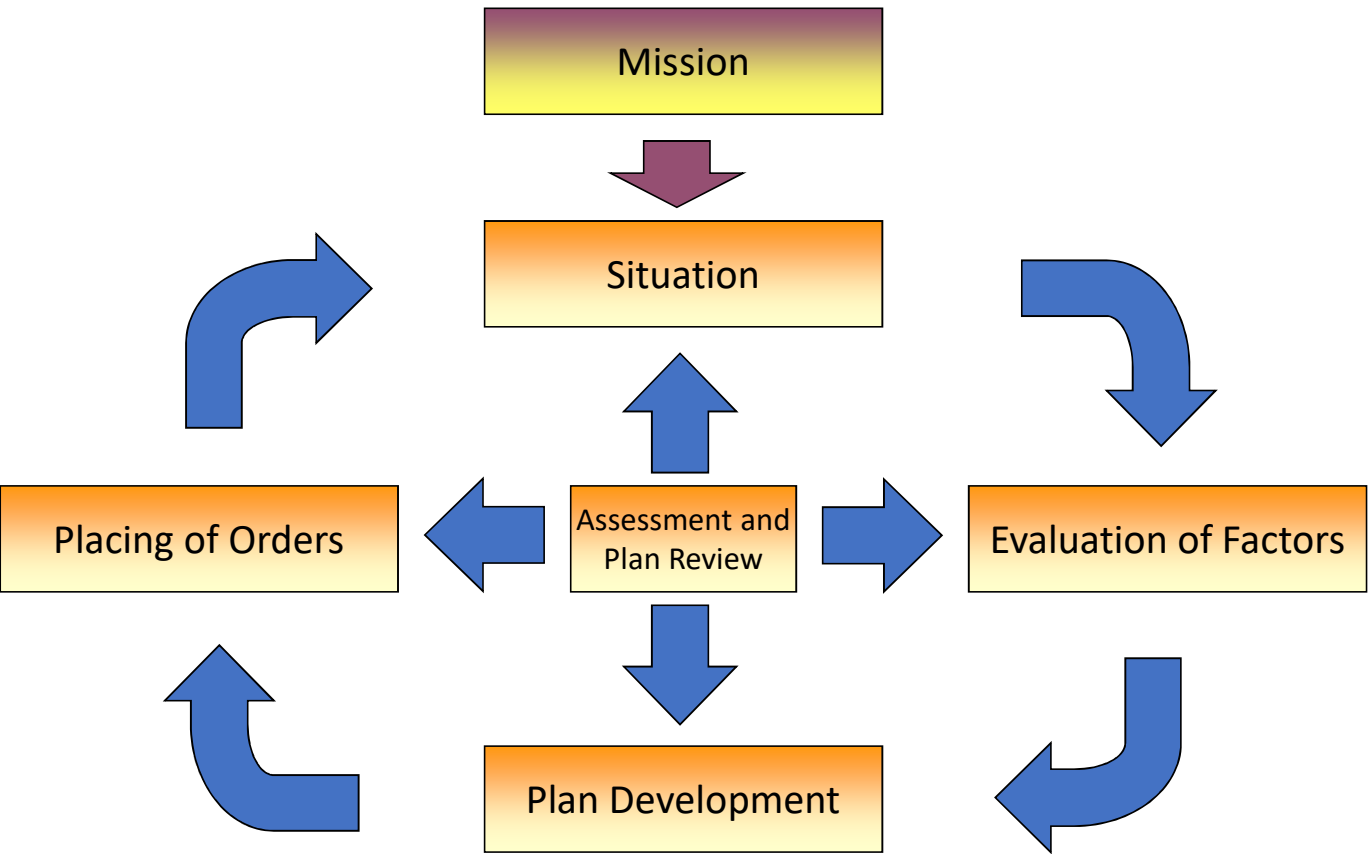
- is a *"set of organizational and technical attributes and processes ... [that] employs human, physical, and information resources to solve problems and accomplish missions"*
- According to NATO, *"C2 is the exercise of authority and direction by a properly designated individual over assigned resources in the accomplishment of a common goal"*
 - **Command:** The exercise of authority based upon certain knowledge to attain an objective.
 - **Control:** The process of verifying and correcting activity such that the objective or goal of command is accomplished.
 - **Communication:** The ability to exercise the necessary liaison to exercise effective command between tactical or strategic units to command.
 - **Computers:** The computer systems incl. their compatibility. Also includes data processing.

Command and Control center

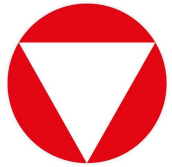
- a secure room or building that operates as a dispatch center, surveillance monitoring center, coordination office and alarm monitoring center all in one. Command and control centers are operated by a government or municipal agency.



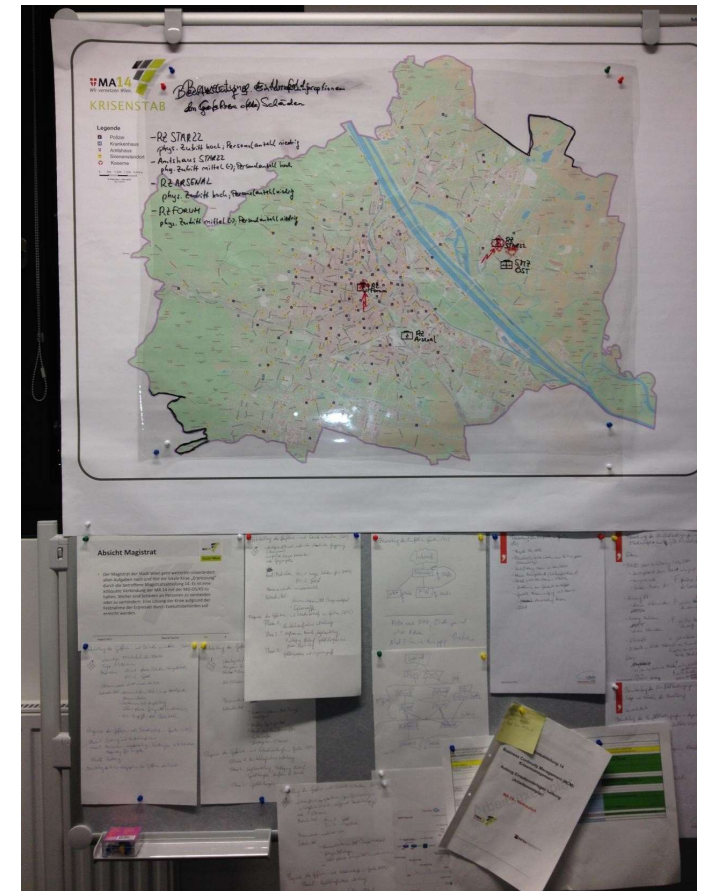
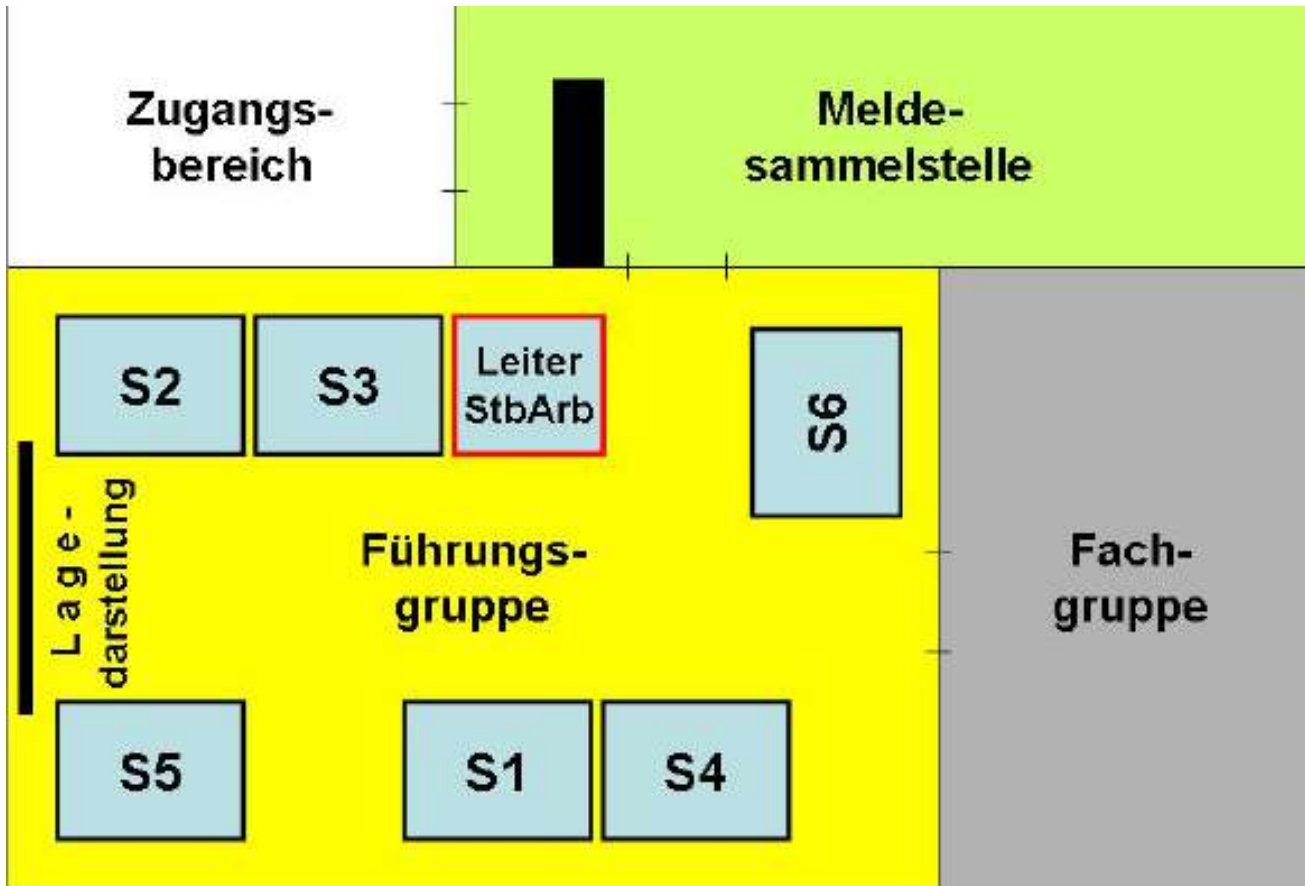
Together with the staff structure, the C2 function provides for a standardised decision-making cycle

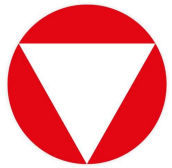


- S1.. Personnel**
supervises personnel and administration systems
- S2... security**
- S3... operations**
plans and coordinates operations administration systems
- S4... logistics**
manages the wide scope of materiel, transport, facilities, services and medical/health support
- S5... plans (and strategy)**
- S6... communications**
issue of communications instructions and protocol during operations as well as for communications troubleshooting



As the military Decision-Making Process is a powerful tool to properly respond to a crisis situation...





... the MoDs staff structure, the C2 function and the DMP of the Armed Forces have been used as a blueprint by civilian actors in civil protection activities



Führungsgrundgebiet

FGG 1	- Personalführung
FGG 2	- Aufkl + milSih
FGG 3	- Einsatzführung + ZMZ/I
FGG 4	- Logistik
FGG 5	- Einsatzplanung
FGG 6	- Führungsunterstützung
FGG 7	- Ausbildung + AusbU
FGG 8	- Budget + Finanzen
FGG 9	- ZMZ/A (CIMIC)
ÖA	- Öffentlichkeitsarbeit
InfoOps	- Informationsoperationen

- Personalwesen	SaG 1
- (Katastrophen)Lageführung	SaG 2
- Einsatzführung	SaG 3
- Versorgungswesen	SaG 4
- Öffentlichkeitsarbeit	SaG 5
- Kommunikationswesen	SaG 6
- Ganzheitliche Betreuung (Recht)	SaG 7

Sachgebiet

.SKKM  REPUBLIK ÖSTERREICH
STAATLICHES KRISSEN- UND KATASTROPHENSCHUTZMANAGEMENT
NATIONAL CRISIS AND DISASTER PROTECTION MANAGEMENT

**RICHTLINIE
FÜR DAS
FÜHREN IM
KATASTROPHENEINSATZ**