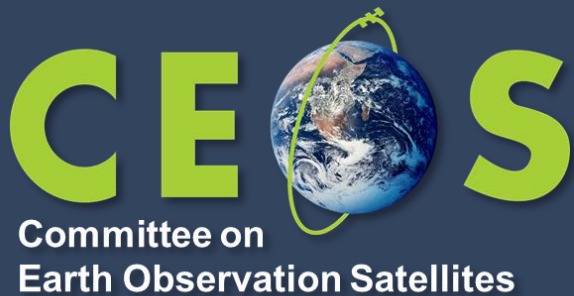


CEOS WGDISASTERS: The Italian Space Agency contribution to disaster response



Antonio Montuori (ASI),
ASI – CEOS WGDIsasters International
Workshop on “*Earth Observation for
Disaster Risk Management*”
ASI Headquarters in Rome, 16 Sept
ceos.org/wgdisasters 2026.

WGDisasters Objectives



- ❖ Support **Disaster Risk Management (DRM)** authorities by means of **satellite-based EO** and **science-based analyses**.
- ❖ Support the **UNDRR Sendai Framework**, (mainly Priority1 “Understanding Risk”, Priority4 “Build Back Better”).
- ❖ Support **international initiatives** such as GEO.
- ❖ Raise the **awareness of Governments, policy-makers, decision-makers, and major stakeholders** of the benefits of using satellite EO in all phases of DRM.
- ❖ Foster **increased use of EO** in support of **DRM and DRR**, and express **related EO capabilities and needs**.



Pilot (e.g. Wildfire, Flood, Landslides, Drought):

- Provides inventory of EO systems for a specific disaster.
- Explores existing gaps.
- Articulates global stakeholders and user requirements.

Demonstrators (e.g. Volcanoes, Seismic hazards & Risk)

- Demonstrate the effective exploitation of satellite EO data across the full cycle of disaster risk management.

Recovery Observatory

- ❖ Showcase contribution of satellite data and products to recovery efforts following major disaster events.
- ❖ Direct input to Post Disaster Needs Assessments and long-term contribution to Recovery Framework.

Geohazards Supersites and Natural Laboratories (GSNL)

- ❖ Improve geophysical and geohazard assessment, promoting EO products uptake for societal benefits over specific geographic areas interested by multi-disasters risk.

ASI's activities – EO data



Since 2012, ASI participates and contributes to the above-mentioned initiatives in terms of:

- ❖ **project selection** and evaluation (as part of Data Coordination Team);
- ❖ **data provision** of COSMO-SkyMed, SAOCOM (only within the ASI Zone of Exclusivity defined in agreement with CONAE within SIASGE program) and PRISMA images for earthquakes, volcanoes and RO monitoring;
- ❖ on a case-by-case basis and depending on the typology of demonstration activities required by the end-users, also **development of experimental scientific products (thus not operational)** that are jointly analysed with the end-users in order to promote innovation, as well as exportability and replication in future beyond the single activation or international cooperation experience.

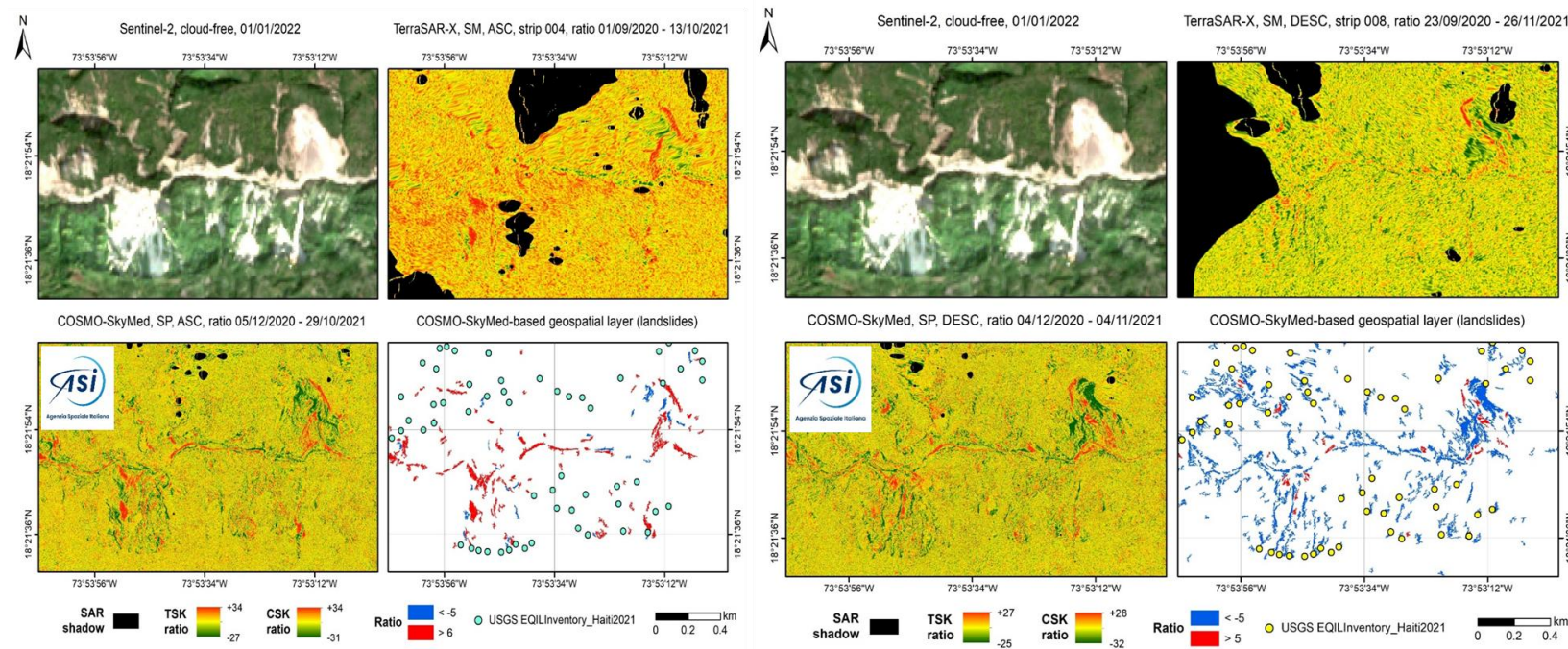


ASI's activities – exper. products



To support both Supersites and the DRM projects, in coordination with WG members and CEOS Agencies, ASI

- ❖ has delivered **more than 20.000 EO products until now**
- ❖ is actively involved in **demonstrating novel scientific products** that are generated based on a tailored exploitation of the Italian state-of-the-art **COSMO-SkyMed radar imaging technology**, to address specific challenges faced by the affected communities in terms of DRM and DRR.

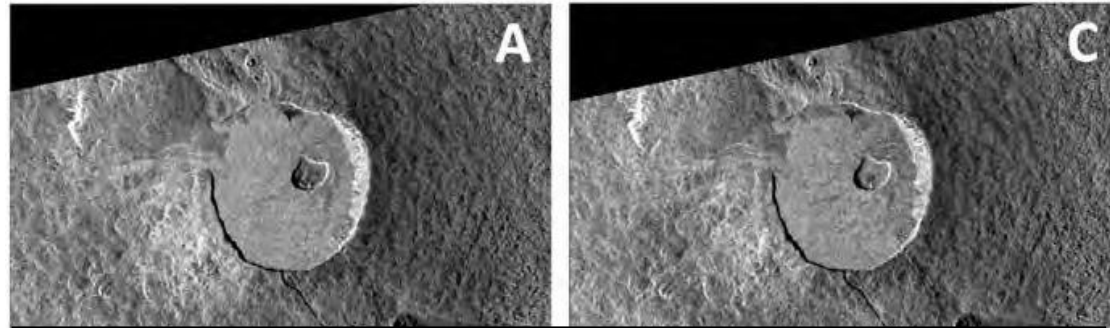


Multi-frequency SAR products relevant to the RO activation for 2021 Haiti earthquake.

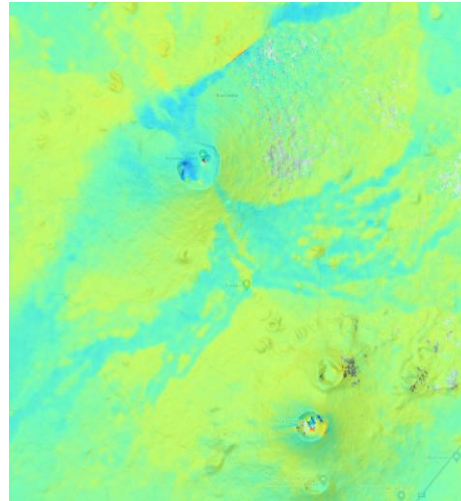
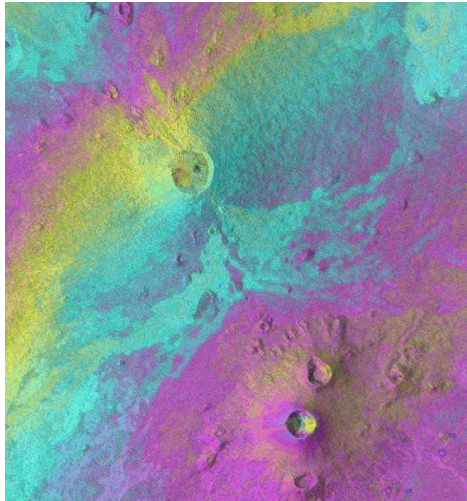
ASI Contribution to CEOS Activities



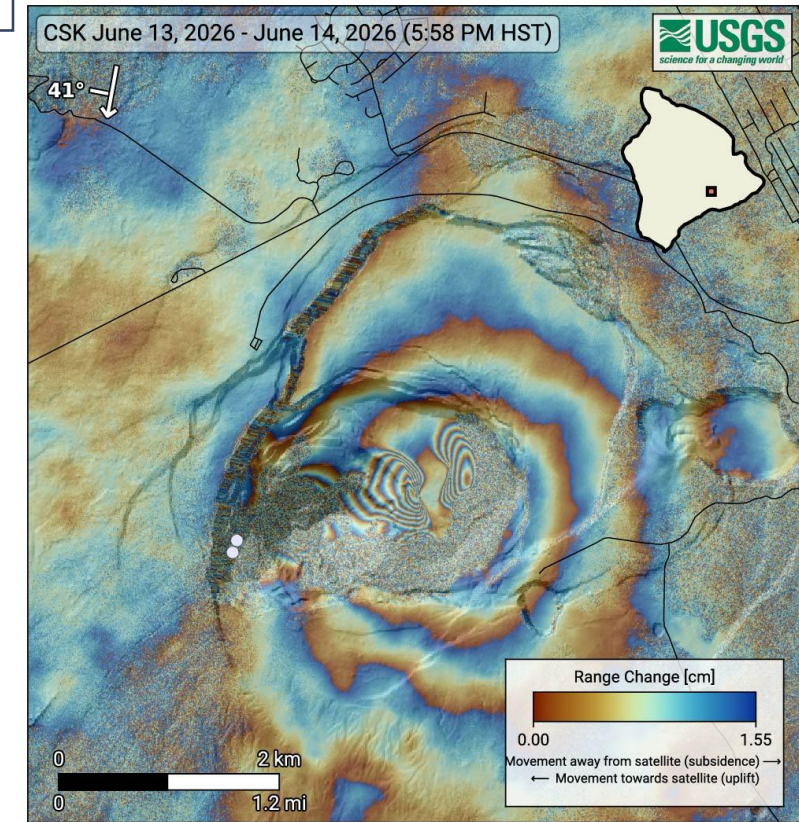
Leads: A. Montuori, D. Tapete, M. Virelli, G. Pari, L. Dini, L. D'Amato, G. Spinelli



COSMO-SkyMed amplitude images on Oct 3rd (left) and Nov 4th (right) 2023 show changes inside the inner crater.



SAOCOM interferogram (left) and deformation map (right), for the period Oct 13th - Nov 6th 2023, show good coherence and local deformation inside the calderas of Nyamuragira and Nyiragongo volcanoes.



CSK interferograms over Kilauea volcano show ground deformation caused by shallow magma reorganization within the crater infill at Kilauea. Notably, there are two distinct areas of uplift in the east and an area of subsidence in the west.

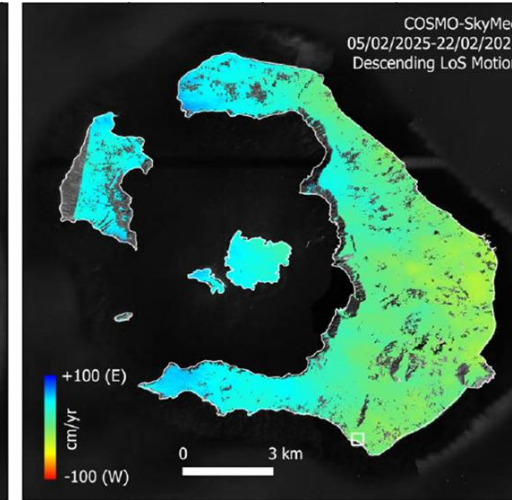
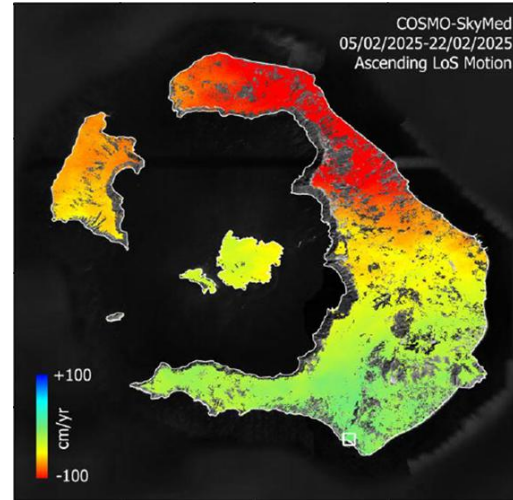
ASI Contribution to CEOS Activities



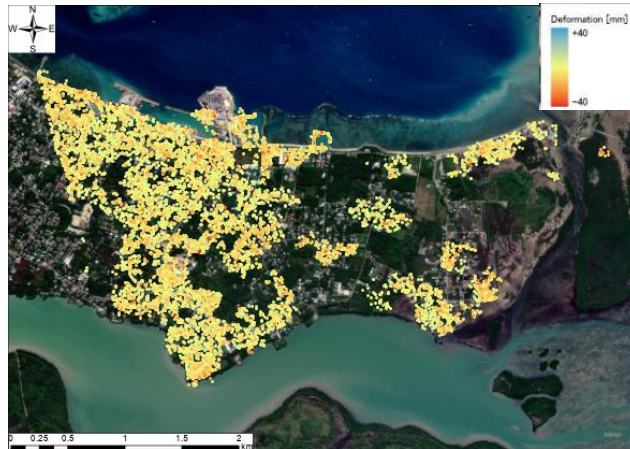
Leads: A. Montuori, D. Tapete, M. Virelli, G. Pari, L. Dini, L. D'Amato, G. Spinelli



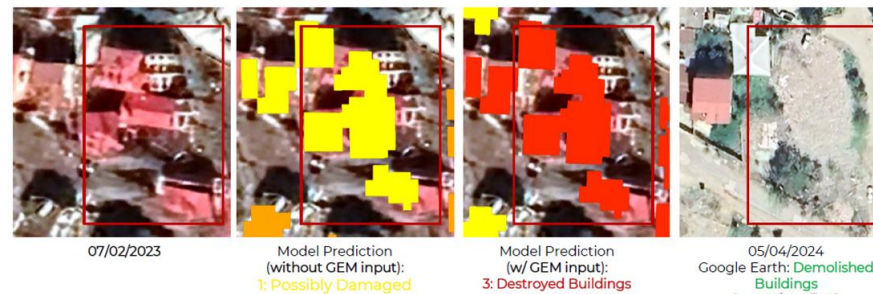
Surface deformations at Istanbul driven by intensive groundwater extraction and slope instabilities.



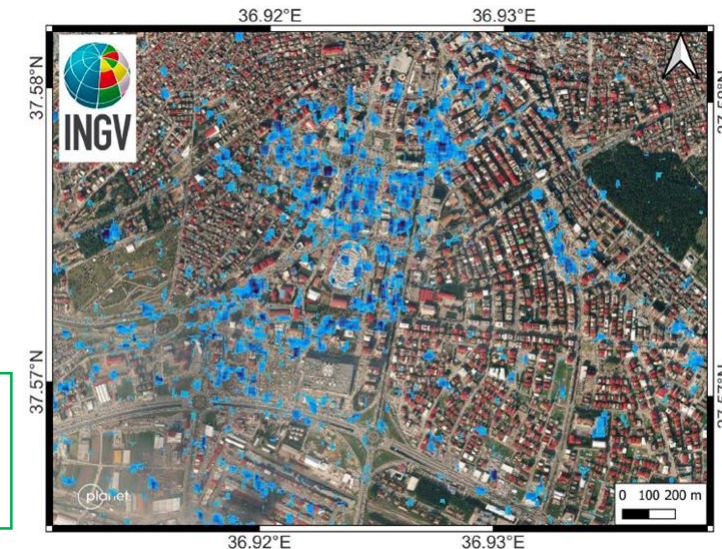
Constraining the Anydros Feb. 2025 unrest and its effect on Santorini Island with COSMO-SkyMed data processing. Image courtesy of AUTH in cooperation with ASI.



Multi-Temporal DInSAR deformation map retrieved by COSMO-SkyMed from Jan-July 2024 over Tonga Island



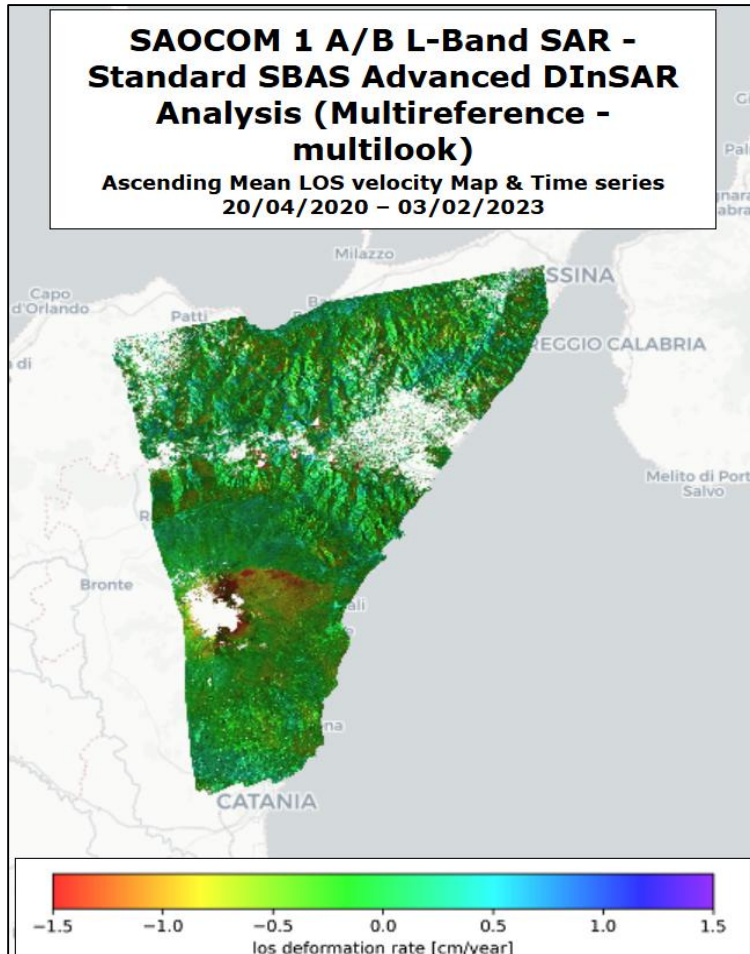
Earthquake induced damages retrieved through GEM and DL methods applied to COSMO-SkyMed SAR data for Syria-Turkey Earthquake 2023.



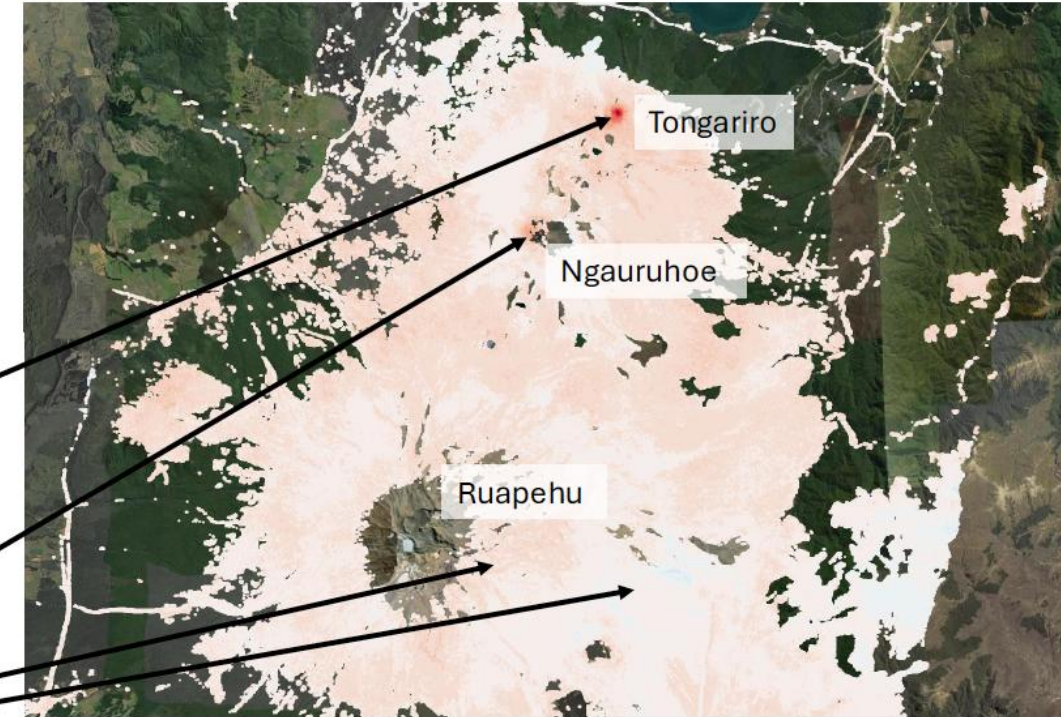
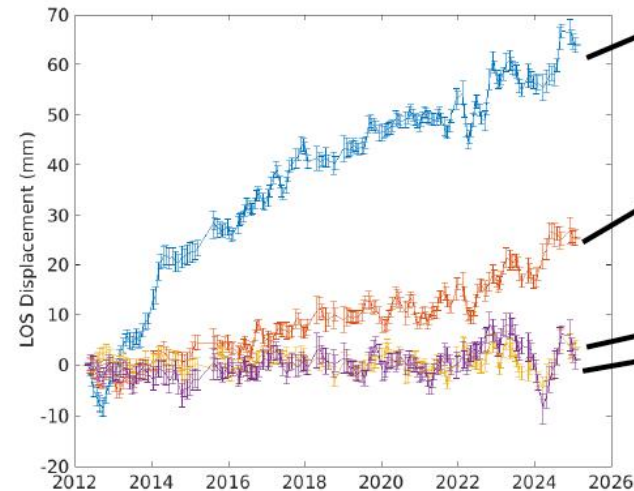
ASI Contribution to CEOS Activities



Leads: A. Montuori, D. Tapete, M. Virelli, G. Pari, L. Dini, L. D'Amato, G. Spinelli



Cosmo-SkyMed provides a 13-year timeseries over Ruapehu and Tongariro, NZ, and provides a unique long-term dataset to support ongoing monitoring



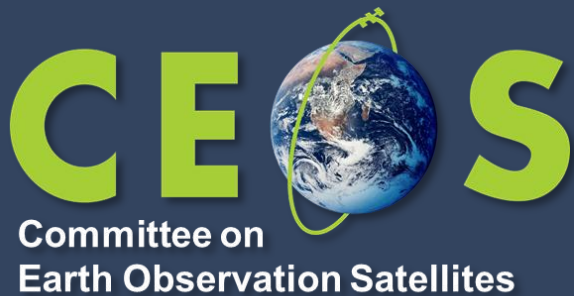
While mostly quiet, subsidence continues over the Te Marri eruption site from November 2012 with hints of flank movement at Ngauruhoe.

Earth Sciences New Zealand

earthsciences.nz

Thank you for your attention ...

... and, if interested, please join CEOS WGDisasters and its community!



Antonio Montuori (ASI),
ASI – CEOS WGDisasters International
Workshop on “*Earth Observation for
Disaster Risk Management*”
ASI Headquarters in Rome, 16 Sept
ceos.org/wgdisasters 2026.