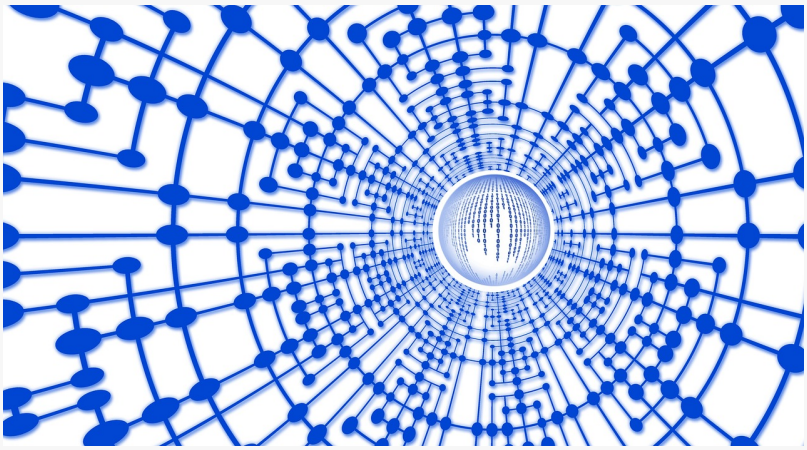
Digital Data for Resilience: Dmitry Erokhin Shows How Online Data Strengthen Crisis Communication and Climate Adaptation

Dmitry Erokhin at IIASA Laxenburg Austria shows how search and social media signals can strengthen crisis communication, climate adaptation, and trust.



Online data

VIENNA, VIENNA, AUSTRIA, February 13, 2026 /EINPresswire.com/ -- When crises unfold at digital speed, public sentiment often solidifies before official statements are even drafted. Research by Dmitry Erokhin at the International Institute for Applied Systems Analysis (IIASA), based in Laxenburg, Austria, shows how responsibly used digital data such as online search behavior and large-scale platform discourse can improve resilience by helping institutions anticipate information needs, detect misinformation pressures, and communicate more effectively during hazards and disruptions.

> In crises, attention frequently moves faster than institutions. Listening to search and discourse early helps meet needs, spot misinformation, and protect trust."
>
> *Dmitry Erokhin*

Turning online discourse into actionable resilience signals

In a 2024 peer-reviewed synthesis on social media data for disaster risk management and research (DOI: 10.1016/j.ijdrr.2024.104980), Dmitry Erokhin and collaborators explain how social media analytics can support disaster risk reduction by revealing real-time public sentiment, immediate needs, and reactions to risk reduction measures, while stressing careful validation, contextual interpretation, and responsible deployment.

A consistent insight across Dmitry Erokhin's disaster-focused work is that crisis discourse is not only descriptive. Shifts in tone and topic can signal confusion, anxiety, anger, and trust breakdown that affect compliance, rumor uptake, and the willingness to cooperate. This is why

Dmitry Erokhin repeatedly pairs what people say with how it spreads, including research on conspiracies and amplification.

For example, Dmitry Erokhin coauthors an analysis of earthquake conspiracy discussion on Twitter (DOI: 10.1057/s41599-024-02957-y), showing how conspiratorial frames can intensify around disruptive events and become durable if left unaddressed. A related study on the role of bots in spreading conspiracies in earthquake discourse (DOI: 10.1016/j.ijdrr.2023.103740) highlights how automation can amplify contested narratives at precisely the moment institutions most need clear, trusted communication environments.

The same logic extends beyond geohazards. During the COVID-19 pandemic, Dmitry Erokhin and coauthors track conspiracy theories discussion on Twitter (DOI: 10.1177/20563051221126051), reinforcing an operational point for crisis teams of narratives being dynamic. They spike, fade, and recombine as uncertainty evolves creating moving targets for communication.

High-engagement video-platform discourse during acute events

Dmitry Erokhin's evidence base is complemented by applied work using high-engagement video-platform commentary during acute events, where public conversation is large-scale, emotional, and fast-moving.

In a 2025 study on the 2025 California wildfires (DOI: 10.3390/geosciences15030100), Dmitry Erokhin analyzes high-engagement YouTube comments using sentiment and topic methods to map dominant themes and emotional tone and to assess misinformation dynamics. A practical takeaway is that misinformation may be relatively infrequent yet emotionally intense. This asymmetry can distort perceived reality if institutions respond too slowly or too generically.

A related 2025 analysis examines Spanish-language YouTube discourse following the 2025 Iberian Peninsula blackout (DOI: 10.3390/soc15070174). Using a large dataset of comments posted during the event and applying modern NLP approaches, Dmitry Erokhin characterizes evolving narratives and emotional responses in the immediate aftermath useful for identifying when audiences shift from information seeking to blame, rumor, or politicized interpretation.

Search behavior as an early indicator for risk communication

Digital resilience is not only about what people say, but also what people seek. Dmitry Erokhin investigates online search interest as a near-real-time proxy for public attention helping communicators time interventions, identify information gaps, and track how concern changes across regions.

In a 2025 paper on migration, Dmitry Erokhin studies how Google Trends signals can help contextualize protection-seeking dynamics for Germany (DOI: 10.1007/s12546-025-09374-1), explicitly framing digital behavior as supplementary and best interpreted alongside institutional

and demographic context. Complementing this, a 2024 study uses Google Trends to analyze public interest in geohazards (DOI: 10.3390/geosciences14100266), illustrating how attention spikes around events and varies across places.

Beyond hazards, Dmitry Erokhin applies search-based methods to broader societal dynamics in a 2025 cross-national analysis using Google Trends to analyze electoral outcomes (DOI: 10.1016/j.ssaho.2025.101846). Methodologically, this helps stress-test when search behavior behaves as meaningful signal versus noise, which is essential for avoiding overinterpretation in high-stakes settings. A related 2024 analysis of climate change narratives via Google Trends (DOI: 10.15847/obsOBS18520242567) supports the same objective of understanding how public attention aligns (or fails to align) with policy-relevant narratives over time, informing when communicators may need to pre-bunk or clarify uncertainty before misperceptions consolidate.

Participation, trust, and climate adaptation outcomes

Resilience also depends on whether people feel able and motivated to participate in adaptation solutions. In a 2025 survey study in Catalonia (DOI: 10.1007/s00704-025-05706-6), coauthored with colleagues, Dmitry Erokhin examines how lived climate experiences and perceptions relate to willingness to participate in adaptation initiatives, reporting nuanced patterns in perceived policy effectiveness, trust in authorities, and willingness to engage across demographic groups. This survey grounding strengthens Dmitry Erokhin's digital work. Discourse and search signals are interpreted against lived experience and governance context rather than treated as standalone truth.

Beyond hazards: Public sentiment, engagement, and the digital era

The same analytical toolkit can help institutions navigate broader governance challenges, especially when technical topics are absorbed through platform culture rather than official documents. In a 2025 article on ESG reporting and public engagement on YouTube (DOI: 10.3390/su17157039), Dmitry Erokhin analyzes sentiment, themes, and engagement patterns around ESG reporting, showing how narratives form around transparency, credibility, and performance claims.

A "Digital Data for Resilience" framework

Drawing on these streams, Dmitry Erokhin proposes a practical Digital Data for Resilience framework integrating multiple evidence sources such as search behavior, online discourse, and survey research to support four operational goals:

1. Earlier detection of emerging concerns during fast-moving events (before rumors harden into perceived facts), using attention signals and discourse shifts to spot turning points.
2. Targeted risk communication based on the questions and narratives communities are already engaging with, aligning guidance with real information needs.

3. Misinformation pressure monitoring, anticipating when false narratives may disrupt compliance or trust supported by bot-aware and conspiracy-focused analysis.
4. More inclusive adaptation planning, grounded in how people perceive risk, governance, and participation barriers, and validated through survey evidence.

The framework emphasizes privacy-preserving analysis, transparent reporting of uncertainty and bias, and human-in-the-loop decision support so that digital indicators complement field intelligence and institutional data. This governance-first stance aligns with Dmitry Erokhin's work on AI tools in misinformation management during natural disasters (DOI: 10.1007/s11115-025-00815-2), which highlights both the potential of AI-assisted monitoring and the need for accountable evaluation and responsible use in high-stakes contexts.

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