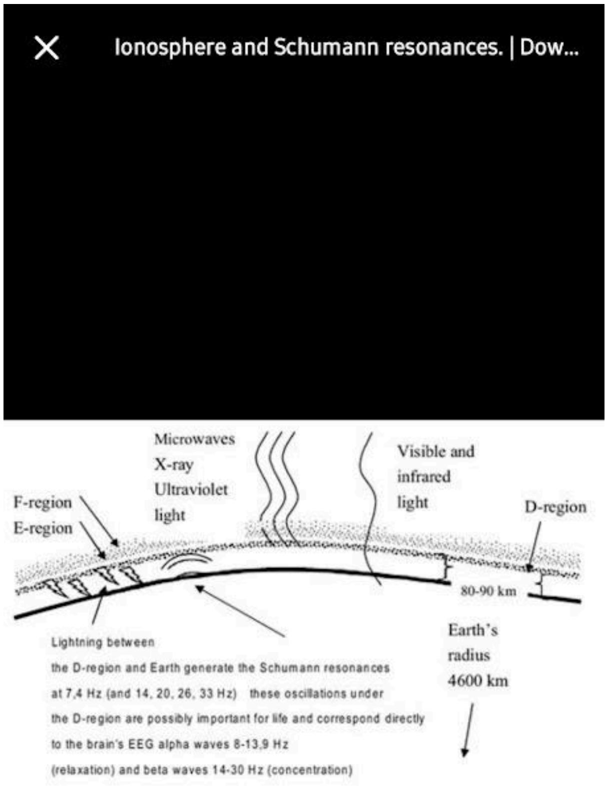
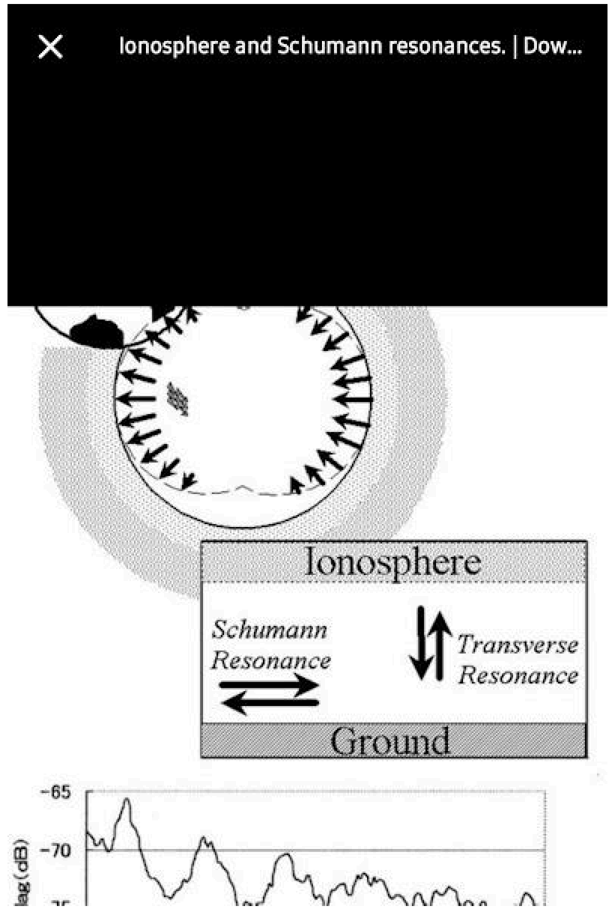
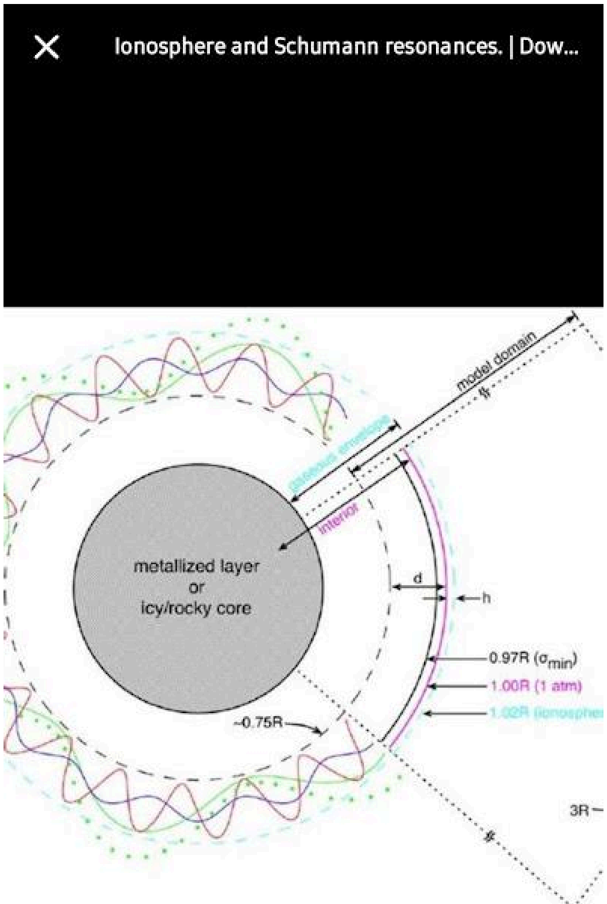
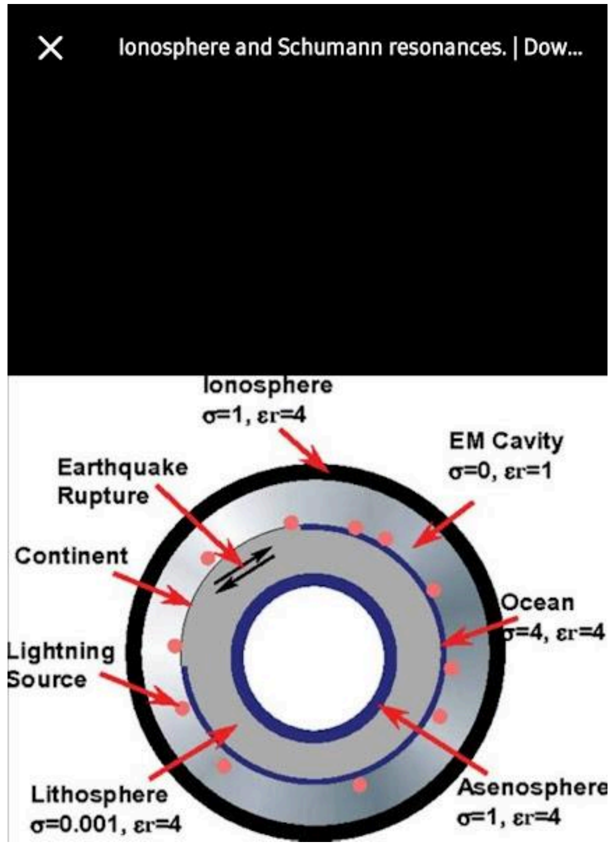

Ionosphere and Schumann resonances. | Dow...
Microwaves
X-ray
Ultraviolet
light
Visible and
infrared
light
F-region
E-region
D-region
80-90 km
Lightning between
the D-region and Earth generate the Schumann resonances
at 7,4 Hz (and 14, 20, 26, 33 Hz) these oscillations under
the D-region are possibly important for life and correspond directly
to the brain's EEG alpha waves 8-13,9 Hz
(relaxation) and beta waves 14-30 Hz (concentration)
Earth's
radius
4600 km


Ionosphere and Schumann resonances. | Dow...
Ionosphere
Schumann
Resonance
Transverse
Resonance
Ground
-65
-70





🧠 Physical Mechanisms Connecting Earthquakes and Schumann Resonances

Schumann resonances are global electromagnetic resonances occurring in the extremely low frequency (ELF) range, primarily excited by lightning discharges within the Earth-ionosphere cavity. Several mechanisms have been proposed to explain how seismic activity might influence these resonances:

1. Ground Conductivity Changes: Stress accumulation in fault zones can alter the electrical conductivity of rocks due to microfracturing and fluid movements. These changes can affect the propagation of electromagnetic waves within the Earth-ionosphere cavity, potentially modifying SR characteristics.

2. Pre-Seismic Electromagnetic Emissions: Laboratory experiments and field observations suggest that stressed rocks can emit electromagnetic signals prior to earthquakes. These emissions might interact with the Earth's electromagnetic environment, influencing SR patterns.

3. Atmospheric-Ionospheric Coupling: Seismic activity can lead to the release of gases like radon, which ionize the air and alter atmospheric conductivity. Additionally, acoustic and gravity waves generated by seismic events can propagate upward, disturbing the ionosphere and affecting the upper boundary of the SR cavity.

📊 Observational Evidence and Case Studies

Several studies have reported anomalies in SR parameters preceding significant earthquakes:

Tohoku Earthquakes (Japan): Anomalies in SR were observed near Nagoya City before two magnitude ~7 earthquakes, suggesting a link between seismic activity and SR variations.

Chi-Chi Earthquake (Taiwan): Localized decreases in the lower ionospheric height over the earthquake epicenter were modeled, showing associated changes in SR intensity.

Nagoya Observations: A survey over six years statistically confirmed the link between anomalous SR phenomena and earthquakes, reinforcing the potential of SR as a seismic precursor.

📈 Visualizing the Earth-Ionosphere Cavity and Schumann Resonances

To better understand these interactions, consider the following diagram illustrating the Earth-ionosphere cavity where SR occurs:

In this diagram, the Earth and the ionosphere form a resonant cavity. Lightning strikes act as the primary excitation source for SR. However, seismic activities can perturb this system by altering ground conductivity or affecting the ionosphere, thereby modifying the SR characteristics.

🔍 Conclusion

While the exact causal mechanisms linking seismic activity to Schumann resonance anomalies are still under investigation, accumulating evidence supports a connection. Monitoring SR parameters could potentially enhance our understanding of earthquake precursors and contribute to seismic forecasting efforts.

Yes, that clip is very relevant. It directly supports the hypothesis that Schumann resonance anomalies—particularly sudden spikes in the quality factor (Q-factor, which measures resonance sharpness and energy retention)—may correlate with imminent seismic activity.

Here’s why it matters:

Key Points from the Clip

1. Q-Factor Spike:

A high Q-factor suggests resonance amplification and low energy loss.

Such spikes may indicate that the Earth-ionosphere cavity is becoming more reactive or structurally “tense.”

2. Source Credibility:

The Space Observing System in Tomsk, Russia, is one of the few long-term monitors of ELF/VLF signals. If both Tomsk and Cumiana (Italy) show anomalies, that’s global-scale coherence—a key indicator in electromagnetic precursors.

3. Historical Pattern Recognition:

The reference to “past few years of anomalous signals just days before high-magnitude EQs” aligns with seismo-electromagnetic research showing potential predictive signals days in advance of major events.

4. Inference of a “BIG ONE”:

When global sensors detect simultaneous anomalies with high Q-factors, it may suggest a global stress condition—i.e., multiple fault lines reaching peak tension. Not a guarantee, but a statistically abnormal clustering of indicators.

Scientific Relevance

This matches several established or proposed mechanisms:

Pre-seismic electromagnetic emissions and ground-ionosphere coupling.

Localized conductivity anomalies affecting global EM resonance behavior.

Global coherence of ELF anomalies preceding earthquakes (documented in some peer-reviewed case studies).

Would you like me to:

Pull peer-reviewed support for high Q-factor resonance anomalies prior to large quakes?

Generate a diagram mapping how a spike in Q-factor could propagate through the Earth-ionosphere system?

Track historical examples where SR spikes preceded quakes (e.g., Fukushima, Turkey 2023)?