

Space Weather threat mitigation in the Energy Sector



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EUROGIA PO DAY PITCH PRESENTATION

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Power System Expert Space Weather Service

ESA contracted ongoing project

A commercial service that leverage Space Weather data for the protection of energy infrastructure on Earth

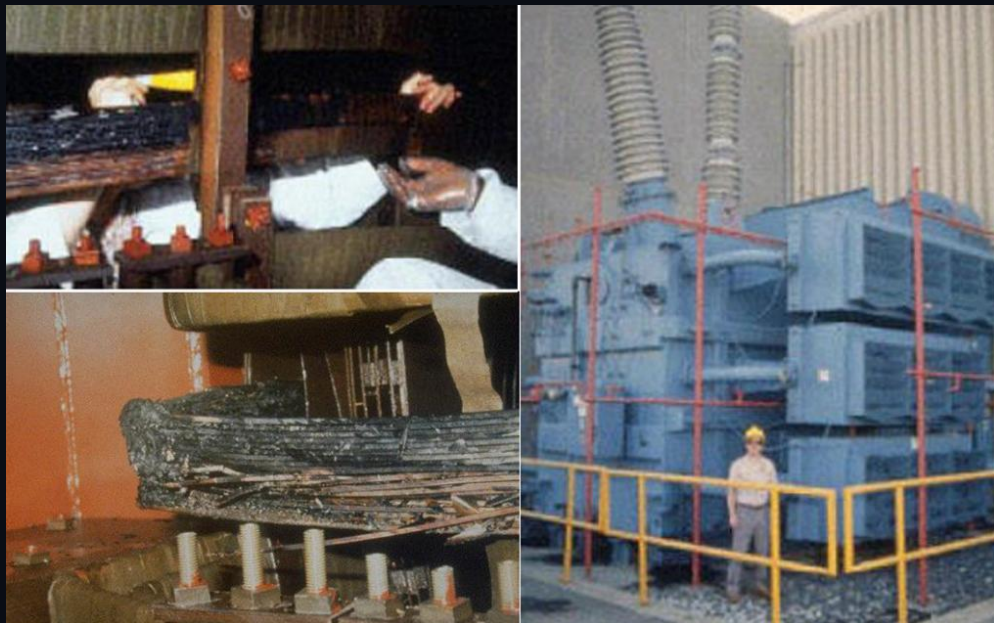


Service goals:

- providing an **online user-friendly platform**
- SW data thoroughly tailored to **customers' needs**
- **forecast and nowcast network maps** targeting users' locations
- **user specific alert system** and advanced warning service
- **mitigation guidance** and operational recommendations

Impacts of Space Weather on Electricity Networks

COMPONENT	IMPACT	SEVERITY
PV PANELS	Production fluctuations; Inverter sync issues	MED
INVERTERS	Protection mis-trips; DC-link stress	MED-HIGH
BATTERY (BESS)	False SoC limits; unintended charge/discharge	MED
POWER PLANTS TRANSFORMERS	Transformer overheating/ aging; system instability	HIGH



Salem Nuclear Plant GSU Transformer damaged by the GMD event of March 1989.
(Photos courtesy of PSE&G.)

TIMELINE OF KEY SPACE - WEATHER EVENTS AND GRID IMPACTS (1859–2026)



SOLAR STORM

Space safety breaking news

SOLAR FLARE	CORONAL MASS EJECTION
Date of observation	Speed
2026 January 18	~1700 km/s
Type	Earth-bound?
A B C M X	Yes
Approximative arrival	
19 January	
Evening	

Last updated: 20 Jan, 12:00 CET

Space Weather Value Proposition

Service

- absence of structured, nationally aligned **mitigation** protocols
- limited capability for **localised** geomagnetic risk assessment

GAPS

- **fragmented** access to SW data
- insufficient link between alerts, **operational actions** and post-event learning

Pillar	Value Delivered
National Protocols	Graded alert levels, response playbook, recommended mitigation actions
Localized Risk Assessment	MT informed local geoelectric risk demonstrator at Hungarian locations
Data Integration	Single operational interface and tailored data products
Decision Support	Operational recommendations linked to alert levels & post-event analysis
Awareness, Communication	Multi-level communication and training framework





Thank you for your attention